FFT FLEX-FLOAT TECHNOLOGY®

MacDon

FD2 Series FlexDraper® Header with FM200 Float Module

Operator's Manual

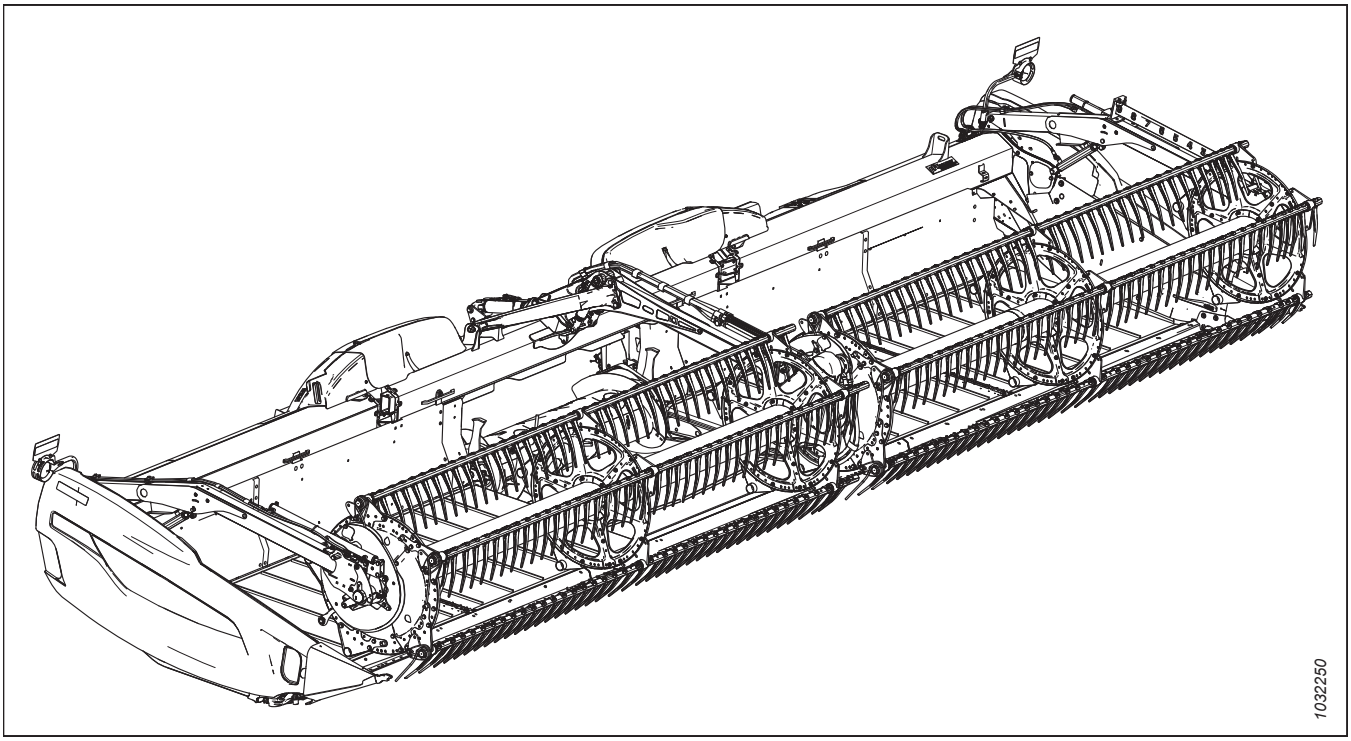
262227 Revision A

Original Instruction

Featuring MacDon FLEX-FLOAT Technology®

The Harvesting Specialists.

FD2 Series FlexDraper® Header



Published August 2023

Declaration of Conformity

EC Declaration of Conformity

[1] MacDon

MacDon Industries Ltd.
680 Moray Street,
Winnipeg, Manitoba, Canada
R3J 3S3

[2] Combine Header

[3] MacDon FD2 Series

[4] As per Shipping Document

[5] May 4, 2023

[6] _____
Adrienne Tankeu
Product Integrity

EN

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

fulfils all the relevant provisions of the Directive 2006/42/EC.

Harmonized standards used, as referred to in Article 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Place and date of declaration: [5]

Identity and signature of the person empowered to draw up the declaration: [6]

Name and address of the person authorized to compile the technical file:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germany)
bvonriedesel@macdon.com

BG

Ние, [1]

декларираме, че следният продукт:

Тип машина: [2]

Наименование и модел: [3]

Сериен номер(а) [4]

отговаря на всички приложими разпоредби на директива 2006/42/ЕО.

Използвани са следните хармонизирани стандарти според чл. 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Място и дата на декларацията: [5]

Име и подпис на лицето, упълномощено да изготви декларацията: [6]

Име и адрес на лицето, упълномощено да състави техническия файл:

Бенедикт фон Рийдезел
Управител, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Германия)
bvonriedesel@macdon.com

CZ

My, [1]

Prohlašujeme, že produkt:

Typ zařízení: [2]

Název a model: [3]

Sériové(á) číslo)a): [4]

splňuje všechna relevantní ustanovení směrnice 2006/42/EC.

Byly použity harmonizované standardy, jak je uvedeno v článku 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Místo a datum prohlášení: [5]

Identita a podpis osoby oprávněné k vydání prohlášení: [6]

Jméno a adresa osoby oprávněné k vyplnění technického souboru:

Benedikt von Riedesel
generální ředitel, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Německo)
bvonriedesel@macdon.com

DA

Vi, [1]

erklærer, at prduktet:

Maskintype [2]

Navn og model: [3]

Serienummer (-numre): [4]

Opfylder alle bestemmelser i direktiv 2006/42/EF.

Anvendte harmoniserede standarder, som henvist til i paragraf 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Sted og dato for erklæringen: [5]

Identitet på og underskrift fra den person, som er bemyndiget til at udarbejde erklæringen: [6]

Navn og adresse på den person, som er bemyndiget til at udarbejde den tekniske fil:

Benedikt von Riedesel
Direktør, MacDon Europe GmbH
Hagenauer Straße 59
D-65203 Wiesbaden (Tyskland)
bvonriedesel@macdon.com

DE

Wir, [1]

Erklären hiermit, dass das Produkt:

Maschinentyp: [2]

Name & Modell: [3]

Seriennummer (n): [4]

alle relevanten Vorschriften der Richtlinie 2006/42/EG erfüllt.

Harmonisierte Standards wurden, wie in folgenden Artikeln angegeben, verwendet 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Ort und Datum der Erklärung: [5]

Name und Unterschrift der Person, die dazu befugt ist, die Erklärung auszustellen: [6]

Name und Anschrift der Person, die dazu berechtigt ist, die technischen Unterlagen zu erstellen:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden
bvonriedesel@macdon.com

ES

Nosotros [1]

declaramos que el producto:

Tipo de máquina: [2]

Nombre y modelo: [3]

Números de serie: [4]

cumple con todas las disposiciones pertinentes de la directriz 2006/42/EC.

Se utilizaron normas armonizadas, según lo dispuesto en el artículo 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Lugar y fecha de la declaración: [5]

Identidad y firma de la persona facultada para draw redactar la declaración: [6]

Nombre y dirección de la persona autorizada para elaborar el expediente técnico:

Benedikt von Riedesel
Gerente general - MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Alemania)
bvonriedesel@macdon.com

ET

Meie, [1]

deklareerime, et toode

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumbrid: [4]

vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele.

Kasutatud on järgnevaid harmoniseeritud standardeid, millele on viidatud ka punktis 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Deklaratsiooni koht ja kuupäev: [5]

Deklaratsiooni koostamiseks volitatud isiku nimi ja allkiri: [6]

Tehnilise dokumendi koostamiseks volitatud isiku nimi ja aadress:

Benedikt von Riedesel
Peadirektor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Saksamaa)
bvonriedesel@macdon.com

FR

Nous soussignés, [1]

Déclarons que le produit :

Type de machine : [2]

Nom et modèle : [3]

Numéro(s) de série : [4]

Est conforme à toutes les dispositions pertinentes de la directive 2006/42/EC.

Utilisation des normes harmonisées, comme indiqué dans l'Article 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Lieu et date de la déclaration : [5]

Identité et signature de la personne ayant reçu le pouvoir de rédiger cette déclaration : [6]

Nom et adresse de la personne autorisée à constituer le dossier technique :

Benedikt von Riedesel
Directeur général, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Allemagne)
bvonriedesel@macdon.com

EC Declaration of Conformity

IT

Noi, [1]

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero(i) di serie: [4]

soddisfa tutte le disposizioni rilevanti della direttiva 2006/42/CE.

Utilizzo degli standard armonizzati, come indicato nell'Articolo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Luogo e data della dichiarazione: [5]

Nome e firma della persona autorizzata a redigere la dichiarazione: [6]

Nome e persona autorizzata a compilare il file tecnico:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germania)
bvonriedesel@macdon.com

HU

Mi, [1]

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Név és modell: [3]

Szériaszám(ok): [4]

teljesíti a következő irányelv összes vonatkozó előírásait: 2006/42/EK.

Az alábbi harmonizált szabványok kerültek alkalmazásra a 7(2) cikkely szerint:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

A nyilatkozattétel ideje és helye: [5]

Azon személy kiléte és aláírása, aki jogosult a nyilatkozat elkészítésére: [6]

Azon személy neve és aláírása, aki felhatalmazott a műszaki dokumentáció összeállítására:

Benedikt von Riedesel
Vezérigazgató, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Németország)
bvonriedesel@macdon.com

LT

Mes, [1]

Pareiškiame, kad šis produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.

Naudojami harmonizuoti standartai, kai nurodoma straipsnyje 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklaracijos vieta ir data: [5]

Asmens tapatybės duomenys ir parašas asmens, įgalioto sudaryti šią deklaraciją: [6]

Vardas ir pavardė asmens, kuris įgaliotas sudaryti šį techninį failą:

Benedikt von Riedesel
Generalinis direktorius, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Vokietija)
bvonriedesel@macdon.com

LV

Mēs, [1]

Deklarējam, ka produkts:

Mašīnas tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.

Piemēroti šādi saskaņotie standarti , kā minēts 7. panta 2. punktā:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklarācijas parakstīšanas vieta un datums: [5]

Tās personas vārds, uzvārds un paraksts, kas ir pilnvarota sagatavot šo deklarāciju: [6]

Tās personas vārds, uzvārds un adrese, kas ir pilnvarota sastādīt tehnisko dokumentāciju:

Benedikts fon Rīdīzels
Ģenerāldirektors, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Vācija)
bvonriedesel@macdon.com

NL

Wij, [1]

Verklaren dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

voldoet aan alle relevante bepalingen van de Richtlijn 2006/42/EC.

Geharmoniseerde normen toegepast, zoals vermeld in Artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plaats en datum van verklaring: [5]

Naam en handtekening van de bevoegde persoon om de verklaring op te stellen: [6]

Naam en adres van de geautoriseerde persoon om het technisch dossier samen te stellen:

Benedikt von Riedesel
Algemeen directeur, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Duitsland)
bvonriedesel@macdon.com

PO

My niżej podpisani, [1]

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

spełnia wszystkie odpowiednie przepisy dyrektywy 2006/42/WE.

Zastosowaliśmy następujące (zharmonizowane) normy zgodnie z artykułem 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data i miejsce oświadczenia: [5]

Imię i nazwisko oraz podpis osoby upoważnionej do przygotowania deklaracji: [6]

Imię i nazwisko oraz adres osoby upoważnionej do przygotowania dokumentacji technicznej:

Benedikt von Riedesel
Dyrektor generalny, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Niemcy)
bvonriedesel@macdon.com

PT

Nós, [1]

Declaramos, que o produto:

Tipo de máquina: [2]

Nome e Modelo: [3]

Número(s) de Série: [4]

cumpre todas as disposições relevantes da Directiva 2006/42/CE.

Normas harmonizadas aplicadas, conforme referido no Artigo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Local e data da declaração: [5]

Identidade e assinatura da pessoa autorizada a elaborar a declaração: [6]

Nome e endereço da pessoa autorizada a compilar o ficheiro técnico:

Benedikt von Riedesel
Gerente Geral, MacDon Europa Ltda.
Hagenauer Straße 59
65203 Wiesbaden (Alemanha)
bvonriedesel@macdon.com

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul mașinii: [2]

Denumirea și modelul: [3]

Număr (numere) serie: [4]

corespunde tuturor dispozițiilor esențiale ale directivei 2006/42/EC.

Au fost aplicate următoarele standarde armonizate conform articolului 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data și locul declarației: [5]

Identitatea și semnătura persoanei împuternicite pentru întocmirea declarației: [6]

Numele și semnătura persoanei autorizate pentru întocmirea cărții tehnice:

Benedikt von Riedesel
Manager General, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germania)
bvonriedesel@macdon.com

SR

Mi, [1]

Izjavljujemo da proizvod

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Ispunjava sve relevantne odredbe direktive 2006/42/EC.

Korišæeni su usklađeni standardi kao što je navedeno u èlanu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Datum i mesto izdavanja deklaracije: [5]

Identitet i potpis lica ovlašæenog za sastavljanje deklaracije: [6]

Ime i adresa osobe ovlašæene za sastavljanje tehniène datoteke:

Benedikt von Riedesel
Generalni direktor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemačka)
bvonriedesel@macdon.com

SV

Vi, [1]

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

uppfyller alla relevanta villkor i direktivet 2006/42/EG.

Harmonierade standarder används, såsom anges i artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plats och datum för intyget: [5]

Identitet och signatur för person med befogenhet att upprätta intyget: [6]

Namn och adress för person behörig att upprätta den tekniska dokumentationen:

Benedikt von Riedesel
Administrativ chef, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Tyskland)
bvonriedesel@macdon.com

SL

Mi, [1]

izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska/-e številka/-e: [4]

ustreza vsem zadevnim določbam Direktive 2006/42/ES.

Uporabljeni usklajeni standardi, kot je navedeno v členu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Kraj in datum izjave: [5]

Istovetnost in podpis osebe, opolnomočene za pripravo izjave: [6]

Ime in naslov osebe, pooblaščene za pripravo tehnične datoteke:

Benedikt von Riedesel
Generalni direktor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemčija)
bvonriedesel@macdon.com

SK

My, [1]

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

spĺňa príslušné ustanovenia a základné požiadavky smernice č. 2006/42/ES.

Použité harmonizované normy, ktoré sa uvádzajú v Článku č. 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Miesto a dátum prehlásenia: [5]

Meno a podpis osoby oprávnenej vypracovať toto prehlásenie: [6]

Meno a adresa osoby oprávnenej zostaviť technický súbor:

Benedikt von Riedesel
Generálny riaditeľ MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemecko)
bvonriedesel@macdon.com

EC Declaration of Conformity

[1] MacDon

MacDon Industries Ltd.
680 Moray Street,
Winnipeg, Manitoba, Canada
R3J 3S3

[2] Float Module

[3] MacDon FM200

[4] As per Shipping Document

[5] May 5, 2023

[6] _____
Adrienne Tankeu
Product Integrity

EN

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

fulfils all the relevant provisions of the Directive 2006/42/EC.

Harmonized standards used, as referred to in Article 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Place and date of declaration: [5]

Identity and signature of the person empowered to draw up the declaration: [6]

Name and address of the person authorized to compile the technical file:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germany)
bvonriedesel@macdon.com

BG

Ние, [1]

декларираме, че следният продукт:

Тип машина: [2]

Наименование и модел: [3]

Сериен номер(а) [4]

отговаря на всички приложими разпоредби на директива 2006/42/ЕО.

Използвани са следните хармонизирани стандарти според чл. 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Място и дата на декларацията: [5]

Име и подпис на лицето, упълномощено да изготви декларацията: [6]

Име и адрес на лицето, упълномощено да състави техническия файл:

Бенедикт фон Рийдезел
Управител, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Германия)
bvonriedesel@macdon.com

CZ

My, [1]

Prohlašujeme, že produkt:

Typ zařízení: [2]

Název a model: [3]

Sériové(á) číslo)a): [4]

splňuje všechna relevantní ustanovení směrnice 2006/42/EC.

Byly použity harmonizované standardy, jak je uvedeno v článku 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Místo a datum prohlášení: [5]

Identita a podpis osoby oprávněné k vydání prohlášení: [6]

Jméno a adresa osoby oprávněné k vyplnění technického souboru:

Benedikt von Riedesel
generální ředitel, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Německo)
bvonriedesel@macdon.com

DA

Vi, [1]

erklærer, at prduktet:

Maskintype [2]

Navn og model: [3]

Serienummer (-numre): [4]

Opfylder alle bestemmelser i direktiv 2006/42/EF.

Anvendte harmoniserede standarder, som henvist til i paragraf 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Sted og dato for erklæringen: [5]

Identitet på og underskrift fra den person, som er bemyndiget til at udarbejde erklæringen: [6]

Navn og adresse på den person, som er bemyndiget til at udarbejde den tekniske fil:

Benedikt von Riedesel
Direktør, MacDon Europe GmbH
Hagenauer Straße 59
D-65203 Wiesbaden (Tyskland)
bvonriedesel@macdon.com

DE

Wir, [1]

Erklären hiermit, dass das Produkt:

Maschinentyp: [2]

Name & Modell: [3]

Seriennummer (n): [4]

alle relevanten Vorschriften der Richtlinie 2006/42/EG erfüllt.

Harmonisierte Standards wurden, wie in folgenden Artikeln angegeben, verwendet 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Ort und Datum der Erklärung: [5]

Name und Unterschrift der Person, die dazu befugt ist, die Erklärung auszustellen: [6]

Name und Anschrift der Person, die dazu berechtigt ist, die technischen Unterlagen zu erstellen:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden
bvonriedesel@macdon.com

ES

Nosotros [1]

declaramos que el producto:

Tipo de máquina: [2]

Nombre y modelo: [3]

Números de serie: [4]

cumple con todas las disposiciones pertinentes de la directriz 2006/42/EC.

Se utilizaron normas armonizadas, según lo dispuesto en el artículo 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Lugar y fecha de la declaración: [5]

Identidad y firma de la persona facultada para draw redactar la declaración: [6]

Nombre y dirección de la persona autorizada para elaborar el expediente técnico:

Benedikt von Riedesel
Gerente general - MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Alemania)
bvonriedesel@macdon.com

ET

Meie, [1]

deklareerime, et toode

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumbrid: [4]

vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele.

Kasutatud on järgnevaid harmoniseeritud standardeid, millele on viidatud ka punktis 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Deklaratsiooni koht ja kuupäev: [5]

Deklaratsiooni koostamiseks volitatud isiku nimi ja allkiri: [6]

Tehnilise dokumendi koostamiseks volitatud isiku nimi ja aadress:

Benedikt von Riedesel
Peadirektor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Saksamaa)
bvonriedesel@macdon.com

FR

Nous soussignés, [1]

Déclarons que le produit :

Type de machine : [2]

Nom et modèle : [3]

Numéro(s) de série : [4]

Est conforme à toutes les dispositions pertinentes de la directive 2006/42/EC.

Utilisation des normes harmonisées, comme indiqué dans l'Article 7(2):

EN ISO 4254-1:2013
EN ISO 4254-7:2009

Lieu et date de la déclaration : [5]

Identité et signature de la personne ayant reçu le pouvoir de rédiger cette déclaration : [6]

Nom et adresse de la personne autorisée à constituer le dossier technique :

Benedikt von Riedesel
Directeur général, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Allemagne)
bvonriedesel@macdon.com

EC Declaration of Conformity

IT

Noi, [1]

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero(i) di serie: [4]

soddisfa tutte le disposizioni rilevanti della direttiva 2006/42/CE.

Utilizzo degli standard armonizzati, come indicato nell'Articolo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Luogo e data della dichiarazione: [5]

Nome e firma della persona autorizzata a redigere la dichiarazione: [6]

Nome e persona autorizzata a compilare il file tecnico:

Benedikt von Riedesel
General Manager, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germania)
bvonriedesel@macdon.com

HU

Mi, [1]

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Név és modell: [3]

Szériaszám(ok): [4]

teljesíti a következő irányelv összes vonatkozó előírásait: 2006/42/EK.

Az alábbi harmonizált szabványok kerültek alkalmazásra a 7(2) cikkely szerint:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

A nyilatkozattétel ideje és helye: [5]

Azon személy kiléte és aláírása, aki jogosult a nyilatkozat elkészítésére: [6]

Azon személy neve és aláírása, aki felhatalmazott a műszaki dokumentáció összeállítására:

Benedikt von Riedesel
Vezérigazgató, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Németország)
bvonriedesel@macdon.com

LT

Mes, [1]

Pareiškiame, kad šis produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.

Naudojami harmonizuoti standartai, kai nurodoma straipsnyje 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklaracijos vieta ir data: [5]

Asmens tapatybės duomenys ir parašas asmens, įgalioto sudaryti šią deklaraciją: [6]

Vardas ir pavardė asmens, kuris įgaliotas sudaryti šį techninį failą:

Benedikt von Riedesel
Generalinis direktorius, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Vokietija)
bvonriedesel@macdon.com

LV

Mēs, [1]

Deklarējam, ka produkts:

Mašīnas tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.

Piemēroti šādi saskaņotie standarti , kā minēts 7. panta 2. punktā:

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklarācijas parakstīšanas vieta un datums: [5]

Tās personas vārds, uzvārds un paraksts, kas ir pilnvarota sagatavot šo deklarāciju: [6]

Tās personas vārds, uzvārds un adrese, kas ir pilnvarota sastādīt tehnisko dokumentāciju:

Benedikts fon Rīdīzels
Ģenerāldirektors, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Vācija)
bvonriedesel@macdon.com

NL

Wij, [1]

Verklaren dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

voldoet aan alle relevante bepalingen van de Richtlijn 2006/42/EC.

Geharmoniseerde normen toegepast, zoals vermeld in Artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plaats en datum van verklaring: [5]

Naam en handtekening van de bevoegde persoon om de verklaring op te stellen: [6]

Naam en adres van de geautoriseerde persoon om het technisch dossier samen te stellen:

Benedikt von Riedesel
Algemeen directeur, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Duitsland)
bvonriedesel@macdon.com

PO

My niżej podpisani, [1]

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

spełnia wszystkie odpowiednie przepisy dyrektywy 2006/42/WE.

Zastosowaliśmy następujące (zharmonizowane) normy zgodnie z artykułem 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data i miejsce oświadczenia: [5]

Imię i nazwisko oraz podpis osoby upoważnionej do przygotowania deklaracji: [6]

Imię i nazwisko oraz adres osoby upoważnionej do przygotowania dokumentacji technicznej:

Benedikt von Riedesel
Dyrektor generalny, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Niemcy)
bvonriedesel@macdon.com

PT

Nós, [1]

Declaramos, que o produto:

Tipo de máquina: [2]

Nome e Modelo: [3]

Número(s) de Série: [4]

cumpre todas as disposições relevantes da Directiva 2006/42/CE.

Normas harmonizadas aplicadas, conforme referido no Artigo 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Local e data da declaração: [5]

Identidade e assinatura da pessoa autorizada a elaborar a declaração: [6]

Nome e endereço da pessoa autorizada a compilar o ficheiro técnico:

Benedikt von Riedesel
Gerente Geral, MacDon Europa Ltda.
Hagenauer Straße 59
65203 Wiesbaden (Alemanha)
bvonriedesel@macdon.com

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul mașinii: [2]

Denumirea și modelul: [3]

Număr (numere) serie: [4]

corespunde tuturor dispozițiilor esențiale ale directivei 2006/42/EC.

Au fost aplicate următoarele standarde armonizate conform articolului 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data și locul declarației: [5]

Identitatea și semnătura persoanei împuternicite pentru întocmirea declarației: [6]

Numele și semnătura persoanei autorizate pentru întocmirea cărții tehnice:

Benedikt von Riedesel
Manager General, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Germania)
bvonriedesel@macdon.com

SR

Mi, [1]

Izjavljujemo da proizvod

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Ispunjava sve relevantne odredbe direktive 2006/42/EC.

Korišæeni su usklađeni standardi kao što je navedeno u èlanu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Datum i mesto izdavanja deklaracije: [5]

Identitet i potpis lica ovlašæenog za sastavljanje deklaracije: [6]

Ime i adresa osobe ovlašæene za sastavljanje tehničke datoteke:

Benedikt von Riedesel
Generalni direktor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemačka)
bvonriedesel@macdon.com

SV

Vi, [1]

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

uppfyller alla relevanta villkor i direktivet 2006/42/EG.

Harmonierade standarder används, såsom anges i artikel 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plats och datum för intyget: [5]

Identitet och signatur för person med befogenhet att upprätta intyget: [6]

Namn och adress för person behörig att upprätta den tekniska dokumentationen:

Benedikt von Riedesel
Administrativ chef, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Tyskland)
bvonriedesel@macdon.com

SL

Mi, [1]

izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska/-e številka/-e: [4]

ustreza vsem zadevnim določbam Direktive 2006/42/ES.

Uporabljeni usklajeni standardi, kot je navedeno v členu 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Kraj in datum izjave: [5]

Istovetnost in podpis osebe, opolnomočene za pripravo izjave: [6]

Ime in naslov osebe, pooblaščene za pripravo tehnične datoteke:

Benedikt von Riedesel
Generalni direktor, MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemčija)
bvonriedesel@macdon.com

SK

My, [1]

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

spĺňa príslušné ustanovenia a základné požiadavky smernice č. 2006/42/ES.

Použité harmonizované normy, ktoré sa uvádzajú v Článku č. 7(2):

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Miesto a dátum prehlásenia: [5]

Meno a podpis osoby oprávnenej vypracovať toto prehlásenie: [6]

Meno a adresa osoby oprávnenej zostaviť technický súbor:

Benedikt von Riedesel
Generálny riaditeľ MacDon Europe GmbH
Hagenauer Straße 59
65203 Wiesbaden (Nemecko)
bvonriedesel@macdon.com

UK Declaration of Conformity

[1] MacDon

MacDon Industries Ltd.
680 Moray Street,
Winnipeg, Manitoba, Canada
R3J 3S3

[2] Combine Header

[3] MacDon FD2 Series

[4] As per Shipping Document

[5] May 4, 2023

[6] _____
Adrienne Tankeu
Product Integrity

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

fulfills all relevant provisions of the Supply of Machinery (Safety) Regulations 2008

Designated standards used are :

EN ISO 4254-1:2015

EN ISO 4254-7:2017

Place and date of declaration: [5]

Identity and signature of the person empowered to draw up the declaration: [6]

UK Declaration of Conformity

[1] MacDon

MacDon Industries Ltd.
680 Moray Street,
Winnipeg, Manitoba, Canada
R3J 3S3

[2] Float Module

[3] MacDon FM200

[4] As per Shipping Document

[5] May 4, 2023

[6] _____
Adrienne Tankeu
Product Integrity

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

fulfills all relevant provisions of the Supply of Machinery (Safety) Regulations 2008

Designated standards used are :

EN ISO 4254-1:2015

EN ISO 4254-7:2017

Place and date of declaration: [5]

Identity and signature of the person empowered to draw up the declaration: [6]

Introduction

Your machine

This instructional manual contains information on the FD2 Series FlexDraper® Header and the FM200 Float Module. Use it in conjunction with your combine operator's manual.

The FD2 Series FlexDraper® Header is specially designed to work well in all straight cut conditions, whether cutting on or above the ground, using a three-piece flexible frame to closely follow the ground contours. The FM200 Float Module attaches the FD2 Series FlexDraper® Header to most makes and models of combines.

Your warranty

MacDon provides warranty for Customers who operate and maintain their equipment as described in this manual. A copy of the MacDon Industries Limited Warranty Policy, which explains this warranty, should have been provided to you by your Dealer. Damage resulting from any of the following conditions will void the warranty:

- Accident
- Misuse
- Abuse
- Improper maintenance or neglect
- Abnormal or extraordinary use of the machine
- Failure to use the machine, equipment, component, or part in accordance with the manufacturer’s instructions

Your manual

Carefully read all of the material provided before attempting to operate the machine.

Use this manual as your first source of information about the machine. If you follow the instructions provided, your header will work well for many years.

The following conventions are used in this document:

- Right and left are determined from the operator’s position. The front of the header faces the crop; the back of the header attaches to the float module and the combine.
- Unless otherwise noted, use the standard torque values provided in Chapter *7.1 Torque Specifications, page 759*.

When setting up the machine or making any adjustments, review and follow the recommended machine settings in all relevant MacDon publications. Failure to do so may compromise machine function and machine life and may result in a hazardous situation.

The Table of Contents and the Index will guide you to specific areas in this manual. Study the Table of Contents to familiarize yourself with how the information is organized.

Keep this manual handy for frequent reference and to pass on to new Operators or Owners. The manual storage case (A) is located at the rear of the header, beside the right outer leg.

NOTE:

Keep your MacDon publications up-to-date. The most current English version can be downloaded from our website (*www.macdon.com*) or from our Dealer-only site (*https://portal.macdon.com*) (login required).

Call your MacDon Dealer if you need assistance, information, or additional copies of this manual.

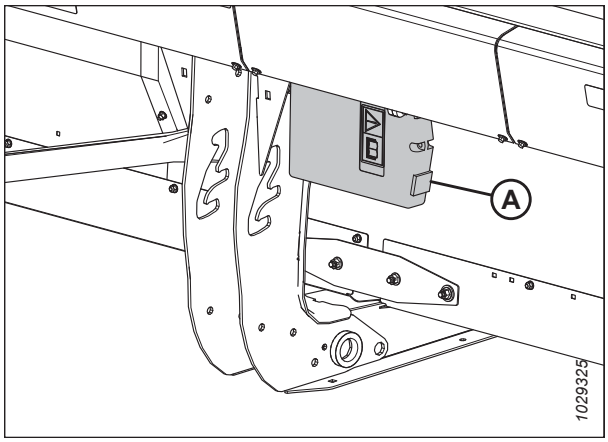


Figure 1: Manual Storage Location

This manual is available in the following languages:

- Czech
- Danish
- English
- Estonian
- French
- German
- Hungarian
- Italian
- Latvian
- Lithuanian
- Polish
- Portuguese
- Romanian
- Russian
- Spanish
- Ukrainian

These manuals can be ordered from MacDon, from the MacDon Dealer Portal (*https://portal.macdon.com*) (login required), or from the MacDon website.

Summary of Changes

The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
—	Removed the following topics: • Attaching Header to / Detaching Header from FM200 Float Module • Changing Float Spring Configuration — Confirming Type of Float Lever • Locking and Unlocking Header Wings — FD2 Series Only • Repositioning Fore-Aft Cylinders — Single-Reel Headers • Repositioning Fore-Aft Cylinders — Double-Reel Headers • Repositioning Fore-Aft Cylinders — Triple-Reel Headers	Product Support Technical Publications
Introduction, page vii	Added Italian, Hungarian, and Ukrainian to list of available languages.	Technical Publications
1.6 Decommissioning and Disposing of Agricultural Equipment, page 8	Added topic.	Technical Publications
1.8 Safety Decal Locations, page 11	Added safety decal locations on backtube for FD225.	ECN 63816
1.9 Understanding Safety Signs, page 17	Updated topic.	Technical Publications
2.2 Product Specifications, page 27	Updated header weight ranges.	ECN 63174
Checking and Adjusting Header Endshields, page 42	Added specifications and new illustration.	Technical Publications
Selecting the Default Function for the Multifunction Lever Toggle Switch (with CLAAS Integration Kit), page 58	Added topic.	Product Support
Controlling Header Pitch Cylinder, page 60	Added topic.	Product Support
Controlling Draper Speed – CLAAS 600 and 700 Series, page 63	Added topic.	Product Support
Controlling Draper Speed – CLAAS 5000, 6000, 7000, and 8000 Series, page 65	Added topic.	Product Support
Viewing Header Hours, page 65	Added topic.	Product Support
Assigning Ground Speed Lever Buttons – John Deere X9 Series, page 66	Added matrix.	ECN 64318
Using Wing Level Function as Tilt Toggle – John Deere X9 Series, page 70	Added topic.	ECN 64318
Mapping Draper Speed Controls on Ground Speed Lever – John Deere X9 Series, page 71	Added topic.	ECN 64318
Locking/Unlocking Double Tap Tilt Function – John Deere X9 Series, page 72	Added topic.	ECN 64318
Checking Software Version of Header Controller – John Deere X9 Series, page 73	Moved topic to current location.	Technical Publications

Section	Summary of Change	Internal Use Only
3.6 Header Attachment/Detachment, page 75	Updated table.	Technical Publications
Attaching Header to Case IH Combine, page 75	Added note and illustration.	Product Support
Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine, page 83	Added note and illustration.	Technical Publications
Attaching Header to CLAAS Combine, page 91	Added note and illustration.	Product Support
Attaching Header to IDEAL™ Series Combine, page 99	Added note and illustration.	Product Support
Attaching Header to John Deere Combine, page 105	Added note and illustration.	Product Support
Attaching Header to New Holland CR or CX Combine, page 113	Added note and illustration.	Product Support
3.6.7 Rostselmash Combines, page 123	Added table.	Technical Publications
Attaching Header to Rostselmash Combine, page 124	Added note and illustration.	Product Support
3.7.2 Header Settings, page 131	Updated recommended reel cam setting for lodged edible beans.	Product Support
Checking and Adjusting Header Float, page 190	Updated illustrations and procedure.	ECN 64338
Changing Float Spring Configuration – Float Levers with Two Holes, page 196	Updated float spring installation chart.	ECN 63638
Disabling Flex Frown Limiter, page 206	Removed steps and illustration. Added new step.	Product Support
Enabling Flex Frown Limiter, page 207	Removed steps and illustration. Added new step.	Product Support
Adjusting Side Draper Speed, page 217	Updated illustration.	ECN 63634
3.9.10 Knife Speed Information, page 218	Revised table.	Product Support
Checking Knife Speed, page 219	Revised table.	Product Support
Checking and Adjusting Reel Height Sensor, page 221	Updated illustration.	Technical Publications
Repositioning Fore-Aft Cylinders, page 226	Added topic.	Technical Publications
Reel Cam Settings, page 233	Updated illustrations.	Engineering
3.10.2 Recommended Sensor Output Voltages for Combines, page 266	Updated voltage ranges.	Product Support
3.10.3 Manually Checking Voltage Limits, page 266	Updated illustrations.	ECN 64232 ECN 63801
Checking Voltage Range from Combine Cab – Case IH 5130, 5140, 6130, 6140, 7130, and 7140, page 272	Updated illustration and added note.	ECN 64232
Checking Voltage Range from Combine Cab – Case IH, 120, 230, 240, and 250 Series Combines, page 282	Updated illustration and added note.	ECN 64232
Reel Reverse Function – Case IH Combines, page 296	Added topic.	Engineering
Checking Voltage Range from Combine Cab – Challenger® and Massey Ferguson®, page 298	Updated illustration and added note.	ECN 64232

Section	Summary of Change	Internal Use Only
Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 5000, 6000, 7000, and 8000 Series, page 338	Updated steps and added illustration.	ECN 63526
Checking Voltage Range from Combine Cab – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series, page 340	Updated illustration and added note.	ECN 64232
Checking Voltage Range from Combine Cab – John Deere 70 Series, page 380	Updated illustration and added note.	ECN 64232
Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387	Updated illustration and added note.	ECN 64232
Checking Voltage Range from Combine Cab – John Deere S7 Series, page 410	Updated illustration and added note.	ECN 64232
Calibrating Auto Header Height Control – John Deere X9 Series, page 420	Clarified how to calibrate the header.	ECN 64318
Checking Voltage Range from Combine Cab – New Holland CR and CX Series, page 432	Updated illustration and added note.	ECN 64232
Checking Voltage Range from Combine Cab – New Holland CR Series, page 442	Updated illustration and added note.	ECN 64232
Reel Reverse Function – New Holland CR Series, page 461	Added topic.	Engineering
3.10.21 Rostselmash Combines – RSM-081 and RSM-161, page 464	Added topic.	Technical Publications
Calibrating Auto Header Height Control – Rostselmash RSM-081 and RSM-161, page 464	Added topic.	Technical Publications
Engaging Auto Header Height Control – Rostselmash RSM-081 and RSM-161, page 466	Added topic.	Technical Publications
Calibrating Reel Speed – Rostselmash RSM-081 and RSM-161, page 467	Added topic.	Technical Publications
Operating Header – Rostselmash RSM-081 and RSM-161, page 469	Added topic.	Technical Publications
3.11 Leveling Header, page 471	Updated illustration and added note.	ECN 64232
3.12 Unplugging Cutterbar, page 474	Rearranged steps.	Product Support
3.13 Unplugging Float Module Feed Draper, page 475	Rearranged steps.	Product Support
4.2.1 Maintenance Schedule/Record, page 500	Added actions.	Engineering
4.4.1 Checking Oil Level in Hydraulic Reservoir, page 526	Updated procedure.	Engineering
4.12.5 Adjusting Side Draper Tracking, page 646	Revised table.	Engineering
4.12.7 Removing Side Draper Deck Idler Roller, page 647	Updated procedure.	Product Support
4.13.1 Reel to Cutterbar Clearance, page 658	Revised table.	Engineering
Removing Bushings from Reels, page 671	Removed options from procedure.	Technical Publications
Installing Bushings onto Reels, page 674	Removed options from procedure.	Technical Publications
4.14.6 Replacing Drive Chain (Endless) – Double and Triple Reel, page 700	Updated procedure and illustrations.	Technical Publications

Section	Summary of Change	Internal Use Only
4.15.1 ContourMax™ Option – Checking Wheel Bolt Torque, page 705	Added topic.	Product Support
4.15.4 Checking Contour Wheel End Play, page 710	Added topic.	Engineering
5.1.6 Lodged Crop Reel Finger Kit, page 730	Added kit.	ECN 62424
5.1.10 In-Cab Side Draper Speed Control Integration Kit, page 733	Added kit.	ECN 64329
5.3.5 Full Interface Filler Kit, page 737	Updated bundle number.	ECN 61357
5.4.1 ContourMax™ Contour Wheels Kit, page 739	Removed ContourMax™ Height Sensing bundle.	ECN 63044
5.4.3 EasyMove™ Transport System, page 740	Updated bundle numbers and collector numbers.	ECN 62597
5.4.6 Steel Reel Finger Kit, page 742	Added kit.	ECN 63262
5.4.8 Stabilizer Wheel Kit, page 743	Updated collector number.	ECN 62597
6.6 CLAAS Multicoupler Error Codes for Troubleshooting, page 757	Added topic.	Product Support
7.1.3 O-Ring Boss Hydraulic Fittings – Adjustable, page 762	Updated table.	ECN 64539
7.1.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable, page 763	Updated table.	ECN 64539
7.1.5 O-Ring Face Seal Hydraulic Fittings, page 764	Updated table.	Technical Publications
Recommended Fluids and Lubricants, page (inside back cover)	Updated table.	Product Support

Recording Model and Serial Number

Record the model number, serial number, and model year of the header, float module, and transport/stabilizer wheel option (if installed) in the spaces provided.

FD2 Series FlexDraper® Header

Header Model: _____

Serial Number: _____

Model Year: _____

The header's serial number plate (A) is located on the back of the header, beside the left endsheet.

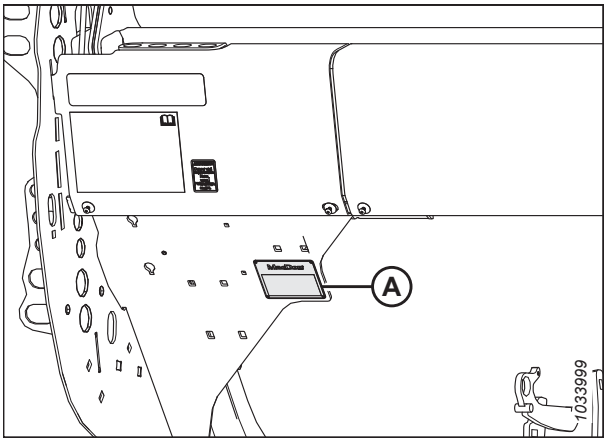


Figure 2: Header Serial Number Plate Location

FM200 Float Module for Combine

Serial Number: _____

Model Year: _____

The float module's serial number plate (A) is located on the top left side of the float module.

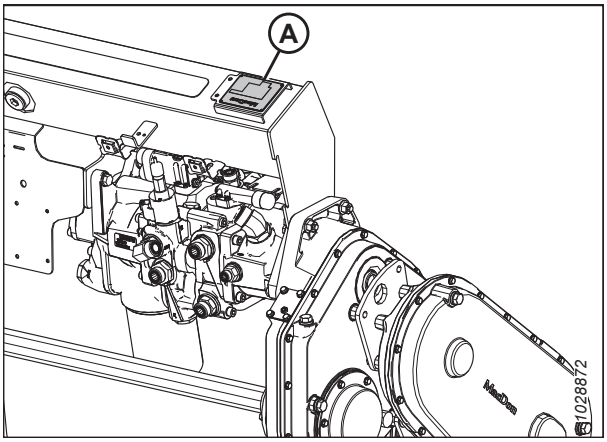


Figure 3: Float Module Serial Number Plate Location

EasyMove™ Transport Option

Serial Number: _____

Model Year: _____

The EasyMove™ transport's serial number plate (A) is located on the right axle assembly.

NOTE:

The transport is an option and may not be installed on this machine.

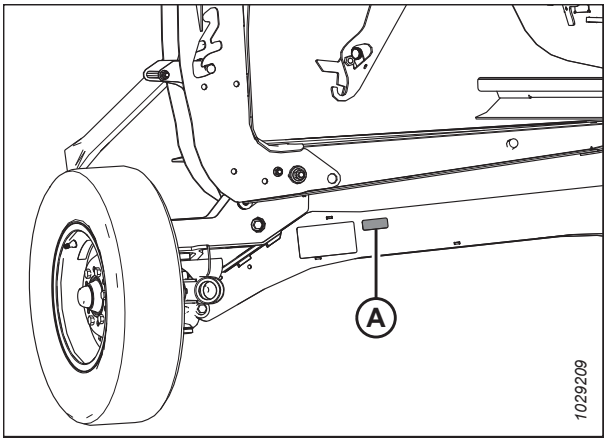


Figure 4: EasyMove™ Transport Option

Chapter 1: Safety

Understanding and consistently following these safety procedures will help to ensure the safety of those operating the machine and of bystanders.

1.1 Safety Alert Symbols

The safety alert symbol indicates important safety messages in this manual and on safety signs on the machine.

This symbol means:

- **ATTENTION!**
- **BECOME ALERT!**
- **YOUR SAFETY IS INVOLVED!**

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

- Accidents disable and kill
- Accidents cost
- Accidents can be avoided

Figure 1.1: Safety Symbol

1.2 Signal Words

Three signal words, **DANGER**, **WARNING**, and **CAUTION**, are used to alert you to hazardous situations. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information.

Signal words are selected using the following guidelines:

DANGER

Indicates an imminently hazardous situation that, if it is not prevented, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation that, if it is not prevented, could result in death or serious injury. It may also be used to alert you to unsafe practices.

CAUTION

Indicates a potentially hazardous situation that, if it is not prevented, may result in minor or moderate injury. It may also be used to alert you to unsafe practices.

IMPORTANT:

Indicates a situation that, if not prevented, could result in a malfunction or damage to the machine.

NOTE:

Provides additional information or advice.

1.3 General Safety

Operating, servicing, and assembling machinery presents several safety risks. These risks can be reduced or eliminated by following the relevant safety procedures and wearing the appropriate personal protective equipment.

CAUTION

The following general farm safety precautions should be part of your operating procedure for all types of machinery.

Wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask

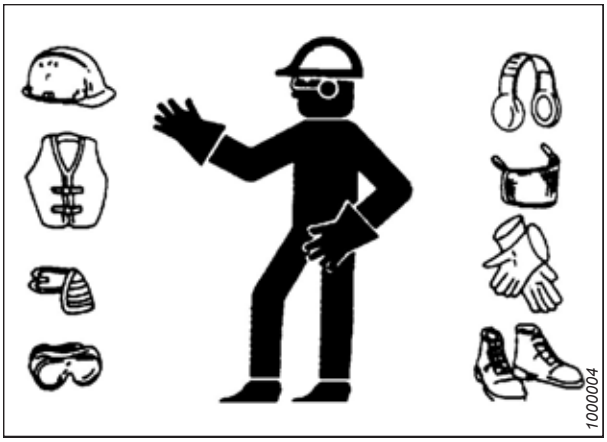


Figure 1.2: Safety Equipment

In addition, take the following precautions:

- Be aware that exposure to loud noises can cause hearing impairment. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

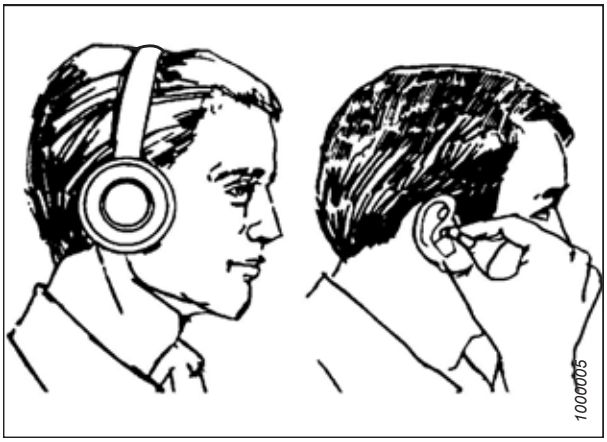


Figure 1.3: Safety Equipment

- Provide a first aid kit in case of emergencies.
- Keep a properly maintained fire extinguisher on the machine. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

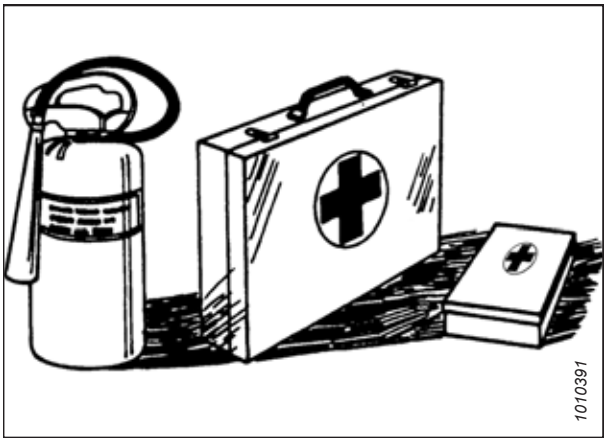


Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as hoodies, scarves, or bracelets.
- Keep all shields in place. **NEVER** alter or remove safety equipment. Ensure that the driveline guards can rotate independently of their shaft, and that they can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Parts from other manufacturers may not meet the correct strength, design, or safety requirements.

Figure 1.5: Safety around Equipment

- Keep hands, feet, clothing, and hair away from moving parts. **NEVER** attempt to clear obstructions or objects from a machine while the engine is running.
- Do **NOT** modify the machine. Unauthorized modifications may impair the functionality and/or safety of the machine. It may also shorten the machine's service life.
- To avoid injury or death from the unexpected startup of the machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

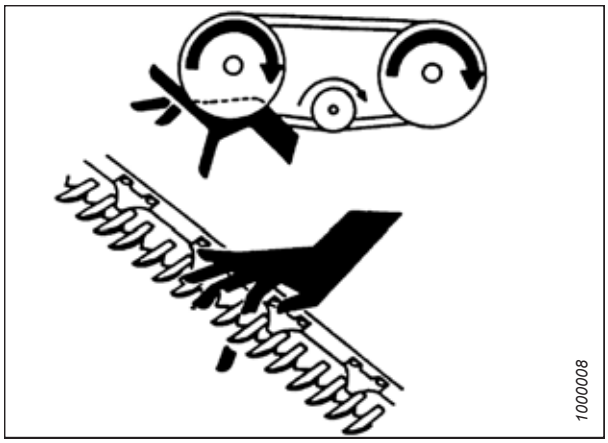


Figure 1.6: Safety around Equipment

- Keep the machine service area clean and dry. Wet and/or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Ensure that all electrical outlets and tools are properly grounded.
- Keep the work area well-lit.
- Keep machinery clean. Straw and chaff on a hot engine are fire hazards. Do **NOT** allow oil or grease to accumulate on service platforms, ladders, or controls. Clean machines before they are stored.
- **NEVER** use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- When storing machinery, cover any sharp or extending components to prevent injury from accidental contact.

Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

Maintaining your equipment safely requires that you follow the relevant safety procedures and wear the appropriate personal protective equipment for the task.

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operating or performing maintenance on the machine.
- Place all controls in Neutral, stop the engine, set the parking brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, or repairing the machine.
- Follow good shop practices:
  - Keep service areas clean and dry
  - Ensure that electrical outlets and tools are properly grounded
  - Keep the work area well lit

Figure 1.8: Wet Floors Present Safety Risks

- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Ensure that all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to hydraulic systems.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear the area of bystanders, especially children, when carrying out any maintenance, repairs, or adjustments.
- Install the transport lock or place safety stands under the frame before working under the machine.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or another mechanically driven component by hand (for example, accessing a lubricant fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.

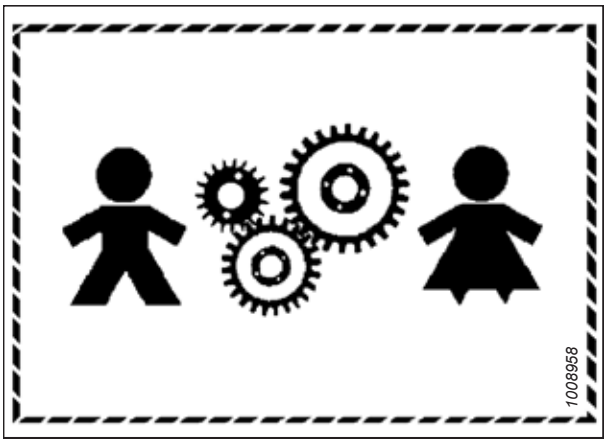


Figure 1.9: Equipment is NOT Safe for Children

- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.

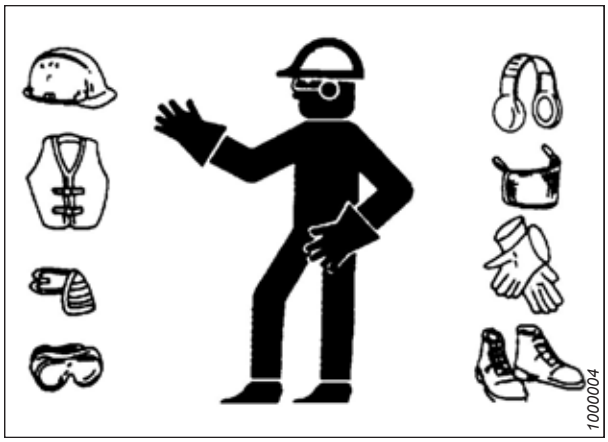


Figure 1.10: Personal Protective Equipment

1.5 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. Follow the proper safety procedures when inspecting hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in **NEUTRAL** before leaving the operator's seat.
- Ensure that all of the components in the hydraulic system are kept clean and in good condition.
- Replace any worn, cut, abraded, flattened, or crimped hoses and steel lines.
- Do **NOT** attempt any makeshift repairs to hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs can fail suddenly and create hazardous conditions.

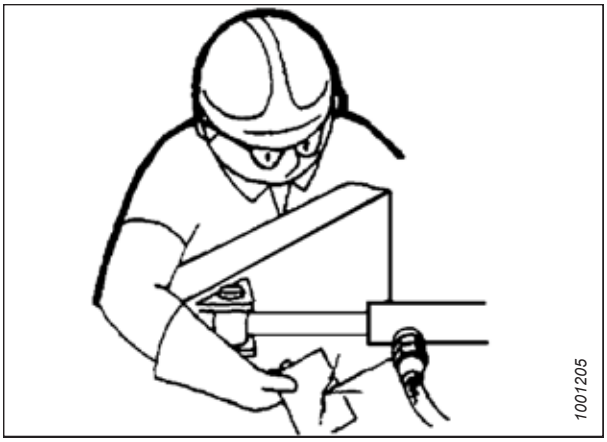


Figure 1.11: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic fluid leaks. Use a piece of cardboard as a backstop instead of your hands to isolate and identify a leak.
- If you are injured by a concentrated, high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or a toxic reaction can develop from hydraulic fluid piercing the skin.

Figure 1.12: Hydraulic Pressure Hazard

- Ensure that all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to a hydraulic system.

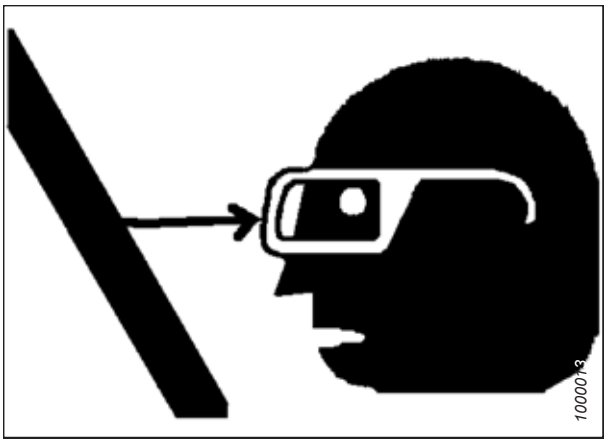


Figure 1.13: Safety around Equipment

1.6 Decommissioning and Disposing of Agricultural Equipment

When agricultural equipment is no longer serviceable and needs to be decommissioned and disposed of, recyclable materials including ferrous and non-ferrous metals, rubber, and plastics; fluids such as lubricants, refrigerants, and fuels; and hazardous materials found in batteries, some light bulbs, and electronic equipment must be handled safely and not introduced into the environment.

Comply with local regulations and authorities.

Products with symbol (A) should **NOT** be disposed of with domestic waste.

Figure 1.14: Symbol for Do NOT Dispose with Domestic Waste

Materials with symbol (B) should be recycled as labelled.

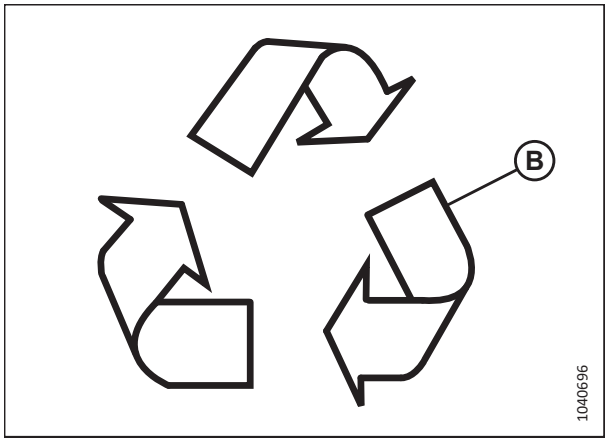


Figure 1.15: Symbol for Recycle as Labelled

- Use appropriate personal protective equipment when removing and handling objects and materials.
- Use appropriate personal protective equipment when handling objects with residue from pesticides, fertilizers, or other agricultural chemicals. Follow local regulations when handling and disposing of these objects.
- Safely release stored energy from suspension components, springs, hydraulic, and electrical systems.
- Recycle or reuse packaging material.
- Recycle or reuse plastics that are labelled with specifications for a material such as PP TV 20. Do **NOT** dispose of them with domestic waste.
- Return batteries to the vendor or take them to a collection point. Batteries contain hazardous substances. Do **NOT** dispose of batteries with domestic waste.
- Follow local regulations to correctly dispose of hazardous materials such as oils, hydraulic fluids, brake fluids, and fuels.
- Take refrigerants to qualified people at specialized facilities for disposal. Refrigerants must **NEVER** be released into the atmosphere.

1.7 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the Operator should take extra precautions before operating the controls. They are usually yellow.

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or illegible.
- If the original part on which a safety sign was installed is replaced, ensure that the repair part displays the current safety sign.
- Replacement safety signs are available from your MacDon Dealer.

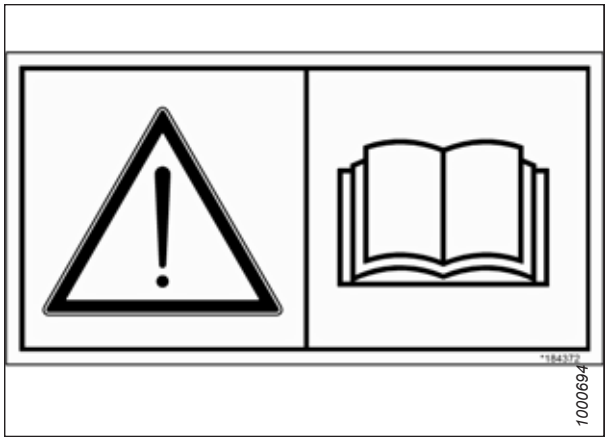


Figure 1.16: Operator's Manual Decal

1.7.1 Installing Safety Decals

Worn or damaged safety decals will need to be removed and replaced.

1. Decide exactly where you are going to place the decal.
2. Clean and dry the installation area.
3. Remove the smaller portion of the split backing paper.
4. Place the decal in position and slowly peel back the remaining paper, smoothing the decal as it is applied.
5. Prick small air pockets with a pin and smooth them out.

1.8 Safety Decal Locations

Safety signs are usually yellow decals and are placed on the machine where there is a risk of injury or where the Operator should take extra precautions before working.

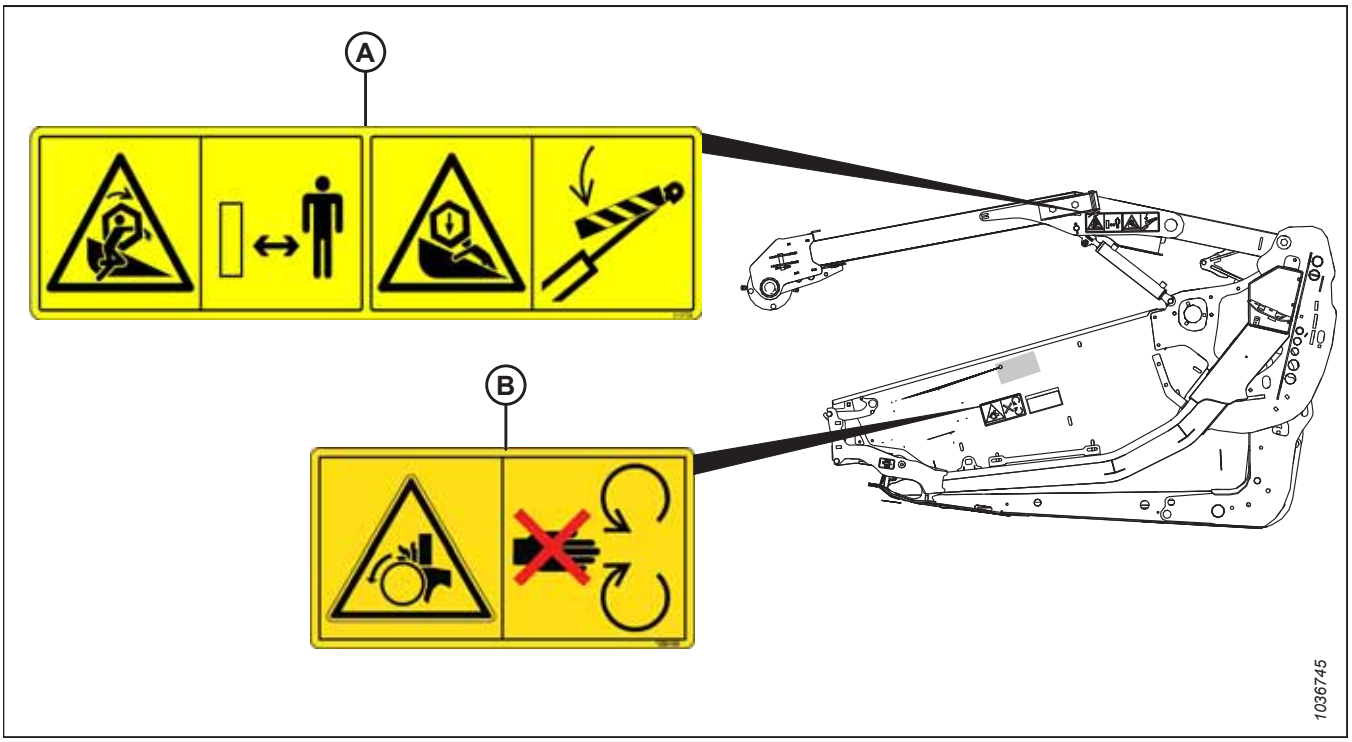


Figure 1.17: Reel Arms and Endsheets

A - MD #360541 – Reel Entanglement / Reel Crushing Hazard (Two Locations)

B - MD #288195 – Danger, Rotating Part (Two Locations)

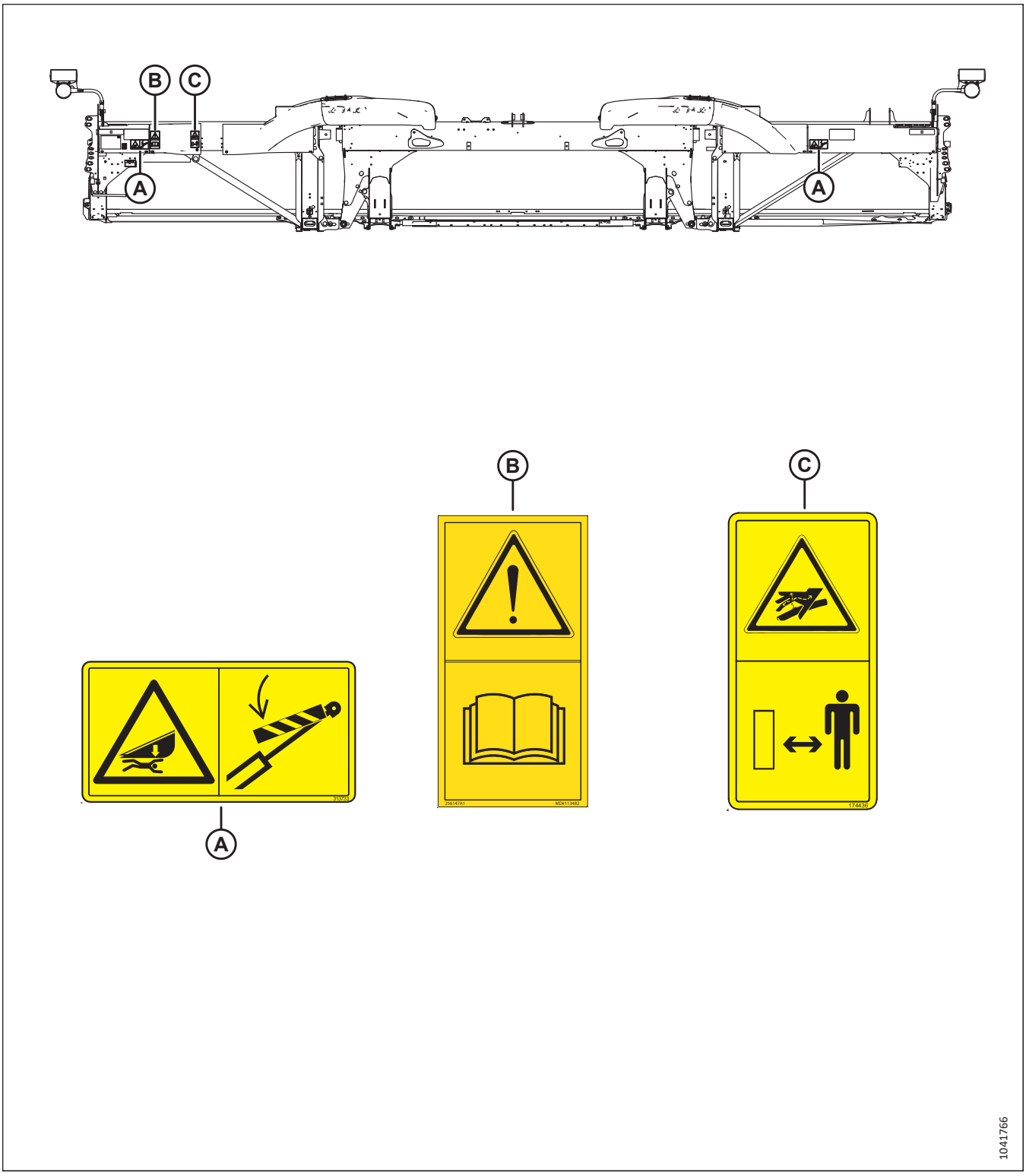


Figure 1.18: Backtube, FD225

A - MD #313733 – Header Crushing Hazard

B - MD #113482 – General Hazard

C - MD #174436 – High Pressure Fluid

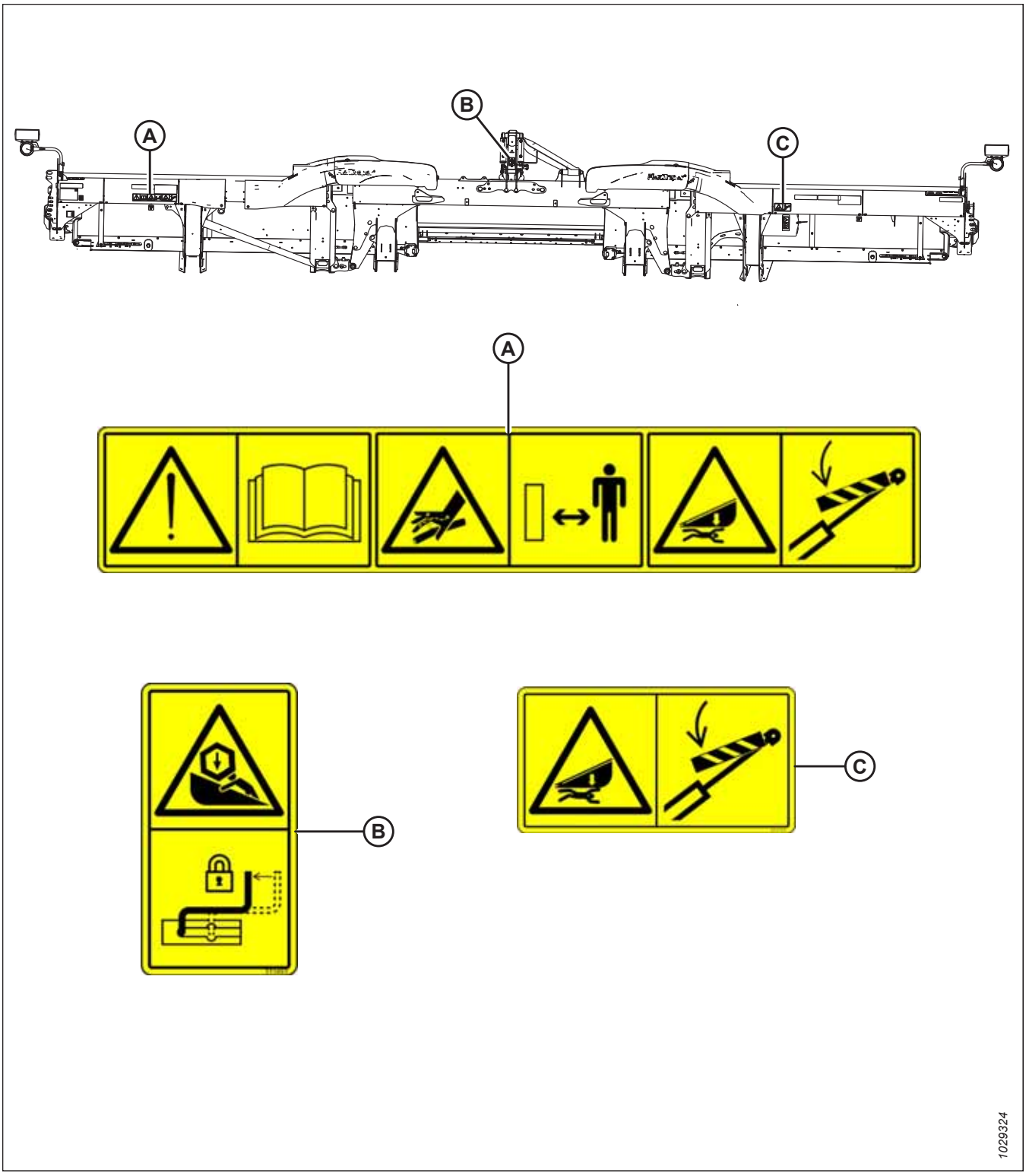


Figure 1.19: Backtube, FD230 and Larger

A - MD #313725 – Read Manual / High Pressure Fluid / Header Hazard
B - MD #311493 – Center Prop Lock
C - MD #313733 – Header Crushing Hazard

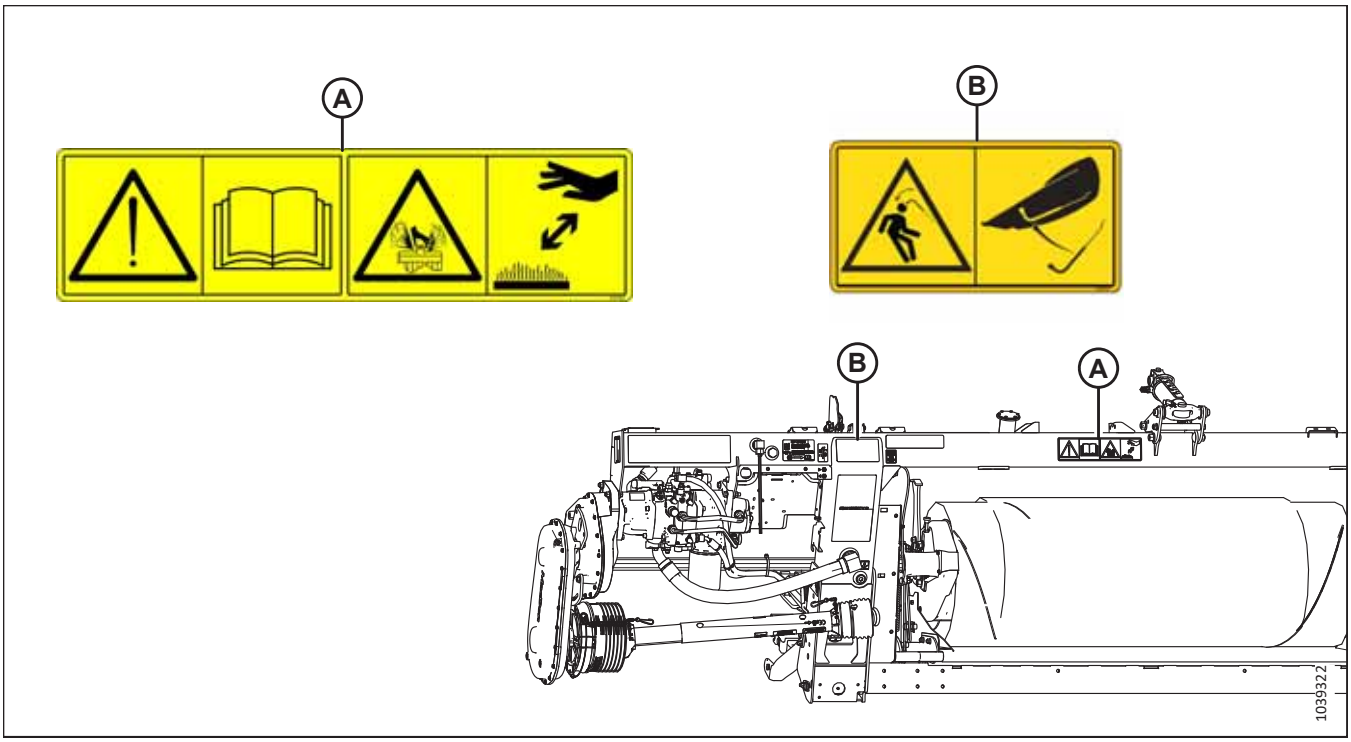


Figure 1.20: FM200 Float Module

A - MD #313728 – Read Manual / Fluid Spray Hazard

B - MD #360655 – Released Spring Energy Hazard

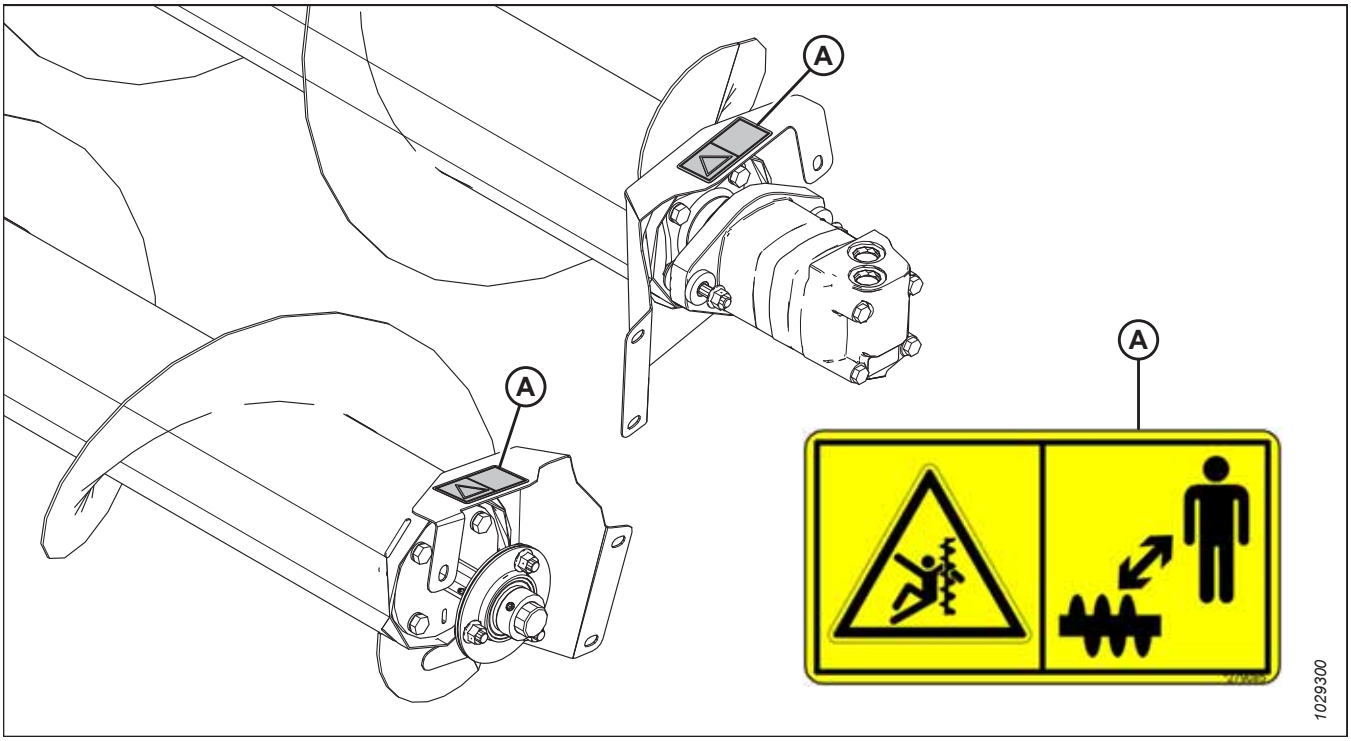


Figure 1.21: Upper Cross Auger (Optional)

A - MD #279085 – Auger Warning

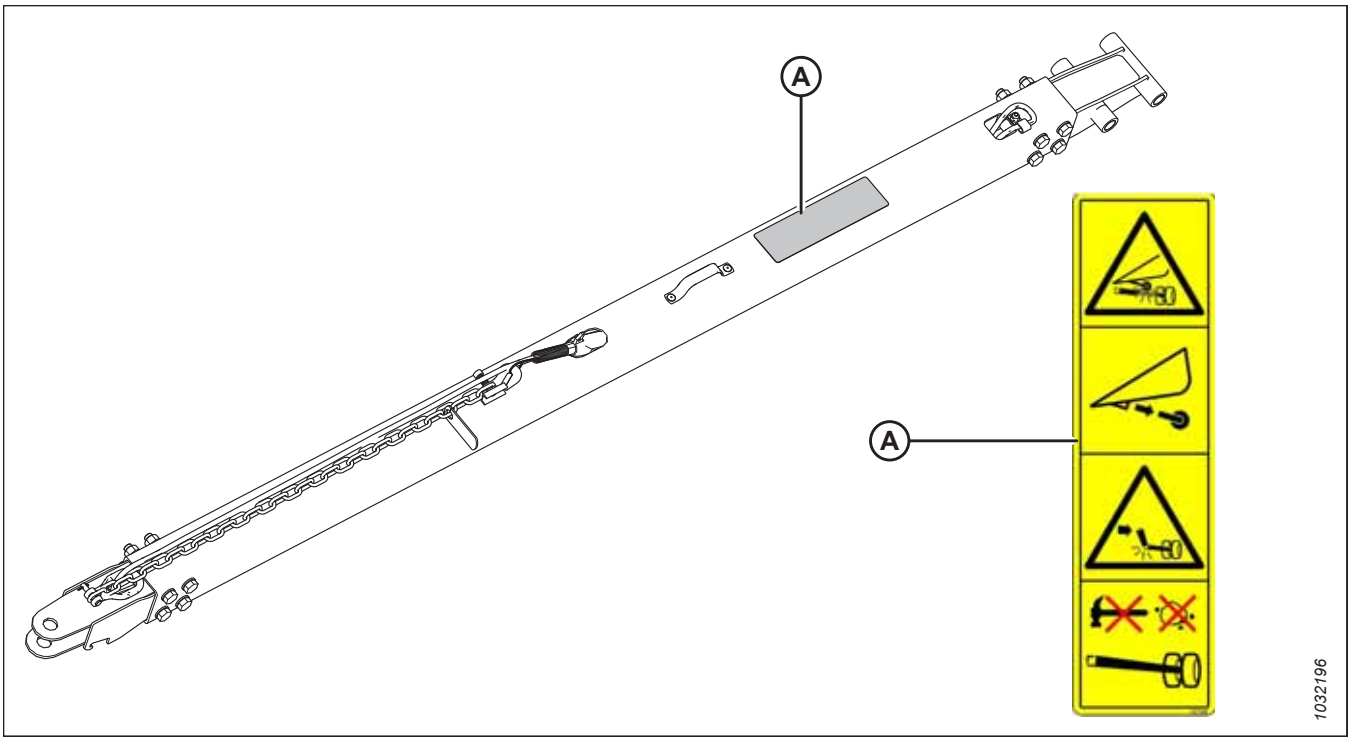


Figure 1.22: Transport System – Tow-Bar (Short Bar Shown; Long Bar Similar) (Optional)

A - MD #327588 – Hitch Damage Hazard

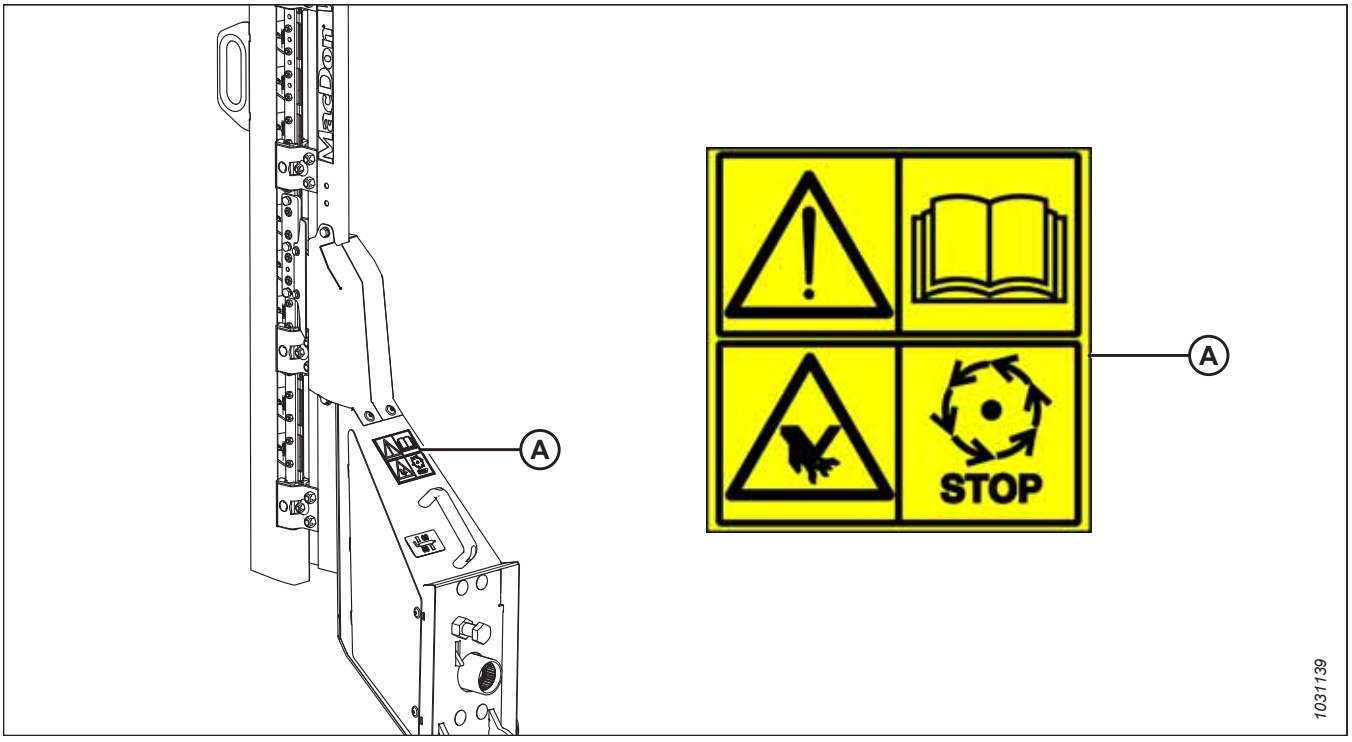


Figure 1.23: Vertical Knife (Optional)

A - MD #313881 – Knife Hazard

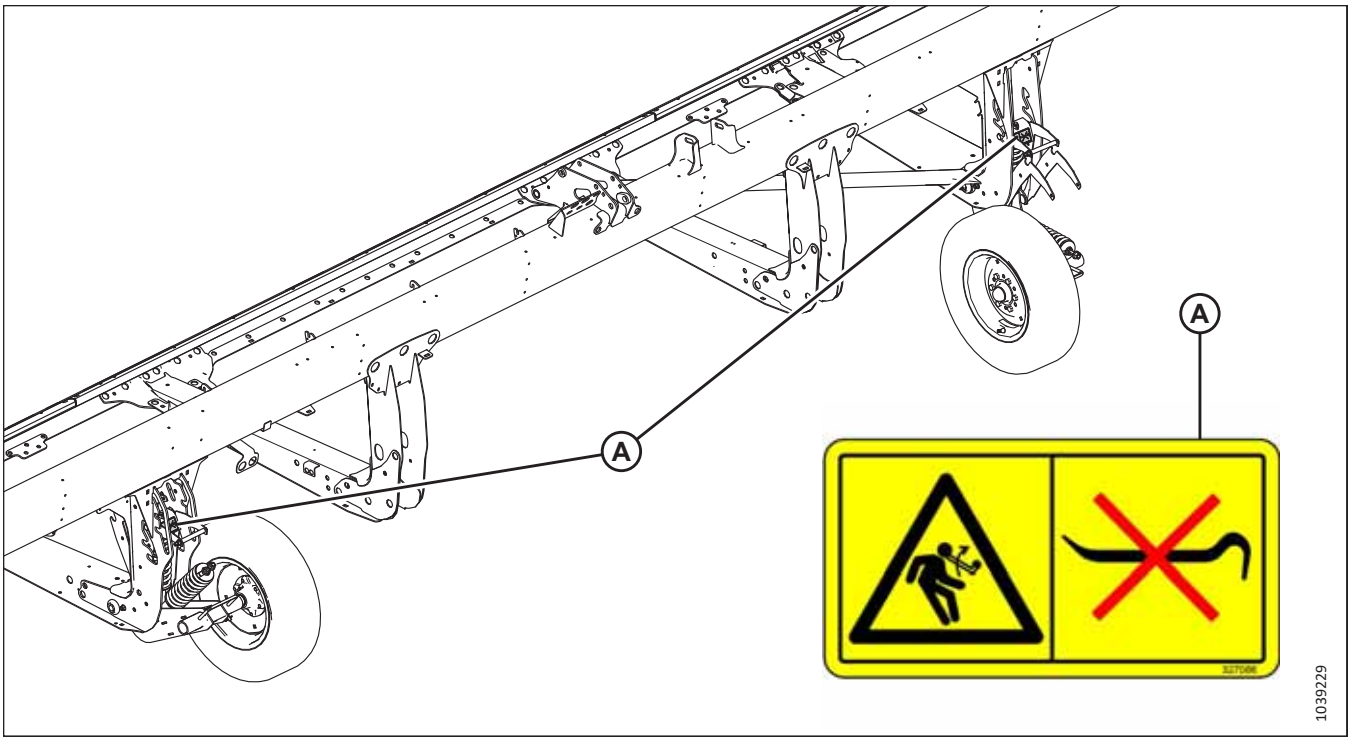


Figure 1.24: Stabilizer Wheels (Optional)

A - MD #327086 – Released Spring Energy Hazard

1.9 Understanding Safety Signs

Safety sign decals use illustrations to convey important safety or equipment maintenance information.

MD #174436

High-pressure oil hazard

WARNING

High-pressure hydraulic fluid can penetrate human skin, which can cause serious injury such as gangrene, which can be fatal. To prevent this:

- Do **NOT** go near hydraulic fluid leaks.
- Do **NOT** use a finger or skin to check for hydraulic fluid leaks.
- Lower the load or relieve the pressure in the hydraulic system before loosening any hydraulic fittings.
- If you are injured, seek emergency medical help. **IMMEDIATE** surgery is required to remove hydraulic fluid which has penetrated the skin.

Figure 1.25: MD #174436

MD #220799

Loss of control hazard

WARNING

To prevent serious injury or death from loss of control, lock the tow-bar lock mechanism.

Figure 1.26: MD #220799

MD #279085

Auger entanglement hazard

DANGER

To prevent injury from a rotating auger:

- Stand clear of the auger while the machine is running.
- Stop the engine and remove the key before servicing the auger.
- Do **NOT** reach into moving parts while the machine is running.

Figure 1.27: MD #279085

MD #288195

Rotating object pinch hazard

CAUTION

To prevent injury:

- Stop the engine and remove the key before opening the shield.
- Do **NOT** operate the machine without shields in place.

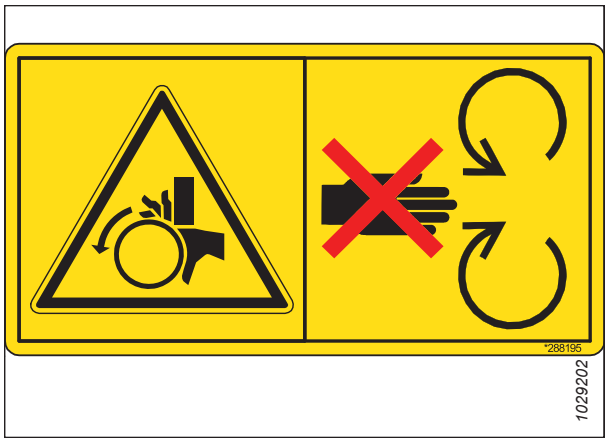


Figure 1.28: MD #288195

MD #311493

Reel crushing hazard

DANGER

To prevent injury from the fall of a raised reel:

- Fully raise the reel.
- Stop the engine and remove the key, and engage the mechanical safety lock on each reel support arm before working on or under the reel.

Figure 1.29: MD #311493

MD #313725

Read manual / high pressure fluid / header crushing hazard

DANGER

To prevent injury or death from improper or unsafe machine operation:

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all of the safety signs are installed and legible.
- Ensure everyone is clear of the machine before starting the engine and during operation.
- Keep riders off of the machine.
- Keep all shields in place and stay clear of moving parts.
- Before leaving the operator's position, disengage the header drive, put the transmission in Neutral, and wait for all movement to stop.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a unit in the raised position, engage the safety locks to prevent it from lowering unexpectedly.
- Use a slow moving vehicle emblem and flashing warning lights when operating on roadways (unless prohibited by law).

To prevent injury or death from the fall of a raised header:

- Fully raise the header, stop the engine, remove the key, and engage the mechanical safety locks on the combine before going under the header.
- Alternatively, rest the header on the ground, stop the engine, and remove the key before servicing it.

WARNING

To prevent serious injury, gangrene, or death:

- Do **NOT** go near leaks.
- Do **NOT** use a finger or skin to check for leaks.
- Lower the load or relieve hydraulic pressure before loosening fittings.
- High-pressure oil can easily puncture skin, and can cause serious injury, gangrene, or death.
- If you are injured, seek emergency medical help. Immediate surgery is required to remove oil.

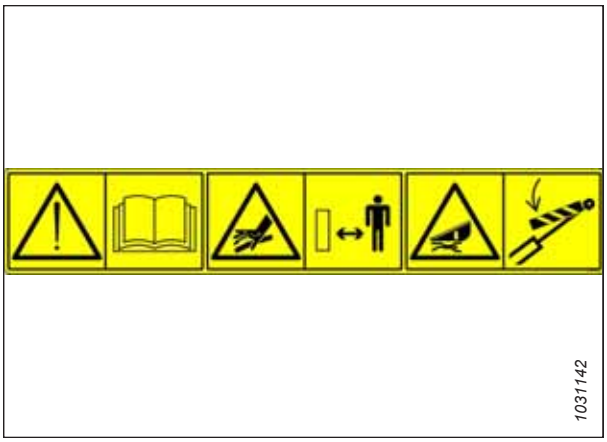


Figure 1.30: MD #313725

MD #313728

General hazard pertaining to machine operation and servicing / Hot fluid spray hazard

DANGER

To prevent injury or death from improper or unsafe machine operation:

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all of the safety signs are installed and legible.
- Ensure everyone is clear of the machine before starting the engine and during operation.
- Keep riders off of the machine.
- Keep all shields in place and stay clear of moving parts.
- Before leaving the operator's position, disengage the header drive, put the transmission in Neutral, and wait for all movement to stop.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a unit in the raised position, engage the safety locks to prevent it from lowering unexpectedly.
- Use a slow moving vehicle emblem and flashing warning lights when operating on roadways (unless prohibited by law).

CAUTION

To prevent injury from hot fluids:

- Do **NOT** remove the fluid fill cap while the machine is hot.
- Allow the machine to cool down before opening the fluid fill cap.
- Be aware the fluid is under pressure and may be hot.

Figure 1.31: MD #313728

MD #313733

Header crushing hazard

DANGER

To prevent injury or death from the fall of a raised header:

- Fully raise the header, stop the engine, remove the key, and engage the mechanical safety locks on the combine before going under the header.
- Alternatively, rest the header on the ground, stop the engine, and remove the key before servicing.

Figure 1.32: MD #313733

MD #313881

General hazard pertaining to machine operation and servicing / knife hazard

DANGER

To prevent injury or death from improper or unsafe machine operation:

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all of the safety signs are installed and legible.
- Ensure everyone is clear of the machine before starting the engine and during operation.
- Keep riders off of the machine.
- Keep all shields in place and stay clear of moving parts.
- Before leaving the operator's position, disengage the header drive, put the transmission in Neutral, and wait for all movement to stop.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a unit in the raised position, engage the safety locks to prevent it from lowering unexpectedly.
- Use a slow moving vehicle emblem and flashing warning lights when operating on roadways (unless prohibited by law).

WARNING

To prevent injury from the sharp cutting knife:

- Wear suitable when working with the knife.
- Ensure that no one is near the knife when removing it or rotating it.

Figure 1.33: MD #313881

MD #327086

Released spring energy hazard

WARNING

To prevent injury:

- When servicing wheel axle components, the lift-assist spring no longer has counterweight and becomes energized.
- Do **NOT** attempt to pry the adjustment handle out of a position slot before releasing tension from the assist springs.

Figure 1.34: MD #327086

MD #327588

Hitch damage hazard

DANGER

To prevent serious injury or death:

- If the optional contour wheel system is installed, remove the left contour wheel before transporting the header.
- Do **NOT** tow a header if the transport hitch is damaged.

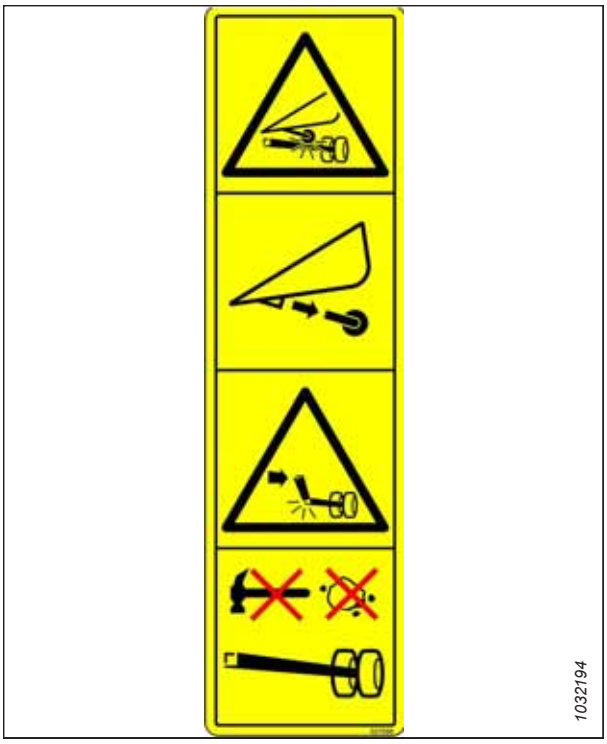


Figure 1.35: MD #327588

MD #360541

Reel entanglement / reel crushing hazard

DANGER

To prevent injury from entanglement with a rotating reel:

- Stand clear of the header while the machine is running.
- To prevent injury from the fall of a raised reel, fully raise the reel, stop the engine, remove the key, and engage the mechanical safety lock on each reel support arm before working on or under the reel.

Figure 1.36: MD #360541

MD #360655

Released spring energy hazard

WARNING

To prevent serious injury:

- After pulling the float setting lever over the center, remove the multi-tool and return it to its storage location.
- Do **NOT** use the multi-tool to push the float setting lever over the center.
- Failing to return the multi-tool to its storage location can result in the multi-tool swinging upward and releasing stored energy from the spring, which can result in injury.

Figure 1.37: MD #360655

Chapter 2: Product Overview

Refer to this section to learn the definitions of the technical terms used in this manual, the machine's specifications, and the locations of key components.

2.1 Definitions

The following terms, abbreviations, and acronyms are used in this manual.

Table 2.1 Definitions

Term	Definition
AHHC	Automatic header height control
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener designed to be paired with a nut
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
DK	Double knife
DKD	Double-knife drive
DWA	Double Windrow Attachment
Export header	The header configuration typical outside North America
FD2 Series Header	MacDon FD225, FD230, FD235, FD240, FD241, FD245, and FD250 FlexDraper® Headers
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position in which the given sealing surfaces or components are making contact with each other and the fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
FM200	The float module used with a D2 or FD2 Series header for combining
FSI	Float setting indicator
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
North American header	The header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-Ring Seal
PTO	Power take-off
SAE	Society of Automotive Engineers

Table 2.1 Definitions (continued)

Term	Definition
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when inserted into a mating part
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time
spm	Strokes per minute
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
UCA	Upper cross auger
Untimed (knife drive)	Unsynchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor or from two hydraulic motors
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism

2.2 Product Specifications

Use the specification table to reference information about a machine's specific configuration. The table lists dimensions, weights, performance ranges, and features.

NOTE:

Specifications are subject to change without notice.

The following symbols and letters are used in specification tables:

– S: standard / O_F: optional (factory installed) / O_D: optional (dealer installed) / –: not available

Cutterbar			
Effective cutting width (distance between crop divider points; cut width plus divider gather)			
FD225		7.7 m (301 in)	S
FD230		9.2 m (361 in.)	S
FD235		10.7 m (421 in.)	S
FD240		12.2 m (481 in.)	S
FD241		12.5 m (493 in.)	S
FD245		13.7 m (541 in.)	S
FD250		15.3 m (601 in.)	S
Cutterbar lift range		Varies with combine model	S
Knife			
Single-knife drive (FD225–FD240): hydraulic motor mounted to enclosed heavy duty MacDon knife drive box on the left side of header.			O_F
Double-knife drive (FD235–FD250): one hydraulic motor, untimed, one mounted to enclosed heavy-duty MacDon knife drive box on each side of the header.			O_F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute)	FD225, FD235	1200–1400 spm	S
Single-knife speed (strokes per minute)	FD230	1200–1500 spm	S
Single-knife speed (strokes per minute)	FD240	1200–1300 spm	S
Double-knife speed (strokes per minute)	FD235, FD240, FD241, FD245, FD250	1200–1500 spm	S
Knife Sections			
Over-serrated, ultra coarse, ClearCut™, QuickChange, bolted, 1.5 serrations per cm (4 serrations per inch)			O
Over-serrated, coarse, ClearCut™, QuickChange, bolted, 3.5 serrations per cm (9 serrations per inch)			S
Over-serrated, fine, ClearCut™, QuickChange, bolted, 5.5 serrations per cm (14 serrations per inch)			O
Knife overlap at center (double-knife headers)		3 mm (1/8 in.)	S
Guards and Hold-Downs			
Guard: ClearCut™ pointed, forged and double heat treated (DHT) **Hold-down**: forged, single adjustment bolt			O_F
Guard: ClearCut™ four point, forged and double heat treated (DHT) **Hold-down**: forged, single adjustment bolt			O_F
Guard: ClearCut™ PlugFree™, forged and double heat treated (DHT) **Hold-down**: forged, dual adjustment bolts			O_F
Cutterbar Wearplates and Standard Skid Shoes			
The FD2 Series includes wearplates across the width of the cutterbar.			S
FD225		4 Skid Shoes	S

FD230, FD235, FD240, FD241, FD245, FD250		6 Skid Shoes	S
Guard Angle (Cutterbar on the Ground)			
Center-link retracted		1.7 degrees	S
Center-link extended		8.9 degrees	S
Draper and Decks			
Draper width		1.27 m (50 in.)	S
Draper drive		Hydraulic	S
Draper speed: FM200 Float Module controlled		209 m/min. (687 fpm)	S
Delivery opening width		1905 mm (75 in.)	S
PR15 Pick-Up Reel			
Quantity of tine tubes		5 or 6	
Center tube diameter		203 mm (8 in.)	S
Finger tip radius	Factory-set	800 mm (31 1/2 in.)	S
Finger tip radius	Adjustment range	766–800 mm (30 3/16–31 1/2 in.)	S
Effective reel diameter (via shaped cam action)		1.650 m (65 in.)	S
Finger length		290 mm (11 in.)	S
Finger spacing (nominal, staggered on alternate bats)		100 mm (4 in.)	S
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S

Header Frame Flex Range

Header Model	Up – Standard	Down – Standard	Up – Limiter Removed	Down – Limiter Removed[1]
FD225	102 mm (4 in.)	64 mm (2.5 in.)	102 mm (4 in.)	102 mm (4 in.)
FD230	165 mm (6.5 in.)	130 mm (5 in.)	165 mm (6.5 in.)	165 mm (6.5 in.)
FD235	205 mm (8 in.)	130 mm (5 in.)	205 mm (8 in.)	205 mm (8 in.)
FD240 DR[2]	205 mm (8 in.)	130 mm (5 in.)	205 mm (8 in.)	205 mm (8 in.)
FD240 TR[3]	205 mm (8 in.)	205 mm (8 in.)	205 mm (8 in.)	205 mm (8 in.)
FD241	205 mm (8 in.)	130 mm (5 in.)	205 mm (8 in.)	205 mm (8 in.)
FD245	216 mm (8.5 in.)	216 mm (8.5 in.)	216 mm (8.5 in.)	216 mm (8.5 in.)
FD250	216 mm (8.5 in.)	216 mm (8.5 in.)	216 mm (8.5 in.)	216 mm (8.5 in.)

FM200 Float Module			
Feed draper	Width	2 m (78 11/16 in.)	S
Feed draper	Speed	107–122 m/min (350–400 fpm)	S
Feed auger	Width	1.630 m (64 1/8 in.)	S

1. To avoid cutting off reel fingers, a greater cutterbar clearance is required when the header flex range is increased. For more information, refer to *Disabling Flex Frown Limiter*.
2. Double reel
3. Triple reel

Feed auger	Outside diameter	559 mm (22 in.)	S
Feed auger	Tube diameter	356 mm (14 in.)	S
Feed auger	Speed (varies with combine model)	191–195 rpm (varies with combine model)	S
Oil reservoir capacity		95 liters (25 US gallons)	S
Oil type		Single grade transmission/ hydraulic fluid (THF)	—
THF viscosity at 40°C (104°F)		60.1 cSt	—
THF viscosity at 100°C (212°F)		9.5 cSt	—
Upper Cross Auger			O_D
Outside diameter		330 mm (13 in.)	—
Tube diameter		152 mm (6 in.)	—
Stabilizer Wheel / EasyMove™ Transport			O_D
Wheels		38 cm (15 in.)	—
Tires		225/75 R-15	—
Weight			
Estimated weight range – base header with float module – variances are due to different package configurations.			
Header Model	**Market Region**	**Weight Range – kg (lb.)**	
FD225	North America	3,365–3,468 (7,403–7,629)	
FD230	North America	3,731–3,843 (8,208–8,454)	
FD235	North America	3,931–4,135 (8,648–9,097.)	
FD240	North America	4,069–4,404 (8,951–9,688)	
FD241	Export	4,307–4,430 (9,475–9,746)	
FD245	North America	4,548–4,680 (10,005–10,296)	
	Export	4,685–4,817 (10,307–10,597)	
FD250	North America	4,733–4,870 (10,412–10,714)	
	Export	4,967–5030 (10,927–11,066)	

2.3 FD2 Series FlexDraper® Header Dimensions

When operating a header, it is important to know the dimensions of the machine.

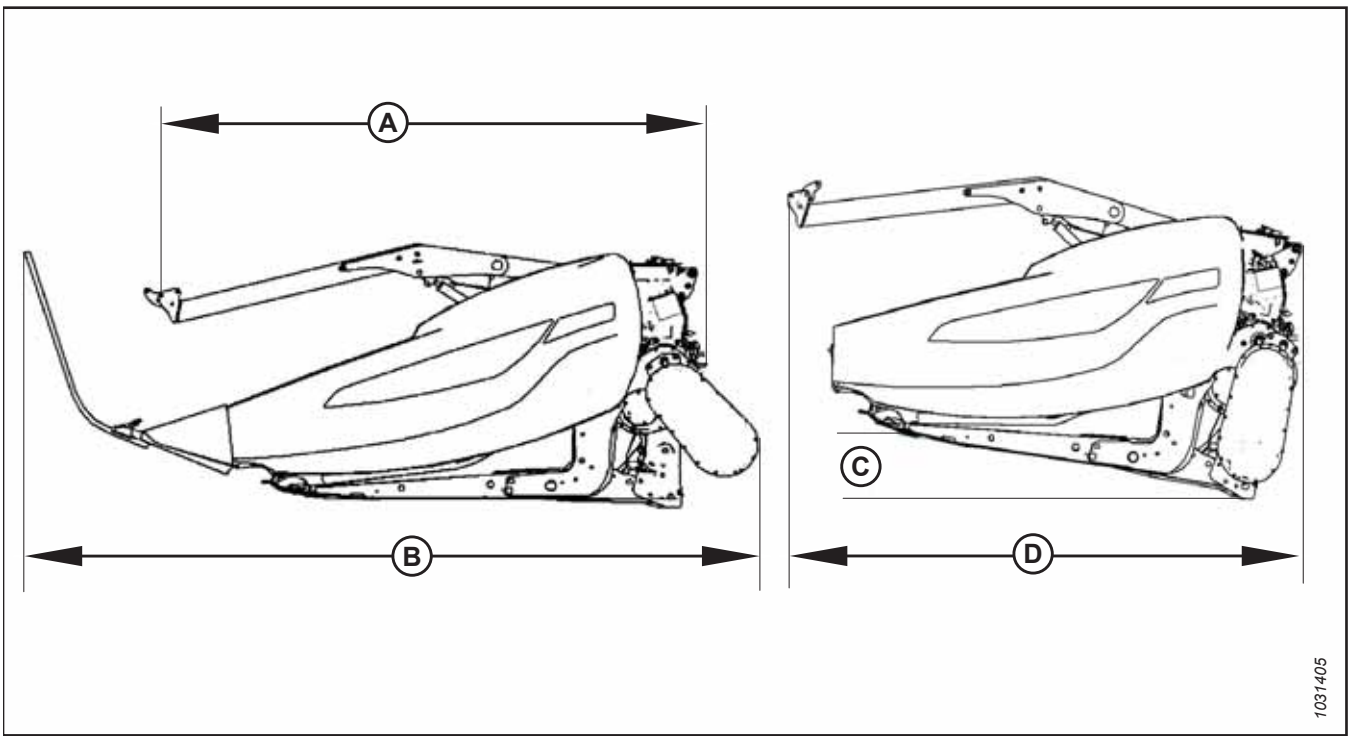


Figure 2.1: Header Dimensions

Table 2.2 Header Dimensions

Frame and Structure		
Feature Being Measured	**Reference to Figure *2.1, page 30***	**Dimension**
Header width in field mode	—	Cut width + 500 mm (19 1/5 in.)
Cutterbar width	—	Cut width - 500 mm (19 1/5 in.)
Header width in transport position with FM200 installed (shortest center-link)	(A) Gearbox rotated (storage), dividers removed (refer to *2.1, page 30*)	2.6 m (103 in.)
Header width in transport position with FM200 installed (shortest center-link)	(B) Gearbox operational, standard dividers installed (refer to *2.1, page 30*)	3.5 m (138 in.)
Header width in transport position with reel fully retracted and FM200 installed (shortest center-link)	Gearbox rotated, dividers removed (refer to *2.1, page 30*) Angle (C) required to achieve transport width (D) **NOTE:** Dimension (D) can be decreased by using a transport trailer with greater angle.	8° 2.591 m (102 in.)

2.4 FD2 Series FlexDraper® Header Component Identification

Familiarizing yourself with the main components of the header will make it easier to follow the operation and maintenance instructions provided in this manual.

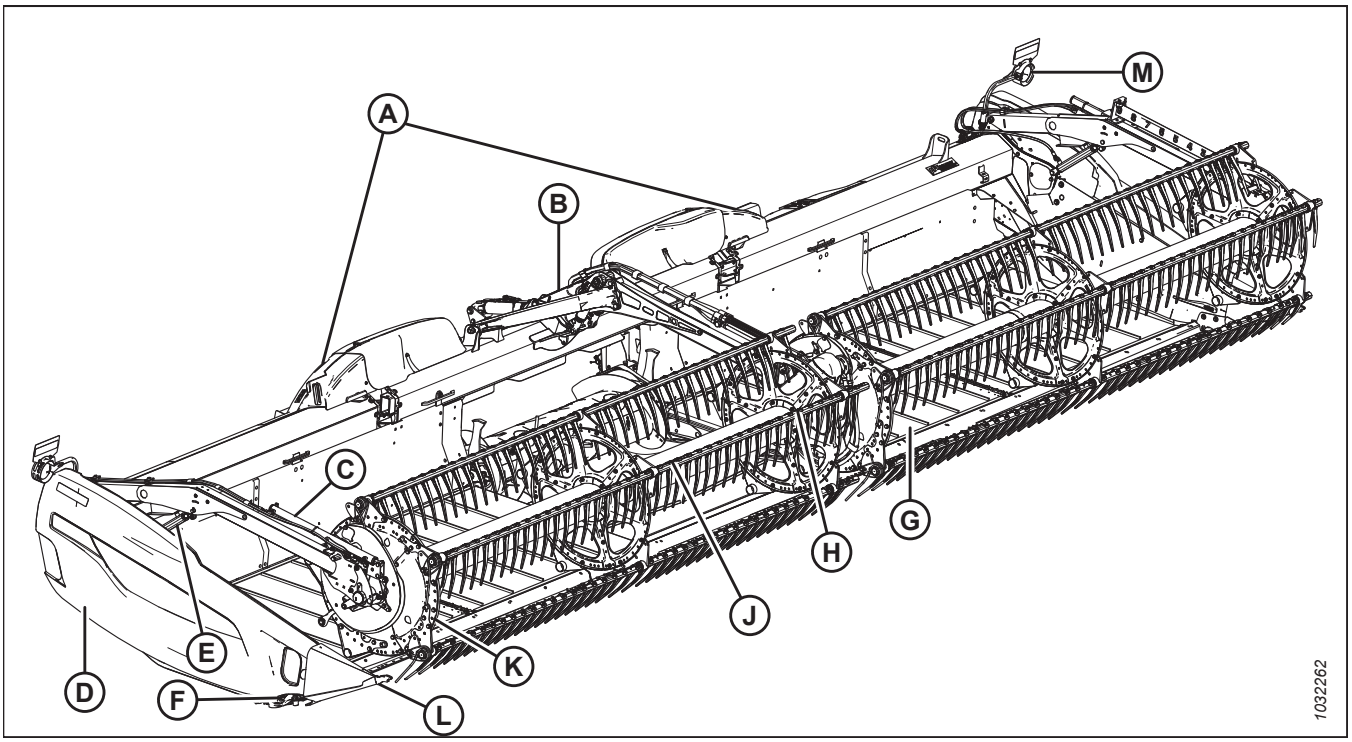


Figure 2.2: FD2 Series FlexDraper® Header Components

A - Wing Float Linkage
B - Center Reel Arm
C - Reel Fore-Aft Cylinder
D - Endshield
E - Reel Lift Cylinder
F - Knife Drive Box (inside endshield)
G - Side Draper
H - Center Reel Drive
J - Pick-up Reel
K - Reel Endshield
L - Crop Divider
M - Header Light (except Europe)

2.5 FM200 Float Module Component Identification

Familiarizing yourself with the main components of the float module will make it easier to follow the instructions provided in this manual.

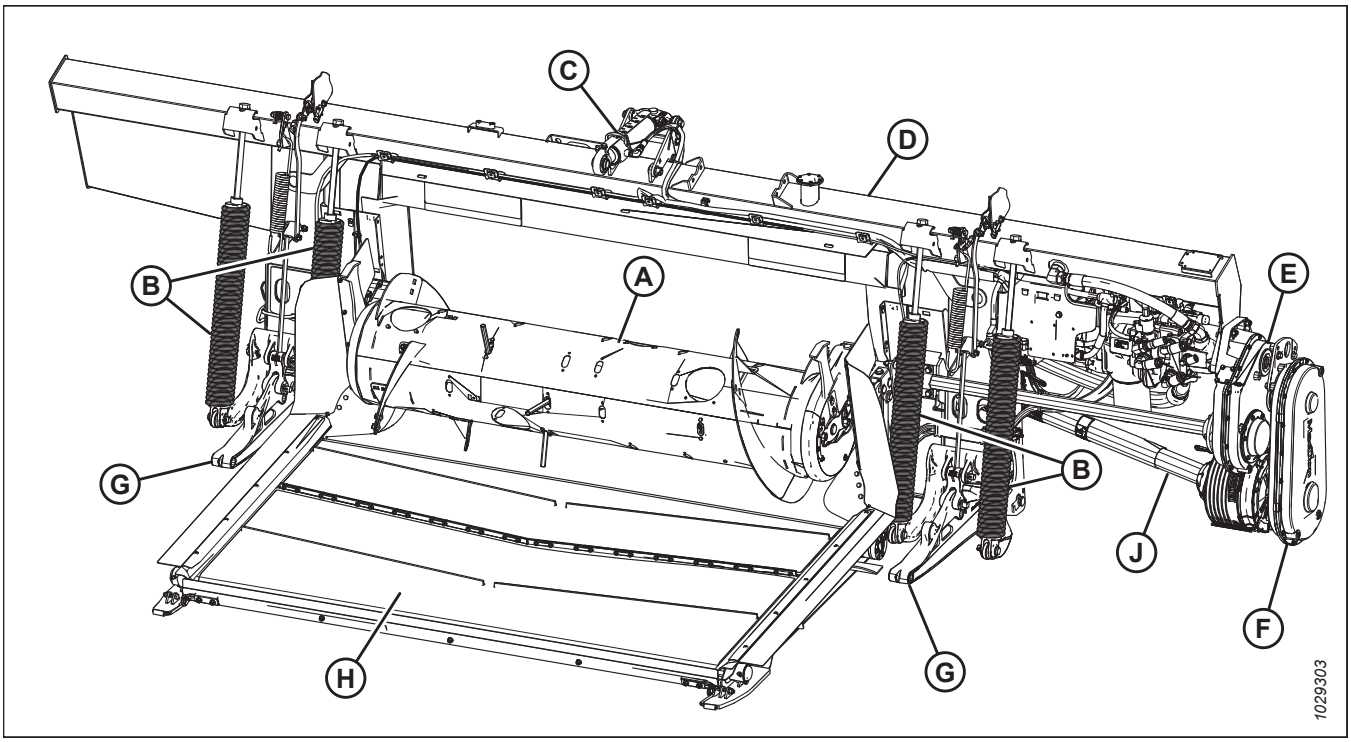


Figure 2.3: Header Side of FM200 Float Module

A - Feed Auger
B - Header Float Springs (x4)
C - Center-Link
D - Hydraulic Reservoir
E - Main Gearbox
F - Completion Gearbox
G - Header Support Arms (x2)
H - Feed Draper
J - Driveline

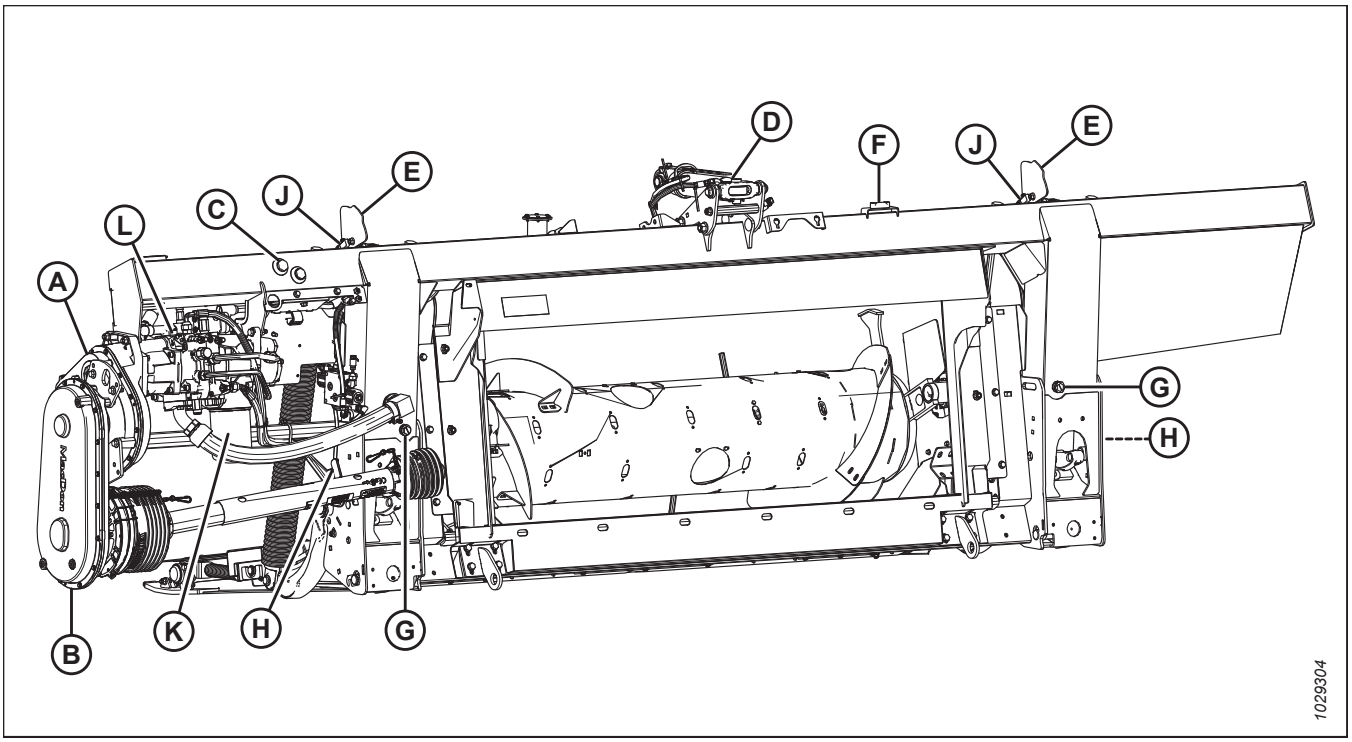


Figure 2.4: Combine Side of FM200 Float Module

A - Main Gearbox
B - Completion Gearbox
C - Reservoir Oil Level Sight Glass
D - Center-Link
E - Header Height Control Indicator (x2)
F - Bubble Level
G - Drain Plug (x2)
H - Float Lock Handle (x2)
J - Auto Header Height Control (AHHC) Sensor (x2)
K - Hydraulic Filter
L - Knife, Side Draper, and Feed Draper Pump

Chapter 3: Operation

Safely operating your machine requires familiarizing yourself with its capabilities.

3.1 Owner/Operator Responsibilities

Owning and operating heavy equipment comes with certain duties.

CAUTION

- **It is your responsibility to read and understand this manual completely before operating the header. Contact your MacDon Dealer if an instruction is not clear to you.**
- **Follow all safety messages in the manual and on safety decals on the machine.**
- **Remember that YOU are the key to safety. Good safety practices protect you and the people around you.**
- **Before allowing people to operate the header, for however short a time or distance, make sure they have been instructed in its safe and proper use.**
- **Review the manual and all safety related items with all Operators annually.**
- **Be alert for other Operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.**
- **Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety of the machine and may reduce the length of service you receive from your machine.**
- **The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.**

3.2 Operational Safety

Follow all the safety and operational instructions given in this manual.

CAUTION

Adhere to the following safety precautions:

- **Follow all safety and operational instructions provided in your operator's manuals. If you do not have a combine manual, get one from your Dealer and read it thoroughly.**
- **Never attempt to start the engine or operate the machine except from the operator's seat.**
- **Check the operation of all controls in a safe, clear area before starting work.**
- **Do NOT allow riders on the combine.**

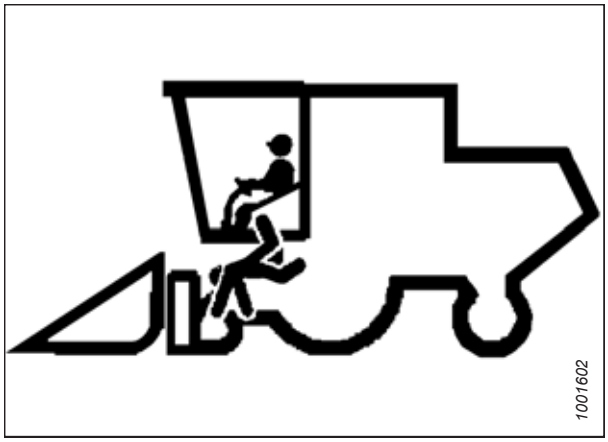


Figure 3.1: No Riders

CAUTION

- **Never start or move the machine until you are sure all bystanders have cleared the area.**
- **Avoid travelling over loose fill, rocks, ditches, or holes.**
- **Drive slowly through gates and doorways.**
- **When working on inclines, travel uphill or downhill whenever possible. Be sure to keep the transmission in gear when travelling downhill.**
- **Never attempt to get on or off a moving machine.**
- **Do NOT leave the operator's station while the engine is running.**
- **To avoid bodily injury or death from the unexpected startup of a machine, always stop the engine and remove the key before adjusting or removing plugged material from the machine.**

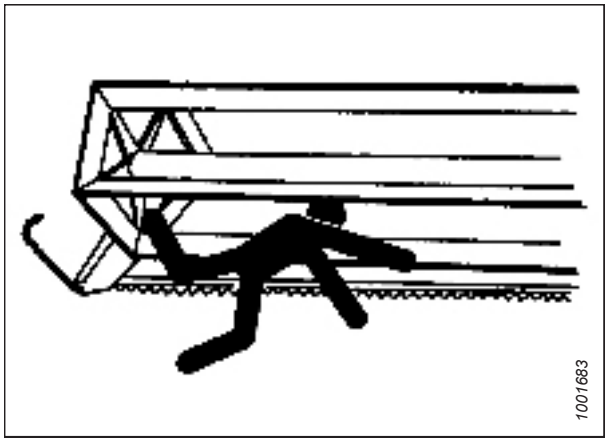


Figure 3.2: Bystander Safety

- **Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow the proper shutdown procedure. For instructions, refer to *3.4 Shutting Down Combine, page 57*.**
- **Operate only in daylight or good artificial light.**

3.2.1 Header Safety Props

The header safety props located on the header lift cylinders prevent the lift cylinders from unexpectedly retracting and lowering the header. For operation instructions, refer to your combine operator's manual.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

3.2.2 Reel Safety Props

The reel safety props are located on the reel arms. When engaged, the reel safety props prevent the reel from falling unexpectedly.

IMPORTANT:

To prevent damage to the reel support arms, do **NOT** transport the header with the reel safety props engaged.

Engaging Reel Safety Props

Engage the reel safety props anytime you need to work around a raised reel. When engaged, the reel safety props prevent the reel from unexpectedly lowering.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

Outer reel arms

2. Raise the reel to its maximum height.
3. Lift up on safety prop (A) and push it forward to remove the prop from hook (B).

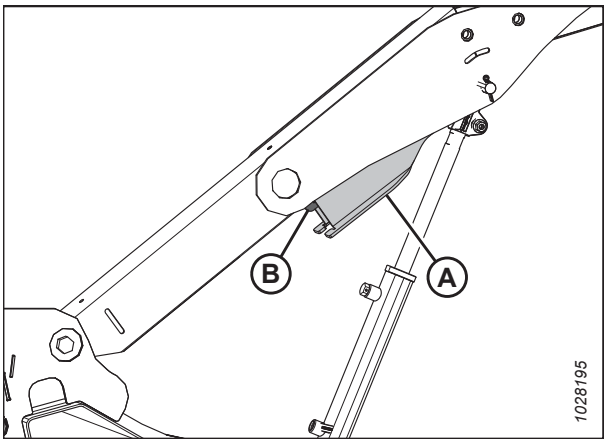


Figure 3.3: Outer Arm

4. Lower safety prop (A) and engage it on the cylinder shaft as shown. Repeat this step on the opposite arm.

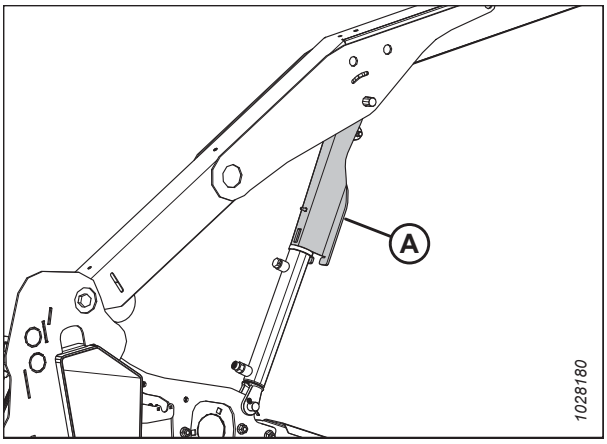


Figure 3.4: Engaged Reel Safety Prop – Outer Arm

Center reel arm – double- and triple-reel headers

5. Rotate handle (A) to release the spring tension and allow the spring to guide the pin into the locked position.

   NOTE:

   For triple-reel headers, the illustration shows the center right arm. The center left arm is opposite.

6. On triple-reel headers, repeat the previous step on the center left arm.

7. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pins.

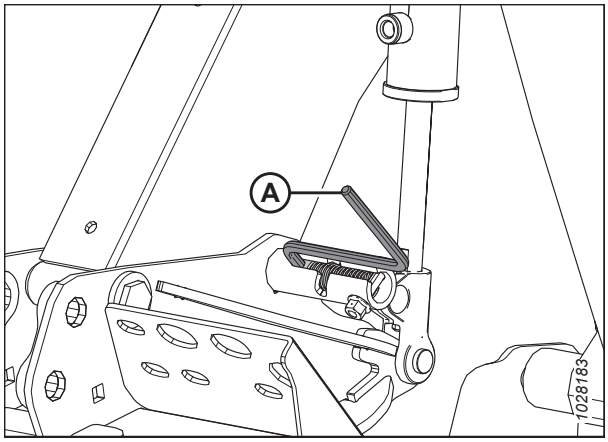


Figure 3.5: Engaged Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

To ensure the proper operation of the reel and header, disengage the reel safety props once you have completed working on or around a raised reel.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

Outer reel arms

2. Raise the reel to its maximum height.

3. Move reel safety prop (A) up onto hook (B) under the reel arm. Repeat this step on the opposite reel arm.

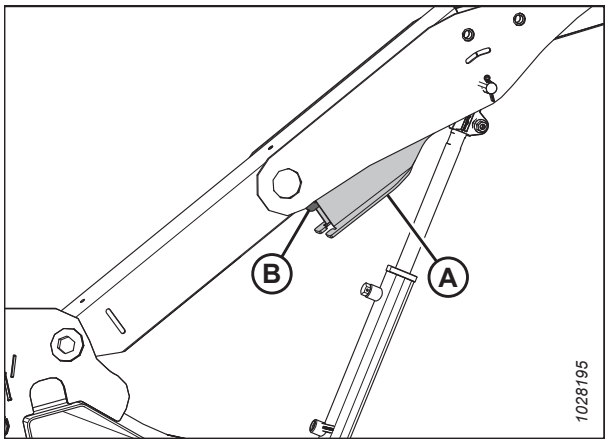


Figure 3.6: Reel Safety Prop – Right Outer Arm

Center reel arm – double- and triple-reel headers

4. Move handle (A) outboard and into slot (B) to put the pin into the unlocked position.

5. On triple-reel headers, repeat the previous step on the center left arm.

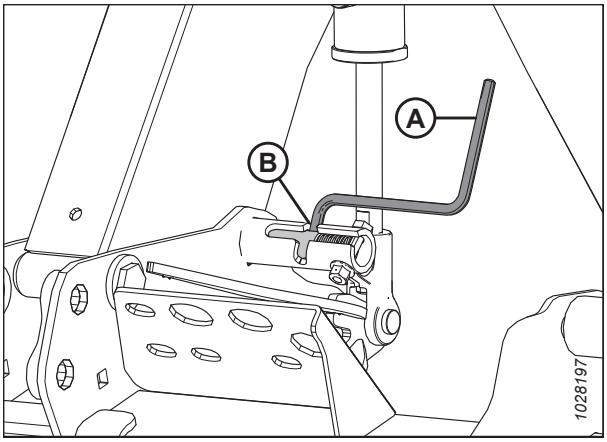


Figure 3.7: Reel Safety Prop – Center Arm

3.2.3 Header Endshields

A hinged, polyethylene endshield is fitted on each end of the header to protect critical drive components.

Opening Header Endshields

The header endshields cover the knife drive components, the hydraulic hoses, the electrical connections, the header wrench, the spare knife, and the optional transport hitch. To access the components, you will need to open the endshield.

1. To unlock the shield, push release lever (B) using access hole (A) on the backside of the header endshield.

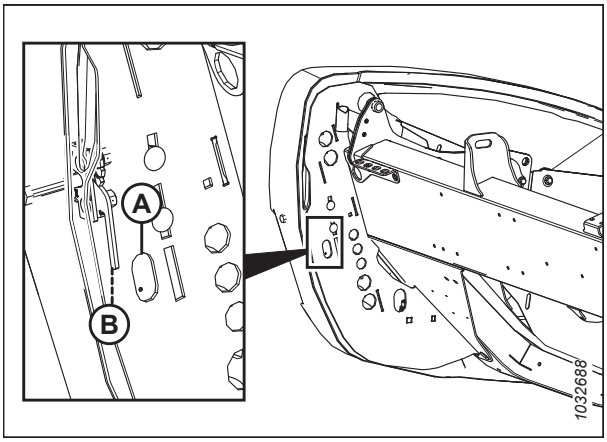


Figure 3.8: Left Header Endshield

2. Pull header endshield (A) open.

   NOTE:

   The header endshield is retained by tab (B) and will open in direction (C).

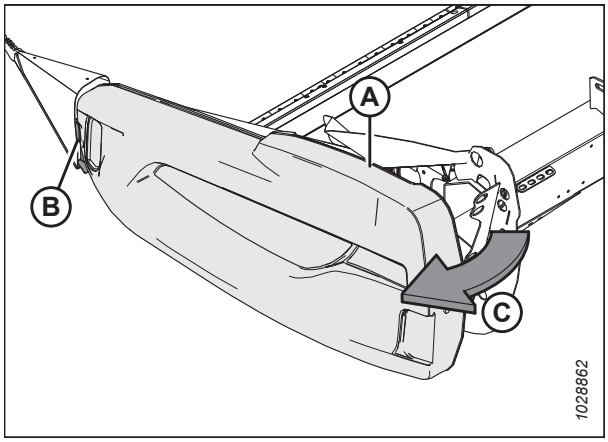


Figure 3.9: Left Header Endshield

3. If additional clearance is required, pull the header endshield free of tab (A), then swing the shield toward the rear of the header.
4. Engage safety latch (B) on hinge arm (C) to secure the shield in the fully open position.

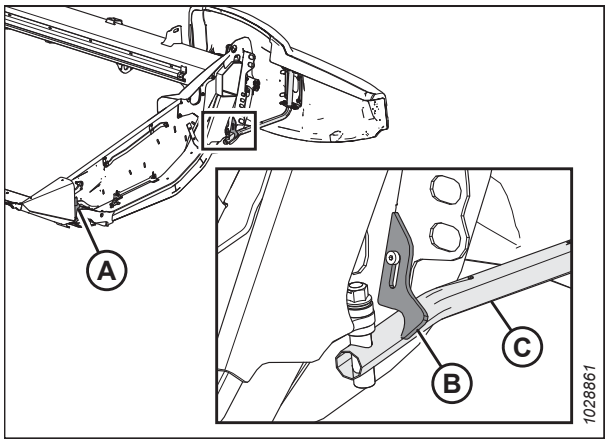


Figure 3.10: Left Header Endshield

Closing Header Endshields

Close the header endshields to protect the drive components, the hoses, and the electrical connections from dirt and debris.

1. If the endshield is fully open and secured behind the header, disengage lock (A) to allow header endshield (B) to move.
2. Rotate the header endshield toward the front of the header.

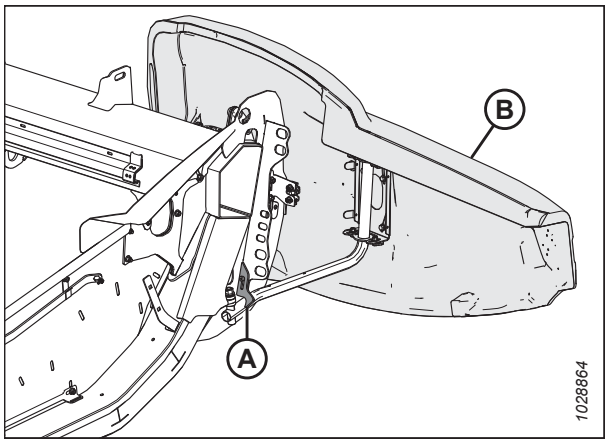


Figure 3.11: Left Header Endshield

3. While closing endshield (A), ensure that it does not contact the top of endsheet (B). If adjustment is required, refer to *Checking and Adjusting Header Endshields, page 42*.

   IMPORTANT:

   The aluminum endsheet will be damaged if the weight of the endshield rests on it.

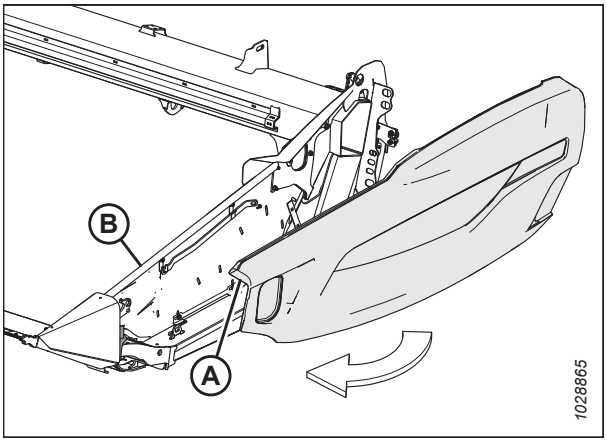


Figure 3.12: Left Header Endshield

4. Insert the front of the header endshield behind hinge tab (B) and into the divider cone.

5. Swing the header endshield in direction (A) into the closed position. Engage two-stage latch (C) with a firm push.

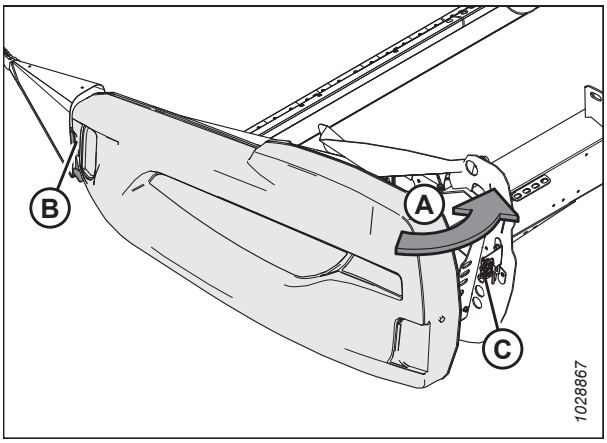


Figure 3.13: Left Header Endshield

IMPORTANT:

Ensure that the header endshield is locked. Ensure bolt (A) is fully engaged on two-stage latch (B) to prevent the header endshield from opening while you are operating the header. If adjustment is required, refer to *Checking and Adjusting Header Endshields, page 42*.

NOTE:

The header endshield is transparent in the illustration to show the latch.

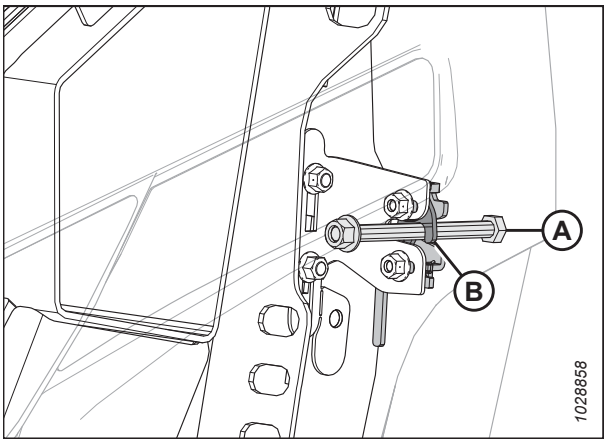


Figure 3.14: Two-Stage Latch

Checking and Adjusting Header Endshields

The header endshields can warp due to extreme changes in temperature. Adjust the position of the header endshield to compensate for dimensional changes.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

IMPORTANT:

Do **NOT** rest the header endshield on the aluminum endsheet.

2. Measure clearance (A) between header endshield (B) and endsheet (C). The clearance should be 1–3 mm (0.04–0.12 in.).

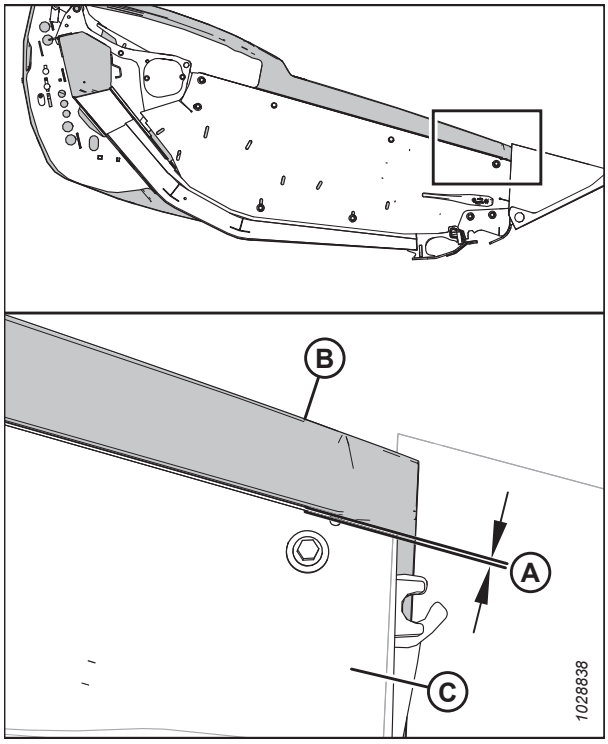


Figure 3.15: Clearance between Header Endshield and Endsheet

3. If the clearance between the header endshield and the endshield is insufficient, adjust support bracket (A) as follows:

   a. Loosen bolts (B).

   b. Move support bracket (A) up or down as needed.

   c. Retighten the hardware.

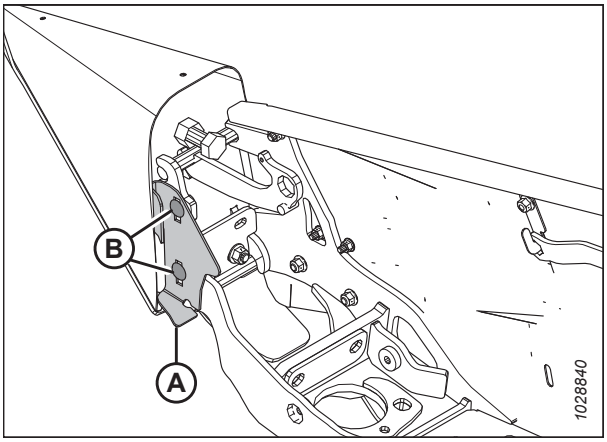


Figure 3.16: Header Endshield Support Bracket

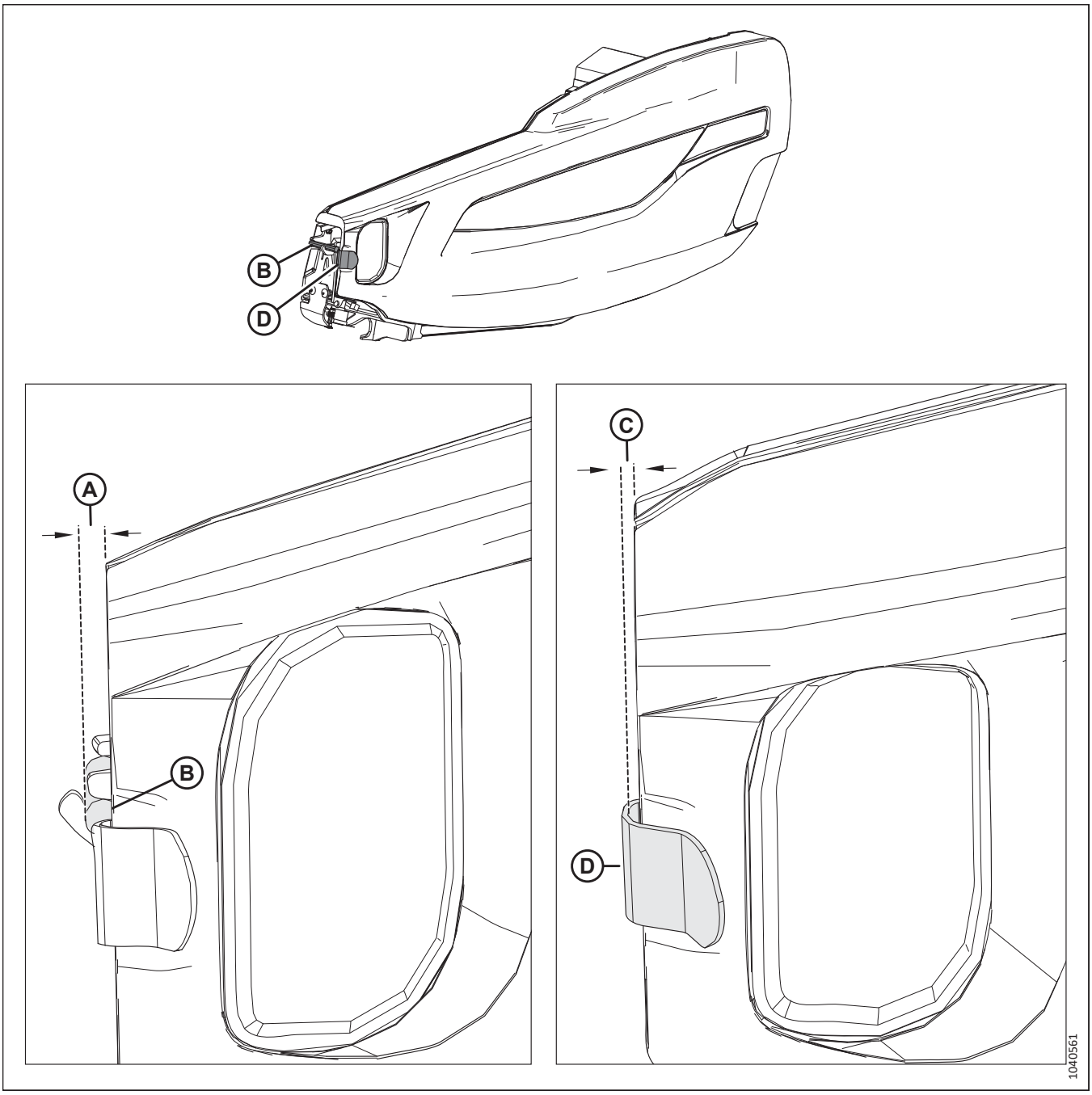


Figure 3.17: Clearance Specifications at the Front of the Endshield

4. Measure clearance (A) between the front of the header endshield and pin (B). The clearance should be 8–18 mm (0.3–0.7 in).

5. Measure clearance (C) between the front of the header endshield and support bracket (D). The clearance should be 6–10 mm (0.24–0.39 in).

6. If the clearances at the front of the endshield are insufficient, adjust the position of hinge arm (A) as follows:
   a. Loosen four nuts (B).
   b. Slide brackets (C) and hinge arm (A) fore or aft as required to achieve the correct clearance.
   c. Retighten the hardware.

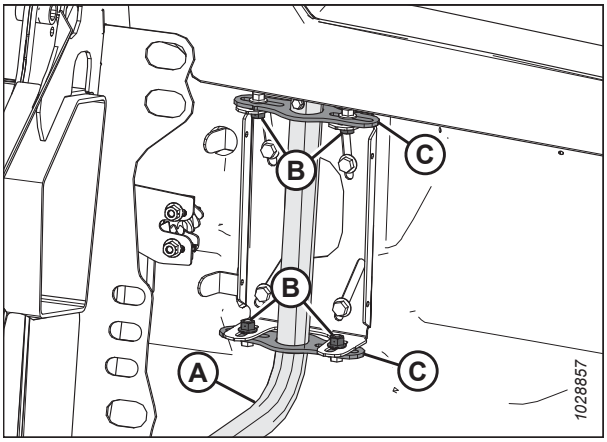


Figure 3.18: Left Header Endshield

7. Measure clearance (A) at the bottom front of left neck shield (E) to the edge of the end panel. The clearance should be 2–4 mm (0.09–0.16 in.).
8. Measure clearance (B) from the front of left neck shield (E) to the inside edge of endshield (D). The clearance should be 42–52 mm (1.65–2.04 in.).
9. Measure clearance (C) from the rear of left neck shield (E) to the inside edge of endshield (D). The clearance should be 15–25 mm (0.68–0.98 in.).

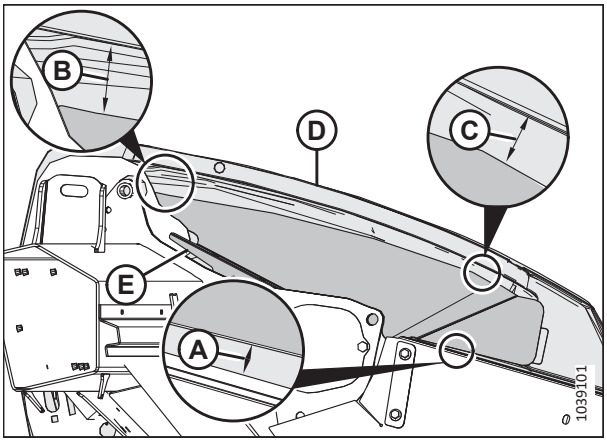


Figure 3.19: Endshield Alignment – View from Inside Deck

10. If the endshield requires adjustment, loosen nuts (A) and slide bracket (B) up or down.
11. Tighten nuts (A).
12. Recheck the clearances. For instructions, refer to Step *7, page 45* to Step *9, page 45*.

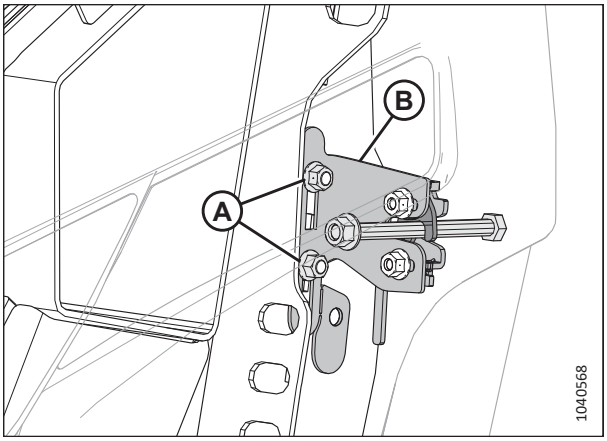


Figure 3.20: Two-Stage Latch

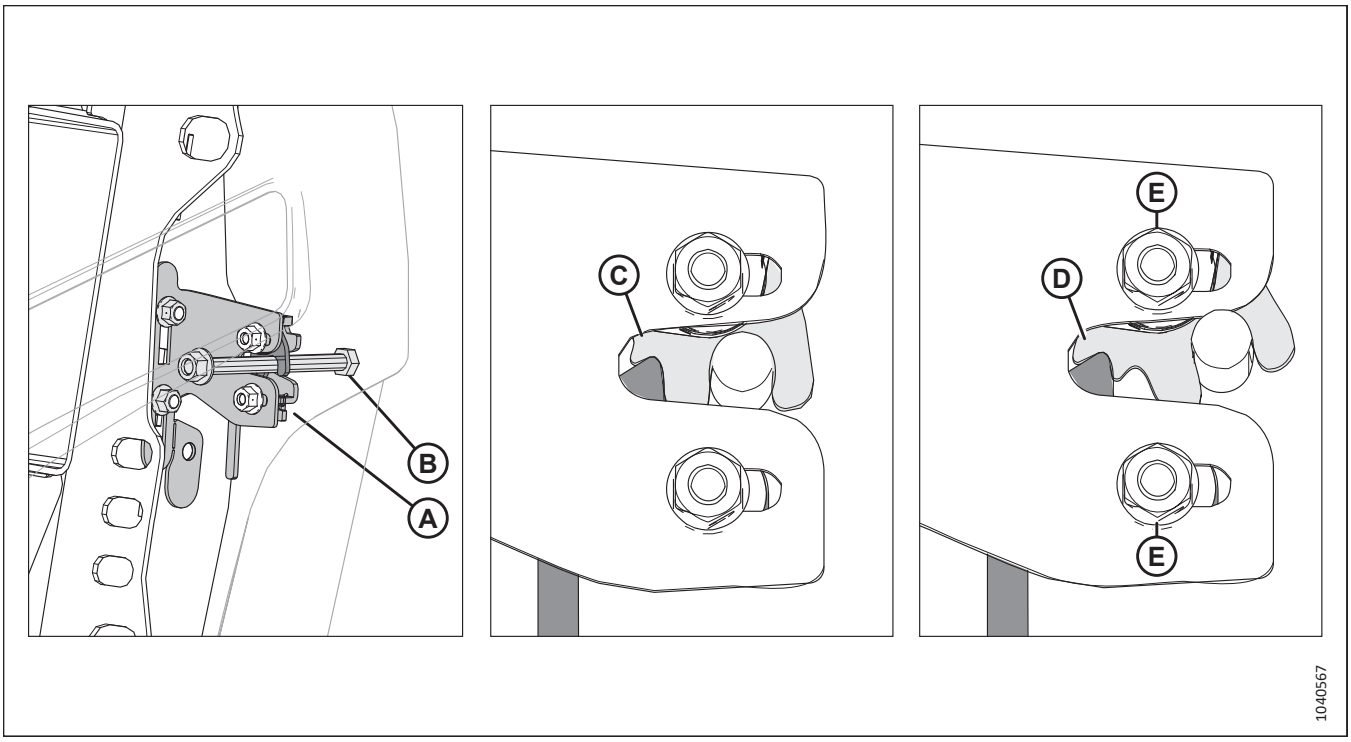


Figure 3.21: Two-Stage Latch

13. When the endshield is closed, two-stage latch (A) must engage first catch (C). This will allow second catch (D) to prevent the endshield from opening completely in case the endshield unlatches by accident. Confirm the endshield latches properly by following Step *14, page 46* to Step *16, page 46*.
14. Close the endshield. Confirm bolt (B) engages latch (A).
15. Release the latch.
16. Try to open the endshield.
    - If you can open the endshield partially, but **NOT** completely, then the latch is positioned properly.
    - If you can open the endshield completely, loosen nuts (E), move latch along the slotted holes, then retighten the nuts. Repeat Step *14, page 46* to Step *16, page 46*.

Removing Header Endshields

Remove the endshields to increase access to the components inside.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

2. Fully open the header endshield. For instructions, refer to *Opening Header Endshields, page 39*.
3. Engage latch (A) to prevent the endshield from moving.
4. Remove self-tapping screw (B).
5. Slide the header endshield upwards and remove it from hinge arm (C).
6. Place the header endshield away from the work area.

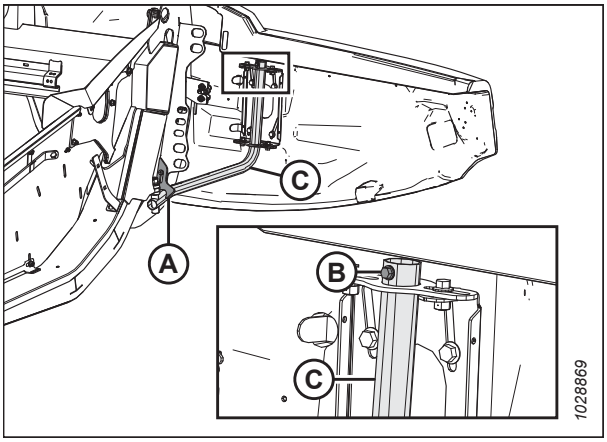


Figure 3.22: Left Header Endshield

Installing Header Endshields

To ensure the endshields are installed correctly, follow the recommended installation procedure provided here.

IMPORTANT:

Do **NOT** rest the header endshield on the aluminum endsheet.

1. Guide the header endshield onto hinge arm (C) and slowly slide it downwards.
2. Install self-tapping screw (B).
3. Disengage latch (A) to allow the header endshield to move.
4. Close the header endshield. For instructions, refer to *Closing Header Endshields, page 40*.

   NOTE:

   The header endshields can warp due to extreme changes in temperature. Adjust the position of the header endshield to compensate for these changes. For instructions, refer to *Checking and Adjusting Header Endshields, page 42*.

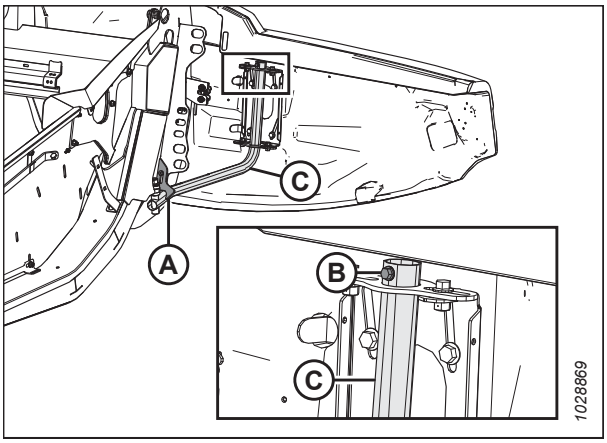


Figure 3.23: Left Header Endshield

3.2.4 Reel Drive Cover

The reel drive cover protects the reel drive components from dirt and debris.

Removing Reel Drive Cover

Remove the reel drive cover to service the reel drive components.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Adjust the reel fully forward.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Rotate spring latch (A) up and over the back plate.

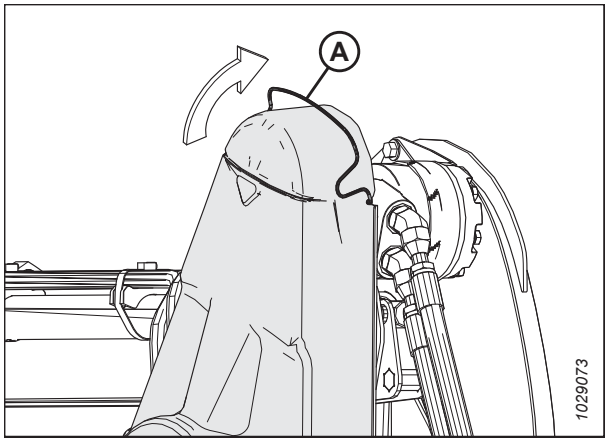


Figure 3.24: Upper Drive Cover

6. Unclip upper cover (A) from the lower cover at locations (B), and remove the upper cover. Keep the two clips engaged on the lower cover.

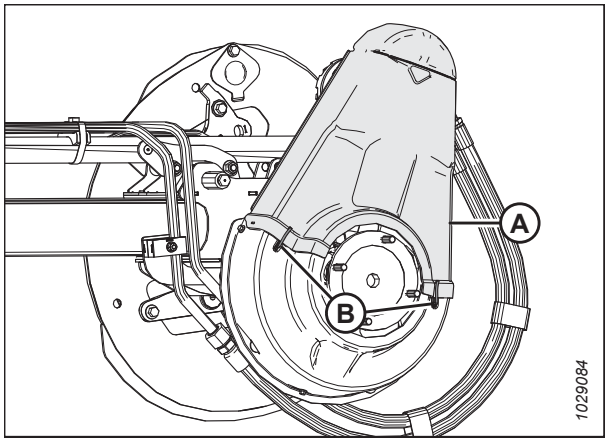


Figure 3.25: Upper Drive Cover

7. If necessary, remove lower cover (B) by removing three bolts (A).

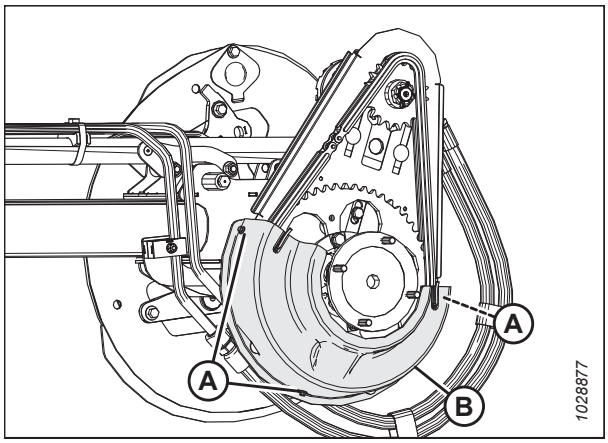


Figure 3.26: Lower Drive Cover

Installing Reel Drive Cover

The reel drive cover protects the drive components from weather and debris. Do **NOT** operate the header without the reel drive cover.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Position lower drive cover (B) (if previously removed) onto the reel drive. Secure the cover with three bolts (A).

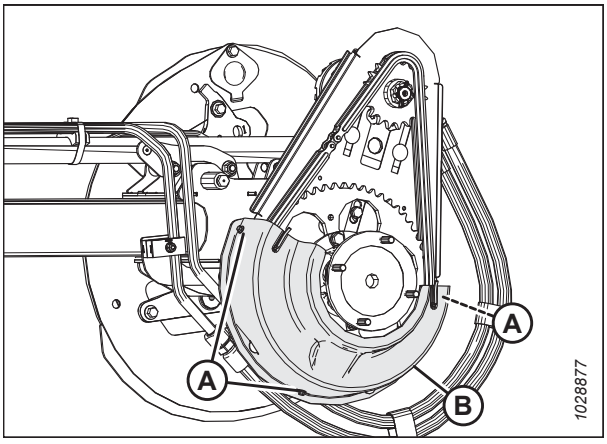


Figure 3.27: Lower Drive Cover

3. Position upper cover (A) on the reel drive. Secure the cover with two clips (B) on the lower cover.

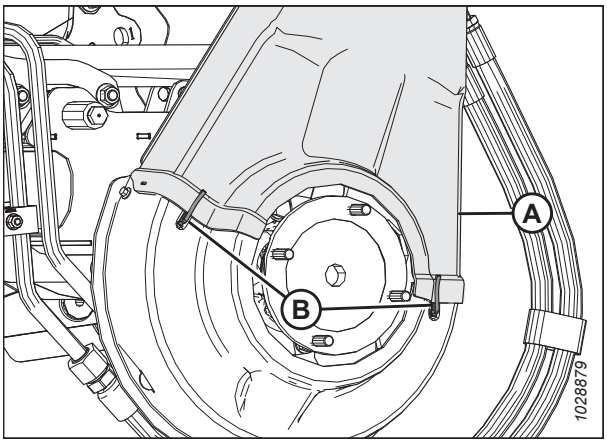


Figure 3.28: Upper Drive Cover

4. Rotate spring latch (A) down to secure the upper cover to the reel drive. Ensure V-shaped loop (C) points down, and the spring end remains inserted into back plate hole (B) on both sides of the reel drive.

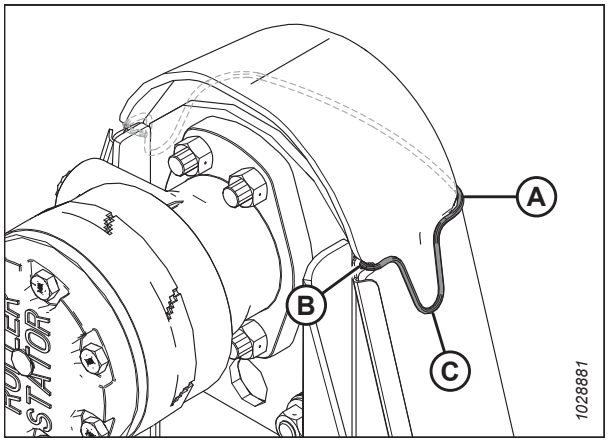


Figure 3.29: Reel Drive

3.2.5 Flex Linkage Cover

Plastic covers are attached to the header frame to protect the header wing balance mechanism from debris and weather.

Removing Inboard Flex Linkage Covers

Removing the flex linkage covers allows you to access the header's wing balance mechanism and hydraulic lines.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Remove hair pin (A) and lynch pin (B) securing flex linkage cover (C) to the backtube.
5. Slide flex linkage cover (C) inboard, then lift it upward and remove it.

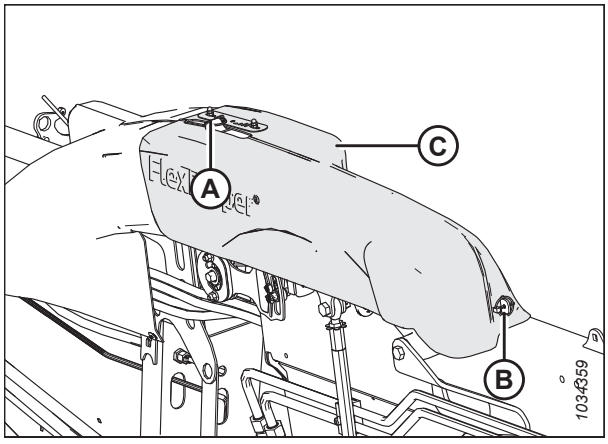


Figure 3.30: Inboard Flex Linkage Cover – Left Side

Installing Inboard Flex Linkage Covers

The inboard flex linkage covers protect the header wing balance mechanism from debris and weather. They are secured to the header with pins.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Lower flex linkage cover (A) over the linkage. Ensure that slots (B) line up with tabs (C) and (D).
3. Slide the flex linkage cover outboard so that tab (D) extends beyond the slot.

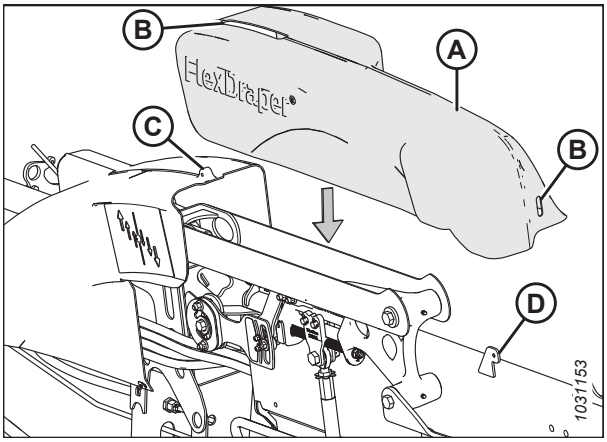


Figure 3.31: Inboard Flex Linkage Cover – Left Side

4. Secure flex linkage cover (C) with hair pin (A) and lynch pin (B).

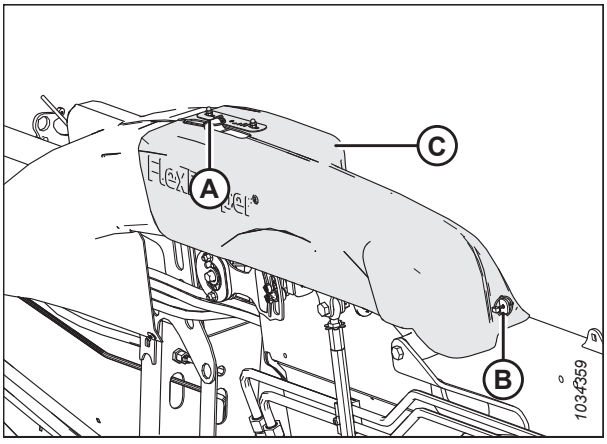


Figure 3.32: Inboard Flex Linkage Cover – Left Side

Removing Outboard Flex Linkage Covers

Remove the flex linkage covers to access the header wing balance mechanism or the hydraulic lines.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. **FD245 and FD250 headers:** Remove screws (A) and the nuts (not shown) securing middle linkage cover (B) to the bracket (not shown).
5. **FD245 and FD250 headers:** Remove pin (C). Remove the cover by lifting it up and over the frame protrusions.

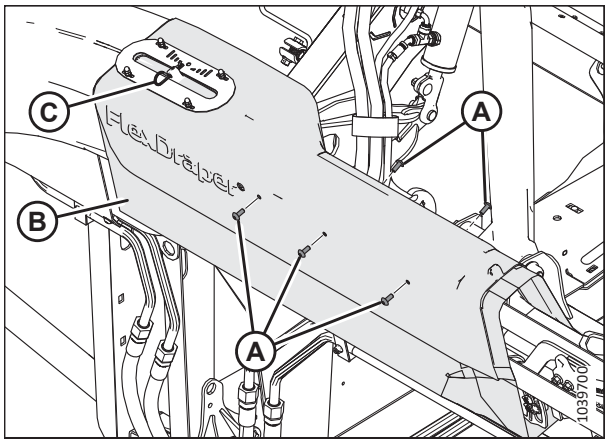


Figure 3.33: Middle Linkage Cover – FD245 and FD250 Headers Only

6. Remove the linkage cover as follows:
   a. Remove screw (A). The nut is integrated into the hydraulic line clamp.
   b. Remove screw (B) and nut (not shown).

      NOTE:

      The Nyloc nut fits into a hex shape spot in the hydraulic line clamp, but it is removable.

   c. Remove screw (C) and hex nut.
   d. Lift the cover away from the wing lock handle.

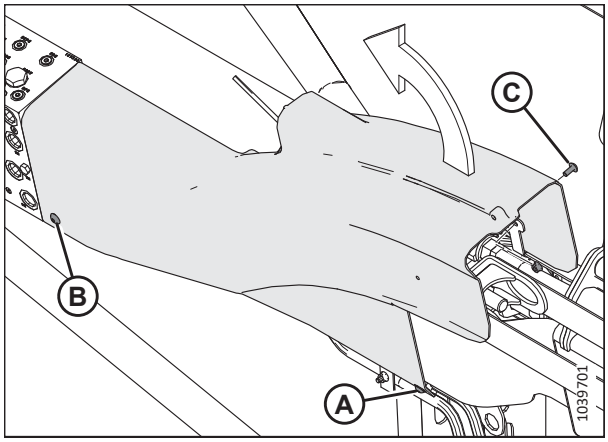


Figure 3.34: Outboard Linkage Cover

Installing Outboard Flex Linkage Covers – FD2 Series

Flex linkage covers protect the header wing balance mechanism from debris and weather.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

2. Position the left outboard linkage cover so that hole (A) goes over the wing lock.

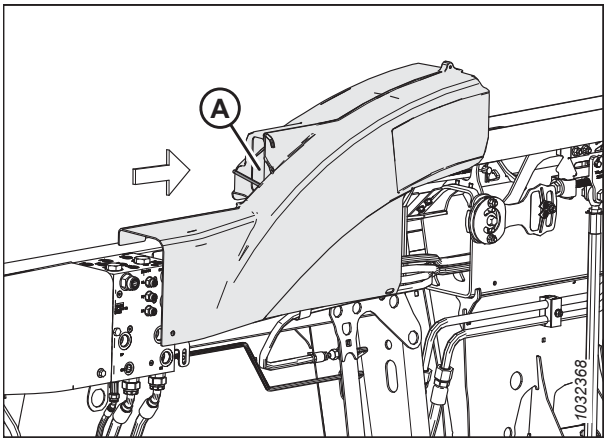


Figure 3.35: Left Linkage Cover – Rear of Header

3. Seat the notch in the cover behind bracket (A) on the backtube, and line up the end so that it is flush with manifold (B).

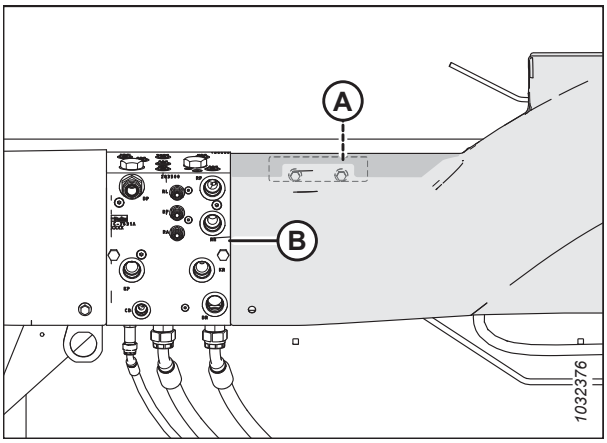


Figure 3.36: Left Linkage Cover – Rear of Header

4. Secure the outboard linkage cover as follows:
   a. Install screw (A) and Nyloc nut (B). The nut fits into a hex shape indent in the hydraulic line clamp.
   b. Install screw (C). The nut is integrated into the bracket.
   c. Install screw (D) and hex nut (E) to secure the front of the cover to the bracket.

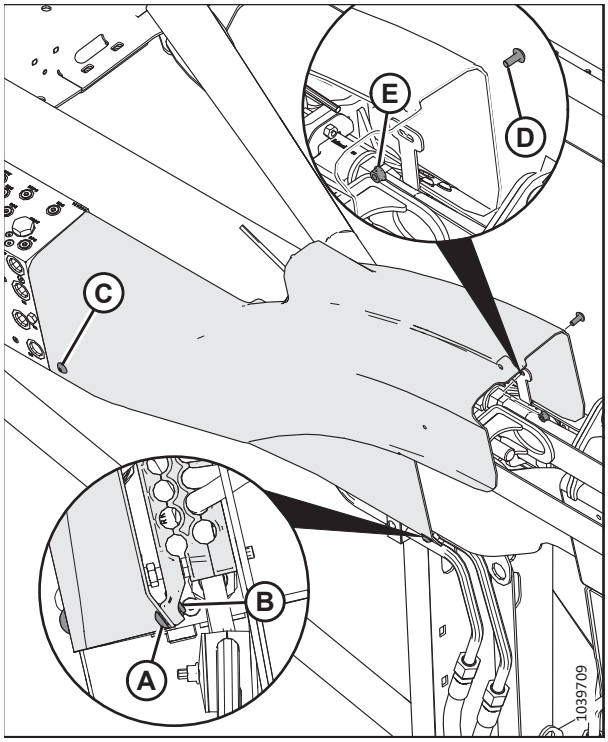


Figure 3.37: Outboard Linkage Cover – Rear of Header

5. **FD245 and FD250 headers:** Place middle linkage cover (B) over flex linkage bracket and outboard linkage cover.
6. **FD245 and FD250 headers:** Install screws (A) and the nuts (not shown) securing middle linkage cover (B) to the bracket.
7. **FD245 and FD250 headers:** Install pin (C) through hole in the tab that protrudes through the flex indicator.

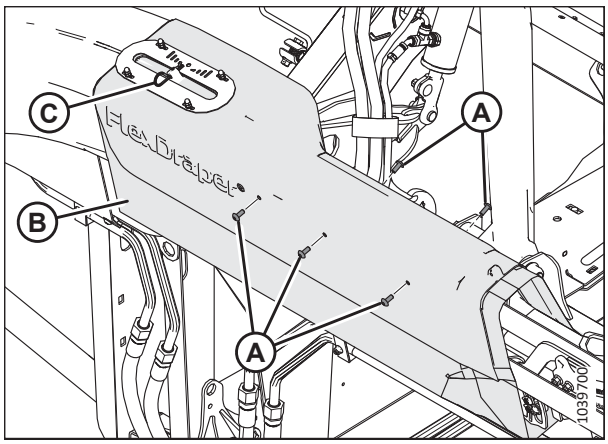


Figure 3.38: Middle Linkage Cover – FD245 and FD250 Headers Only

3.2.6 Daily Start-Up Check

Perform these checks daily before attempting to operate the machine.

CAUTION

- **Clear the area of bystanders. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.**
- **Wear close-fitting clothing and protective shoes equipped with slip-resistant soles.**
- **Remove potentially hazardous objects from the machine and from the surrounding area.**
- **Carry with you any protective clothing and personal safety devices that could be necessary through the day. Do NOT take chances. Personal safety devices that may be needed include a hard hat, protective glasses or goggles, heavy gloves, a respirator or filter mask, or wet weather gear.**

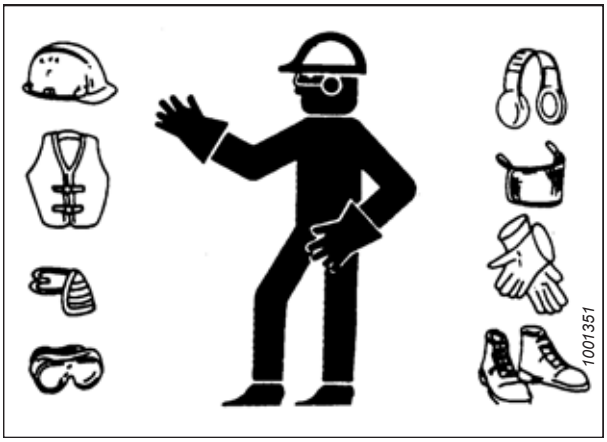


Figure 3.39: Safety Devices

- **Protect against noise. Wear a suitable hearing protection device such as ear muffs or ear plugs to protect against objectionable or uncomfortably loud noises.**

Perform the following checks before starting the machine:

1. Inspect the machine for leaks and for any parts that are missing, damaged, or nonfunctional.

   IMPORTANT:

   Use the proper procedure when searching for pressurized fluid leaks. For instructions, refer to *4.2.5 Checking Hydraulic Hoses and Lines, page 504*.

2. Clean all the lights and reflectors on the machine.

3. Perform all daily maintenance tasks. For instructions, refer to *4.2.1 Maintenance Schedule/Record, page 500*.

3.3 Break-in Period

During the first 50 hours of operation, certain systems on the header will require extra attention. Follow this procedure to ensure the service life of the header.

NOTE:

Until you become familiar with the sound and feel of your new header, be extra attentive.

DANGER

Before investigating an unusual sound or attempting to correct a problem, shut off the engine and remove the key from the ignition.

After attaching the header to the combine for the first time, follow these steps:

1. Slowly run the reels, the drapers, and the knives for five minutes. **FROM THE OPERATOR'S SEAT,** watch and listen for any interference.

   NOTE:

   The reels and the side drapers will not operate until hydraulic oil fills the lines.

2. Refer to *4.2.2 Break-in Inspection, page 502* and perform all the specified tasks.

3.4 Shutting Down Combine

Before leaving the operator's seat for any reason, shut down the combine.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator’s seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

To shut down the combine, do the following:

1. Park the combine on level ground.
2. Lower the header fully.
3. Place all of the controls in NEUTRAL or PARK.
4. Disengage the header drive.
5. Lower and fully retract the reel.
6. Shut down the engine, and remove the key from the ignition.
7. Wait for the machine to stop moving.

3.5 Cab Controls

The header is controlled from the combine cab.

DANGER

Ensure that all bystanders have cleared the area.

For instructions, refer to your combine operator's manual to identify the following in-cab controls:

- Header engage/disengage control
- Header height
- Header angle
- Ground speed
- Reel speed
- Reel height
- Reel fore-aft position

3.5.1 CLAAS Series Cab Controls

Mapping controls on the console and joystick allows for smooth combine operation.

Selecting the Default Function for the Multifunction Lever Toggle Switch (with CLAAS Integration Kit)

The default function for the multifunction lever toggle switch is selectable. For example, when cutting on the ground, the default function can be set so that the multifunction lever's toggle switch activates the pitch control cylinder. Likewise, when cutting off the ground, the default function can be changed so that the toggle switch controls the contour wheels.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

To select pitch control as the default toggle function:

If the combine is equipped with a standard lever:
While pressing the REEL FORE button, push toggle (A) up. Hold the toggle and the button for 30 seconds.

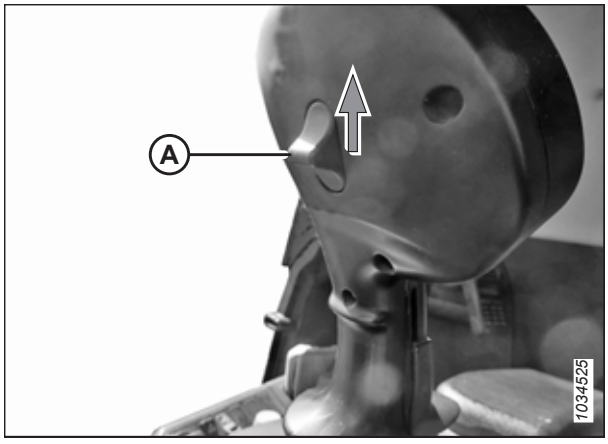


Figure 3.40: Standard Lever

If the combine is equipped with a CMOTION multifunction lever: While pressing the REEL FORE button, pull multifunction lever toggle switch (A) toward you. Hold the toggle and the button for 30 seconds.

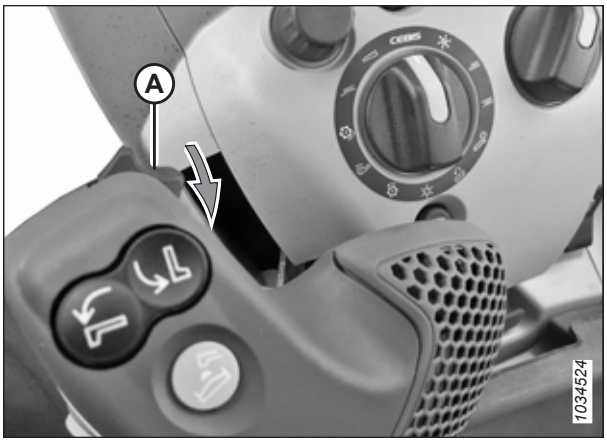


Figure 3.41: CMOTION Lever

To select contour wheel as the default toggle function:

If the combine is equipped with a standard lever: While pressing the REEL AFT button, push toggle (A) up. Hold the toggle and the button for 30 seconds.

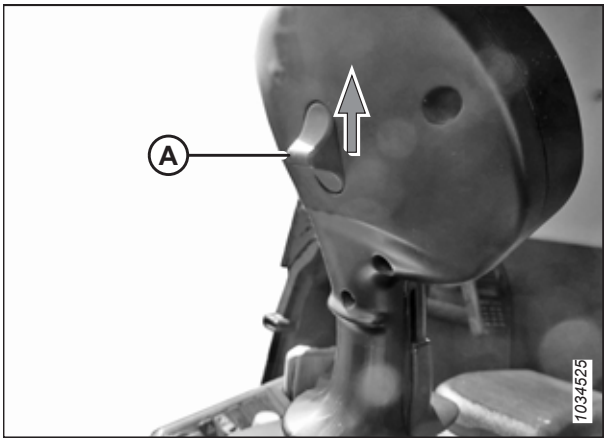


Figure 3.42: Standard Lever

If the combine is equipped with a CMOTION multifunction lever: While pressing the REEL AFT button, pull multifunction lever toggle switch (A) toward you. Hold the toggle and the button for 30 seconds.

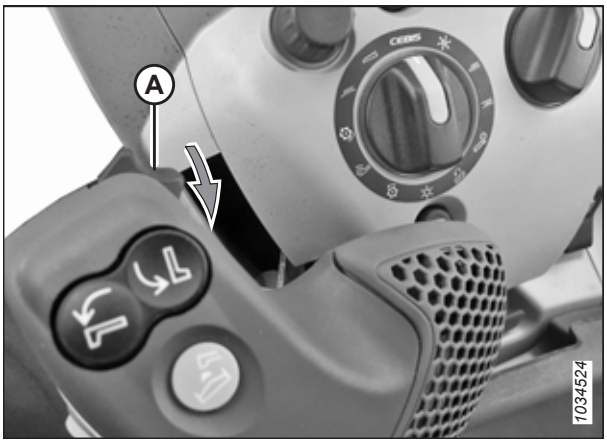


Figure 3.43: CMOTION Lever

Controlling Header Pitch Cylinder

When pitch control is selected as the default function, the pitch cylinder can be controlled with the toggle switch on the front of the multifunction lever.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

When the kit is first installed, pitch cylinder control will be set as the default function. For instructions on toggling the default function between header pitch and contour wheels, refer to *Selecting the Default Function for the Multifunction Lever Toggle Switch (with CLAAS Integration Kit), page 58*.

If the combine is equipped with CMOTION multifunction lever (C):

- To extend the pitch control cylinder: push the toggle away from you (in the direction indicated by arrow [A])
- To retract the pitch control cylinder: pull the toggle toward you (in the direction indicated by arrow [B])

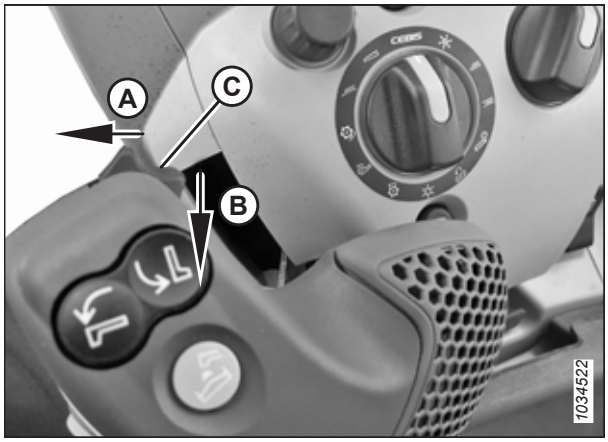


Figure 3.44: CMOTION Lever

If the combine is equipped with standard multifunction lever (C):

- To extend the pitch control cylinder: press multifunction lever toggle switch down (in the direction indicated by arrow [A])
- To retract the pitch control cylinder: press multifunction lever toggle switch up (in the direction indicated by arrow [B])

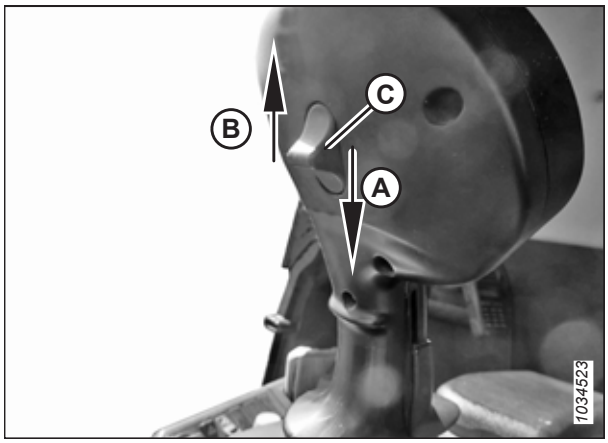


Figure 3.45: Standard Lever

Extending/Retracting Contour Wheels

The contour wheels can be controlled using the multifunction lever toggle switch, or a combination of the toggle switch and the reel fore-aft button, depending on what is set as the default toggle function.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. Move HOTKEY switch (A) on the operator's console to the deck plate position (header icon [A] with the arrows pointing to each other).

Figure 3.46: Multifunction Lever Toggle Switch

Adjusting contour wheels when pitch control is selected as default function

3. **If the combine is equipped with the CMOTION lever**: pull toggle switch (A) toward you while simultaneously pressing the REEL FORE-AFT button.

   - The reel fore function will retract the contour wheels, decreasing the cut height.
   - The reel aft function will extend the contour wheels, increasing the cut height.

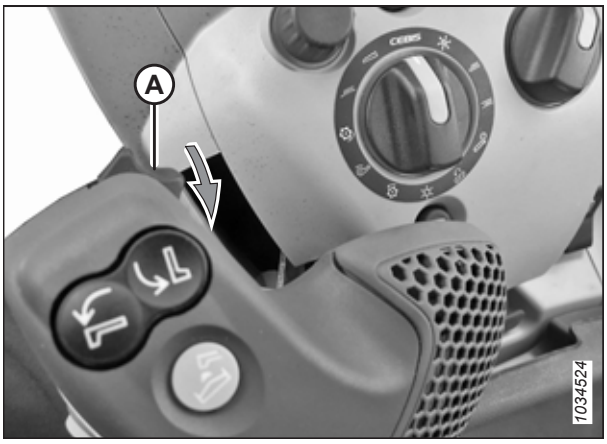


Figure 3.47: CMOTION Lever

4. **If the combine is equipped with the standard lever**: push toggle (A) up while simultaneously pressing the REEL FORE-AFT button.
   - The reel fore function will retract the contour wheels, decreasing the cut height.
   - The reel aft function will extend the contour wheels, increasing the cut height.

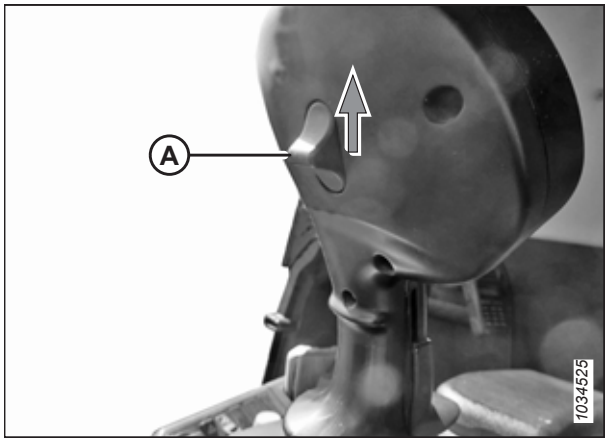


Figure 3.48: Standard Lever

Adjusting contour wheels when contour wheel is selected as default function

5. **If the combine is equipped with the CMOTION lever:**
   - Push toggle switch (C) away from you (direction [A]) to retract the contour wheels, decreasing the cut height.
   - Pull toggle switch (C) toward you (direction [B]) to extend the contour wheels, increasing the cut height.

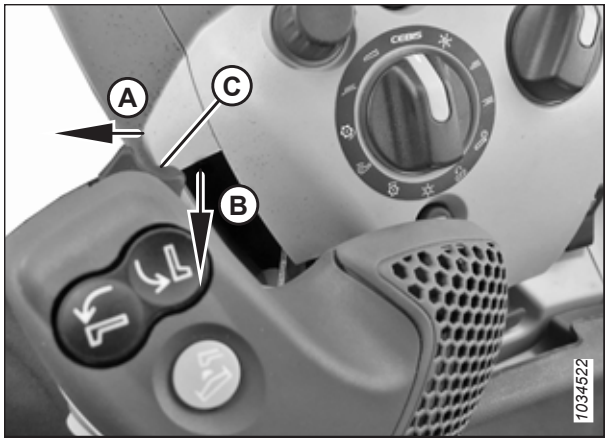


Figure 3.49: CMOTION Lever

6. **If the combine is equipped with the standard lever:**
   - Pull toggle (C) down (direction [A]) to retract the contour wheels, decreasing the cut height.
   - Push toggle (C) up (direction [B]) to extend the contour wheels, increasing the cut height.

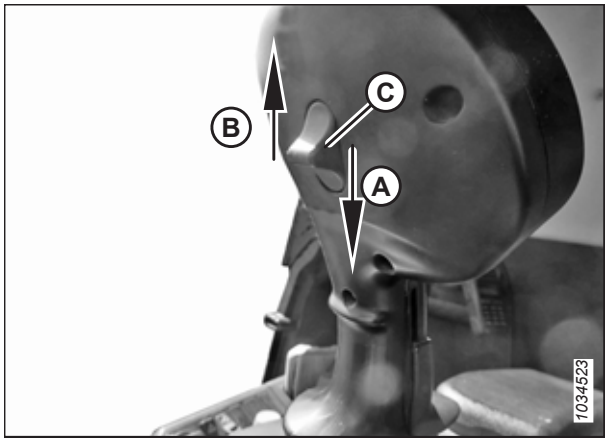


Figure 3.50: Standard Lever

Controlling Draper Speed – CLAAS 600 and 700 Series

The speed of the header's drapers can be controlled through the appropriate selection in the SIDE DRAPER SPEED menu in the combine's CEBIS.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Engage the header.
3. Ensure that selection dial (A) is in CEBIS position (B).

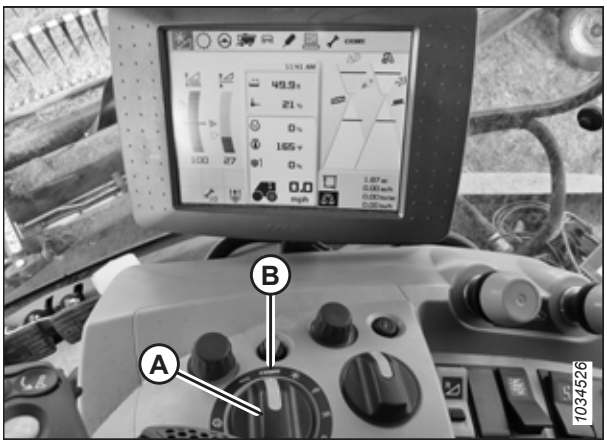


Figure 3.51: CEBIS Dial Position for Draper Speed Control

4. Rotate hot key dial (A) one notch clockwise to show DRAPER SPEED icons (B).

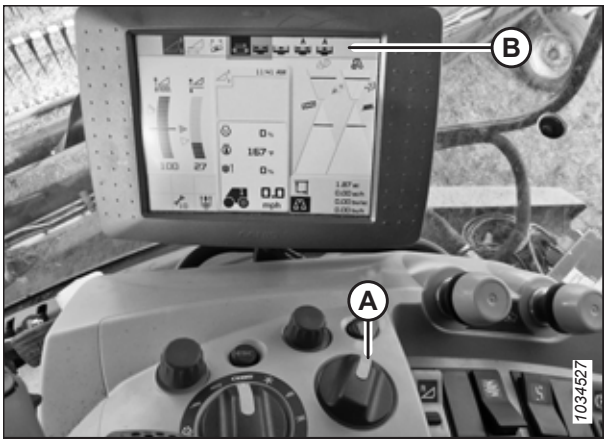


Figure 3.52: Hot Key Position for Draper Speed Control

5. Use left menu selection switch (A) to scroll over to SIDE DRAPER SPEED (B).

   NOTE:

   The header will have to be running for the icon to be active.

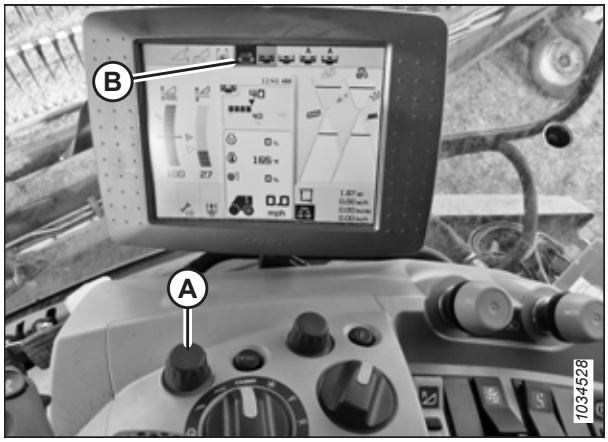


Figure 3.53: Draper Speed Icons

6. Select DRAPER SPEED icon (B) using right menu selection switch (A).

   NOTE:

   You will not see the other four icons on the right side of the menu bar.

Figure 3.54: Draper Speed Icon on Older CLAAS Machines

7. Using right switch (A), adjust the side draper speed as desired. Allow up to five seconds for the speed to change.

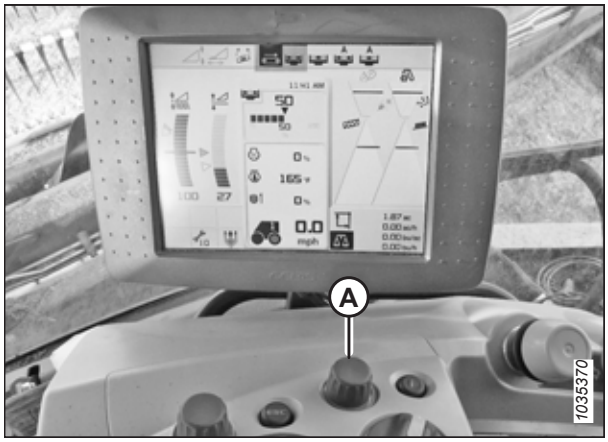


Figure 3.55: Draper Speed Icon

Controlling Draper Speed – CLAAS 5000, 6000, 7000, and 8000 Series

The draper speed can be set using the CONVIO menu in the CEBIS. The header must be running before you can change the draper speed.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Engage the header.
3. Under HEADER menu (A), scroll to CONVIO settings (B) and select draper speed gauge(C).

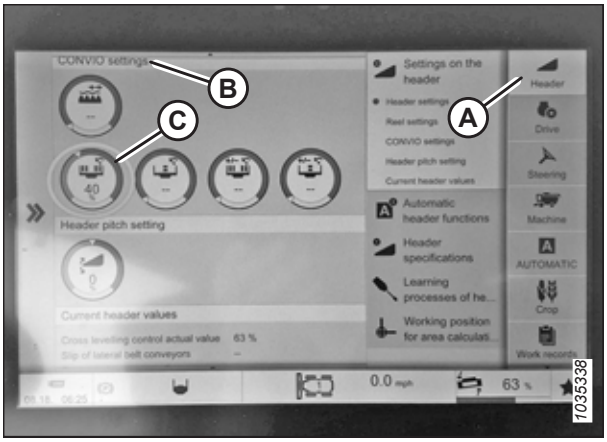


Figure 3.56: Draper Speed Selection

4. Adjust the draper speed by tapping icons + (A) and – (B). Tap on check mark (C) to save your changes.

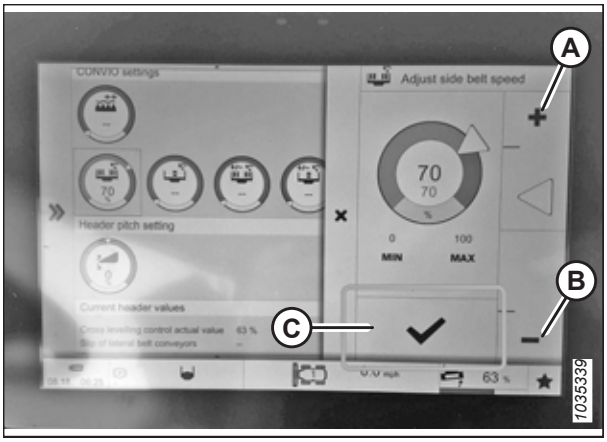


Figure 3.57: Draper Speed Selection

Viewing Header Hours

The hours that the header has been running can be retrieved through the CEBIS terminal.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Ensure selection dial (A) is in CEBIS position (B).
3. Using left menu selection switch (C), scroll to WRENCH/MAINTENANCE icon (D). Press the left menu selection switch.

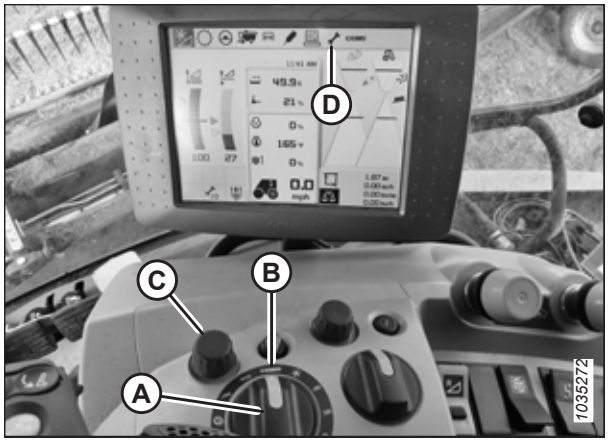


Figure 3.58: CEBIS Dial Position

The header's operating hours and maintenance information will appear on the screen.

Figure 3.59: Header Hours

3.5.2 John Deere X9 Series Cab Controls

Mapping controls on the console and joystick allows for smooth combine operation.

Assigning Ground Speed Lever Buttons – John Deere X9 Series

The function of the buttons on the ground speed lever in the cab of the combine can be customized to suit the Operator's preferences.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.60: CommandCenter™ Display

3. Press multi-function lock button (A) until the light turns off. The CONTROLS SETUP page appears.

Figure 3.61: John Deere X9 Console

4. On ground speed lever (GSL) (A), select a function button (A, B, C, or D) to configure.

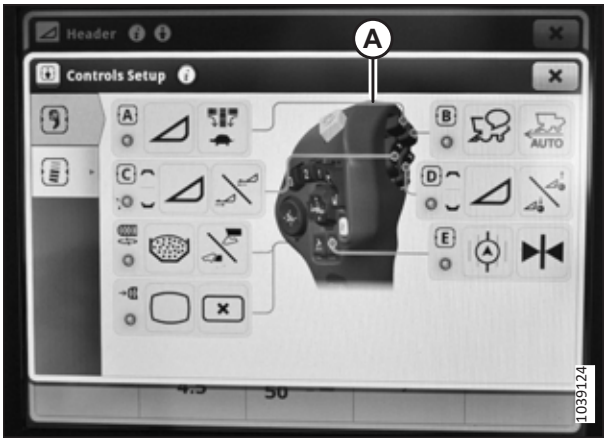


Figure 3.62: John Deere X9 Display – Controls Setup

NOTE:

There is a known issue with the John Deere display that can cause problems when certain buttons are mapped together on the GSL or the arm console. The following matrix specifies which combinations can be mapped together.

	Turtle Mapping	A	B	E	Roller	3	4
Tilt Mapping							
A			Yes	Yes	Yes	Yes	Yes
B		No		Yes	Yes	Yes	Yes
E		No	No		No	No	No
Roller		Yes	Yes	Yes		Yes	No
3		Yes	Yes	Yes	Yes		Yes
4		Yes	Yes	Yes	Yes	No	

5. On SELECT FUNCTION window (A), press the UP or DOWN arrows to find the desired function.
6. Select the function to assign to the selected button.
7. Select the X in the top right corner to exit the Controls Setup screen.

Figure 3.63: John Deere X9 Display – Controls Setup

Assigning Console Buttons – John Deere X9 Series

The function of the buttons on the console in the cab of the combine can be customized to suit the preferences of the Operator.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.64: CommandCenter™ Display

3. Press CONSOLE LOCK button (A) until the light turns off. The CONTROLS SETUP page appears.

Figure 3.65: John Deere X9 – Console

4. Press the function button on console (A) that you want to program or modify.

   NOTE:

   Only button 2 is a rocker switch.

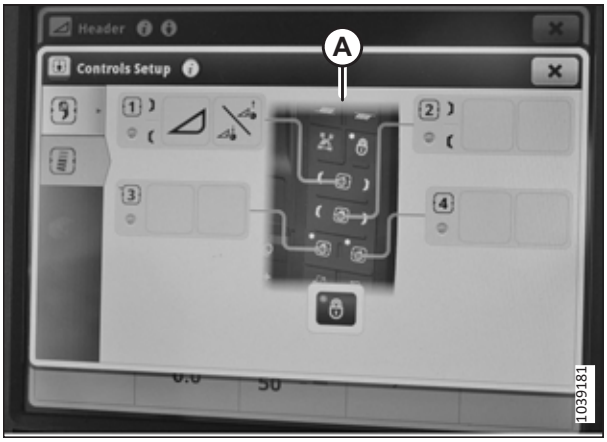


Figure 3.66: John Deere X9 Display – Controls Setup

5. On SELECT FUNCTION window (A), press the UP or DOWN arrow to find the desired function.
6. Select the function to assign it to the selected button.
7. Select the X in the top right corner to exit the CONTROLS SETUP page.

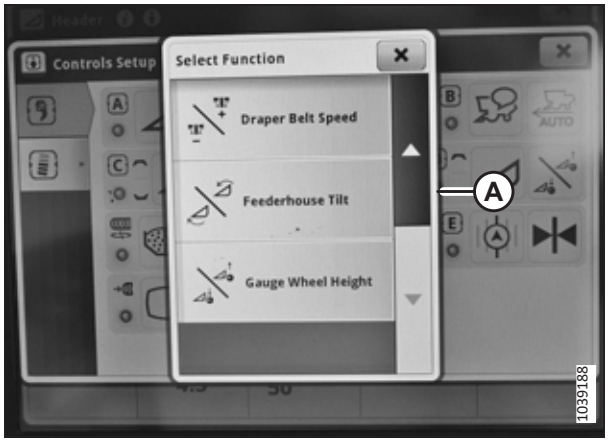


Figure 3.67: John Deere X9 Display – Controls Setup

Using Wing Level Function as Tilt Toggle – John Deere X9 Series

Using the function for wing level, you can toggle between controlling the reel fore/aft and controlling the header tilt cylinder with the combine ground speed lever (GSL).

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Press multi-function lock button (A). The CONTROLS SETUP page appears.

Figure 3.68: John Deere X9 – Console

3. Examine which control on the ground speed lever is mapped to wing level function icon (A).

   NOTE:

   In this illustration, the wing level is mapped to switch A.

   Mapping the wing level function icon to the GSL will allow the user to control the reel fore/aft or control the header tilt cylinder with the press of a button.

   When the mapped button is pressed, the header will interpret moving the reel fore/aft as moving the tilt cylinder fore/aft. After the user is finished adjusting the tilt cylinder, they can press the mapped button once again to control the reel fore/aft.

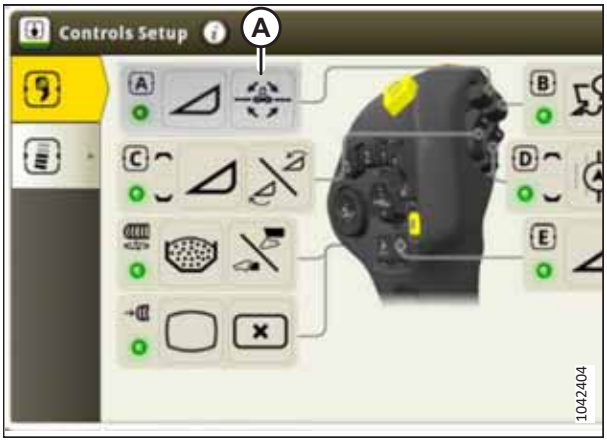


Figure 3.69: John Deere X9 Display – Controls Setup

Mapping Draper Speed Controls on Ground Speed Lever – John Deere X9 Series

Draper speed controls can be mapped to the ground speed lever (GSL) or buttons on the command arm.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. Press multi-function lock button (A). The CONTROLS SETUP page appears.

Figure 3.70: John Deere X9 – Console

3. Examine which control on the GSL is mapped to turtle mode icon (A).

   NOTE:

   In this illustration, turtle mode is mapped to switch A.

   Turtle mode allows you to switch to a slower draper speed at the press of a button. The draper speed in turtle mode can be adjusted during normal operation.

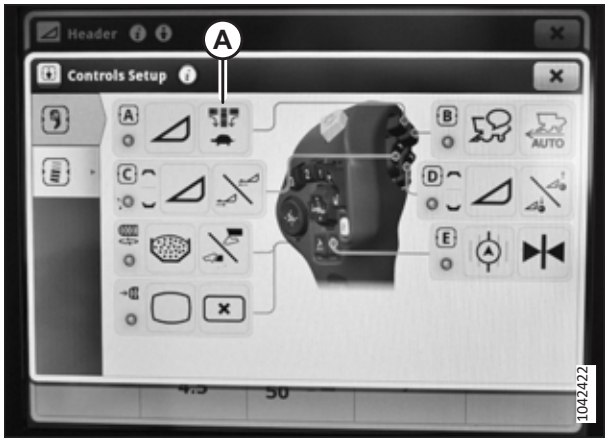


Figure 3.71: John Deere X9 Display – Controls Setup

4. Examine which control on the GSL is mapped to draper speed control icon (A).

   NOTE:

   In this illustration, the draper speed control is mapped to switch D.

   Mapping the draper speed control icon to the GSL will allow you to adjust the draper speed at the press of a button. The draper speed can be adjusted during normal operation.

Figure 3.72: John Deere X9 Display – Controls Setup

Locking/Unlocking Double Tap Tilt Function – John Deere X9 Series

With the double tap tilt function unlocked, operating the header tilt is performed the same way as in previous versions of John Deere's integration software.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

If you wish to use the double tap method of controlling the header tilt, you can lock/unlock the function by holding reel fore button (A) on the GSL for 30 seconds.

NOTE:

There will be no indicator to signify that the double tap function has been locked/unlocked.

Figure 3.73: Reel Fore Button

Checking Software Version of Header Controller – John Deere X9 Series

The software version of the header controller on the combine can be viewed in the CommandCenter™ display's DIAGNOSTICS CENTER.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 3.74: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 3.75: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).
5. Select HEADER/HITCH CONTROLLER (B).

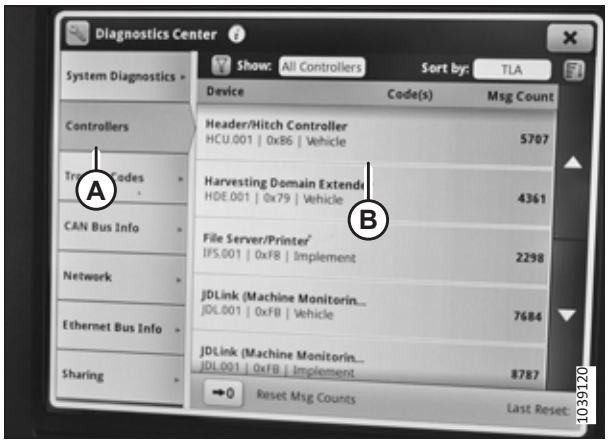


Figure 3.76: John Deere X9 Display – Diagnostics Center

6. Select CONTROLLER INFO (A). Locate SOFTWARE MAIN COMPONENT (B).
7. Select the X in the top right corner to exit the HEADER/HITCH CONTROLLER page.

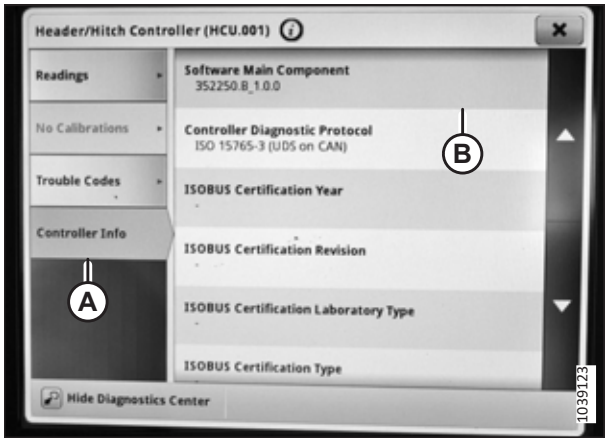


Figure 3.77: John Deere X9 Display – Header/Hitch Controller

3.6 Header Attachment/Detachment

This chapter includes instructions for configuring, attaching, and detaching the header.

Combine	Refer to

NOTE:

Ensure the applicable functions (automatic header height control [AHHC], draper header option, hydraulic center-link option, hydraulic reel drive) are enabled on the combine and the combine computer. Failure to do so may result in improper header operation.

3.6.1 Case IH Combines

To attach the header to or detach it from a Case IH combine, follow the relevant procedure in this section.

Attaching Header to Case IH Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

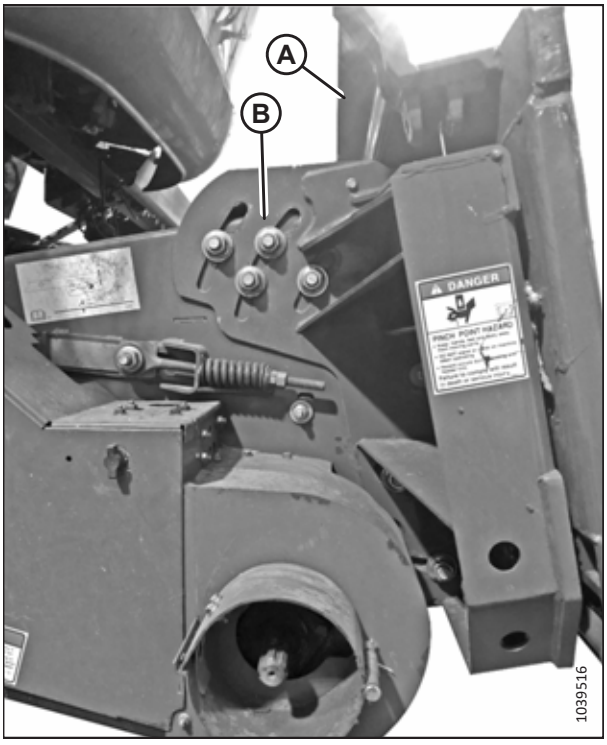


Figure 3.78: Faceplate Tilted to Mid-Position on Unspecified Combine

1. On the combine, ensure lock handle (A) is positioned so hooks (B) can engage the float module.

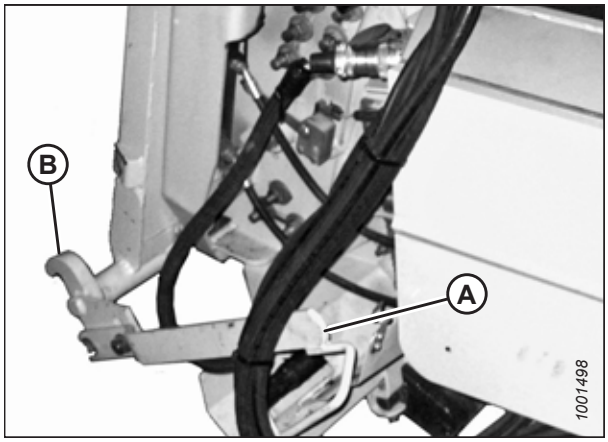


Figure 3.79: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

2. Start the engine.
3. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
4. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is properly engaged in the float module's frame.
5. Shut down the engine, and remove the key from the ignition.

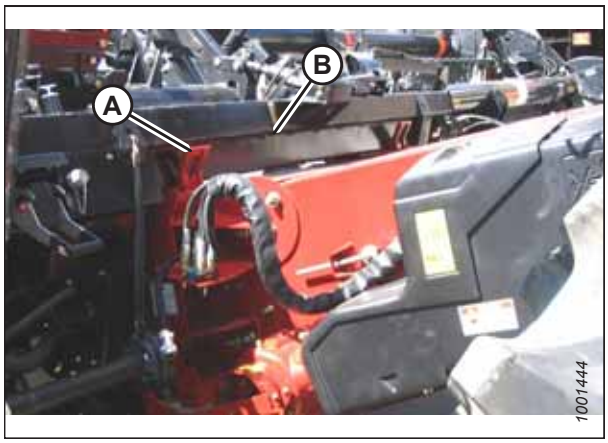


Figure 3.80: Combine and Float Module

6. On the left side of the feeder house, lift lever (A) on the float module and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
7. Push lever (A) down so that the slot in the lever locks the handle.
8. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust the lock. Retighten the bolts.

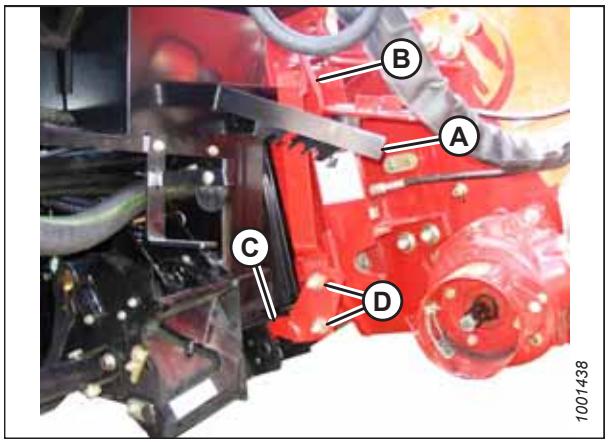


Figure 3.81: Combine and Float Module

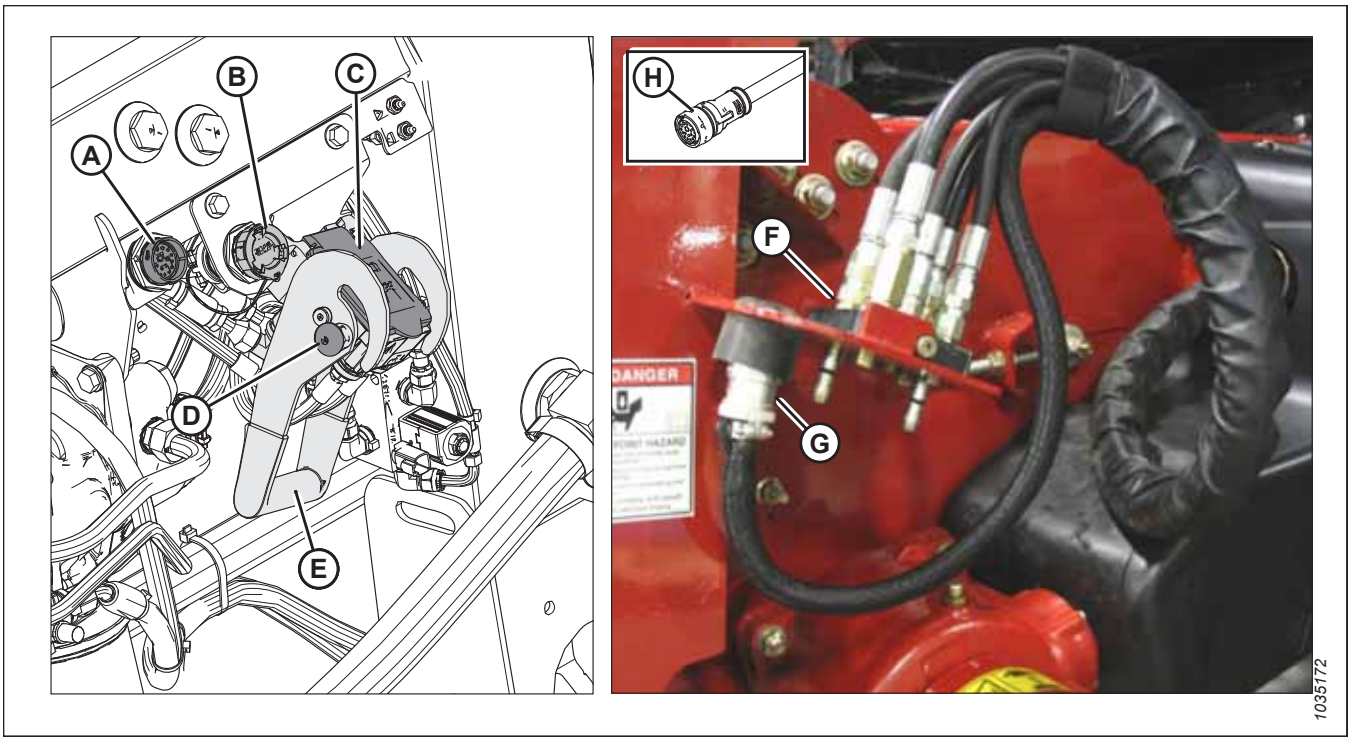


Figure 3.82: Multicoupler and Electrical Connections

9. Remove the caps from connector C81B (A) and connector C72B (B).
10. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
11. Push in lock button (D) and pull handle (E) to the fully open position.
12. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
13. Position coupler (F) onto float module receptacle (C), and push handle (E) to engage the pins into the receptacle.
14. Push handle (E) to closed position until lock button (D) snaps out.
15. Remove combine connector (G) from the storage location on the combine and connect it to receptacle C72B (B). Turn the collar on the connector to lock it in place.
16. Remove cab control kit connector C81A (H) from the storage location on the combine and connect it to C81B (A). Turn the collar on the connector to lock it in place.

17. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

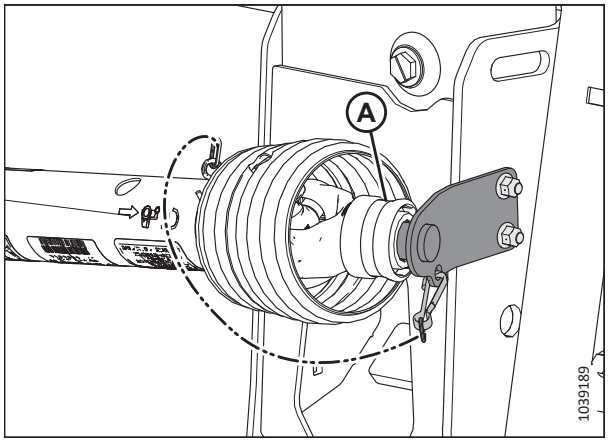


Figure 3.83: Driveline in Storage Position – Driveline B7038 or B7039

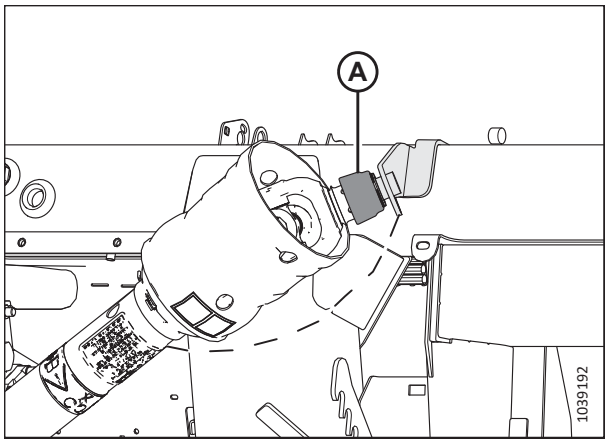


Figure 3.84: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

18. Pull back collar (A) on the end of the driveline. Push the driveline onto combine output shaft (B) until the collar locks.

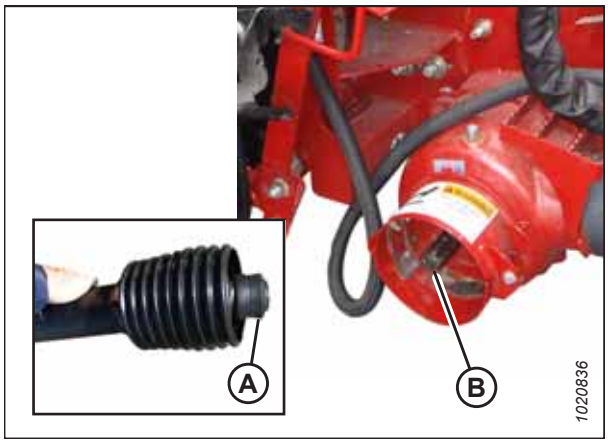


Figure 3.85: Combine Output Shaft

19. Disengage the float locks by pulling each float lock handle (A) away from the float module and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

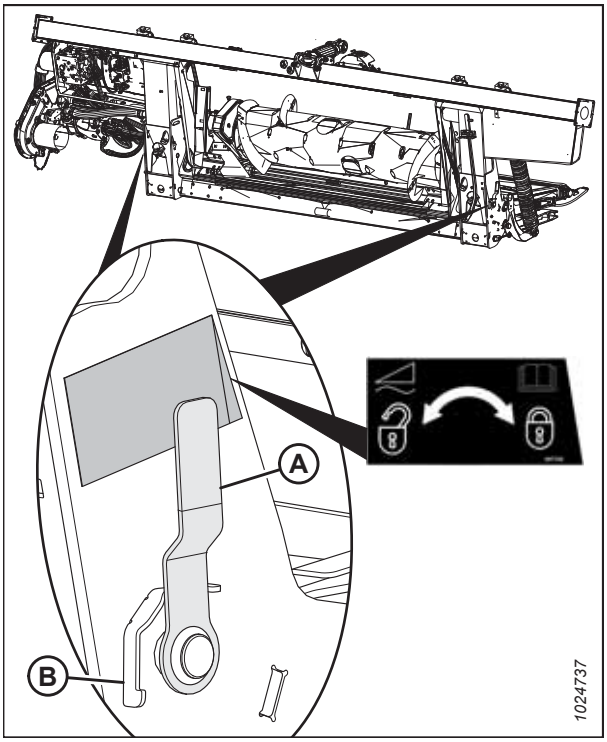


Figure 3.86: Float Lock Handle

Detaching Header from Case IH Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections will need to be removed.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Position the header slightly above the ground.
4. Shut down the engine, and remove the key from the ignition.

    IMPORTANT:

    If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

    IMPORTANT:

    If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

5. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

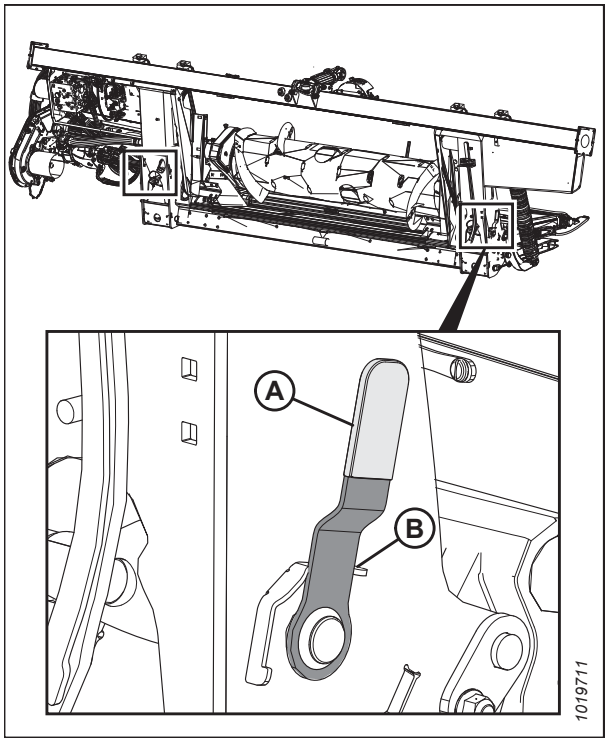


Figure 3.87: Float Lock Handle

6. Push back collar (A) on the end of the driveline and pull the driveline out of combine output shaft (B) until the collar disengages.

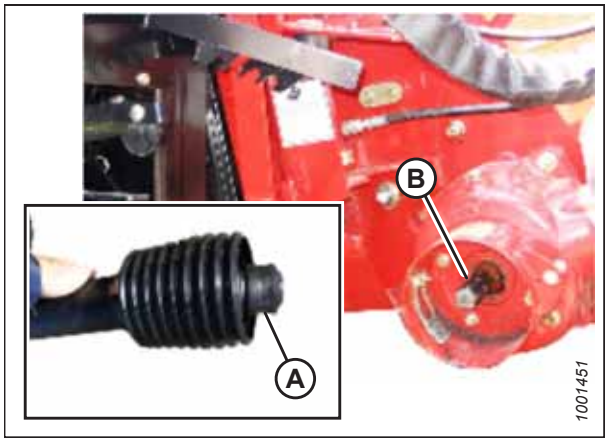


Figure 3.88: Driveline

7. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so it locks into place on the support bracket.

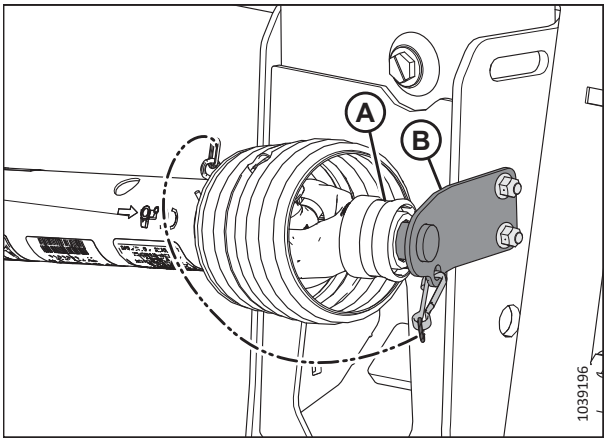


Figure 3.89: Driveline in Storage Position – Driveline B7038 or B7039

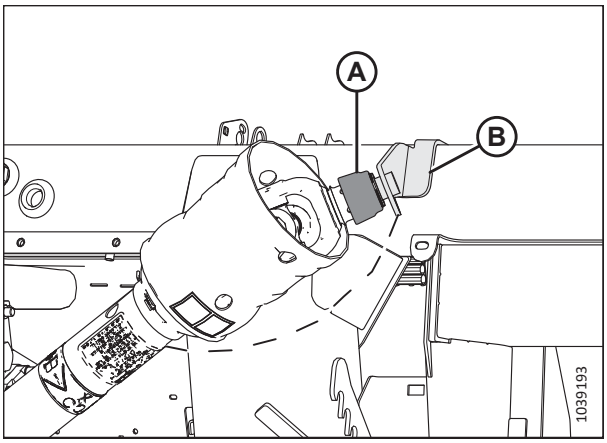


Figure 3.90: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

8. Remove electrical connector (A) and replace cover (B).
9. Push in lock button (C) and pull handle (D) to release multicoupler (E).

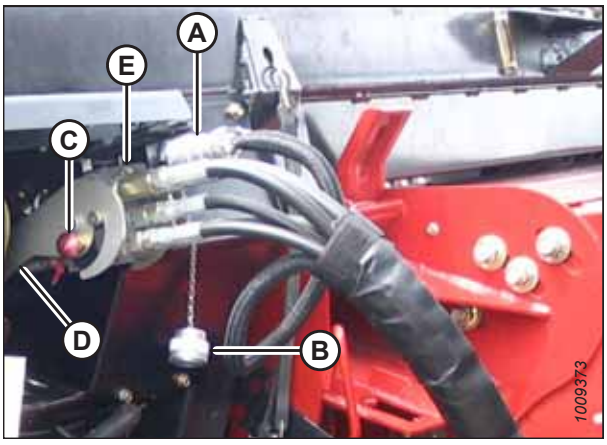


Figure 3.91: Multicoupler

10. Position multicoupler (A) onto storage plate (B) on the combine.
11. Place electrical connector (C) in storage cup (D).

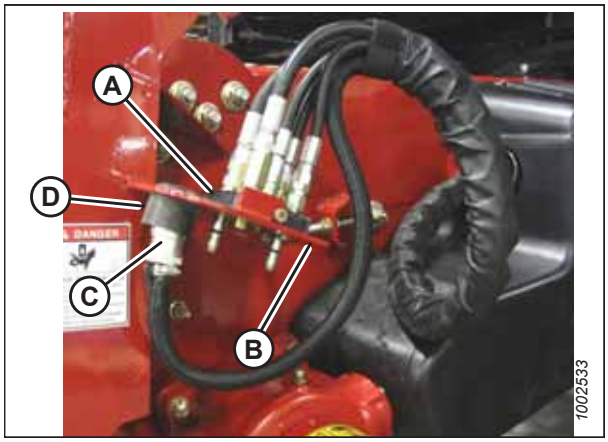


Figure 3.92: Multicoupler Storage

12. Push handle (A) on the float module receptacle to the closed position until lock button (B) snaps out. Close the cover.

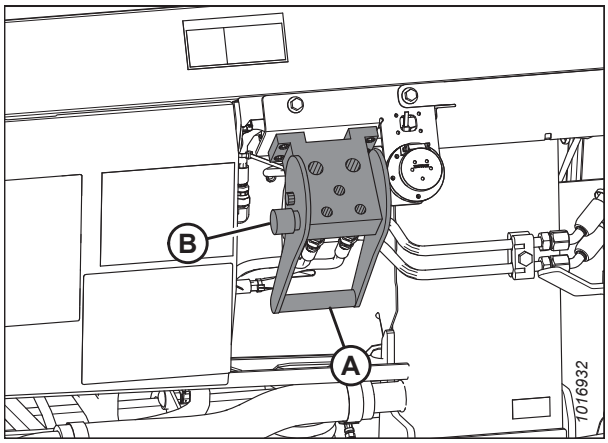


Figure 3.93: Float Module Receptacle

13. Lift lever (A) and pull, and lower handle (B) to disengage feeder house/float module lock (C).
14. Lower the feeder house until it disengages the float module support.
15. Back the combine away slowly from the float module.

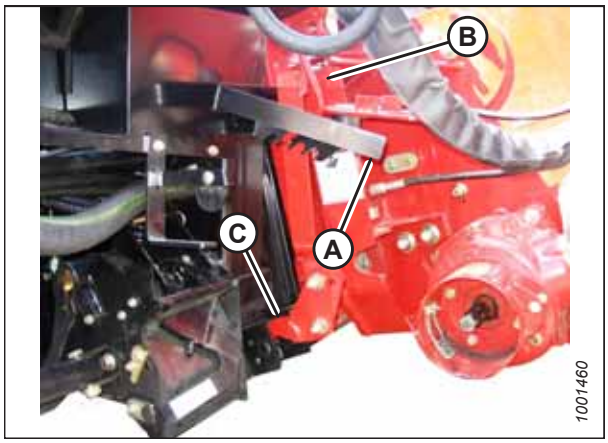


Figure 3.94: Feeder House Locks

3.6.2 Challenger®, Gleaner®, and Massey Ferguson® Combines

To attach the header to or detach it from a Challenger®, Gleaner®, or Massey Ferguson® combine, follow the relevant procedure in this section.

Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

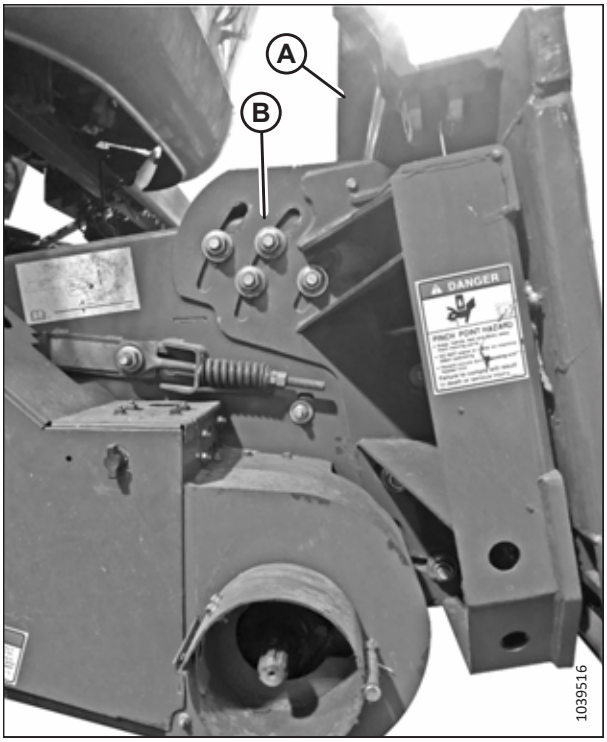


Figure 3.95: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.

2. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

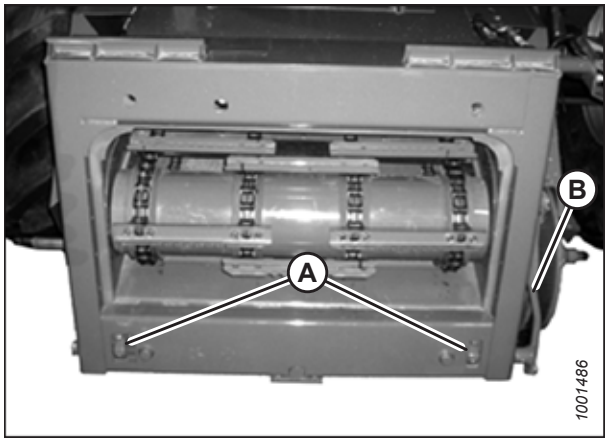


Figure 3.96: AGCO Group Feeder House

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.

4. Slowly approach the header until the feeder house is directly under float module top cross member (A).

   NOTE:

   Ensure that alignment pins (C) (refer to Figure *3.98, page 84*) on the feeder house align with holes (B) in the float module frame.

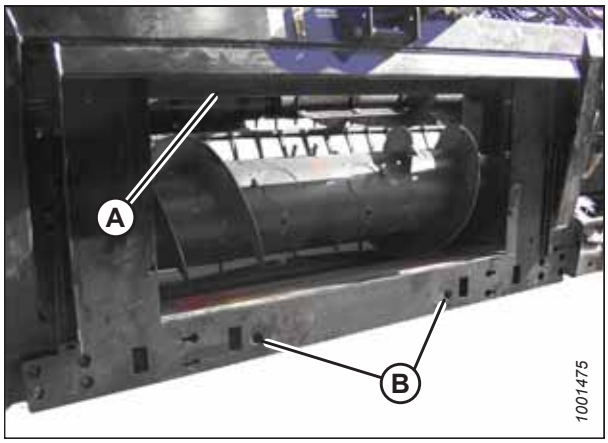


Figure 3.97: Float Module

NOTE:

The combine feeder house may not be exactly as shown.

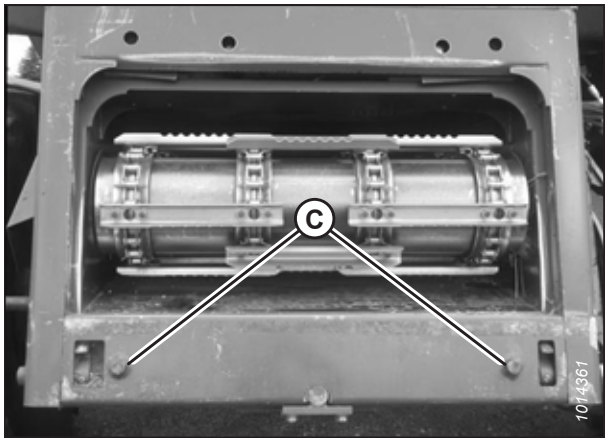


Figure 3.98: AGCO Group Alignment Pins

5. Raise the feeder house slightly to lift the header, ensuring feeder house saddle (A) is properly engaged in the float module frame.
6. Shut down the engine, and remove the key from the ignition.

Figure 3.99: Feeder House and Float Module

7. Use lock handle (B) to engage lugs (A) with the float module.

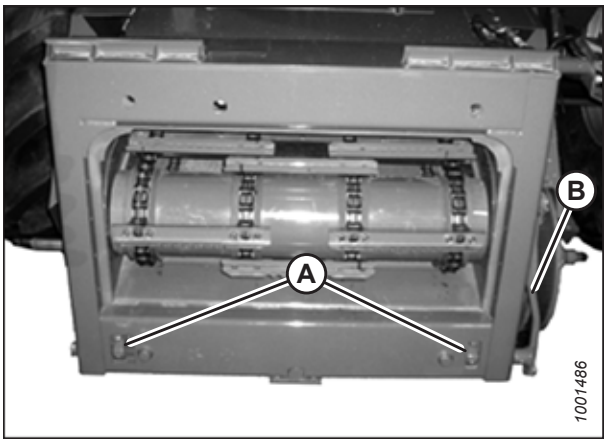


Figure 3.100: AGCO Group Feeder House

8. Start the engine.
9. Lower the header fully.

NOTE:

The float module is equipped with a multicoupler that connects to the combine. If the combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *3.1, page 85* for a list of needed kits.

Table 3.1 Multicoupler Kits

Combine	AGCO Kit Number
Challenger®	71530662
Gleaner® R/S Series	71414706
Massey Ferguson®	71411594

10. Disengage the float locks by pulling each float lock handle (A) away from the float module. Set the handle to unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

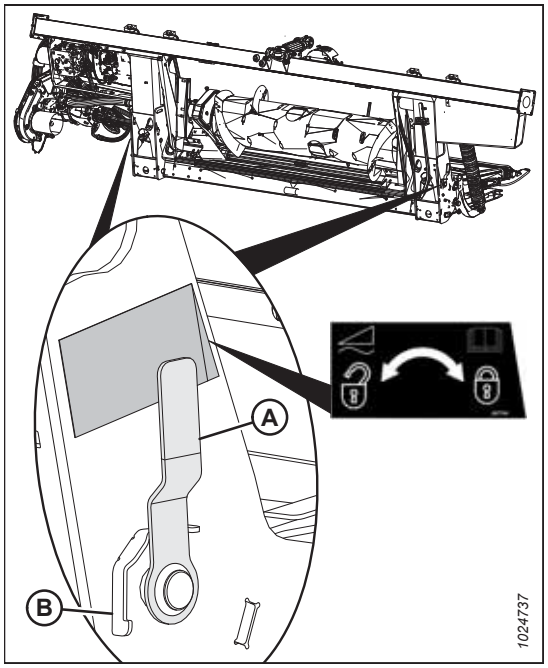


Figure 3.101: Float Lock Handle

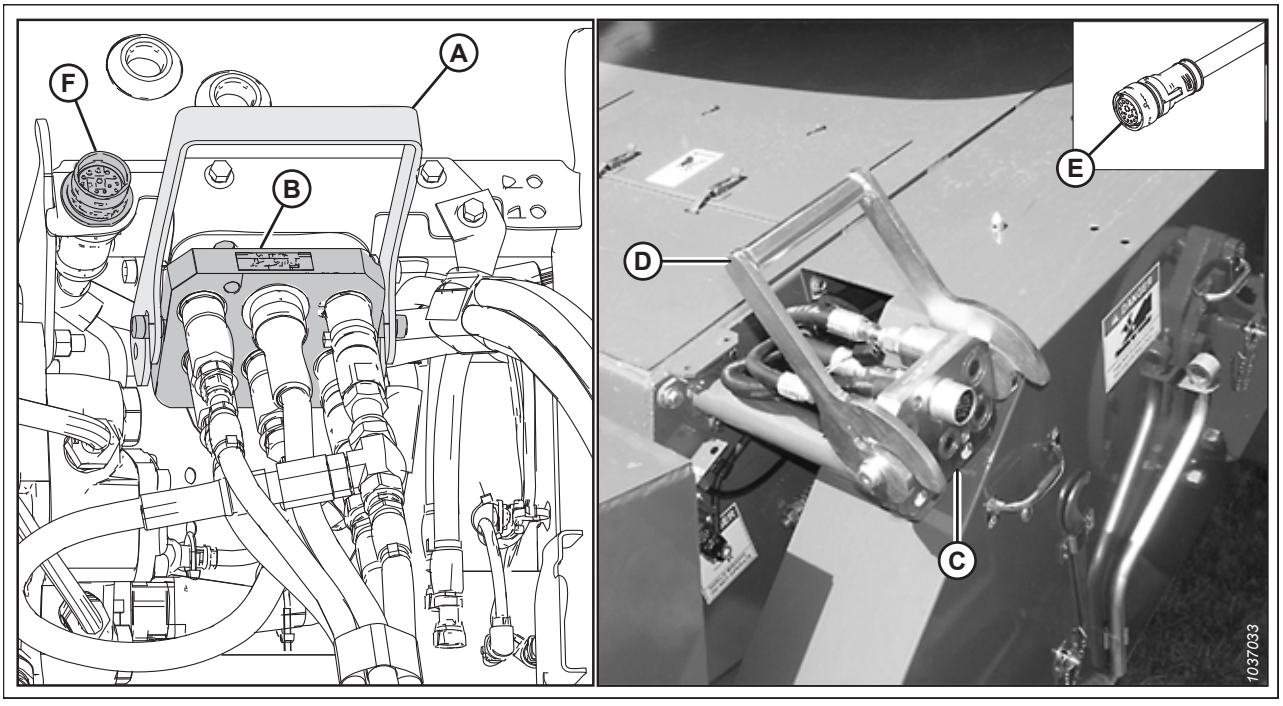


Figure 3.102: Hydraulics and Electrical Multicoupler

11. Raise handle (A) to release multicoupler (B) from the float module.

12. Raise handle (D) on the combine to the fully open position. Clean the mating surfaces of multicoupler (B) and receptacle (C).

13. Instal multicoupler (B) into combine receptacle (C). Pull handle (D) to engage the multicoupler into the receptacle.

14. Retrieve cab control kit connector C81A (E) from the storage location on the combine and connect it to connector C81B (F) on the float module. Turn the collar on the connector to lock it.

15. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

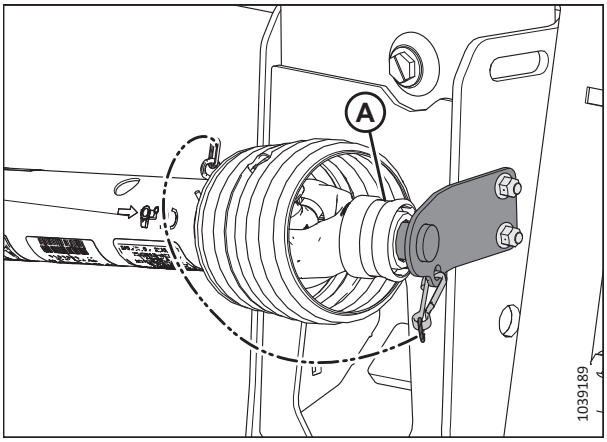


Figure 3.103: Driveline in Storage Position

16. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar is locked.

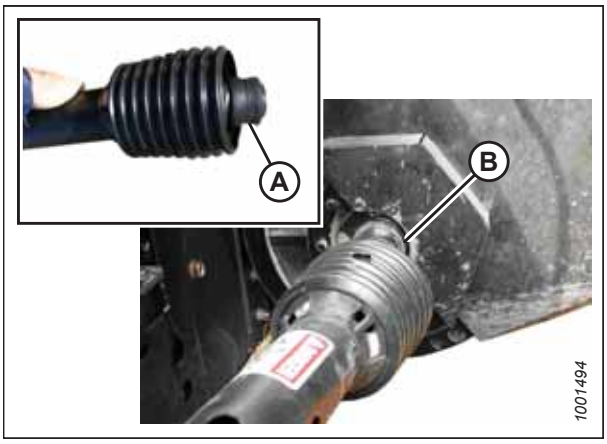


Figure 3.104: Driveline

Detaching Header from a Challenger®, Gleaner®, or Massey Ferguson® Combine

Follow these instructions to remove the hydraulic and electrical connectors and detach the header from the combine.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Choose a level area and position the header slightly above the ground.

3. Shut down the engine, and remove the key from the ignition.

   IMPORTANT:

   If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

4. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on the right side of the header. The float lock hand on the left side of the header is the opposite.

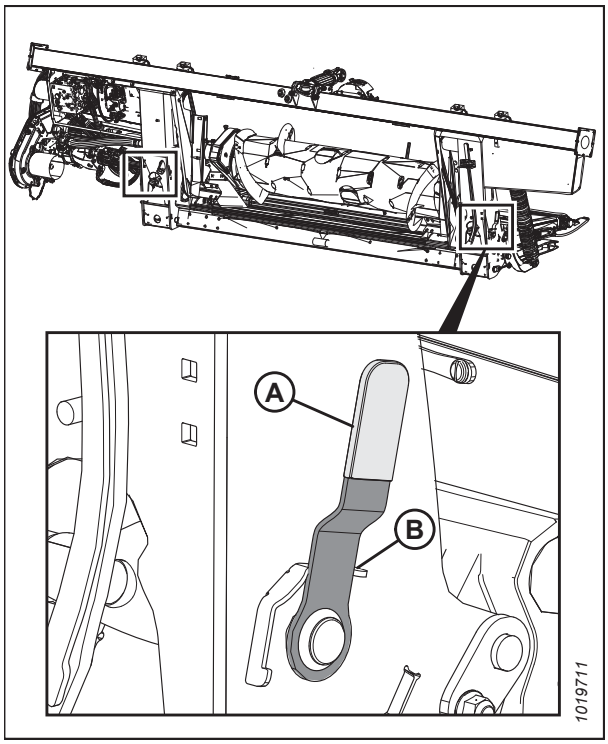


Figure 3.105: Float Lock Handle – Right Shown in Detail, Left Opposite

5. Disconnect driveline (A) from combine output shaft (B).

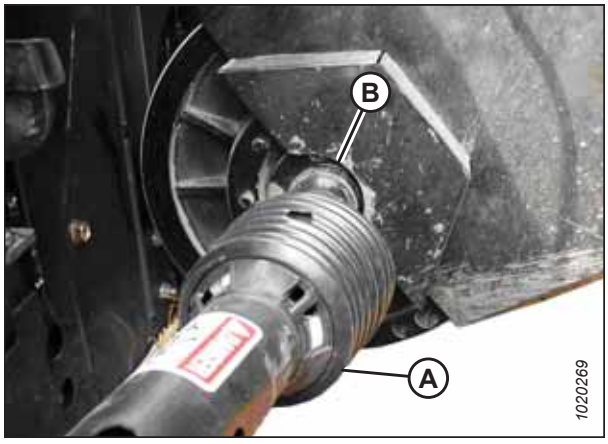


Figure 3.106: Driveline

6. Store driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it over the support bracket body and releasing the collar so it locks into place.

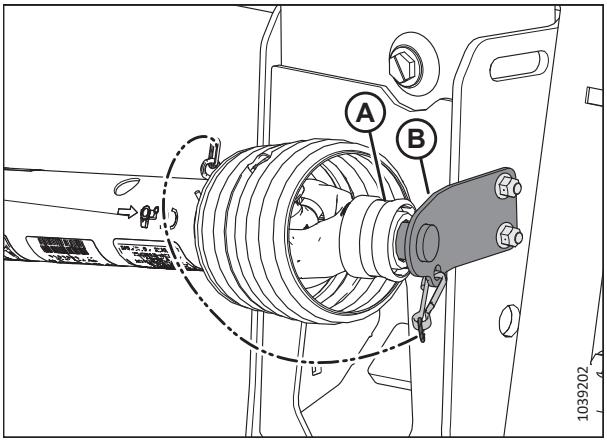


Figure 3.107: Storing the Driveline

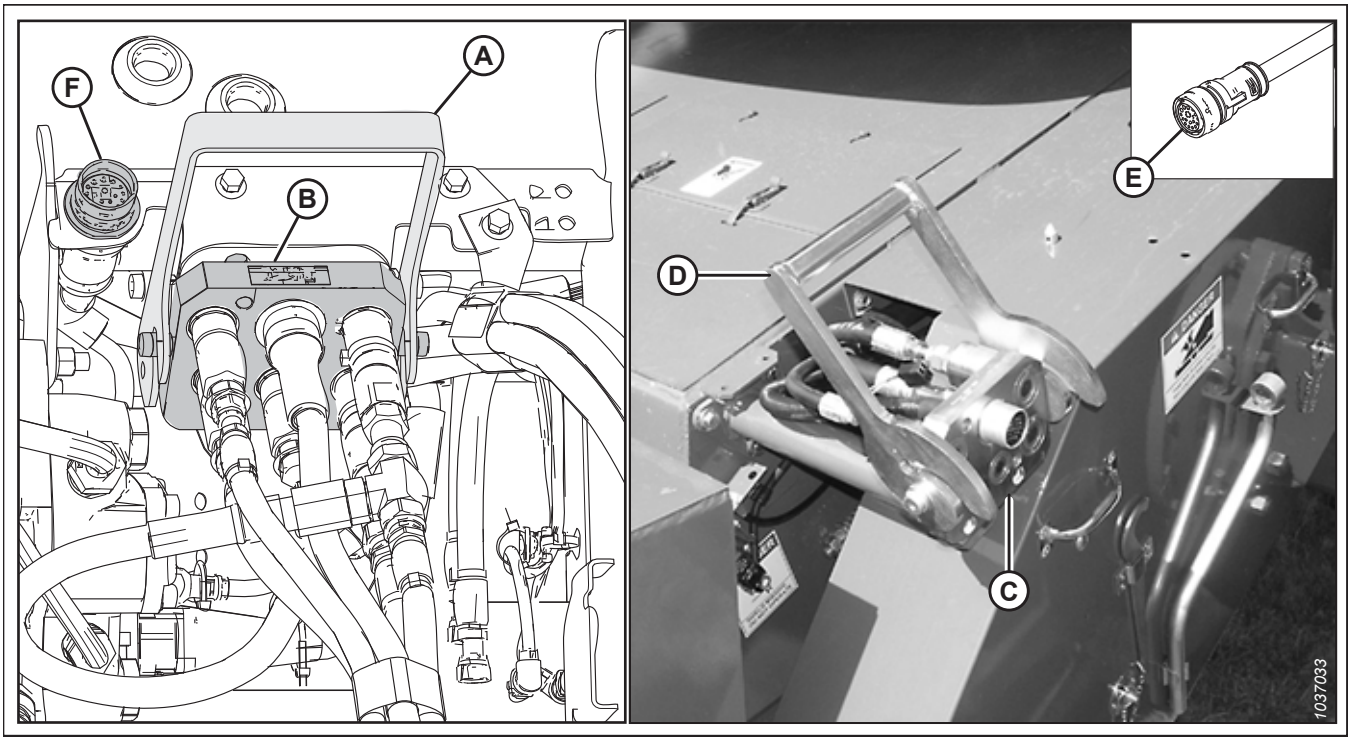


Figure 3.108: Hydraulics and Electrical Multicoupler

7. Turn collar to release cab kit control connector from receptacle C81B (F), and return connector (E) to a storage location on the combine.
8. Raise handle (D) to the fully open position to release the multicoupler from receptacle (C) on the combine.
9. Raise handle (A) on the float module, and place multicoupler (B) on the float module receptacle.
10. Lower handle (A) to lock multicoupler (B).

11. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

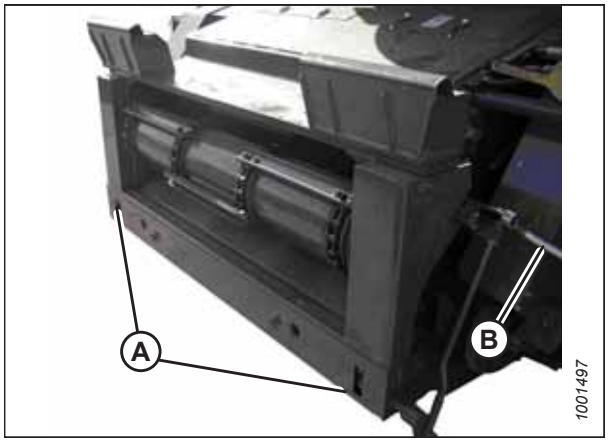


Figure 3.109: Challenger® and Massey Ferguson®

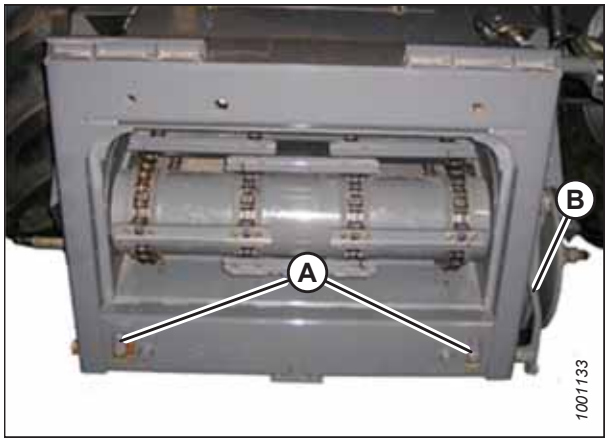


Figure 3.110: Gleaner R and S Series

12. Lower the feeder house until saddle (A) disengages and clears float module support (B).
13. Back the combine away slowly from the float module.

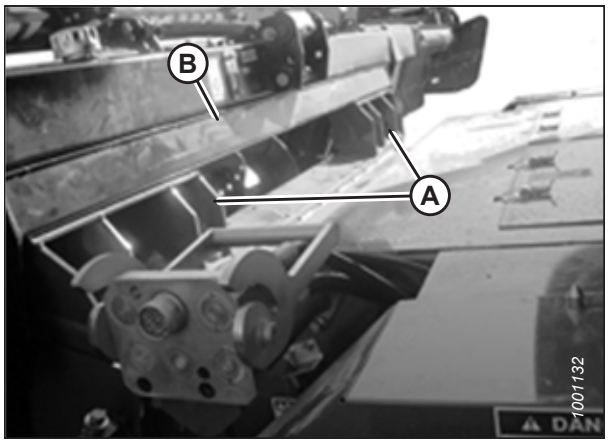


Figure 3.111: Float Module on Combine

3.6.3 CLAAS Combines

To attach the header to or detach it from a CLAAS combine, follow the relevant procedure in this section.

The FD2 Series FlexDraper® Header is compatible with CLAAS Lexion 500, 600, and 700 series, Tucano series, and 5000, 6000, 7000, and 8000 series combines.

Attaching Header to CLAAS Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

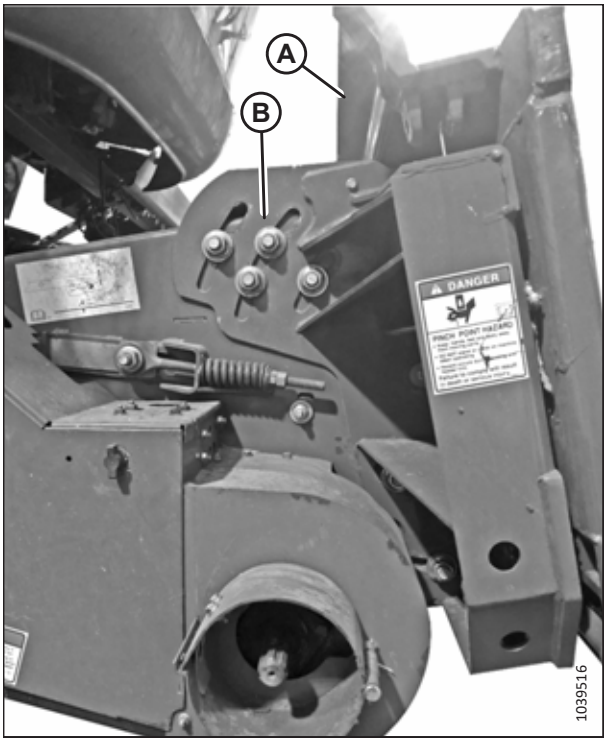


Figure 3.112: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Move handle (A) on the float module to the raised position. Ensure that pins (B) at the bottom corners of the float module are retracted.

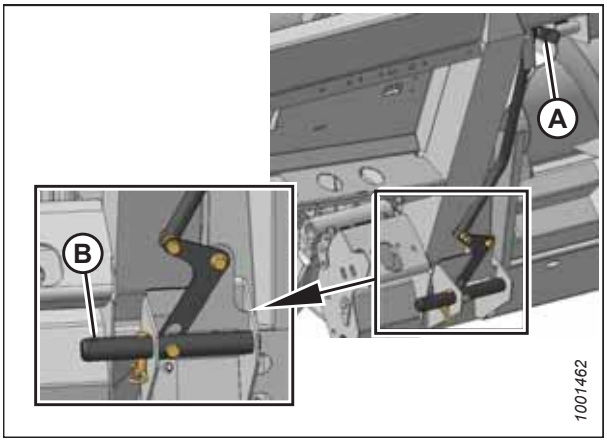


Figure 3.113: Pins Retracted

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
5. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is fully engaged with the float module's frame.
6. Shut down the engine, and remove the key from the ignition.

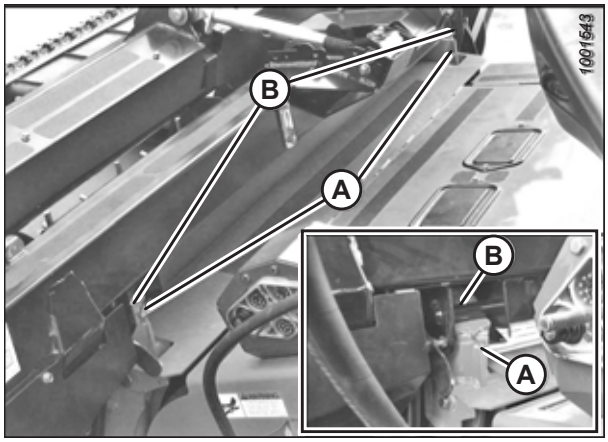


Figure 3.114: Header on Combine

7. Remove locking pin (B) from float module pin (A).

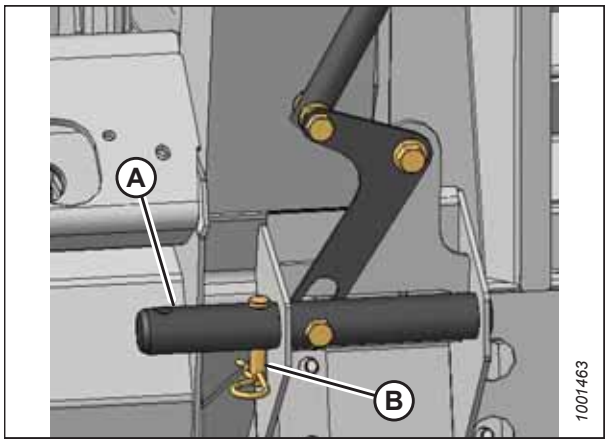


Figure 3.115: Locking Pins

8. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) as shown. Secure the locking pin with the hairpin.
9. Start the engine.
10. Lower the header fully.
11. Shut down the engine, and remove the key from the ignition.

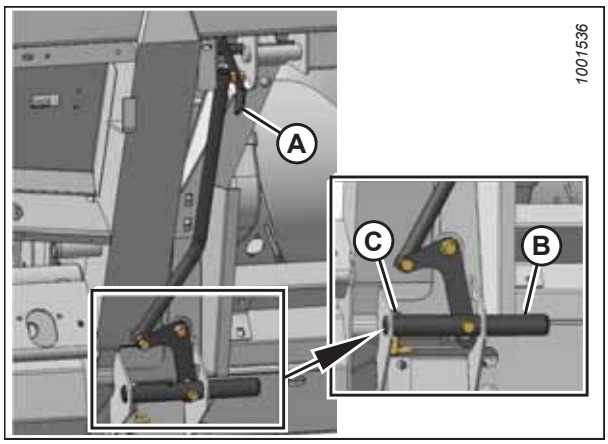


Figure 3.116: Engaging Pins

12. Remove float module receptacle cover (A). Clean the receptacle.

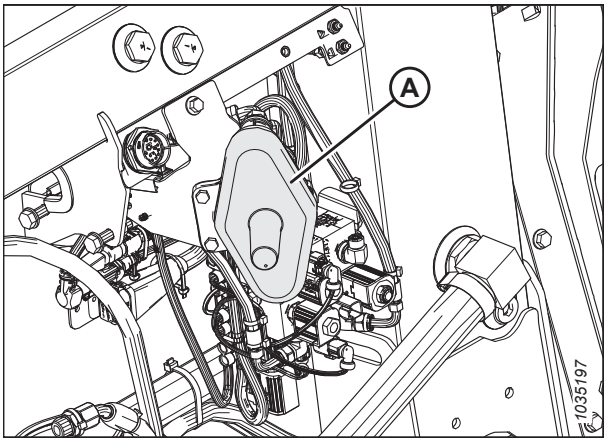


Figure 3.117: Receptacle Cover

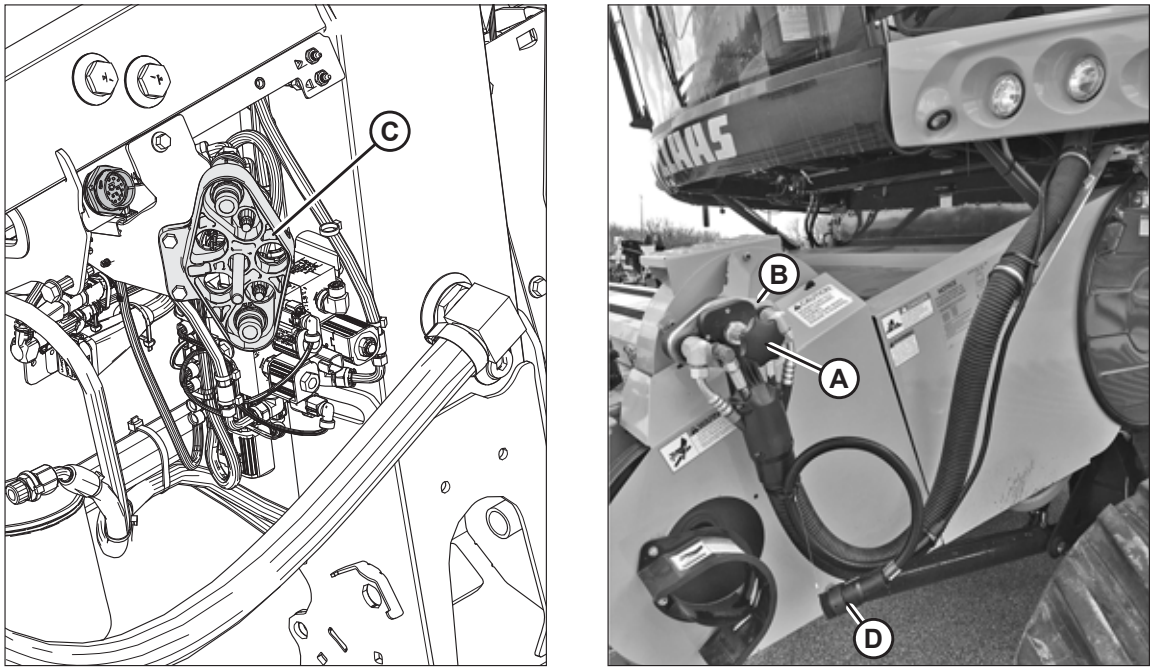


Figure 3.118: Multicoupler and Electrical Connections

13. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.

14. Clean coupler (B) and the receptacle.

15. Install combine coupler (B) onto float module receptacle (C). Secure the coupler by turning knob (A).

    NOTE:

    Combine electrical connector (D) does not need to be connected to the float module – the electrical connection is integrated into the multicoupler.

16. Place float module receptacle cover (A) onto the combine receptacle.

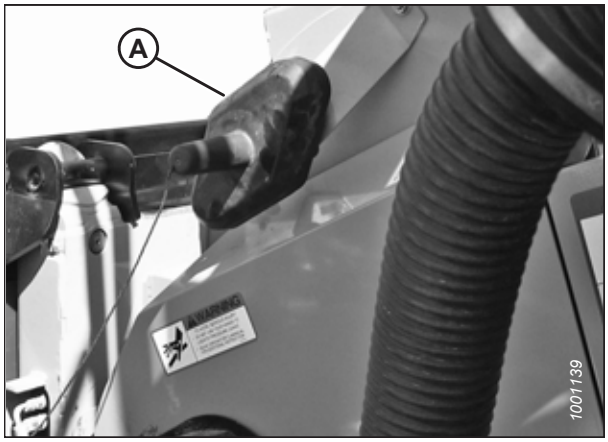


Figure 3.119: Receptacle Cover

17. Pull driveline collar (A) back to release the driveline from the support bracket (B). Remove the driveline from the support bracket.

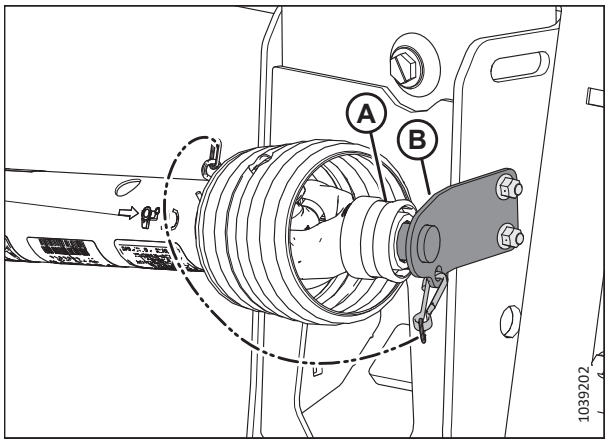


Figure 3.120: Driveline in Storage Position

18. Attach driveline (A) to the combine output shaft.

Figure 3.121: Driveline and Output Shaft

19. Disengage both header float locks by pulling each float lock handle (A) away from the float module and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

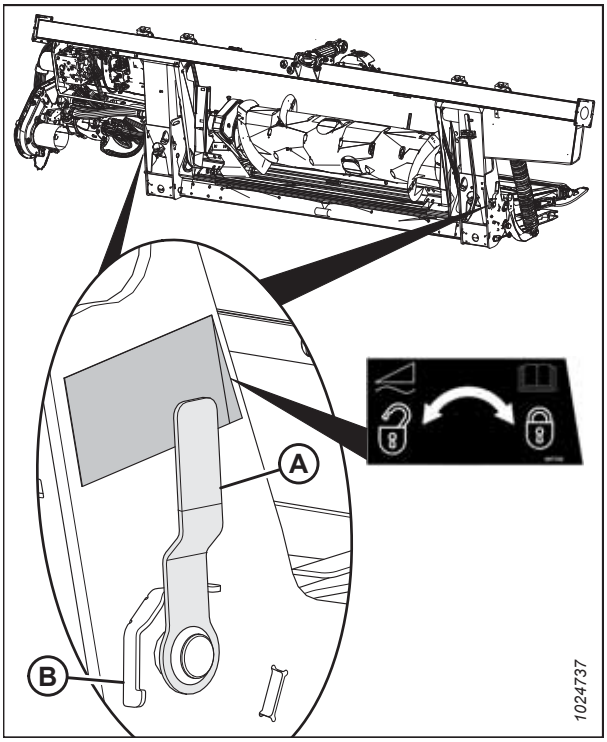


Figure 3.122: Float Lock Handle

Detaching Header from CLAAS Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections will need to be removed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Choose a level area and position the header slightly above the ground.
3. Shut down the engine, and remove the key from the ignition.

    IMPORTANT:

    If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

    IMPORTANT:

    If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

4. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on the right side of the header. The float lock on the left side of the header is the opposite.

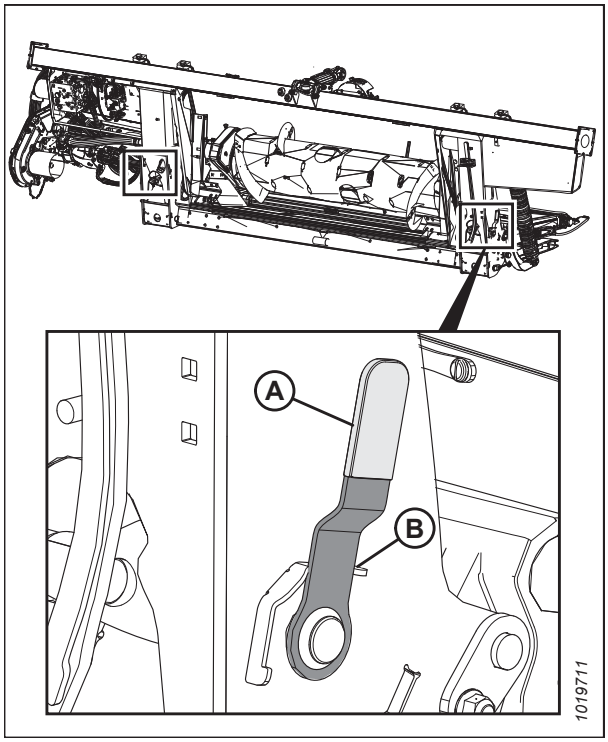


Figure 3.123: Float Lock Handle

5. Disconnect driveline (A) from the combine.

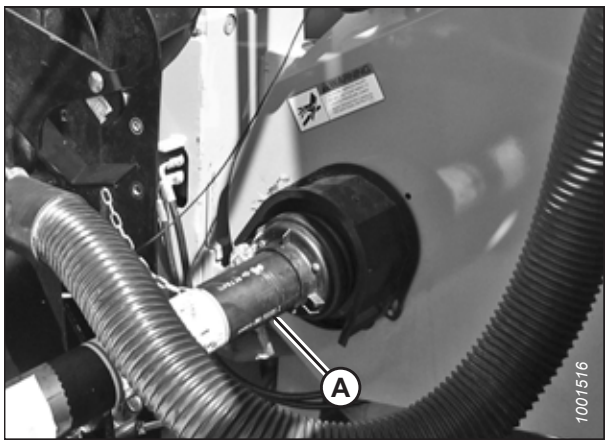


Figure 3.124: Driveline

6. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so it locks into place on the bracket.

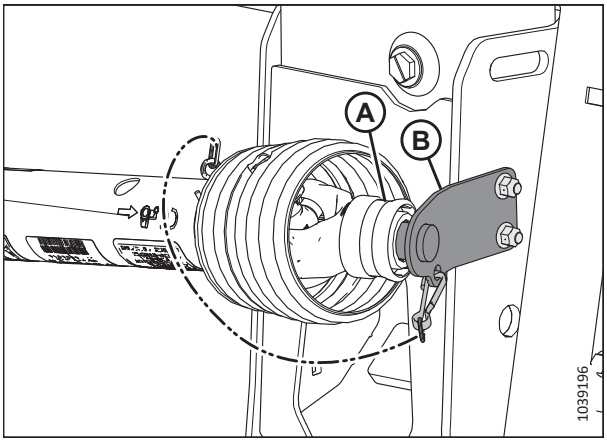


Figure 3.125: Driveline in Storage Position – Driveline B7039

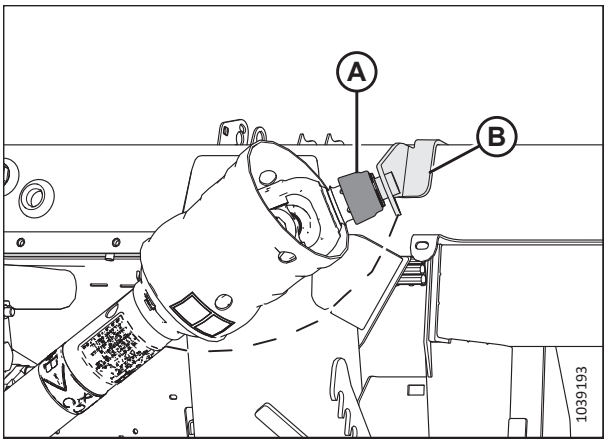


Figure 3.126: Driveline in Storage Position – Sidehill/ Hillside Driveline B7182

7. Remove cover (A) from the combine receptacle.

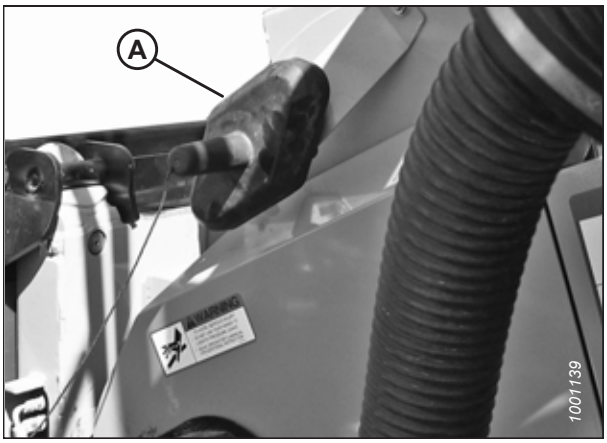


Figure 3.127: Cover

8. Position coupler (A) onto the combine receptacle, and turn knob (B) to secure the coupler to the receptacle.

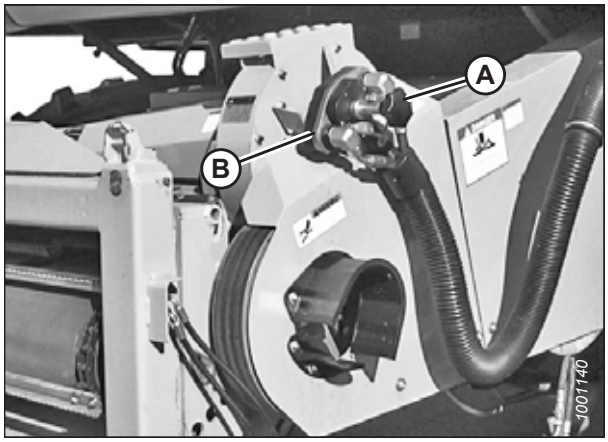


Figure 3.128: Combine Coupler

9. Place cover (A) on the float module receptacle.

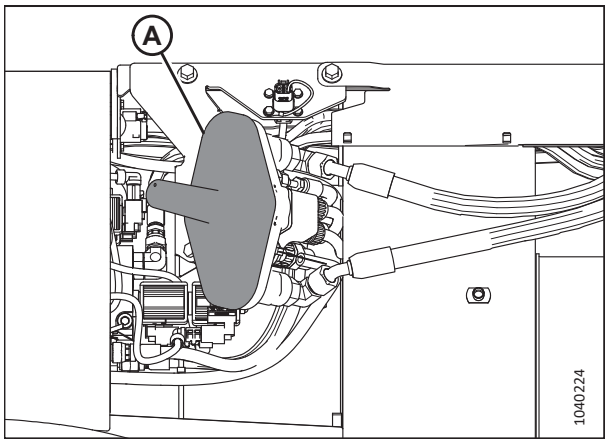


Figure 3.129: Float Module

10. Remove locking pin (A) from float module pin (B).
11. Raise handle (C) to disengage float module pins (B) from the feeder house.
12. Replace locking pin (A) in the float module pin, and secure it with the hairpin.

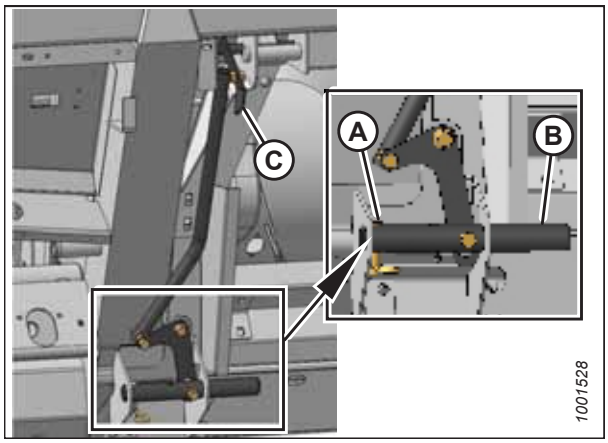


Figure 3.130: Feeder House Locks

13. Lower the feeder house until feeder house posts (A) disengage float module (B).
14. Slowly back the combine away from the float module.

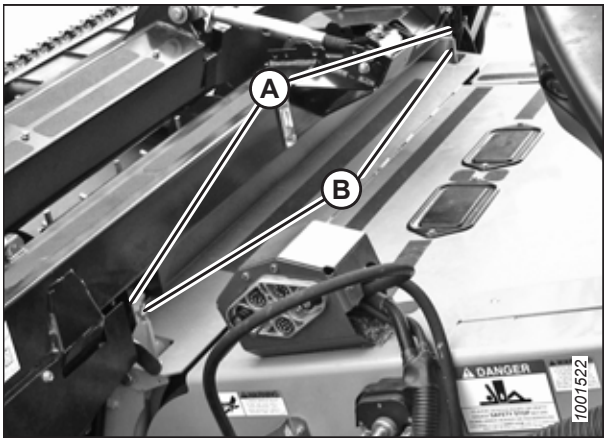


Figure 3.131: Header on Combine

3.6.4 IDEAL™ Series Combines

To attach the header to or detach it from an IDEAL™ combine, follow the relevant procedure in this section.

Attaching Header to IDEAL™ Series Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

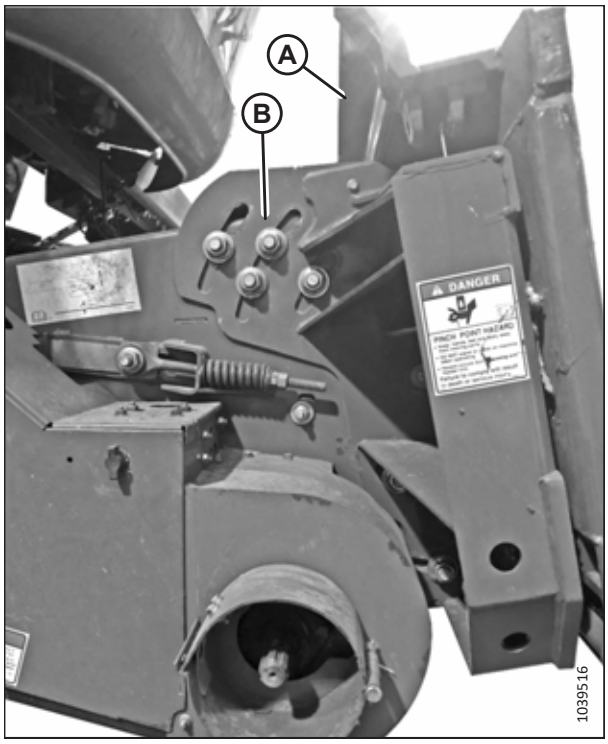


Figure 3.132: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Pull lever (A) up to retract pins (B) at the bottom left and right sides of the feeder house.
3. Start the engine.

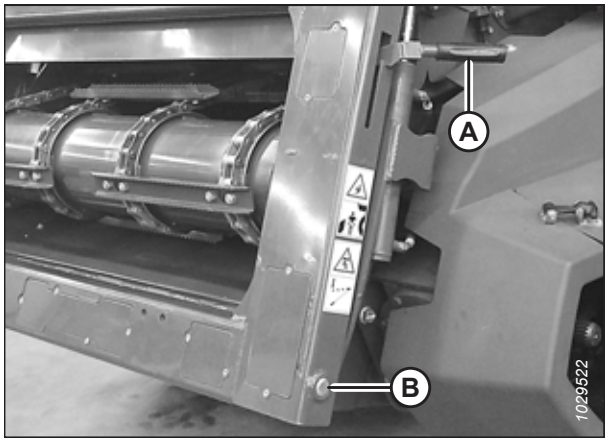


Figure 3.133: Feeder House

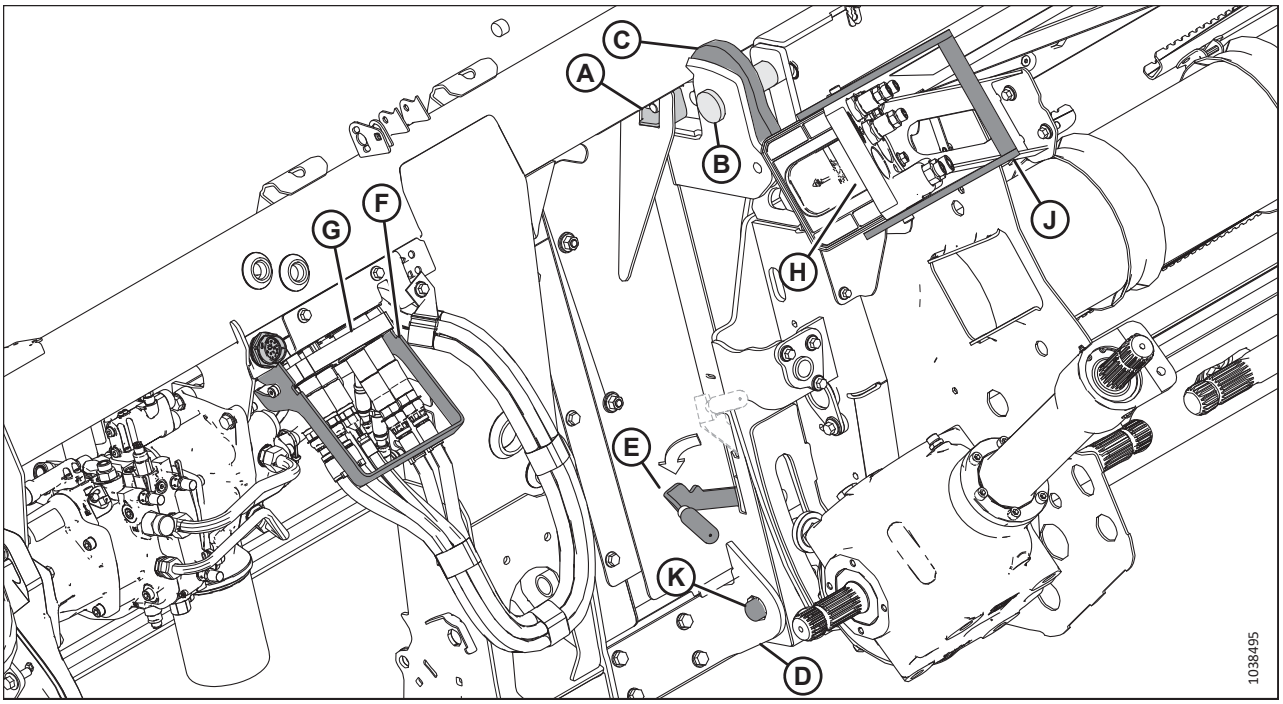


Figure 3.134: Float Module

4. Drive the combine slowly up to the header until the feeder house is directly under top beam (A), and pins (B) are under hooks (C) on the transition frame.
5. Raise the feeder house until transition frame top beam (A) is fully resting on the feeder house. Raise the header slightly off the ground.

   IMPORTANT:

   The full weight of the header must be on the feeder house, **NOT** on pins (B).
6. Position the bottom of the feeder house so that locking pins (K) align with the holes in mount (D).
7. Push lever (E) down to extend locking pins (K) so they engage in mount (D).
8. Lower handle (F) to release multicoupler (G) from the header.
9. Open the cover on combine receptacle (H).
10. Push handle (J) to the fully open position.
11. Clean the mating surfaces of the coupler and receptacle.
12. Position coupler (G) onto combine receptacle (H), and pull handle (J) to fully insert the multicoupler into the receptacle.

13. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

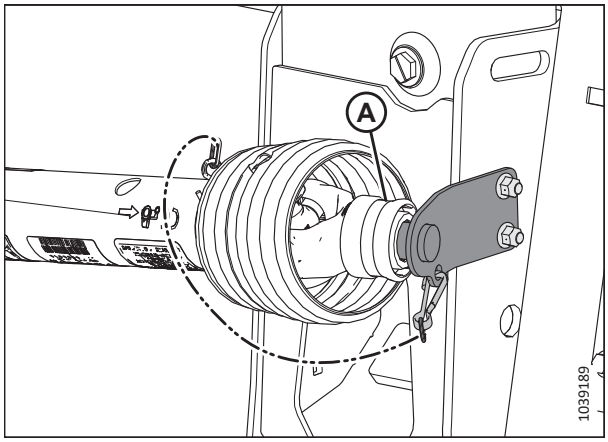


Figure 3.135: Driveline in Storage Position

14. Pull back collar (A) on the end of driveline and push it onto combine output shaft (B) until the collar locks.

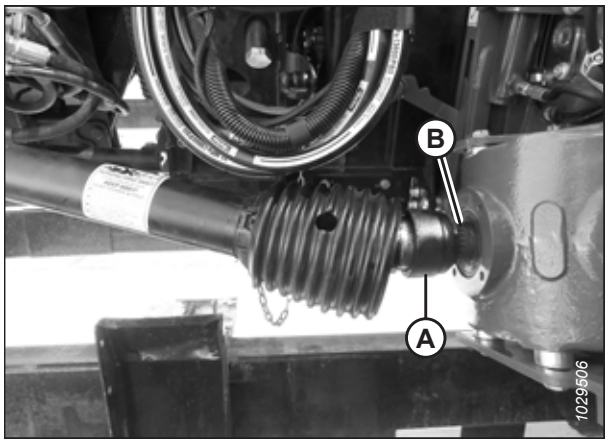


Figure 3.136: Connecting Driveline to Combine

Detaching Header from IDEAL™ Series Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections removed.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.

5. Push combine receptacle handle (B) to the fully-open position to release multicoupler (A).

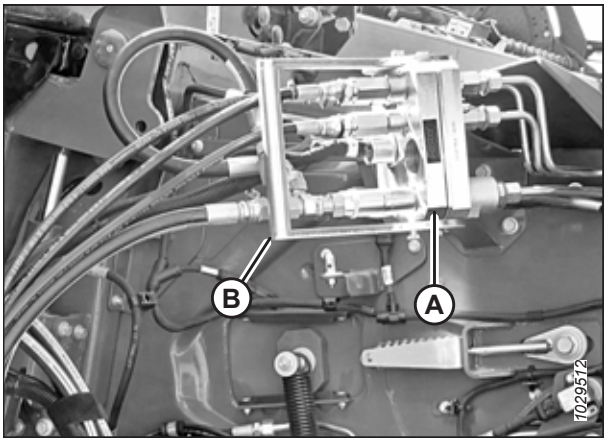


Figure 3.137: Combine Receptacle

6. Position multicoupler (B) onto the header receptacle, and move handle (A) to a vertical position to lock the multicoupler.

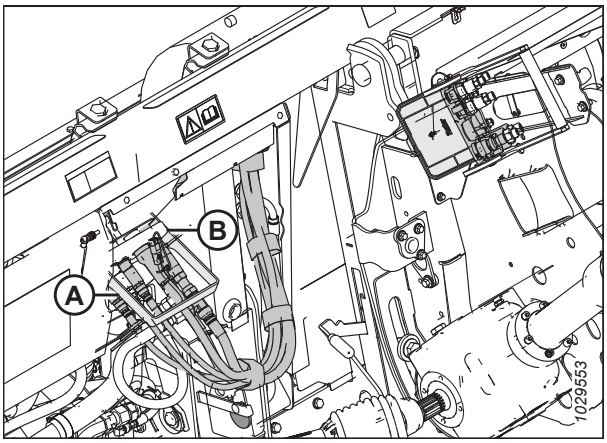


Figure 3.138: Locking Multicoupler

7. Pull back driveline collar (A) and remove the driveline from combine output shaft (B).

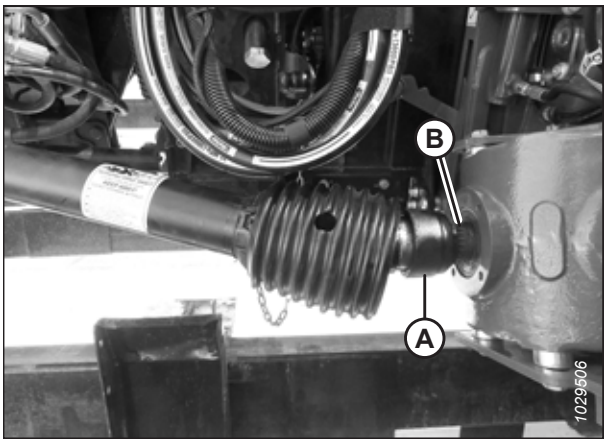


Figure 3.139: Detaching Driveline

8. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so it locks into place on the bracket.

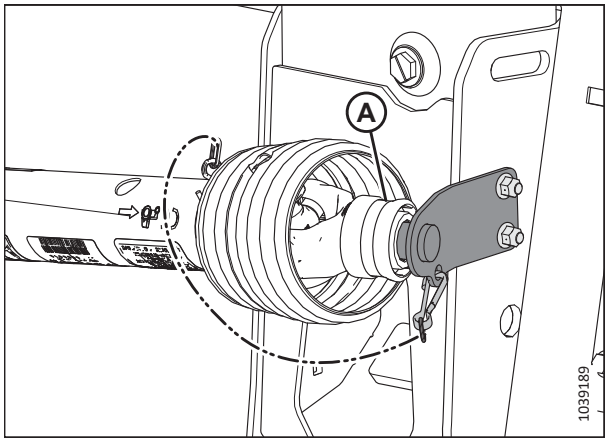


Figure 3.140: Driveline in Storage Position

9. Pull lever (A) up to retract pins (B) at the base of the feeder house.

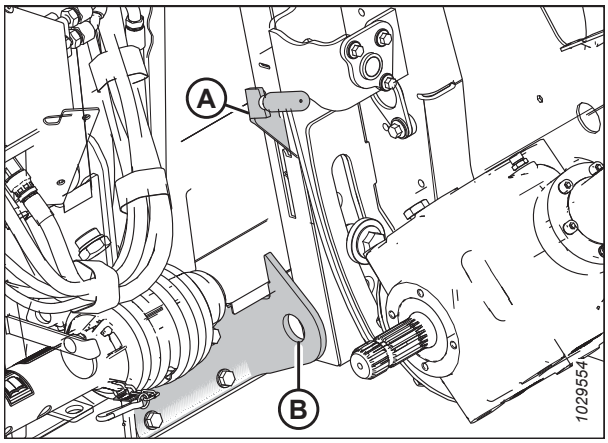


Figure 3.141: Feeder House Locking Pins

10. Start the engine.
11. Lower the header to the ground until feeder house pins (A) are clear of hooks (B).
12. Slowly back the combine away from the header.

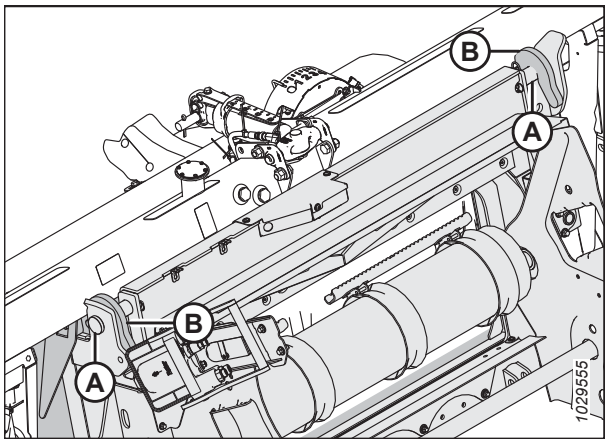


Figure 3.142: Lowering Feeder House

3.6.5 John Deere Combines

To attach the header to or detach it from a John Deere combine, follow the relevant procedure in this section.

The FD2 Series FlexDraper® Header is compatible with John Deere 60, 70, S, T, and X9 Series combines.

Attaching Header to John Deere Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

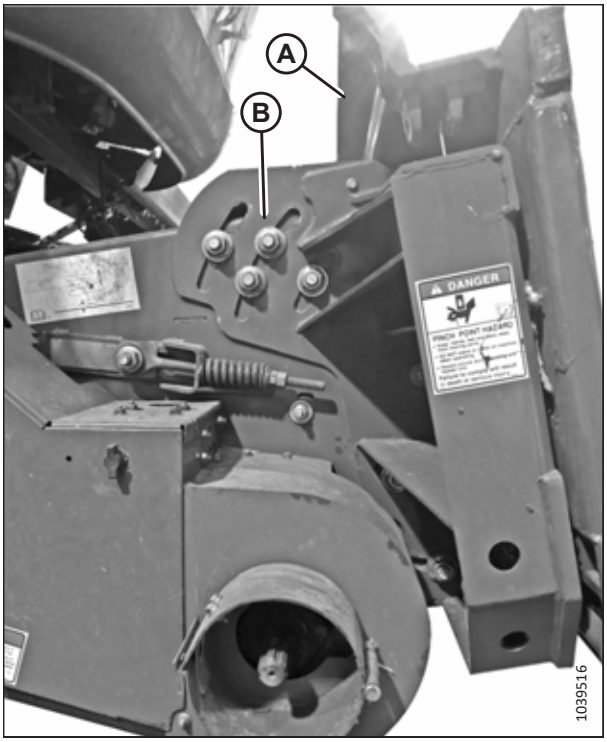


Figure 3.143: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Push handle (A) on the combine multicoupler receptacle towards the feeder house to retract pins (B) at the bottom corners of the feeder house. Clean the receptacle.

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
5. Raise the feeder house slightly to lift the header, ensuring that the feeder house saddle is properly engaged in the float module frame.

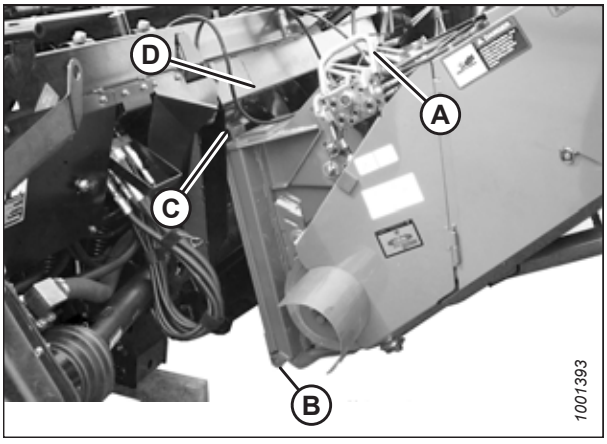


Figure 3.144: Combine and Float Module

6. Shut down the engine, and remove the key from the ignition.

7. Pull handle (A) on the float module to release multicoupler (B) from the storage position. Remove the multicoupler, and push the handle back into the float module.

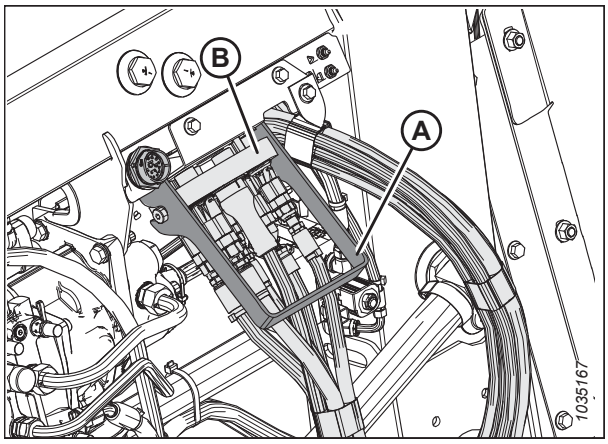


Figure 3.145: Multicoupler Storage

8. Position multicoupler (A) on the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.

9. Pull handle (B) to the horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

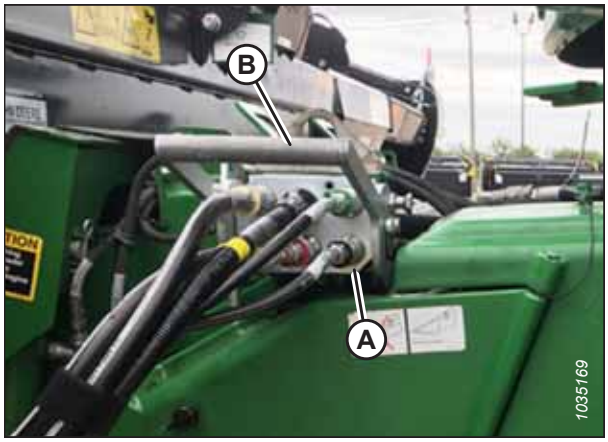


Figure 3.146: Multicoupler

10. Ensure that both feeder house pins (A) are fully engaged into the float module brackets.

    NOTE:

    If pins (A) do not fully engage the float module brackets, loosen bolts (B) and adjust the bracket as required.

11. Tighten bolts (B).

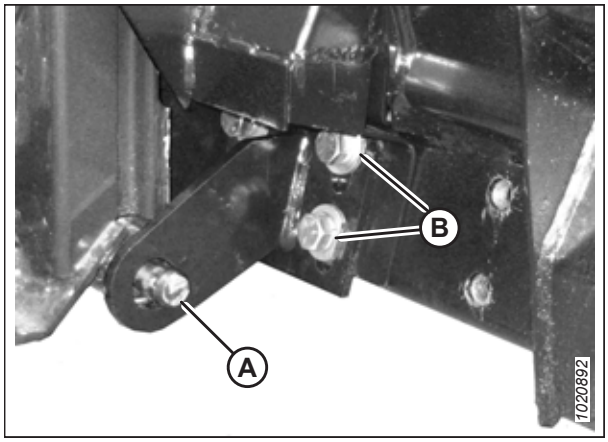


Figure 3.147: Feeder House Pin used on John Deere 60, 70, S, or T Series – X9 Series is Similar

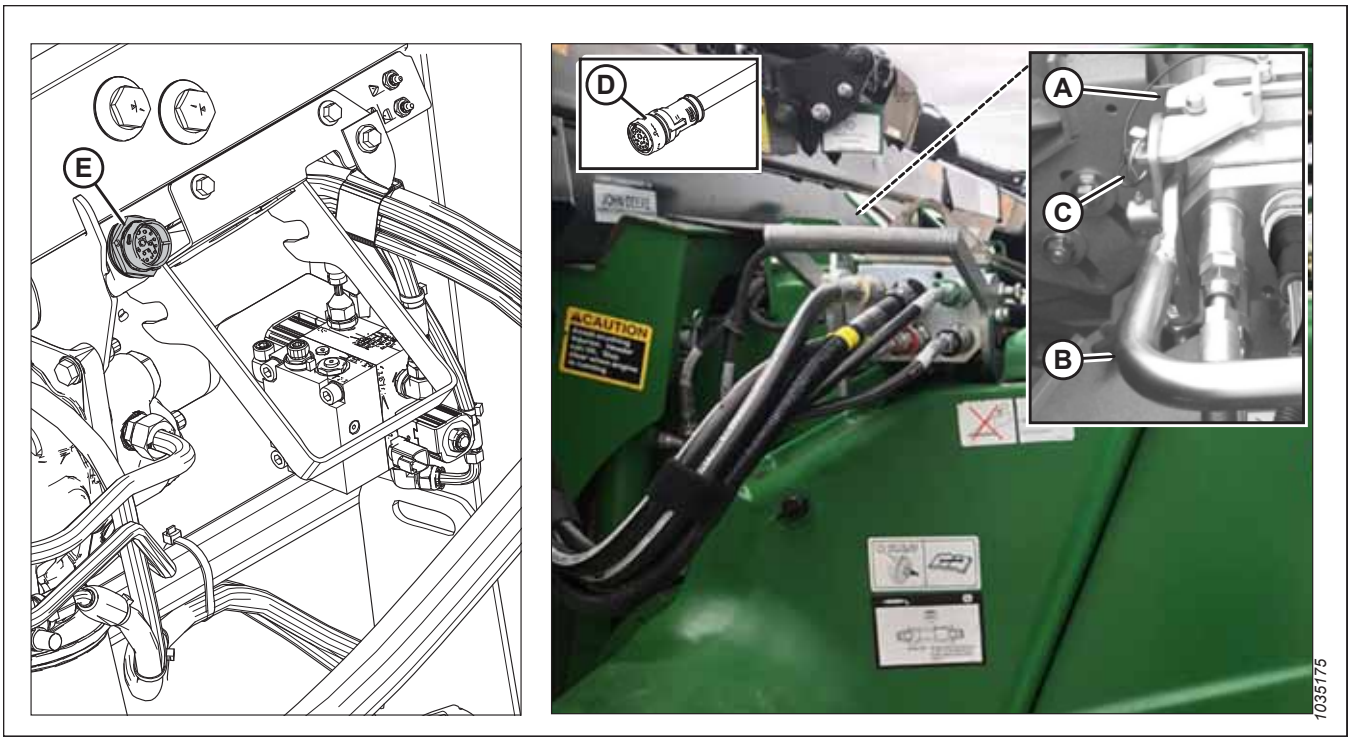


Figure 3.148: Multicoupler Lock, Electrical Connections

12. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).

13. **60, 70, S, or T Series:** Remove cab control kit connector C81A (D) from the storage location on the combine and connect it to C81B (E) on the float module. Turn the collar on the connector to lock it in place.

14. Pull driveline collar (A) back to release the driveline from support bracket (B). Remove the driveline from the support bracket.

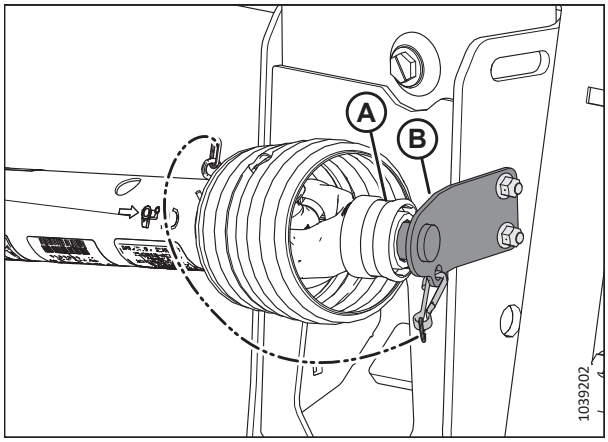


Figure 3.149: Driveline in Storage Position – Driveline B7038 or B7039

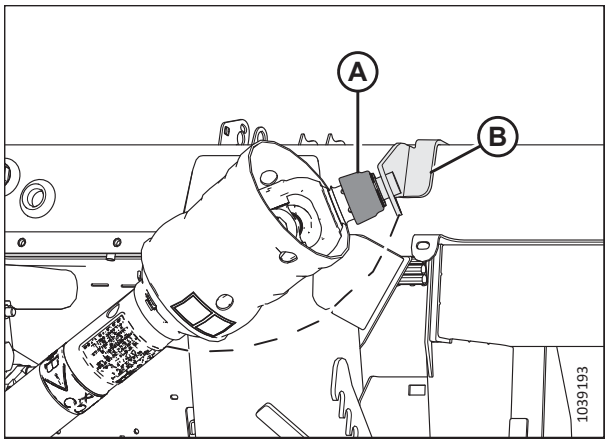


Figure 3.150: Driveline in Storage Position – Sidehill/ Hillside Driveline B7326 or B7182

15. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar locks.

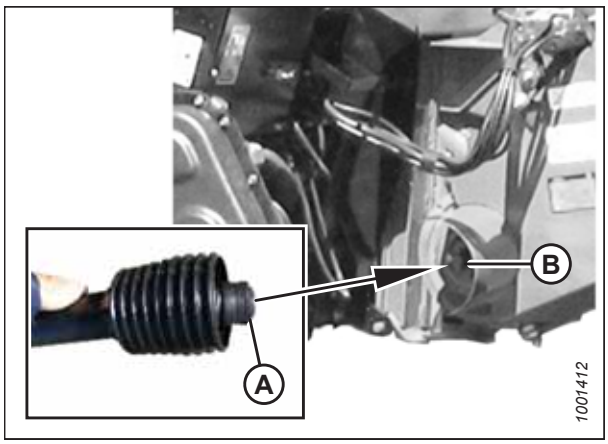


Figure 3.151: Driveline

16. Disengage the float locks by pulling each float lock handle (A) away from the float module, and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

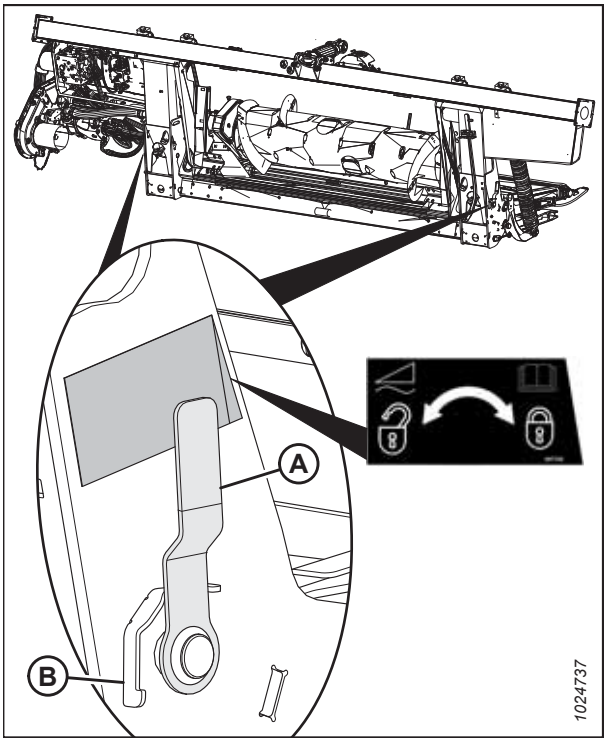


Figure 3.152: Float Lock Handle

Detaching Header from John Deere Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections will need to be removed.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Choose a level area and position the header slightly above the ground.
3. Shut down the engine, and remove the key from the ignition.

    IMPORTANT:

    If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

    IMPORTANT:

    If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

4. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

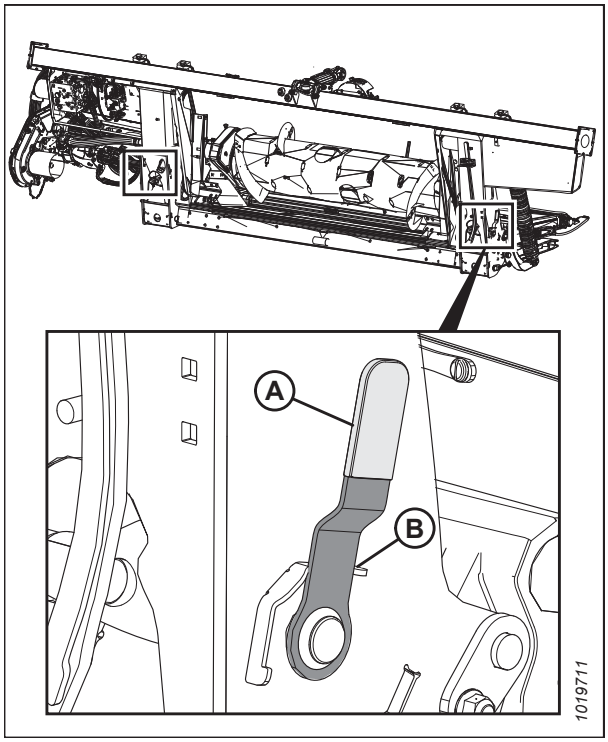


Figure 3.153: Float Lock Handle

5. Open shield (A) on the combine, pull back the collar on driveline (B), and pull the driveline off the combine output shaft.

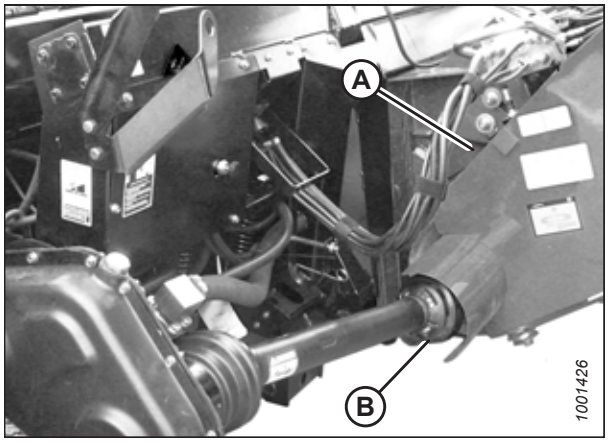


Figure 3.154: Driveline

6. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so that it locks into place on the support bracket.

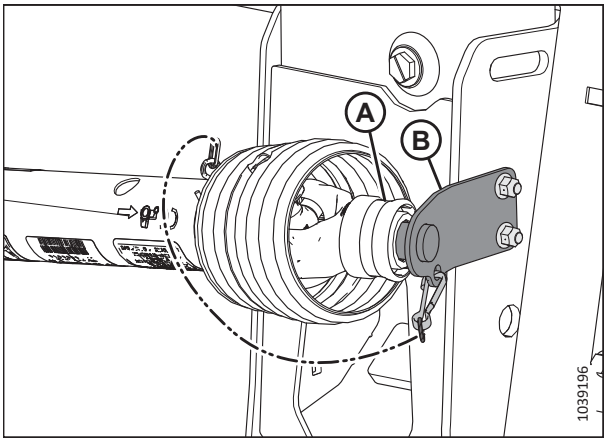


Figure 3.155: Driveline in Storage Position – Driveline B7038 or B7039

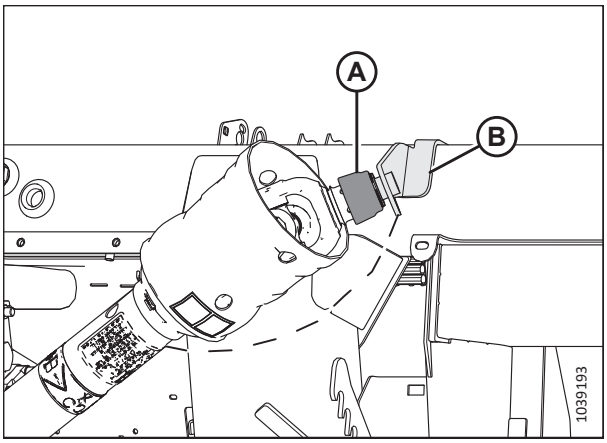


Figure 3.156: Driveline in Storage Position – Sidehill/ Hillside Driveline B7326, or B7182

7. Lift handle (A) on the float module.

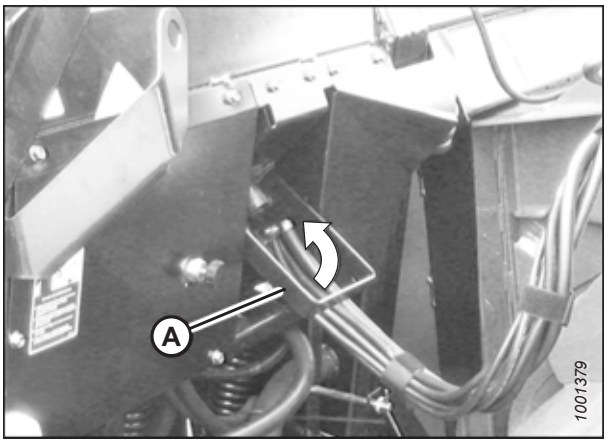


Figure 3.157: Multicoupler Storage

8. Disconnect harness (A) from the combine connector.
9. Remove lynch pin (B) and slide lock (C) to release handle (D).
10. Lift handle (D) to full vertical position to release multicoupler (E) from the combine.

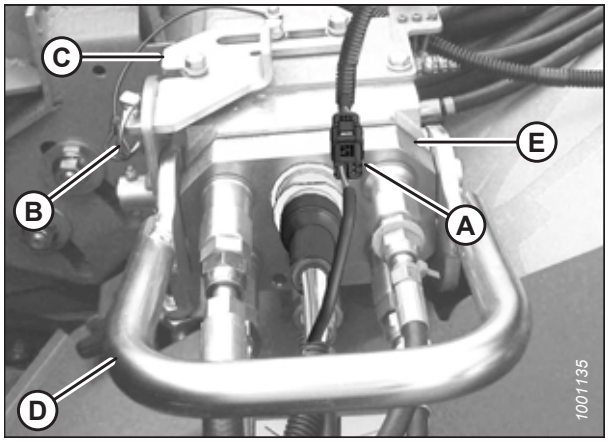


Figure 3.158: Multicoupler

11. Position multicoupler (A) on the float module receptacle and lower handle (B) to lock the multicoupler.

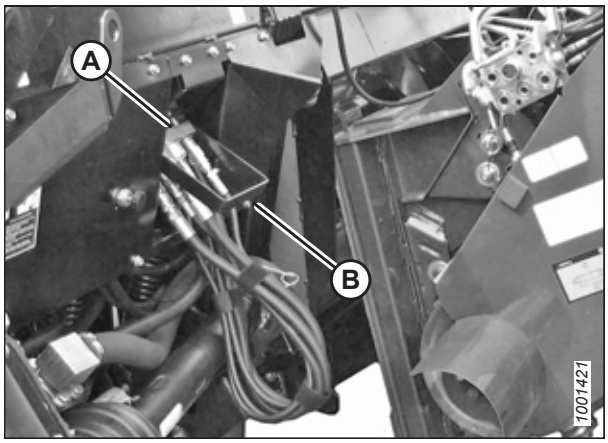


Figure 3.159: Multicoupler Storage

12. Push handle (A) on the combine towards the feeder house to disengage feeder house pin (B) from the float module.

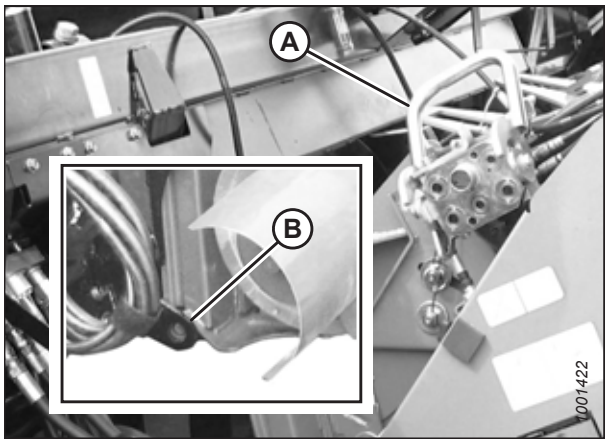


Figure 3.160: Feeder House Locks

13. Lower the feeder house until saddle (A) disengages and clears float module support (B).
14. Slowly back the combine away from the float module.

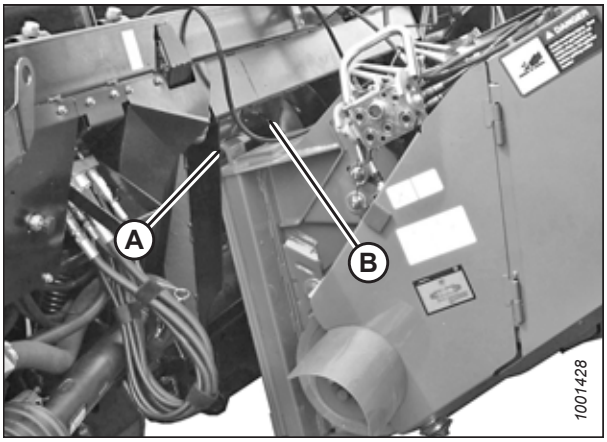


Figure 3.161: Float Module and Feeder House

3.6.6 New Holland Combines

To attach the header to or detach it from a New Holland combine, follow the relevant procedure in this section.

Refer to the table below for information on the New Holland combine models that are compatible with this header.

Table 3.2 New Holland Combine Compatibility

New Holland Combine Series	Combine Model
CR	920, 940, 960, 970, 980
	9020, 9040, 9060, 9065, 9070, 9080
	6090, 7090, 8080, 8090, 9090
	6.80, 6.90, 7.90, 8.90, 9.90, 10.90
CX	840, 860, 870, 880
	8070, 8080, 8090
	8080 Elevation, 8090 Elevation

Attaching Header to New Holland CR or CX Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

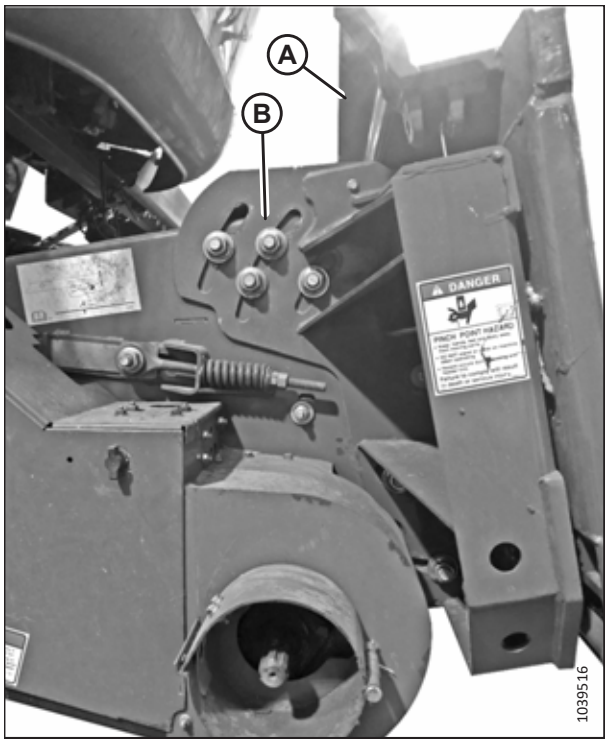


Figure 3.162: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Shut down the engine, and remove the key from the ignition.
2. Ensure that handle (A) is positioned so that locks (B) can engage the float module.

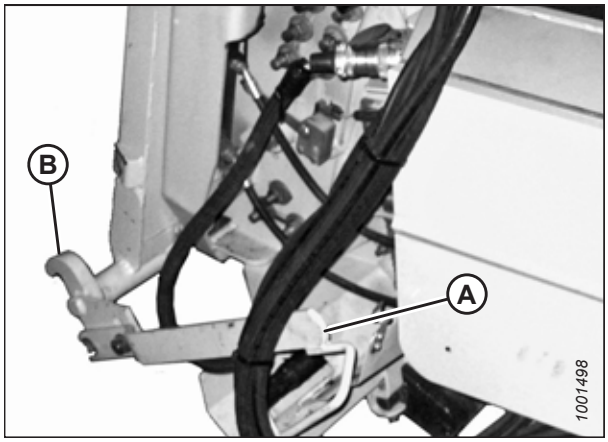


Figure 3.163: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Slowly drive the combine up to the float module until feeder house saddle (A) is directly under float module top cross member (B).
5. Raise the feeder house slightly to lift the header. Ensure that the feeder saddle is fully engaged in the float module frame.
6. Shut down the engine, and remove the key from the ignition.

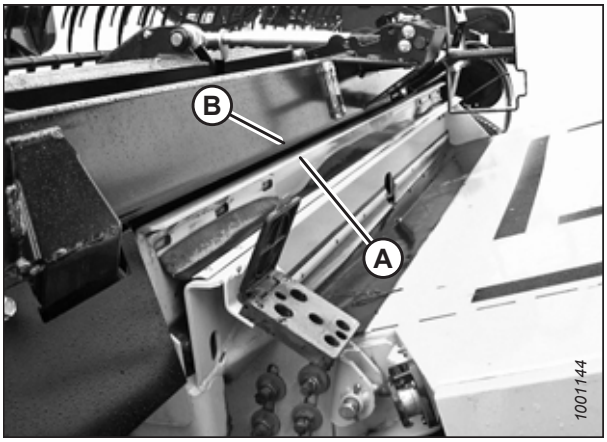


Figure 3.164: Header on Combine

7. Lift lever (A) on the float module on the left side of the feeder house, and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
8. Push down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
9. If the lock does not fully engage pin (D) on the float module when lever (A) and handle (B) are engaged, loosen bolts (E) and adjust lock (C). Retighten the bolts.

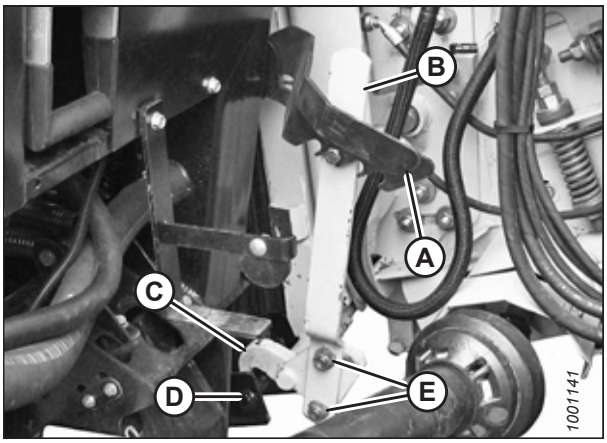


Figure 3.165: Feeder House Locks

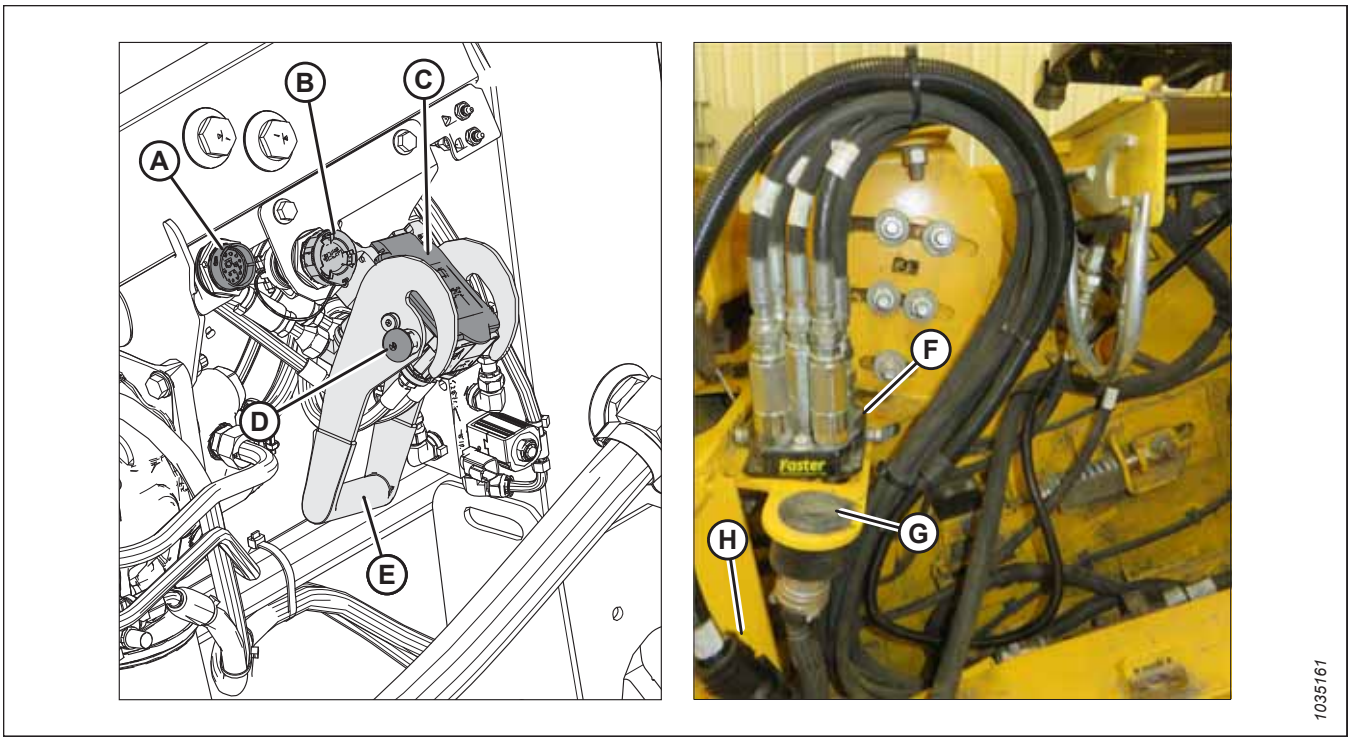


Figure 3.166: Multicoupler and Electrical Connections

10. Remove the caps from connector C81B (A) and connector C72B (B).
11. Remove the cover from hydraulic receptacle (C). Clean the receptacle mating surfaces.
12. Push in lock button (D) and pull handle (E) to the fully open position.
13. Remove hydraulic quick coupler (F) from the storage plate on the combine. Clean the mating surface of the coupler.
14. Position coupler (F) onto float module receptacle (C). Push handle (E) to insert the pins into the receptacle.
15. Push handle (E) to the closed position until lock button (D) snaps out.
16. Remove combine connector (G) from the storage location on the combine and connect it to receptacle C72B (B). Turn the collar on the connector to lock it in place.
17. Remove cab control kit connector C81A (H) from the storage location on the combine and connect it to C81B (A). Turn the collar on the connector to lock it in place.

18. Pull driveline collar (A) back to release the driveline from the support bracket (B). Remove the driveline from the support bracket.

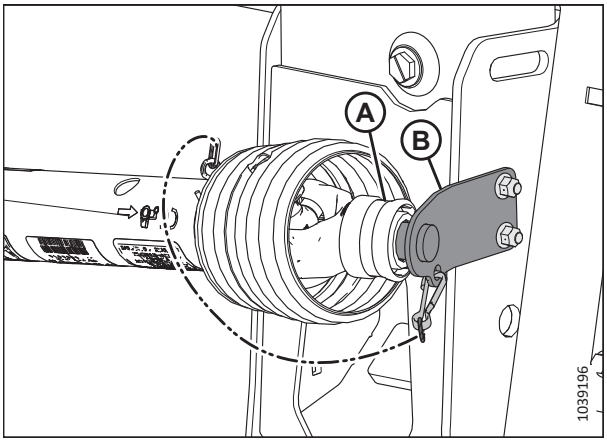


Figure 3.167: Driveline in Storage Position – Driveline B7038 or B7039

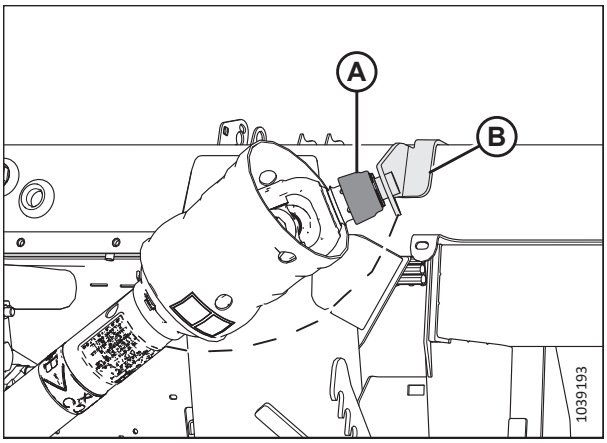


Figure 3.168: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

19. Pull back the collar on the end of the driveline, and push the driveline onto combine output shaft (A) until the collar locks.

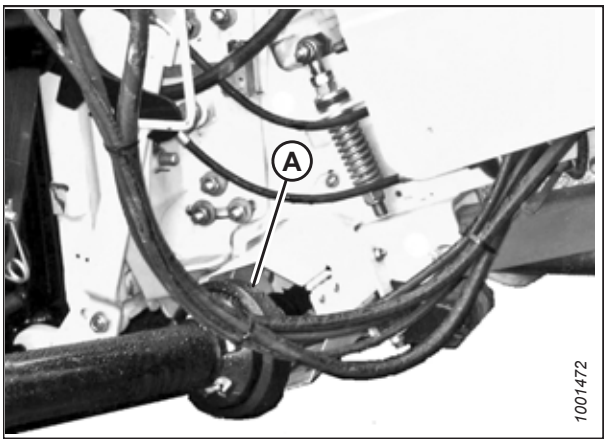


Figure 3.169: Driveline and Output Shaft

20. Disengage the float locks by pulling each float lock handle (A) away from the float module and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header; the float lock handle on the left side of the header is the opposite.

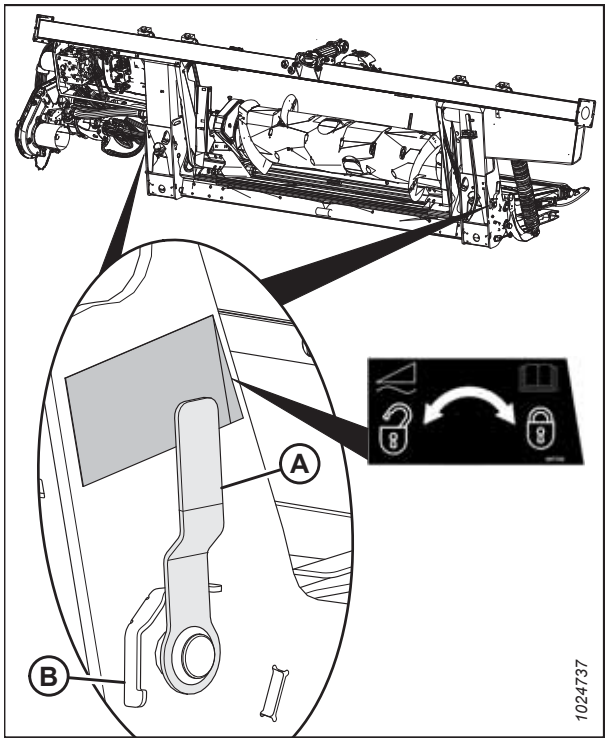


Figure 3.170: Float Lock Handle

Detaching Header from New Holland CR or CX Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections will need to be removed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Choose a level area and position the header slightly above the ground.
3. Shut down the engine, and remove the key from the ignition.

    IMPORTANT:

    If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward, and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

    IMPORTANT:

    If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward, and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

4. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on right side of the header. The float lock handle on the left side of the header is the opposite.

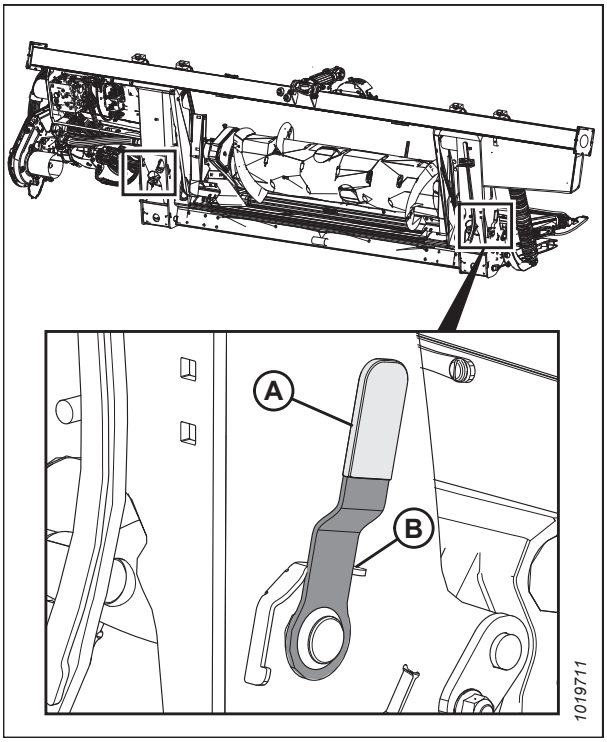


Figure 3.171: Float Lock Handle

5. Disconnect driveline from the combine. Push back collar on the end of the driveline and pull the driveline out of combine output shaft (A) until the collar disengages.

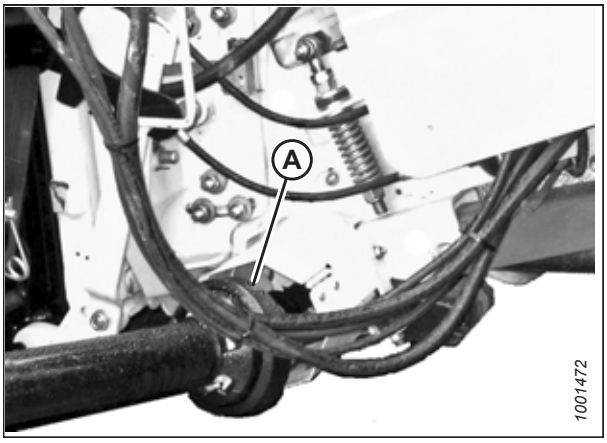


Figure 3.172: Driveline

6. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so it locks into place on the bracket.

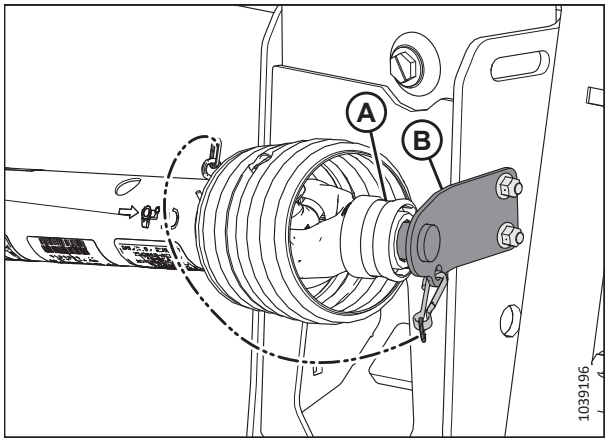


Figure 3.173: Driveline in Storage Position – Driveline B7038 or B7039

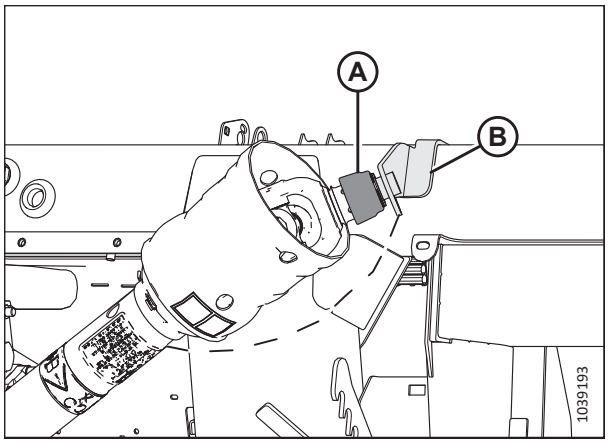


Figure 3.174: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

7. Push in lock button (B), and pull handle (C) to release multicoupler (A).

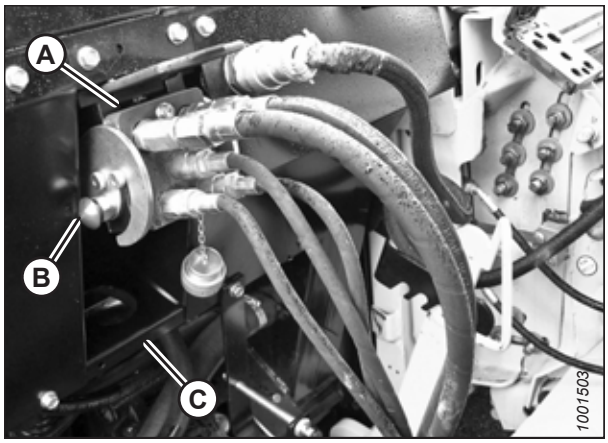


Figure 3.175: Float Module Connections

8. Push handle (A) to the closed position until lock button (B) snaps out. Close the cover.

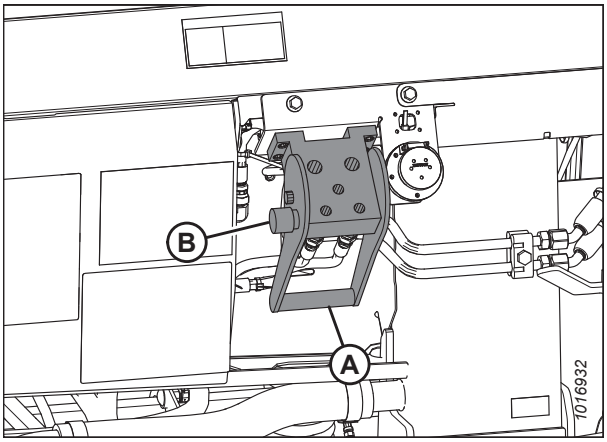


Figure 3.176: Float Module Receptacles

9. Position hydraulic quick coupler (A) onto storage plate (B) on the combine.

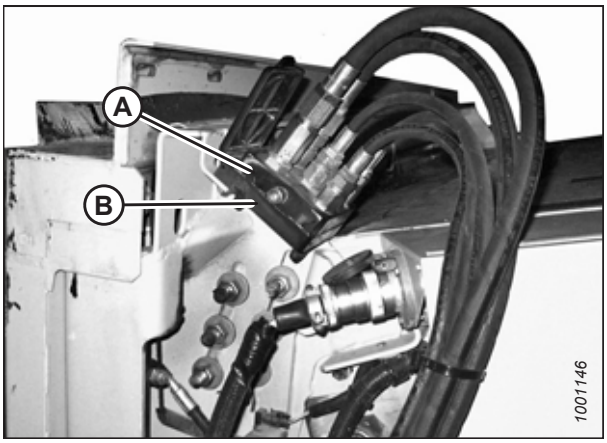


Figure 3.177: Combine Coupler

10. Remove electrical connector (A) from the float module.

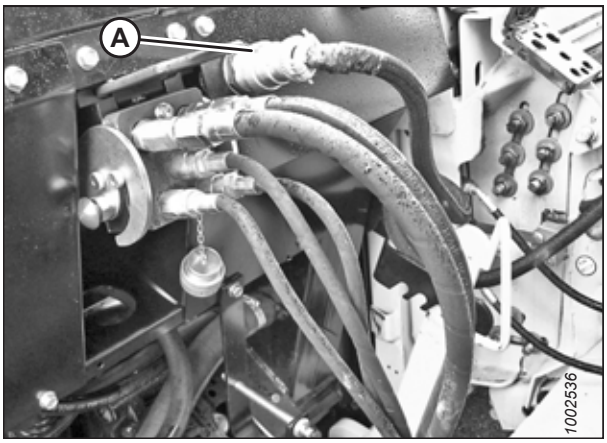


Figure 3.178: Float Module Connections

11. Connect the electrical connector to the combine at location (A).

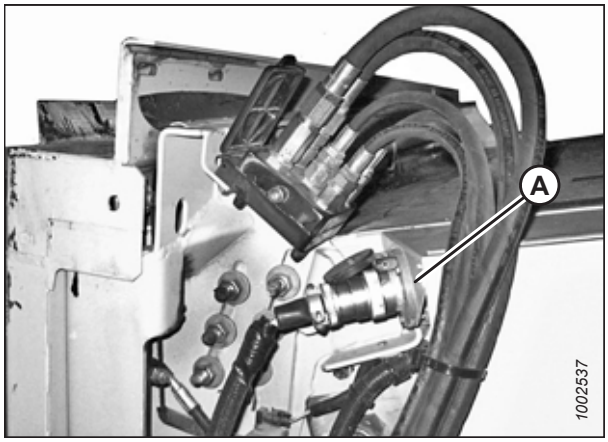


Figure 3.179: Combine Couplers

12. Replace cover (A) on the float module receptacle.

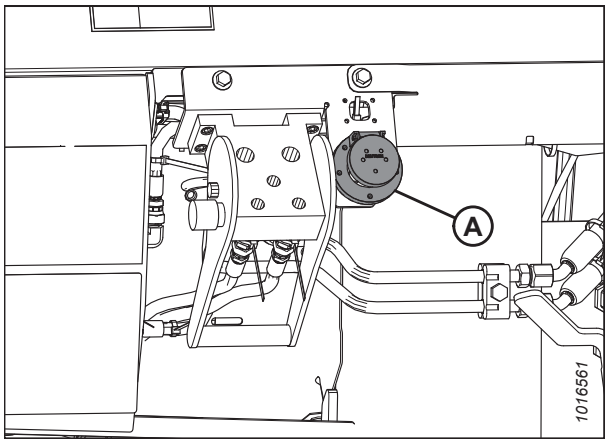


Figure 3.180: Float Module Receptacles

13. Lift lever (A) and pull and lower handle (B) to disengage feeder house/float module lock (C).

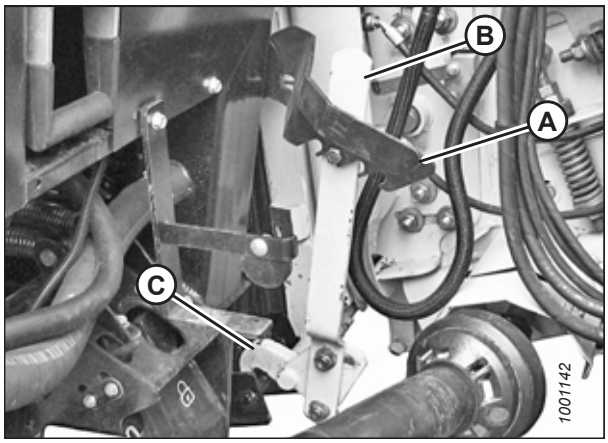


Figure 3.181: Feeder House Locks

14. Lower feeder house (A) until the feeder house disengages float module support (B).
15. Back the combine slowly away from the header.

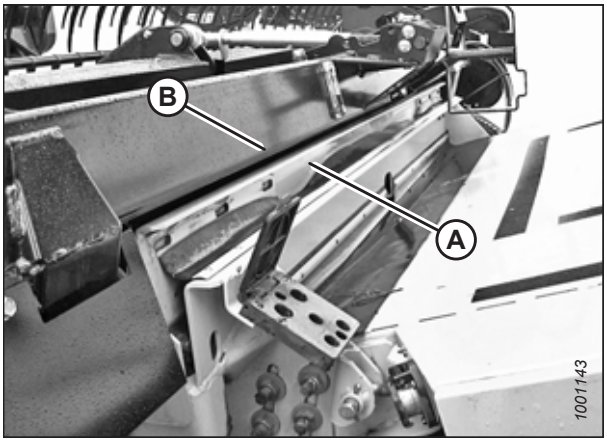


Figure 3.182: Header on Combine

Feeder Deflectors – New Holland CR Series Combines

On New Holland CR Series combines, feeder deflectors may need to be installed. Feeder deflectors are **NOT** necessary on New Holland CX Series combines.

For New Holland CR combines only: Wide feeder deflectors have been factory-installed on the float module to improve feeding into the feeder house. Remove the feeder deflectors if necessary. For instructions, refer to *4.11.3 Replacing Feeder Deflectors on Float Modules for New Holland CR and CX Combines, page 637*.

Long feeder kits are provided for narrow feeder house combines and can be installed to replace the short feeder deflectors.

Table 3.3 Feeder Kits for New Holland CR Model Combines

Feeder House Size	Feeder Kit Size	Part Number
1250–1350 mm (49–65 in.)	Narrow: 200 mm (7 7/8 in.)	MD #328082, 328083
1100 mm (43 1/2 in.) and below	Wide: 325 mm (12 13/16 in.)	MD #314690, 314691

3.6.7 Rostselmash Combines

To attach or detach the header from a Rostselmash combine, follow the relevant procedure in this section.

Refer to the table below for information on the Rostselmash combine models that are compatible with this header.

Table 3.4 Rostselmash Combine Compatibility – FD2 Series Draper Headers

Combine Model
RSM 161
Torum 785
T500

NOTE:

To complete the FM200 conversion, extra bundles are required. Transition frame conversion kit B7311 will be required for all Rostselmash combines and driveshaft conversion kit B7312 will be required for Rostselmash combines 2019 and older.

Attaching Header to Rostselmash Combine

The header will need to be physically connected to the combine's feeder house, and the electrical and hydraulic connections completed.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

IMPORTANT:

If the combine is **NOT** equipped with a rock trap, feeder house faceplate (A) **MUST** be in mid-position (B). For instructions on adjusting the faceplate, refer to the combine operator's manual.

NOTE:

A rock trap prevents rocks or debris from entering the combine, and is located on the front of the combine and behind the feeder house.

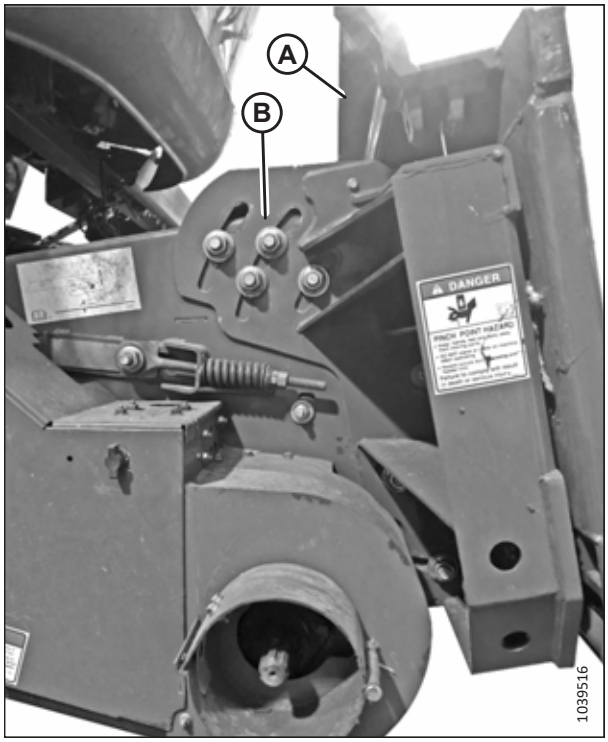


Figure 3.183: Faceplate Tilted to Mid-Position on Unspecified Combine

1. Start the engine.
2. Slowly drive the combine up to the header until feeder house saddle (A) is directly under float module top cross member (B).
3. Raise the feeder house slightly to lift the header, ensuring the feeder house saddle is properly engaged in the float module frame.
4. Shut down the engine, and remove the key from the ignition.

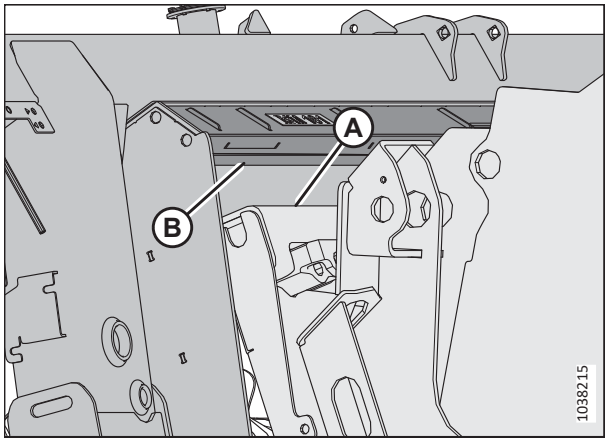


Figure 3.184: Combine and Float Module

5. Pull pin (A) outward and rotate handle (B) until both feeder house pins (C) are fully engaged into float module brackets (D).

   NOTE:

   If pins (C) do not fully engage the float module brackets, loosen bolts (E) and adjust brackets (D) as required.

6. Tighten nuts (E).

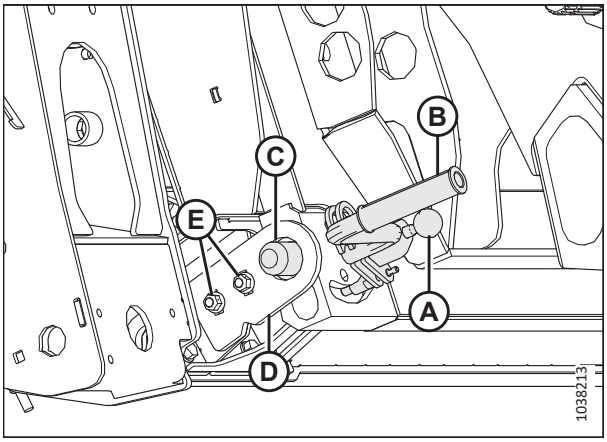


Figure 3.185: Feeder House Pin

7. Push in lock button (A) and pull handle (B) to the fully open position.
8. Remove the hydraulic quick coupler from the storage plate on the combine. Clean the mating surface of the coupler.
9. Position the combine coupler onto the float module receptacle. Push down on the handle to engage the pins into the receptacle.
10. Push the handle down to the closed position until lock button (B) snaps out.
11. Remove the combine connector from the storage location on the combine and connect it to receptacle (C). Turn the collar on the connector to lock it in place.
12. Remove the cab control kit connector C81A from the storage location on the combine and connect it to connector C81B (D). Turn the collar on the connector to lock it.

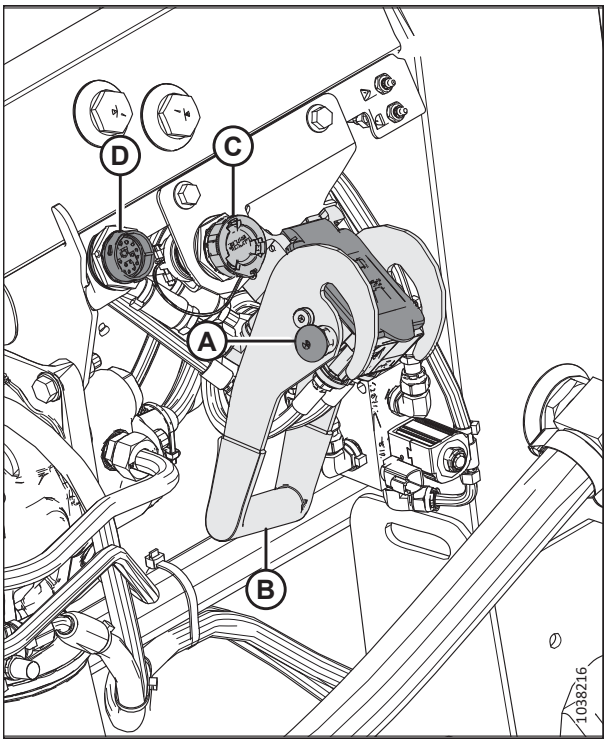


Figure 3.186: Multicoupler Storage

13. Detach safety chain (C) from support bracket (B).

14. Pull driveline collar (A) back to release the driveline from the support bracket. Remove the driveline from the support bracket.

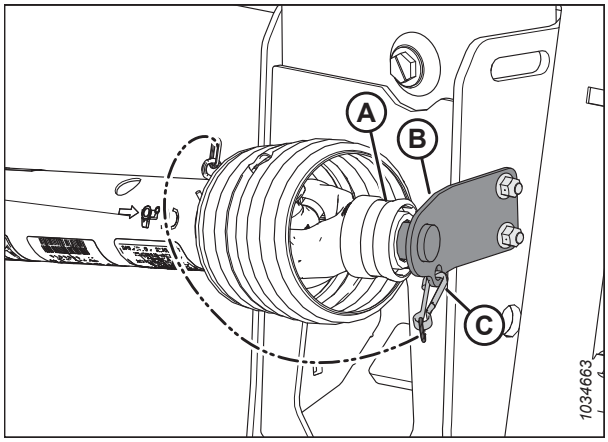


Figure 3.187: Driveline in Storage Position

15. Pull back collar (A) on the end of the driveline, and push the driveline onto combine output shaft (B) until the collar locks.

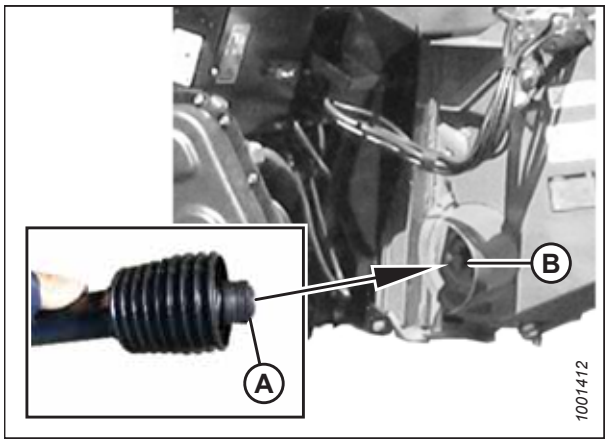


Figure 3.188: Driveline

16. Disengage the float locks by pulling each float lock handle (A) away from the float module, and setting it in unlocked position (B).

    NOTE:

    The illustration shows the float lock handle on the right side of the header. The float lock handle on the left side of the header is the opposite.

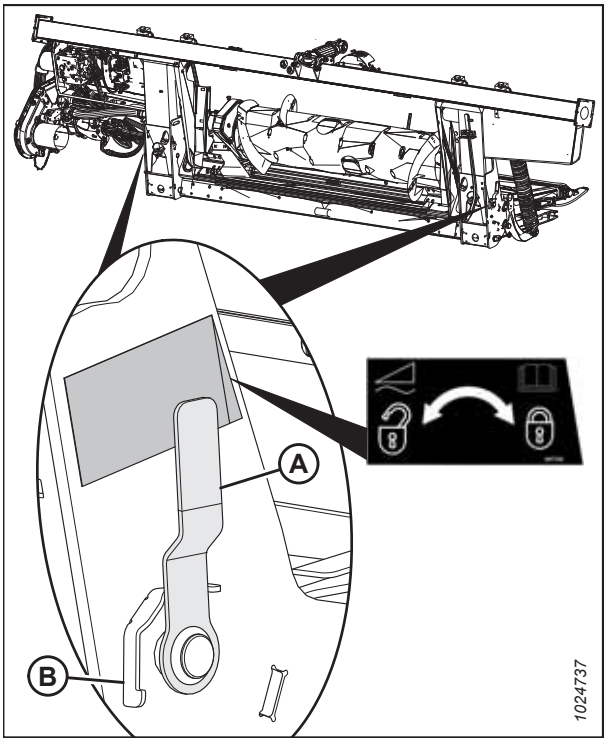


Figure 3.189: Float Lock Handle

Detaching Header from Rostselmash Combine

The header will need to be physically disconnected from the combine, and the hydraulic and electrical connections removed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Position the header slightly above the ground.
4. Shut down the engine, and remove the key from the ignition.

    IMPORTANT:

    If transport wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.

    IMPORTANT:

    If stabilizer wheels are installed, set the wheels to the storage or uppermost working position. If the wheels are not in position, the header may tilt forward and make reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

5. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   The illustration shows the float lock handle on the right side of the header. The float lock on the left side of the header is the opposite.

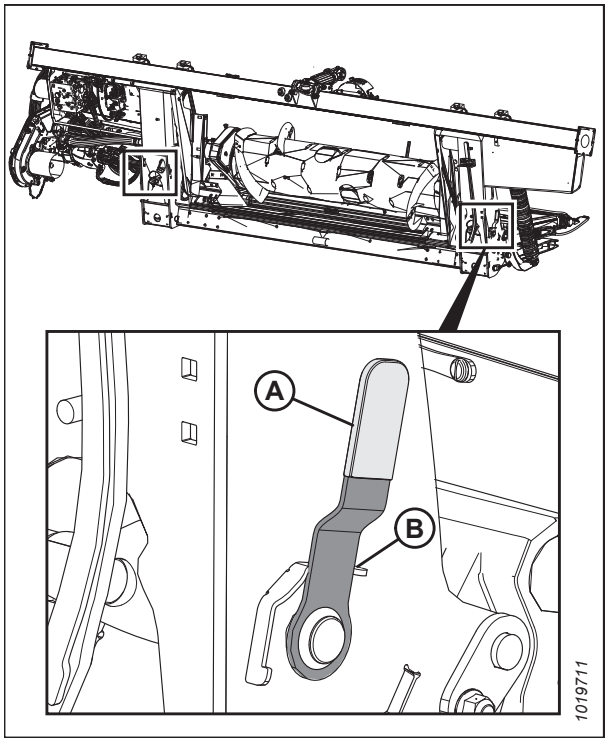


Figure 3.190: Float Lock Handle

6. Disconnect combine cab control harness connector C81A (D) from Connector C81B (D).

7. Disconnect the combine electrical harness from connector (C).

8. Push in lock button (A) and lift handle (B) to release the multicoupler. Remove the hydraulic quick coupler from the combine and return to its storage location on the combine.

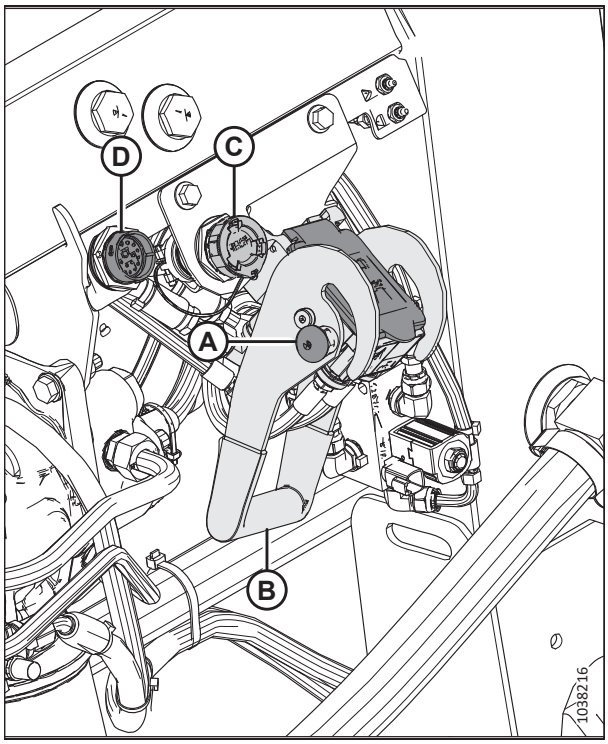


Figure 3.191: Float Lock Handle

9. Pull back collar (A) on the end of the driveline, and pull the driveline out of combine output shaft (B) until the collar disengages.

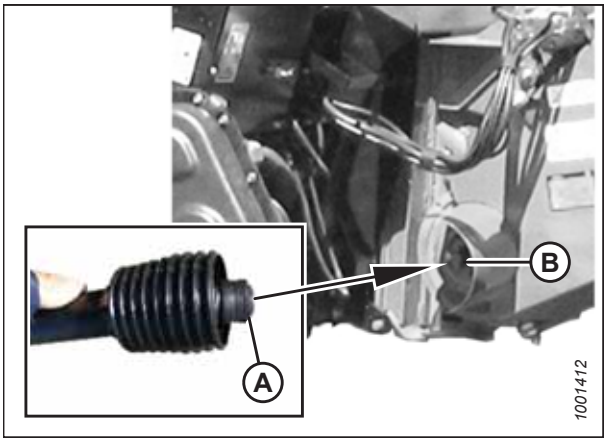


Figure 3.192: Driveline

10. Store the driveline on driveline support bracket (B) by pulling back collar (A) on the driveline and fitting it onto support bracket (B). Release the collar so it locks into place on the support bracket.

11. Attach safety chain (C) to support bracket (B).

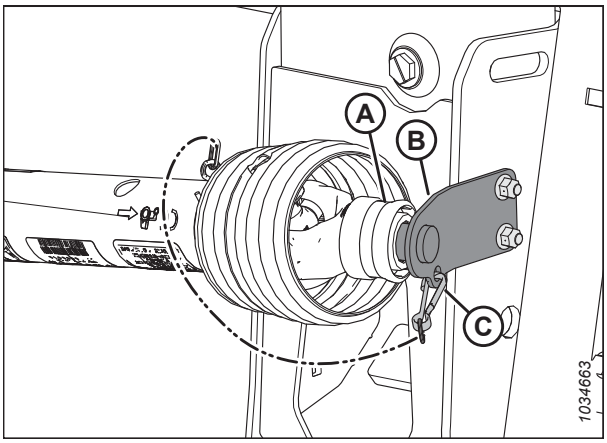


Figure 3.193: Driveline in Storage Position – Driveline B7038 or B7039

12. Pull pin (A) outward and rotate handle (B) clockwise until both feeder house pins (C) are fully retracted into float module brackets (D).

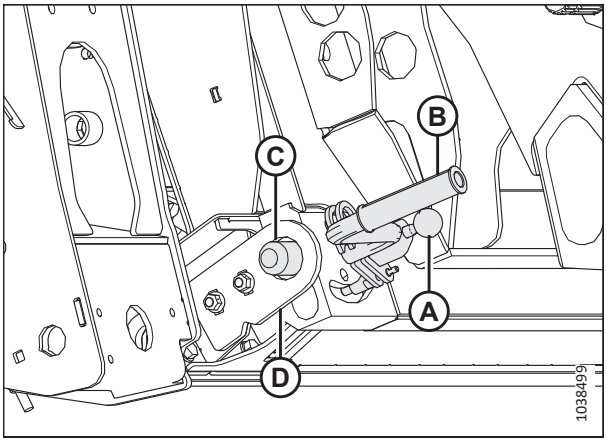


Figure 3.194: Feeder House Pin

13. Start the engine.
14. Lower feeder house (A) until it disengages float module support (B).
15. Back the combine away slowly from the float module.

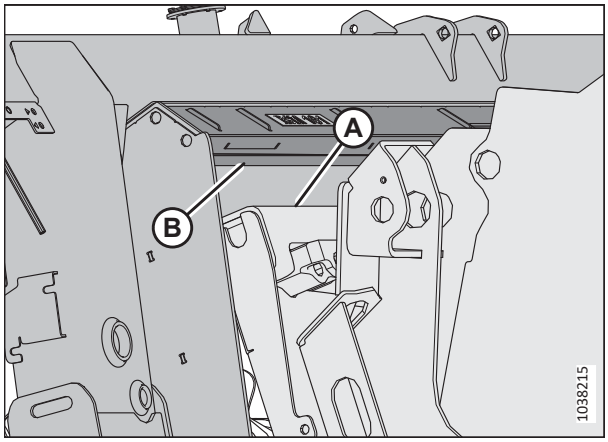


Figure 3.195: Combine and Float Module

3.7 Header Setup

For optimal performance, the header must be configured specifically for various harvesting conditions and crops.

3.7.1 Header Attachments

Optional attachments can improve performance in specific conditions or add features to the header. Optional attachments can be ordered and installed with help from your MacDon Dealer.

Refer to Chapter *5 Options and Attachments, page 727* for the descriptions of available items.

3.7.2 Header Settings

The following tables provide guidelines for setting up the header for various harvesting conditions and crops.

For information on the reel settings, refer to *3.7.4 Reel Settings, page 142*.

For information on configuring the FM200 feed auger, refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148*.

NOTE:

Increase the side draper speed to increase performance when there is abundant crop material or when you increase the ground speed.

Table 3.5 Recommended Settings for Cereals

Stubble Height	102 mm (<4 in.)						
Stabilizer Wheels[4]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[5]	**Header Angle**[6, 7]	**Reel Cam**	**Reel Speed %**[8]	**Reel Position**	**Upper Cross Auger**
Light	Off	8	B – C	3	10–15	6 or 7	Not required
Normal	On	7	B – C	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Recommended
Lodged	Off	7	B – C	3 or 4	5–10	4 or 5	Not required
Stubble Height	102–203 mm (4–8 in.)						
Stabilizer Wheels	As needed						
Skid Shoe Position	Down for lodged crop conditions, middle or down for other crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[5]	**Header Angle**[6, 7]	**Reel Cam**	**Reel Speed %**[8]	**Reel Position**	**Upper Cross Auger**
Light	Off	8	B – C	4	10–15	6 or 7	Not required
Normal	On	7	A	2	10	6 or 7	Not required
Heavy	On	7	A	2	10	6 or 7	Recommended
Lodged	Off	7	D	3 or 4	5–10	4 or 5	Not required

4. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
5. Setting on FM200 draper control.
6. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
7. The header's cutting height is determined by the skid shoe settings and the header angle.
8. Percentage above ground speed.

Table 3.5 Recommended Settings for Cereals (continued)

Stubble Height	203 mm + (8 in. +)						
Stabilizer Wheels	As needed						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[5]	**Header Angle**[6, 7]	**Reel Cam**	**Reel Speed %**[8]	**Reel Position**	**Upper Cross Auger**
Light	Off	8	A	4	10–15	6 or 7	Not required
Normal	On	7	A	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	Off	7	B – C	3 or 4	5–10	4 or 5	Not required

Table 3.6 Recommended Settings for Lentils

Stubble Height	On ground						
Stabilizer Wheels[9]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[10]	**Header Angle**[11, 12]	**Reel Cam**	**Reel Speed %**[13]	**Reel Position**	**Upper Cross Auger**
Light	On	8	B – C	2	5–10	6 or 7	Not required
Normal	On	7	B – C	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	On	7	D	2	5–10	6 or 7	Not required

9. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
10. Setting on FM200 draper control.
11. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
12. The header's cutting height is determined by the skid shoe settings and the header angle.
13. Percentage above ground speed.

Table 3.7 Recommended Settings for Peas

Stubble Height	On ground						
Stabilizer Wheels[14]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[15]	**Header Angle**[16, 17]	**Reel Cam**	**Reel Speed %**[18]	**Reel Position**	**Upper Cross Auger**
Light	On	7	B – C	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	2	10	6 or 7	Recommended
Heavy	On	7	B – C	2	10	4 or 5	Recommended
Lodged	On	7	D	2	5–10	4 or 5	Recommended

14. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
15. Setting on FM200 draper control.
16. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
17. The header's cutting height is determined by the skid shoe settings and the header angle.
18. Percentage above ground speed.

Table 3.8 Recommended Settings for Canola

Stubble Height	102–203 mm (4–8 in.)						
Stabilizer Wheels[19]	As needed						
Skid Shoe Position	Down for light or heavy crop conditions, middle or down for normal or lodged crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[20]	**Header Angle**[21, 22]	**Reel Cam**	**Reel Speed %**[23]	**Reel Position**	**Upper Cross Auger**
Light	On	7	A	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	1	10	6 or 7	Recommended
Heavy	On	8	B – C	1	10	3 or 4	Recommended
Lodged	On	7	D	2	5–10	3 or 4	Recommended
Stubble Height	203 mm + (8 in. +)						
Stabilizer Wheels[19]	As needed						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[20]	**Header Angle**[21 , 22]	**Reel Cam**	**Reel Speed %**[23]	**Reel Position**	**Upper Cross Auger**
Light	On	7	A	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	2	10	6 or 7	Recommended
Heavy	On	8	B – C	1 or 2	10	3 or 4	Recommended
Lodged	On	7	D	2 or 3	5–10	3 or 4	Recommended

19. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
20. Setting on FM200 draper control.
21. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
22. The header's cutting height is determined by the skid shoe settings and the header angle.
23. Percentage above ground speed.

Table 3.9 Recommended Settings for California Rice

Stubble Height	102 mm (<4 in.)						
Stabilizer Wheels[24]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**[25]	**Draper Speed Setting**[26]	**Header Angle**[27, 28]	**Reel Cam**	**Reel Speed %**[29]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	D	2	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	2	10	4 or 5	Not required
Heavy	Rice divider rod	4	B – C	2	10	4 or 5	Not required
Lodged	Rice divider rod	4	D	2	5–10	4 or 5	Not required
Stubble Height	102–203 mm (4–8 in.)						
Stabilizer Wheels[24]	As needed						
Skid Shoe Position	Middle or down						
Crop Condition	**Divider Rods**[25]	**Draper Speed Setting**[26]	**Header Angle**[27, 28]	**Reel Cam**	**Reel Speed %**[29]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	D	3	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Heavy	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Lodged	Rice divider rod	4	D	4	5–10	6 or 7	Not required

24. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
25. The rice divider rod is available. The rice divider rod is not required on both ends of header.
26. Setting on FM200 draper control.
27. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
28. The header's cutting height is determined by the skid shoe settings and the header angle.
29. Percentage above ground speed.

Table 3.9 Recommended Settings for California Rice (continued)

Stubble Height	203 mm + (8 in. +)						
Stabilizer Wheels[24]	As required						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**[25]	**Draper Speed Setting**[26]	**Header Angle**[27, 28]	**Reel Cam**	**Reel Speed %**[29]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	A	3	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Heavy	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Lodged	Rice divider rod	4	D	4	5–10	6 or 7	Not required

Table 3.10 Recommended Settings for Delta Rice

Stubble Height	51–152 mm (2–6 in.)						
Stabilizer Wheels[30]	As needed						
Skid Shoe Position	Middle or down						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[31]	**Header Angle**[32, 33]	**Reel Cam**	**Reel Speed %**[34]	**Reel Position**	**Upper Cross Auger**
Light	Off	6	D	2 or 3	10–15	6 or 7	Not required
Normal	Off	6	B – C	2 or 3	10	6 or 7	Not required
Heavy	Off	6	B – C	2 or 3	10	6 or 7	Not required
Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not required
Stubble Height	152 mm + (6 in. +)						
Stabilizer Wheels[30]	As needed						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[31]	**Header Angle**[32 , 33]	**Reel Cam**	**Reel Speed %**[34]	**Reel Position**	**Upper Cross Auger**
Light	Off	6	A	2 or 3	10–15	6 or 7	Not required
Normal	Off	6	B – C	2 or 3	10	6 or 7	Not required
Heavy	Off	6	B – C	2 or 3	10	6 or 7	Not required
Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not required

30. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
31. Setting on FM200 draper control.
32. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
33. The header's cutting height is determined by the skid shoe settings and the header angle.
34. Percentage above ground speed.

Table 3.11 Recommended Settings for Edible Beans

Stubble Height	On ground						
Stabilizer Wheels[35]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[36]	**Header Angle**[37, 38]	**Reel Cam**	**Reel Speed %**[39]	**Reel Position**	**Upper Cross Auger**
Light	On	8	D	2	5–10	6 or 7	Not required
Normal	On	7	B – C	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	On	7	D	4	5–10	6 or 7	Not required

35. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
36. Setting on FM200 draper control.
37. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
38. The header's cutting height is determined by the skid shoe settings and the header angle.
39. Percentage above ground speed.

Table 3.12 Recommended Settings for Flax

Stubble Height	51–153 mm (2–6 in.)						
Stabilizer Wheels[40]	As needed						
Skid Shoe Position	Down for lodged crop conditions, middle or down for other crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[41]	**Header Angle**[42, 43]	**Reel Cam**	**Reel Speed %**[44]	**Reel Position**	**Upper Cross Auger**
Light	On	8	B – C	2	5–10	6 or 7	Not required
Normal	On	7	A	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	On	7	D	2	5–10	6 or 7	Not required

40. Stabilizer wheels are used to limit the side-to-side and vertical movement of the header when cutting off of the ground.
41. Setting on FM200 draper control.
42. Set the header angle as shallow as possible (setting A) using the center-link and skid shoes while maintaining the cutting height.
43. The header's cutting height is determined by the skid shoe settings and the header angle.
44. Percentage above ground speed.

3.7.3 Optimizing Header for Straight-Combining Canola

Ripe canola can be straight-combined, but most varieties are susceptible to pod shatter and subsequent seed loss. This section provides information on the recommended attachments, settings, and adjustments to optimize FD2 Series FlexDraper® Headers for straight-combining canola to reduce seed loss.

Recommended attachments

To optimize the header for straight-combining canola, make the following modifications:

- Install a full-length upper cross auger
- Install vertical knives

NOTE:

Each kit includes installation instructions and the necessary hardware. For more information, refer to Chapter *5 Options and Attachments, page 727*.

Recommended settings

To optimize the header for straight-combining canola, make the following adjustments:

- Relieve the tension on the auger spring. For instructions, refer to *3.8.5 Checking and Adjusting Feed Auger Springs, page 177*.
- Set the reel speed so that it is equal to the combine's ground speed. Increase the speed as needed. For instructions, refer to *3.9.6 Reel Speed, page 214*.
- Set the side draper speed to position six on the in-cab side draper speed control. For instructions, refer to *3.9.8 Side Draper Speed, page 216*.
- Adjust the reel height so that the fingers just engage the crop. For instructions, refer to *3.9.11 Reel Height, page 220*.
- Adjust the reel fore-aft position. For instructions, refer to *Adjusting Reel Fore-Aft Position, page 226*.
- Move the reel fore-aft cylinders to the alternative aft location. For instructions, refer to *Repositioning Fore-Aft Cylinders, page 226*.
- Set the reel cam to position 1. For instructions, refer to *Adjusting Reel Cam, page 235*.
- Set the auger to floating position. For instructions, refer to *3.8.4 Setting Auger Position, page 175*.

3.7.4 Reel Settings

The different combinations of reel positions and cam settings affect the delivery of the crop to the drapers by rotating the finger profile.

NOTE:

Callout (A) refers to the ground level while callout (B) refers to the stubble height.

Table 3.13 FD2 Series Recommended Reel Settings

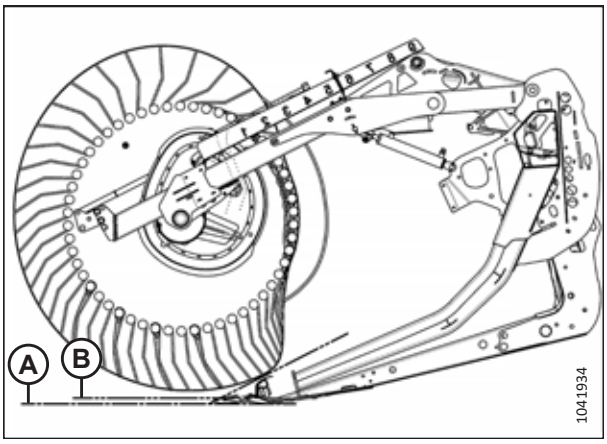
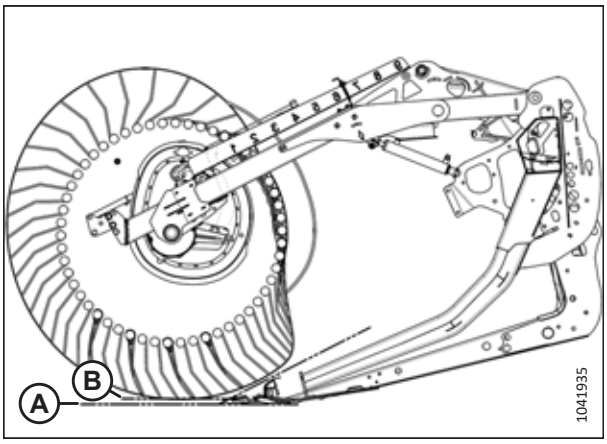
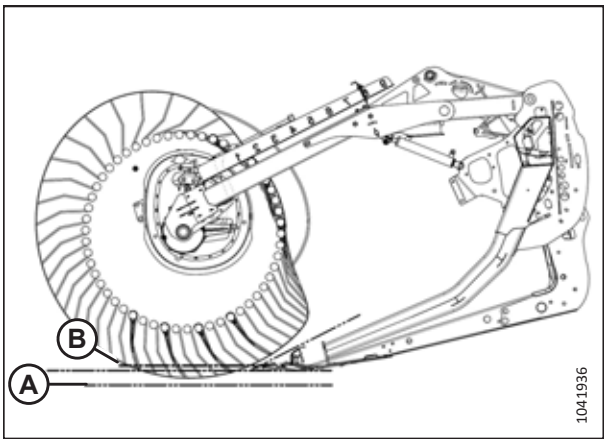
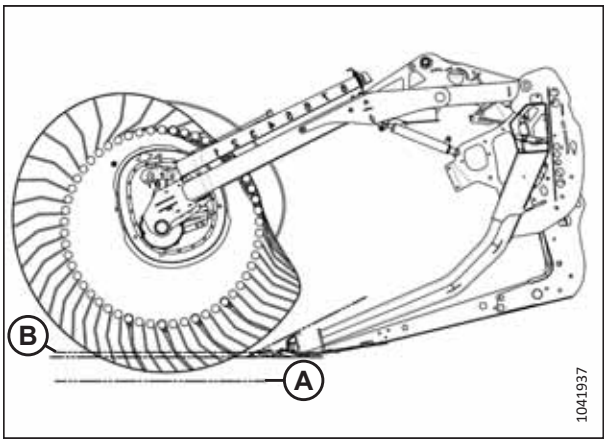
Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern	Ground to Stubble Height
1 (0%)	5 or 6		25 mm (0.98 in.)
2 (20%)	6 or 7		25 mm (0.98 in.)

Table 3.13 FD2 Series Recommended Reel Settings (continued)

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern	Ground to Stubble Height
3 (30%)	8		102 mm (4 in.)
4 (35%)	9		150 mm (5.9 in.)

NOTE:

- Adjust the reel forward to get closer to the ground while tilting the header back. Fingers/tines will dig into the ground at extreme reel-forward positions, so adjust the skid shoes or header angle to compensate. Adjust the reel rearward to position the reel farther away from the ground when tilting the header forward.
- The header tilt can be increased to position the reel closer to the ground, or decreased to position the reel farther from the ground, while keeping material flowing onto drapers.
- To leave the maximum amount of stubble in lodged crop, raise the header and increase the header tilt to keep the reel close to the ground. Position the reel fully forward.
- The reel may have to be moved back to prevent lumps or plugging on the cutterbar in thinner crops.
- Minimum crop carrying capacity (the minimum area of exposed draper between the reel and the header backsheet) occurs with the reel in the farthest aft position.
- Maximum crop carrying capacity (the maximum area of exposed draper between the reel and the header backsheet) occurs with the reel in the farthest forward position.
- Due to the nature of the cam action, the tip speed of the fingers/tines at the cutterbar becomes higher than that of the reel speed at higher cam settings. For more information, refer to Table *3.13, page 143*.

3.7.5 Floating Crop Divider Settings (Optional)

Floating crop dividers can be adjusted for different crop conditions.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

For instructions on how to make adjustments to the floating crop divider, refer to *Adjusting Floating Crop Dividers, page 248*. For settings, refer to the applicable stubble height table below.

Table 3.14 Stubble Height 50 mm to 125 mm (2 in. to 5 in.)

	Header Angle[45]	Stubble Height	Header Main Shoes	DownStop	Fore Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Whisker
Normal	A	125 mm 5 inch	Down	2	1	1	C	In
	A	125 mm 5 inch	Down	2	3	1	C	In
	E	50 mm 2 inch	Down	1	1	1.5	C	In
	E	50 mm 2 inch	Down	1	3	1.5	C	In
Lodged	A	125 mm 5 inch	Down	2	3	1	C	Out
	A	125 mm 5 inch	Down	2	4	1	C	Out
	E	50 mm 2 inch	Down	1	3	2	D	Out
	E	50 mm 2 inch	Down	1	4	2	D	Out
Severely Lodged	A	125 mm 5 inch	Down	2	4	3	D	Out
	A	125 mm 5 inch	Down	2	5	4	D	Out
	E	50 mm 2 inch	Down	1	4	3	C	Out
	E	50 mm 2 inch	Down	1	5	4	C	Out

45. A (min) – E (max)

Table 3.15 Stubble Height 20 mm to 100 mm (3/4 in. to 4 in.)

	Header Angle[45]	Stubble Height	Header Main Shoes	DownStop	Fore Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Whisker
Normal	A	100 mm 4 inch	Mid	2	1	1	C	In
	A	100 mm 4 inch	Mid	2	3	1	C	In
	E	20 mm 3/4 inch	Mid	1	1	1	C	In
	E	20 mm 3/4 inch	Mid	1	3	1	C	In
Lodged	A	100 mm 4 inch	Mid	2	3	1	C	Out
	A	100 mm 4 inch	Mid	2	4	2	C	Out
	E	20 mm 3/4 inch	Mid	1	3	1	D	Out
	E	20 mm 3/4 inch	Mid	1	4	2	D	Out
Severely Lodged	A	100 mm 4 inch	Mid	2-3	4	3	D	Out
	A	100 mm 4 inch	Mid	2-3	5	4	D	Out
	E	20 mm 3/4 inch	Mid	1	4	3	C	Out
	E	20 mm 3/4 inch	Mid	1	5	4	C	Out

Table 3.16 Stubble Height 16 mm to 50 mm (5/8 in. to 2 in.) Cutterbar on Ground

	Header Angle[45]	Stubble Height	Header Main Shoes	DownStop	Fore Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Whisker
Normal	A	50 mm 2 inch	Up	2	1-3	1	C	In
	A	50 mm 2 inch	Up	2	1-3	1	C	In
	E	16 mm 5/8 inch	Up	1	1	2	C	In
	E	16 mm 5/8 inch	Up	1	3	1	C	In
Lodged	A	50 mm 2 inch	Up	2	3	1	C	Out
	A	50 mm 2 inch	Up	3	4	1	C	Out
	E	16 mm 5/8 inch	Up	1	3-4	2	D	Out
	E	16 mm 5/8 inch	Up	1	3-4	2	D	Out
Severely Lodged	A	50 mm 2 inch	Up	2-3	4	3	D	Out
	A	50 mm 2 inch	Up	2-3	5	4	D	Out
	E	16 mm 5/8 inch	Up	1	4	2.5	C	Out
	E	16 mm 5/8 inch	Up	1	5	4	C	Out

3.8 Float Module Setup

The following sections outline the recommended float module setup guidelines for your specific combine model and crop type; however, the recommendations cannot cover all conditions.

If feeding problems develop with the float module, refer to Chapter *6 Troubleshooting, page 745*.

3.8.1 FM200 Feed Auger Performance Configurations

The FM200 feed auger can be configured to suit various crop conditions; there are five configurations available.

Ultra Narrow Configuration: Ultra Narrow configuration uses 8 long bolt-on flightings (4 on the left and 4 on the right) and 18 auger fingers. This optional configuration may improve feeding performance on combines with narrow feeder houses. It may also be helpful when harvesting rice.

NOTE:

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

NOTE:

You will need to drill holes in the flighting and in the drum to install the extra flighting.

For more information on converting to Ultra Narrow configuration, refer to *Ultra Narrow Configuration – Auger Flighting, page 150*.

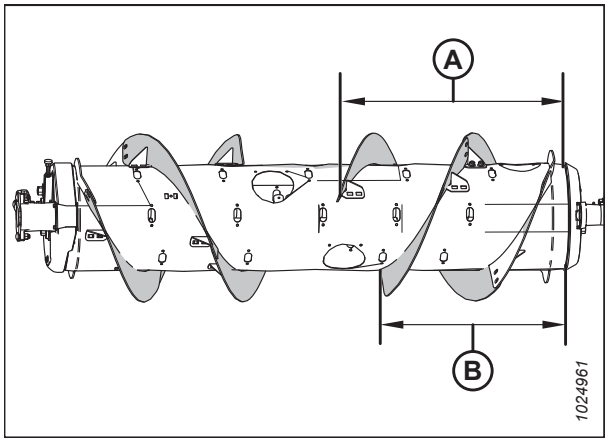


Figure 3.196: Ultra Narrow Configuration – Rear View

A - 760 mm (29 15/16 in.) **B - 602 mm (23 11/16 in.)**

Narrow Configuration: The narrow configuration uses 4 long bolt-on flightings (2 on the left and 2 on the right) and 18 feed auger fingers.

NOTE:

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

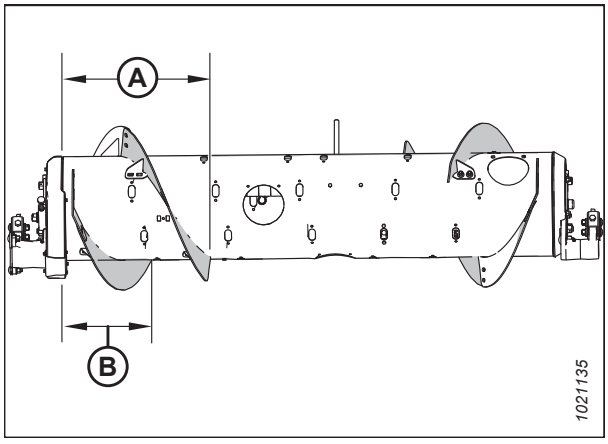


Figure 3.197: Narrow Configuration – Rear View

A - 514 mm (20 1/4 in.) **B - 356 mm (14 in.)**

Medium Configuration: The medium configuration uses 4 short bolt-on flightings (2 on the left and 2 on the right) and 22 feed auger fingers.

NOTE:

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

Medium configuration is a standard configuration for the following combines:

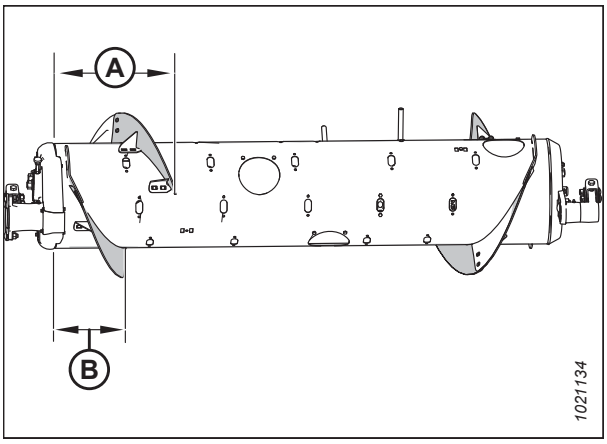


Figure 3.198: Medium Configuration – Rear View

A - 410 mm (16 1/8 in.) **B - 260 mm (10 1/4 in.)**

For more information on converting to Medium configuration, refer to *Medium Configuration – Auger Flighting, page 157*.

Wide Configuration: The wide configuration uses 2 short bolt-on flightings (1 on the left and 1 on the right) and 30 feed auger fingers.

NOTE:

Dimensions (A) and (B) are the same for both ends of the auger. They should be within 15 mm (9/16 in.) of the numbers given.

NOTE:

This configuration may increase combine capacity on wide feeder house combines in certain crop conditions.

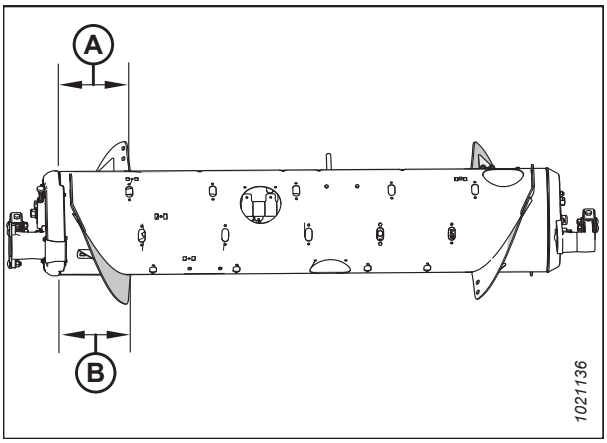


Figure 3.199: Wide Configuration – Rear View

A - 257 mm (10 1/8 in.) **B - 257 mm (10 1/8 in.)**

For more information on converting to Wide configuration, refer to *Wide Configuration – Auger Flighting, page 159*.

Ultra Wide Configuration: The Ultra Wide configuration uses only factory-welded flighting (A) is responsible for conveying the crop. No bolt-on flighting is installed and a total of 30 auger fingers are recommended for this configuration.

Ultra Wide configuration is an optional configuration for wide feeder house combines.

NOTE:

This configuration may improve feeding for wide feeder house combines.

For more information on converting to Ultra Wide configuration, refer to *Ultra Wide Configuration – Auger Flighting, page 162*.

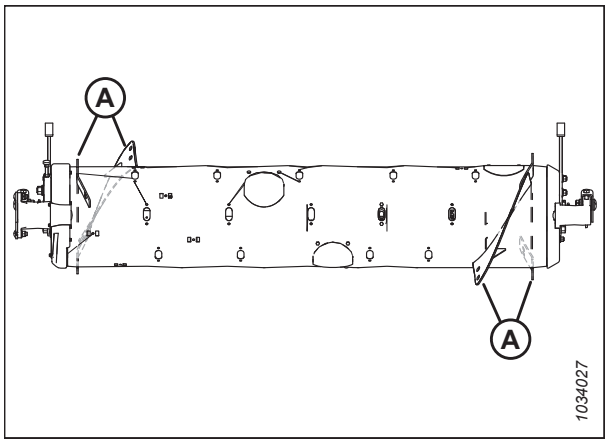


Figure 3.200: Ultra Wide Configuration – Rear View

Ultra Narrow Configuration – Auger Flighting

Ultra Narrow Configuration uses eight long bolt-on flightings (four on the left and four on the right), and 18 auger fingers are recommended.

NOTE:

You will need to drill holes in the flighting and in the drum to install the four additional flightings.

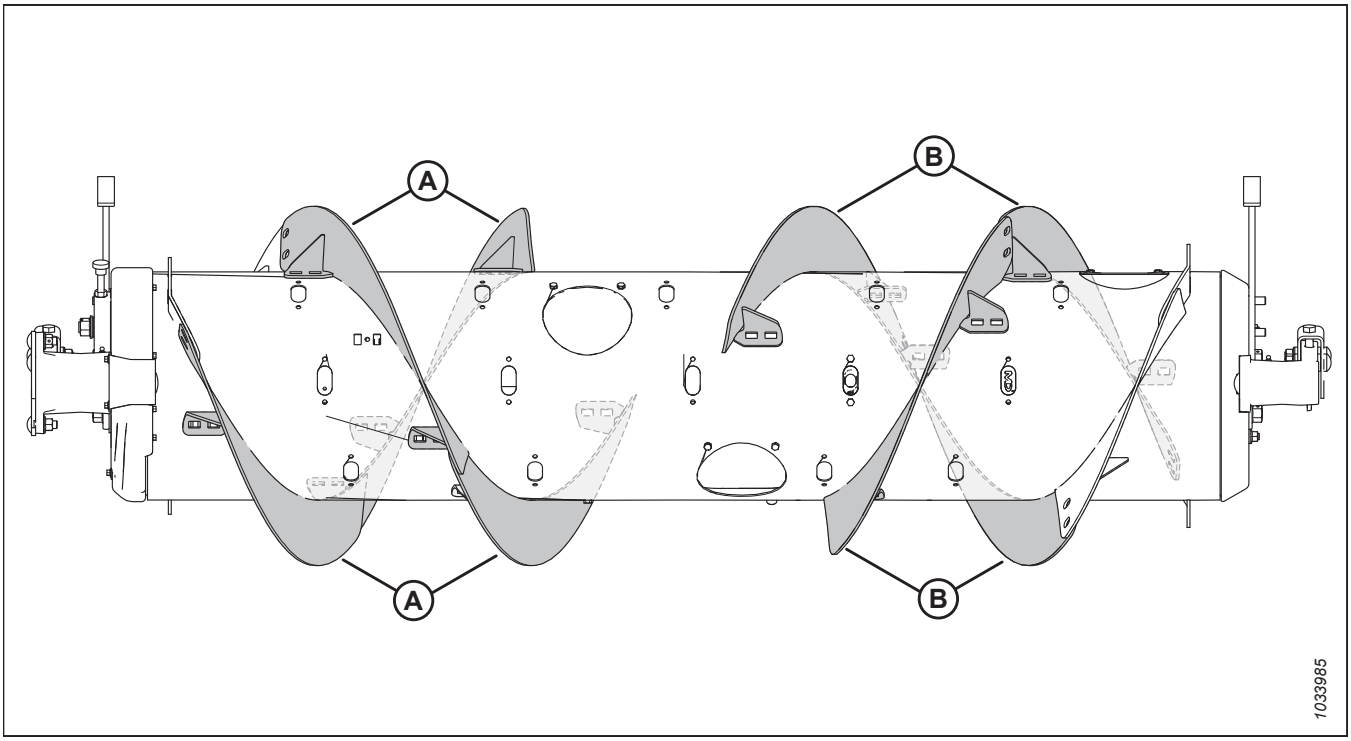


Figure 3.201: Ultra Narrow Configuration

A - Left Long Flighting (MD #287889)

B - Right Long Flighting (MD #287890)

To convert to Ultra Narrow Configuration from Narrow Configuration:

One flighting kit (MD #357234 or B7345[46]) and some hole-drilling are required to install flightings (A). Add or remove auger fingers as necessary to optimize feeding for your combine and crop conditions.

IMPORTANT:

Extra hardware is included in these kits. Be sure to use the correct hardware at the correct location to prevent damage and to maximize performance.

- For flighting installation instructions, refer to *Installing Bolt-On Flighting, page 166*.
- To install the additional flightings that require hole drilling, refer to *Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 169*.
- For finger installation/removal instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174* and *3.8.2 Removing Feed Auger Fingers, page 171*.

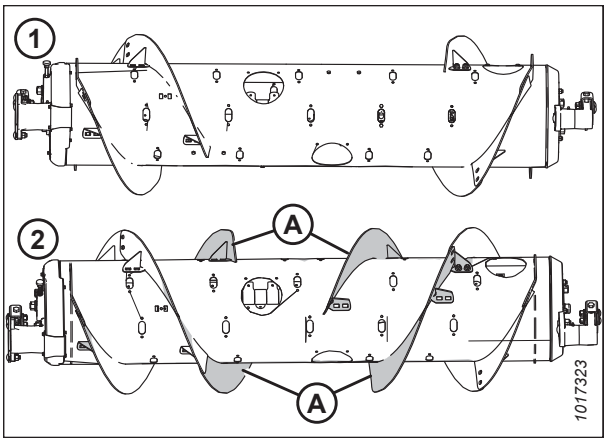


Figure 3.202: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**

To convert to Ultra Narrow Configuration from Medium, Wide, or Ultra Wide Configuration:

Two flighting kits (MD #357234 or B7345[46]) and some hole-drilling is required to convert to this configuration.

You will need to replace existing short flightings (A)[47] with long flightings (B). Add or remove auger fingers as necessary to optimize feeding for your combine and crop conditions.

IMPORTANT:

Extra hardware is included in these kits. Be sure to use the correct hardware in the correct location to prevent damage and to maximize performance.

- For flighting replacement instructions, refer to *Removing Bolt-On Flighting, page 164* and *Installing Bolt-On Flighting, page 166*.
- To install the additional flightings that require hole drilling, refer to *Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 169*.
- For finger installation/removal instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174* and *3.8.2 Removing Feed Auger Fingers, page 171*.

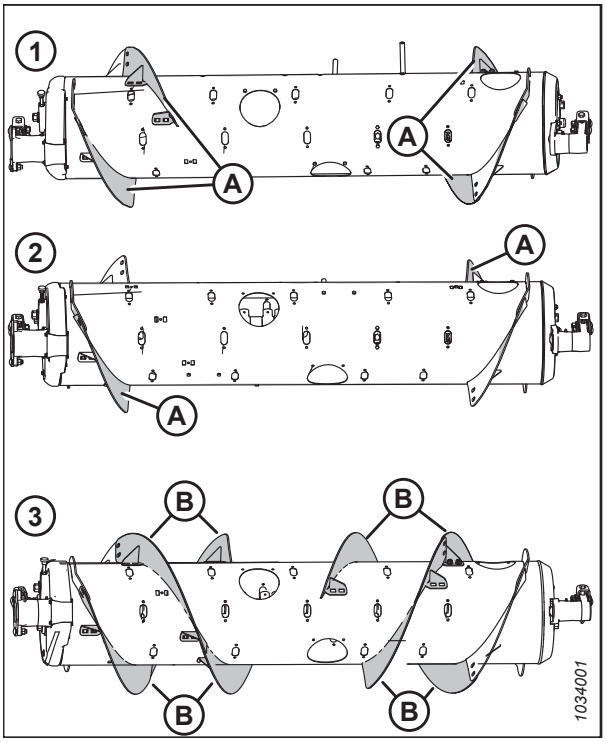


Figure 3.203: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Ultra Narrow Configuration

46. MD #357234 is available only through MacDon Parts. B7345 is available only through MacDon Whole Goods. Both kits contain wear-resistant flightings.
47. The quantity of existing short flightings is either 0, 2, or 4, depending on the current configuration.

NOTE:

If converting from Ultra Wide Configuration, there is no existing bolt-on flighting to remove because that configuration uses only the factory-welded flighting (A).

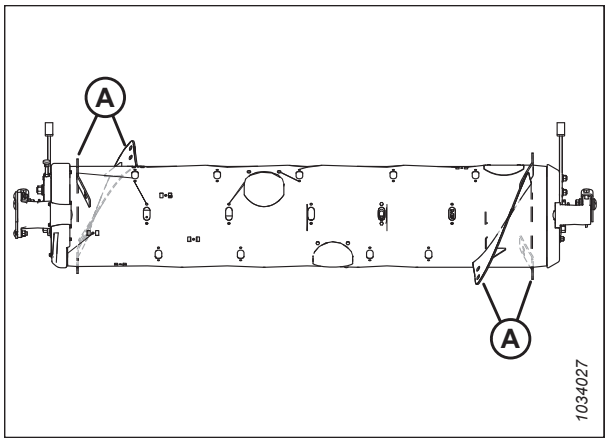


Figure 3.204: Ultra Wide Configuration

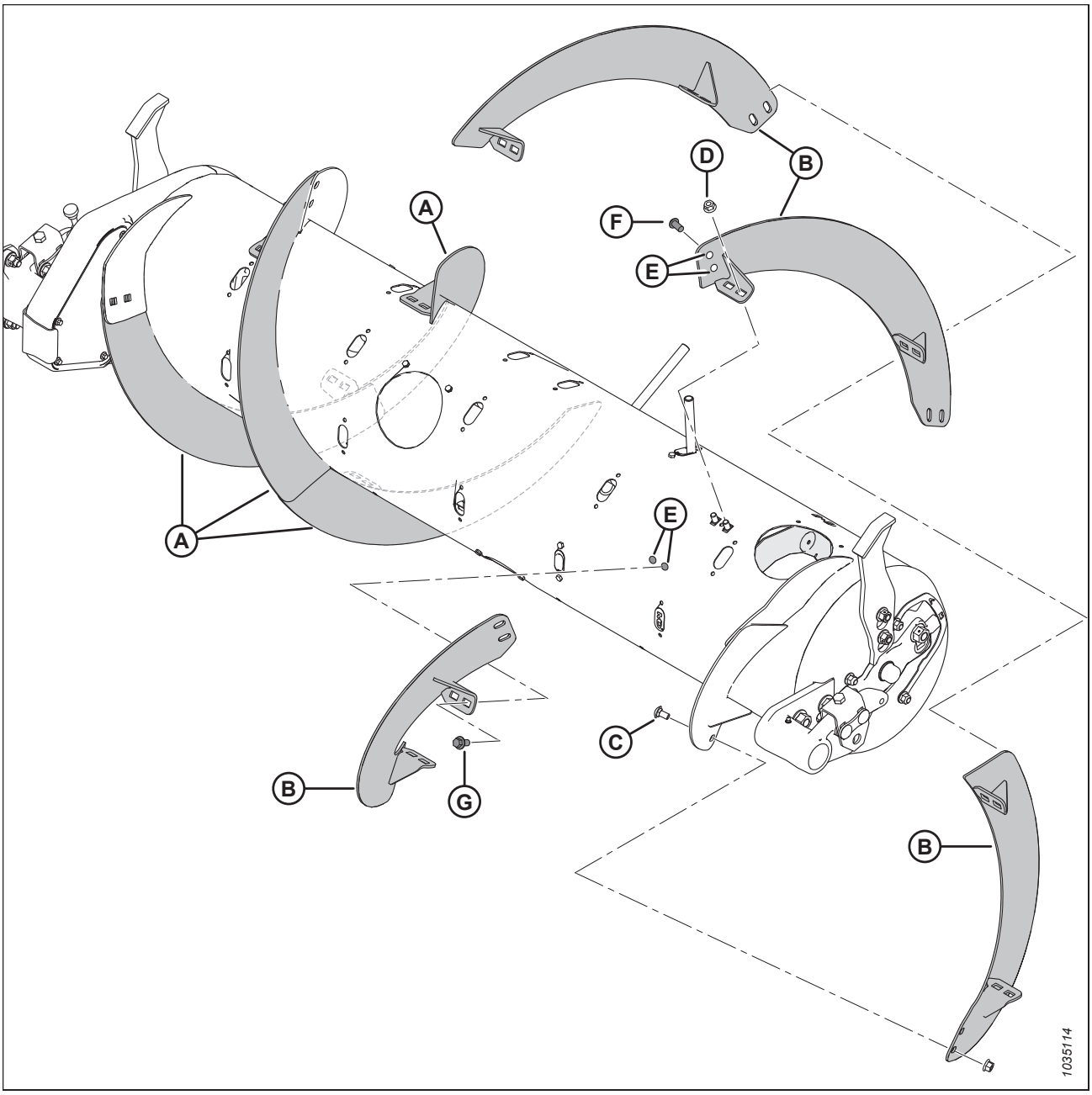


Figure 3.205: Ultra Narrow Configuration

A - Left Long Flighting (MD #287889)
B - Right Long Flighting (MD #287890)
C - M10 x 20 mm Carriage Bolt (MD #136178)
D - M10 Center Lock Flange Nut (MD #135799)
E - Drilled Holes – 11 mm (7/16 in.) [48]
F - M10 x 20 mm Button Head Bolt (MD #135723)[49]
G - M10 x 20 mm Flange Head Bolt (MD #152655)[50]

48. Each of the four additional flightings require six drilled holes to install (four in the auger and two in the adjacent flighting).
49. Used on the holes drilled in the existing flighting.
50. Used on the holes drilled in the auger.

Narrow Configuration – Auger Flighting

Narrow Configuration uses four long bolt-on flightings (two on the left and two on the right), and 18 auger fingers.

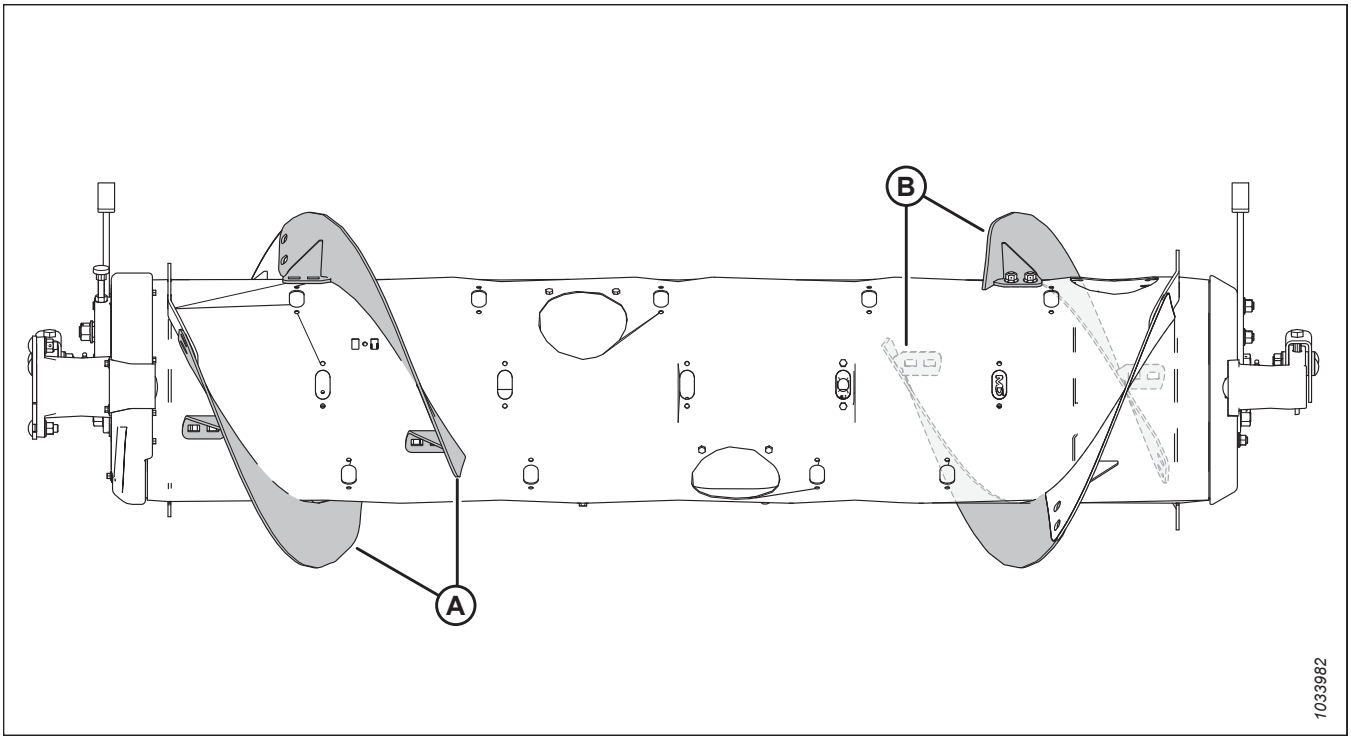


Figure 3.206: Narrow Configuration

A - Left Long Flighting (MD #287889) **B - Right Long Flighting (MD #287890)**

To convert to Narrow Configuration from Ultra Narrow Configuration:

Remove four flightings (A) from the auger and install additional auger fingers. A total of 18 auger fingers is recommended for this configuration.

- For flighting removal instructions, refer to *Removing Bolt-On Flighting, page 164*.
- For finger installation instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174*.

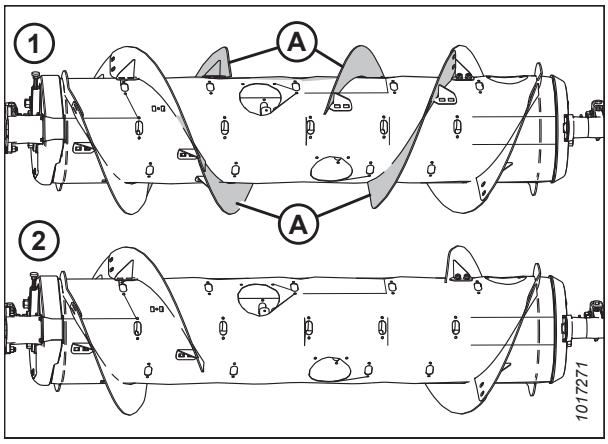


Figure 3.207: Auger Configurations – Rear View

1 - Ultra Narrow Configuration **2 - Narrow Configuration**

To convert to Narrow Configuration from Medium, Wide, or Ultra Wide Configuration:

One flighting kit (MD #357234 or B7345[51]) is required. You will need to replace any of the existing short flightings (A)[52] with long flightings (B) and remove the extra auger fingers. A total of 18 auger fingers is recommended for this configuration.

IMPORTANT:

Extra hardware is included in these kits. Be sure to use the correct hardware in the correct location to prevent damage and to maximize performance.

- For flighting replacement instructions, refer to *Removing Bolt-On Flighting, page 164* and *Installing Bolt-On Flighting, page 166*.
- For finger removal instructions, refer to *3.8.2 Removing Feed Auger Fingers, page 171*.

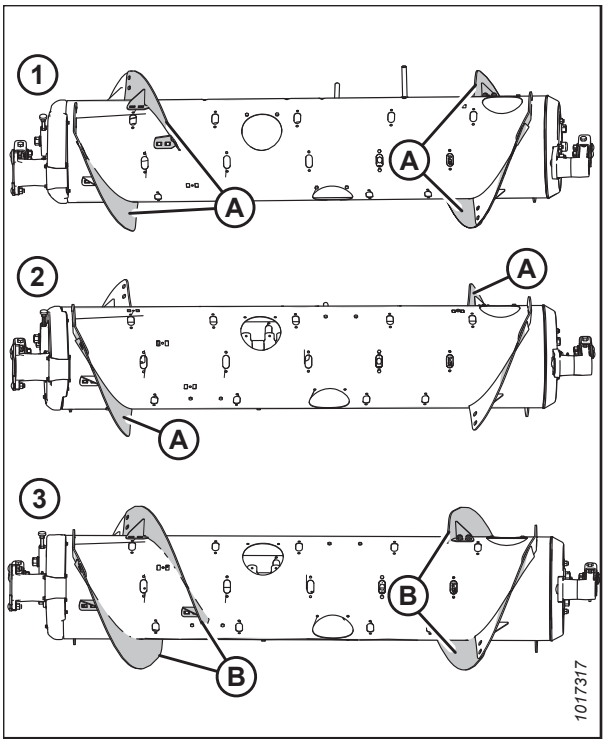


Figure 3.208: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Narrow Configuration

NOTE:

If converting from Ultra Wide Configuration, there is no existing bolt-on flighting to remove because that configuration uses only the factory-welded flighting (A).

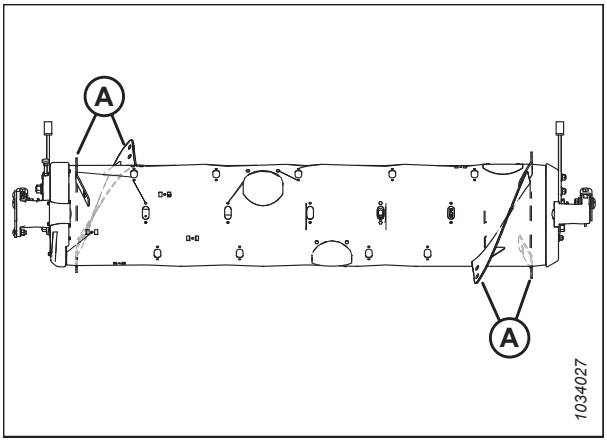


Figure 3.209: Ultra Wide Configuration

51. MD #357234 is available only through MacDon Parts. B7345 is available only through MacDon Whole Goods. Both kits contain wear-resistant flightings.
52. The quantity of existing short flightings is either 0, 2, or 4, depending on the current configuration.

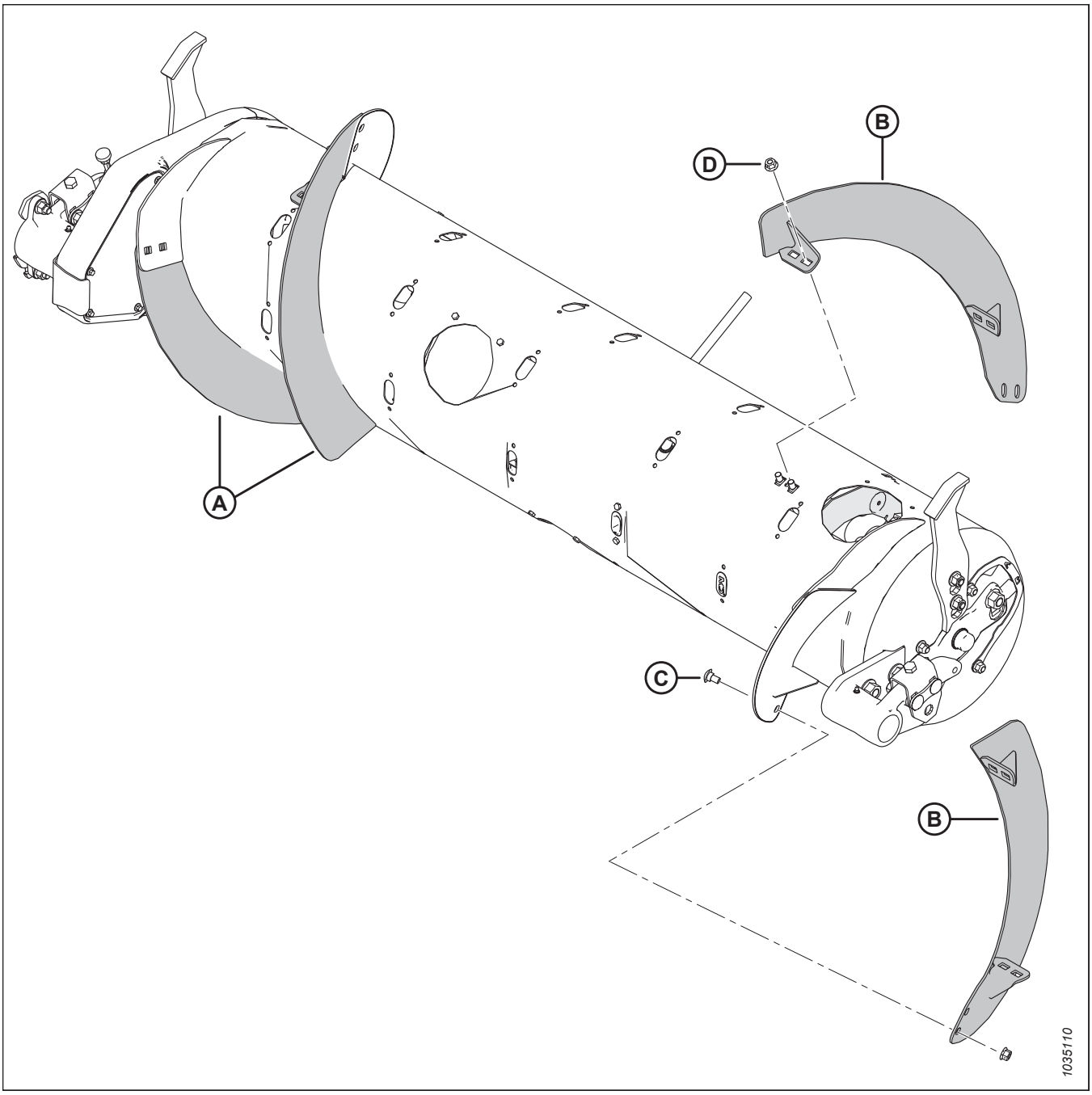


Figure 3.210: Narrow Configuration

A - Left Long Flighting (MD #287889)

B - Right Long Flighting (MD #287890)

C - M10 x 20 mm Carriage Bolt (MD #136178)

D - M10 Center Lock Flange Nut (MD #135799)

Medium Configuration – Auger Flighting

Medium Configuration uses four short bolt-on flightings (two on the left and two on the right), and 22 auger fingers are recommended.

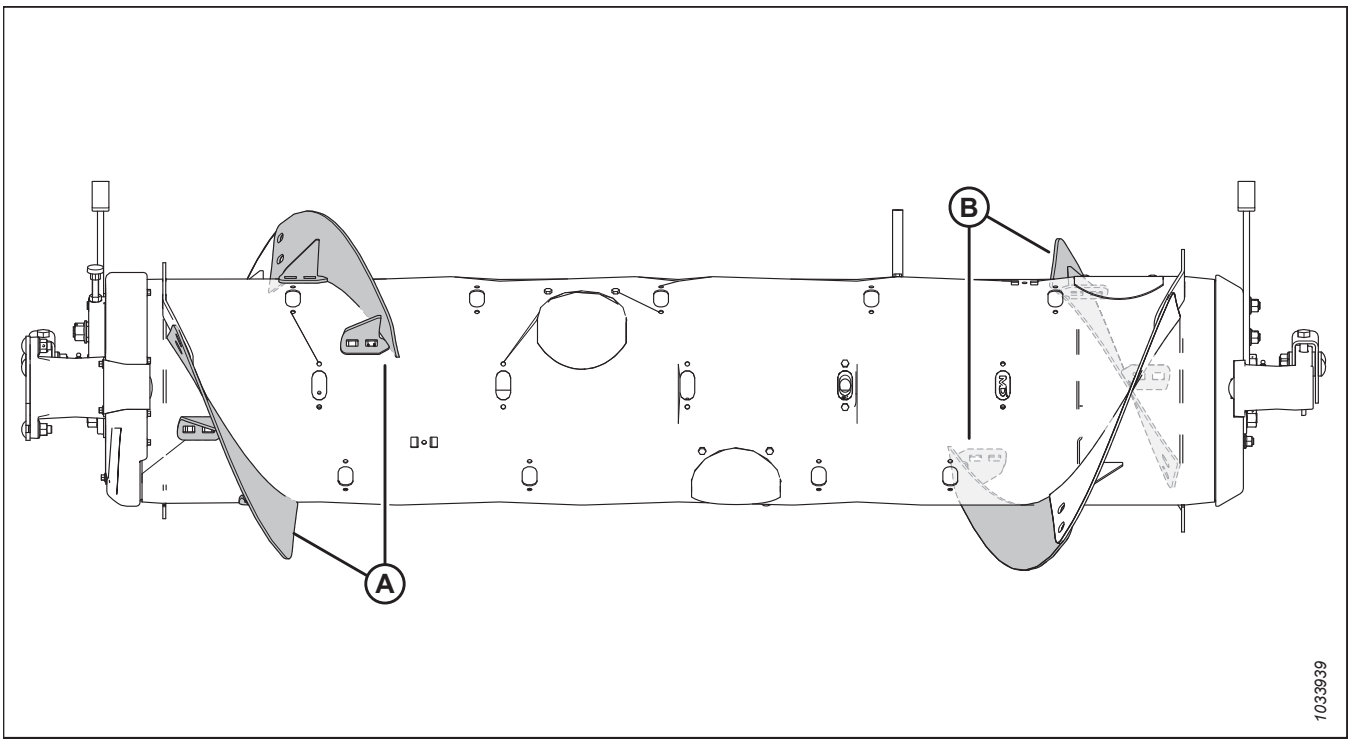


Figure 3.211: Medium Configuration

A - Left Short Flighting (MD #287888) **B - Right Short Flighting (MD #287887)**

To convert to Medium Configuration from Wide Configuration:

One flighting kit (MD #357233 or B7344[53]) is required. You will need to install new flightings (A) and remove the extra auger fingers. A total of 22 auger fingers is recommended for this configuration.

- For flighting installation instructions, refer to *Installing Bolt-On Flighting, page 166*.
- For finger removal instructions, refer to *3.8.2 Removing Feed Auger Fingers, page 171*.

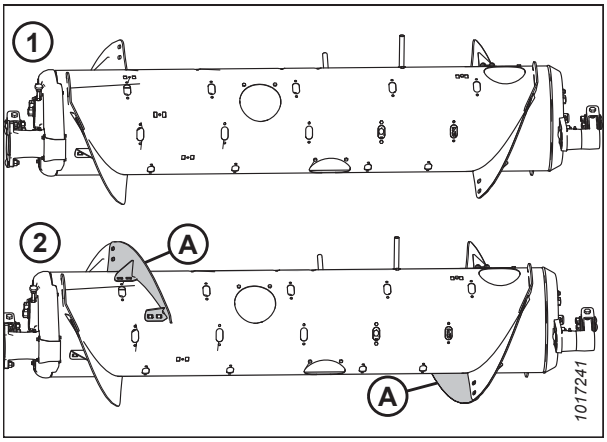


Figure 3.212: Auger Configurations – Rear View

1 - Wide Configuration **2 - Medium Configuration**

53. MD #357233 is available only through MacDon Parts. B7344 is available only through MacDon Whole Goods. Both kits contain wear-resistant flightings.

To convert to Medium Configuration from Narrow or Ultra Narrow Configuration:

Two flighting kits (MD #357233 or B7344[53]) are required. You will need to replace long flightings (A)[54] with short flightings (B) and install additional auger fingers. A total of 22 auger fingers is recommended for this configuration.

- For flighting replacement instructions, refer to *Removing Bolt-On Flighting, page 164* and *Installing Bolt-On Flighting, page 166*.
- For finger installation instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174*.

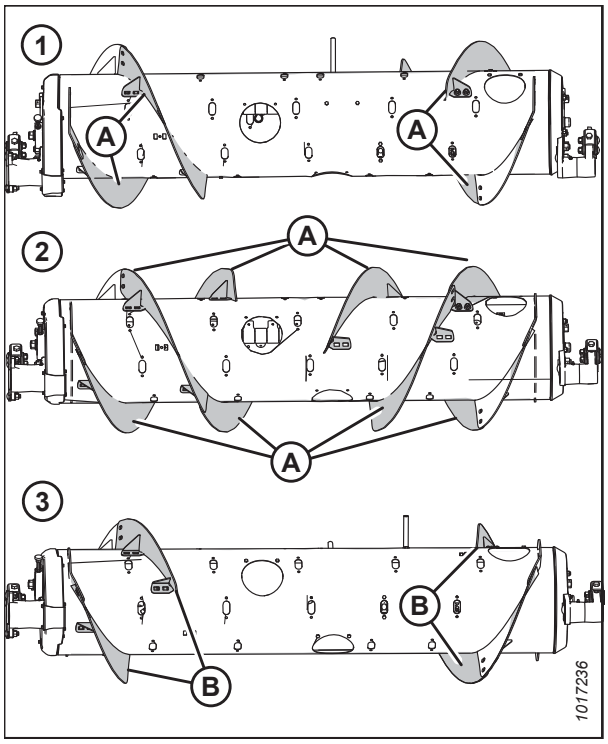


Figure 3.213: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Medium Configuration

To convert to Medium Configuration from Ultra Wide Configuration:

Two flighting kits (MD #357233 or B7344[53]) are required. You will need to install four short flightings onto the existing welded flightings (A) and remove the extra auger fingers. A total of 22 auger fingers is recommended for this configuration.

- For flighting installation instructions, refer to *Installing Bolt-On Flighting, page 166*.
- For finger removal instructions, refer to *3.8.2 Removing Feed Auger Fingers, page 171*.

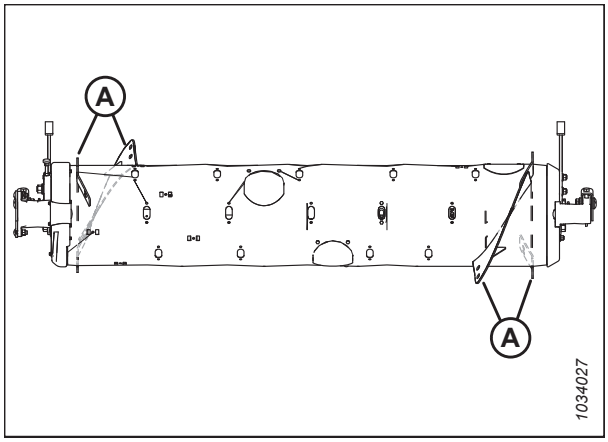


Figure 3.214: Ultra Wide Configuration

54. The quantity of existing long flightings is either 4 or 8, depending on the current configuration.

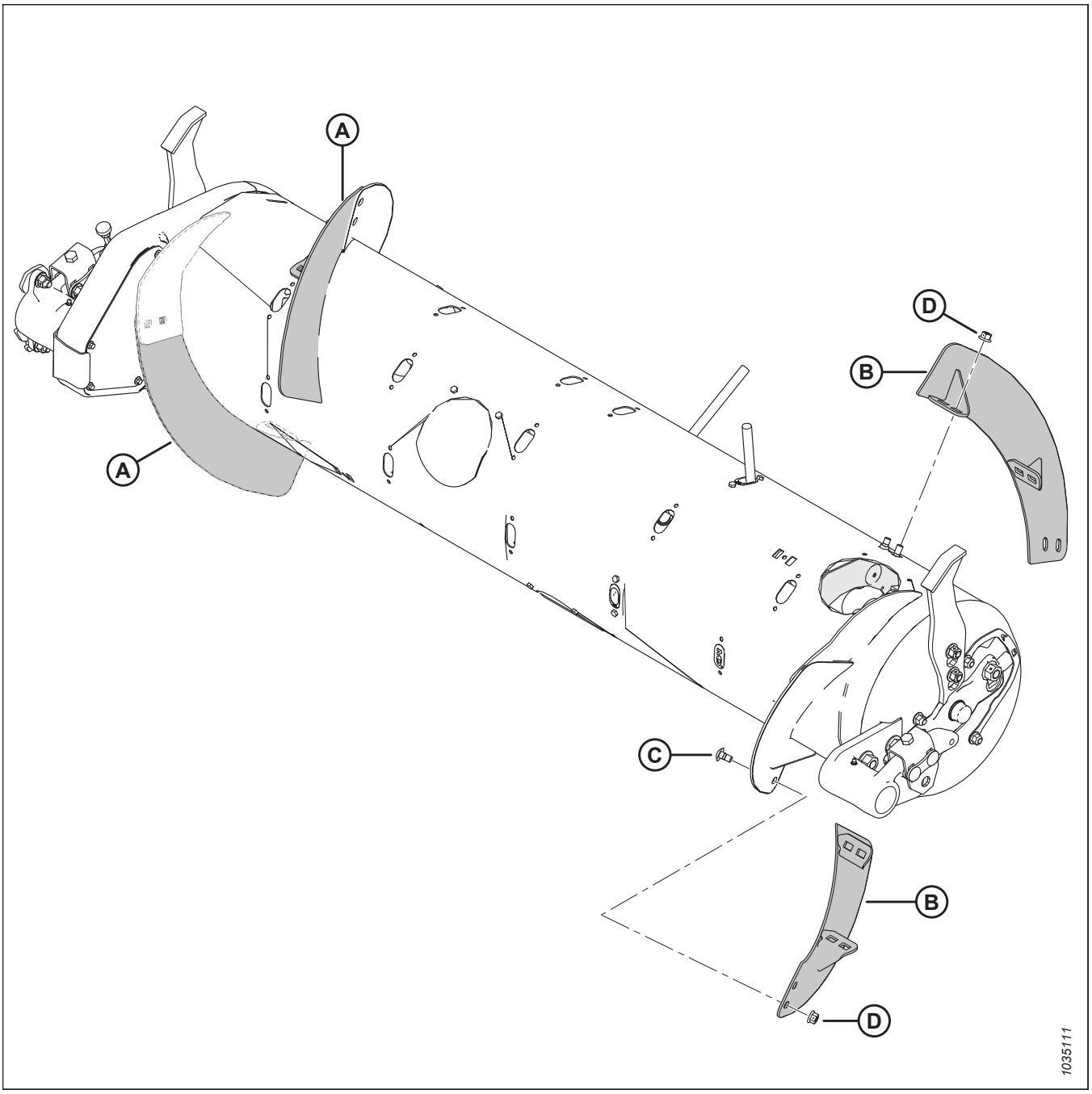


Figure 3.215: Medium Configuration

A - Left Short Flighting (MD #287888)

B - Right Short Flighting (MD #287887)

C - M10 x 20 mm Carriage Bolt (MD #136178)

D - M10 Center Lock Flange Nut (MD #135799)

Wide Configuration – Auger Flighting

Wide Configuration uses two short bolt-on flightings (one on the left and one on the right), and 30 auger fingers are recommended.

NOTE:

This configuration may increase combine capacity on wide feeder house combines in certain crop conditions.

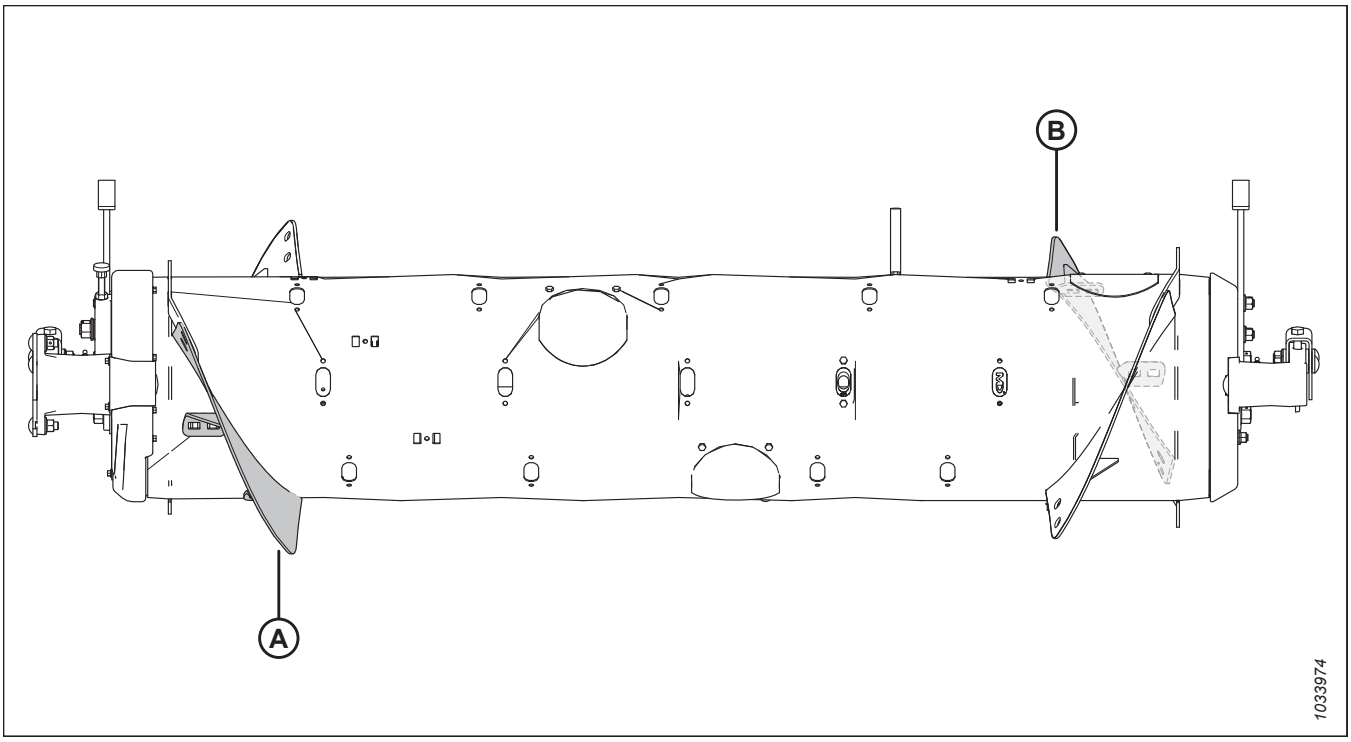


Figure 3.216: Wide Configuration

A - Left Short Flighting (MD #287888) **B - Right Short Flighting (MD #287887)**

To convert to Wide Configuration from Medium Configuration:

Remove existing flightings (A) from the auger and install additional auger fingers. A total of 30 auger fingers is recommended for this configuration.

- For flighting removal instructions, refer to *Removing Bolt-On Flighting, page 164*.
- For finger installation instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174*.

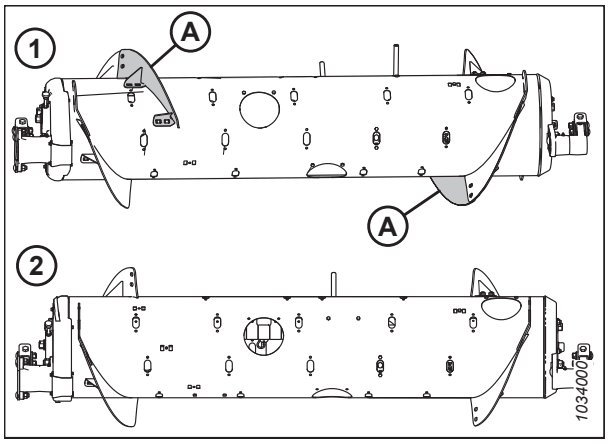


Figure 3.217: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**

To convert to Wide Configuration from Ultra Wide Configuration:

One flighting kit (either MD #357233 or B7344[55]) is required. You will need to install two short flightings onto the existing welded flightings (A). A total of 30 auger fingers is recommended for this configuration.

- For flighting installation instructions, refer to *Installing Bolt-On Flighting, page 166*.
- If required to remove auger fingers, refer to *3.8.2 Removing Feed Auger Fingers, page 171*.

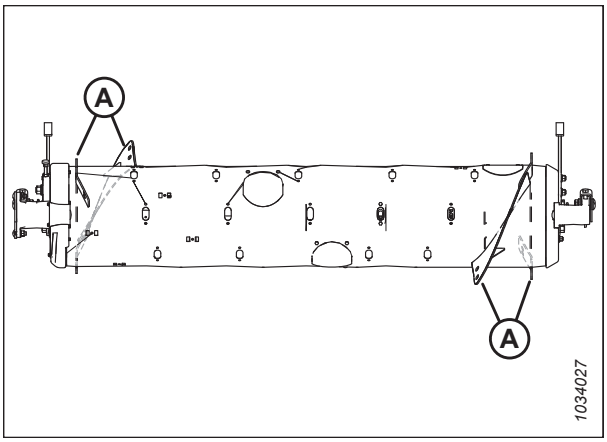


Figure 3.218: Ultra Wide Configuration

To convert to Wide Configuration from Narrow or Ultra Narrow Configuration:

One flighting kit (MD #357233 or B7344[55]) is required. You will need to replace existing long flightings (A)[56] with short flightings (B) and install additional auger fingers. A total of 30 auger fingers is recommended for this configuration.

- For flighting replacement instructions, refer to *Removing Bolt-On Flighting, page 164* and *Installing Bolt-On Flighting, page 166*.
- For finger installation instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174*.

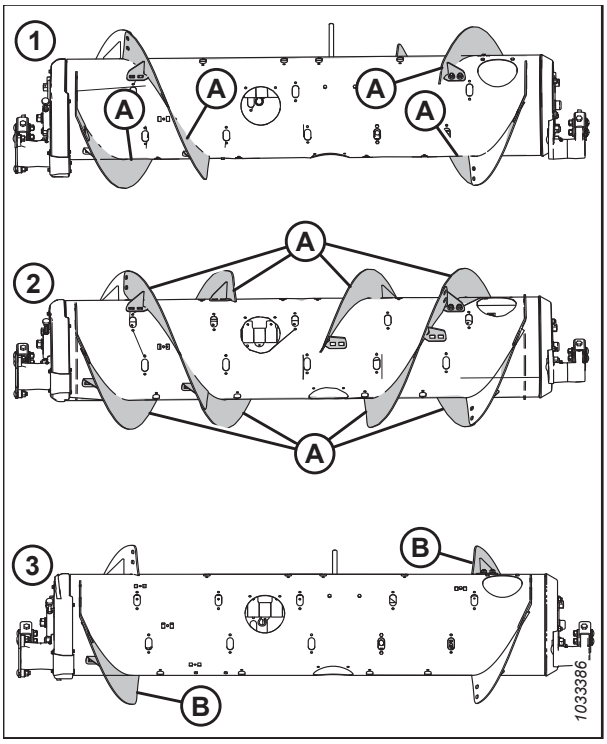


Figure 3.219: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Wide Configuration

55. MD #357233 is available only through MacDon Parts. B7344 is available only through Whole Goods. Both kits contain wear-resistant flightings.
56. The quantity of existing long flightings is either 4 or 8, depending on the current configuration.

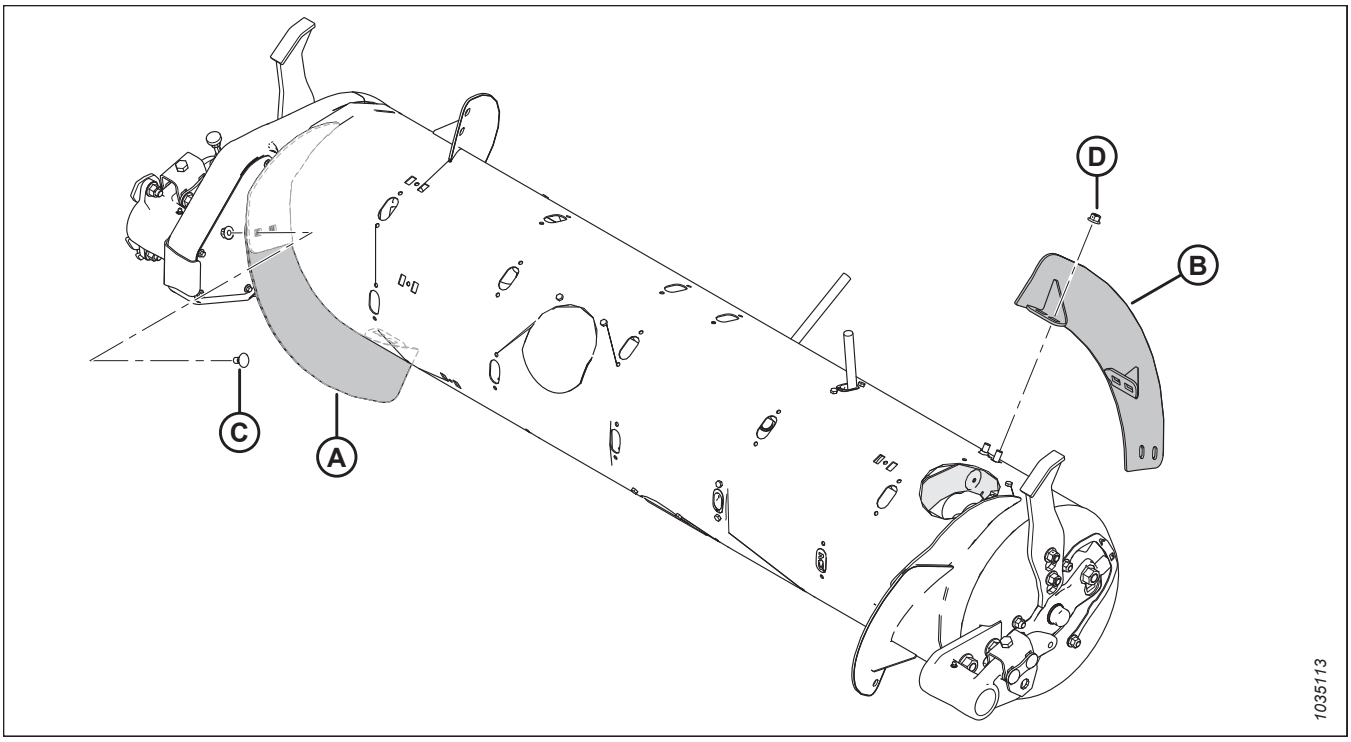


Figure 3.220: Wide Configuration

A - Left Short Flighting (MD #287888)

B - Right Short Flighting (MD #287887)

C - M10 x 20 mm Carriage Bolt (MD #136178)

D - M10 Center Lock Flange Nut (MD #135799)

Ultra Wide Configuration – Auger Flighting

Ultra Wide Configuration uses no bolt-on flighting; only factory-welded flighting is responsible for conveying the crop. A total of 30 auger fingers is recommended for this configuration.

NOTE:

This configuration may increase combine capacity on wide feeder house combines in certain crop conditions.

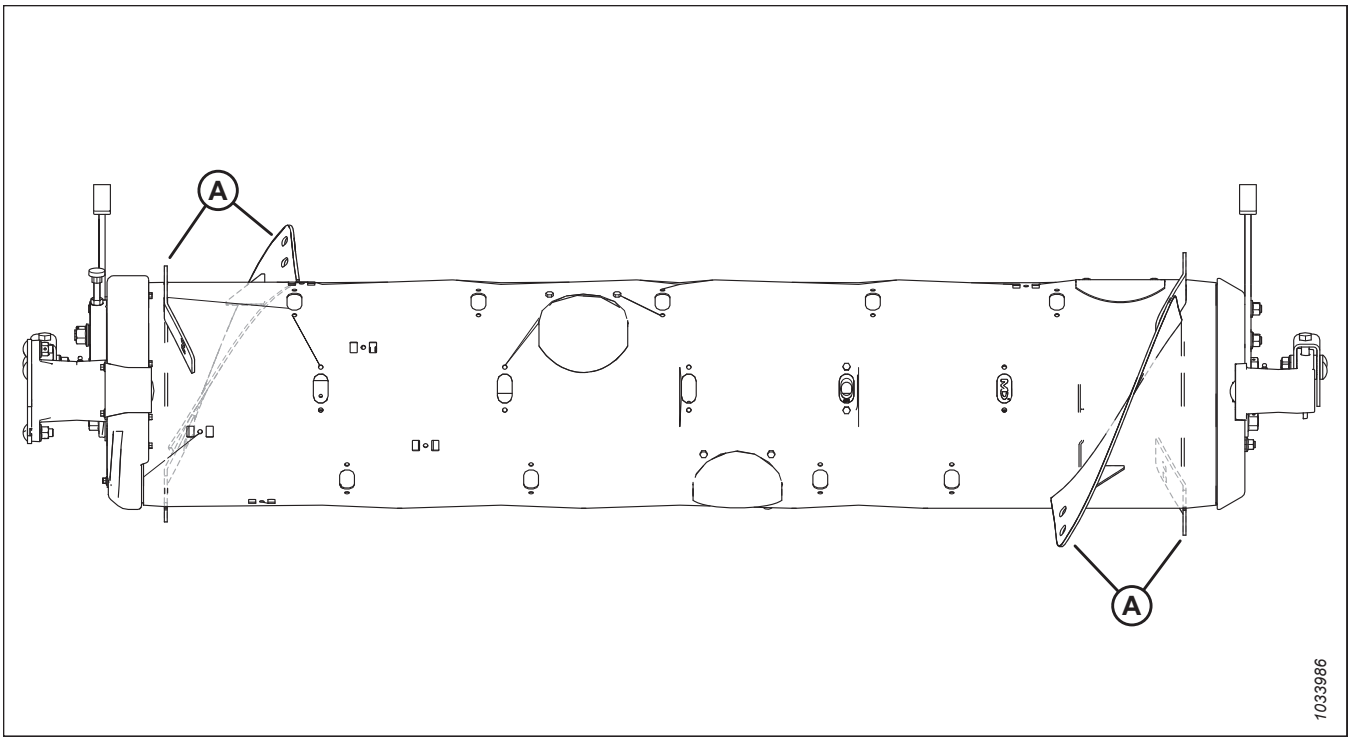


Figure 3.221: Ultra Wide Configuration

A - Factory-Welded Flighting

To convert to Ultra Wide Configuration:

Remove all existing bolt-on flightings (A) from the auger and install additional auger fingers if required. A total of 30 auger fingers is recommended for this configuration.

- For flighting removal instructions, refer to *Removing Bolt-On Flighting, page 164*.
- For finger installation instructions, refer to *3.8.3 Installing Feed Auger Fingers, page 174*.

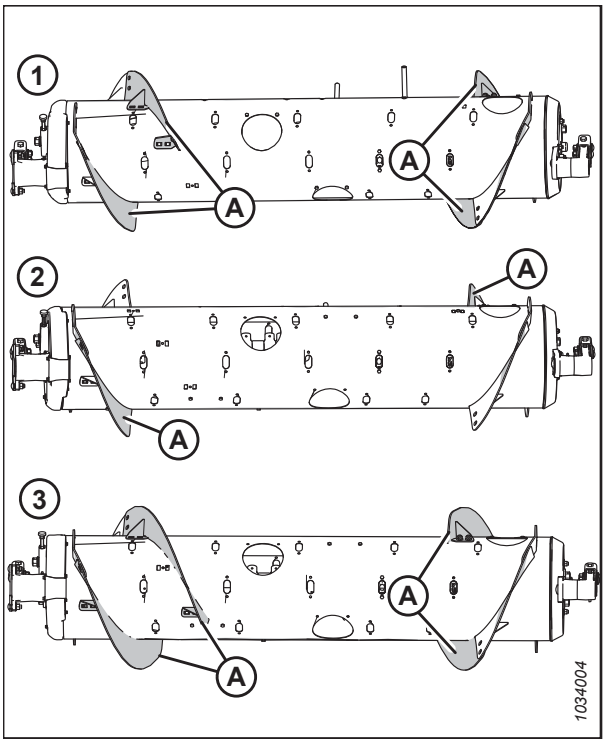


Figure 3.222: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Narrow Configuration

Auger Flighting

The auger flighting on the FM200 can be configured for particular harvesting and crop conditions.

For instructions, refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148* for combine/crop specific configurations.

Removing Bolt-On Flighting

The feed auger has removable flighting that can be customized to the different models of combines.

Before removing the bolt-on flighting, determine the quantity and the type of flighting required. For more information on the different flighting configurations, refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148*.

To remove the bolt-on flighting, follow these steps:

1. To improve access to the feed auger, remove the float module from the combine.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the auger as needed.

   NOTE:

   The illustrations in this procedure show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.
4. Remove bolts (A) and access cover (B). Retain these parts for reassembly. If necessary, remove multiple access covers.

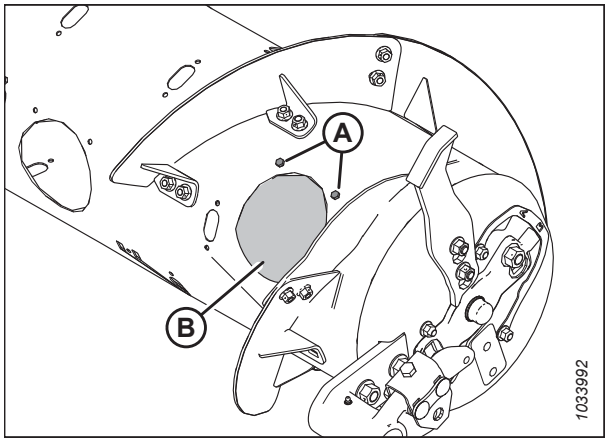


Figure 3.223: Auger Access Cover – Right Side

5. Remove bolts and nuts (B) and remove flighting (A).

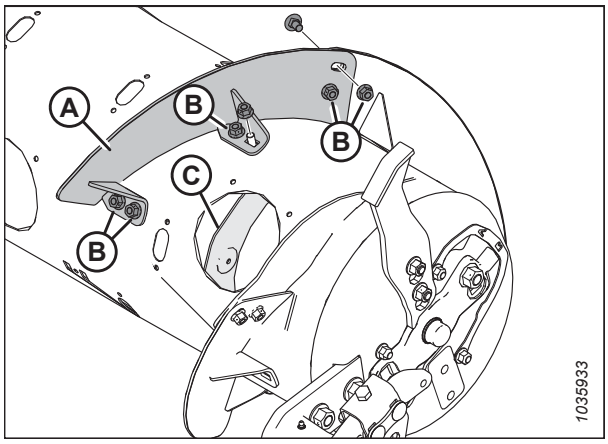


Figure 3.224: Short Flighting – Right Side

NOTE:

The illustration shows new long flighting (A) installed.

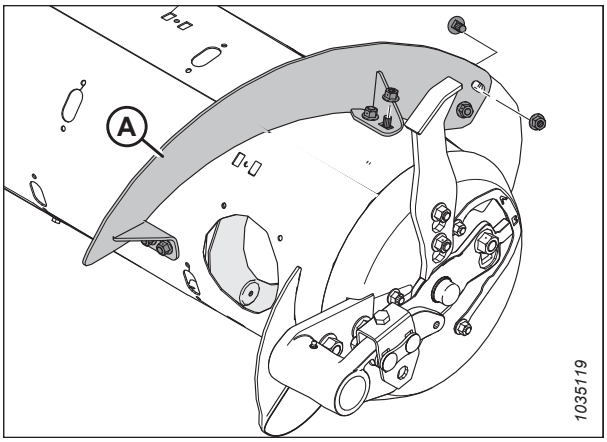


Figure 3.225: Long Flighting – Right Side

6. Install slot plug (A) with M6 bolt (B) and tee nut (C) at each location from which the flighting was removed. Torque the hardware to 9 Nm (80 lbf·in).

   NOTE:

   If the plug bolts are **NOT** new, coat them with medium-strength threadlocker (Loctite® 243 or equivalent) prior to installation.

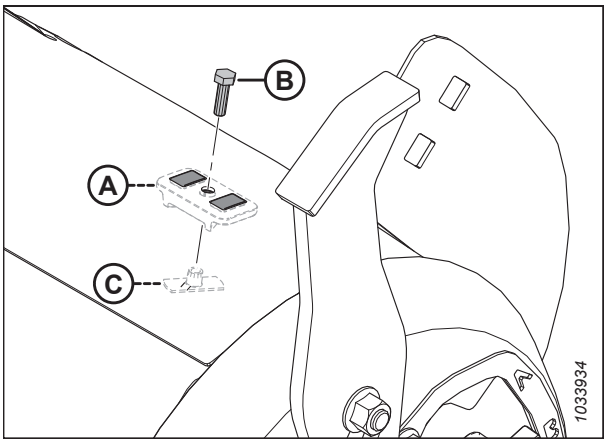


Figure 3.226: Installing Slot Plugs

7. Repeat this procedure to remove flighting (A) from the left side of the auger.

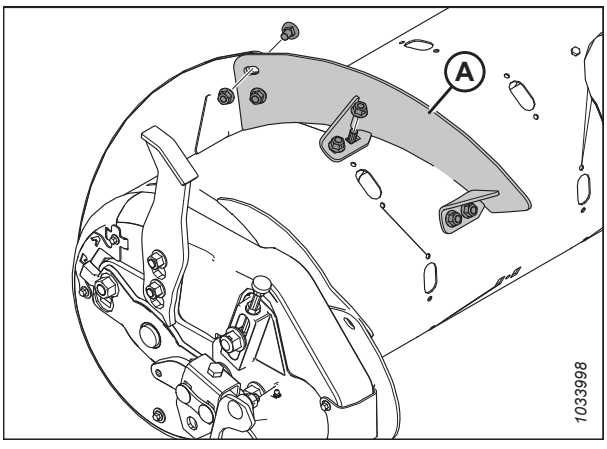


Figure 3.227: Short Flighting – Left Side

8. Reinstall access cover(s) (A) using retained bolts (B) and the welded nuts inside the auger. Coat the bolts with medium-strength threadlocker (Loctite® 243 or equivalent) and torque the hardware to 9 Nm (80 lbf·in).

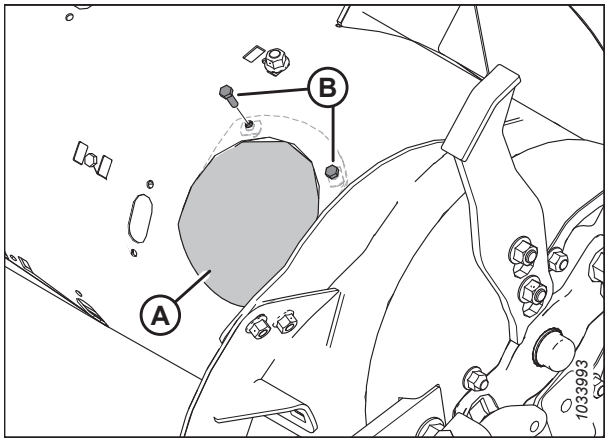


Figure 3.228: Access Cover – Right Side

Installing Bolt-On Flighting

The feed auger has removable flighting that can be customized to the different models of combines.

Before installing the bolt-on flighting, determine the quantity and the type of flighting required. For more information on the different flighting configurations, refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148*.

To install the bolt-on flighting, follow these steps:

1. To improve access to the feed auger, remove the float module from the combine.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the auger as needed.

   NOTE:

   The illustrations in this procedure show the feed auger separated from the float module for clarity. This procedure can be performed with the feed auger installed in the float module.
4. Remove bolts (A) and access cover (B). Retain these parts for reassembly. If necessary, remove multiple access covers.

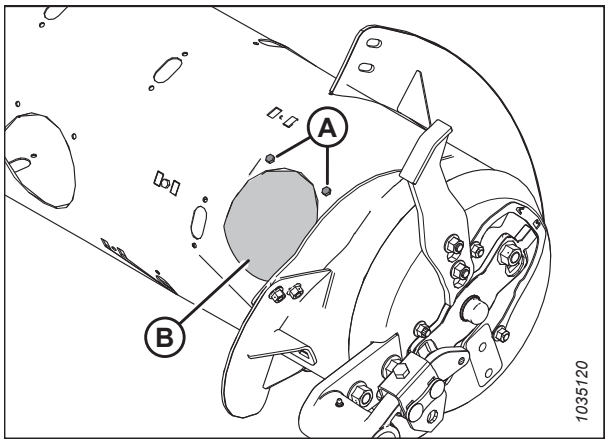


Figure 3.229: Auger Access Cover – Right Side

5. Align the new bolt-on flighting (A) to determine which slot plugs to remove from the auger. The new flighting overlaps on the outboard side of the adjacent flighting.

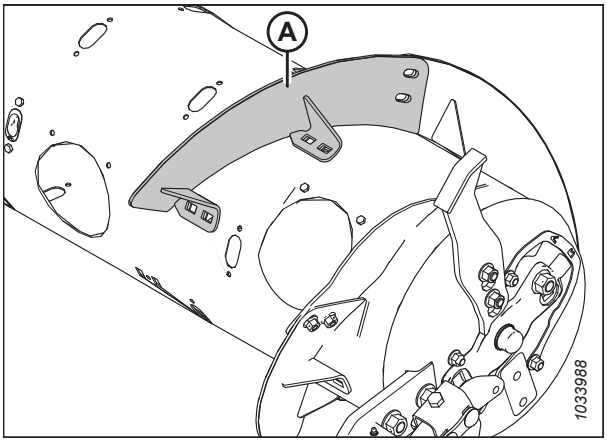


Figure 3.230: Right Side of Auger

6. Remove applicable slot plugs(s) (A).

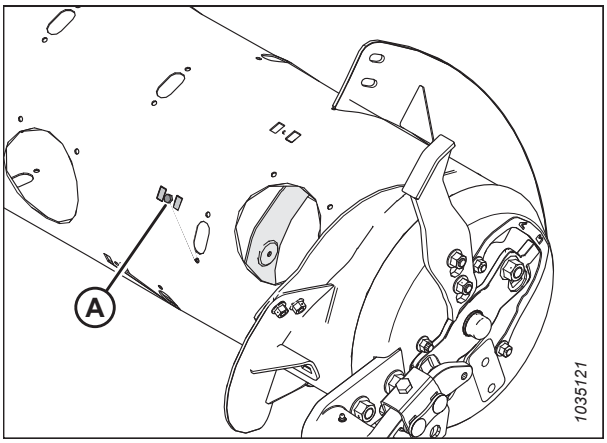


Figure 3.231: Right Side of Auger

7. Install flighting (A) using M10 x 20 mm square neck carriage bolts and center lock nuts at locations (B).

   IMPORTANT:

   The bolt heads must be installed on the inside of the auger to prevent damage to the auger's internal components.

   IMPORTANT:

   The bolts that attach the flightings to each other must have the bolt heads on the inboard (crop side) of the flighting.

8. Torque the six nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on the flighting, then torque them to 61 Nm (45 lbf·ft).

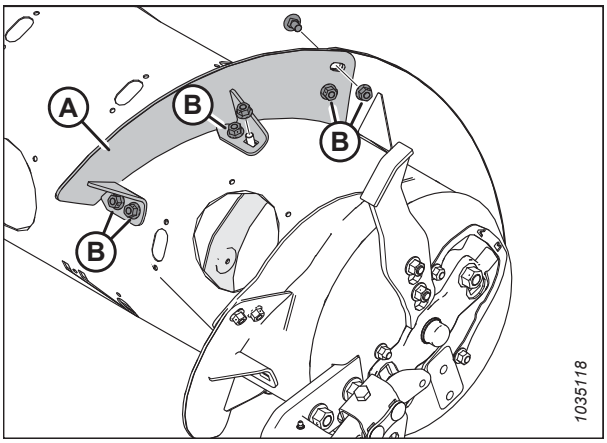


Figure 3.232: Short Flighting – Right Side

NOTE:

The illustration shows long flighting (A) installed.

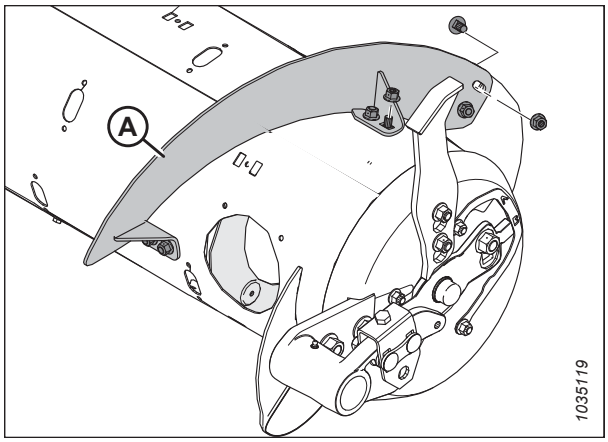


Figure 3.233: Long Flighting – Right Side

9. Repeat the procedure to install flighting (A) on the left side of the auger.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

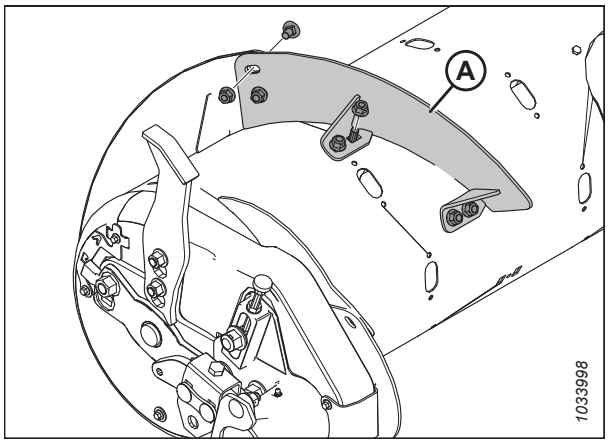


Figure 3.234: Short Flighting – Left Side

10. Reinstall access cover(s) (A) using retained bolts (B) and the welded nuts inside the auger. Coat the bolts with medium-strength threadlocker (Loctite® 243 or equivalent) and torque the hardware to 9 Nm (80 lbf·in).

11. If you are converting the feed auger to an Ultra Narrow configuration and require drilling to install the remaining flighting, proceed to *Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 169*.

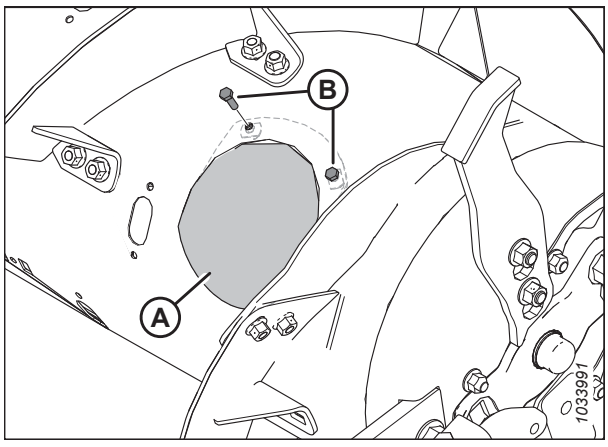


Figure 3.235: Access Cover – Right Side

Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only

When converting the feed auger to an Ultra Narrow configuration, drilling is required to install the additional flighting.

NOTE:

This procedure assumes the feed auger is currently in Narrow configuration (4 long flightings [A] installed).

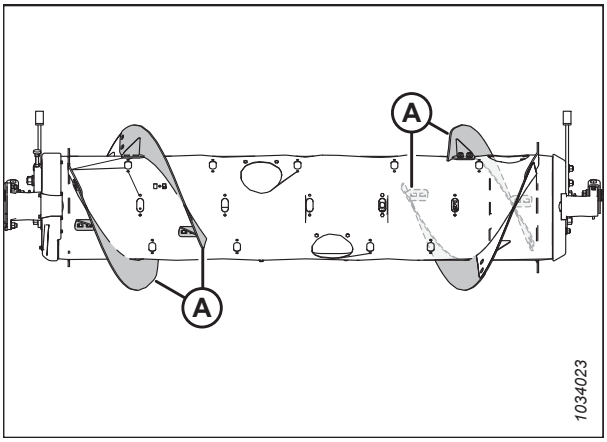


Figure 3.236: Narrow Configuration

To install the four additional long flightings for an Ultra Narrow configuration, follow the steps below:

1. To improve access to the feed auger, remove the float module from the combine.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the auger as needed.

   NOTE:

   The illustrations in this procedure show the feed auger separated from the float module for clarity. This procedure can be performed with the feed auger installed in the float module.
4. Place new flighting (A) outboard of already installed flighting (B) on the left side of the auger, as shown.
5. Mark hole locations (C) on already installed flighting (B).
6. Remove the nearest access cover to already installed flighting (B). Retain the hardware for reassembly.
7. Remove already installed bolt-on flighting (B) from the auger. Retain the hardware for reassembly.

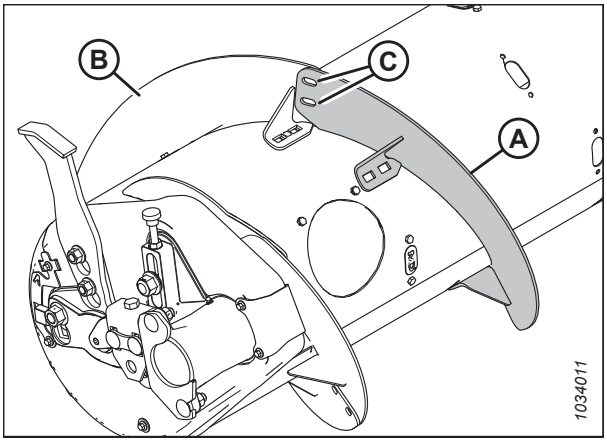


Figure 3.237: Left Side of Auger

8. Drill two 11 mm (7/16 in.) holes at the locations (A) you marked in Step *5, page 169*.

9. Reinstall the bolt-on flighting.

   IMPORTANT:

   Ensure the carriage bolt heads are on the inside of the auger to prevent damage to the internal components.

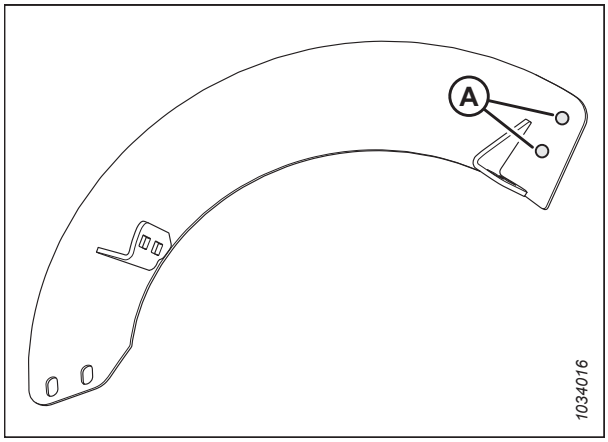


Figure 3.238: Drilling Locations

10. Place new flighting (A) into position on the auger, outboard of installed flighting (B).

11. Secure the new flighting with two M10 x 20 mm button head bolts and center lock nuts (C).

    IMPORTANT:

    Ensure the bolt heads are on the inboard side (crop side) and the nuts are on the outboard side of the new flighting.

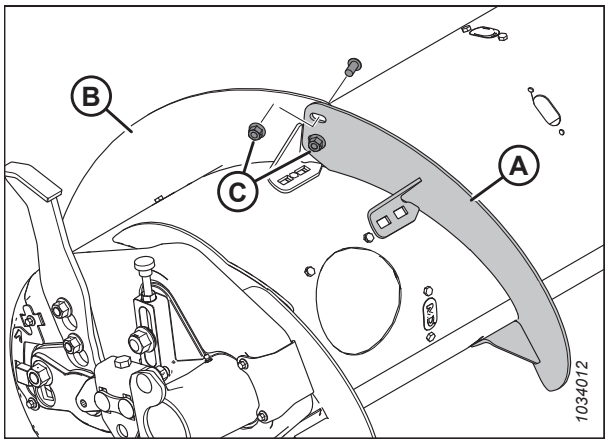


Figure 3.239: Left Side of Auger

12. Stretch new flighting (A) to fit the auger tube as shown. Use the slotted holes on the new flighting to best fit the auger tube.

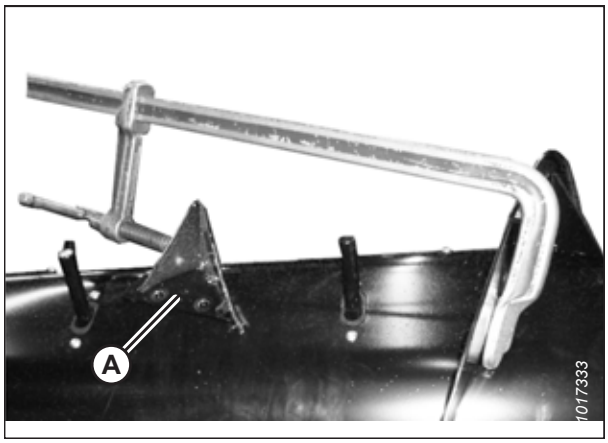


Figure 3.240: Flighting Stretched Axially

13. Mark four hole locations (A) on the new flighting and drill 11 mm (7/16 in.) holes in the auger tube.

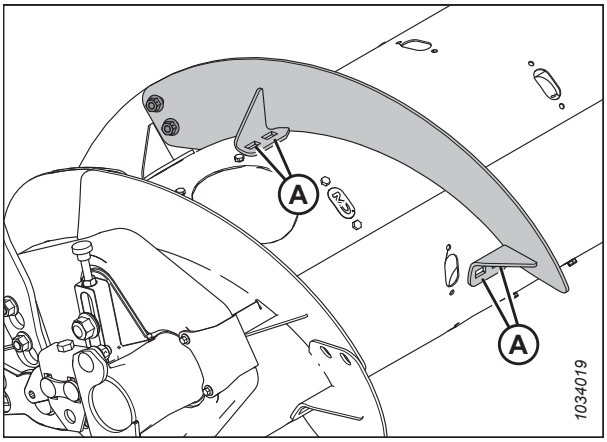


Figure 3.241: Flighting on Left Side of Auger

14. Remove the nearest access cover(s) (B). Retain the cover for reinstallation.
15. Secure the new flighting to the auger at drilled holes (A) using four M10 x 20 mm flange head bolts and center lock nuts.
16. Repeat Step *3, page 169* to Step *15, page 171* for the other flighting on the left side of the auger.
17. Repeat Step *3, page 169* to Step *15, page 171* for both flightings on the right side of the auger.
18. Torque all the flighting nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on the flighting, then torque the nuts and bolts to 61 Nm (45 lbf·ft).

    NOTE:

    Flighting performs best when there are no gaps between the flighting and the auger drum. If desired, use silicone sealant to fill any gaps.

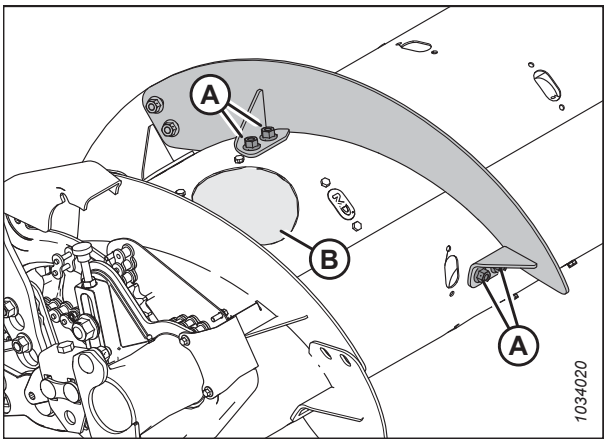


Figure 3.242: Left Side of Auger

19. Add or remove auger fingers as necessary to optimize feeding for your combine and crop conditions. For instructions, refer to *3.8.2 Removing Feed Auger Fingers, page 171* or *3.8.3 Installing Feed Auger Fingers, page 174*.
20. If you are not adding or removing auger fingers, reinstall all of the access covers. Coat the retained bolts with medium-strength threadlocker (Loctite® 243 or equivalent), then use the bolts to secure the auger covers. Torque the bolts to 9 Nm (80 lbf·in).

3.8.2 Removing Feed Auger Fingers

The feed auger uses fingers to bring crop into the feeder house. The quantity of fingers varies for the different models of combines.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Remove the auger fingers from the feed auger from outside inward. Make sure that there is an equal number of fingers on each side of the auger.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain the parts for reinstallation.

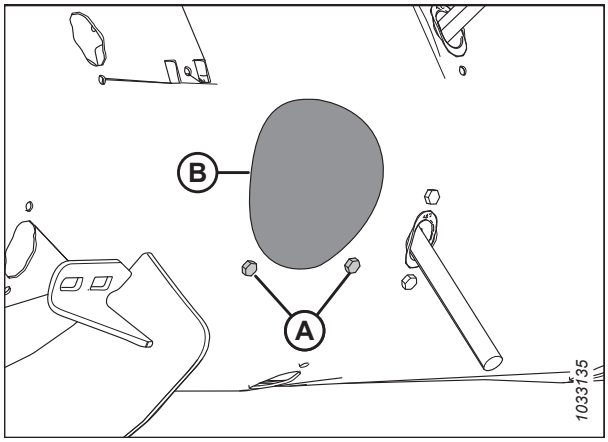


Figure 3.243: Auger Access Hole Cover

6. Remove the auger finger as follows:
   a. Remove hairpin (A).
   b. Pull finger (B) out of finger holder (C).
   c. Push finger (B) through guide (D) and into the drum.
   d. Pull the finger out of the drum access hole.

   NOTE:

   If the auger finger is broken, remove any remnants from holder (C) and from inside the drum.

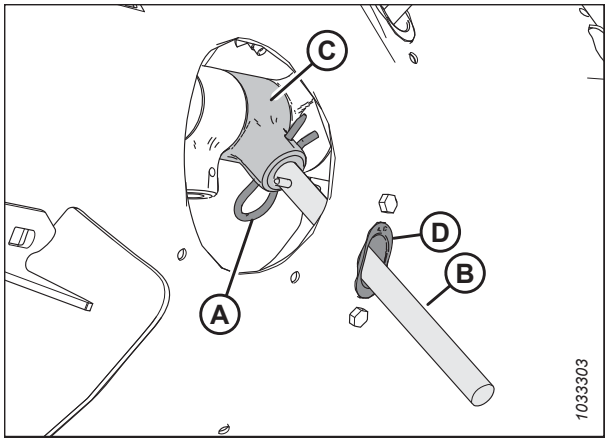


Figure 3.244: Auger Finger

7. Remove and retain two bolts (A) and tee nuts (not shown) securing finger guide (B) to the auger. Remove guide (B).

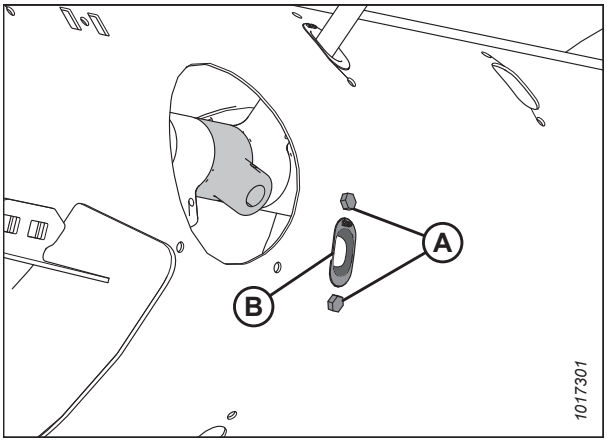


Figure 3.245: Auger Finger Hole

8. Position plug (A) into the hole from inside the auger. Secure with two M6 hex head bolts (B) and tee nuts. Torque the hardware to 9 Nm (80 lbf·in).

   NOTE:

   Bolts (B) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (B), apply medium-strength threadlocker (Loctite® 243 or equivalent) before reinstalling the bolts.

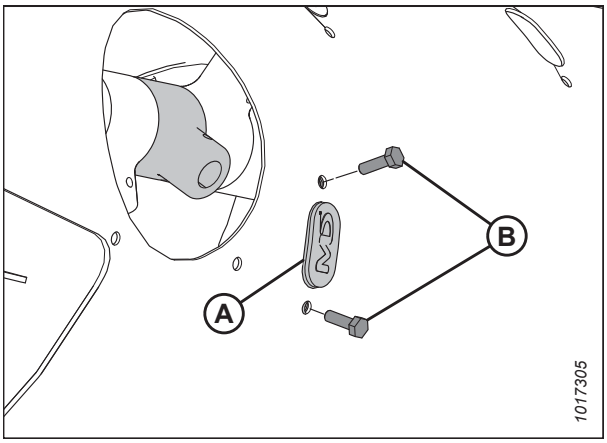


Figure 3.246: Plug

9. Secure access cover (B) in place with bolts (A). Torque the bolts to 9 Nm (80 lbf·in).

   NOTE:

   Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (A), apply medium-strength threadlocker (Loctite® 243 or equivalent) before reinstalling the bolts.

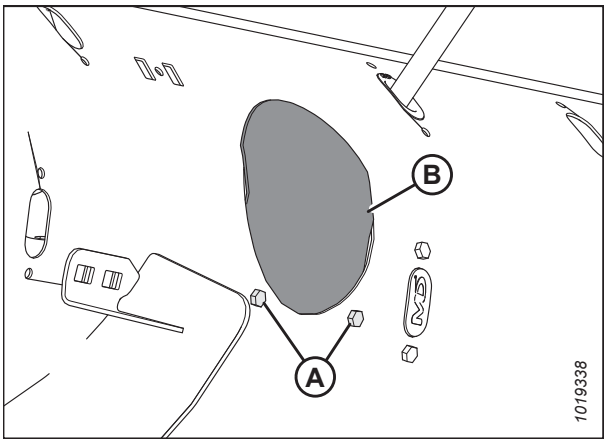


Figure 3.247: Auger Access Hole Cover

3.8.3 Installing Feed Auger Fingers

The feed auger uses fingers to bring the crop into the feeder house. The quantity of fingers varies for the different models of combines.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Ensure that you install an equal number of auger fingers on each side of the auger.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Insert guide (B) from inside of the auger and secure it with bolts (A) and tee nuts (not shown).

   IMPORTANT:

   Always install a new guide when replacing a solid finger.

   NOTE:

   Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (A), apply medium-strength threadlocker (Loctite® 243 or equivalent) before reinstallation.
6. Torque bolts (A) to 9 Nm (80 lbf·in).

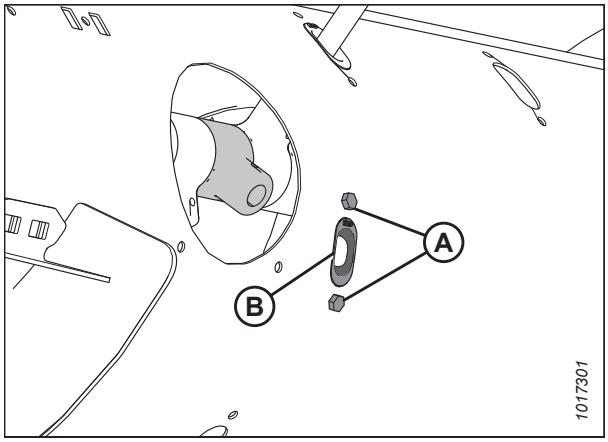


Figure 3.248: Auger Finger Hole

7. Install auger finger (A) inside the drum. Insert one end of auger finger (A) up through the bottom of guide (B) and insert the other end of the finger into holder (C).
8. Secure the finger by inserting hairpin (D) into the holder. Make sure the round end (the S-shaped side) of the hairpin faces the chain drive side of the auger. Make sure the closed end of the hairpin points in the direction of auger-forward rotation.

   IMPORTANT:

   Position the hairpin as described in this step to prevent the hairpin from falling out during operation. If the fingers are lost, the header might not be able to feed the crop into the combine properly. Furthermore, fingers that fall into the drum might damage the auger's internal components.

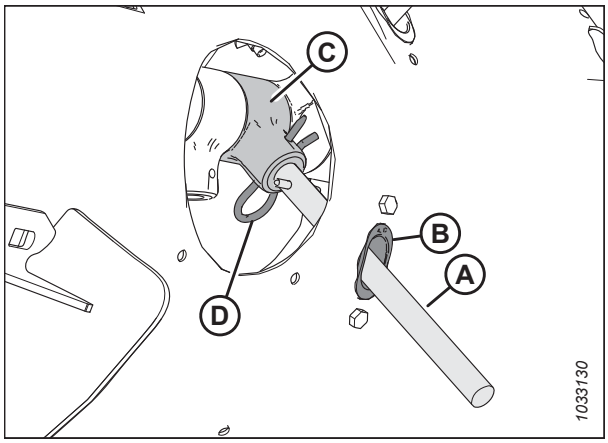


Figure 3.249: Auger Finger

9. Secure access cover (B) in place with bolts (A). Torque the bolts to 9 Nm (80 lbf·in).

   NOTE:

   Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (A), apply medium-strength threadlocker (Loctite® 243 or equivalent) before reinstallation.

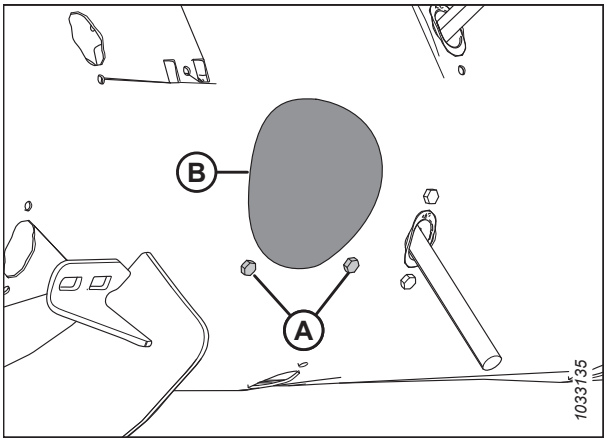


Figure 3.250: Auger Access Hole Cover

3.8.4 Setting Auger Position

The auger position has two settings: floating and fixed. The factory setting is the floating position, and it is recommended for most crop conditions.

Auger float adjustment arms (A) are located at the bottom left and bottom right of the float module.

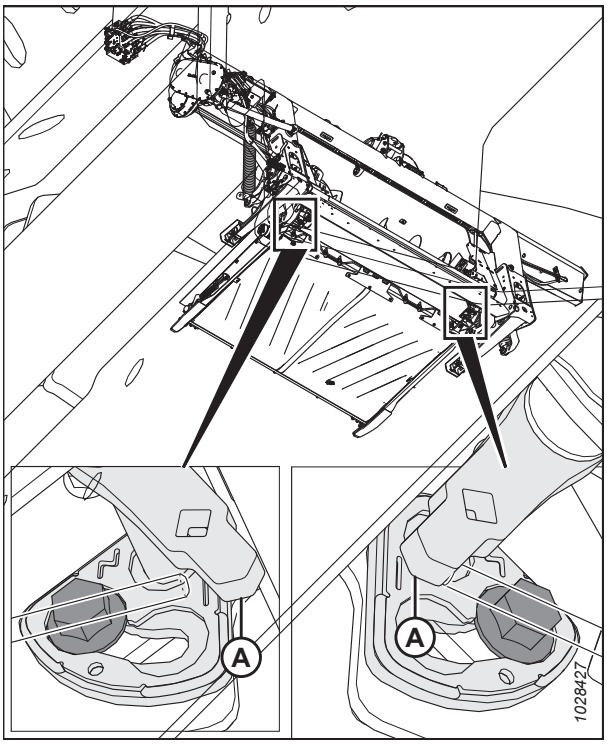


Figure 3.251: Auger Float Adjustment Arms

If bolt (A) is next to floating symbol (B), the auger is in the floating position. If bolt (A) is next to fixed symbol (C), the auger is in the fixed position.

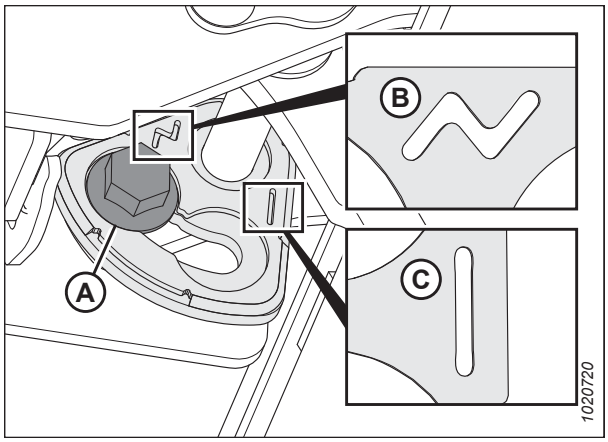


Figure 3.252: Auger Float Positions

CAUTION

Make sure the left and the right brackets are set to the same position; two bolts (A) must be in the same location to prevent damage to the machine during operation.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

To set the auger position, follow these steps:

1. Start the engine.
2. Raise the header fully.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.
4. Shut down the engine, and remove the key from the ignition.
5. Using a 21 mm wrench, loosen bolt (A) until the bolt head is clear of bracket (B).

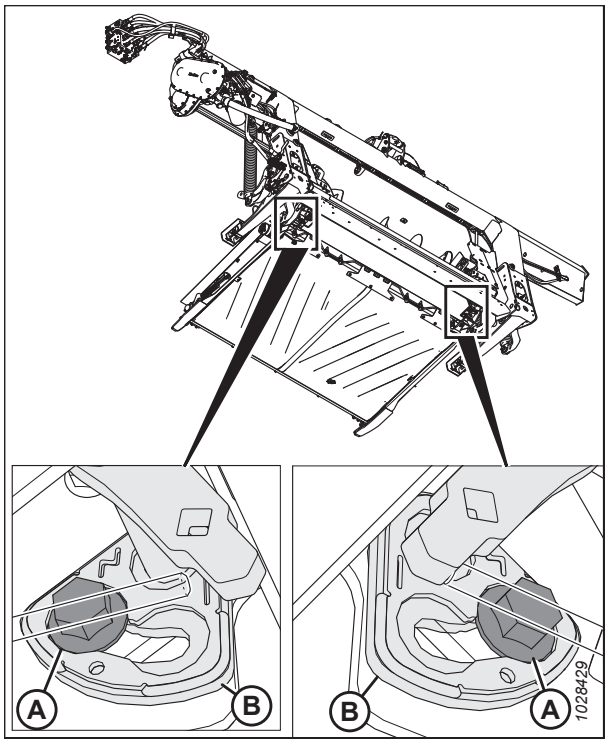


Figure 3.253: Feed Auger Float Adjustment

6. Using a breaker bar in the square hole on arm (B), move arm (B) forward until bolt (A) is in the slot on the bracket next to the fixed symbol.

   NOTE:

   If you are changing the auger position from fixed to floating, move the arm in the opposite direction.

7. Tighten bolt (A) to 122 Nm (90 lbf·ft).

   IMPORTANT:

   Bolt (A) must be properly seated in the recess on the bracket before tightening the bolt. If arm (B) can be moved after tightening the bolt, then bolt (A) is not seated properly.

8. Repeat this procedure on the opposite side.

   IMPORTANT:

   Bolt (A) on each side of the float module must be in the same position to prevent damage to the machine during operation.

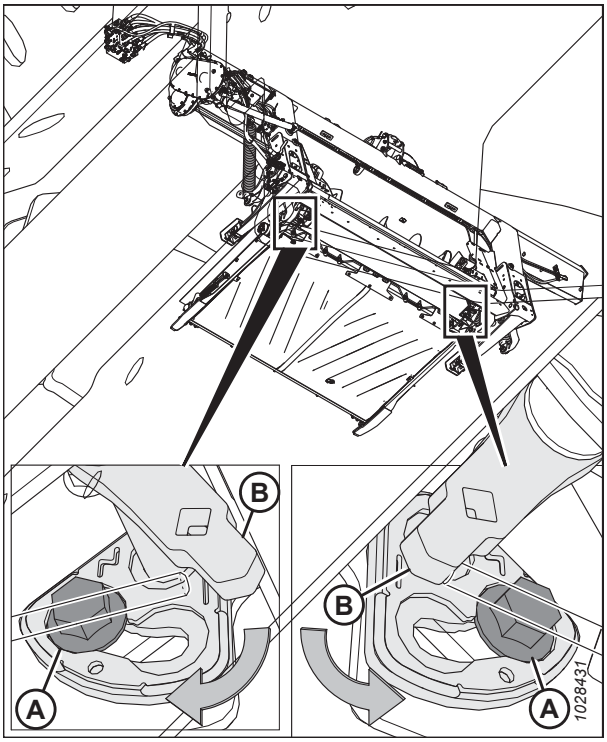


Figure 3.254: Feed Auger Float Adjustment

3.8.5 Checking and Adjusting Feed Auger Springs

The feed auger has an adjustable spring tensioning system that allows the auger to float on top of the crop instead of crushing and damaging it. The factory-set tension is adequate for most crop conditions.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.

5. Check the thread length protruding past nut (A). The length should be 22–26 mm (7/8–1 in.).

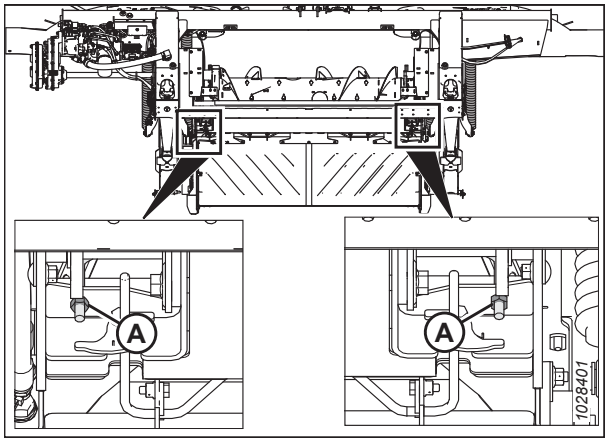


Figure 3.255: Spring Tensioner

If adjustment is required, follow these steps:

6. Loosen upper jam nut (A) on the spring tensioner.

   NOTE:

   The upper jam nut is located on other side of the plate.

7. Turn lower nut (B) until thread (C) protrudes 22–26 mm (7/8–1 in.).

8. Tighten jam nut (A).

9. Repeat Steps *6, page 178* to *8, page 178* on the opposite side.

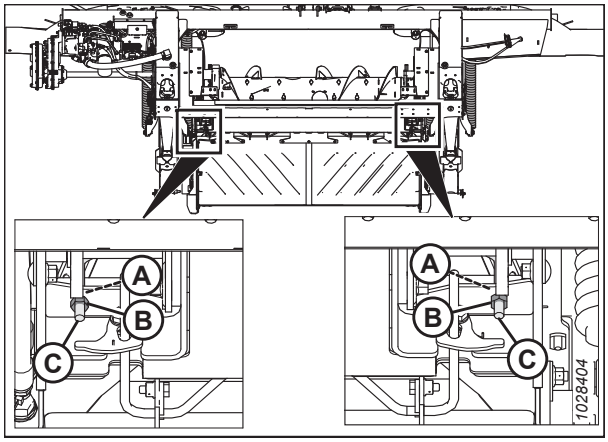


Figure 3.256: Spring Tensioner

3.8.6 Stripper Bars

A stripper bar kit may have been supplied with your header. Installing the stripper bar kit improves feeding in certain crops, such as rice.

For information on removing and installing the stripper bars, refer to *4.11 Stripper Bars, page 636*.

3.9 Header Operating Variables

The header will perform better if you adjust it to suit your specific crops and conditions.

Correctly adjusting the header reduces crop loss and speeds harvesting. Proper adjustments, along with timely maintenance, will also increase the service life of the header.

The variables listed in Table *3.17, page 179* and detailed on the following pages will affect the performance of your header.

You will quickly become adept at adjusting the machine to achieve the results you desire. Most of the settings below have been configured at the factory, but the settings can be changed to suit various crops and harvesting conditions.

Table 3.17 Operating Variables

Variable	Refer to
Cutting height	*3.9.1 Cutting off Ground, page 179* *3.9.2 Cutting on Ground, page 187*
Header float	*3.9.3 Header Float, page 190*
Header angle	*3.9.5 Header Angle, page 212*
Reel speed	*3.9.6 Reel Speed, page 214*
Ground speed	*3.9.7 Ground Speed, page 215*
Draper speed	*3.9.8 Side Draper Speed, page 216*
Knife speed	*3.9.10 Knife Speed Information, page 218*
Reel height	*3.9.11 Reel Height, page 220*
Reel fore-aft position	*3.9.12 Reel Fore-Aft Position, page 225*
Reel tine pitch	*3.9.13 Reel Tine Pitch, page 233*
Crop divider rods	*3.9.15 Crop Dividers, page 240*
Feed auger configurations	*3.8.1 FM200 Feed Auger Performance Configurations, page 148*

3.9.1 Cutting off Ground

The header's design allows you to cut crop above the ground, which results in stubble being cut to a uniform height.

When cutting above ground level:

- Use the stabilizer wheels on the header (if this optional component is installed) to set the cutting height.
- The stabilizer wheel system is designed to minimize bouncing at the header ends and may be used to float the header to achieve an even cutting height when cutting above the ground in cereal grains.

  NOTE:

  Lock the header wings when using the stabilizer wheel system.

- Contour wheels provide consistent cutting height information back to the header so it can flex, maintain an accurate and consistent cutting height, and still use the combine's auto height control seamlessly. The wheels contact the ground, allowing the cutterbar to remain at a fixed height even through rolling contours. There is no need to adjust the factory auto height control settings.

  NOTE:

  Lock the header wings when using contour wheels.

The stabilizer wheel system (or stabilizer/transport wheel system) cutting height is controlled by the combine header height control.

If the Stabilizer Wheels kit is installed, refer to *Adjusting Stabilizer Wheels, page 180* to change the wheel position.

If the EasyMove™ Transport option is installed, refer to *Adjusting EasyMove™ Transport Wheels, page 181* to change the wheel position.

If the contour wheels option is installed, refer to *Adjusting Contour Wheels with Foot Switch, page 182* to change the wheel position.

Adjusting Stabilizer Wheels

A properly adjusted header will achieve a balance between the amount of header weight carried by the float and the amount carried by the stabilizer wheels.

Refer to *3.7.2 Header Settings, page 131* for recommended use in specific crops and crop conditions.

NOTE:

When cutting off the ground using stabilizer wheels: If the stubble is uneven when cutting off the ground on stabilizer wheels, and other header leveling problems have been eliminated (refer to *3.11 Leveling Header, page 471*), then adjust the float until the stubble height is even:

- On the side of the header where the stubble is high, loosen the float springs (make the header heavier).
- On the side of the header where the stubble is low, tighten the float springs (make the header lighter).

IMPORTANT:

When cutting on the ground, set the float using the standard float adjustment procedure. Poor performance and potential wear will occur if you use the stabilizer wheels' float settings when cutting on the ground.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header until the stabilizer wheels are off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Hold axle pivot handle (B); do **NOT** lift the handle.

   NOTE:

   Lifting the handle will make it more difficult to take the system out of slot (C).
5. Pull suspension handle (A) rearward to remove the pin from slot (C).
6. Lift the wheel to the desired height position using support (B), and engage the support channel into center slot (C) in the upper support.
7. Suspension handle (A) should snap into the slot. If the handle does not snap in, push (for middle and lower position) or pull in (for top position) the suspension handle to ensure it is seated in the slot.

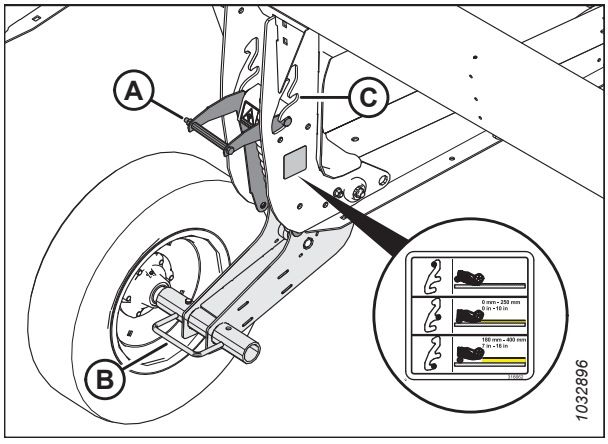


Figure 3.257: Stabilizer Wheel

8. Use the combine's auto header height control (AHHC) to automatically maintain the cutting height. For instructions, refer to *3.10 Auto Header Height Control System, page 263* and your combine operator's manual for details.

   NOTE:

   The height sensor on the FM200 Float Module must be connected to the combine height control system in the cab.

Adjusting EasyMove™ Transport Wheels

A properly adjusted header will achieve a balance between the amount of header weight carried by the float and the amount carried by the transport wheels.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header so that the transport wheels are off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure the float is working properly. For instructions, refer to *Checking and Adjusting Header Float, page 190*.
5. Hold axle pivot handle (C); do **NOT** lift the handle.

   NOTE:

   Lifting the handle will make it more difficult to take the system out of slot (B).
6. Pull suspension handle (A) rearward to remove the pin from slot (B).
7. Adjust the wheel to the desired slot position.
8. Suspension handle (A) should snap into the slot. If the handle does not snap in, push (for middle position) or pull in (for top position) the suspension handle to ensure it is seated in the slot.

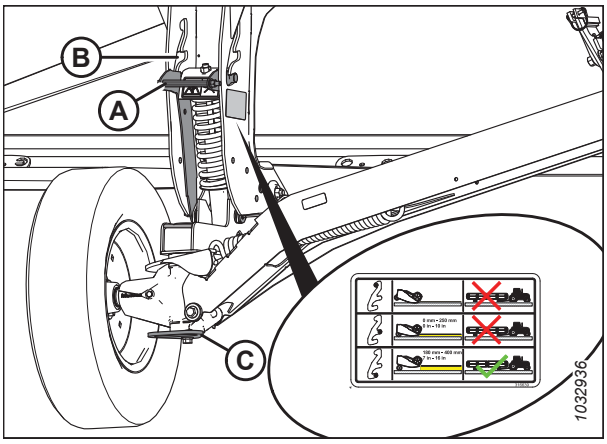


Figure 3.258: Right Wheel

9. Hold axle pivot handle (A); do **NOT** lift the handle.

   NOTE:

   Lifting the handle will make it more difficult to take the system out of the slot.

10. Pull suspension handle (B) rearward to remove the pin from the slot.

11. Adjust the wheel to the desired slot position.

12. Suspension handle (B) should snap into the slot. If the handle does not snap in, pull out the suspension handle to ensure it is seated in the slot.

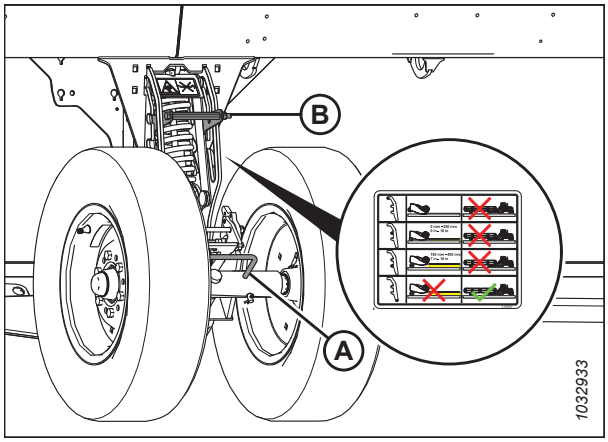


Figure 3.259: Left Wheel

13. Use the combine's auto header height control (AHHC) to automatically maintain the cutting height. For instructions, refer to *3.10 Auto Header Height Control System, page 263* and your combine operator's manual.

    NOTE:

    The height sensor on the FM200 Float Module must be connected to the combine header control module in the cab.

Adjusting Contour Wheels with Foot Switch

The contour wheels allow the header to follow the contours of the ground, and can be adjusted between 25 mm (1 in.) and 457 mm (18 in.) from the ground surface. A foot switch allows the wheels to be controlled from the combine cab.

DANGER

To avoid bodily injury or death from the unexpected startup or fall of the raised header, stop the engine, remove the key from the ignition, and engage the safety props before going under the header for any reason. If using a lifting vehicle, be sure the header is secure before proceeding.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.

2. Locate the contour wheels foot switch.

3. Press and hold the foot switch to activate the contour wheels.

   NOTE:

   When the contour wheels foot switch is activated and the reel fore-aft button on the combine's multifunction handle is pressed, the contour wheels will move regardless of the fore-aft / header tilt switch position.

4. To properly phase the hydraulic cylinders, press and hold the REEL AFT button on the combine multifunction handle to extend the wheels all the way down, then hold the button for 30 seconds.

5. Press and hold the REEL FORE button on the combine multifunction handle to fully retract the wheels, then hold the button for 30 seconds.

6. Operate the hydraulic controls on the multifunction handle to move the wheels to the desired height.

7. Release the foot switch to deactivate the contour wheels. The header tilt and the fore-aft functions should operate normally.

The following table describes what functionality the reel fore/aft buttons will have on the header when the contour wheel foot switch and the fore-aft/header tilt switch are in various (active/inactive) states. The X indicates a switch is active.

Table 3.18 Control Logic Chart

Activated Switch				
ContourMax™ Foot Switch Condition	Fore-Aft / Header Angle Switch Position		Combine Multifunction Handle Controls	
	Fore-Aft	Angle	Reel Fore	Reel Aft
—	X	—	Reel forward	Reel back
—	—	X	Header angle extend	Header angle retract
X	—	X	Contour Wheel retract (decrease cut height)	Contour Wheel extend (increase cut height)
X	X	—		

NOTE:

When the contour wheels are fully retracted, the cutterbar can be on the ground when the header angle is set approximately between (B) and (E); the contour wheels will contact the ground when the header angle is set between (A) and (B).

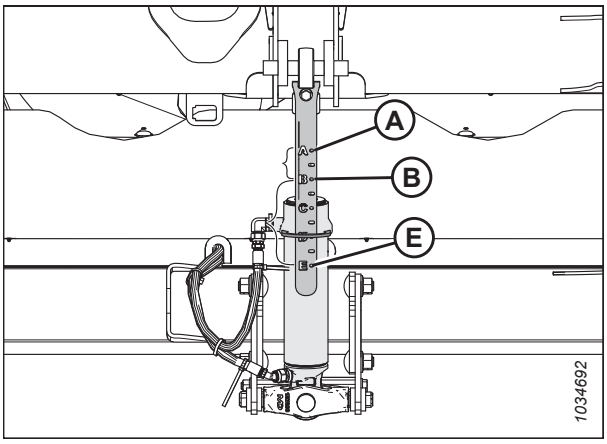


Figure 3.260: Header Angle Indicator

Adjusting Contour Wheels with CLAAS Integration Kit

The contour wheels option follows the contours of the ground, and can be adjusted between 25 mm (1 in.) and 457 mm (18 in.) from the ground surface.

NOTE:

Functions controlled by the multi-function trigger rocker switch will be available only when the header function switch is in the VARIO table extend/retract position.

1. Press HOTKEY switch (A) on the operator's console to the deck plate position (the header icon [A] with the arrows pointing to each other).

Figure 3.261: Multi-Function Trigger Rocker Switch

2. If the combine is equipped with the standard lever, push toggle (A) up while simultaneously pressing the reel fore-aft button.
   - The reel fore will retract the contour wheels, decreasing the cut height.
   - The reel aft will extend the contour wheels, increasing the cut height.

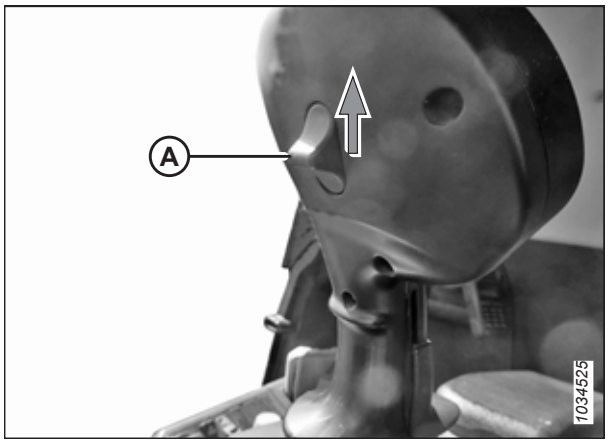


Figure 3.262: Standard Multi-Function Lever

3. If the combine is equipped with the CMOTION multi-function lever, pull the multi-function trigger rocker switch (A) toward you while simultaneously pressing the reel fore-aft button.
   - The reel fore will retract the contour wheels, decreasing the cut height.
   - The reel aft will extend the contour wheels, increasing the cut height.

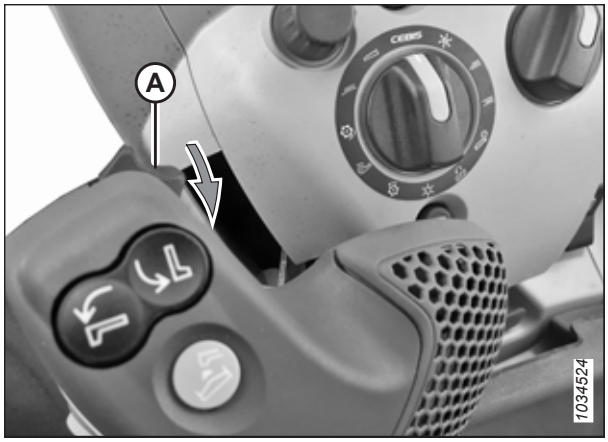


Figure 3.263: CMOTION Multi-Function Lever

Leveling Contour Wheel Height

The contour wheels allow the header to follow the contours of the ground, and can be adjusted between 25 mm (1 in.) and 457 mm (18 in.) from the ground surface.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To avoid bodily injury or death from the unexpected startup or fall of a raised machine, always stop the engine, remove the key, and engage the lift cylinder lock-out valves before going under the machine for any reason.

NOTE:

Set the header float before leveling the contour wheels. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

NOTE:

Set the wing balance before leveling the contour wheels. For instructions, refer to *3.9.4 Checking and Adjusting Wing Balance, page 208*.

1. Unlock the header wings. For instructions, refer to *Operating in Flex Mode, page 202*.
2. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
3. Start the engine.
4. Park the combine on a level surface.
5. Lower the reel fully.
6. Adjust the contour wheels so that height indicator (A) is at number 2 (B).

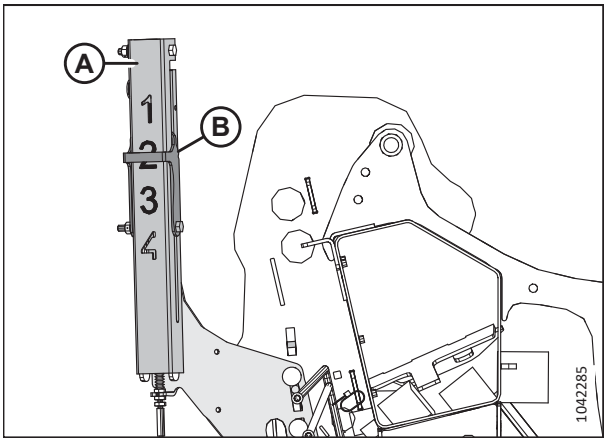


Figure 3.264: Height Indicator – Rear Left End

7. Lower the header until auto header height indicator (A) is at number 2 (B).
8. Shut down the engine, and remove the key from the ignition.

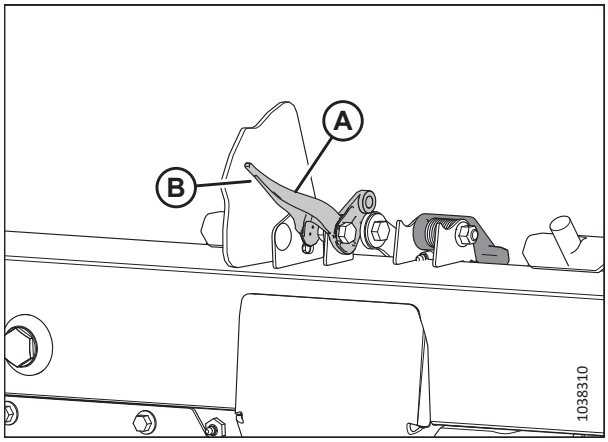


Figure 3.265: Float Setting Indicator

9. At the center of the header, measure distance (A) from the ground to the tip of the center guard. Record distance (A).
10. At each end of the header, measure distance (A) from the ground to the tip of the end guard. Record both of the measurements.
    - If the difference between the center measurement and the end measurements is less than 25 mm (1 in.), no adjustment is required.
    - If the difference between the center measurement and the end measurements is greater than 25 mm (1 in.), adjustment is required. Continue to the next step.
11. Start the engine.
12. Raise the header fully.
13. Shut down the engine, and remove the key from the ignition.
14. Engage the header safety props. For instructions, refer to the combine operator's manual.

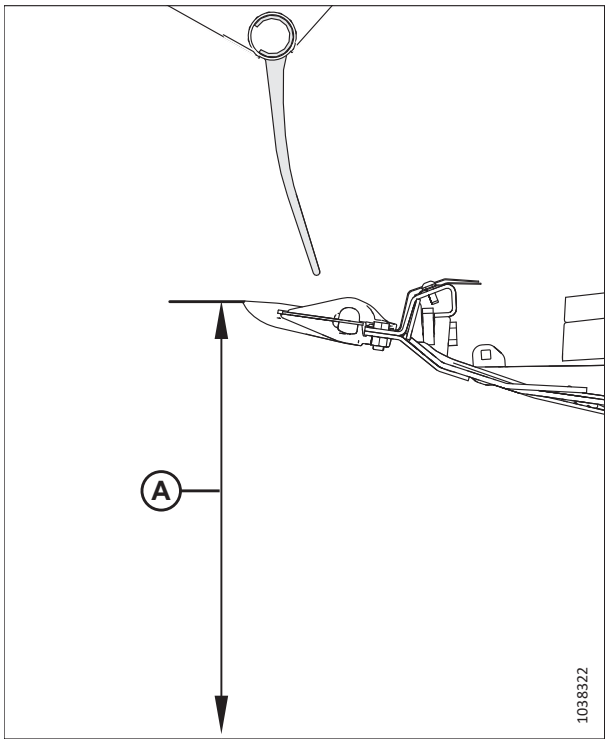


Figure 3.266: Float Setting Indicator

15. Remove pin (A).
16. Reposition adjuster plate (B) in the slot to align with a different hole. There is approximately a 24 mm (1/2 in.) difference between each of the holes.
    - If the measurement is less than the measurement at the center of the header, move the adjuster plate **TOWARD** the cutterbar.
    - If the measurement is more than the measurement at the center of the header, move the adjuster plate **AWAY** from the cutterbar.
17. On the opposite end of the header, repeat Step *15, page 187* and Step *16, page 187*.

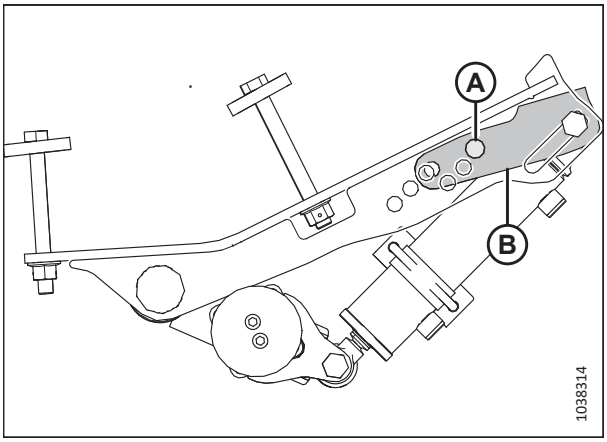


Figure 3.267: Pin Location – Left Outer Wheel

18. Disengage the header safety props. Refer to the combine operator's manual for instructions.
19. Start the engine.
20. Lower the header until the auto header height indicator is at number 2.
21. Shut down the engine, and remove the key from the ignition.
22. Measure the guard to ground distance again. Ensure that the three measurements are the same. If more adjustment is required, repeat Steps *15, page 187* to *17, page 187*.

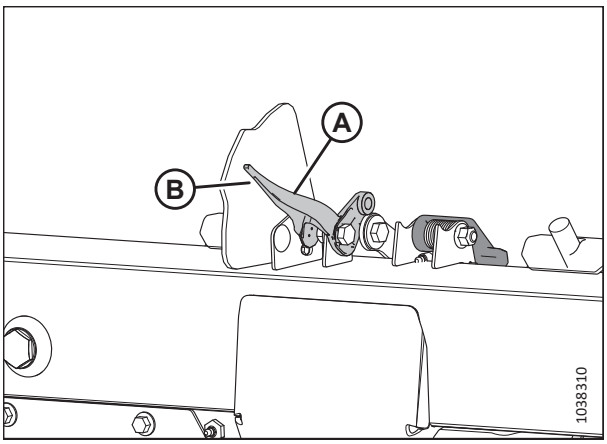


Figure 3.268: Auto Header Height Indicator

3.9.2 Cutting on Ground

Cutting height will vary depending on crop type, crop conditions, cutting conditions, etc.

Cutting on the ground is performed with the header fully lowered and the cutterbar on the ground. The orientation of the knife and the knife guards relative to the ground (the header angle) is controlled by the skid shoes and the center-link—it is **NOT** controlled by the header lift cylinders. The skid shoes, center-link, and flex lockout allow you to adjust to the field conditions and maximize the amount of material cut while reducing damage to the knife caused by stones and debris.

The flexible cutterbar, the wings, and the header float system compensate for ridges, trenches, and other variations in the ground contour to prevent the cutterbar from pushing into the ground or leaving any uncut crop.

Refer to the following topics for additional information:

- *Adjusting Inner Skid Shoes, page 188*
- *Adjusting Outer Skid Shoes, page 189*
- *3.9.3 Header Float, page 190*

- *3.9.5 Header Angle, page 212*

Adjusting Inner Skid Shoes

The skid shoes and the center-link allow you to adjust to the field conditions and maximize the amount of material cut while reducing damage to the knife caused by stones and debris.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Running the skid shoes in the down position can speed up wear on the skid shoe plates.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. Raise the stabilizer wheels or the transport wheels fully (if installed). For instructions, refer to the following:
   - *Adjusting Stabilizer Wheels, page 180*
   - *Adjusting EasyMove™ Transport Wheels, page 181*
6. Remove lynch pin (A) from each skid shoe.
7. Hold shoe (B) and remove pin (C) by disengaging from the frame and pulling away from the shoe.
8. Raise or lower skid shoe (B) to achieve the desired position using the holes in support (D) as a guide.
9. Install pin (C) in the desired position on support (D), engage in frame, and secure with lynch pin (A).
10. Ensure both skid shoes are adjusted to the same position.
11. Adjust the header angle to the desired working position using the machine's header angle controls.

    NOTE:

    If the header angle is not critical, set it to the mid-position.
12. Check the header float. For instructions, refer to *3.9.3 Header Float, page 190*.

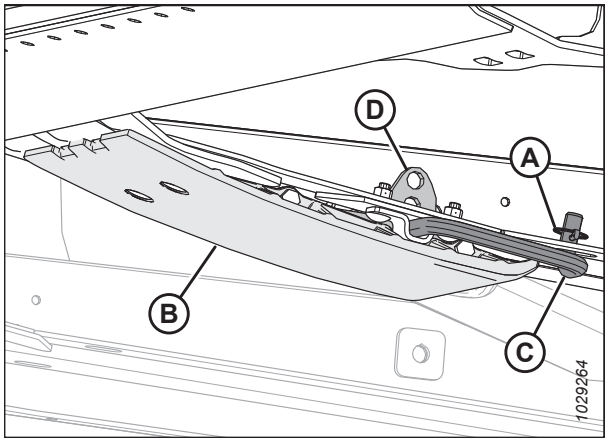


Figure 3.269: Inner Skid Shoe

Adjusting Outer Skid Shoes

The skid shoes and the center-link allow you to adjust to the field conditions and maximize the amount of material cut while reducing damage to the knife caused by stones and debris.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Running the skid shoes in the down position can speed up wear of the skid shoes.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. Raise the stabilizer wheels or the transport wheels fully (if installed). For instructions, refer to the following:
   - *Adjusting Stabilizer Wheels, page 180*
   - *Adjusting EasyMove™ Transport Wheels, page 181*
6. Remove lynch pin (A) from each skid shoe pin (C).
7. Hold skid shoe (B) and remove pin (C) by disengaging from the bracket and pulling away from the shoe.
8. Raise or lower skid shoe (B) to achieve the desired position using the holes in the support plate as a guide.
9. Reinstall pin (C) in the desired position on the support plate, engage the pin into the bracket, and secure with lynch pin (A).
10. Ensure both skid shoes are adjusted to the same position.
11. Check the header float. For instructions, refer to *3.9.3 Header Float, page 190*.

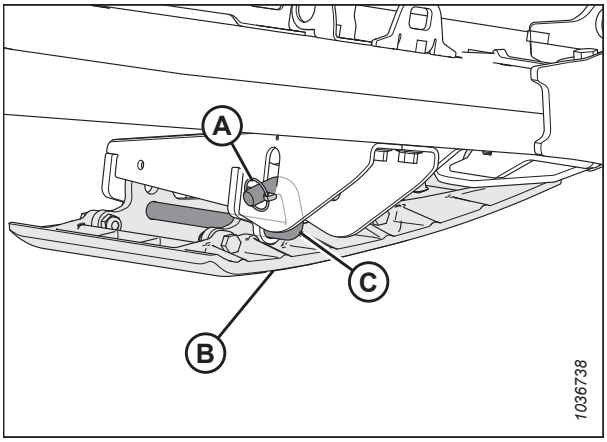


Figure 3.270: Outer Skid Shoe

3.9.3 Header Float

The header float system supports the majority of the header weight to reduce the pressure of the ground on the cutterbar, allowing the header to more easily follow the ground and quickly respond to sudden changes or obstacles.

The header float is indicated by float indicator (A). Values 0 to 4 represent the pressure of the cutterbar on the ground, with 0 being the minimum, and 4 being the maximum. These values also represent where the header is at in the float range, with 0 being the bottom end of the float range, and 4 being the top end of the float range.

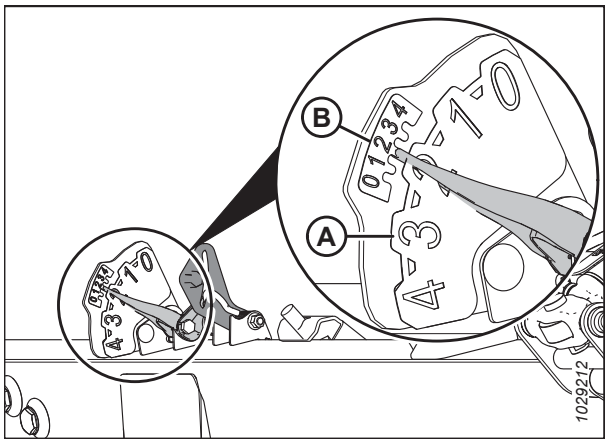


Figure 3.271: Float Indicator – Left Side

NOTE:

The indicator on the left side of the float module is for float indication and float settings; the indicator on the right side is for float settings only.

The maximum force is determined by the tension on the float module's adjustable float springs. The float can be changed to suit different conditions and it is dependent on what options have been installed on the header.

NOTE:

Decal (B) at the top of the float indicator is used to check and adjust the float setting. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

The FD2 Series FlexDraper® Header performs best with minimum ground pressure under normal conditions. If you are adding optional attachments to the header that will affect its weight, readjust the float.

1. Set the float for cutting on the ground as follows:
   a. Ensure the header float locks are disengaged. For instructions, refer to *Locking/Unlocking Header Float, page 202*.
   b. Using the combine header controls, lower the feeder house until float indicator (A) reaches the desired float value (cutterbar ground force). Set the float indicator initially to float value 2 and adjust the float as necessary.
2. Set the float for cutting off the ground as follows:
   a. Adjust the contour wheels. For instructions, refer to *3.9.1 Cutting off Ground, page 179*.
   b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

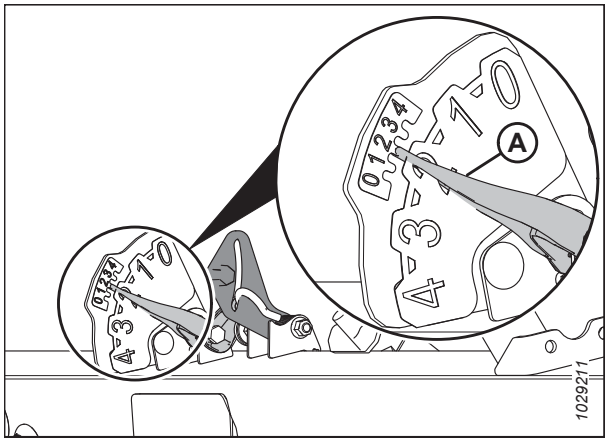


Figure 3.272: Cutting on the Ground

Checking and Adjusting Header Float

The header is equipped with a suspension system that floats the header over the ground to compensate for changes in ground elevation. If the header float is not set properly, the cutterbar may scoop soil or it may leave crop uncut. If the float setting is not satisfactory, it will need to be inspected and adjusted.

IMPORTANT:

Do **NOT** use the float module springs to level the header.

When adjusting the float, use the following guidelines:

- Set the header float as light as possible, but not so light that the header bounces when the combine is moving. This will help prevent knife breakage, soil pushing, soil build-up at the cutterbar in wet conditions, and excessive wear to the skid plates.
- To prevent the header from bouncing excessively and cutting unevenly when the float is light, operate the combine at a lower ground speed.
- To cut crop while the header is above ground level, use the stabilizer wheels in conjunction with the header float. This will minimize bouncing at the header ends and help regulate the cut height. For instructions, refer to *Adjusting Stabilizer Wheels, page 180*.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

NOTE:

If you cannot achieve an adequate header float after using all of the available adjustments, change the float spring configuration. For instructions, refer to *Changing Float Spring Configuration – Float Levers with Two Holes, page 196*.

To check and adjust the float settings, do the following:

Preliminary steps

1. Start the engine.
2. Park the combine on a level surface.
3. Locate spirit level (A) on top of the float module frame. Ensure that the bubble is in the center. If adjustment is required, refer to *3.11 Leveling Header, page 471*.
4. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

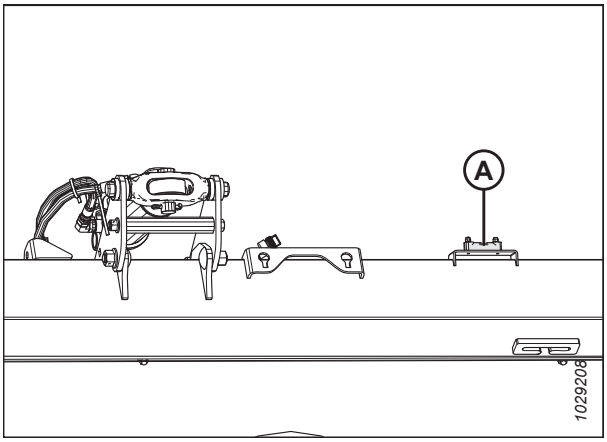


Figure 3.273: Spirit Level

5. Adjust the reel fore-aft position so that the indicator on left indicator bracket (A) is at position 6.

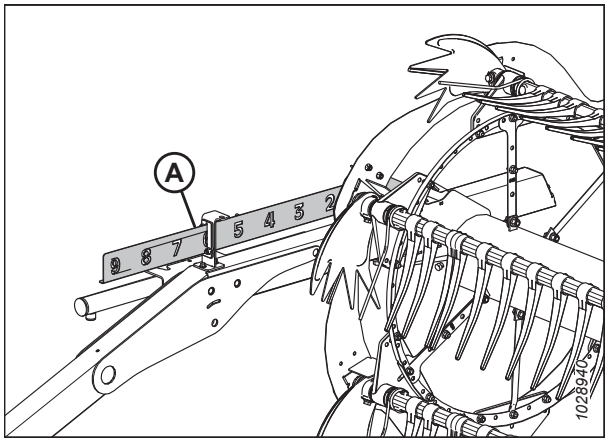


Figure 3.274: Fore-Aft Position

6. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
7. Lower the reel fully.
8. Shut down the engine, and remove the key from the ignition.
9. Lock the header wings. For instructions, refer to *Operating in Rigid Mode, page 205*.
10. If transport wheels are installed on the header, move them to the uppermost position.

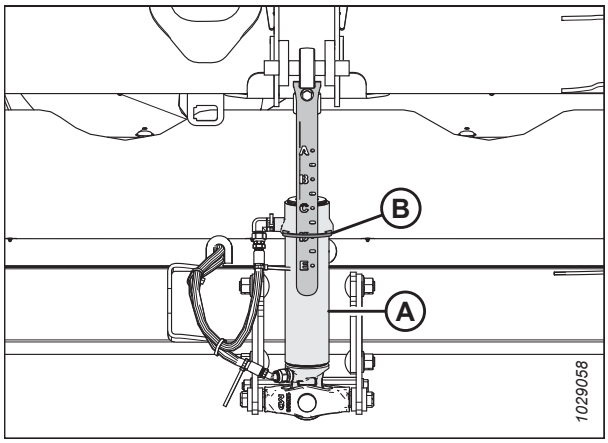


Figure 3.275: Center-Link

11. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

    NOTE:

    Use zero dot (E) above the decal to correctly set the indicator needle.

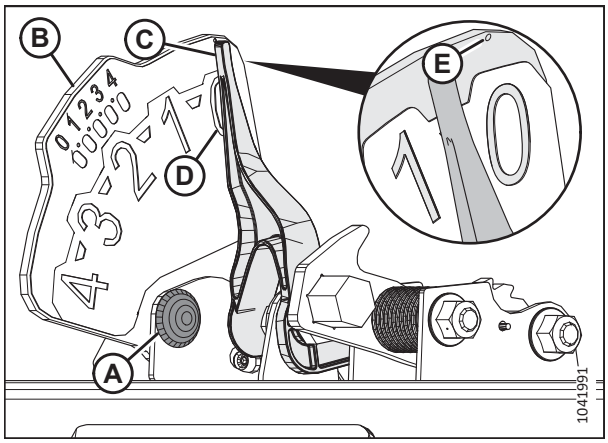


Figure 3.276: Float Indicator

12. On the left side of the float module, pull float lock handle (A) away from the float module, and pull the float lock handle down and into position (B) (UNLOCK).
13. Repeat the previous step on the right side of the float module.

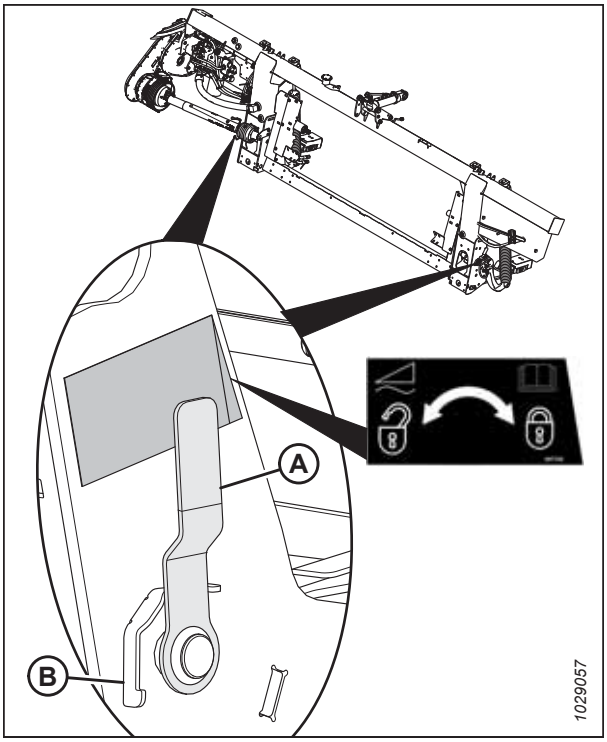


Figure 3.277: Header Float Lock in Locked Position

14. Open the left endshield. For instructions, refer to *Opening Header Endshields, page 39*.
15. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.
16. Remove multi-tool (B). Replace the hairpin.

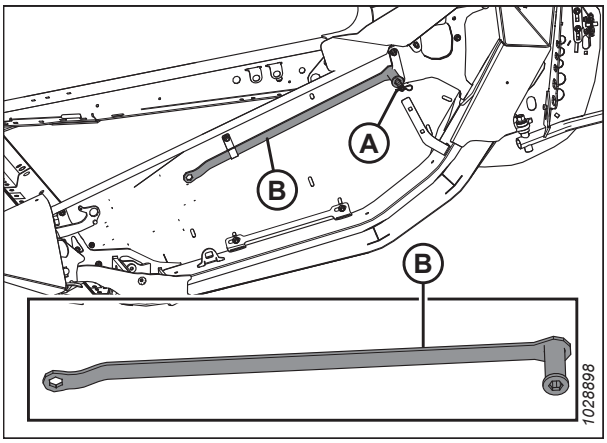


Figure 3.278: Multi-Tool Location

Setting the float setting levers

17. On the left side of the float module, lift float setting lever (A) by hand so that the lever is free of slack.

    NOTE:

    Some parts have been removed from the illustration for clarity.

18. Fully engage the flat end of multi-tool (B) onto the float setting lever. The multi-tool should be angled toward the front of the float module.

19. Pull multi-tool (B) toward the back of the float module until float setting lever (A) cannot be pulled back any further and it is locked into place on last tooth (C) of the lever.

20. Repeat Steps *17, page 194* to *19, page 194* to set the right float setting lever.

    IMPORTANT:

    Set both the left and the right float setting levers **BEFORE** adjusting the float on either side of the header.

21. Remove the multi-tool and set it aside.

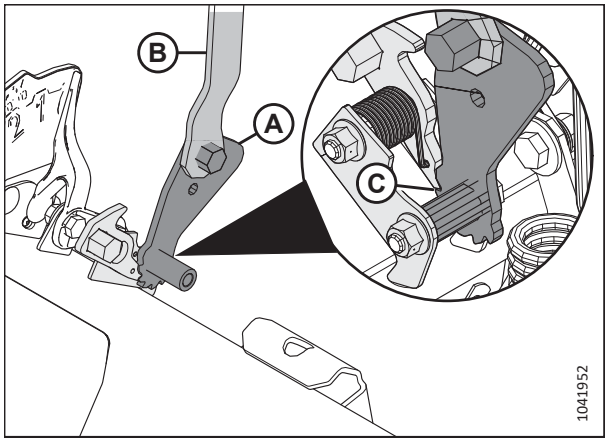


Figure 3.279: Multi-Tool Engaged with Left Float Setting Assembly

Checking the float

22. Set the left float by pushing the left end of the header down by approximately 76 mm (3 in.). Allow the header to rise. Repeat this step at least three times.

    NOTE:

    Moving the left side of the header up and down ensures that the reading on the left indicator will be accurate.

23. On the left side of the float module, inspect upper scale on float setting indicator (FSI) (B). Arm (A) on the indicator should point to the number 2.
    - If arm (A) on indicator (B) points to a value higher than 2, then the float is too heavy.
    - If arm (A) on indicator (B) points to a value lower than 2, then the float is too light.

    NOTE:

    The lower set of numbers indicates the float height while the header is operating in the field.

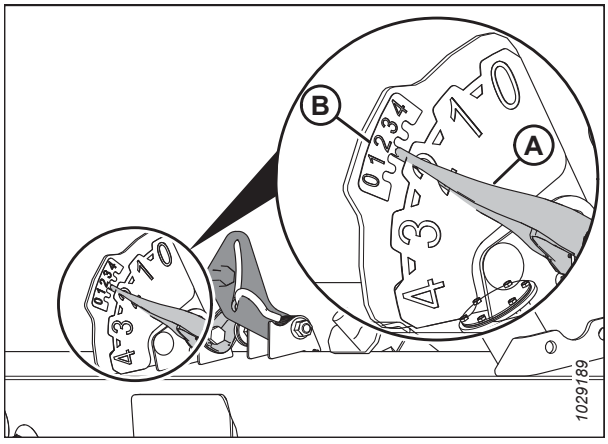


Figure 3.280: Left Float Setting and AHHC Indicator

Adjusting the float

24. On the left side of the float module, loosen bolts (C). Rotate spring locks (B) so that bolt heads (A) are accessible.

25. Increase or decrease the float on the left side of the float module as needed:

    - To increase the float, turn adjustment bolts (A) clockwise.
    - To decrease the float, turn adjustment bolts (A) counterclockwise.

    NOTE:

    Adjust each pair of bolts (A) by the same amount.

26. Set the left float again. Refer to Step *22, page 194* for instructions.

27. Check the left float setting indicator again. Refer to Step *23, page 194* for instructions.

28. If the left float setting is not satisfactory, repeat Step *25, page 195* to Step *27, page 195*.

29. Check and adjust the right float. For instructions, refer to Step *22, page 194* to Step *28, page 195*.

30. On both sides of the float module, lock adjustment bolts (A) with spring locks (B). Ensure that bolt heads (A) are engaged in the spring lock cutouts. Tighten bolts (C) to secure the spring locks.

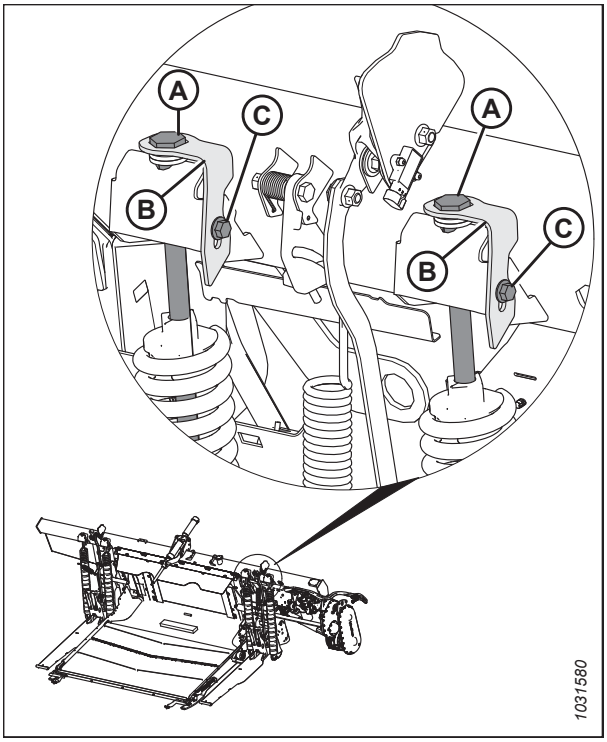


Figure 3.281: Left Float Adjustment

Releasing the float setting levers

WARNING

Release the float setting lever before resuming operation.

31. Fully engage multi-tool (A) onto pawl (B) and push it upward to release the float setting lever.

32. Adjust the wing balance. For instructions, proceed to *3.9.4 Checking and Adjusting Wing Balance, page 208*.

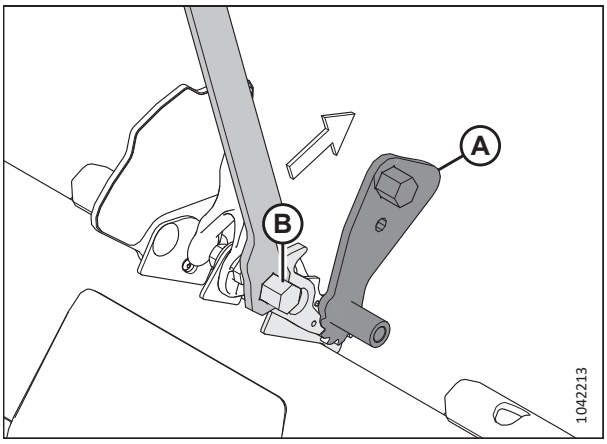


Figure 3.282: Multi-Tool Engaged with Left Pawl

Changing Float Spring Configuration – Float Levers with Two Holes

The header's float spring configuration is determined by the weight of the header. If the weight of the header has changed (for example, due to the addition of optional equipment), you will need to change the float spring configuration. To determine the appropriate float spring configuration for the header, calculate the weight of the header.

NOTE:

This procedure applies **ONLY** to headers with two holes (A) and (B) in the float spring levers. If the header you are working on has float springs levers with only one hole, refer to for instructions on changing the float spring configuration.

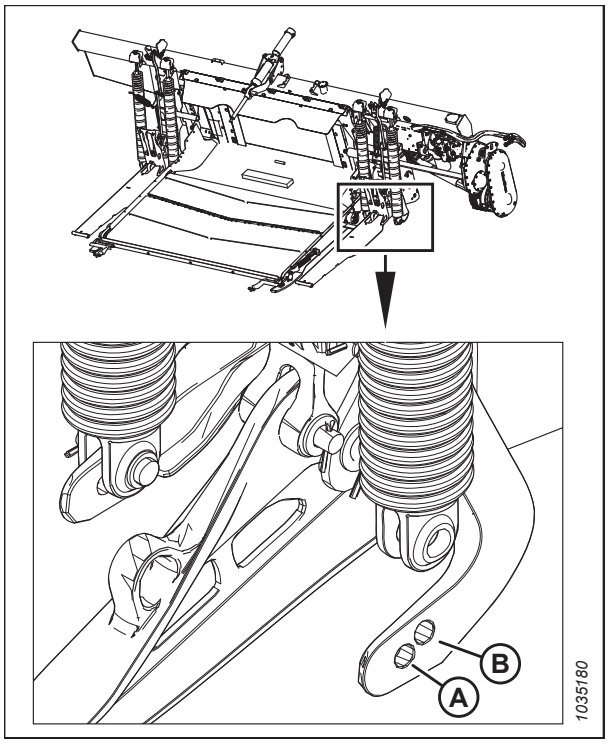


Figure 3.283: Left Float Spring Lever

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

Determining header weight and spring configuration

1. Referring to Table *3.19, page 197*, calculate the total weight of the header according to the formula (A) + (B) + (C) + (D) = Total header weight, where:
   - Base header weight is (A)
   - Weight of dividers, if any, is (B)
   - Weight of upper cross auger (UCA), if installed, is (C)
   - Weight of other options, if any, is (D)

   For an example of this calculation, refer to *Example, page 197*.

Table 3.19 Header Component Weights

Category	Header Model	Knife Configuration	Reel Configuration	Weight
(A) Base header weight – select one	FD225	Single	Any	N/A. Use the back hole on the float lever.
	FD230	Single	Any	2400 kg (5,300 lb.)
	FD235	Single	Any	2600 kg (5,750 lb.)
	FD235	Double	Any	2700 kg (5,950 lb.)
	FD240	Single	Any	2800 kg (6,150 lb.)
	FD240	Double	Any	N/A. Use the front hole on the float lever.
	FD241	Double	Any	N/A. Use the front hole on the float lever.
	FD245	Double	Any	3225 kg (7,100 lb.)
	FD250	Double	Any	3400 kg (7,500 lb.)
(B) Dividers – select up to one option	**Divider Option Installed**			20 kg (50 lb.)
	Rice divider rods			
	Vertical knives			185 kg (407 lb.)[57]
(C) Upper cross auger (UCA) – if a UCA is installed on the header, select one option[58]	**UCA Option Installed**			142 kg (312 lb.)
	9.1 m (30 ft.) two piece auger			
	10.7 m (35 ft.) two piece			156 kg (343 lb.)
	12.2 m (40 ft.) three piece			168 kg (370 lb.)
	12.5 m (41 ft.) two piece			163 kg (360 lb.)
	13.7 m (45 ft.) three piece			191 kg (420 lb.)
	15.2 m (50 ft.) three piece			212 kg (468 lb.)
(D) Other options – add any installed options	**Option Installed**			360 kg (800 lb.)
	Transport wheels			
	Contour wheels			205 kg (450 lb.)
	Stabilizer wheels			160 kg (350 lb.)

Example

Example of header weight calculation for FD235 FlexDraper® Header, single-knife, double-reel, no UCA, no options:

Base header weight (A) = 2,600 kg (5,750 lb.)

Weight of vertical knives (B) = (70 kg (150 lb.)

Weight of UCA (C) = 0 kg (0 lb.)

Weight of options (D) = 0 kg (0 lb.)

Total header weight = (A) + (B) + (C) + (D) = 2,670 kg (5,900 lb.)

57. Weight includes hydraulic package for FD250.
58. Add 24.5 kg (54 lbs) for hydraulic plumbing, if this was installed separately.

2. Using the total header weight calculated in the previous step, refer to *3.20, page 198* to determine which weight range the header is in and which float spring configuration is best for the header.

   NOTE:

   Generally, heavier headers will need the float springs placed in the front float lever hole and lighter headers will use the back hole. Some headers will only have one possible float spring configuration.

Table 3.20 Float Spring Installation Location in Float Lever

Header Model	Knife Configuration	Reel Configuration	Weight Range (Light)	Float Lever Hole	Weight Range (Heavy)	Float Lever Hole	Spring Configuration
FD225	Single	Any	Use the back hole on the float lever				1
FD230	Single	Any	2400–2675 kg (5300–5900 lb.)	Back	2676–3215 kg (5901–7100 lb.)	Front	1
FD235	Single	Any	2600–3050 kg (5750–6700 lb.)	Back	3051–3415 kg (6701–7550 lb.)	Front	3
FD235	Double	Any	2700–3150 kg (5950–6900 lb.)	Back	3151–3515 kg (6901–7750 lb.)	Front	2
FD240	Single	Double	2800–3200 kg (6150–7000 lb.)	Back	3201–3615 kg (7001–7950 lb.)	Front	3
FD240	Double	Double	2900–3400 kg (6,393–7,496 lb.)	Back	3401–3700 kg (7497–8157 lb.)	Front	4
FD240	Single	Triple	2900–3400 kg (6393–7496 lb.)	Back	3401–3700 kg (7497–8157 lb.)	Front	4
FD240	Double	Triple	3000–3400 kg (6614–7496 lb.)	Back	3401–3800 kg (7497–8378 lb.)	Front	4
FD241	Double	Any	Use the back hole on the float lever				4
FD245	Double	Any	3225–3475 kg (7100–7650 lb.)	Back	3476–4050 kg (7651–8900 lb.)	Front	4
FD250	Double	Any	3400–3800 kg (7500–8350 lb.)	Back	3801–4215 kg (8351–9300 lb.)	Front	5

3. If you need to change the float spring configuration, proceed to the next step.

Changing float spring configuration

4. Shut down the engine, and remove the key from the ignition.

5. Lock the header float by pulling the float lock handle into position (A) on the left side of the float module.

   NOTE:

   The float is unlocked when the handle is in position (B).

6. Repeat the previous step to set the float lock handle on the other side of the float module.

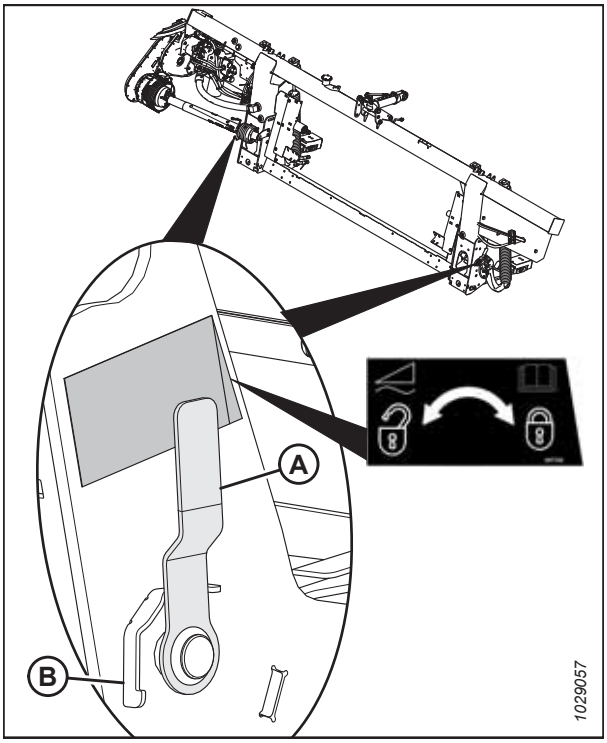


Figure 3.284: Header Float Lock in Locked Position

7. Access float spring adjustment bolts (A) by loosening bolts (C) and rotating spring locks (B) forward.

8. Loosen adjustment bolts (A) by making small identical adjustments to each bolt, one after the other, until the springs are loose.

   NOTE:

   Adjustment bolts (A) will rise slightly above the washers when the springs are loose.

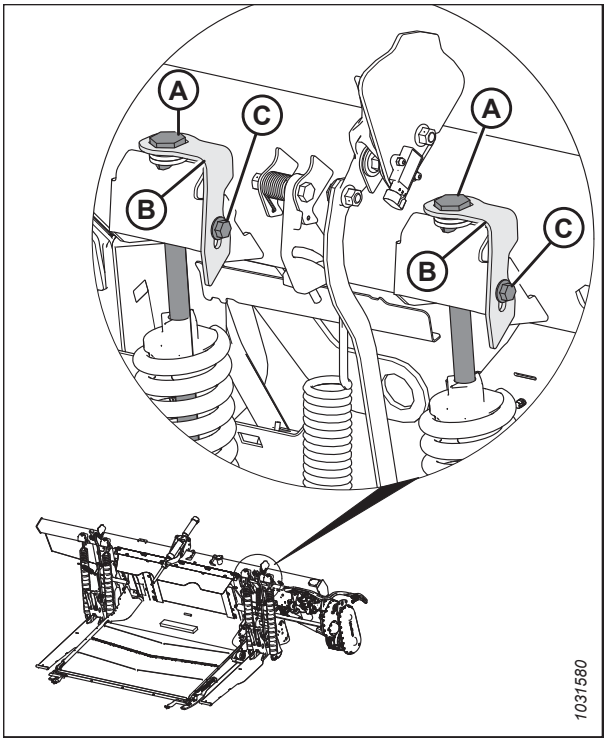


Figure 3.285: Left Float Adjustment

9. Remove cotter pin (C) from pin (A).
10. Remove pin (A) and washers (B).

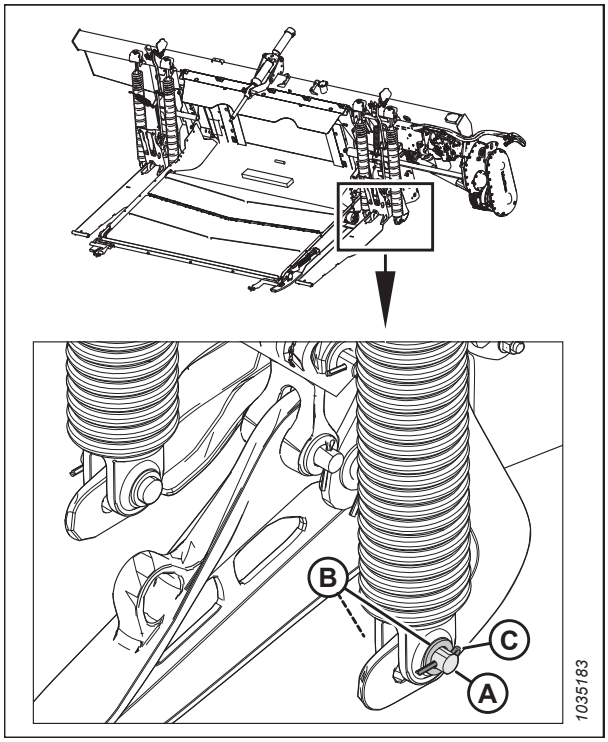


Figure 3.286: Left Float Spring Installed in Rear Float Lever Hole

11. Align the spring with front float lever hole (A) or back float lever hole (B) according to the specifications in Table *3.20, page 198*.

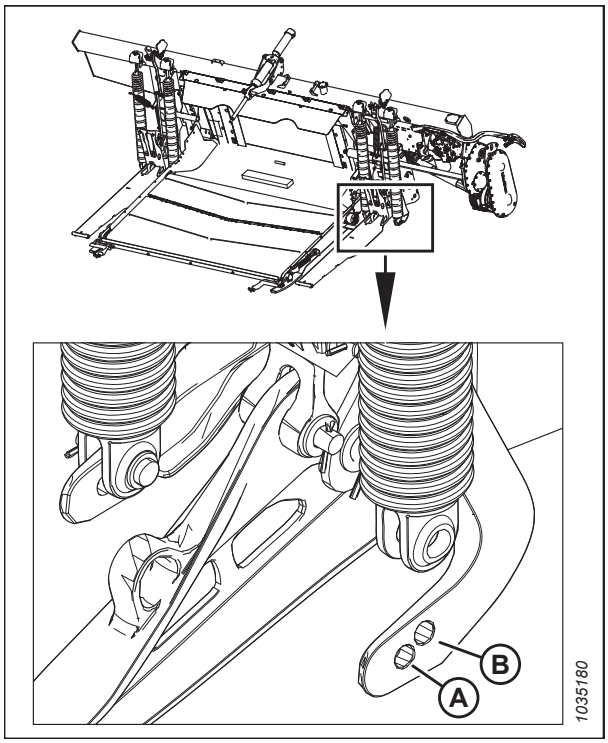


Figure 3.287: Left Float Spring Installed in Rear Float Lever Hole

12. Install pin (A) and two washers (B) into the new hole.
13. Secure the pin with cotter pin (C).
14. Repeat Step *9, page 200* to Step *13, page 201* to configure spring (D).

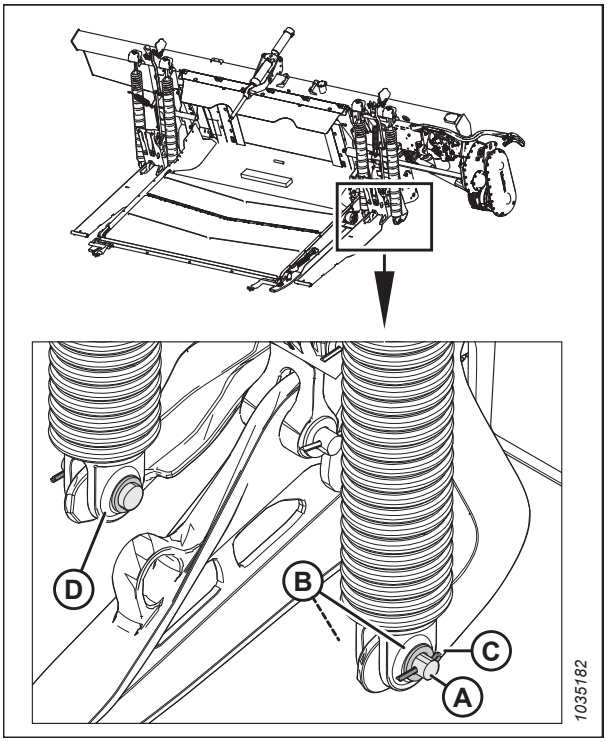


Figure 3.288: Left Float Spring – Installed in Rear Float Lever Hole

15. Retighten adjustment bolts (A) by making small identical adjustments to each bolt, one after the other, until the float springs are the same length.
16. Repeat Step *7, page 199* to Step *15, page 201* on the pair of float springs (B) on the opposite side of the float module.
17. Check the float, and if necessary, adjust it. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

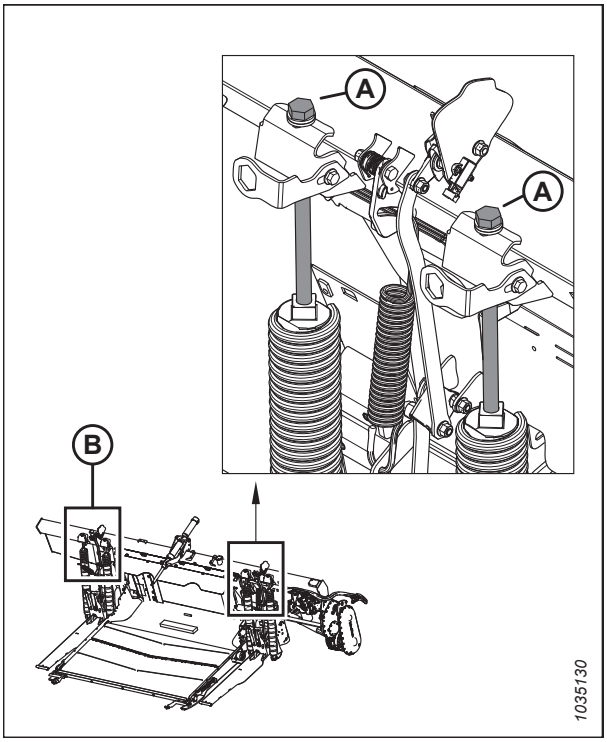


Figure 3.289: Float Adjustment – Left

Locking/Unlocking Header Float

Two header float locks—one on each side of the float module—lock and unlock the header float system.

IMPORTANT:

Engage the float locks when transporting the header with the float module attached so that there is no relative movement between the float module and the header. The float locks must also be locked when detaching the float module from the combine to enable the feeder house to release the float module.

- To disengage (unlock) the float locks, pull float lock handle (A) into position (B). In this position, the header is unlocked, and can float with respect to the float module.
- To engage (lock) the float locks, push float lock handle (A) into position (C). In this position, the header cannot move with respect to the float module.

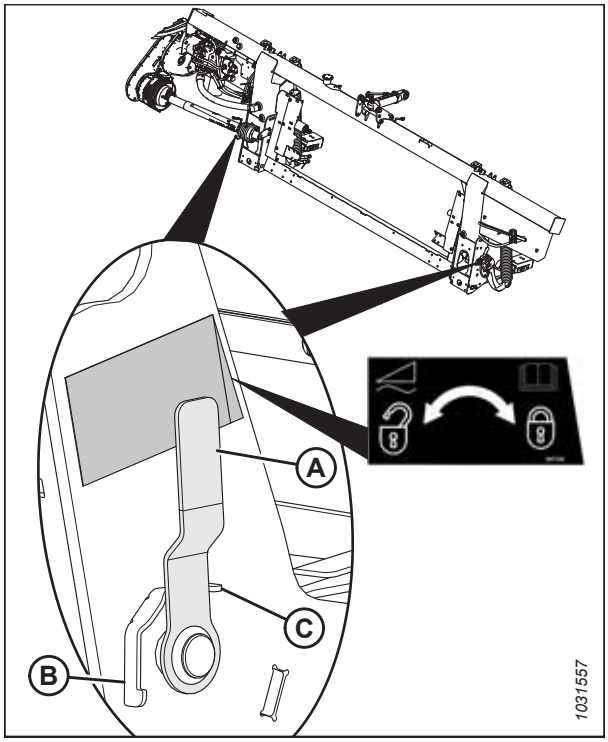


Figure 3.290: Float Lock – in Locked Position

Operating in Flex Mode

The header is designed to operate with the cutterbar on the ground. The three sections of the cutterbar move independently to follow the ground contours. When the wings are unlocked, they are free to move up and down.

1. Move spring handle (A) in the lower slot to unlock the wing. You should hear the lock disengage.
2. If the lock link does not disengage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it disengages.
3. If the lock still does not disengage, proceed to the next step.
4. Open the left endshield. For instructions, refer to *Opening Header Endshields, page 39*.

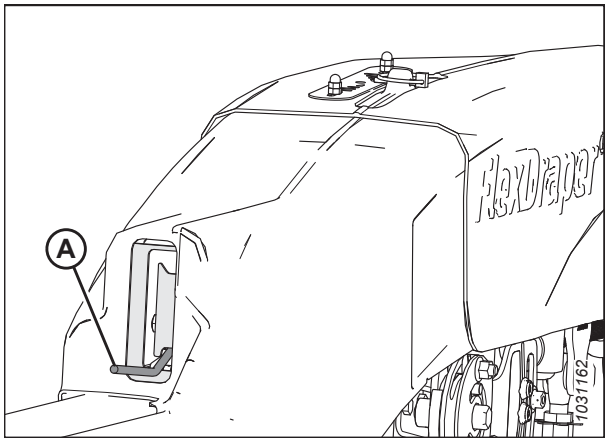


Figure 3.291: Wing in Unlocked Position

5. Remove hairpin (A) securing the multi-tool to the bracket on the left endsheet.
6. Remove multi-tool (B). Reinstall the hairpin onto the bracket.

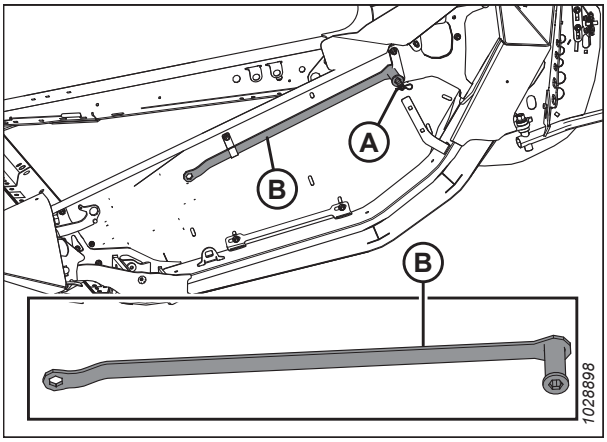


Figure 3.292: Left Endsheet

7. Attach flex checker cable (A) to flex checker cable lock (B).

   NOTE:

   The parts in the illustration have been removed for clarity.

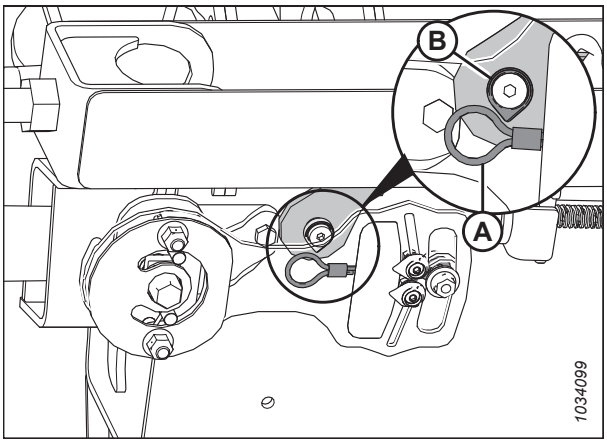


Figure 3.293: Flex Checker Cable Lock – Left Side

8. Use multi-tool (A) on plate (B) to move the wing up and down until the lock disengages.

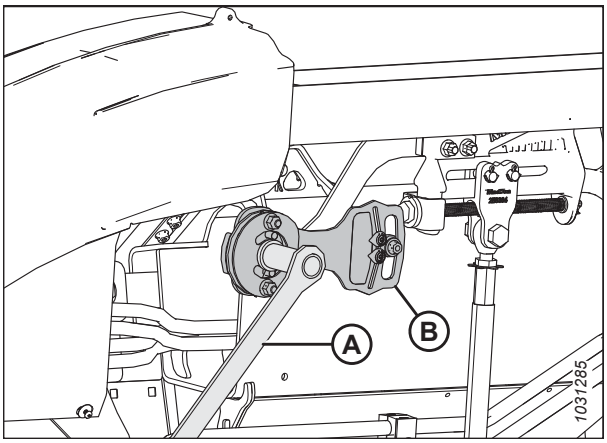


Figure 3.294: Wing Lock in Unlocked Position

9. Detach flex checker cable (A) from flex checker cable lock (B).

   NOTE:

   The parts in the illustration have been removed for clarity.

10. Return multi-tool (A) to its storage position. Reinstall the linkage cover.

11. If necessary, balance the wing. For instructions, refer to *3.9.4 Checking and Adjusting Wing Balance, page 208*.

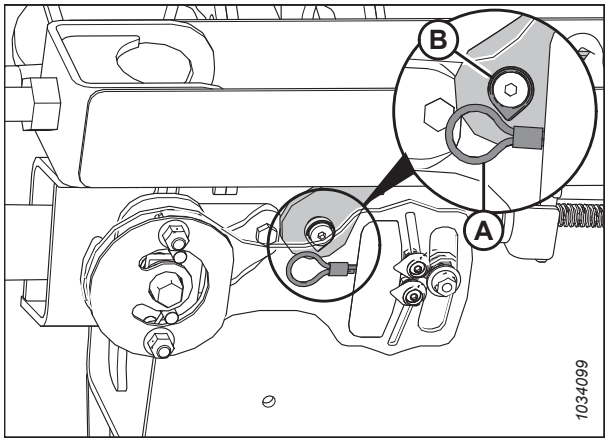


Figure 3.295: Flex Checker Cable Lock – Left Side

NOTE:

When the header is attached to a combine and its wings are locked and level with the feed draper deck, lynch pin (A) should point to the center of indicator (B). If lynch pin (A) does **NOT** point to the center of indicator (B) under those conditions, calibrate the indicator by loosening bolts (C) and by adjusting the indicator's position. The indicator should move as the wing flexes. If the indicator remains stuck at either end of the range, refer to *Checking and Adjusting Header Float, page 190* and *3.9.4 Checking and Adjusting Wing Balance, page 208*.

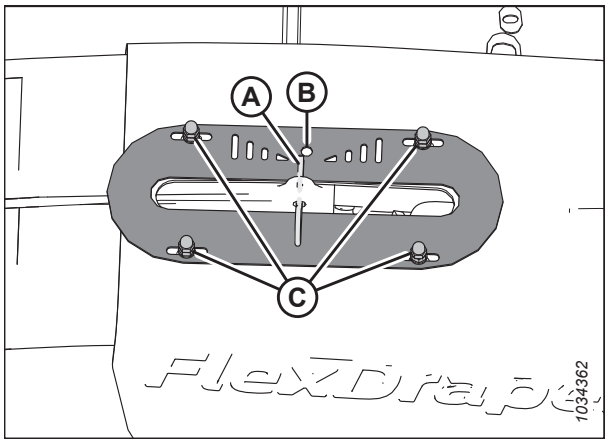


Figure 3.296: Wing Movement Indicator on Top of Flex Linkage Cover – Left Side Shown

12. Close the left endshield. For instructions, refer to *Closing Header Endshields, page 40*.

Operating in Rigid Mode

The header is designed to operate with the cutterbar on the ground. Locking the wings allows the header to operate as a rigid header with the cutterbar straight. When the three sections of the header are locked, the cutterbar is rigid and moves up and down at the same time.

Lock the wings as follows:

1. Move spring handle (A) in the upper slot to lock the wing. You should hear the lock engage.
2. If the lock link does not engage, move the wing by raising and lowering the header, changing the header angle, or by driving the combine until it engages.
3. If the lock still does not engage, proceed to the next step.
4. Remove the flex linkage cover. For instructions, refer to *Removing Inboard Flex Linkage Covers, page 50*.

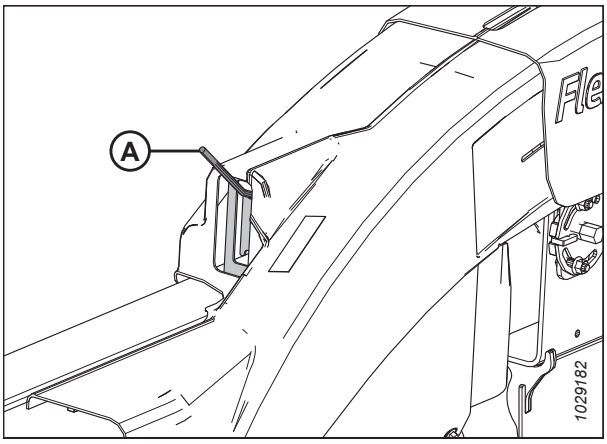


Figure 3.297: Wing in Locked Position

5. Open the left endshield. For instructions, refer to *Opening Header Endshields, page 39*.
6. Remove hairpin (A) securing multi-tool to the holder bracket on the left endsheet.
7. Remove multi-tool (B) from its storage location. Reinstall the hairpin onto the bracket.

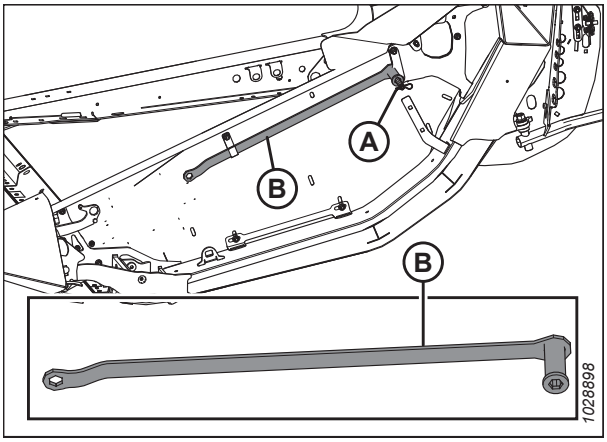


Figure 3.298: Left Endsheet

8. Use multi-tool (A) on plate (B) to move the wing up and down until the lock engages.
9. Return multi-tool (A) to its storage position.
10. Reinstall the flex linkage cover. For instructions, refer to *Installing Inboard Flex Linkage Covers, page 51*.

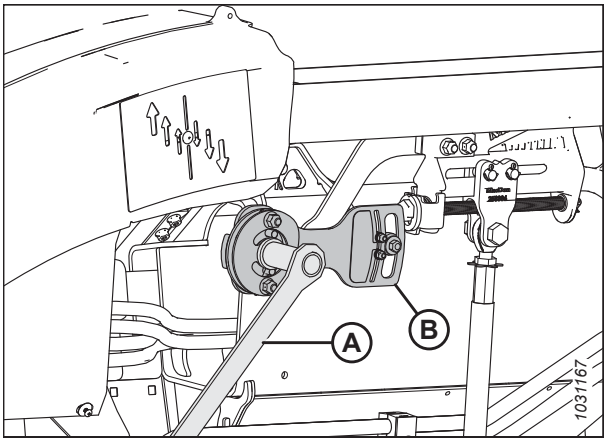


Figure 3.299: Wing in Locked Position

Disabling Flex Frown Limiter

Disabling the flex frown limiter increases the extent to which the header wings can flex. You may wish to disable the flex frown limiter to improve the header's ability to adjust to changes in the terrain elevation and/or when you are harvesting tall crops such as standing cereals and canola.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

After removing the flex frown limiter plate, you will need to adjust the clearance between the reel and the cutterbar. Refer to *4.13.1 Reel to Cutterbar Clearance, page 658* for specifications.

1. Start the engine.
2. Park the combine on a level surface.
3. Lock the header wings. For instructions, refer to *Operating in Rigid Mode, page 205*.
4. Extend the hydraulic center-link fully.
5. Lower the header fully.
6. Shut down the engine, and remove the key from the ignition.
7. Remove two bolts (A).
8. Remove flex frown limiter plate (B).
9. Store bolts (A) and flex frown limiter (B) in the manual storage case.
10. Repeat Step *7, page 206* to Step *9, page 206* to remove the flex frown limiter and hardware on the other side of the float module.
11. Adjust the reel finger clearance. For instructions, refer to *4.13.1 Reel to Cutterbar Clearance, page 658*.

    IMPORTANT:

    Adjusting the reel-to-cutterbar clearance is necessary to prevent the cutterbar from cutting off reel fingers when the wings flex.

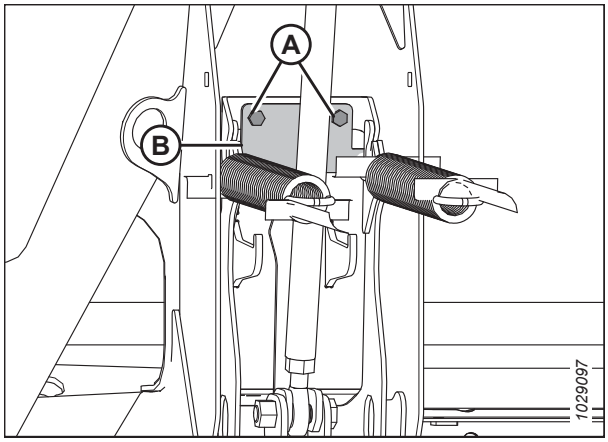


Figure 3.300: Flex Frown Limiter Plate

Enabling Flex Frown Limiter

Enabling the flex frown limiter limits the header's ability to frown, allowing the reel to be very close to the cutterbar. A close reel-to-cutterbar relationship is ideal when harvesting short crops such as lentils, lodged peas, or short soybeans.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

After installing the flex float limiter plate, you will need to adjust the clearance between the reel and the cutterbar. Refer to *4.13.1 Reel to Cutterbar Clearance, page 658* for specifications.

1. Start the engine.
2. Park the combine on a level surface.
3. Lock the header wings. For instructions, refer to *Operating in Rigid Mode, page 205*.
4. Lower the header fully.
5. Extend the hydraulic center-link fully.
6. Shut down the engine, and remove the key from the ignition.
7. Retrieve the two flex frown limiter plates and hardware from the header's manual storage case.
8. On the left side of the header, position flex frown limiter (B) as shown.
9. Secure the limiter with two bolts (A).
10. Repeat the previous two steps to install the flex frown limiter on the right side of the float module.
11. Adjust the reel finger clearance. For instructions, refer to *Adjusting Reel-to-Cutterbar Clearance, page 662* for specifications.

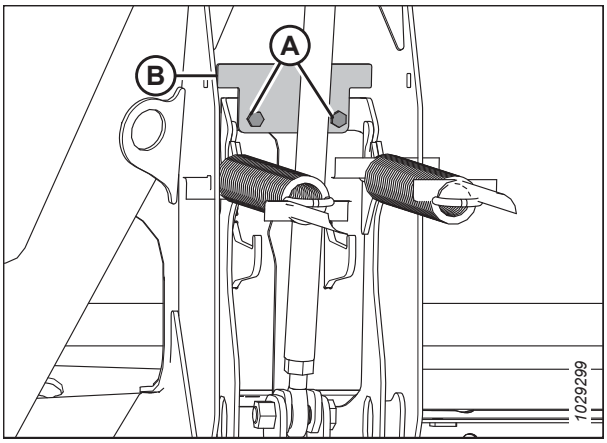


Figure 3.301: Flex Frown Limiter Plate

3.9.4 Checking and Adjusting Wing Balance

The wing balance is a critical factor for ensuring that the header follows the contours of the ground closely. If the header wing balance is unsatisfactory, it will need to be adjusted.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Ensure that the header float is set properly for accurate wing balance readings. For instructions, refer to *Checking and Adjusting Header Float, page 190*. The float module must be sitting level before performing any adjustments.

NOTE:

The header wings are balanced when it takes an equal amount of force to move a wing up or down.

If the header wings tend to be in a smile (A) or a frown (B) position, and the header is missing crop or pushing soil, adjust the wing balance.

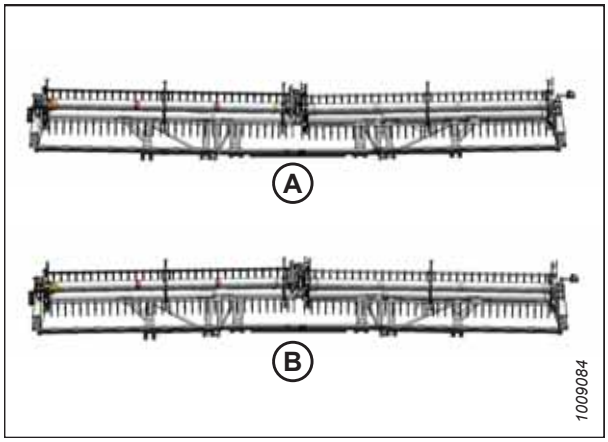


Figure 3.302: Wing Imbalance

1. Start the engine.
2. Adjust the reel fore-aft position so that the indicator on left indicator bracket (A) is at position 6.
3. Lower the reel fully.

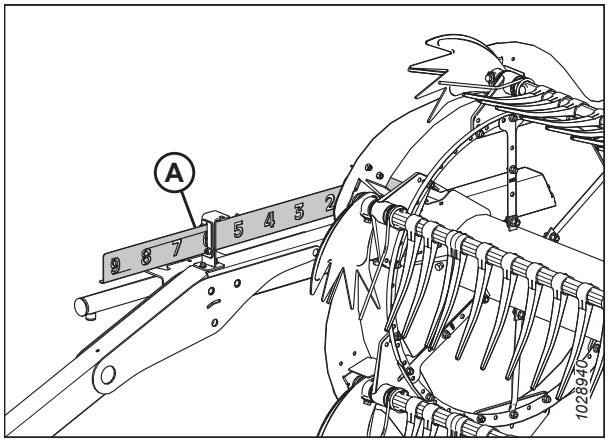


Figure 3.303: Fore-Aft Position

4. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.

5. **Headers with transport wheels or stabilizer wheels installed:** Move the wheels so that they are supported by the header.

   - For transport wheels, refer to *Adjusting EasyMove™ Transport Wheels, page 181*.
   - For stabilizer wheels, refer to *Adjusting Contour Wheels with Foot Switch, page 182*.

6. Park the combine on a level surface.

7. Move the header up or down as needed until it sits 254–356 mm (10–14 in.) above the ground.

8. Locate spirit level (A) on top of the float module frame. Ensure that the bubble is in the center. If adjustment is required, refer to *3.11 Leveling Header, page 471*.

9. Shut down the engine, and remove the key from the ignition.

10. Remove the linkage cover. For instructions, refer to *Removing Inboard Flex Linkage Covers, page 50*.

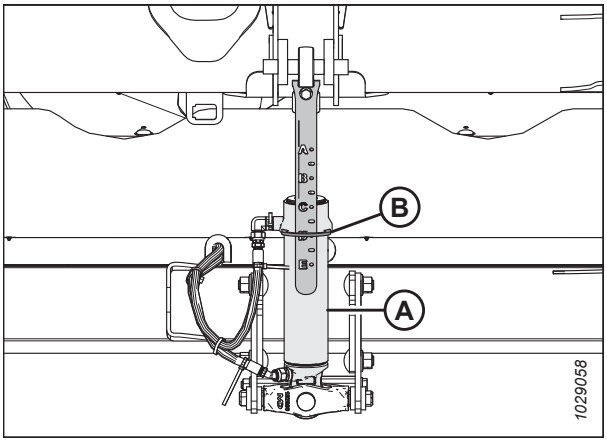


Figure 3.304: Center-Link

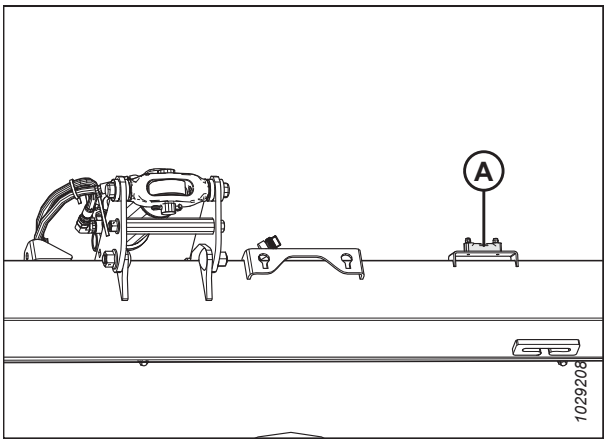


Figure 3.305: Spirit Level

11. Attach flex checker cable (A) to flex checker cable lock (B).

    NOTE:

    Some parts have been made transparent in the illustration to better show the cable lock.

12. Open the left header endshield. For instructions, refer to *Opening Header Endshields, page 39*.

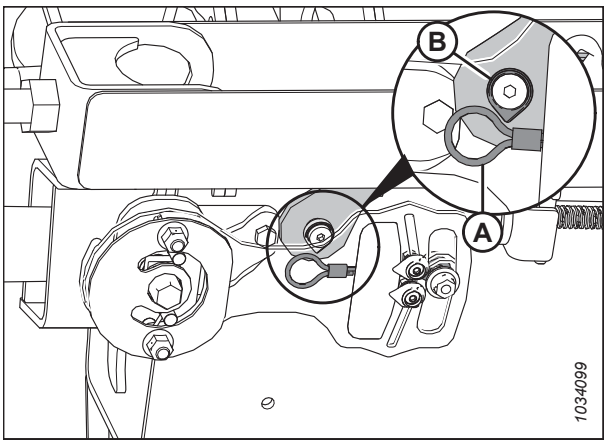


Figure 3.306: Left Flex Checker Cable Lock

13. Remove hairpin (A) securing the multi-tool to the bracket on the left endsheet.
14. Remove multi-tool (B). Reinstall the hairpin.

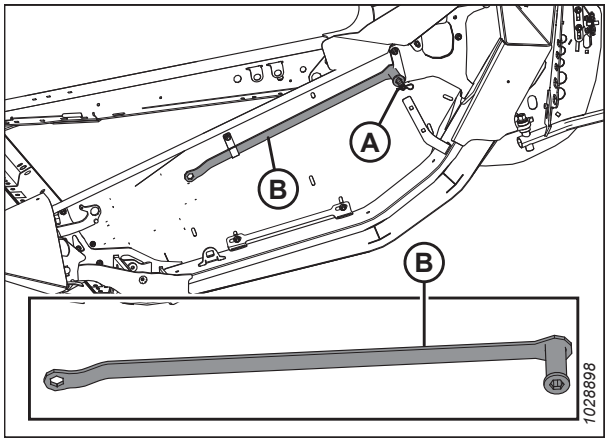


Figure 3.307: Left Endsheet

15. Unlock the wing that you are checking by moving spring handle (A) to the lower UNLOCK position. Unlock **ONLY** the wing being checked. Ensure that the other wing is locked.

    NOTE:

    You should hear a click after moving the spring handle; this click indicates that the internal mechanism has engaged or disengaged.

16. If the internal lock mechanism does not engage, move the wing with multi-tool (B) until you hear a click.

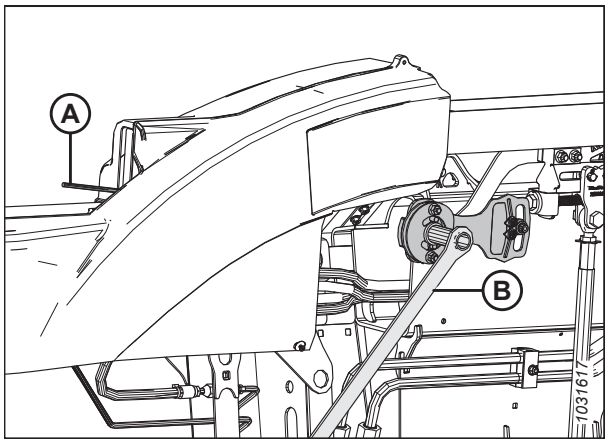


Figure 3.308: Wing Unlocked Position

17. Ensure that float checking toggles (A) are disengaged (down) on both sides of the float module.
18. Ensure that float locks (B) are engaged (up) on both sides of the float module.

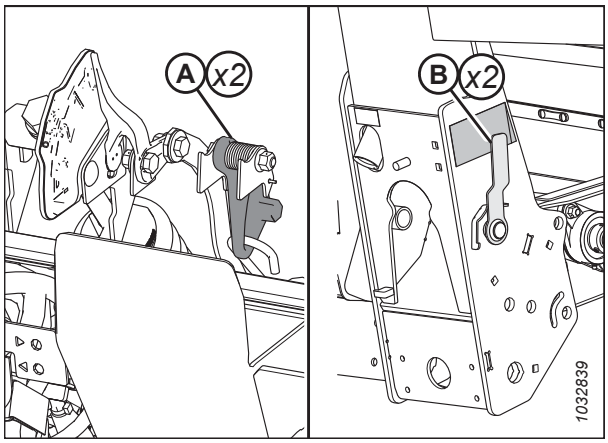


Figure 3.309: Checker Plate Assembly

19. On the flex checker plate, pinch indicators (A) and (B) together with your fingers.

20. Use multi-tool (C) to rotate the flex checker plate up until the pin reaches the end of the slot. Lower indicator (B) will move down to give the first reading.

21. Use multi-tool (C) to rotate the flex checker plate down until the pin reaches the end of the slot. Upper indicator (A) will move up to give the second reading.

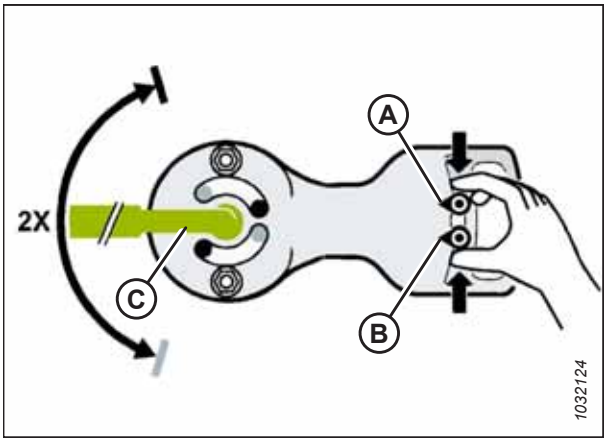


Figure 3.310: Left Wing Balance Indicators

22. Interpret the reading on the flex checker plate as follows:
    - If the wing is too light (A), make it heavier by turning adjuster bolt (D) to move clevis (E) in direction (F). Recheck the wing balance. Adjust the balance as needed until the wing is balanced (C).
    - If the wing is too heavy (B), make it lighter by turning adjuster bolt (D) to move clevis (E) in direction (G). Recheck the wing balance. Adjust the balance as needed until the wing is balanced (C).
    - If the wing is balanced (C), no action is required. Proceed to the next step.

23. Move the spring handle to the upper LOCK position.

24. If the lock does not engage, move the wing up and down with the multi-tool until it engages.

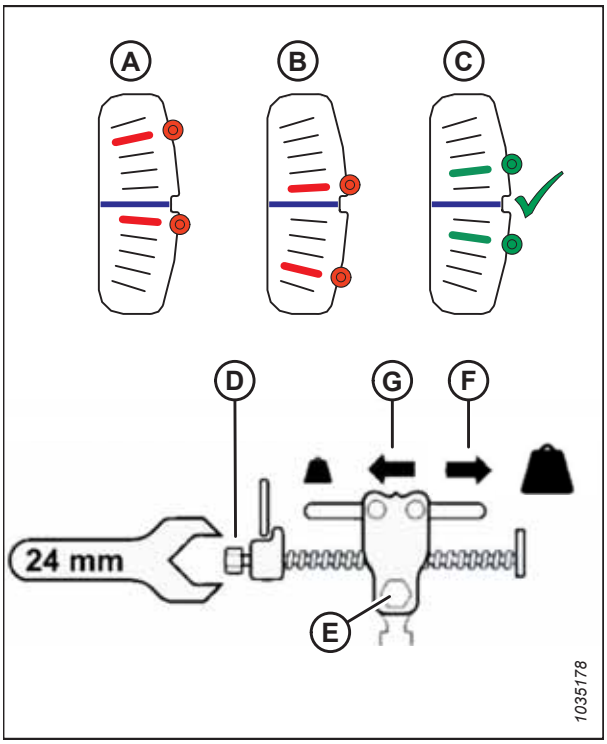


Figure 3.311: Left Wing Balance Adjustment Checker Plate

25. Remove flex checker cable (A) from flex checker cable lock (B).

    IMPORTANT:

    The flex checker cable may be damaged if it is left in place.

26. Repeat this procedure to set the wing balance on the other wing.

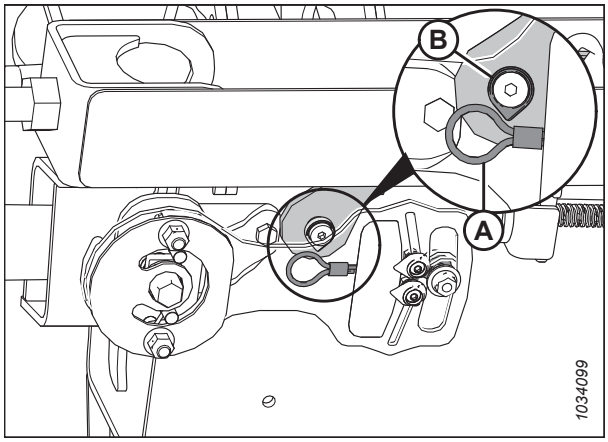


Figure 3.312: Left Flex Checker Cable Lock

27. Return multi-tool (B) to its storage position. Secure the multi-tool with hairpin (A).

28. Reinstall the linkage covers.

    - For the outboard flex linkage covers, refer to *Installing Outboard Flex Linkage Covers – FD2 Series, page 52*.
    - For the inboard flex linkage covers, refer to *Installing Inboard Flex Linkage Covers, page 51*.

    NOTE:

    When operating the header in the field, adjust the main float as necessary to maintain a proper wing balance. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

29. If the cutterbar is not straight when the wings are locked, then further adjustments to the header are required. Contact your MacDon Dealer.

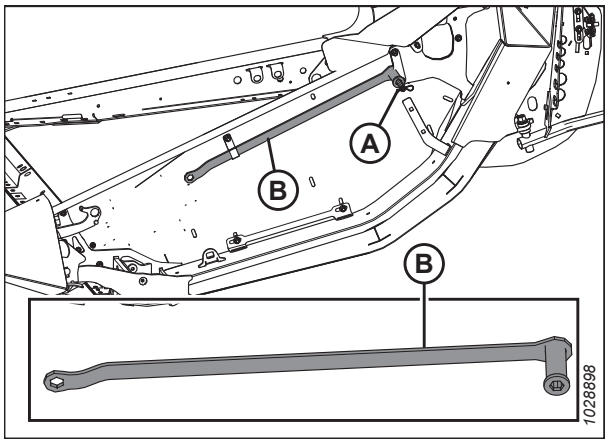


Figure 3.313: Left Endsheet

3.9.5 Header Angle

You can adjust the header angle to accommodate different crop conditions and/or soil types by using the center-link between the combine and the header.

Refer to *Adjusting Header Angle from Combine, page 214* for combine-specific adjustment details.

Header angle (A) is the angle between the header and the ground.

When cutting the crop at ground level, the header angle controls distance (B) between the cutterbar knife and the ground.

Adjusting the header angle pivots the header at the point of skid shoe/ground contact (C).

Guard angle (D) is the angle between the upper surface of the cutterbar guards and the ground.

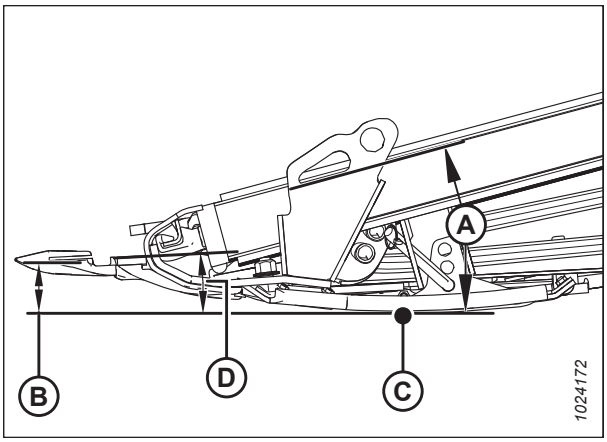


Figure 3.314: Header Angle

Set the header angle according to the type and the condition of the crop and the soil as follows:

- Use shallower settings (A) (position **A** on the indicator) for normal cutting conditions and for wet soil to prevent the soil from building up at the cutterbar. A shallow header angle also minimizes knife damage in stony fields.
- Use steeper settings (E) (position **E** on the indicator) for lodged crops and crops that are close to the ground such as soybeans.

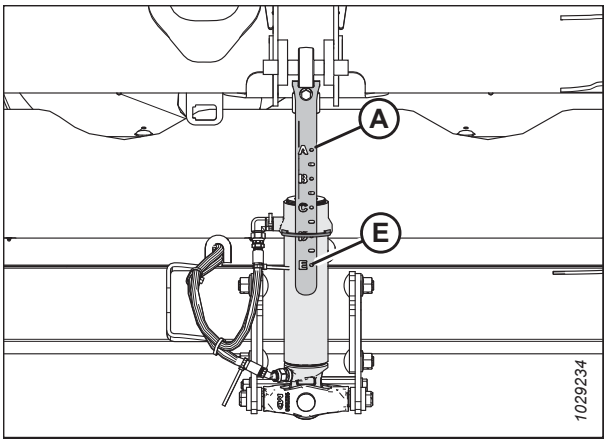


Figure 3.315: Center-Link

Shallowest angle (A) (center-link fully retracted) is at 1.7°, and produces the highest stubble when cutting on the ground.

Steepest angle (E) (center-link fully extended) is at 8.9°, and produces the lowest stubble when cutting on the ground.

Choose an angle that maximizes the performance for your crop and field conditions.

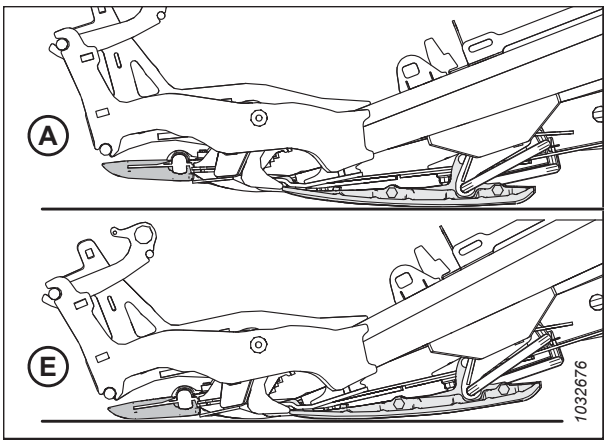


Figure 3.316: Guard Angles

Adjusting Header Angle from Combine

The header angle is adjusted from the combine cab using a switch on the operator's control handle and an indicator on the center-link or on the monitor in the cab. The header angle is determined by the length of the center-link between the combine float module and the header, or by the degree of feeder house tilt on certain combine models.

3.9.6 Reel Speed

The reel speed helps control how crop moves from the cutterbar onto the drapers.

The reel performs best when it appears to be driven by the ground. It should move the cut crop evenly through the cutterbar and onto the drapers without bunching and with minimal disturbance.

In standing crop, the reel speed should be slightly higher than or equal to the ground speed.

In flattened crop or crop that leans away from the cutterbar, the reel speed must be higher than the ground speed. To achieve this, either increase the reel speed or decrease the ground speed.

Excessive shattering of grain heads or crop loss over the header backtube may indicate that the reel speed is too high. Excessive reel speed also increases reel component wear and overloads the reel drive.

NOTE:

Excessive reel speed will also cause the reel circuit to go over relief. The reel will speed up and slow down at each bat when operating in heavy, tough, and lodged crops. Reducing the reel speed, so it is closer to the ground speed, will still allow the reel to lift the crop while not trying to pull it out of the ground. This will also reduce seed loss from the reel trying to comb through the crop, instead of just lifting it.

For recommended reel speeds in specific crops and conditions, refer to *3.7.2 Header Settings, page 131*.

You can adjust the reel speed using the controls in the combine cab. For instructions, refer to the combine operator's manual.

Optional Reel Drive Sprockets

Optional sprockets for use in specific crop conditions are available as an alternative to the factory-installed single sprocket.

The header is factory-equipped with a 19-tooth reel drive single sprocket, which is suitable for most crops. Replacing the 19-tooth reel drive single sprocket with optional dual reel drive sprocket (A) will provide more torque to the reel in heavy cutting conditions. With the optional dual reel drive sprocket installed, an optional 52-tooth sprocket (B) can also be added on top of the existing 56-tooth lower sprocket that will allow for higher reel speed in light crops when operating at increased ground speed. With these two optional sprockets installed, switching from high-torque to high-speed and vice versa will be quick and easy. For sprocket information, refer to Table . Contact your MacDon Dealer for more information.

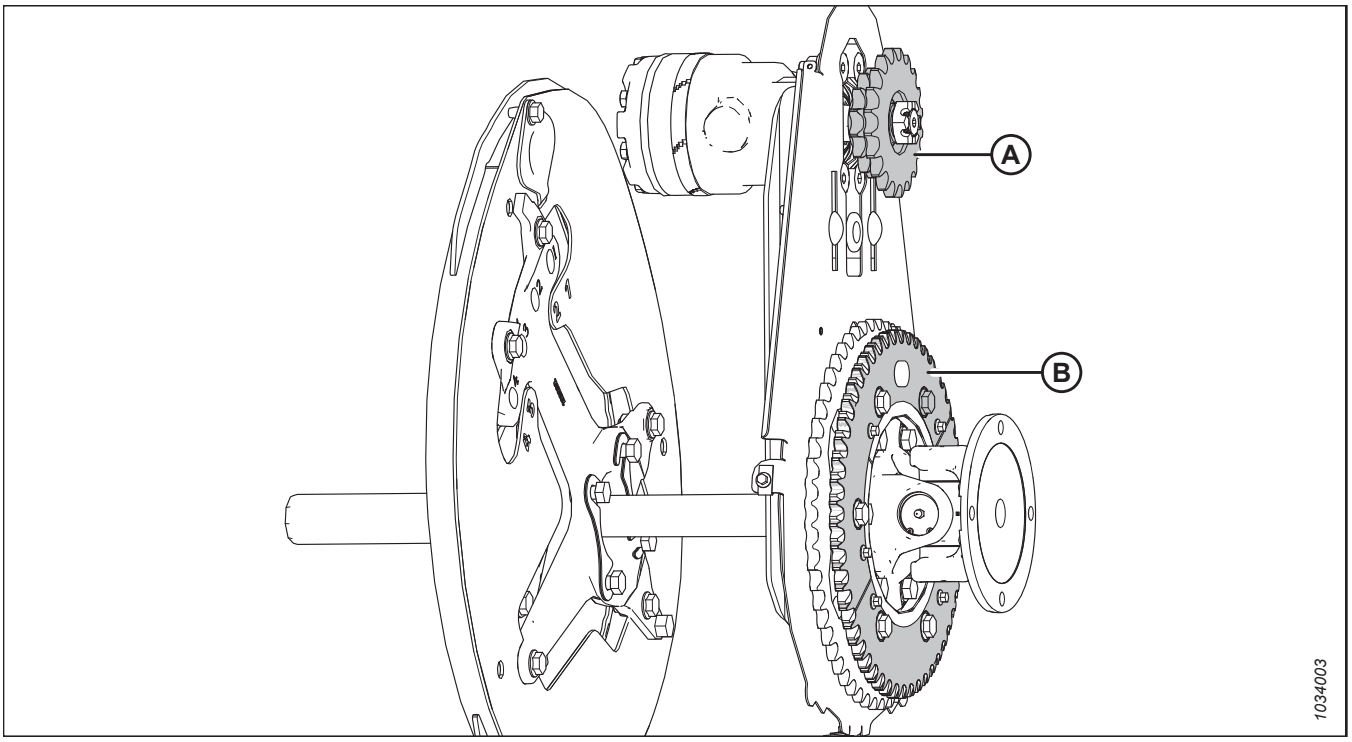


Figure 3.317: Reel Drive with Optional Sprockets

A - Dual Reel Drive Sprocket (MD #273451, MD #273452, or MD #273453)[59]

B - 52-Tooth Sprocket (MD #273689)[60]

3.9.7 Ground Speed

Operating the header at the appropriate ground speed for the conditions results in cleanly cut crop and even feeding.

Reduce the vehicle's ground speed in difficult cutting conditions to reduce equipment wear.

Use lower ground speeds when harvesting very light crops (for example, short soybeans) to allow the reel to pull in short plants. Start at 4.8–5.8 km/h (3.0–3.5 mph) and adjust the speed as needed.

Higher ground speeds may require heavier float settings to prevent excessive bouncing, which can result in uneven cutting and possible damage to the cutting components. If the ground speed is increased, the draper and reel speeds should generally be increased to handle the extra material.

Figure *3.318, page 216* illustrates the relationship between the ground speed and the area cut for the various sized headers.

59. These sprockets are sold separately (individual parts).
60. This sprocket is included in kit MD #311882.

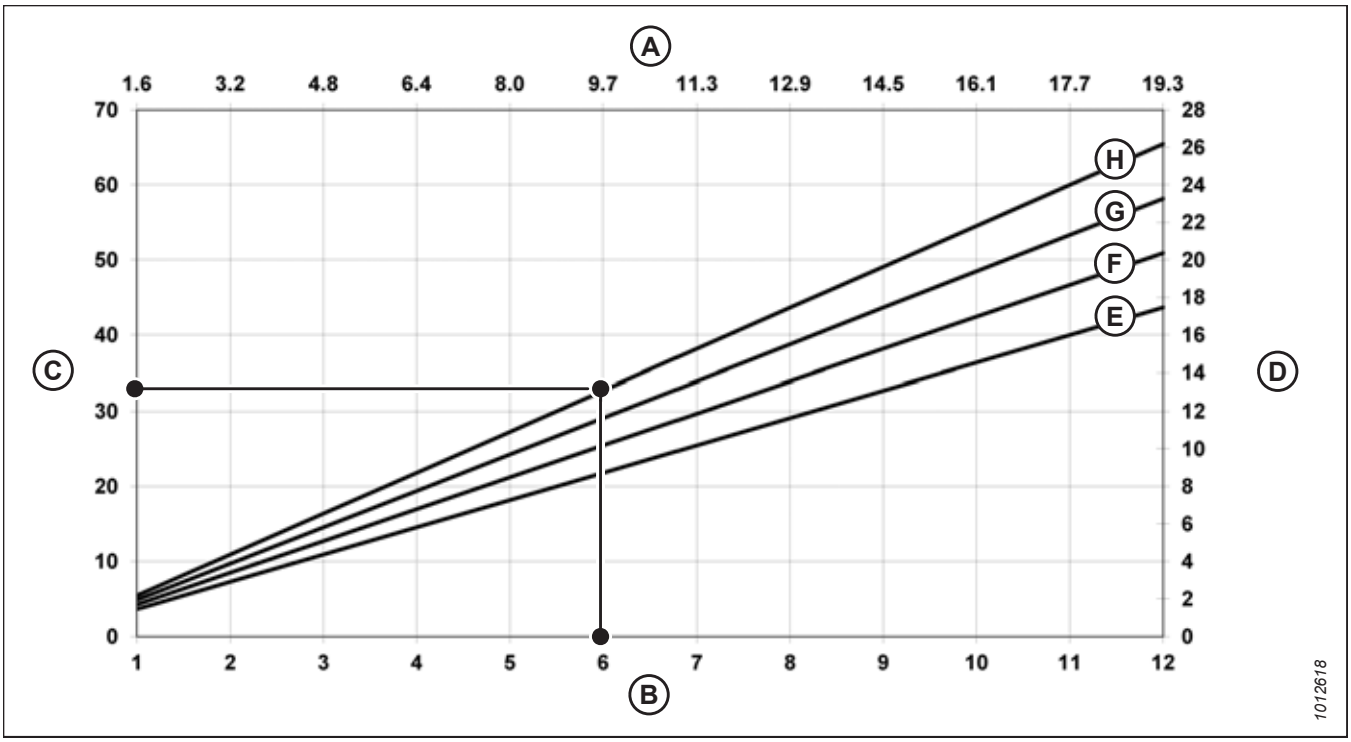


Figure 3.318: Ground Speed versus Acres

A - Kilometers/Hour
B - Miles/Hour
C - Acres/Hour
D - Hectares/Hour
E - 9.1 m (30 ft.)
F - 10.7 m (35 ft.)
G - 12.2 m (40 ft.)
H - 13.7 m (45 ft.)

Example: A 12.2 m (40 ft.) header operating at a ground speed of 9.7 km/h (6 mph) would produce a cut area of approximately 11.3 hectares (28 acres) in one hour.

3.9.8 Side Draper Speed

Operating with the correct draper speed is important for achieving the desired flow of cut crop away from the cutterbar.

Optimize the side draper speed for crop density, ground speed, and feeder house capacity. Side drapers that run too fast will pull crop off of the cutterbar and can result in crop bunching at the feed draper. Side drapers that run too slow will allow the feed draper to pull crop off of the side drapers and can result in uneven feeding.

Adjust the side draper speed to efficiently feed crop onto the float module feed draper. For instructions, refer to *Adjusting Side Draper Speed, page 217*.

Adjusting Side Draper Speed

The side drapers carry the cut crop to the float module feed draper, which then feeds the crop into the combine. You can adjust the speed of the side drapers for various crops and crop conditions.

Side drapers (A) are driven by hydraulic motors and by a pump that is powered by the combine feeder house drive through a gearbox on the float module. From inside the cab, you can adjust the side draper speed on the side draper speed control, which regulates the flow to the draper hydraulic motors.

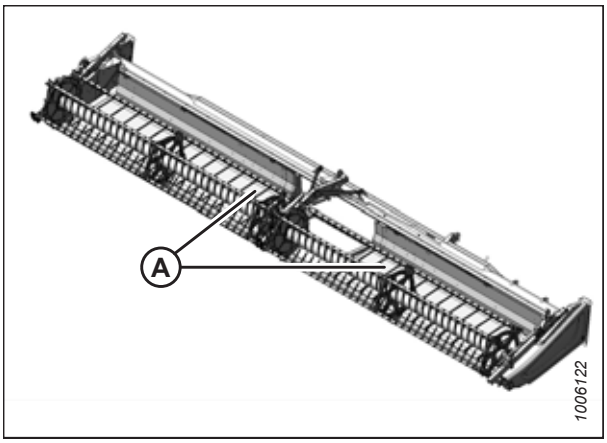


Figure 3.319: Side Drapers

1. Rotate knob (A) to setting 6 to start adjustment.

   NOTE:

   Switch (B) activates the header tilt and reel fore-aft controls. For instructions on the controls, refer to *Adjusting Header Angle from Combine, page 214*.

   NOTE:

   For CNH combines, the switch to activate the header tilt and reel fore-aft controls is located behind the ground speed lever (GSL).

2. For the recommended draper settings, refer to one of the following:

   - *3.7.2 Header Settings, page 131*
   - *3.7.3 Optimizing Header for Straight-Combining Canola, page 142*

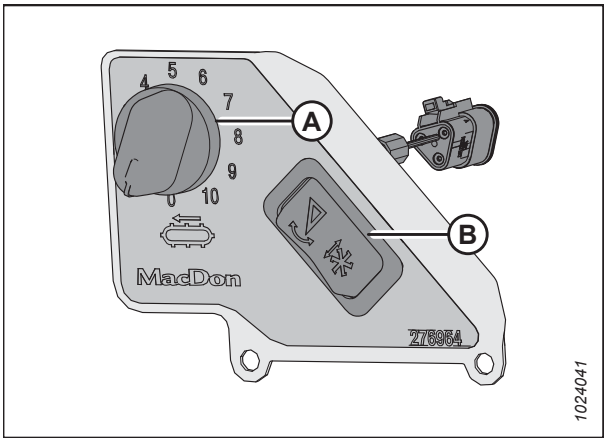


Figure 3.320: In-Cab Side Draper Speed Control

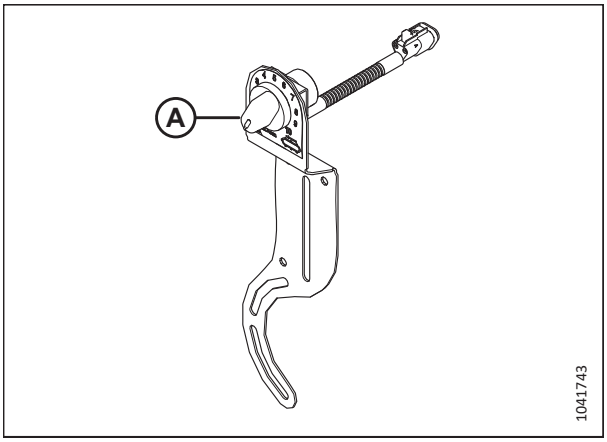


Figure 3.321: CNH In-Cab Side Draper Speed Control

3.9.9 Feed Draper Speed

The feed draper moves the cut crop from the side drapers into the float module feed auger.

The float module feed draper (A) is driven by a hydraulic motor and a pump that is powered by the combine feeder house drive through a gearbox on the float module.

IMPORTANT:

The feed draper speed is determined by the combine feeder house speed and cannot be independently adjusted.

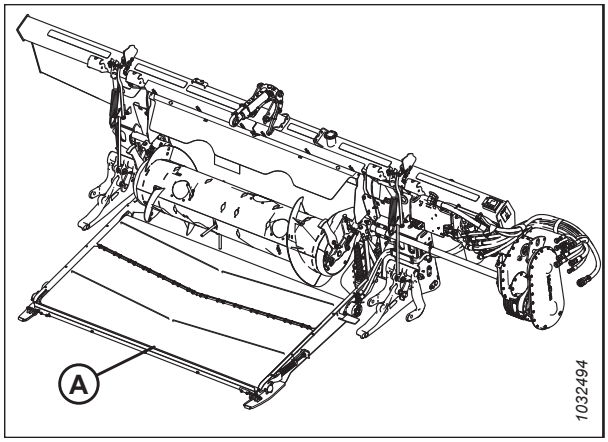


Figure 3.322: FM200 Float Module

3.9.10 Knife Speed Information

The float module is driven by a driveline that is attached to the combine feeder house. The driveline attaches to a gearbox that drives the knife drive pump.

Table 3.21 Feeder House Speed

Combine Make	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS Lexion 500/600	Display Speed: 420 Actual Shaft Speed: 750
CLAAS 5000/6000/7000/8000	750
Gleaner®	625
IDEAL™	620
John Deere[61]	490
Massey Ferguson®	625
New Holland	580

Table 3.22 FD2 Series Header Knife Speed

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
FD225	600–700	—
FD230	600–750	—
FD235	600–700	600–750
FD240	600–650	600–750
FD241	—	600–750

61. Some John Deere combines have a fixed feeder house speed of 520 rpm. For hydraulic testing purposes, this difference is not significant.

Table 3.22 FD2 Series Header Knife Speed (continued)

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
FD245	—	600–750
FD250	—	600–750

IMPORTANT:

Ensure the knife speed is within the range of rpm values in Table *3.22, page 218*. For instructions, refer to *Checking Knife Speed, page 219*.

IMPORTANT:

To prevent the knife from overspeeding, set the knife speed while the feeder house speed is to set maximum speed.

Checking Knife Speed

For best performance, the header's knife drive must run within the specified rpm range. You can check the knife speed by using a photo tachometer at the flywheel of the knife drive motor.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine.
4. Engage the header drive, and run the feeder house at the maximum speed. For maximum speed information, refer to *3.23, page 219*.

   IMPORTANT:

   Before checking the knife speed, make sure the feeder house is set to maximum speed. This will prevent the knife from overspeeding when making further adjustments.
5. Run the float module and the header until the oil temperature is 38°C to 52°C (100°F to 125°F).

Table 3.23 Feeder House Speed

Combine Make	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS Lexion 500/600	Display Speed: 420 Actual Shaft Speed: 750
CLAAS 5000/6000/7000/8000	750
Gleaner®	625
IDEAL™	620
John Deere[62]	490
Massey Ferguson®	625
New Holland	580

62. Some John Deere combines have a fixed feeder house speed of 520 rpm. For hydraulic testing purposes, this difference is not significant.

6. Measure the rpm of flywheel (A) with a hand-held photo tachometer.

   NOTE:

   One revolution (rpm) is equivalent to two knife strokes (spm) (1 rpm = 2 spm).

7. Shut down the engine, and remove the key from the ignition.

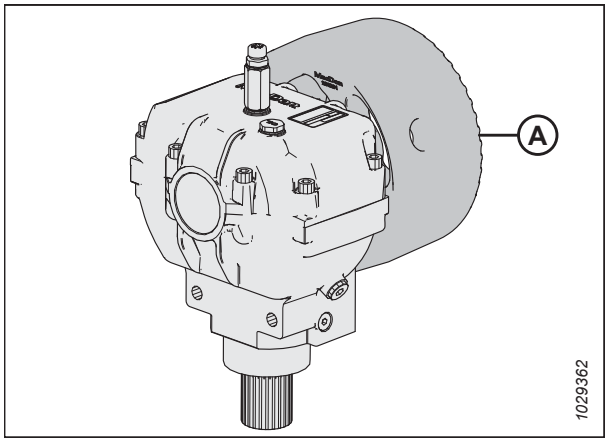


Figure 3.323: Flywheel

8. Compare the flywheel rpm measurement with the rpm values in *3.24, page 220*.

9. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

Table 3.24 FD2 Series Header Knife Speed

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
FD225	600–700	—
FD230	600–750	—
FD235	600–700	600–750
FD240	600–650	600–750
FD241	—	600–750
FD245	—	600–750
FD250	—	600–750

3.9.11 Reel Height

The reel operating position depends on the type of crop and the cutting conditions.

Set the reel height and fore-aft position to carry material past the knife and onto the drapers with minimal damage to the crop.

The reel height is controlled manually or with button presets on the ground speed lever (GSL) in the combine cab. For instructions, refer to your combine operator's manual.

When applicable, this manual also contains instructions for presetting the reel height on select combines. Refer to *3.10 Auto Header Height Control System, page 263* for more information.

For more information on fore-aft positioning, refer to *3.9.12 Reel Fore-Aft Position, page 225*.

The following table describes how to change the reel position for different crop conditions:

Table 3.25 Reel Position

Crop Condition	Reel Position
Lodged rice	• Lower the reel • Change reel speed and/or cam setting • Change fore-aft position by extending the reel
Bushy or heavy standing (all)	Raised

If the reel is set too low, the following conditions may happen:

- Crop loss over the header backtube
- Crop disturbance on the drapers caused by the reel fingers
- Crop pushed down by the tine tubes
- Tall crop wrapped around the reel drive and ends

If the reel is set too high, the following conditions may happen:

- Cutterbar plugging
- Crop lodging and being left uncut
- Grain stalks dropping ahead of the cutterbar

For the recommended reel heights for specific crops and crop conditions, refer to *3.7.2 Header Settings, page 131*.

IMPORTANT:

Maintain an adequate clearance between the reel and the cutterbar to prevent the reel fingers from contacting the cutterbar during operation. For instructions, refer to *4.13.1 Reel to Cutterbar Clearance, page 658*.

Checking and Adjusting Reel Height Sensor

The orientation of the reel height sensor arm must be checked manually at the sensor. The output voltage range of the sensor can be checked either manually at the sensor or from the cab.

IMPORTANT:

Set the minimum reel height before adjusting the reel height sensor. For instructions, refer to *4.13.1 Reel to Cutterbar Clearance, page 658*.

NOTE:

For in-cab instructions, refer to the combine operator's manual.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

Checking and adjusting the sensor arm orientation

1. Start the engine.
2. Park the combine on a level surface.
3. Shut down the engine, and remove the key from the ignition.

4. On the right endsheet, locate reel height sensor (A). The sensor connects to the right reel arm.

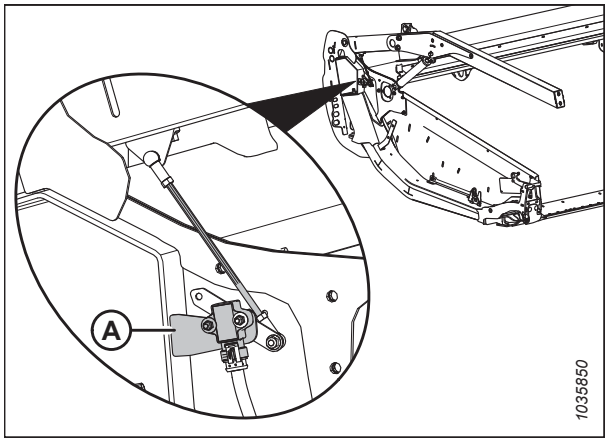


Figure 3.324: Reel Height Sensor Location

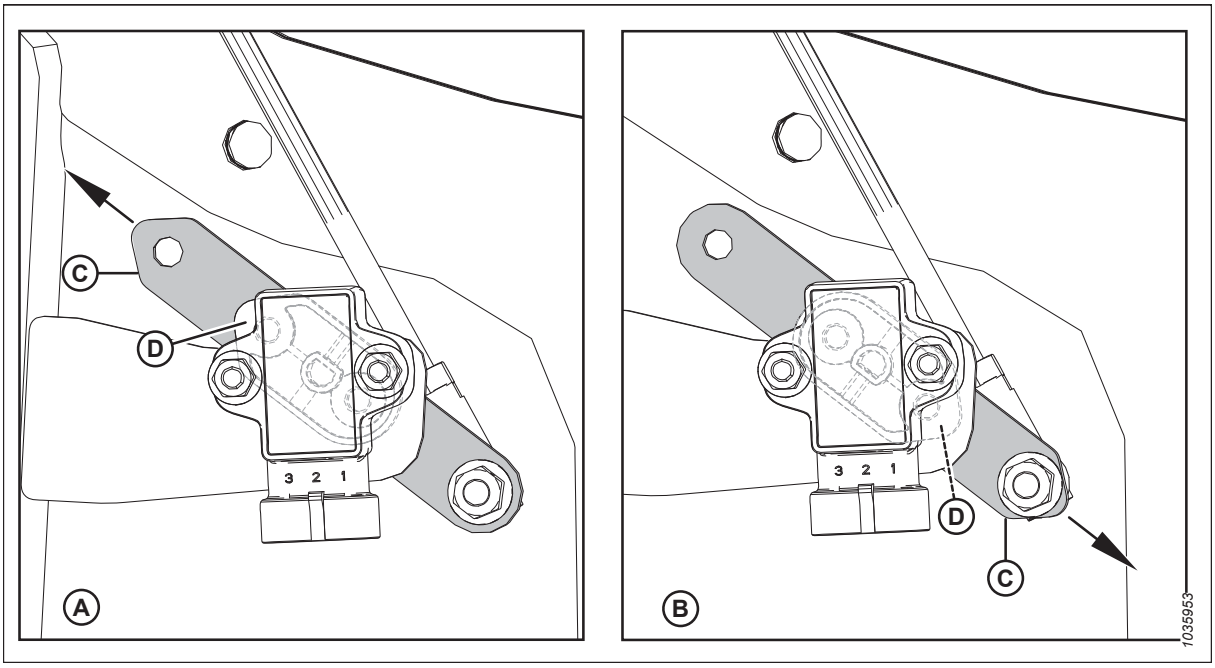


Figure 3.325: Sensor Arm/Pointer Configurations

A - John Deere, CLAAS, IDEAL Configuration

B - Case/New Holland Configuration

C - Sensor Arm

D - Sensor Pointer (Located Between Sensor and Sensor Arm)

5. Ensure that sensor arm (C) and pointer (D) are configured properly for the header. For instructions, refer to Figure *3.325, page 222*.

   NOTE:

   In configuration **A**, the arrow indicates that the pointed end of the sensor arm is pointed toward the back of the header.

   In configuration **B**, the arrow indicates that the pointed end of the sensor arm is pointed toward the front of the header.

6. If the sensor arm orientation is incorrect, remove sensor arm (C) and reposition it in the correct orientation. Torque the nut to 8.2 Nm (72.5 lbf·in).

Checking and adjusting the sensor output voltage when reel is lowered

7. Engage the parking brake.
8. Start the engine.
9. Lower the reel fully.
10. Use the combine display or a voltmeter to measure the voltage range when the reel is lowered. Refer to Table *3.26, page 223* for the recommended voltage ranges.

Table 3.26 Reel Height Sensor Voltage Limits

Combine Type	Recommended Voltage Range	
	Voltage with Reel Raised	Voltage with Reel Lowered
Case/New Holland	0.7–1.1 V	3.9–4.3 V
CLAAS	3.9–4.3 V	0.7–1.1 V
IDEAL™	3.9–4.3 V	0.7–1.1 V
John Deere	3.9–4.3 V	0.7–1.1 V

11. Shut down the engine, and remove the key from the ignition.
12. Using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at reel height sensor (A).
13. Ensure that the voltage is within the recommended voltage range. If the voltage is not within the recommended range, loosen jam nuts (B) and (C), and adjust the rod length.
14. Tighten the jam nuts by hand until they are snug, then tighten the jam nuts by another quarter-turn.

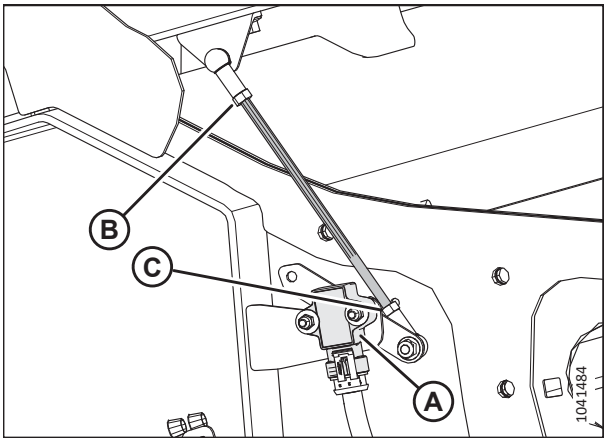


Figure 3.326: Reel Height Sensor – Right Reel Arm with Reel Down

Checking and adjusting the sensor output voltage when reel is raised

15. Start the engine.
16. Fully raise the reel.
17. Use the combine display or a voltmeter to measure the voltage range when the reel is raised. Refer to Table *3.26, page 223* for the recommended voltage ranges.
18. Shut down the engine, and remove the key from the ignition.

19. Using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at reel height sensor (A).
20. If the voltage is not within the recommended range, loosen two M5 hex nuts (B) and rotate sensor (A) to achieve the recommended voltage range. Tighten nuts (B) to 2.5 Nm (22 lbf·in).
21. Start the engine.
22. Lower the reel fully.

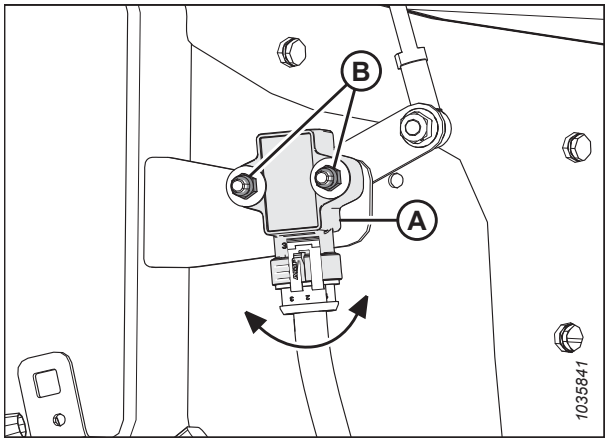


Figure 3.327: Reel Height Sensor – Right Reel Arm with Reel Up

Replacing Reel Height Sensor

The reel height sensor is used to reference where the reel is positioned above from the cutterbar.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Disconnect the harness from sensor (A).
5. Remove two hex head bolts (B) from sensor arm (C). Retain the hardware for reinstallation.

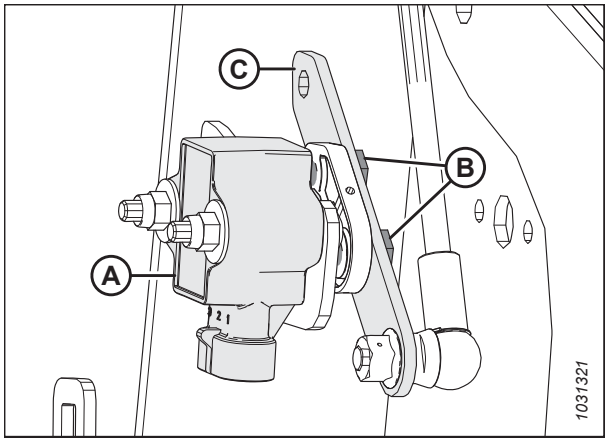


Figure 3.328: Reel Height Sensor – Right Reel Arm

6. Remove two nyloc nuts, washers, and bolts (A) securing sensor (B) to the header frame. Remove the sensor.
7. Install new sensor (B) onto bracket (C) on the header frame. Attach it using retained bolts (A), washers, and nyloc nuts. Torque bolts (A) to 2–3 Nm (17–27 lbf·in).

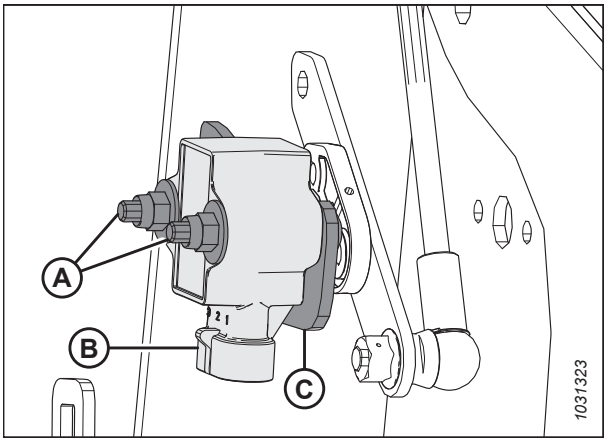


Figure 3.329: Reel Height Sensor – Right Reel Arm

8. Secure sensor arm (B) using retained hex head bolts (A). Ensure sensor pointer (C) is installed in the same direction as the pointed end of sensor arm (B).
9. Torque bolts (A) to 4 Nm (35 lbf·in).
10. Connect the harness to the sensor.
11. Check the sensor voltage range. For instructions, refer to *Checking and Adjusting Reel Height Sensor, page 221*.

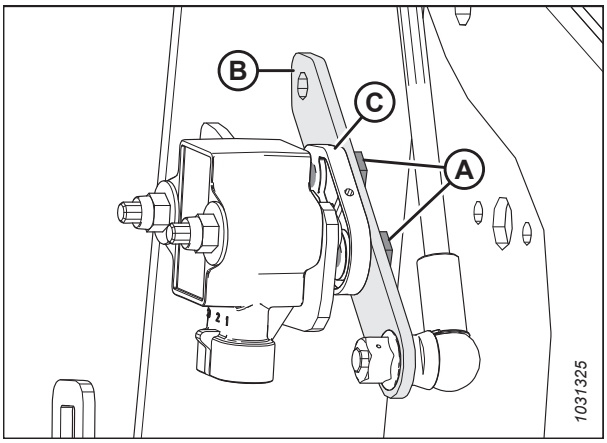


Figure 3.330: Reel Height Sensor – Right Reel Arm

3.9.12 Reel Fore-Aft Position

The reel fore-aft position is a critical factor for achieving the best results in adverse conditions. The factory-recommended reel position has the position marker centered over numbers (4–5 on the indicator). This position suits normal conditions, but you can adjust the fore-aft position as required by using the controls inside of the cab.

To improve the reel's performance in certain crop conditions, the reel can be moved approximately 155 mm (6 in.) farther aft by repositioning the fore-aft cylinders on the header's reel arms. For instructions, refer to *Repositioning Fore-Aft Cylinders, page 226*.

The reel position indicator (A) is located at the left reel arm. Bracket (B) is the reel fore-aft position marker.

For straight standing crop, center the reel over the cutterbar (4–5 on indicator).

For crops that are down, tangled, or leaning, it may be necessary to move the reel ahead of the cutterbar (the lower number on the indicator).

NOTE:

If you are having difficulty picking up flattened crop, adjust the header to a steeper angle. For instructions, refer to *3.9.5 Header Angle, page 212*. Only adjust the reel position after adjusting the header angle.

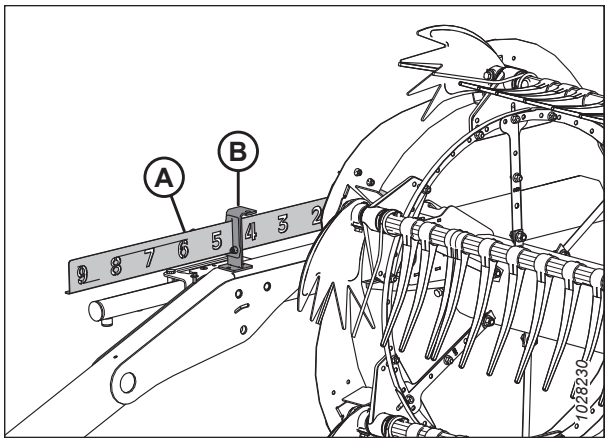


Figure 3.331: Fore-Aft Indicator

NOTE:

In crops that are difficult to pick up such as rice, or in severely lodged crops that require full forward positioning of the reel, set the reel tine pitch to properly place the crop onto the drapers. For instructions, refer to *3.9.13 Reel Tine Pitch, page 233*.

Adjusting Reel Fore-Aft Position

The factory-set reel position suits normal conditions, but you can adjust the fore-aft position as required by using the controls inside of the cab.

To adjust the reel fore-aft position, follow these steps:

1. Operate the hydraulics to move the reel to the desired position while using fore-aft indicator (A) as a reference. Bracket (B) is the position marker.
2. Check the reel to cutterbar clearance after adjusting the cam setting. Refer to the following:
   - *4.13.1 Reel to Cutterbar Clearance, page 658*
   - *4.13.2 Reel Frown, page 666*

   IMPORTANT:

   Operating with the reel too far forward can result in the fingers contacting the ground. When operating with the reel in this position, lower the skid shoes or adjust the header tilt as required to prevent damaging the fingers.

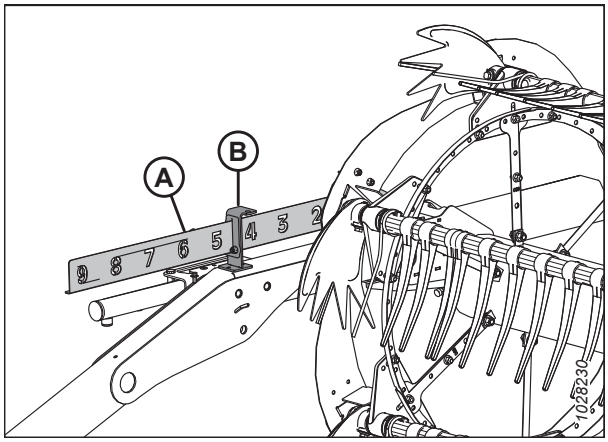


Figure 3.332: Fore-Aft Indicator

Repositioning Fore-Aft Cylinders

To accommodate certain crop conditions, you can move the reel approximately 155 mm (6 in.) farther aft by repositioning the fore-aft cylinders on the reel arms.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Ensure that all of the fore-aft cylinders are set to the same position.

1. Start the engine.
2. Adjust the reel height so that the reel arms are parallel with the ground.
3. Shut down the engine, and remove the key from the ignition.

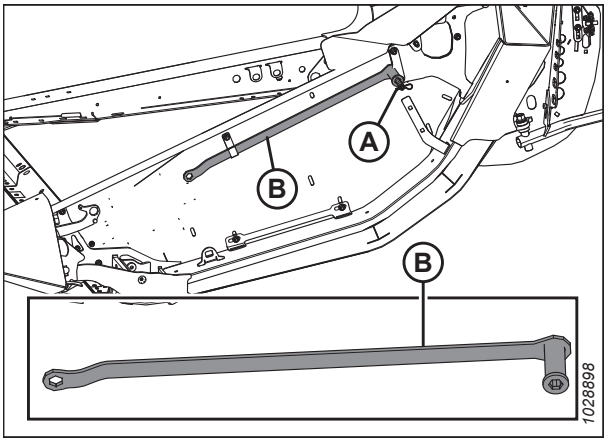


Figure 3.333: Left Endsheet

4. Remove hairpin (A) securing the multi-tool to the bracket on the left endsheet.
5. Remove multi-tool (B). Reinstall the hairpin.

6. Refer to Figure *3.334, page 228* to determine the fore-aft cylinder adjustment procedures for your header type. The number on the illustration refers to one of the following procedures:

   - For reel arms with fore-aft cylinder adjustment [**1**] at the front, refer to Step *1, page 229*.
   - For reel arms with fore-aft cylinder adjustment [**2**] at the rear, refer to Step *1, page 230*.

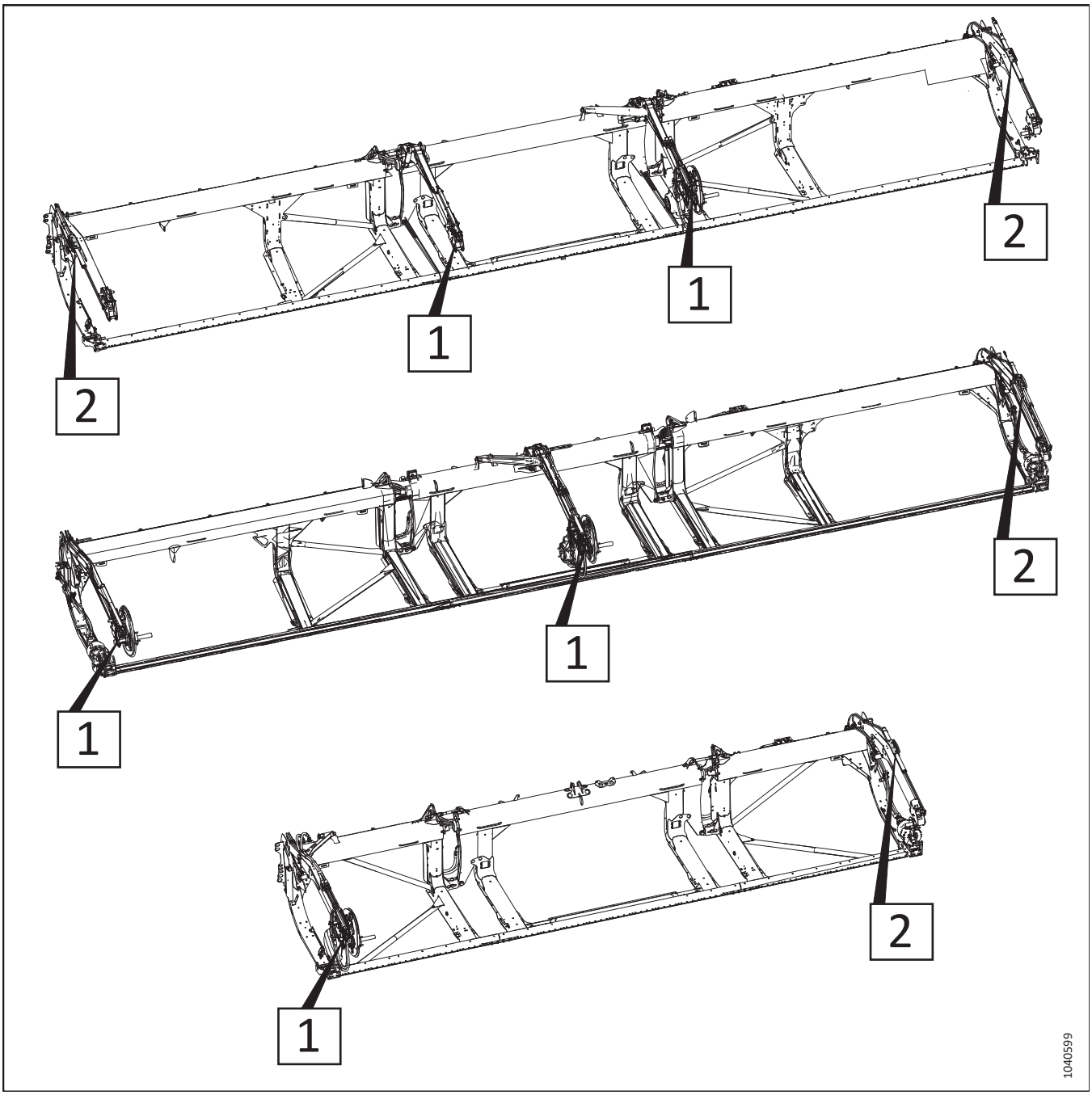


Figure 3.334: Adjustable Fore-Aft Cylinders – Procedure Reference Numbers

To change the reel position on the fore-aft cylinders that adjust at the front of the reel arm, follow these steps:

1. Remove split ring (A), clevis pin (B), and flat washer (not shown) securing the adjustable fore-aft cylinder in the forward position.

   NOTE:

   The reel drive components are not shown in the illustration.

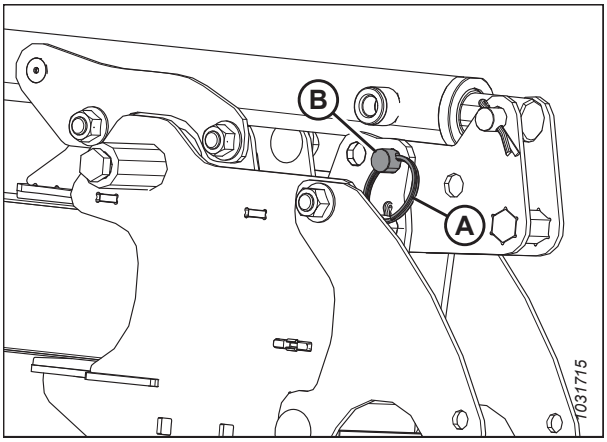


Figure 3.335: Fore-Aft Cylinder Adjustment Type 1 – Forward Position

2. Use multi-tool (A) to push bracket (B) rearward until hole (C) aligns with hole (D). The reel will move rearward as bracket (B) rotates on bottom pin (E).

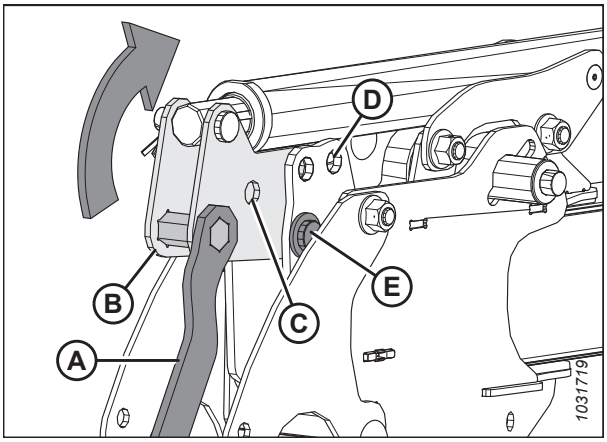


Figure 3.336: Fore-Aft Cylinder Adjustment Type 1 – Forward Position

3. Secure the cylinder in the aft position with clevis pin (A), flat washer, and split ring (B).

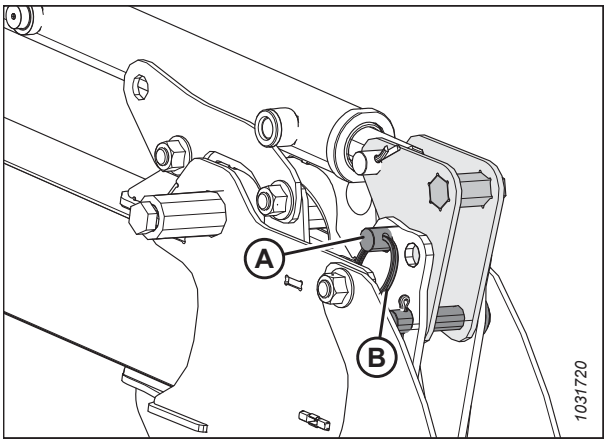


Figure 3.337: Fore-Aft Cylinder Adjustment Type 1 – Aft Position

To change the reel position on the fore-aft cylinders that adjust at the back of the reel arm, follow these steps:

1. Remove split ring (A) and clevis pin (B) securing the left cylinder in the forward position on cylinder bracket (C).

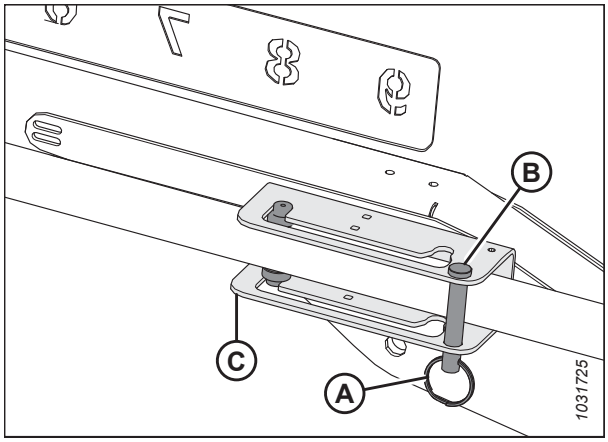


Figure 3.338: Fore-Aft Cylinder Adjustment Type 2 – Forward Position

2. Slide cylinder guides (A) along the bracket slot and into aft position (B).

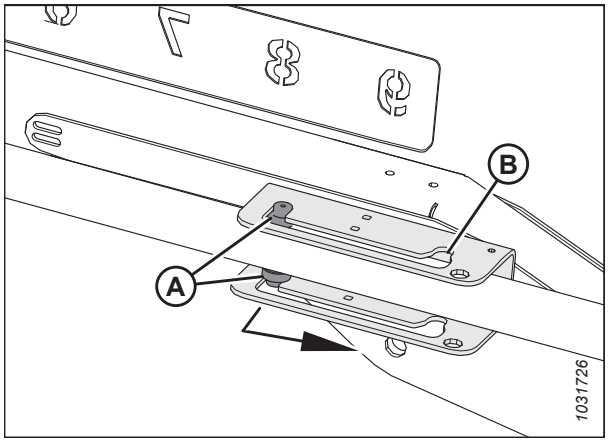


Figure 3.339: Fore-Aft Cylinder Adjustment Type 2 – Forward Position

3. Reinstall clevis pin (A) and split ring (B) to secure the cylinder in aft position (C) on the bracket.

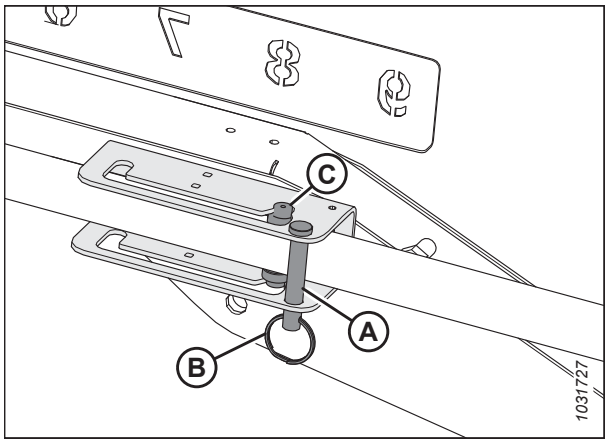


Figure 3.340: Fore-Aft Cylinder Adjustment Type 2 – Aft Position

4. Ensure that there is still an adequate clearance between the reel and the following parts of the header:
   - Backsheet
   - Reel braces
   - Upper cross auger (if this is installed on the header)
5. If necessary, adjust the reel tine pitch. For instructions, refer to *3.9.13 Reel Tine Pitch, page 233*.

Checking and Adjusting Fore-Aft Position Sensor

The fore-aft position sensor indicates the position of the reel in the fore-aft plane. The sensor arm's orientation and the sensor's output voltage range must be calibrated.

Checking and adjusting sensor arm orientation

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Shut down the engine, and remove the key from the ignition.

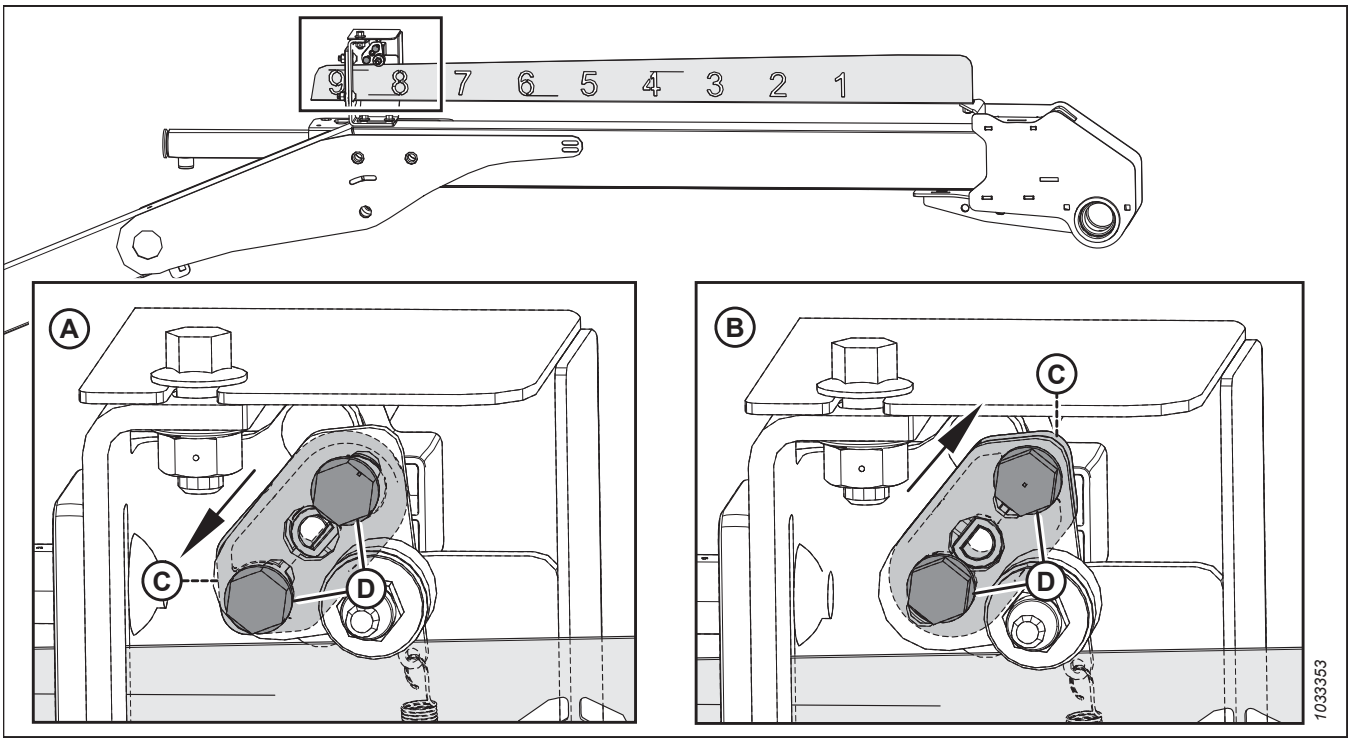


Figure 3.341: Sensor Arm Configurations

A - John Deere, CLAAS, IDEAL™ Configuration

B - Case/New Holland Configuration

C - Sensor Arm

D - Mounting Hardware

4. Check the orientation of sensor arm (C) and hardware (D). If sensor arm (C) is not oriented correctly, remove it and reinstall it in the correct orientation.

Checking and adjusting sensor output voltage

5. Engage the parking brake.

   IMPORTANT:

   To measure the output voltage of the fore-aft sensor, the engine needs to be running and supplying power to the sensor.

6. Start the engine.

7. Adjust the reel to the fully forward position. Ensure that dimension (A) (from the sensor bracket to the end of the indicator) is 62–72 mm (2.4–2.8 in.).

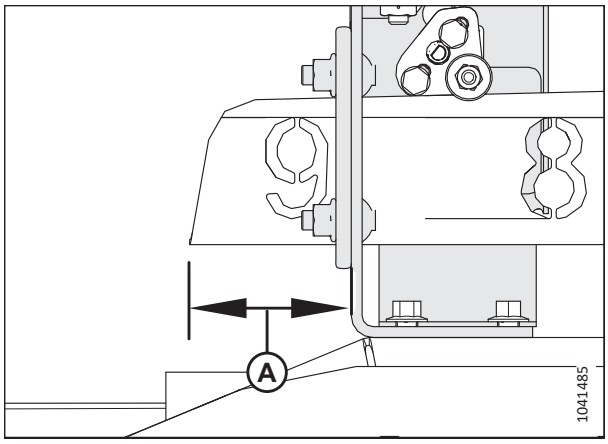


Figure 3.342: Fore-Aft Bracket

8. Use the combine display or a voltmeter (if measuring the sensor manually) to measure the voltage range. If you are using a voltmeter, check sensor voltage (A) between pin 2 (ground) and pin 3 (signal).
   - For Case and New Holland combines, the voltage range should be 0.7–1.1 V.
   - For Challenger®, CLAAS, Gleaner, IDEAL®, John Deere, and Massey Ferguson®combines, the voltage range should be 3.9–4.3 V.
9. Shut down the engine, and remove the key from the ignition.

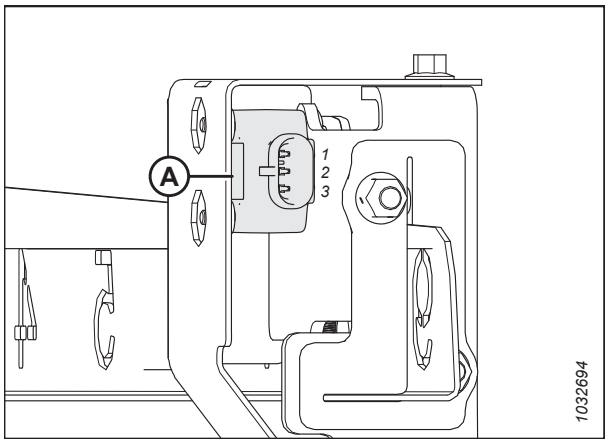


Figure 3.343: Fore-Aft Sensor

10. If adjustment is required, loosen hardware (A) and rotate sensor (B) until the voltage is in the correct range.

11. Once sensor adjustment is complete, torque the hardware to 2.1 Nm (22 lbf·in).

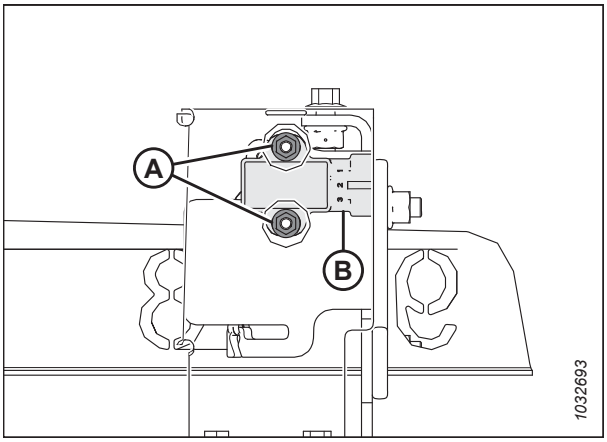


Figure 3.344: Fore-Aft Sensor

12. Ensure that bolt (A) is free spinning. Do **NOT** tighten the bolt.

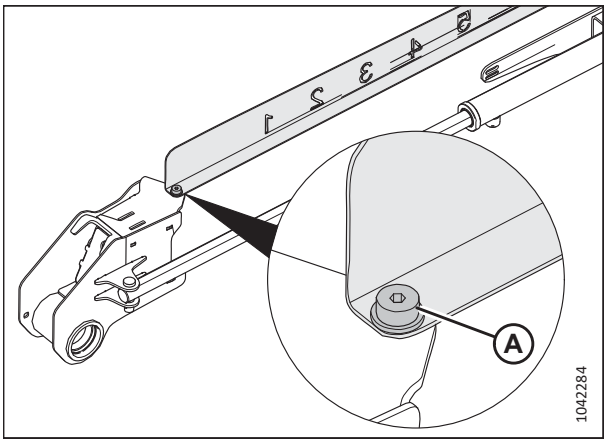


Figure 3.345: Indicator Bolt

3.9.13 Reel Tine Pitch

Reel tine pitch describes the position of the reel fingers in relation to the cutterbar. You can change it by changing the reel fore-aft position and the reel cam setting. You may also wish to change the reel tine pitch to suit different harvesting conditions.

Changing the reel position has the largest impact on the reel tine pitch. On the other hand, changing the cam setting has a smaller impact on the reel tine pitch. For example, with the cam position range at 33°, the corresponding finger pitch range is only 5° at the lowest point of the reel's rotation.

For the best results, use the minimum cam setting that delivers the crop past the rear edge of the cutterbar and onto the drapers. For more information, refer to *3.7.2 Header Settings, page 131*.

Reel Cam Settings

Changing the cam position allows you to adjust the point at which the reel fingers release gathered crop to the drapers. Recommendations are provided for reel cam settings in various harvesting conditions.

The setting numbers are visible above the slots on the cam disc. For instructions, refer to *Adjusting Reel Cam, page 235*.

NOTE:

For the recommended reel tine pitch setting to use in various harvesting conditions, refer to *3.7.2 Header Settings, page 131*.

Cam Position 1, Reel Position 5 or 6 delivers the most even crop flow onto the drapers without fluffing or disturbing the material.

- This setting will release crop close to the cutterbar. Use this setting when the cutterbar is on the ground while harvesting.
- Some crops will not be delivered past the cutterbar when the cutterbar is raised off the ground while the reel is far forward. Therefore, set the initial reel speed so that it is close to the ground speed.

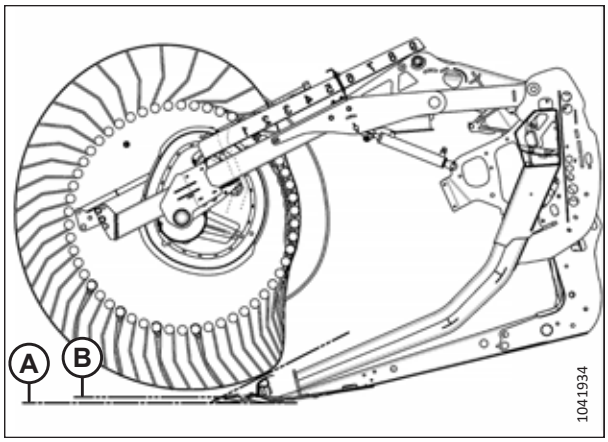


Figure 3.346: Finger Profile – Cam Position 1

Cam Position 2, Reel Position 6 or 7 is the recommended starting position for most crops and conditions.

- Before adjusting the cam setting, adjust the reel fore or aft to try to bring the crop onto the draper.
- If the crop is still stalling on the cutterbar and the reel cannot push the crop back on the draper, increase the cam setting to push the crop past the rear edge of the cutterbar.
- If the crop is fluffing or if there is a disruption to the flow across the drapers, decrease the cam setting.
- This setting results in the reel fingertip speed being approximately 20% faster than the reel speed.

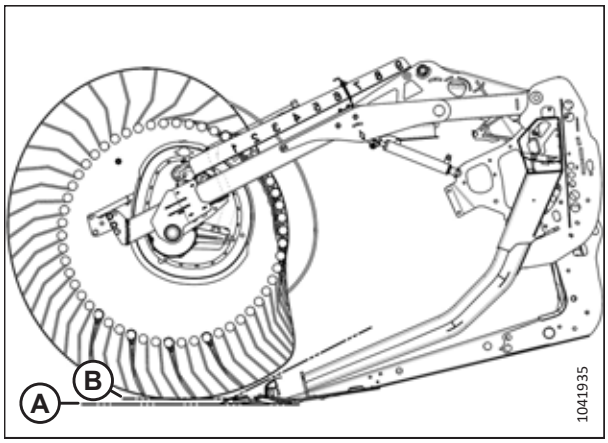


Figure 3.347: Finger Profile – Cam Position 2

Cam Position 3, Reel Position 8 is mainly used to leave long stubble.

- This position allows the reel to reach forward and lift the crop across the knife and onto the drapers.
- This setting results in the reel fingertip speed being approximately 30% faster than the reel speed.

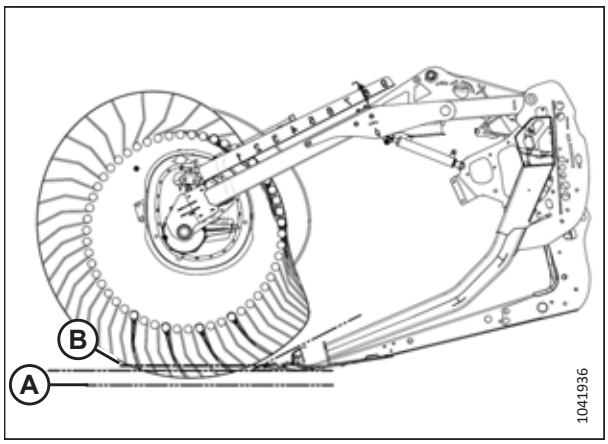


Figure 3.348: Finger Profile – Cam Position 3

Cam Position 4, Header Angle at Minimum, Reel Position 9 results in the header leaving a shorter stubble when harvesting lodged crops (in comparison to a header that is tilted fully forward). With this header angle, the reel just manages to graze the ground.

- This position allows the reel to reach forward and lift the crop across the knife and onto the drapers.
- This setting results in the reel fingertip speed being approximately 35% faster than the reel speed.

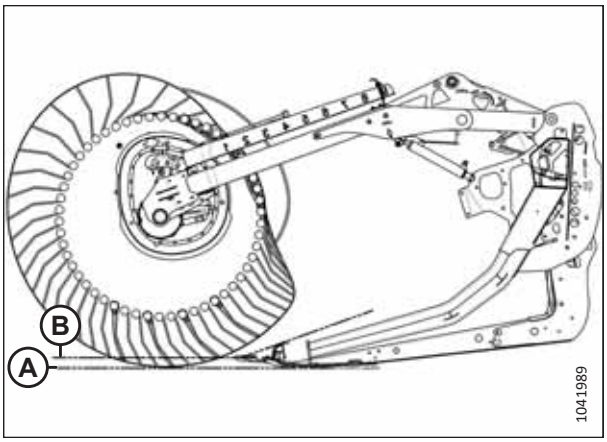


Figure 3.349: Finger Profile – Cam Position 4, Minimum Header Angle

Cam Position 4, Header Angle at Maximum, Reel Position 9 provides the maximum amount of reel reach below the cutterbar to pick up lodged crops.

- This position leaves a significant amount of stubble when the cutting height is set to approximately 203 mm (8 in.). In damp materials such as rice, it is possible to double the combine's ground speed because of the reduction of cut material.
- This setting results in the reel fingertip speed being approximately 35% faster than the reel speed.

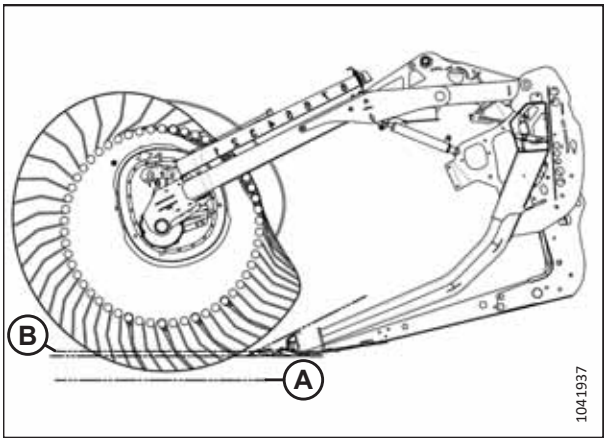


Figure 3.350: Finger Profile – Cam Position 4, Maximum Header Angle

NOTE:

Using higher cam settings when the reel's fore-aft position is set between 4 and 5 results in drastically decreased draper capacity. This happens because the reel fingers continually engage with crop that is already moving on the drapers, disrupting flow into the combine feeder house. Higher cam settings are recommended only when the reel is at or close to the fully forward setting.

Adjusting Reel Cam

Adjust the reel cam to change the reel tine pitch.

IMPORTANT:

Always check the reel-to-cutterbar clearance after adjusting the reel tine pitch and the reel fore-aft position. For more information, refer to *4.13.1 Reel to Cutterbar Clearance, page 658*.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

NOTE:

If there are multiple reel cams, adjust all of them.

1. Shut down the engine, and remove the key from the ignition.
2. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.

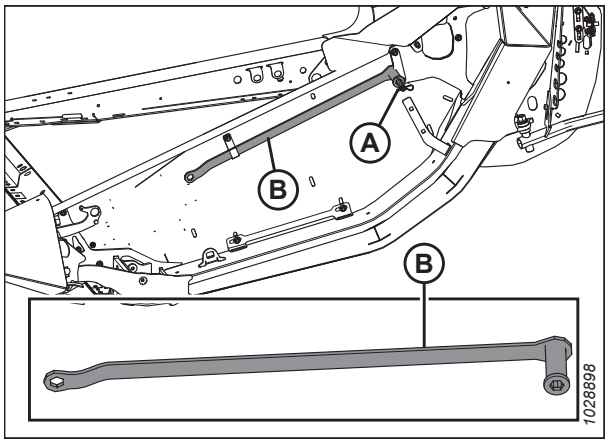


Figure 3.351: Left Endsheet

3. Using the multi-tool, turn latch pin (A) **COUNTERCLOCKWISE** to release the cam disc.

   IMPORTANT:

   Refer to the cam latch decal for the locking/unlocking rotation direction. Forcing the cam latch in the wrong direction can damage the roll pins.

4. Use the multi-tool on bolt (B) to rotate the cam disc and align latch pin (A) with the desired cam disc hole position (C) (1 to 4).

   NOTE:

   Bolt (B) is welded to the cam support.

5. Turn latch pin (A) **CLOCKWISE** to engage and lock the cam disc.

   IMPORTANT:

   Ensure that the cam is secured into position before operating the machine.

6. Repeat the above procedure for all of the reel cams.

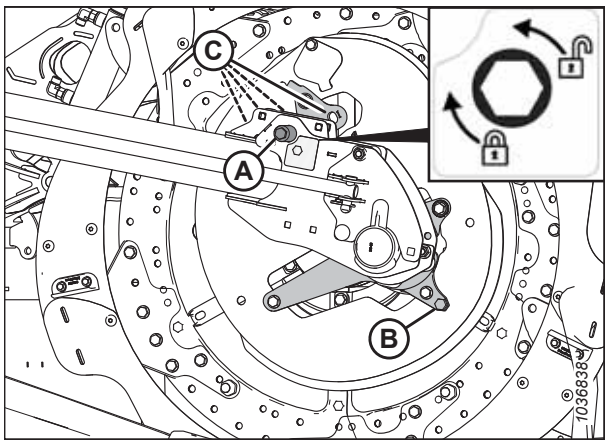


Figure 3.352: Cam Disc Positions

3.9.14 Upper Cross Auger

The upper cross auger (UCA) improves crop feeding into the center of the header in heavy crop conditions. It is ideal for high-volume harvesting of forages, oats, canola, mustard, and other tall, bushy, hard-to-convey crops.

You can use shutoff valve (A) to turn off the UCA when it is not needed.

NOTE:

Even if the UCA is shut off, it still needs to be greased at regular intervals because of the movement of the wings.

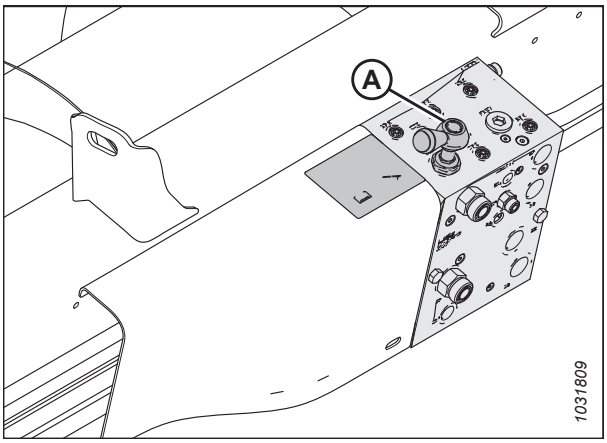


Figure 3.353: Shutoff Valve

Adjusting Upper Cross Auger Position

The upper cross auger (UCA) has an adjustable mount that allows you to adjust the position for different harvesting conditions. Headers with three-piece augers have two adjustable mounts: one on each end of the center auger.

NOTE:

For more information on the positions of the primary and secondary front bolts, refer to Figure *3.356, page 238*.

The mount(s) are initially installed in the rear-most position, so that front bolt (A) is in the primary position. This position is the recommended configuration for most conditions.

When front bolt (A) is in the primary position, the auger and the reel are safe to operate in any position. You can adjust the position of the auger to a limited extent by changing the position of the mount with respect to rear bolt (B).

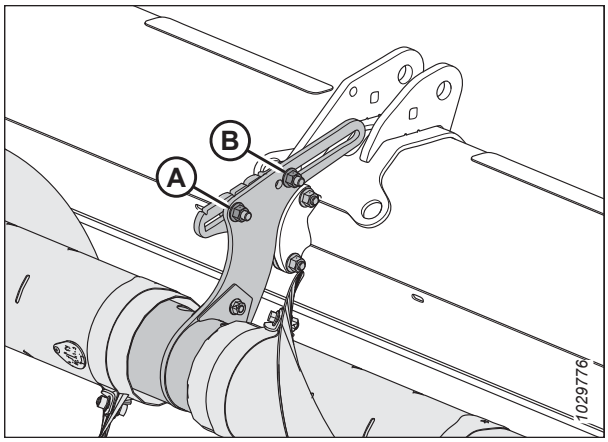


Figure 3.354: Initial Position of Adjustable Mounts – Two-Piece Auger

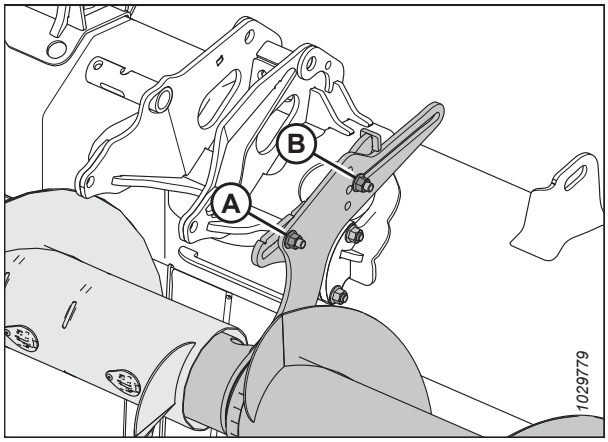


Figure 3.355: Initial Position of Adjustable Mounts – Three-Piece Auger

The auger position can be adjusted to a greater extent by moving the front bolt to secondary position (B). For three-piece augers, additional secondary positions (B) are available if you wish to raise or lower the auger. When the front bolt is in one of these positions, the fore-aft adjustment is limited, which prevents the UCA from interfering with the feed auger and the header frame.

IMPORTANT:

When the front bolt is in one of secondary positions (B) and the reel is in its rear-most position, the reel fingers and the cam arms may contact the UCA. When the reel is moved fully back (for example, when harvesting canola), the UCA must also be moved fully back in order to allow for a sufficient clearance between the reel fingers and the auger.

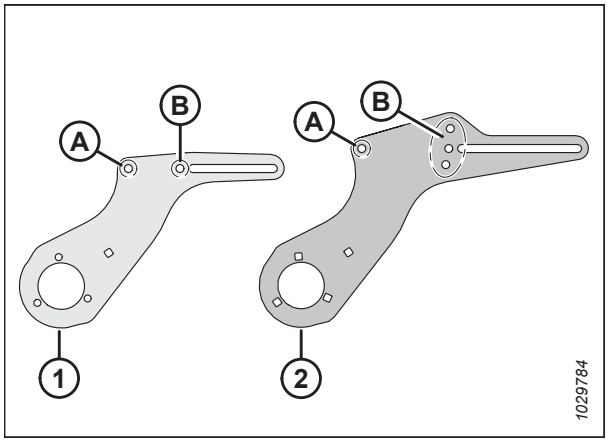


Figure 3.356: Adjustable Mount Details

1 - Two-Piece Auger Mount

2 - Three-Piece Auger Mount

A - Primary Position for Front Bolt

B - Secondary Position(s) for Front Bolt

Move the auger forward to

- Help convey light crops, especially on side hills
- Improve the feeding of light crops
- Reduce the reel carry over or reduce the crop flow disruption caused by the reel

Move the auger rearward to

- Increase the available volume for conveying heavy crop
- Keep the auger close to the deflectors to prevent crop from getting behind the auger and wrapping around the auger

To adjust the auger position, do the following:

1. Locate the adjustable mount.

   NOTE:

   On two-piece augers, the adjustable mount protrudes from the center support assembly. On three-piece augers, the adjustable mount protrudes from the ends of the center auger.

   NOTE:

   The illustration shows the left adjustable mount on a three-piece auger. The adjustable mount on a two-piece auger is similar, but has only one secondary position for the front bolt instead of three. Refer to Figure *3.356, page 238* for more information.

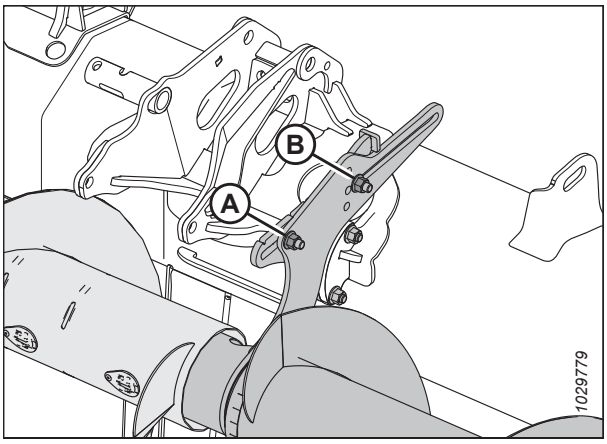


Figure 3.357: Initial Position of Adjustable Mounts – Three-Piece Auger

2. If desired, relocate front bolt and nut (A). The front bolt and nut have two possible locations on two-piece augers: the primary location and the secondary location. On three-piece augers, there are four possible locations: one primary location and three secondary locations.
3. Loosen front nut (A) and rear nut (B) just enough to allow the adjustable mount to slide.
4. Move the mount to the desired position.
5. Retighten nuts (A) and (B). Torque the nuts to 69 Nm (51 lbf·ft).
6. If a three-piece UCA is installed, repeat this procedure on the second adjustable mount.

   IMPORTANT:

   On headers with three-piece augers, ensure that both of the mounts are in the same position.

7. Check for any interference between the reel fingers and the UCA. Check for interference between the cam arms and the UCA along the entire hydraulic fore-aft range of the reel. For instructions, refer to *Checking Upper Cross Auger for Interference, page 240*.

Checking Upper Cross Auger for Interference

If the upper cross auger (UCA) is out of adjustment, it can contact the reel or the header frame. The clearance between the UCA and certain header components will need to be inspected.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Fully retract the reel fore/aft fully to bring the reel as close as possible to the UCA.

   NOTE:

   If the reel cam adjustment is changed, this procedure will need to be performed again.
3. Place 254–356 mm (10–14 in.) blocks under the cutterbar at both ends of the header. Lower the header onto the blocks so that the header forms a smile shape.

DANGER

To prevent injury or death from the unexpected startup of the machine, stop the engine and remove the key from the ignition before you make adjustments to the machine.

4. Shut down the engine, and remove the key from the ignition.
5. Manually rotate UCA (A). Ensure that the clearance between the UCA and the header components is at least 10 mm (13/32 in.) at the following locations:
   - Reel cam arms (B)
   - Reel fingers (C)
   - Reel cylinder supports (D)
   - **FD241, FD245, and FD250:** Split frame joint (E)
6. If the clearance between the UCA and the header components requires adjustment, proceed to *Adjusting Upper Cross Auger Position, page 237*.

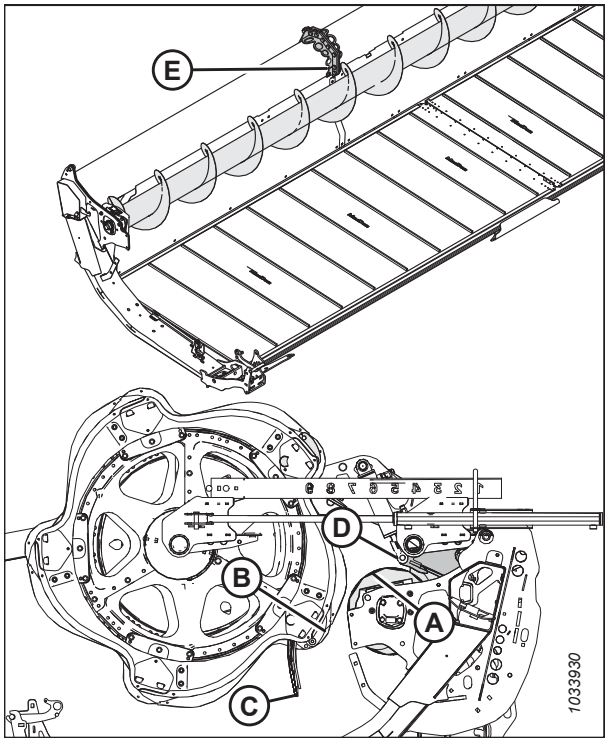


Figure 3.358: UCA Clearance Check Locations

3.9.15 Crop Dividers

Crop dividers separate the crop when harvesting. Remove them to install vertical knives and to decrease transport width.

Standard crop dividers are provided with all headers. You may also purchase optional floating crop dividers. Refer to *5.1.4 Floating Crop Dividers, page 728*.

Removing Crop Dividers

Crop dividers can be removed to allow the installation of other options or to decrease the transport width.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel and raise the header. For instructions, refer to the combine operator's manual.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the safety props. For instructions, refer to the combine operator's manual.
5. Open the endshields. For instructions, refer to *Opening Header Endshields, page 39*.
6. Remove lynch pin (A).
7. Hold onto crop divider (E).
8. Rotate hex shaft (B) on divider latch (C) forward to disengage it from bolt (D).

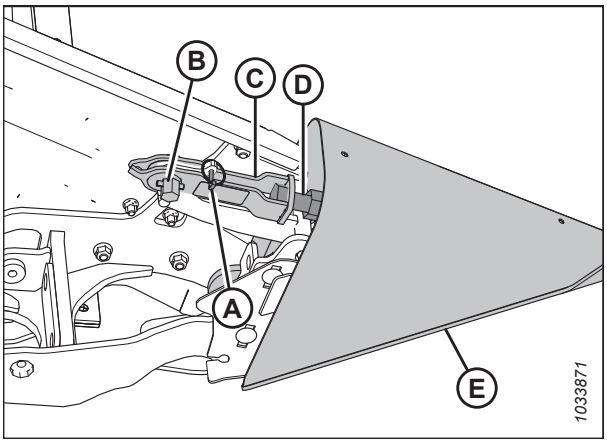


Figure 3.359: Crop Divider with Latch

9. Lower crop divider (A) and remove it from the endsheet.
10. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

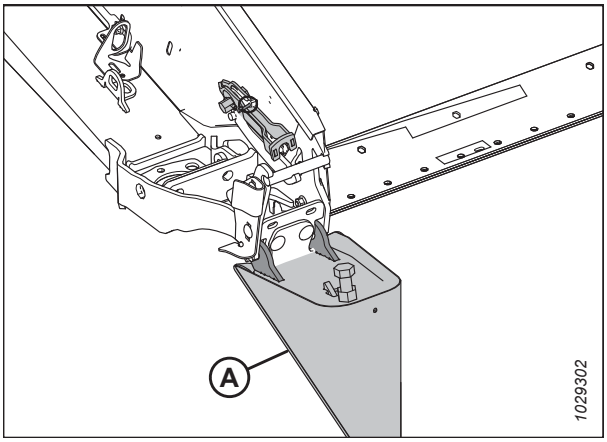


Figure 3.360: Crop Divider with Latch

11. If the optional storage bracket is installed, put crop divider (A) in position on bracket (B).
12. If the optional storage bracket is not installed, store the crop dividers in a safe location.

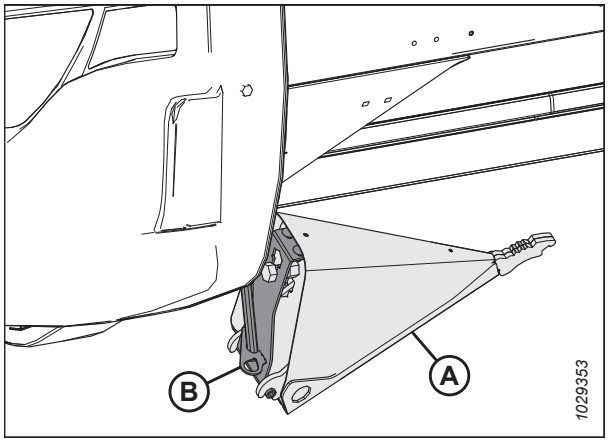


Figure 3.361: Optional Crop Divider Storage

Installing Crop Dividers

Follow these instructions to properly install the crop dividers.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. If the optional storage bracket is installed, remove crop divider (A) from its storage position by lifting the crop divider so that bolt (B) clears the slot in storage bracket (C).
7. If the optional storage bracket is **NOT** installed, retrieve the crop dividers from where they were stored.
8. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.

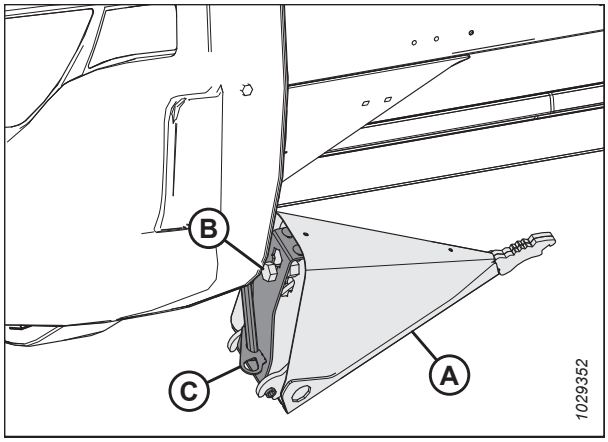


Figure 3.362: Optional Crop Divider

9. Insert crop divider lugs (A) into holes in the endsheet as shown.
10. Remove lynch pin (B) from latch (C).

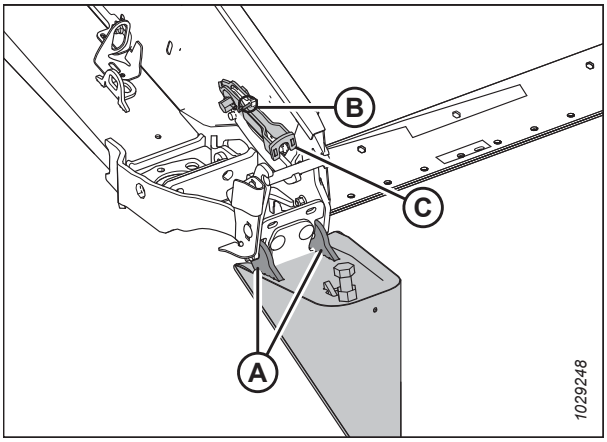


Figure 3.363: Crop Divider with Latch

11. Lift the forward end of latch (A) and crop divider (B).

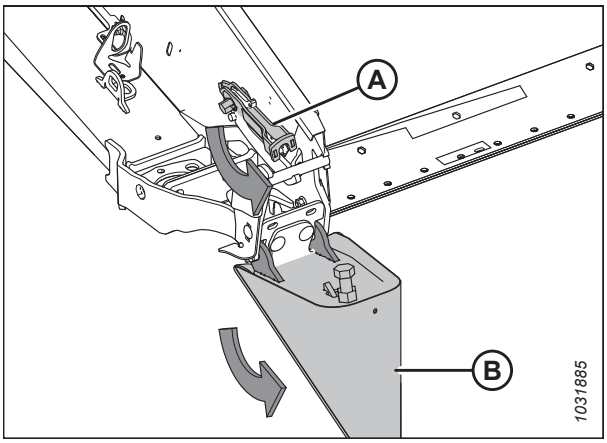


Figure 3.364: Crop Divider with Latch

12. Engage latch (A) onto crop divider bolt (B).
13. Rotate hex shaft (D) on latch (A) counterclockwise to engage lock.

    NOTE:

    Hex shaft (D) requires a torque of 40–54 Nm (30–40 lbf·ft) to close the latch. If adjustment is required, loosen latch (A) and adjust bolt (B) to correct the amount of torque required.

14. Secure with lynch pin (C).
15. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

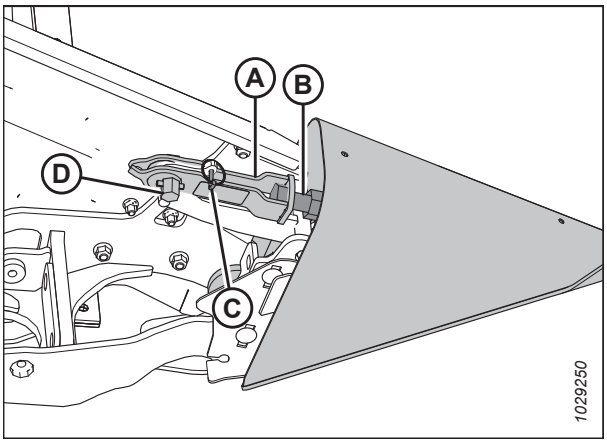


Figure 3.365: Crop Divider with Latch

Removing Floating Crop Dividers

Remove the floating crop dividers to install other attachments or the standard crop dividers.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Raise the header 60–90 cm (2–3 ft.) off of the ground.
4. Shut down the engine, and remove the key from the ignition.
5. Open the endshield.
6. Retrieve multi-tool (A) from the left endsheet.
7. Remove lynch pin (B).
8. Install multi-tool (A) onto hex shaft (C).
9. Rotate the multi-tool downwards until latch (D) releases from bolt (E).
10. Lift latch (D) up and off bolt (E).

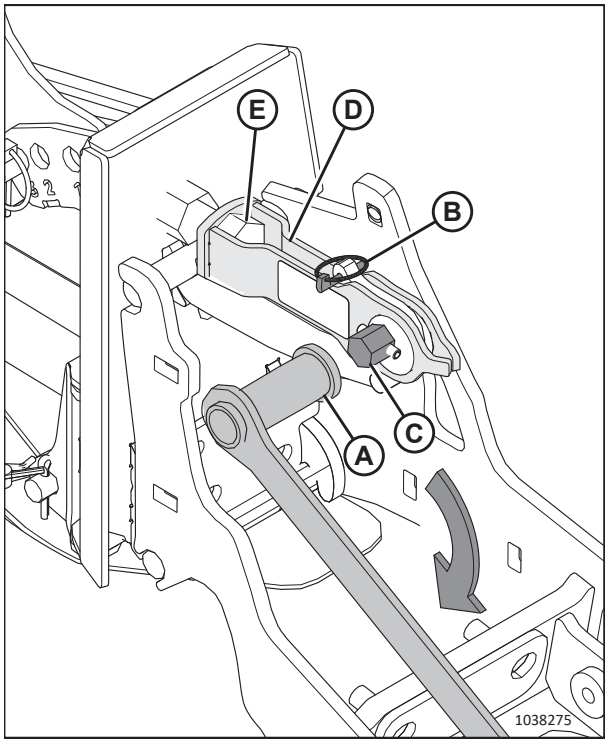


Figure 3.366: Floating Crop Divider Installed

11. Tilt the floating crop divider forward and pull it out of the header.
12. Reinstall lynch pin (A).
13. Close the endshield.
14. Repeat Step *5, page 244* to Step *13, page 245* at the opposite end of the header to remove the opposite floating crop divider.

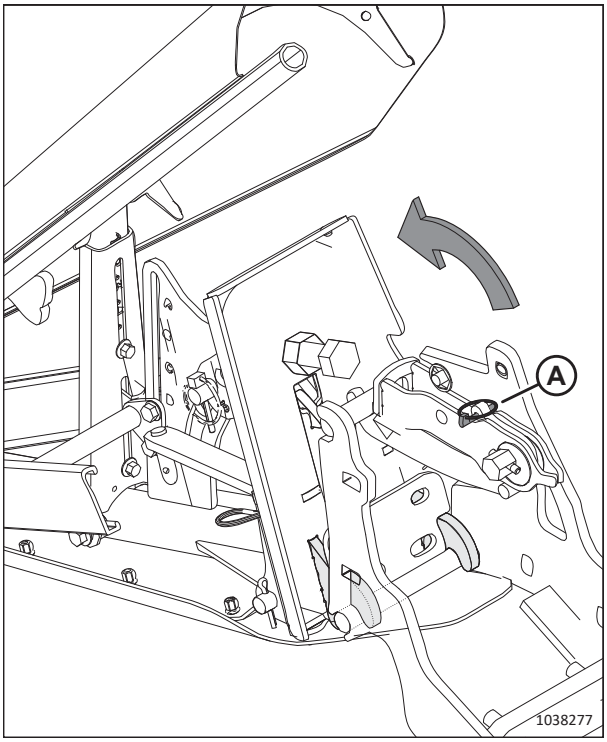


Figure 3.367: Latch Released

Installing Floating Crop Dividers

Follow these instructions to properly install the floating crop dividers onto the header.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Raise the header 60–90 cm (2–3 ft.) off the ground.
4. Shut down the engine, and remove the key from the ignition.
5. Open the endshields.

6. Remove lynch pin (A) from quick latch (B).
7. Attach multi-tool (C) (stored on the left endsheet) to hex shaft (D) and rotate to release latch (B).
8. If crop dividers (E) are installed, lift latch (B) off of bolt (F) and set the crop dividers aside.

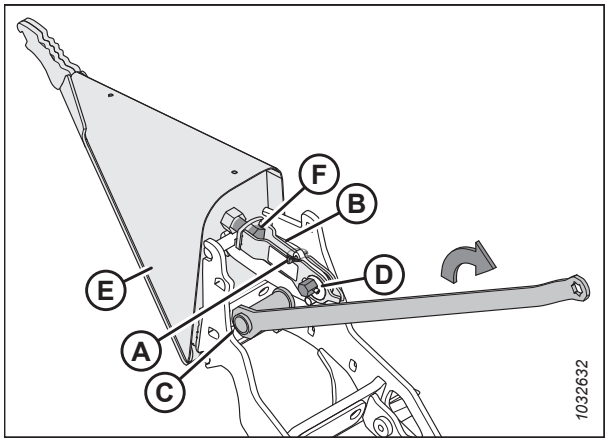


Figure 3.368: Crop Divider Installed

9. Insert crop divider lugs (A) into the slots in the header frame.

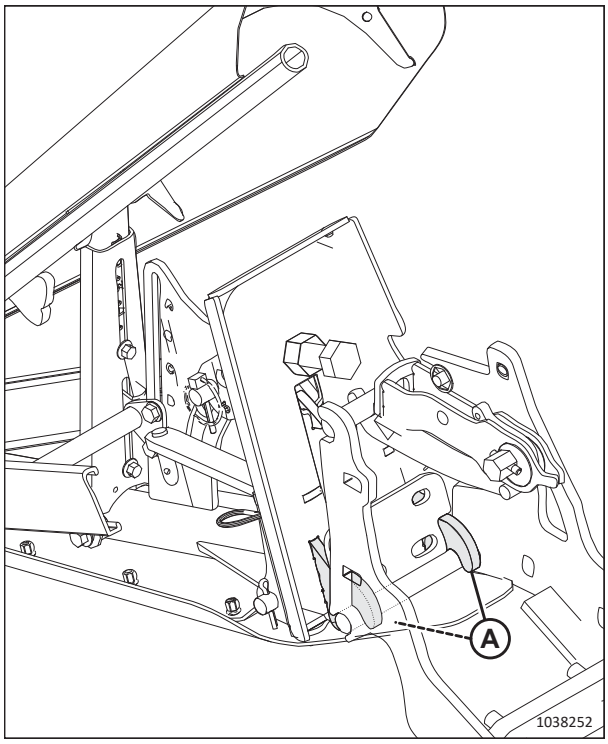


Figure 3.369: Crop Divider Installation

10. Lift the forward end of quick latch (A), and rotate crop divider (B) up into position.

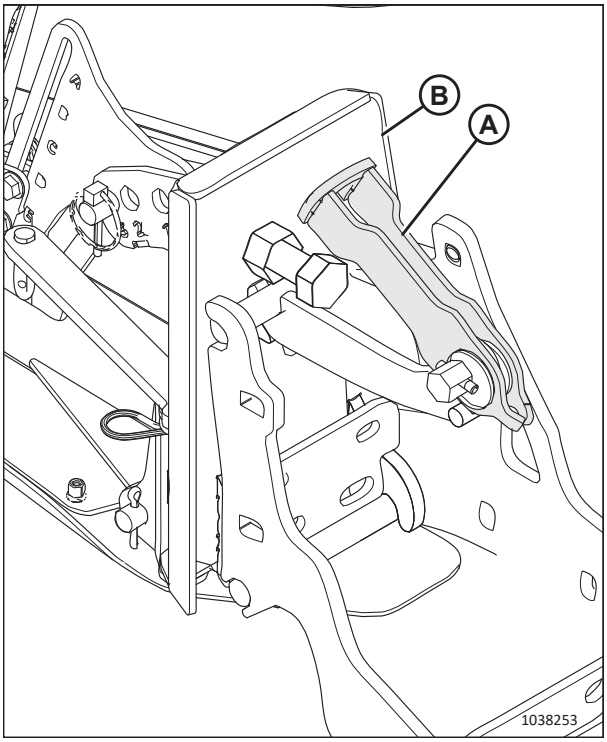


Figure 3.370: Quick Latch

11. Engage quick latch (A) onto the bolt.

12. Make sure the latch closes tightly and crop divider stop (B) contacts header stop (C).

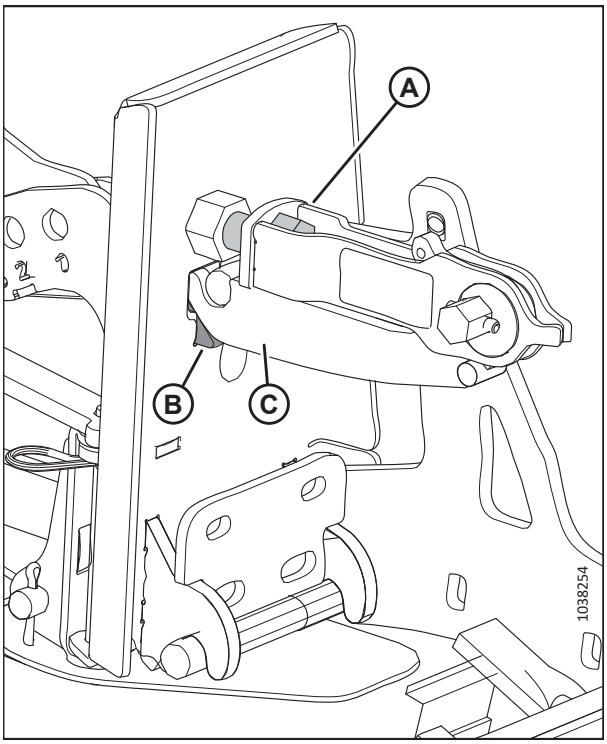


Figure 3.371: Crop Divider Latched to Header

13. If the latch requires adjustment, loosen nut (A), and adjust the length of bolt (B) until it takes 40–54 Nm (30–40 lbf·ft) of torque on hex shaft (C) to close the latch.
14. Retighten nut (A).
15. Attach multi-tool (D) onto hex shaft (C) and rotate the multi-tool to lock the latch.
16. Install lynch pin (E) to secure the quick latch in place.
17. Repeat Step *6, page 246* to Step *16, page 248* at the opposite end of the header to install the opposite crop divider.
18. Close the endshields. For instructions, refer to *Closing Header Endshields, page 40*.
19. Check the float. For instructions, refer to *Checking and Adjusting Header Float, page 190*.
20. Check the wing balance. For instructions, refer to *3.9.4 Checking and Adjusting Wing Balance, page 208*

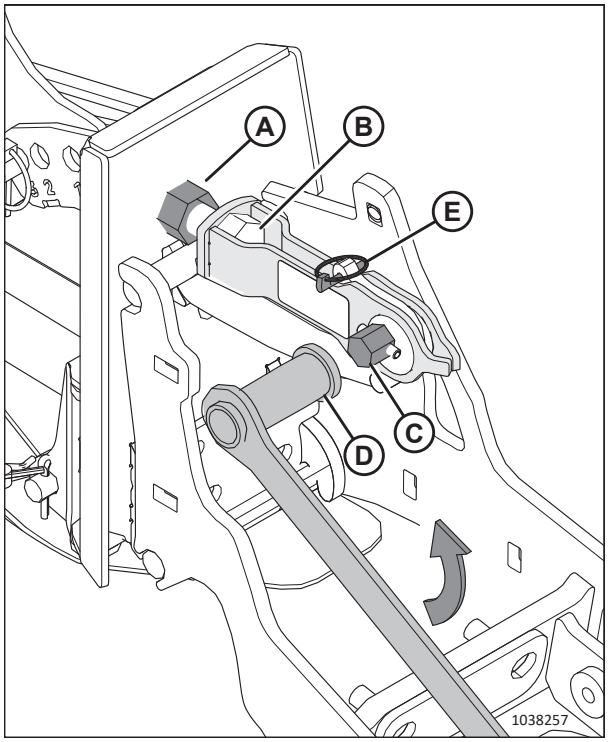


Figure 3.372: Latch Adjustment

Adjusting Floating Crop Dividers

Crop dividers can be adjusted for different crop conditions.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Raise the header 60–90 cm (2–3 ft.) off the ground.
4. Shut down the engine, and remove the key from the ignition.

5. Refer to the chart according to the stubble height range and reel configuration:
   - Field with a stubble height of 50–125 mm (2–5 in.), double- or triple-reel headers: refer to Step *6, page 250*.
   - Field with a stubble height of 20–100 mm (3/4–4 in.), double- or triple-reel headers: refer to Step *7, page 251*.
   - Cutterbar on the ground, field with a stubble height of 16–50 mm (5/8–2 in.), double- or triple-reel headers: refer to Step *8, page 252*.
   - Field with a stubble height of 50–125 mm (2–5 in.), single-reel headers: refer to Step *9, page 253*.
   - Field with a stubble height of 20–100 mm (3/4–4 in.), single-reel headers: refer to Step *10, page 254*.
   - Cutterbar on the ground, field with a stubble height of 16–50 mm (5/8–2 in.), single-reel headers: refer to Step *11, page 255*.

Table 3.27 Floating Crop Divider Settings – Double- or Triple-Reel Header, Field with a Stubble Height of 50–125 mm (2–5 in.)

6. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
   a. Adjust the header angle.
   b. Adjust the header skid shoes.
   c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[63]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing Crop	125 mm (5 in.)	A	Down	2	1 or 3	1	C	In
	50 mm (2 in.)	E	Down	1	1 or 3	1.5	C	In
Lodged	125 mm (5 in.)	A	Down	2	3 or 4	1	C	Out
	50 mm (2 in.)	E	Down	1	3 or 4	2	D	Out
Severely Lodged[64]	125 mm (5 in.)	A	Down	2	4	3	D	Out
	125 mm (5 in.)	A	Down	2	5	4	D	Out
	50 mm (2 in.)	E	Down	1	4	3	C	Out
	50 mm (2 in.)	E	Down	1	5	4	C	Out

63. A (min) – E (max)
64. Crop canopy lower than 150 mm (6 in.)

Table 3.28 Floating Crop Divider Settings – Double- or Triple-Reel Header, Field with a Stubble Height of 20–100 mm (3/4–4 in.)

7. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
   a. Adjust the header angle.
   b. Adjust the header skid shoes.
   c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[65]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing Crop	100 mm (4 in.)	A	Middle	2	1 or 3	1	C	In
	20 mm (3/4 in.)	E	Middle	1	1 or 3	1	C	In
Lodged	100 mm (4 in.)	A	Middle	2	3	1	C	Out
	100 mm (4 in.)	A	Middle	2	4	2	C	Out
	20 mm (3/4 in.)	E	Middle	1	3	1	D	Out
	20 mm (3/4 in.)	E	Middle	1	4	2	D	Out
Severely Lodged[66]	100 mm (4 in.)	A	Middle	2 or 3	4	3	D	Out
	100 mm (4 in.)	A	Middle	2 or 3	5	4	D	Out
	20 mm (3/4 in.)	E	Middle	1	4	3	C	Out
	20 mm (3/4 in.)	E	Middle	1	5	4	C	Out

65. A (min) – E (max)
66. Crop canopy lower than 150 mm (6 in.)

Table 3.29 Floating Crop Divider Settings – Double- or Triple-Reel Header, Cutterbar on the Ground, Field with a Stubble Height of 16–50 mm (5/8–2 in.)

8. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
   a. Adjust the header angle.
   b. Adjust the header skid shoes.
   c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[67]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing Crop	50 mm (2 in.)	A	Up	2	1 or 3	1	C	In
	16 mm (5/8 in.)	E	Up	1	1	2	C	In
	16 mm (5/8 in.)	E	Up	1	3	1	C	In
Lodged	50 mm (2 in.)	A	Up	2	3	1	C	Out
	50 mm (2 in.)	A	Up	3	4	1	C	Out
	16 mm (5/8 in.)	E	Up	1	3 or 4	2	D	Out
Severely Lodged[68]	50 mm (2 in.)	A	Up	2 or 3	4	3	D	Out
	50 mm (2 in.)	A	Up	2 or 3	5	4	D	Out
	16 mm (5/8 in.)	E	Up	1	4	2.5	C	Out
	16 mm (5/8 in.)	E	Up	1	5	4	C	Out

67. A (min) – E (max)
68. Crop canopy lower than 150 mm (6 in.)

Table 3.30 Floating Crop Divider Settings – Single-Reel Header, Field with a Stubble Height of 50–125 mm (2–5 in.)

9. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
   a. Adjust the header angle.
   b. Adjust the header skid shoes.
   c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[69]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing or Lodged Crop	125 mm (5 in.)	A	Down	2	4	1	A–E	In or Out
	50 mm (2 in.)	E	Down	1	5	2.5	A–E	In or Out
Severely Lodged[70]	125 mm (5 in.)	A	Down	2	4	1	A–E	In or Out
	50 mm (2 in.)	E	Down	1	5	2.5	A–E	In or Out

69. A (min) – E (max)
70. Crop canopy lower than 150 mm (6 in.)

Table 3.31 Floating Crop Divider Settings – Single-Reel Header, Field with a Stubble Height of 20–100 mm (3/4–4 in.)

10. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
    a. Adjust the header angle.
    b. Adjust the header skid shoes.
    c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[71]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing or Lodged Crop	100 mm (4 in.)	A	Middle	2	5	1	A–E	In or Out
	20 mm (3/4 in.)	E	Middle	1	5	2.5	A–E	In or Out
Severely Lodged[72]	100 mm (4 in.)	A	Middle	2	4	1	A–E	In or Out
	20 mm (3/4 in.)	E	Middle	1	5	2.5	A–E	In or Out

71. A (min) – E (max)
72. Crop canopy lower than 150 mm (6 in.)

Table 3.32 Floating Crop Divider Settings – Single-Reel Header, Cutterbar on the Ground, Field with a Stubble Height of 16–50 mm (5/8–2 in.)

11. Adjust the header according to the settings in the table row that describes the crop condition and the stubble height:
    a. Adjust the header angle.
    b. Adjust the header skid shoes.
    c. Adjust the floating crop divider (Down Stop to Top Deflector Side Rod) and confirm the range of motion set by the down stop does **NOT** contact the reel supports or the reel. For instructions, refer to Step *12, page 256* to Step *18, page 259*.

	Stubble Height	Header Angle[73]	Header Skid Shoes	Down Stop	Nose Cone Fore-Aft Position	Top Deflector Height	Side Deflector Height	Top Deflector Side Rod
Standing or Lodged Crop	50 mm (2 in.)	A	Up	2	4	1	A–E	In or Out
	16 mm (5/8 in.)	E	Up	1	5	2.5	A–E	In or Out
Severely Lodged[74]	50 mm (2 in.)	A	Up	2	4	1	A–E	In or Out
	16 mm (5/8 in.)	E	Up	1	5	2.5	A–E	In or Out

73. A (min) – E (max)
74. Crop canopy lower than 150 mm (6 in.)

12. **Down stop:** Remove lynch pin (A) from the clevis pin, and remove the clevis pin. Retain both the lynch pin and the clevis pin for reinstallation.

13. Tilt the divider, then reinstall the clevis pin into the appropriate numbered hole “1” to “3”. Secure the clevis pin with the lynch pin.

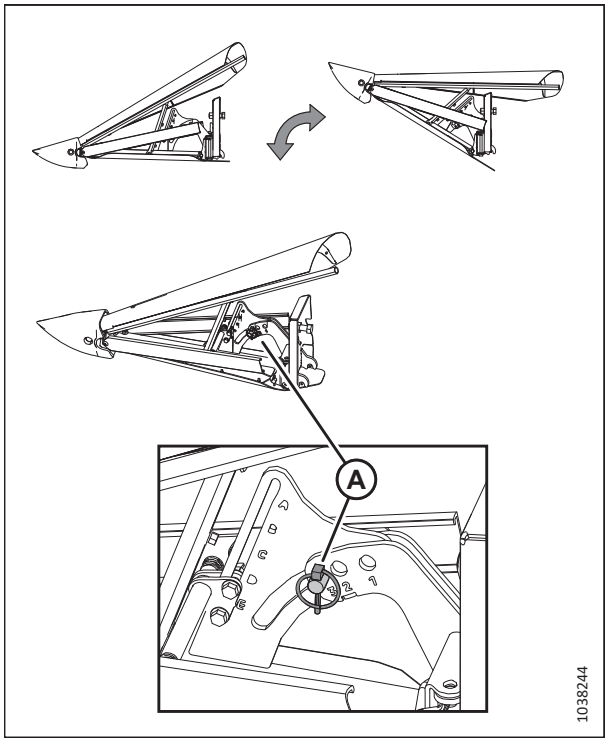


Figure 3.373: Down Stop Adjustment

14. **Nose cone fore-aft:** Remove bolt (A), move the tube, then install the bolt into one of the five tube holes.

    NOTE:

    - In example (B), the bolt is installed in tube hole “1”.
    - In example (C), the bolt is installed in tube hole “5”.

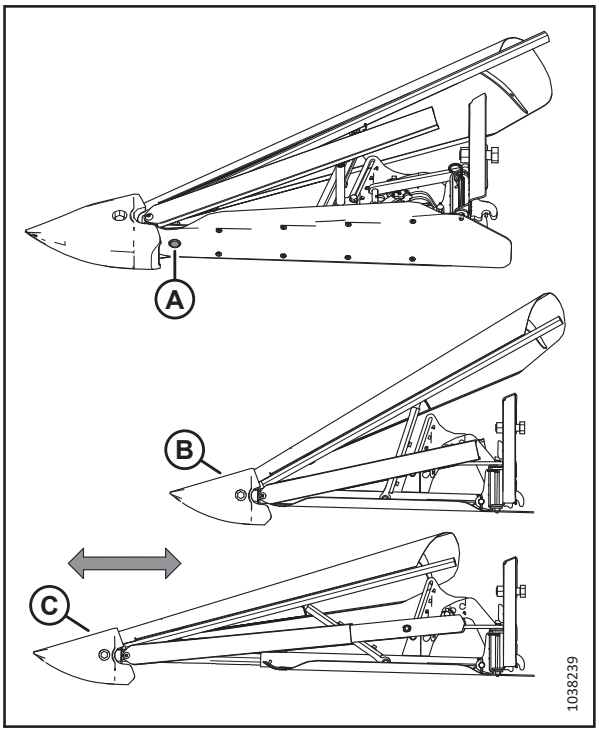


Figure 3.374: Nose Cone Fore-aft Adjustment

15. **Top deflector height:** Loosen the nuts on bolts (A). Slide the center support to the desired setting (1 to 4.5), then tighten the nuts.

    - Align the dots with the support to set half-increments. Example (B) is 2.5.
    - Align the number with the support to set full increments. Example (C) is 2.

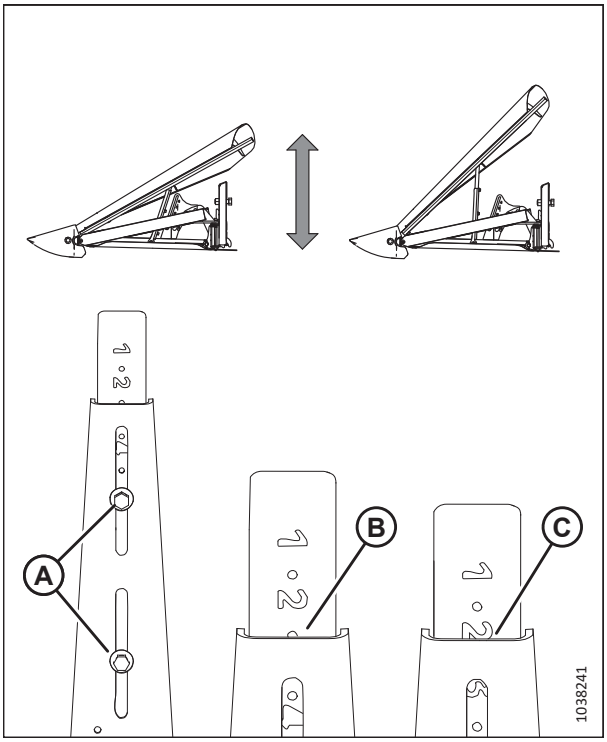


Figure 3.375: Top Deflector Height Adjustment

16. **Side deflector height:** Loosen the nuts on bolts (A). Slide deflectors until notch (B) is at a desired setting (A to E), then tighten the nuts.

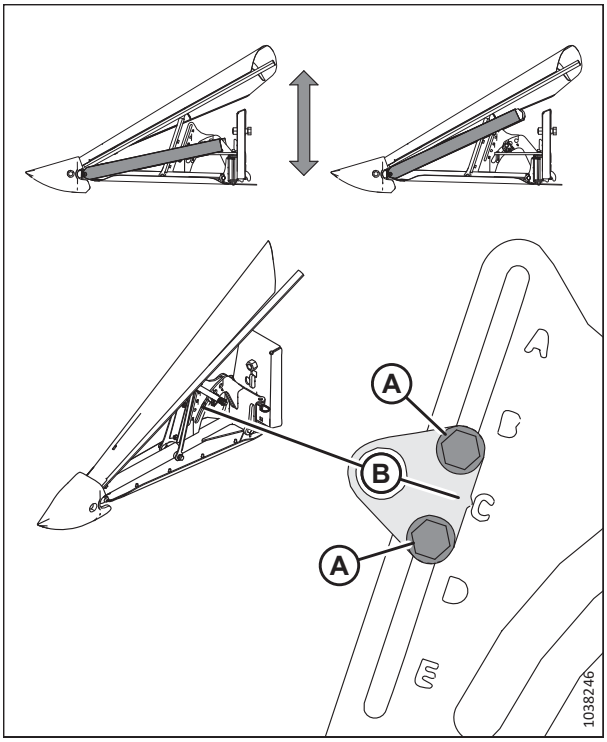


Figure 3.376: Side Deflector Height Adjustment

17. **Top deflector side rod:** Loosen nut (A) and bolt (B), then swing rod (C). Tighten nut (A) to 39 Nm (29 lbf·ft). Tighten bolt (B) to 52 Nm (38 lbf·ft).

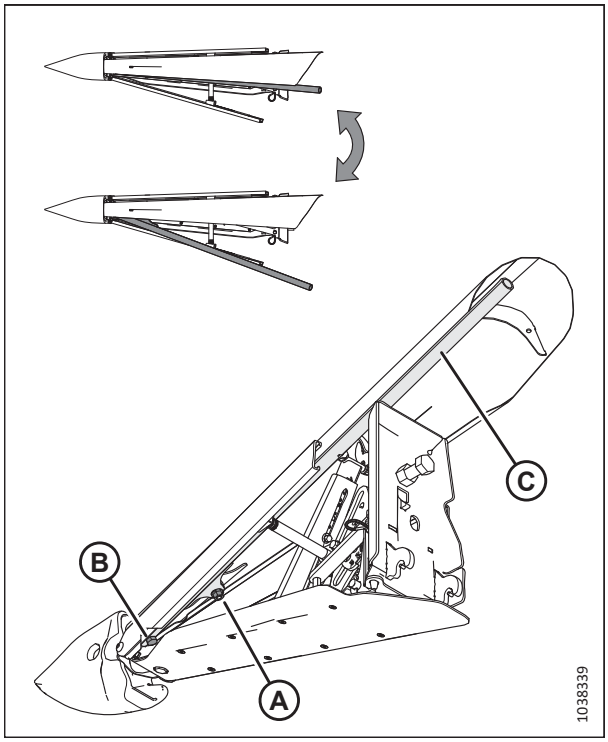


Figure 3.377: Top Deflector Side Rod Adjustment

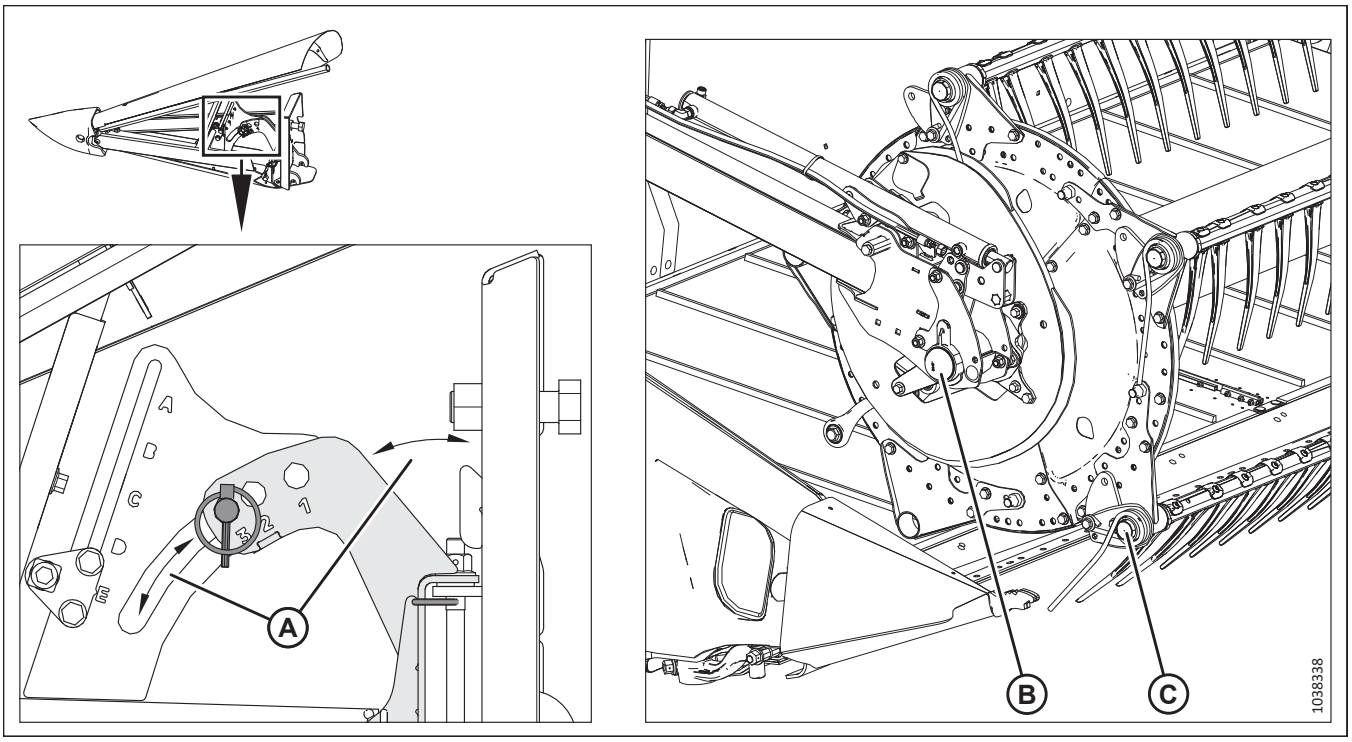


Figure 3.378: Floating Crop Divider Range of Motion

18. **Range of motion check:** Lift and lower the floating crop divider through the range of motion (A) set by the down-stop. Confirm the floating divider does **NOT** contact reel supports (B) or reel (C).

    IMPORTANT:

    When checking for interference between the floating crop dividers and a **single reel**, also make sure that the floating crop dividers do **NOT** contact the reel drive.

3.9.16 Crop Divider Rods

Removable crop divider rods are provided with the header and to be used in conjunction with crop dividers to help separate crop when harvesting. The crop divider rods are most useful when the crop is bushy or down. In standing crops, using only crop dividers is recommended.

The following table outlines which crops should be harvested with divider rods and which crops should be harvested without divider rods.

Table 3.33 Recommended Use for Crop Divider Rods

With Divider Rods		Without Divider Rods
Alfalfa	Lodged cereal	Edible beans
Canola	Peas	Milo
Flax	Soybeans	Rice
Grass seed	Sudan grass	Soybeans
Lentils	Winter forage	Standing cereal

Removing Crop Divider Rods

Crop divider rods can be removed from the ends of the crop dividers and stored on the header.

1. Loosen bolt (B) and remove crop divider rod (A) from both sides of the header.

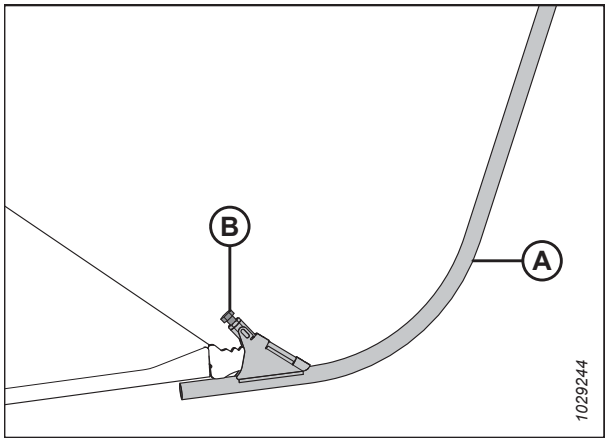


Figure 3.379: Crop Divider Rod

2. Store both crop divider rods (B) on the right endsheet, and secure with lynch pin (A).

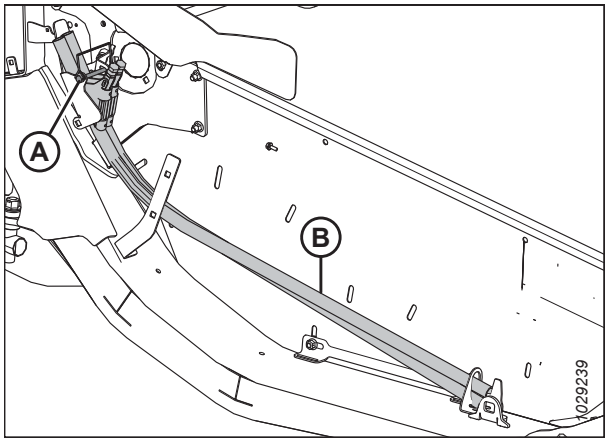


Figure 3.380: Right Endsheet

Installing Crop Divider Rods

The crop divider rods can be installed on the ends of the crop dividers to help separate bushy crop.

1. Open the right endshield. For instructions, refer to *Opening Header Endshields, page 39*.

2. Undo lynch pin (A) securing divider rods (B) to the header endsheet. Remove the divider rods from their storage location.
3. Reinstall lynch pin (A).

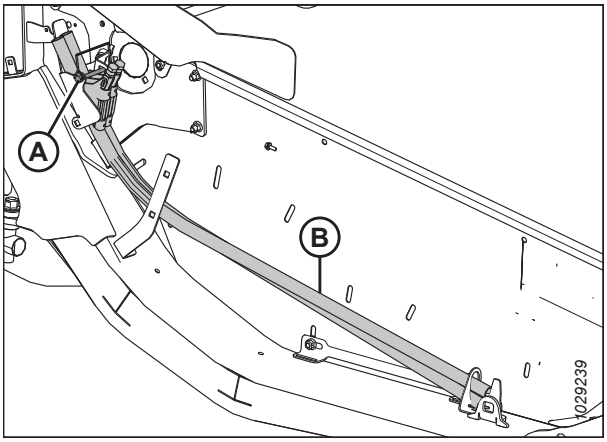


Figure 3.381: Divider Rods in Storage Location at Right Header Endsheet

4. Position crop divider rod (A) on the tip of the crop divider as shown. Tighten bolt (B).
5. Repeat this procedure to install the crop divider rod on the opposite end of the header.
6. Close the right endshield. For instructions, refer to *Closing Header Endshields, page 40*.

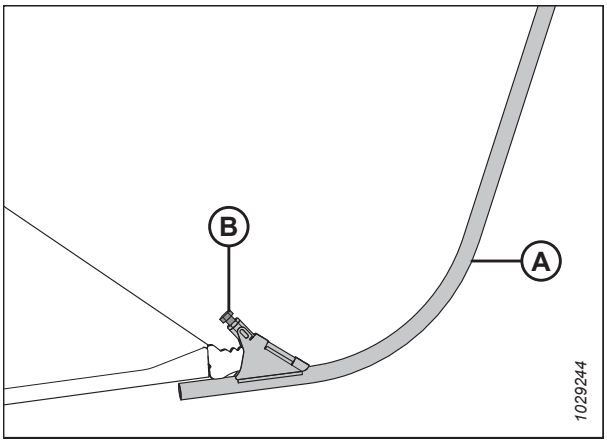


Figure 3.382: Divider Rod on Crop Divider

Optional Rice Divider Rods

The optional rice divider rods are used to assist with tall and tangled rice crops. They can be installed on the ends of the crop dividers.

Rice divider rods improve performance in tall and tangled rice crops. For more information, refer to *5.1.7 Rice Divider Rod Kit, page 730*.

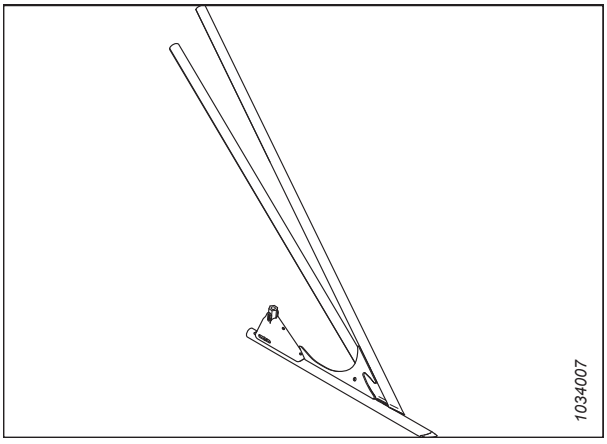


Figure 3.383: Optional Divider Rod for Rice

Rice divider rods are stored at the rear of both endsheets on storage bracket (A) and secured in place with pin (B).
The installation and removal of these rods follow the same procedures as standard crop divider rods.

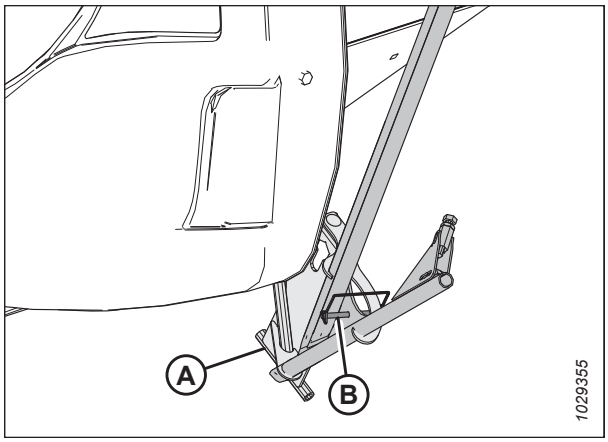


Figure 3.384: Rice Divider Rod Storage

3.10 Auto Header Height Control System

MacDon's auto header height control (AHHC) system works in conjunction with the AHHC option available on certain combine models.

Two Hall effect sensors (A) are installed on the float setting indicators on the float module. These sensors send signals to the combine, which allow the combine to maintain the header at a consistent cutting height and the optimum float setting as the header follows the contours of the ground.

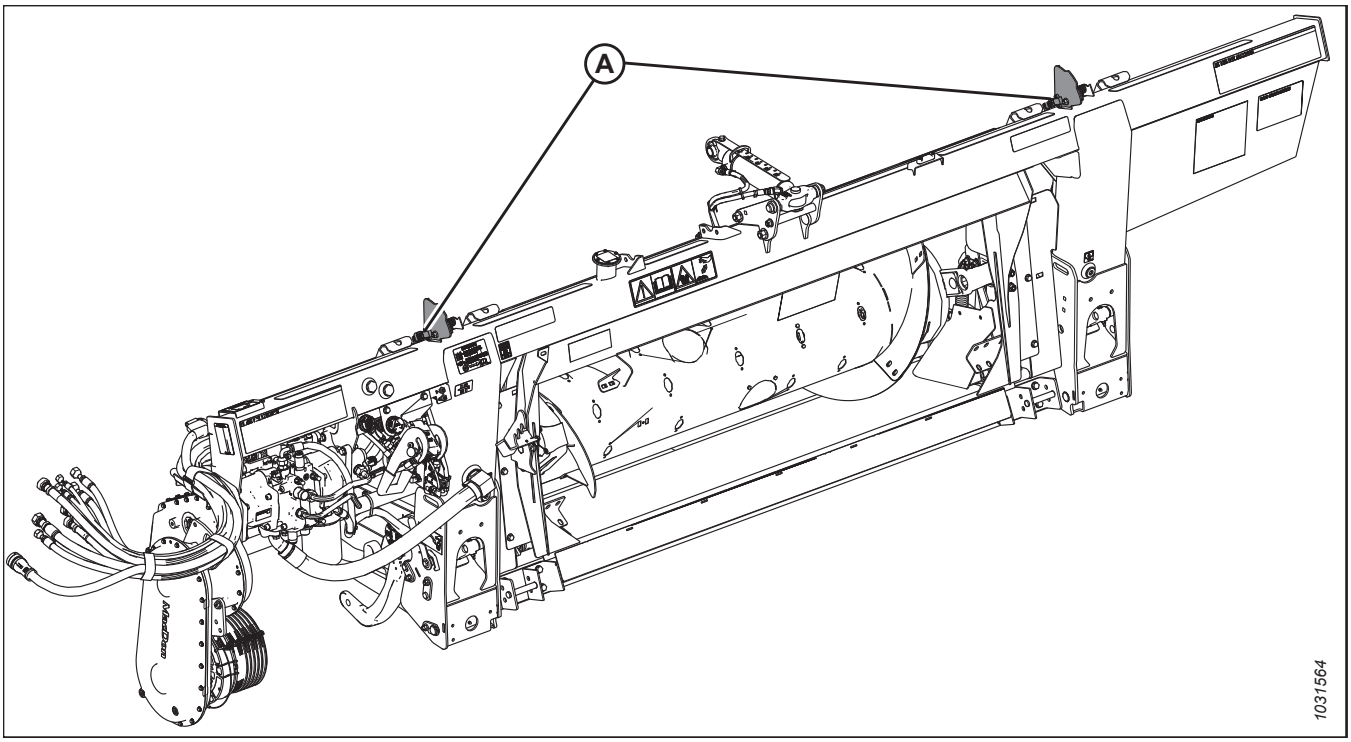


Figure 3.385: FM200 Float Module

Complete the following tasks before using the AHHC system:

1. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the instructions for your combine).
2. Calibrate the sensors used by the AHHC system so that the combine can correctly interpret data from the Hall effect sensors on the float module. For more information, refer to the combine operator's manual.

To configure the AHHC system for a particular combine model, refer to the relevant procedure:

- *3.10.6 Case IH 130 and 140 Series Mid-Range Combines, page 272*
- *3.10.7 Case IH 120, 230, 240, and 250 Series Combines, page 282*
- *3.10.8 Challenger® and Massey Ferguson® 6 and 7 Series Combines, page 298*
- *3.10.9 CLAAS 500 Series Combines, page 306*
- *3.10.10 CLAAS 600 and 700 Series Combines, page 317*
- *3.10.11 CLAAS 5000, 6000, 7000, and 8000 Series Combines, page 329*
- *3.10.12 Gleaner® R65, R66, R75, R76, and S Series Combines, page 340*
- *3.10.13 Gleaner® S9 Series Combines, page 349*
- *3.10.14 IDEAL™ Series Combines, page 365*
- *3.10.15 John Deere 70 Series Combines, page 380*

3.10.1 Auto Header Height Control Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system communicate data about the header's height to the combine's computer.

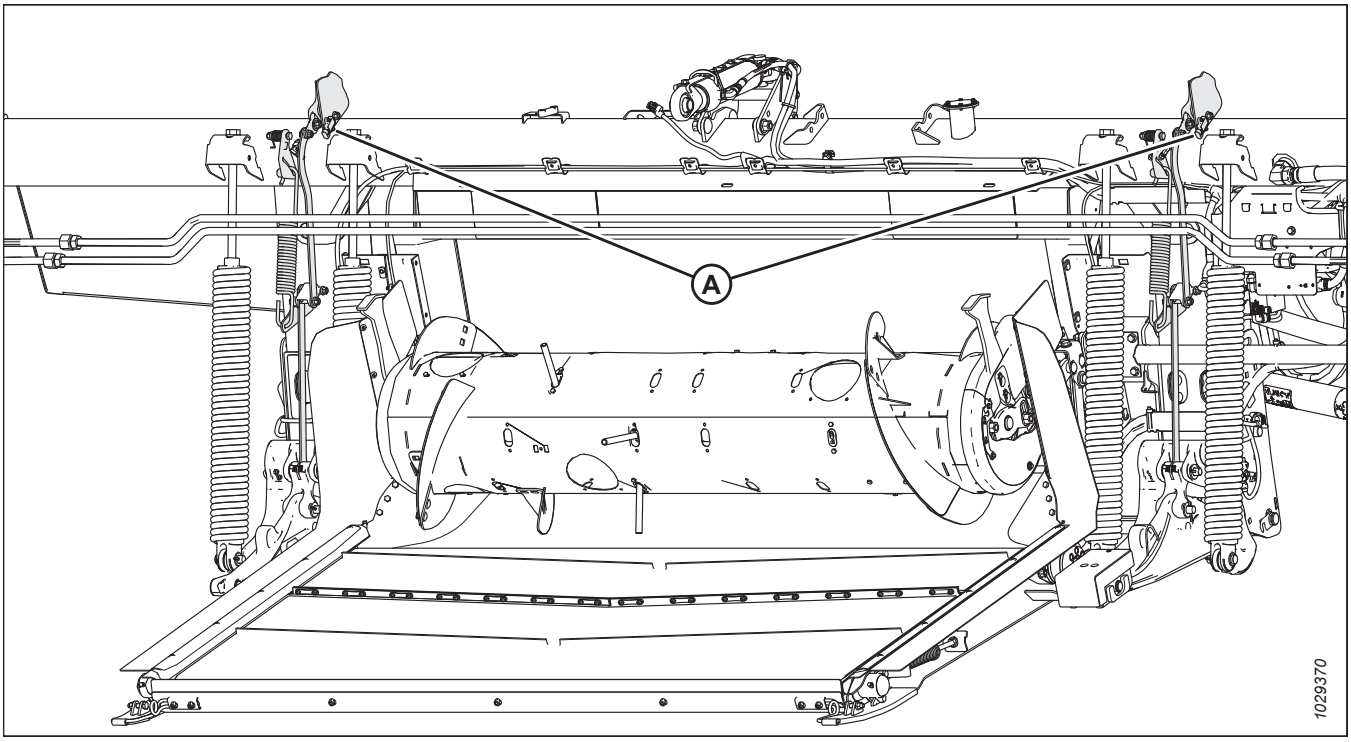


Figure 3.386: Height Control Sensor Locations on Float Module

Auto header height control sensor overview

Two Hall effect sensors are installed on float indicator needles (A). As the header rises and falls, the sensors communicate the header's height to the combine's computer. The combine's computer will, in response, raise or lower the feeder house so that the header can maintain a consistent cutting height.

The normal operating signal voltages for the sensors fall between 0.7 VDC and 4.3 VDC. An increase in sensor voltage correlates to an increase in header height, while a decrease in sensor voltage correlates to a decrease in header height. Any sensor error results in a 0 V signal, which indicates either a faulty sensor or insufficient voltage supply.

Auto header height control sensor voltage ranges

The voltage reported by the sensors occurs in a range of at least 2.5 V (Range [A]) and at most 4.0 V (Range [C]). The ideal voltage range for the sensors is 0.7–4.3 V (Range C), a total range of 3.6 V. If the voltage is too close to low end (D) of the voltage range, calibrating the AHHC system will be difficult. A properly set sensor will have sufficient clearance on both ends of the voltage range.

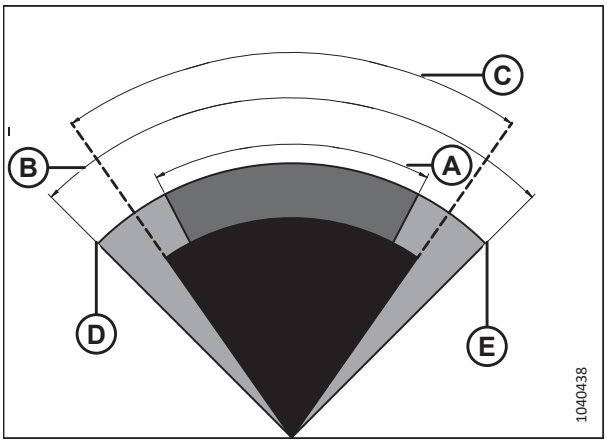


Figure 3.387: Optimal Sensor Voltage Range

A - Minimum Voltage Range – 2.5 V
B - Maximum Voltage Range – 4.0 V
C - Ideal Voltage Range – 3.3 V, between 0.7 and 4.3 V
D Minimum Voltage – 0.5 V
E Maximum Voltage – 4.5 V

A sensor that is configured so that the voltage range (for example, voltage range [C]) is too close to the sensor's low voltage limit (D) or high voltage limit (E) will have difficulty staying within the sensor's operating range of ideal operating range (A) of 0.7-4.3 V. If the sensor reports values that are above maximum voltage (E) or minimum voltage (D), the AHHC system will stop functioning correctly.

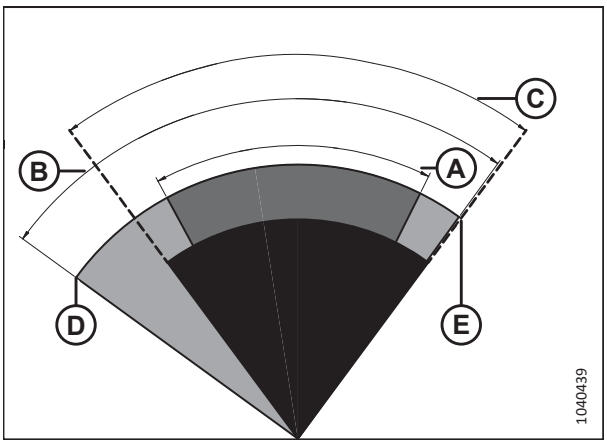


Figure 3.388: Sensor Range Set too Close to Voltage Limit

A - Minimum Voltage Range – 2.5 V
B - Maximum Voltage Range – 4.0 V
C - Configured Voltage Range
D Minimum Voltage – 0.5 V
E Maximum Voltage – 4.5 V

A sensor configured to have a voltage range that is less than 2.5 V (for example, range [C]) will have difficulty staying within the ideal range of 3.6 V. The combine will seek to keep the sensor within the narrow set range, resulting in the combine continually raising and lowering the header to search for the appropriate header height.

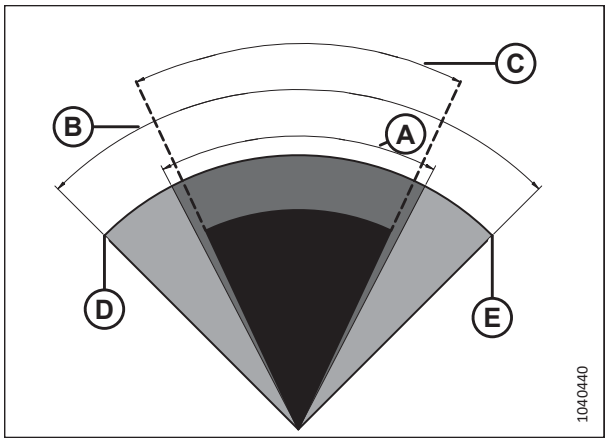


Figure 3.389: Sensor Range too Narrow

A - Minimum Voltage Range – 2.5 V **B - Maximum Voltage Range – 4.0 V**
C - Configured Voltage Range **D Minimum Voltage – 0.5 V**
E Maximum Voltage – 4.5 V

3.10.2 Recommended Sensor Output Voltages for Combines

The auto header height control (AHHC) sensor output must be within a specific voltage range for each combine, or the AHHC feature will not work properly. The recommended lower and upper voltage values for best AHHC operation are provided.

Table 3.34 Combine Voltage Limits

Combine	Lower Voltage Limit (V)	Upper Voltage Limit (V)	Minimum Range (V)
Case IH 5088/6088/7088, 5130/6130/7130, 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240	0.7	4.3	2.5
Challenger® B and C Series	0.7	4.3	2.5
CLAAS 500/600/700 Series, 5000/6000/7000/8000 Series, and Tucano Series	0.7	4.3	2.5
IDEAL™ Series	0.7	4.3	2.5
Gleaner® R, and S Series	0.7	4.3	2.5
John Deere 70, S, and T Series	0.7	4.3	2.5
Massey Ferguson® 9005 and 9500	0.7	4.3	2.5
New Holland CR/CX - 5 V system	0.7	4.3	2.5
New Holland CR/CX - 10 V system	2.8	7.2	4.1–4.4

3.10.3 Manually Checking Voltage Limits

For the auto header height (AHHC) system to function correctly, the voltages reported to the combine by the header height sensors must occur within the specified range.

NOTE:

On some combine models, you can see the voltage from the combine cab.

NOTE:

If the standard plug is installed in connector P600, the plug sends the average of both sensors to the combine. If the optional lateral tilt plug is installed in connector P600, the plug sends separate voltage signals from both sensors to the combine.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Position the header so that the cutterbar is 254–356 mm (10–14 in.) off the ground.

Checking sensor upper voltage limit

4. Extend the guard angle until header angle indicator (A) is at position **E** on the center-link.
5. Shut down the engine, and remove the key from the ignition.

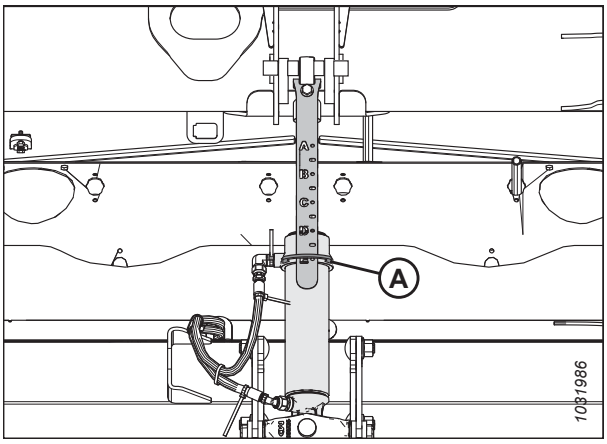


Figure 3.390: Center-Link

6. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is **NOT** on the down stops, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

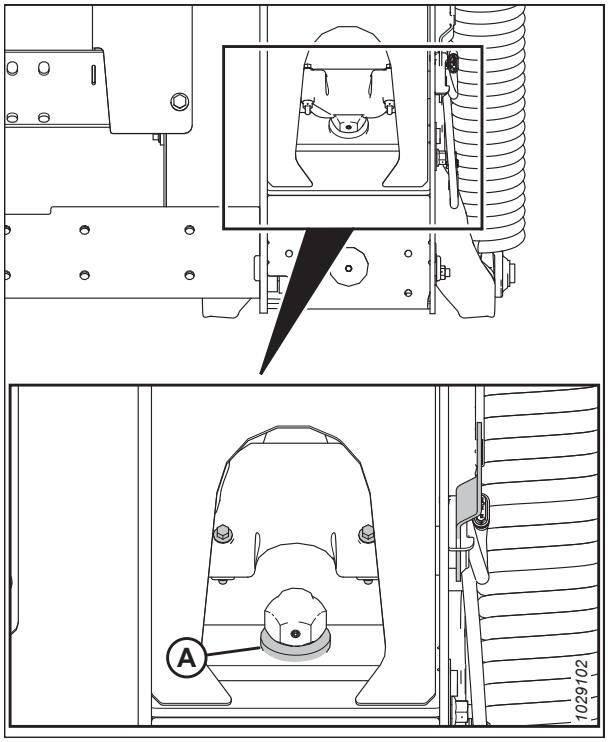


Figure 3.391: Down Stop Washer

7. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

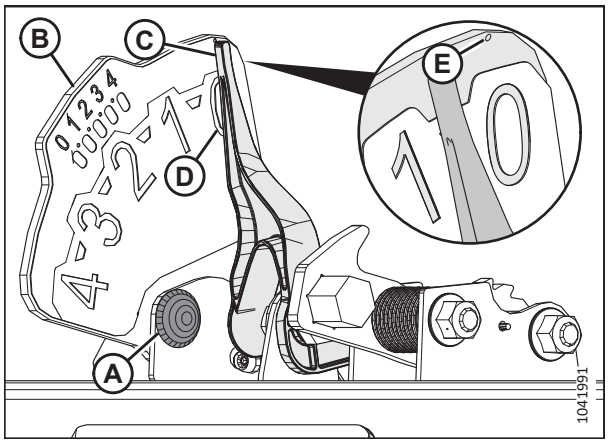


Figure 3.392: Float Indicator

8. Locate connector P600 (A) at the left of the float module.
9. Remove plug cap (B).
10. Insert the key and turn it to the RUN position.
11. Using a digital multimeter, check connector P600 for power from the combine. The multimeter should read 5V at pin 7.
    - Pin 7 - FM2215E – power
    - Pin 8 - FM2515E – ground
12. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the upper range specified in *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

    NOTE:

    With the float lock linkage on the down stops, the upper voltage reading must be the same on both (left and right) sensors.
13. If you need to adjust the voltage, then loosen nuts (A), reposition sensor (B) in the indicator plate, then tighten nuts (A) to 3 Nm (22 lbf·in.).

    NOTE:

    While tightening the nuts, make sure that sensor (B) does **NOT** move in the indicator plate.
14. Turn the key to the OFF position, and remove the key from the ignition.

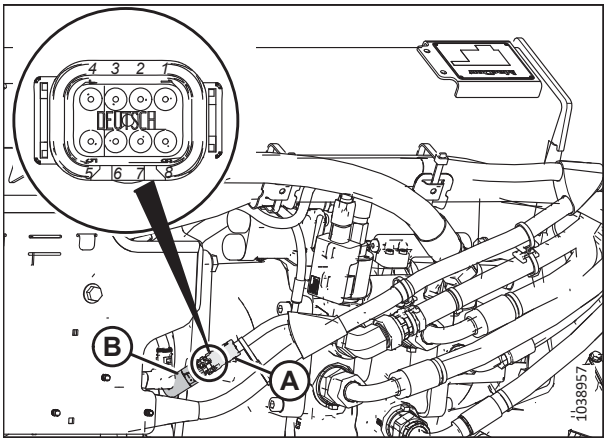


Figure 3.393: Connector P600 – View from Rear

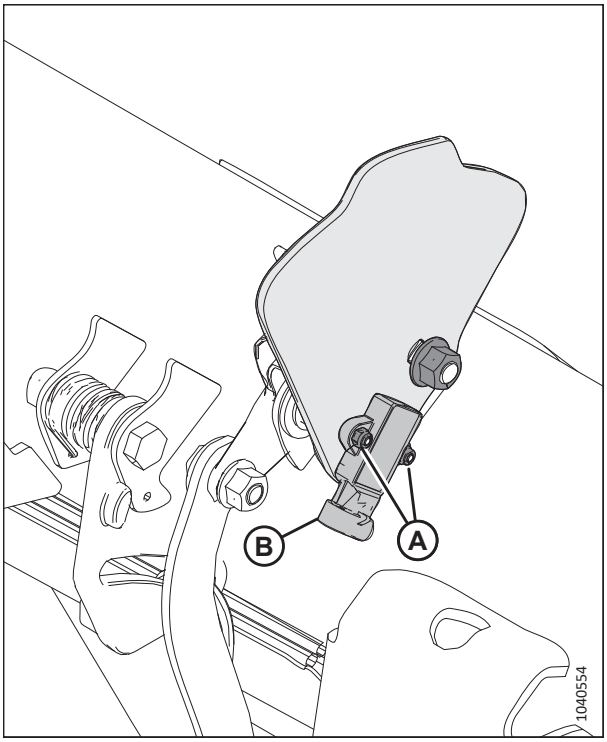


Figure 3.394: Left Float Indicator Plate

Checking sensor lower voltage limit

15. Extend the guard angle until header angle indicator (A) is at position **E** on the center-link.
16. Fully lower the header to the ground.
17. Shut down the engine, and remove the key from the ignition.

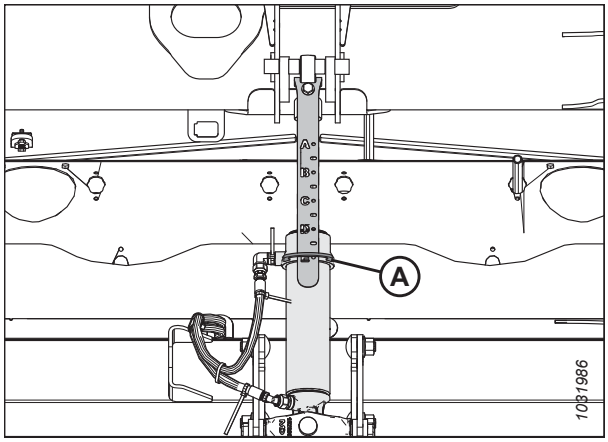


Figure 3.395: Center-Link

18. Float indicator pointer (A) should be at 4 (B).
19. Insert the key and turn it to the RUN position.
20. On connector P600, compare the voltage reported by the left sensor (pins 1 and 8) and the right sensor (pins 3 and 8) to the lower voltage specified in *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3 - FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground
21. If you need to adjust the voltage, refer to Step *13, page 269* for instructions.

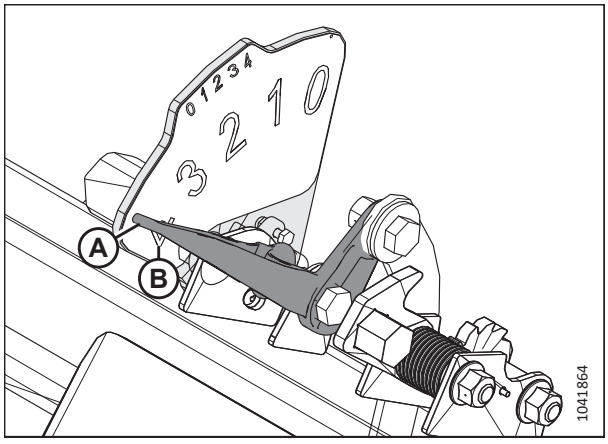


Figure 3.396: Left Float Indicator – View from Rear

3.10.4 Replacing Float Height Sensor

If one of the float height sensors is not reporting the correct voltage to the combine, it must be replaced.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Lower the header fully.
4. Lower the reel fully.
5. Shut down the engine, and remove the key from the ignition.

6. Disconnect harness plug P537 (C) from the sensor on the left side of the float module.

   NOTE:

   If the float height indicator sensor on the right side of the float module needs to be replaced, disconnect plug P539 also.

7. Remove and retain bolt (A).

8. Remove and retain indicator plate (B). The sensor should be attached to the plate.

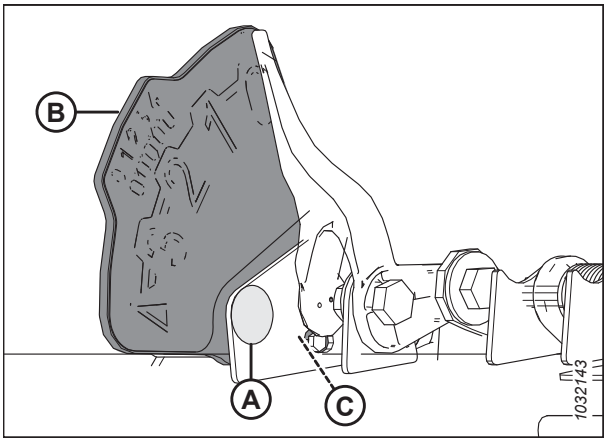


Figure 3.397: Float Setting Indicator – Left

9. Remove and retain two bolts and nuts (A).

10. Remove and discard old sensor (B).

11. Install new sensor (B) so that the plug faces down.

12. Install two bolts and nuts (A) so that the bolt heads are on the same side as the decal.

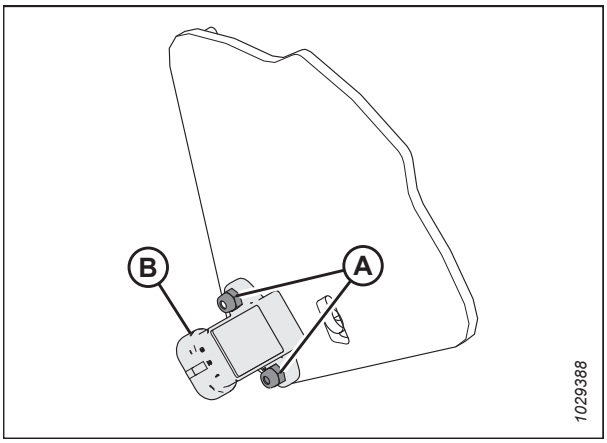


Figure 3.398: Float Height Sensor

13. Reinstall indicator plate (B). The sensor should be attached to the plate.

14. Reinstall bolt (A).

15. Connect harness plug (C).

16. Check the voltage range using the combine's instrumentation. If the combine does not have instruments for checking the voltage, check it manually. For instructions, refer to *3.10.3 Manually Checking Voltage Limits, page 266*.

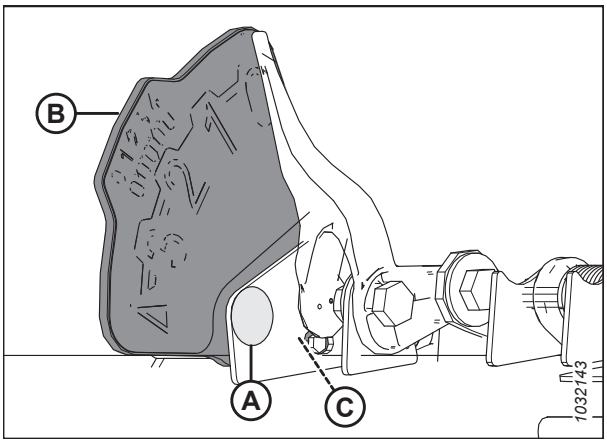


Figure 3.399: Float Setting Indicator – Left

3.10.5 10 Volt Adapter – New Holland Combines Only

New Holland combines equipped with a 10 V system require a 10 V adapter in order to calibrate the auto header height control (AHHC) system.

If a 10 V New Holland combine does not have adapter (A) installed, the AHHC output will always read 0 V, regardless of the sensor's position.

For instructions on checking the sensor voltages, refer to *Checking Voltage Range from Combine Cab – New Holland CR and CX Series, page 432* or *3.10.3 Manually Checking Voltage Limits, page 266*.

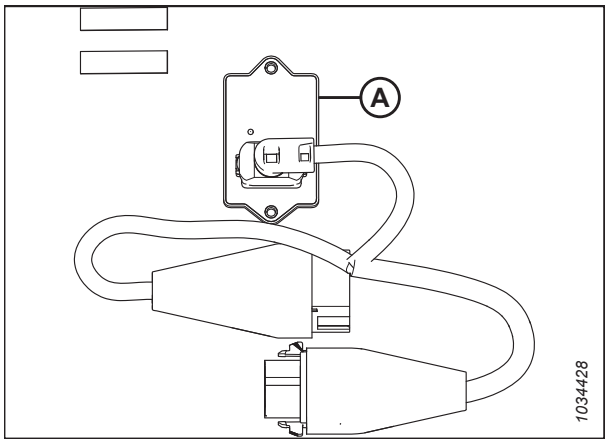


Figure 3.400: 10 V Adapter (B7241)

3.10.6 Case IH 130 and 140 Series Mid-Range Combines

To make the auto header height control (AHHC) system compatible for Case IH 130 and 140 Series mid-range combines, you must configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

The auto header height control sensor needs to operate within a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.

5. Ensure that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

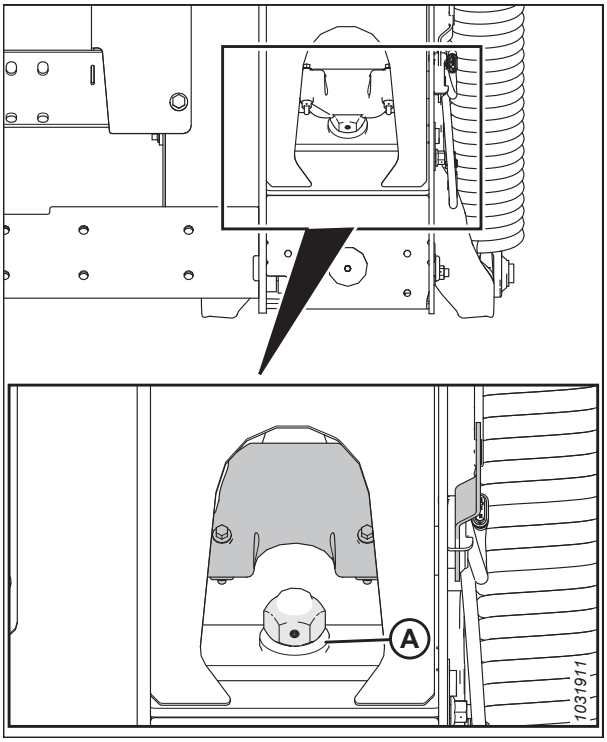


Figure 3.401: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

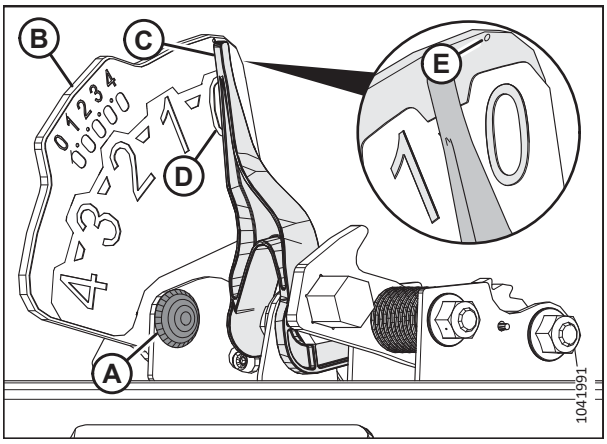


Figure 3.402: Float Indicator

7. Ensure that the header float is unlocked.
8. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

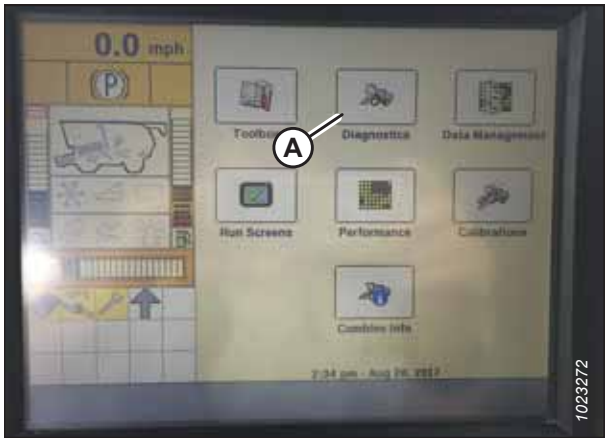


Figure 3.403: Case IH Combine Display

9. Select SETTINGS (A). The SETTINGS page appears.
10. From the GROUP menu, select HEADER (B).

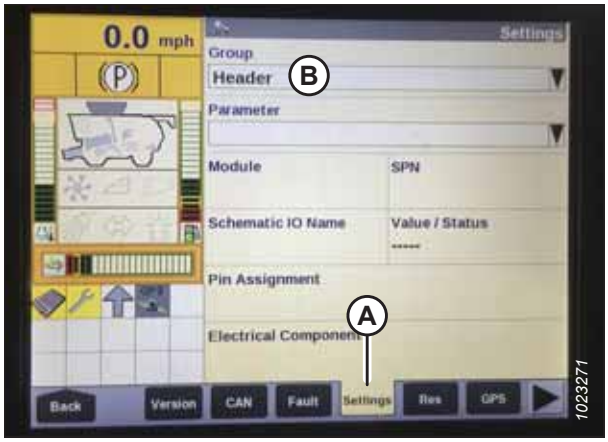


Figure 3.404: Case IH Combine Display

11. From the PARAMETER menu, select LEFT HEIGHT/TILT SENSOR (A).

Figure 3.405: Case IH Combine Display

12. The SETTINGS page updates to display the voltage in VALUE/STATUS field (A). Lower the feeder house fully, and then raise it 254–356 mm (10–14 in.) off the ground to view the full range of voltage readings.

Figure 3.406: Case IH Combine Display

Header Settings Quick Reference – Case IH 130 and 140 Series

The recommended auto header height control (AHHC) settings for an FD2 Series FlexDraper® header operating with a Case IH 130 and 140 Series combine are provided.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Table 3.35 Header Settings – Case IH 130 and 140 Series

Setup Parameter	Suggested Setting	
Cutting type	Platform	
Header pressure float	Not installed	
HHC height sensitivity[75]	Two-sensor system	250
	One-sensor system	180
HHC tilt sensitivity	150	
Reel drive type	Standard 19-tooth drive sprocket	4
	Optional high-torque 14-tooth drive sprocket	5
	Optional high-torque 10-tooth drive sprocket	6
Reel height sensor	Yes	
Autotilt	Two-sensor system	YES
	One-sensor system	NO

Setting up Header on Combine Display – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

To set up the header to work with the combine, you will need to access the HEADER SETUP page on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

75. If hunting occurs during operation, decrease the HUNTING setting by 20 points at a time until hunting no longer occurs.

1. On the main page of the combine display, select TOOLBOX (A).

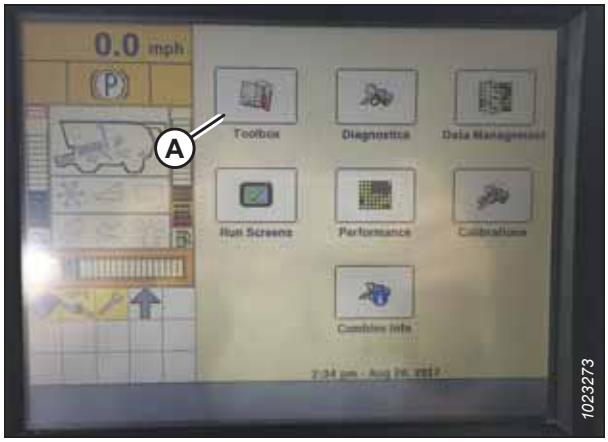


Figure 3.407: Case IH Combine Display

2. Select HEAD 1 tab (A). The HEADER SETUP page appears.

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (C).

3. From CUTTING TYPE menu (B), select PLATFORM.

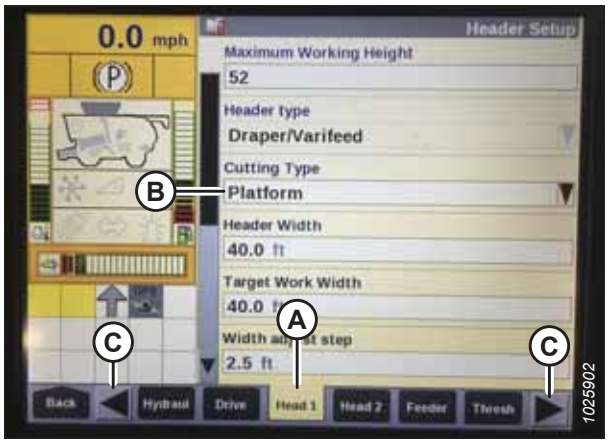


Figure 3.408: Case IH Combine Display

4. Select HEAD 2 tab (A). The HEADER SETUP 2 page appears.

5. From HEADER PRESSURE FLOAT menu (B), select NOT INSTALLED.

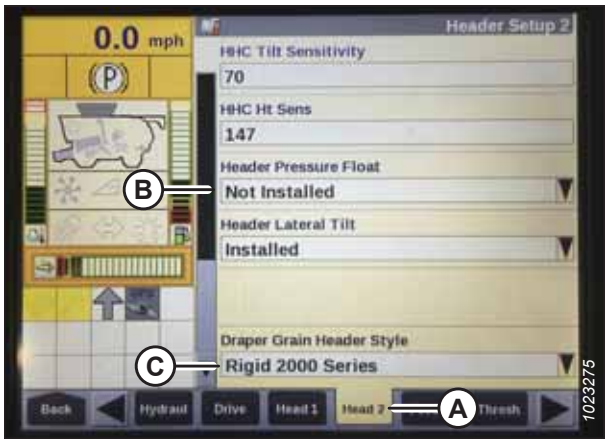


Figure 3.409: Case IH Combine Display

6. Locate HHC HEIGHT SENSITIVITY field (A). Enter the following settings:

   - **If using a two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.
   - **If using a single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.

   NOTE:

   If the combine continually raises and lowers the header during operation (a behavior termed “hunting”), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.

7. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease this value as desired.

8. From REEL DRIVE TYPE menu (A), select one of the following:

   - 4 if the combine is equipped with a standard 19-tooth drive sprocket.
   - 5 if the combine is equipped with an optional high-torque 14-tooth drive sprocket.
   - 6 if the combine is equipped with an optional high-torque 10-tooth drive sprocket.

Figure 3.410: Case IH Combine Display

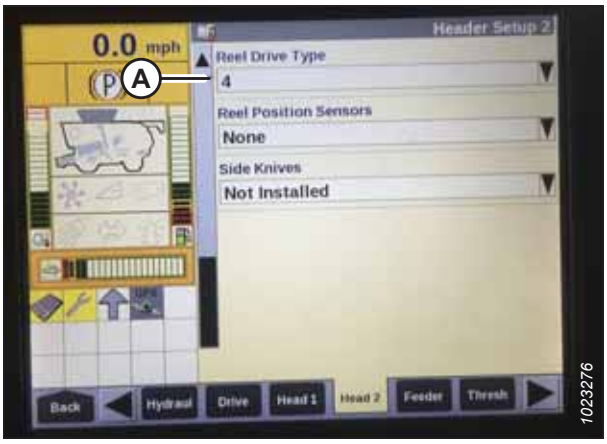


Figure 3.411: Case IH Combine Display

9. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 3.412: Case IH Combine Display

10. Locate AUTOTILT field (A).
    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

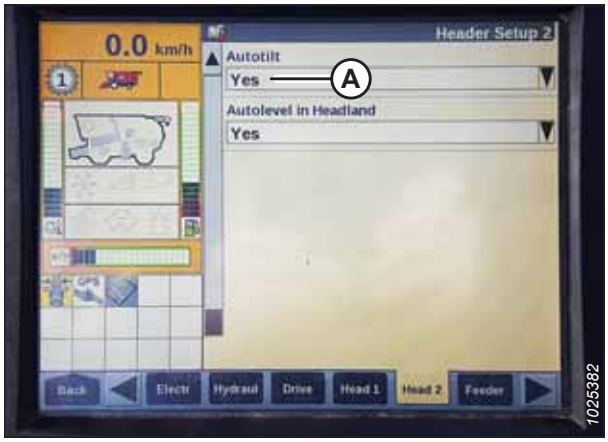


Figure 3.413: Case IH Combine Display

Calibrating Auto Header Height Control – Case IH 5130, 5140, 6130, 6140, 7130, and 7140

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with a software version 28.00 or above, refer to *Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 289*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. In order to prevent the header from separating from the float module, it may be necessary to change the float to a heavier setting during calibration.

1. To view the software version, select the DIAGNOSTICS button from the Home Screen, then select VERSION tab (A).

Figure 3.414: Case IH Combine Display

2. Ensure that the center-link is set to **D**.

   NOTE:

   For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

3. Confirm that all of the electrical and hydraulic connections between the header and float module are functional.

4. Start the combine engine, but do **NOT** engage the separator or the feeder house.

5. Locate the HEADER CONTROL switch on the right console. Set the HEADER CONTROL to HT (AHHC mode).

6. Push and hold the DOWN button for 10 seconds to lower the combine feeder house all the way down (the feeder house should stop moving).

7. Push and hold the RAISE button until the feeder house travels all the way up. It will stop 61 cm (2 ft.) above the ground for 5 seconds, then resume traveling upward. This indicates that the calibration procedure was successful.

8. If the float was changed to a heavier setting to complete the AHHC calibration procedure, adjust it to the recommended operating float weight after the calibration is complete.

Setting Preset Cutting Height – Case 5130, 5140, 6130, 6140, 7130, and 7140

The header's cutting and raised positions can be configured as presets on the combine's control console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Indicator (A) should be at position **0** (B) when the header is 254–356 mm (10–14 in.) above the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal float setting is as light as possible without the header bouncing or missing crop. Operating with a heavy float setting prematurely wears the cutterbar wearplates.

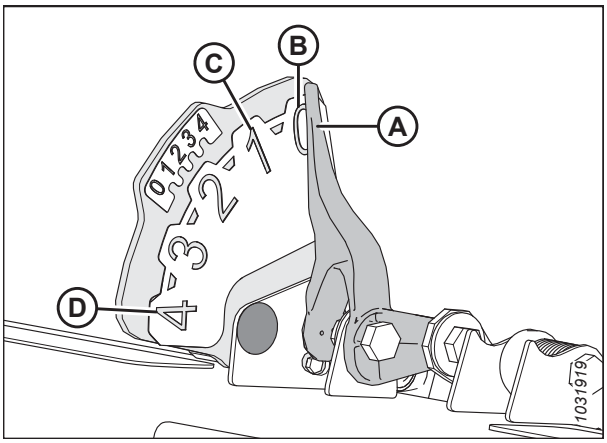


Figure 3.415: Float Indicator

1. Engage the separator and the header.
2. Move the header to the desired cutting height.
3. Press 1 on button (A). A yellow light next to the button will light up.

   NOTE:

   Always set the header position before setting the reel position. If the header and the reel are set at the same time, the reel setting will not be saved.
4. Move the reel to the desired working position.
5. Press 1 on button (A). A yellow indicator next to the button will light up.

Figure 3.416: Case Combine Console

6. Move the header to a second desired cutting height.
7. Press 2 on button (A). A yellow indicator next to the button will light up.
8. Move the reel to the desired working position.
9. Press 2 on button (A). A yellow indicator next to the button will light up.

Figure 3.417: Case Combine Console

The up and down arrows should now appear in MANUAL HEIGHT box (A) on the RUN 1 page on the combine display. This indicates that the auto header height control (AHHC) is functioning.

Figure 3.418: Case Combine Display – Run 1 Page

10. To enable the presets, activate AHHC button (A) to place the header on the ground. To enable the first preset, tap the button once. To enable the second preset, tap the button twice.

    To lift the header to its maximum working height, hold the SHIFT button on the back of the control handle while tapping AHHC button (A).

Figure 3.419: Case Combine Control Handle

11. The maximum working height can be adjusted on the HEADER SETUP page on the combine display. Enter the desired height in MAXIMUM WORKING HEIGHT field (A).

Figure 3.420: Case Combine Display – Header Setup Page

12. If necessary, adjust the position of one of the presets using button (A) on the combine console.

Figure 3.421: Case Combine Console

3.10.7 Case IH 120, 230, 240, and 250 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – Case IH, 120, 230, 240, and 250 Series Combines

In order for the auto header height control (AHHC) system to work correctly, the header height sensors must detect the correct voltage readings. The sensor outputs can be viewed using the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the auto header height control (AHHC) system. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

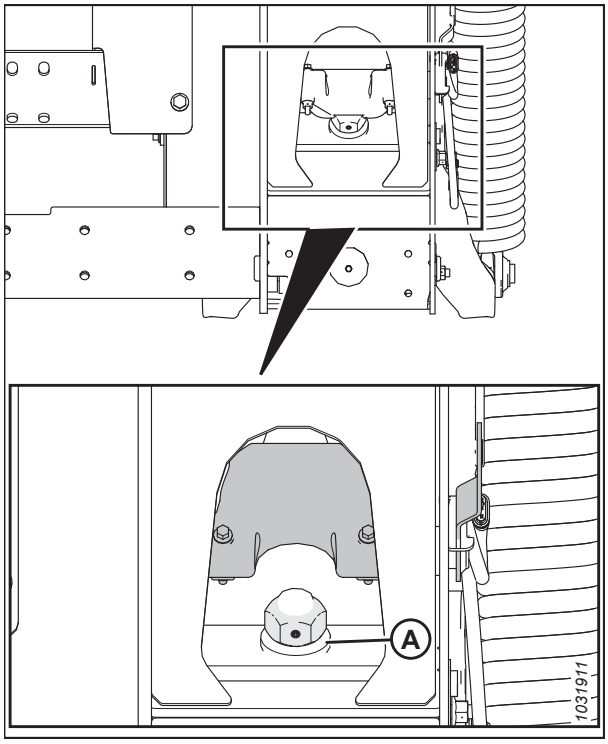


Figure 3.422: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

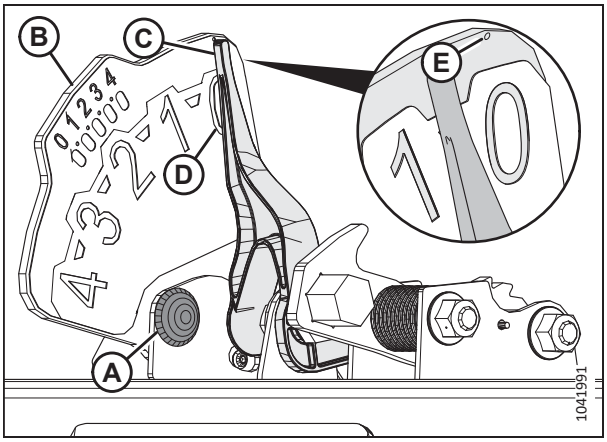


Figure 3.423: Float Indicator

7. Ensure the header float is unlocked.
8. Select DIAGNOSTICS (A) on the MAIN page. The DIAGNOSTICS page opens.
9. Select SETTINGS. The SETTINGS page opens.

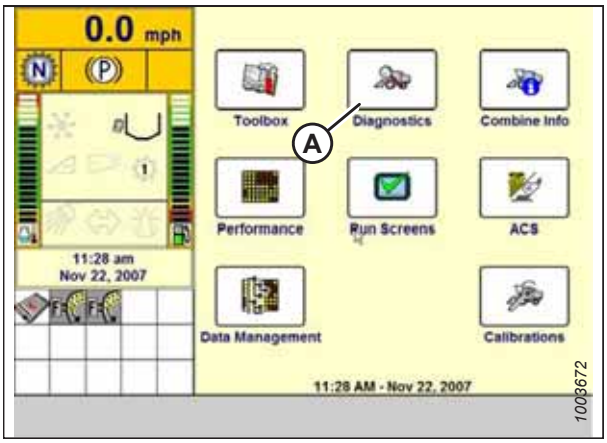


Figure 3.424: Case IH Combine Display

10. Select GROUP drop-down menu (A). The GROUP dialog box opens.

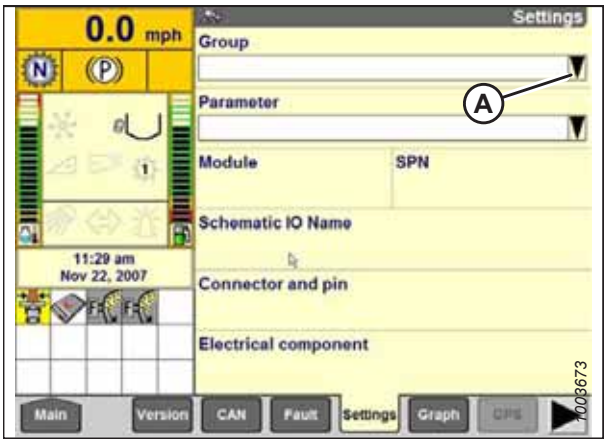


Figure 3.425: Case IH Combine Display

11. Select HEADER HEIGHT/TILT (A). The PARAMETER page opens.

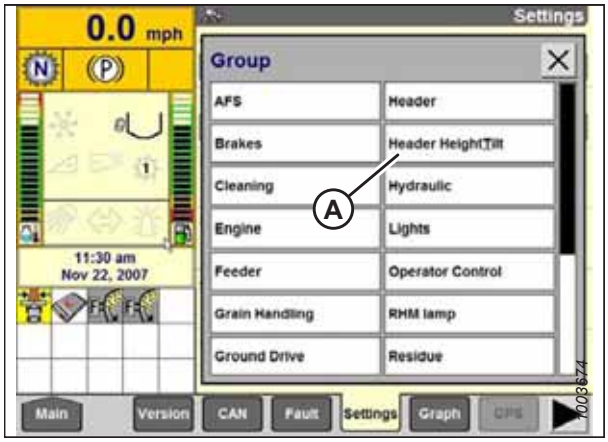


Figure 3.426: Case IH Combine Display

12. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at top of page. Raise and lower the header to see the full range of voltage readings.

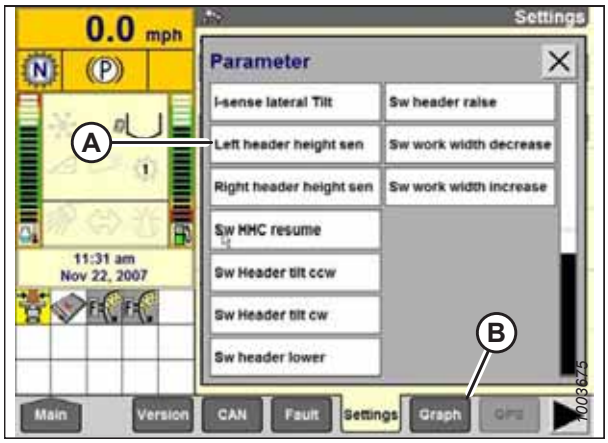


Figure 3.427: Case IH Combine Display

Header Settings Quick Reference – Case IH 120, 230, 240, and 250 Series

The recommended auto header height control (AHHC) settings for an FD2 Series FlexDraper® header operating with a Case IH 120, 230, 240, and 250 Series combine are provided.

NOTE:

The setting options vary based on the combine software version. For version 28.00 or higher, refer to Table *3.36, page 284*; for lower versions, refer to Table *3.37, page 285*.

Table 3.36 Header Settings – Case IH 120, 230, 240, and 250 Series (Software Version 28.00 or Higher)

Setup Parameter	Suggested Setting
Header sub type	2000
Frame type	Flex
Header sensors	Enable
Header pressure float	No
Height/Tilt Response	Fast
Auto height override	Yes

Table 3.36 Header Settings – Case IH 120, 230, 240, and 250 Series (Software Version 28.00 or Higher) (continued)

Setup Parameter	Suggested Setting	
HHC height sensitivity[76]	Two-sensor system	250
	One-sensor system	180
HHC tilt sensitivity	150	
Reel height sensor	Yes	
Autotilt	Two-sensor system	Yes
	One-sensor system	No

Table 3.37 Header Settings – Case IH 120, 230, 240, and 250 Series (Below Software Version 28.00)

Setup Parameter	Suggested Setting	
Header style	Flexhead	
Auto reel speed slope	133	
Header pressure float	No	
Reel drive	Hydraulic	
Reel fore-back	Yes	
HHC height sensitivity[76]	Two sensor system	250
	One sensor system	180
HHC tilt sensitivity	150	
Fore/Aft control	Yes	
Hdr fore/aft tilt	Yes	
Header type (Head2 Tab)	Draper	
Cutting type	Platform	
Header width	Set according to header specification	
Header usage	Set according to header specification	
Reel height sensor	Yes	
Autotilt	Two-sensor system	Yes
	One-sensor system	No

Calibrating Auto Header Height Control – Case IH 120, 230, 240, and 250 Series Combines

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

This procedure applies to combines with a software version below 28.00. For instructions on calibrating the AHHC for combines with software version 28.00 or above, refer to *Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software, page 289*.

76. If hunting occurs during operation, decrease the HUNTING setting by 20 points at a time until hunting no longer occurs.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the auto header height control (AHHC), perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Ensure that the center-link is set to **D**.
2. Confirm that all electrical and hydraulic connections between the header and float module are functional.
3. Select TOOLBOX (A) on the MAIN page.

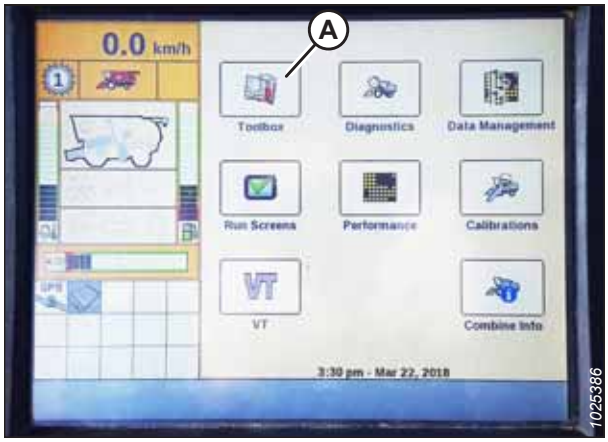


Figure 3.428: Case IH Combine Display

4. Select HEADER tab (A).

   NOTE:

   To locate the HEADER tab, you may need to scroll to the right using side arrows (C).

5. Set HEADER STYLE (B) to FLEXHEAD.

Figure 3.429: Case IH Combine Display

6. Set AUTO REELSPEED SLOPE.

   NOTE:

   The AUTO REEL SPEED SLOPE value automatically maintains the speed of the reel relative to ground speed. For example, if the value is set to 133, then the reel's rotational speed will be higher than the combine's ground speed. In general, the reel's speed should be higher than the combine's ground speed; however, adjust the value according to crop conditions.

7. Set HEADER PRESSURE FLOAT to NO. Ensure that REEL DRIVE is set to HYDRAULIC.

Figure 3.430: Case IH Combine Display

8. Set REEL FORE-BACK to YES (if applicable).

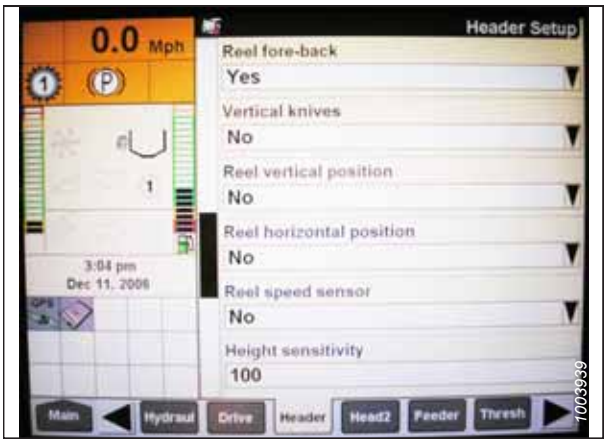


Figure 3.431: Case IH Combine Display

9. Locate HHC HEIGHT SENSITIVITY field (A), and set it as follows:

   - **Two-sensor systems:** Set HHC HEIGHT SENSITIVITY to 250.
   - **Single-sensor systems:** Set HHC HEIGHT SENSITIVITY to 180.

   NOTE:

   If the combine continually raises and lowers the header during operation (a behavior termed "hunting"), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.

10. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease the sensitivity as desired.

Figure 3.432: Case IH Combine Display

11. Set FORE/AFT CONTROL and HDR FORE/AFT TILT to YES (if applicable).

Figure 3.433: Case IH Combine Display

12. Press HEAD2 (A) at the bottom of the page.
13. Ensure HEADER TYPE (B) is set to DRAPER.

    NOTE:

    If the recognition resistor is plugged in to the header harness, you will not be able to change this.

14. Set CUTTING TYPE (C) to PLATFORM.
15. Set HEADER WIDTH (D) and HEADER USAGE (E) to the appropriate values.

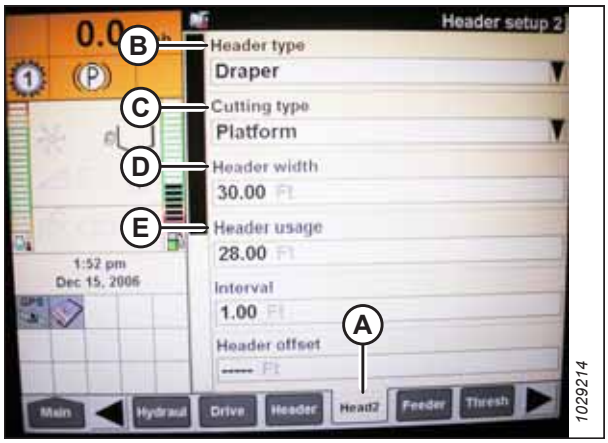


Figure 3.434: Case IH Combine Display

16. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 3.435: Case IH Combine Display

17. Locate AUTOTILT field (A) and set it as follows:
    - **Two-sensor system:** Select YES in the AUTOTILT field.
    - **Single-sensor system:** Select NO in the AUTOTILT field.

    NOTE:

    If the float was changed to a heavier setting to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

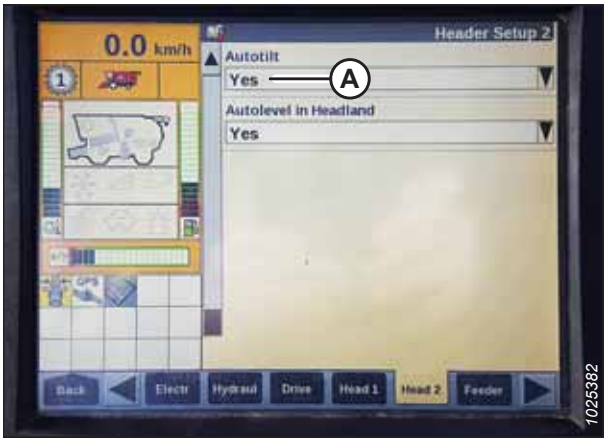


Figure 3.436: Case IH Combine Display

Calibrating Auto Header Height Control – Case IH Combines with Version 28.00 or Higher Software

Calibrate the auto header height control (AHHC) sensor output for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. To view the software version, select the DIAGNOSTICS button from the Home Screen, then select VERSION tab (A).

   NOTE:

   If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

   NOTE:

   For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

Figure 3.437: Case IH Combine Display

2. Set the header center-link to **D**.
3. Raise the header onto the down stops and unlock the float.
4. Place the wings in the locked position.

Adjusting combine display settings

5. Select TOOLBOX (A) on the MAIN page.

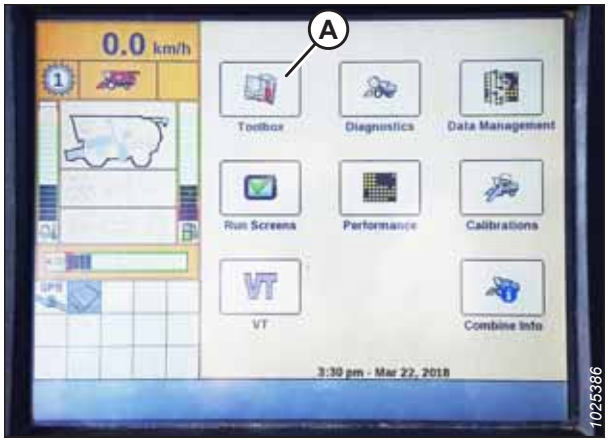


Figure 3.438: Case IH Combine Display

6. Select HEAD 1 tab (A).

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (B).

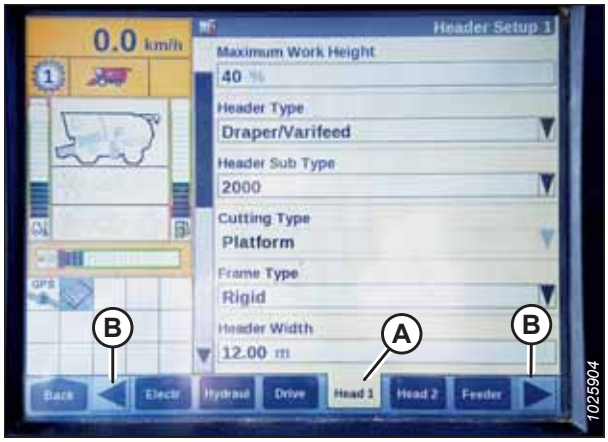


Figure 3.439: Case IH Combine Display

7. Locate the HEADER SUB TYPE field.
8. Select the following value from the HEADER SUB TYPE field:
   - If software version 34 or later is installed, select FD2 SERIES (A).

     NOTE:

     Selecting FD2 SERIES will optimize AHHC performance on FD2, and D2 Series headers.

   - If a software version prior to version 34 is installed, select 2000 (B).

Figure 3.440: Case IH Combine Display

9. Return to the HEAD 1 page and choose FLEX from FRAME TYPE drop-down menu (A).

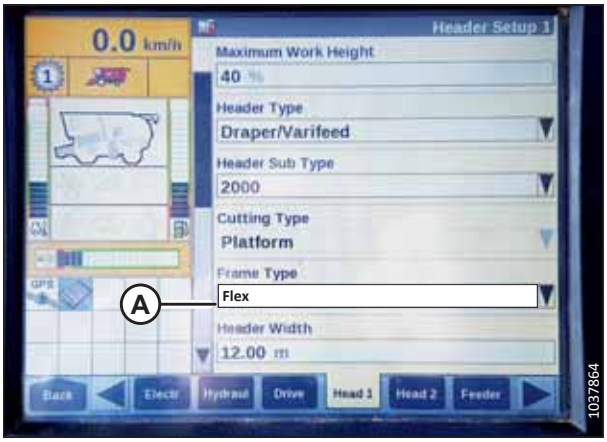


Figure 3.441: Case IH Combine Display

10. Select HEAD 2 tab (A).
11. In HEADER SENSORS field (B), select ENABLE.
12. In HEADER PRESSURE FLOAT field (C), select NO.
13. In HEIGHT/TILT RESPONSE field (D), select FAST.
14. In AUTO HEIGHT OVERRIDE field (E), select YES.
15. Press down arrow (F) to go to the next page.

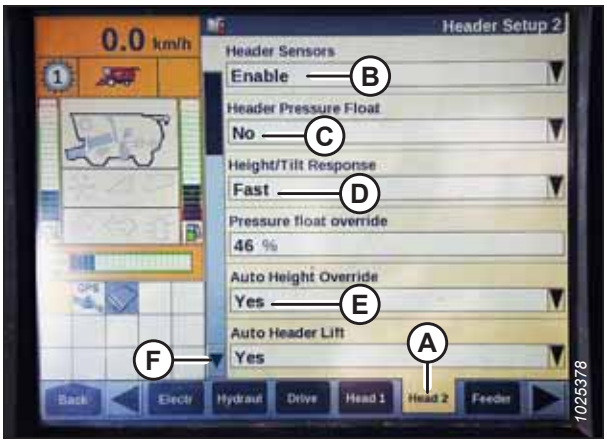


Figure 3.442: Case IH Combine Display

16. Locate HHC HEIGHT SENSITIVITY field (A), and set it as follows:
    - **Single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.
    - **Two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.

    NOTE:

    If the combine continually raises and lowers the header during operation (a behavior termed “hunting”), decrease the HHC HEIGHT SENSITIVITY setting by 20 points at a time until hunting no longer occurs.
17. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease the sensitivity as desired.

Figure 3.443: Case IH Combine Display

18. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 3.444: Case IH Combine Display

19. Scroll to the AUTOTILT field (A), and set it as follows:
    - **Two-sensor system:** Select YES in the AUTOTILT field.
    - **Single-sensor system:** Select NO in the AUTOTILT field.

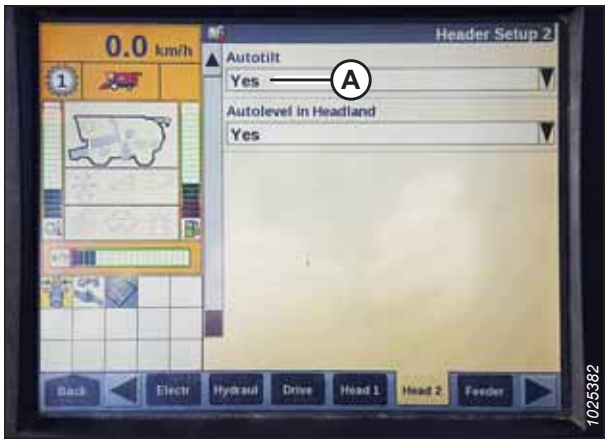


Figure 3.445: Case IH Combine Display

Calibrating Auto Header Height Control

20. Select CALIBRATION on the combine display and press the right arrow navigation key to enter the information box.
21. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

    NOTE:

    Use the UP and DOWN navigation keys to move between options.

Figure 3.446: Case IH Combine Display

22. Follow the calibration steps in the order in which they appear in the dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

    NOTE:

    Pressing the ESC key during any of the steps or letting the system sit idle for over 3 minutes will stop the calibration procedure.

    NOTE:

    Refer to your combine operator's manual for an explanation of any error codes.

23. When all the steps have been completed, CALIBRATION SUCCESSFUL message displays on the page. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

    NOTE:

    If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

Figure 3.447: Case IH Combine Display

24. Ensure AUTO HEIGHT icon (A) appears on the monitor as shown at location (B). When the header is set for cutting on the ground, this verifies that the combine is correctly using the sensor on the header to detect the ground pressure.

    NOTE:

    Icons (A) and (B) appear on the monitor only after engaging the separator and header, and then pressing HEADER RESUME button on the control panel.

    NOTE:

    AUTO HEIGHT field (B) may appear on any of the RUN tabs and not necessarily on the RUN 1 tab.

Figure 3.448: Case IH Combine Display

Checking Reel Height Sensor Voltages – Case IH Combines

The voltage output of the reel height sensors can be inspected using the combine display in the cab.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

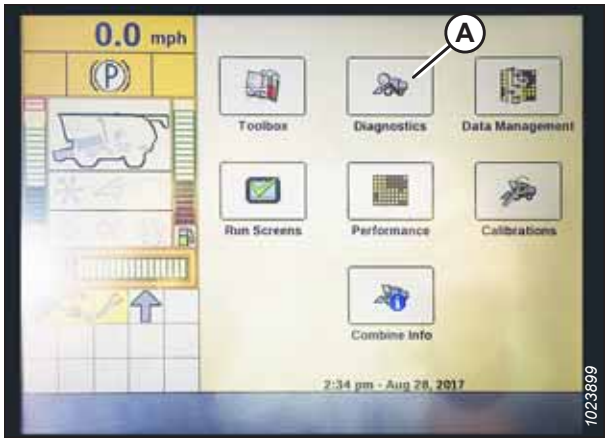


Figure 3.449: Case IH Combine Display

2. Select SETTINGS tab (A). The SETTINGS page appears.
3. From the GROUP menu, select HEADER (B).
4. From the PARAMETER menu, select REEL VERTICAL POSITION (C).

Figure 3.450: Case IH Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph appears.
6. Lower the reel to view upper voltage (B). The voltage should be within 4.1–4.3 V.
7. Raise the reel to view lower voltage (C). The voltage should be within 0.7–0.9 V.
8. If either voltage is out of range, refer to *Checking and Adjusting Reel Height Sensor, page 221*.

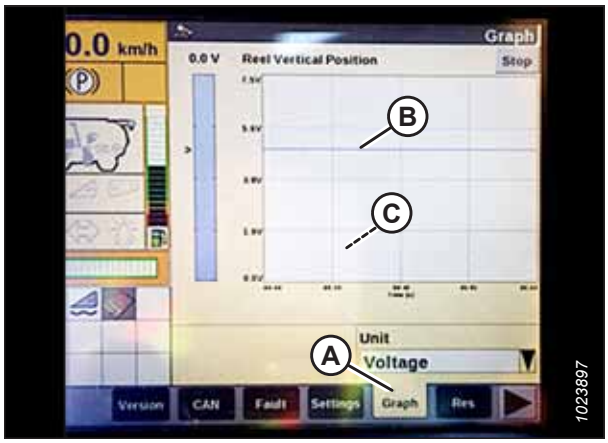


Figure 3.451: Case IH Combine Display

Setting Preset Cutting Height – Case IH, 120, 230, 240, and 250 Series Combines

Once the auto header height control (AHHC) system has been configured to work with the header, the preset cutting height can be configured. The preset cutting height refers to the header height that the AHHC system will attempt to maintain as the combine moves forward.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. The crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

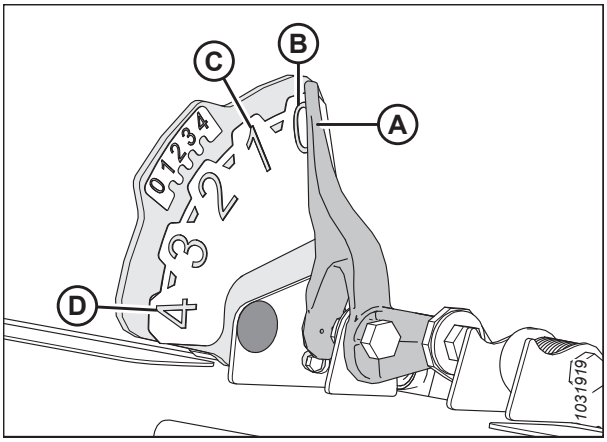


Figure 3.452: Float Indicator

1. Engage the separator and the header.
2. Move the header to a desired cutting height.
3. Press SET #1 switch (A). The light beside switch (A) will appear.

   NOTE:

   Use switch (C) for fine adjustments.

   NOTE:

   When setting the presets, always set the header position before setting the reel position. If the header and the reel are set at the same time, the reel setting will not be saved.
4. Move the reel to the desired working position.
5. Press SET #1 switch (A). The light beside switch (A) will light up.
6. Move the header to a second desired cutting height.
7. Press SET #2 switch (B). The light beside switch (B) will light up.
8. Move the reel to a second desired working position.

Figure 3.453: Case Combine Controls

9. Press SET #2 switch (B). The light beside switch (B) will light up.

10. To swap between the set points, press HEADER RESUME (A).

11. To raise the header, press and hold SHIFT button (B) at the back of the control handle and press HEADER RESUME switch (A). To lower the header, press HEADER RESUME switch (A) once to return to the header preset height.

    NOTE:

    Pressing HEADER RAISE/LOWER switches (C) and (D) disengages AUTO HEIGHT mode. Press HEADER RESUME (A) to re-engage AUTO HEIGHT mode.

Figure 3.454: Case Combine Controls

Reel Reverse Function – Case IH Combines

With the installation of Case kit 91826802, Case IH Flagship combines can allow the reel to reverse with the feederhouse.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select TOOLBOX (A) on the MAIN page.

2. Select HEAD 1 tab (A).

    NOTE:

    To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (B).

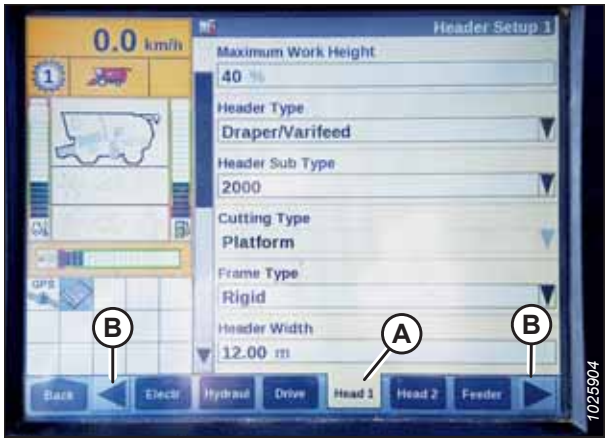


Figure 3.455: Case IH Combine Display

3. Locate the HEADER SUB TYPE field.
4. Select the following value from the HEADER SUB TYPE field:
   - If software version 34 or later is installed, select FD2 SERIES (A).

     NOTE:

     Selecting FD2 SERIES will optimize AHHC performance on FD2, and D2 Series headers.
   - If a software version prior to version 34 is installed, select 2000 (B).

Figure 3.456: Case IH Combine Display

5. Return to the HEAD 1 page and choose FLEX from FRAME TYPE drop-down menu (A).

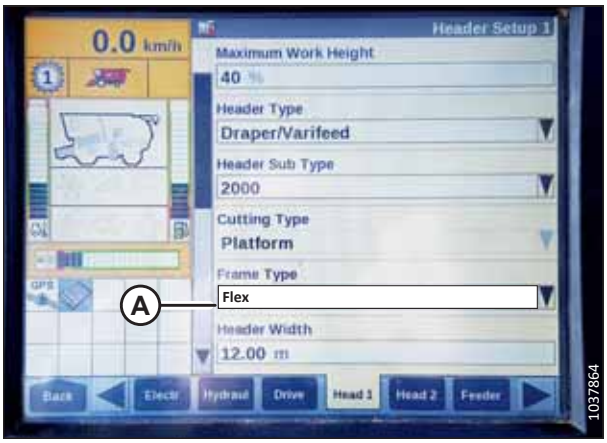


Figure 3.457: Case IH Combine Display

6. Select HEAD 2 tab (A).
7. In HEADER SENSORS field (B), select ENABLE.
8. In HEADER PRESSURE FLOAT field (C), select NO.
9. In HEIGHT/TILT RESPONSE field (D), select FAST.

   NOTE:

   AUTO HEADER LIFT field (E) can be set to the user's preference.

Figure 3.458: Case IH Combine Display

10. Press down arrow (F) to go to the next page.
11. In HYDRAULIC REEL field (A), select YES.
12. In HYDRAULIC REEL REVERSE field (B), select YES.

Figure 3.459: Case IH Combine Display

13. In OVERLAP MODE field (A), select MANUAL.
14. In WORK WIDTH RESET field (B), select MANUAL.

Figure 3.460: Case IH Combine Display

3.10.8 Challenger® and Massey Ferguson® 6 and 7 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – Challenger® and Massey Ferguson®

The auto header height control sensor needs to operate within a specific voltage range in order to work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.

3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.

4. Shut down the engine, and remove the key from the ignition.

5. Ensure that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

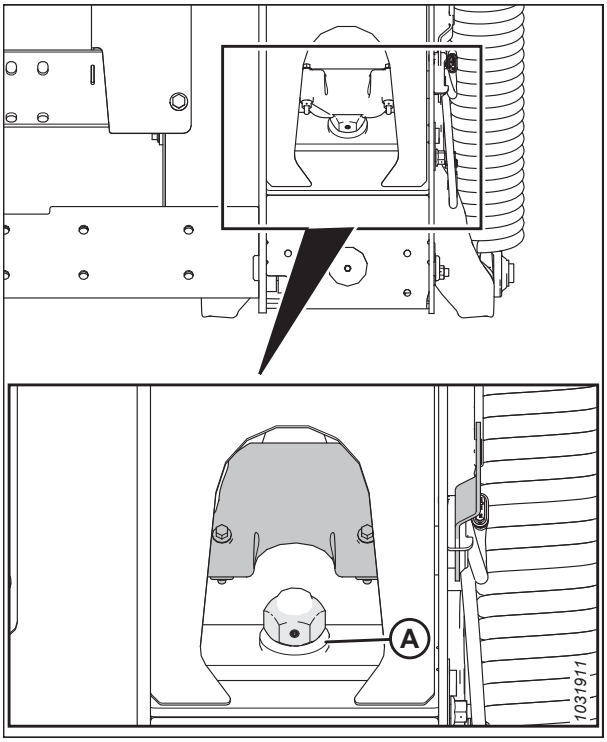


Figure 3.461: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on 0 (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

7. Tighten bolt (A).

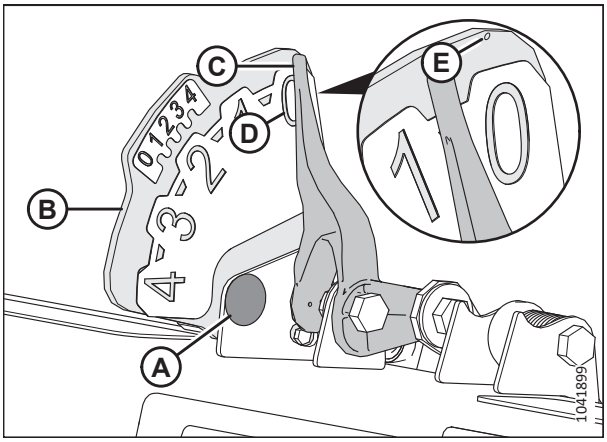


Figure 3.462: Float Indicator

8. Go to the FIELD page on the combine monitor, and then press the diagnostics icon. The MISCELLANEOUS page appears.

9. Select VMM DIAGNOSTIC (A). The VMM DIAGNOSTIC page appears.

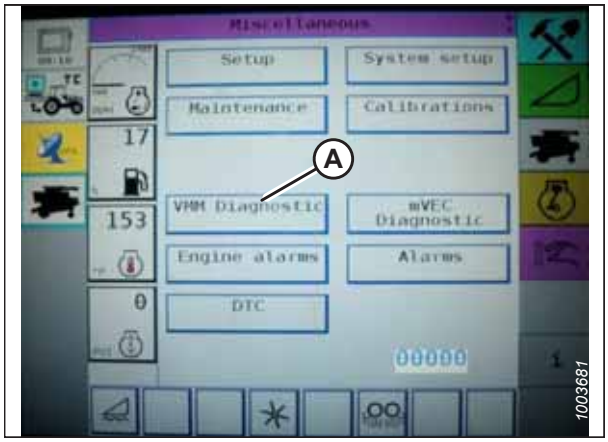


Figure 3.463: Challenger® Combine Display

10. Go to ANALOG IN tab (A), and then select VMM MODULE 3 by selecting the text box below the four tabs. The voltage from the AHHC sensor is now displayed on the page as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. The readings may be slightly different.

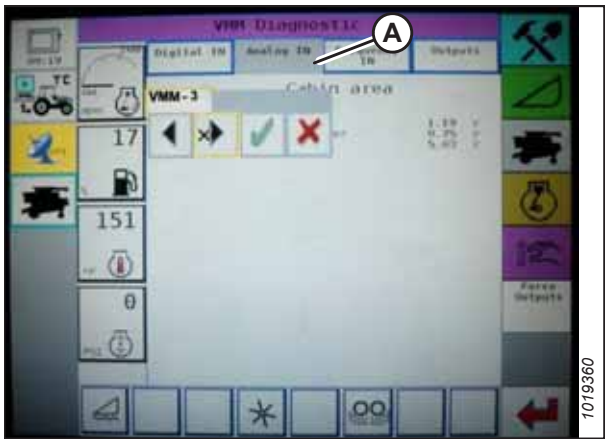


Figure 3.464: Challenger® Combine Display

11. Fully lower the combine feeder house (the float module should be fully separated from the header).

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to fully lower the feeder house.

12. Read the voltage.

13. Raise the header 254–356 mm (10–14 in.) above the ground, and unlock the float.

14. Read the voltage.

15. If the sensor voltage is not within the lower and upper limits, or if the range between the lower and upper limits is insufficient, adjust the voltage limits. For instructions, refer to *3.10.3 Manually Checking Voltage Limits, page 266*.

Figure 3.465: Challenger® Combine Display

Engaging Auto Header Height Control – Challenger® and Massey Ferguson®

The auto header height control (AHHC) system must be engaged before its features can be configured.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

The following system components are required in order for the AHHC to work:

- Main module (PCB board) and header driver module (PCB board) mounted in the card box in the fuse panel module (FP)
- Multifunction control handle operator inputs
- Operator inputs mounted in the control console module (CC) panel
- The electrohydraulic header lift control valve

To engage the AHHC, follow these steps:

1. Scroll through the header control options on the combine display using the header control switch until AHHC icon (A) is displayed in the first message box. The AHHC will adjust the header height in relation to the ground according to the height setting and sensitivity setting.

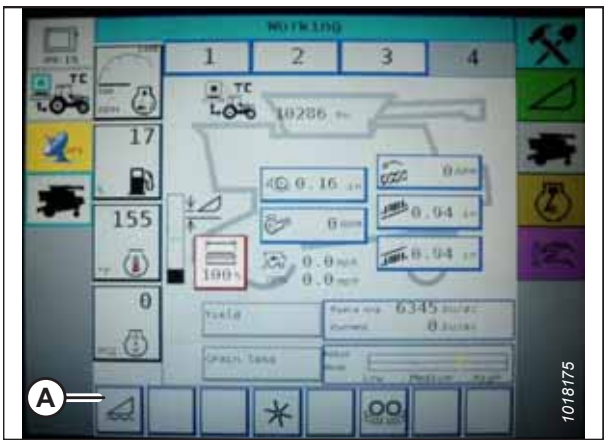


Figure 3.466: Challenger® Combine Display

Calibrating Auto Header Height Control – Challenger® and Massey Ferguson®

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the AHHC calibration. You may need to set the float heavier for the calibration procedure so the header doesn't separate from the float module.

NOTE:

For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Ensure the center-link is set to **D**.
2. On the FIELD page, select DIAGNOSTICS icon (A). The MISCELLANEOUS page appears.

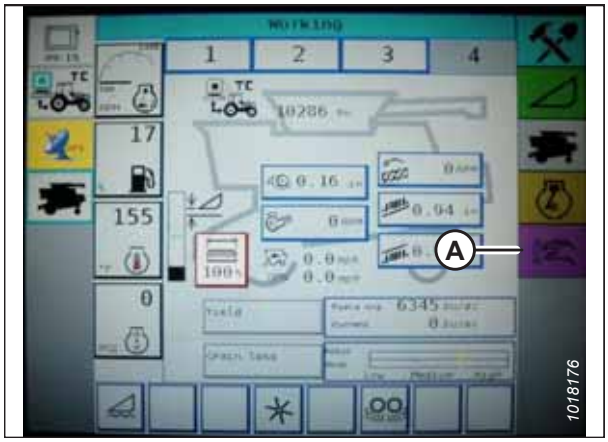


Figure 3.467: Challenger® Combine Display

3. Select CALIBRATIONS (A). The CALIBRATIONS page appears.

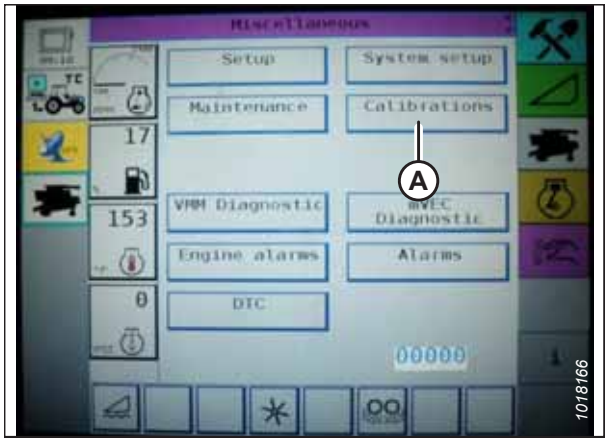


Figure 3.468: Challenger® Combine Display

4. Select HEADER (A). The HEADER CALIBRATION page displays a WARNING.

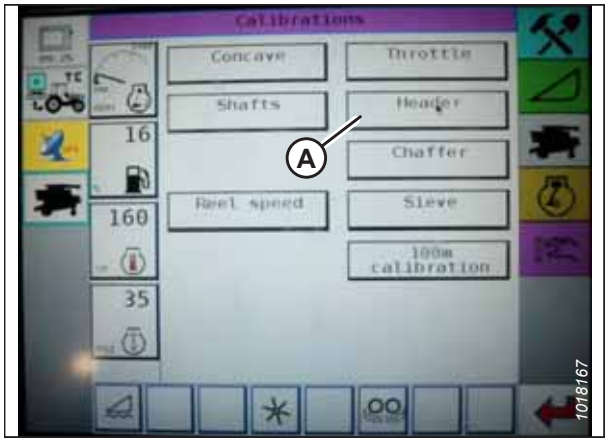


Figure 3.469: Challenger® Combine Display

5. Read the WARNING message, and then select the green check mark button.

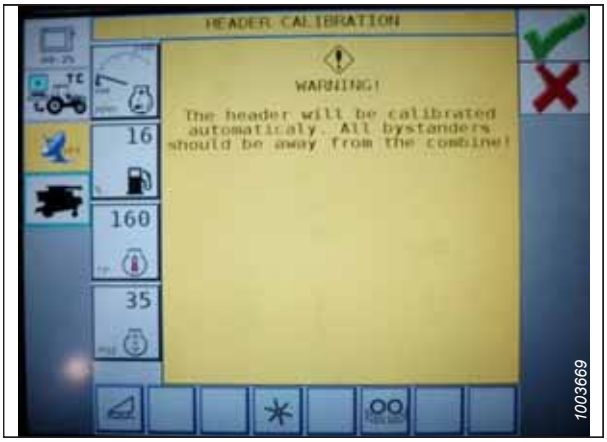


Figure 3.470: Challenger® Combine Display

6. Follow the on-screen prompts to complete calibration.

   NOTE:

   The calibration procedure can be canceled at any time by pressing the CANCEL button on the screen. While the header calibration is running, the calibration can also be canceled by using the UP, DOWN, TILT RIGHT, or TILT LEFT buttons on the control handle.

   NOTE:

   If the combine does not have HEADER TILT installed or if it is inoperable, you may receive warnings during calibration. Press the green check mark if these warnings appear. This will not affect the AHHC calibration.

   NOTE:

   If the float was set heavier to complete the AHHC calibration procedure, adjust to the recommended operating float after the calibration is complete.

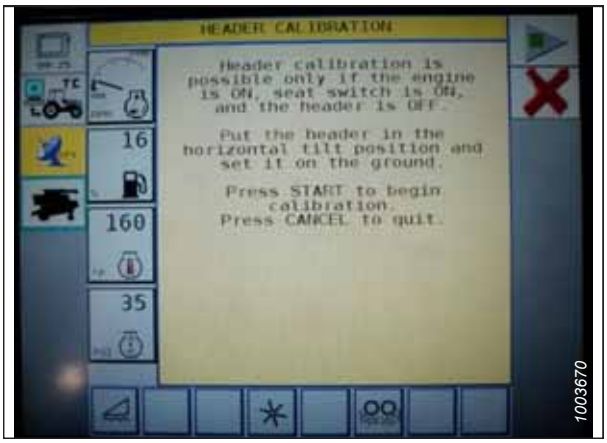


Figure 3.471: Challenger® Combine Display

Adjusting Header Height – Challenger® and Massey Ferguson®

The auto header height control (AHHC) feature allows the operator to set specific header heights.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Once the AHHC is activated, press and release the HEADER LOWER button on the control handle. The AHHC will automatically lower the header to the selected height setting.

You can adjust the selected AHHC height using HEIGHT ADJUSTMENT knob (A) on the control console. Turning the knob clockwise increases the selected height, and turning the knob counterclockwise decreases the selected height.

Figure 3.472: Height Adjustment Knob on the Combine Control Console

Adjusting Header Raise/Lower Rate – Challenger® and Massey Ferguson®

The rate at which the header rises and falls can be configured by accessing the HEADER CONTROL menu on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select HEADER icon (A) on the FIELD page. The HEADER page appears.

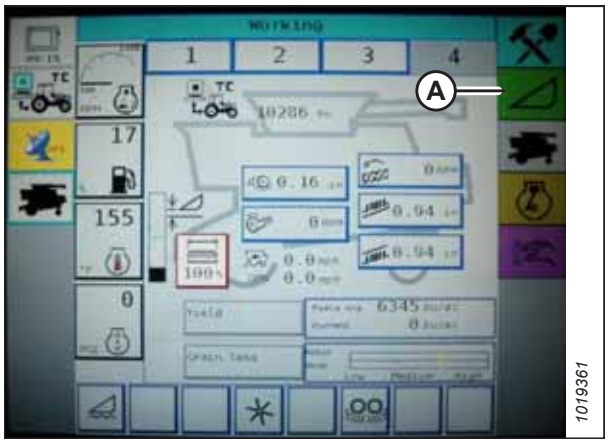


Figure 3.473: Challenger® Combine Display

2. Select HEADER CONTROL (A). The HEADER CONTROL page appears.

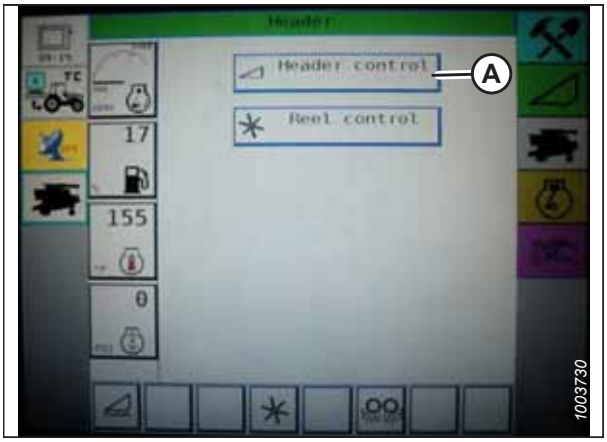


Figure 3.474: Challenger® Combine Display

3. Go to the TABLE SETTINGS tab.
4. Select the up arrow on MAX UP PWM to increase the percentage number and increase the raise speed. Select the down arrow on MAX UP PWM to decrease the percentage number and decrease the raise speed.
5. Select the up arrow on MAX DOWN PWM to increase the percentage number and increase the lower speed. Select the down arrow on MAX DOWN PWM to decrease the percentage number and decrease the lower speed.

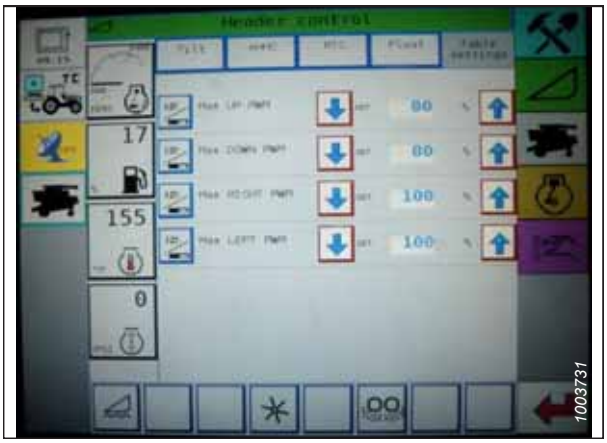


Figure 3.475: Challenger® Combine Display

Setting Auto Header Height Control Sensitivity – Challenger® and Massey Ferguson®

The sensitivity adjustment controls the distance that the cutterbar must travel before the auto header height control (AHHC) raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in the ground height cause the AHHC to move the feeder house. When the sensitivity is set to minimum, only large changes in the ground height cause the AHHC to move the feeder house.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select the HEADER icon on the FIELD page. The HEADER page appears.

2. Select HEADER CONTROL button (A). The HEADER CONTROL page appears. You can adjust the sensitivity on this page by using the up and down arrows.

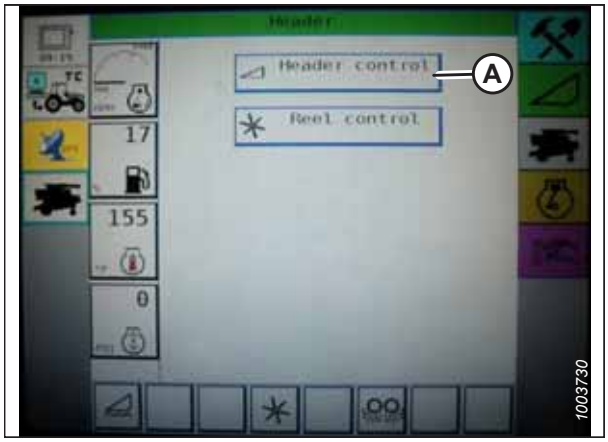


Figure 3.476: Challenger® Combine Display

3. Adjust the sensitivity to the maximum setting.
4. Activate the AHHC, and press the HEADER LOWER button on the control handle.
5. Decrease the sensitivity until the feeder house remains steady and does not bounce up and down.

NOTE:

This is the maximum sensitivity and it is only an initial setting. The final setting must be made in the field, as the system reaction will vary with changing surfaces and operating conditions.

NOTE:

If maximum sensitivity is not needed, a less sensitive setting will reduce the frequency of header height corrections and component wear. Partially opening the accumulator valve will cushion the action of the header lift cylinders and reduce header hunting.

Figure 3.477: Challenger® Combine Display

3.10.9 CLAAS 500 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Calibrating Auto Header Height Control – CLAAS 500 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the AHHC, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Ensure that the center-link is set to **D**.

2. **Headers from model year 2023 and newer:** Locate feeder house fore/aft tilt sensor (B) on the right side of the combine's feeder house, near header safety prop (A).

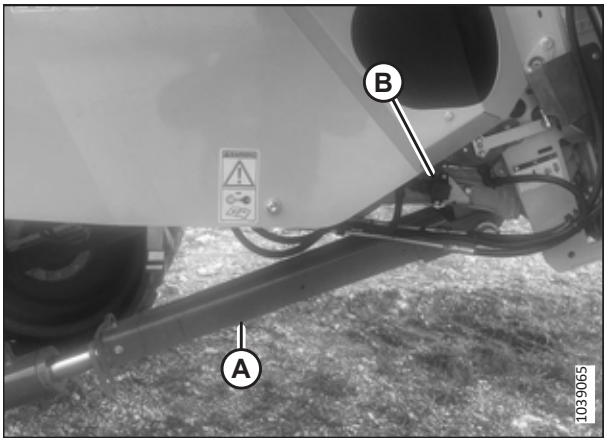


Figure 3.478: Sensor Link Limiter Location – CLAAS Transition Frame

3. **Headers from model year 2023 and newer:** Ensure that the sensor link limiter is in hole (C) as shown. If it is not, undo the nut holding the sensor link limiter, move the link limiter from hole (M) to hole (C), and reinstall the nut.

   IMPORTANT:

   Do **NOT** attempt to calibrate the header when the link limiter is in position (M).

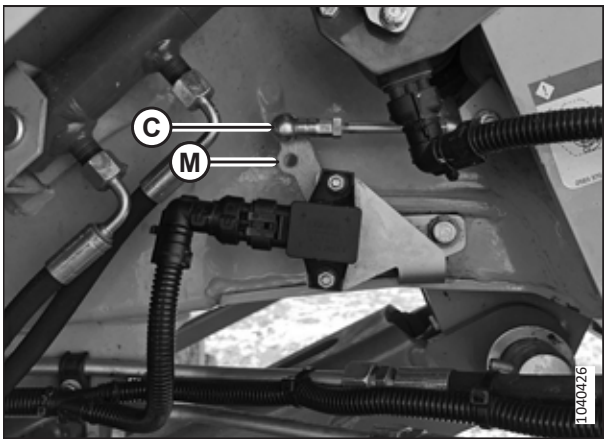


Figure 3.479: Sensor Arm Linkage

4. From the MAIN page, select FRONT ATTACHMENT (A).

Figure 3.480: CEBIS Main Page

5. Press < key (A) or > key (B) to select AUTO HEADER, and press OK key (C). The E5 page indicates whether the automatic header height is on or off.

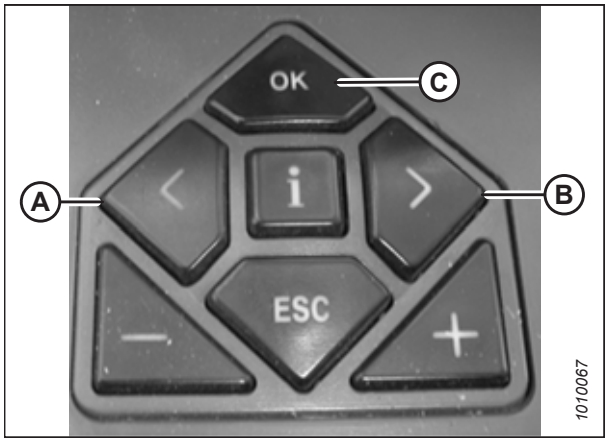


Figure 3.481: CLAAS Combine Controls

6. Press **–** key (A) or **+** key (B) to turn the AHHC on, and press OK key (C).
7. Engage the threshing mechanism and the header.

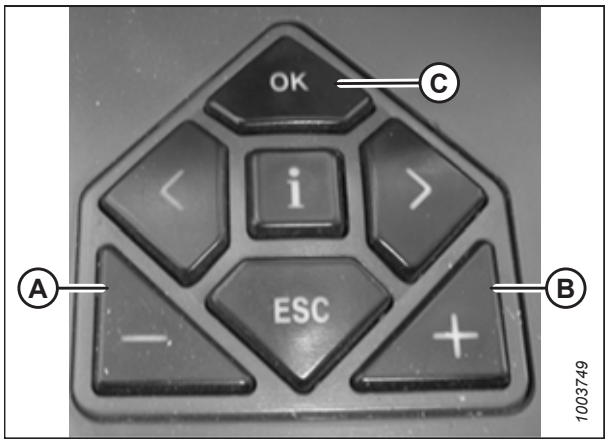


Figure 3.482: CLAAS Combine Controls

8. Press the < or > key to select CUTT. HEIGHT LIMITS, and press the combine control's OK key.
9. Follow the procedure displayed on the screen to program the upper and lower limits of the header into the CEBIS.

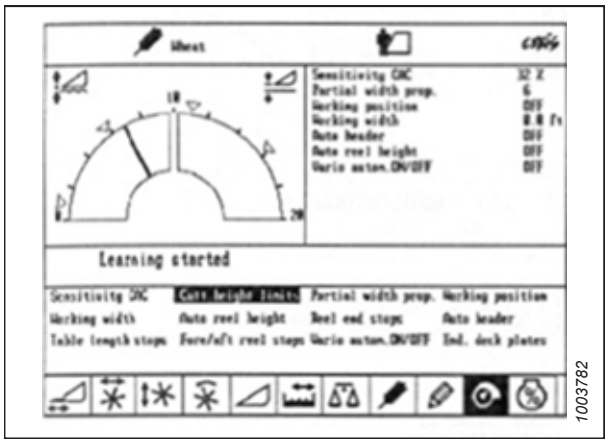


Figure 3.483: CLAAS Combine Display

10. Press the **<** or **>** key to select SENSITIVITY CAC, and press the combine control's OK key.

    NOTE:

    Setting the sensitivity of the AHHC system affects the reaction speed of the AHHC on the header.

11. Press the **–** key or the **+** key to change the reaction speed setting, and press the combine control's OK key.

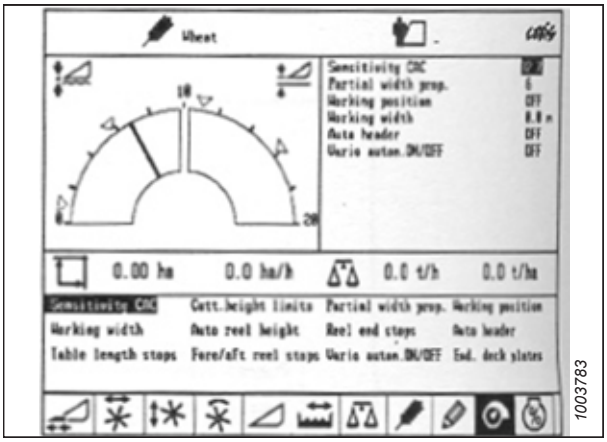


Figure 3.484: CLAAS Combine Display

12. Check the sensitivity setting by using line (A) or value (B).

    NOTE:

    The setting can be adjusted from 0–100%. When the sensitivity is 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When the sensitivity is 100%, the signals from the sensing bands have the maximum effect on the automatic cutting height adjustment. Adjust the sensitivity from 50%.

13. If the float was adjusted for the calibration procedure, check and adjust the float. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

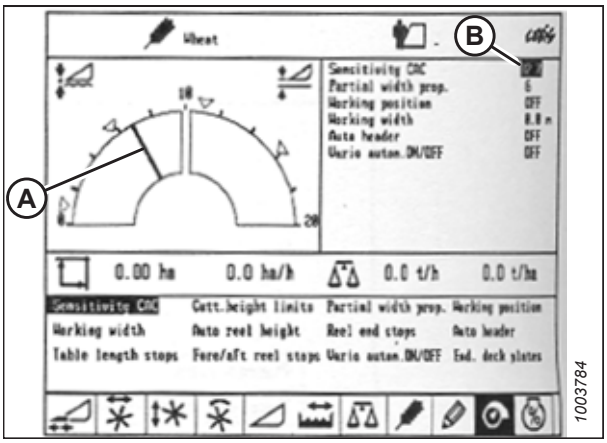


Figure 3.485: CLAAS Combine Display

14. **Headers from model year 2023 and newer:** Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown. Reinstall the nut.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

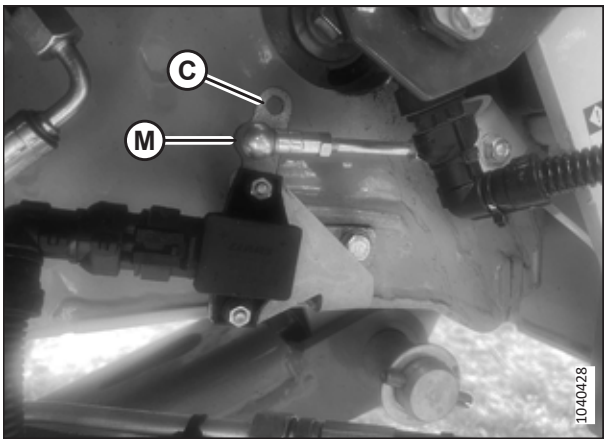


Figure 3.486: Sensor Link Limiter – CLAAS Transition Frame

Cutting Height – CLAAS 500 Series

Cutting heights can be programmed into the preset cutting height and auto contour systems. Use the preset cutting height system for cutting heights above 150 mm (6 in.), and use the auto contour system for cutting heights below 150 mm (6 in.).

Setting Preset Cutting Height – CLAAS 500 Series

Once the auto header height control (AHHC) system has been configured and activated, the preset cutting height can be configured.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Activate the machine enable switch.
3. Engage the threshing mechanism.
4. Engage the header.
5. Briefly press button (A) in order to activate the auto contour system, or briefly press button (B) in order to activate the preset cutting height system.

   NOTE:

   Button (A) is used only with AHHC function. Button (B) is used only with the return to cut function.

Figure 3.487: Control Handle Buttons

6. Press < key (C) or > key (D) to select the CUTTING HEIGHT page, and press OK key (E).
7. Press – key (A) or + key (B) to set the desired cutting height. An arrow indicates the selected cutting height on the scale.

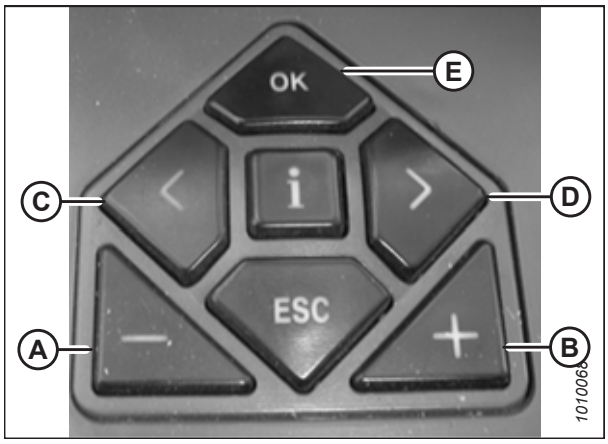


Figure 3.488: CLAAS Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7, page 310* for the set point.

Figure 3.489: Control Handle Buttons

Setting Cutting Height Manually – CLAAS 500 Series

Once the auto header height control (AHHC) system has been configured and activated, the preset cutting height can be configured.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press button (A) to raise the header, or button (B) to lower the header to the desired cutting height.
2. Press and hold button (C) for 3 seconds to program the cutting height (an alarm will sound after the new setting has been stored).
3. Program a second set point, if desired, by using button (A) to raise the header, or button (B) to lower the header to the desired cutting height, and briefly press button (C) to program the second set point (an alarm will sound after the new setting has been stored).

   NOTE:

   For above-the-ground cutting, repeat Step *1, page 311*, then use **button (D)** instead of button (C) while repeating Step *2, page 311*.

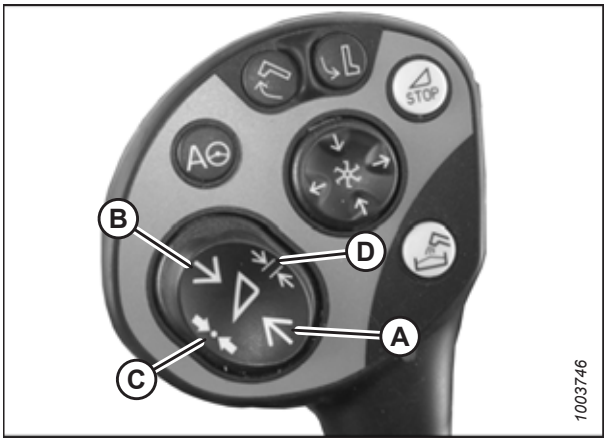


Figure 3.490: Control Handle Buttons

Setting Auto Header Height Control Sensitivity – CLAAS 500 Series

The sensitivity adjustment controls the distance the cutterbar must travel before the auto header height control (AHHC) moves the feeder house. When the sensitivity is set to maximum, only small changes in the ground height cause the system

to move the feeder house. When the sensitivity is set to minimum, only large changes in the ground height cause the system to move the feeder house.

NOTE:

Set the upper and lower limits of the header before adjusting the sensitivity of the AHHC system. The setting can be adjusted from 0–100%. When the sensitivity is 0%, the signals from the sensing bands have no effect on adjusting the automatic cutting height. When the sensitivity is adjusted to 100%, the signals from the sensing bands have a maximum effect on adjusting the automatic cutting height. Start adjusting the sensitivity from 50%.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press **<** key (C) or **>** key (D) to select SENSITIVITY CAC, and press OK key (E).
2. Press **–** key (A) or **+** (B) key to change the reaction speed setting, and press OK key (E).

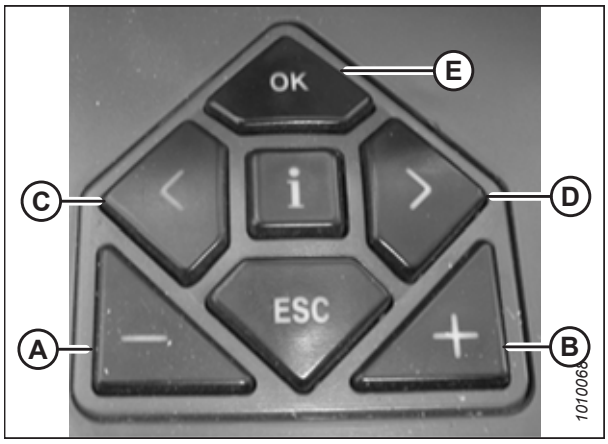


Figure 3.491: CLAAS Combine Controls

3. Check the sensitivity setting by using line (A) or value (B).

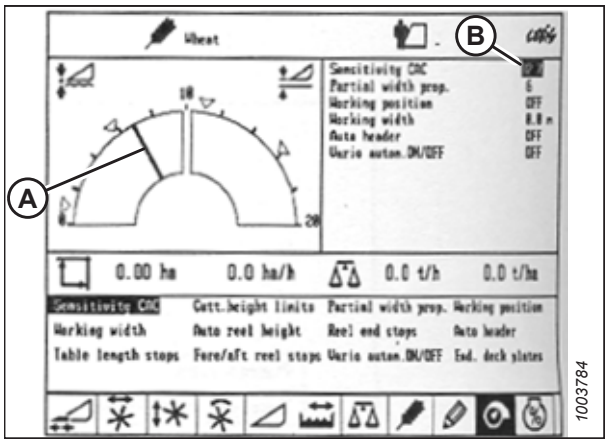


Figure 3.492: CLAAS Combine Display

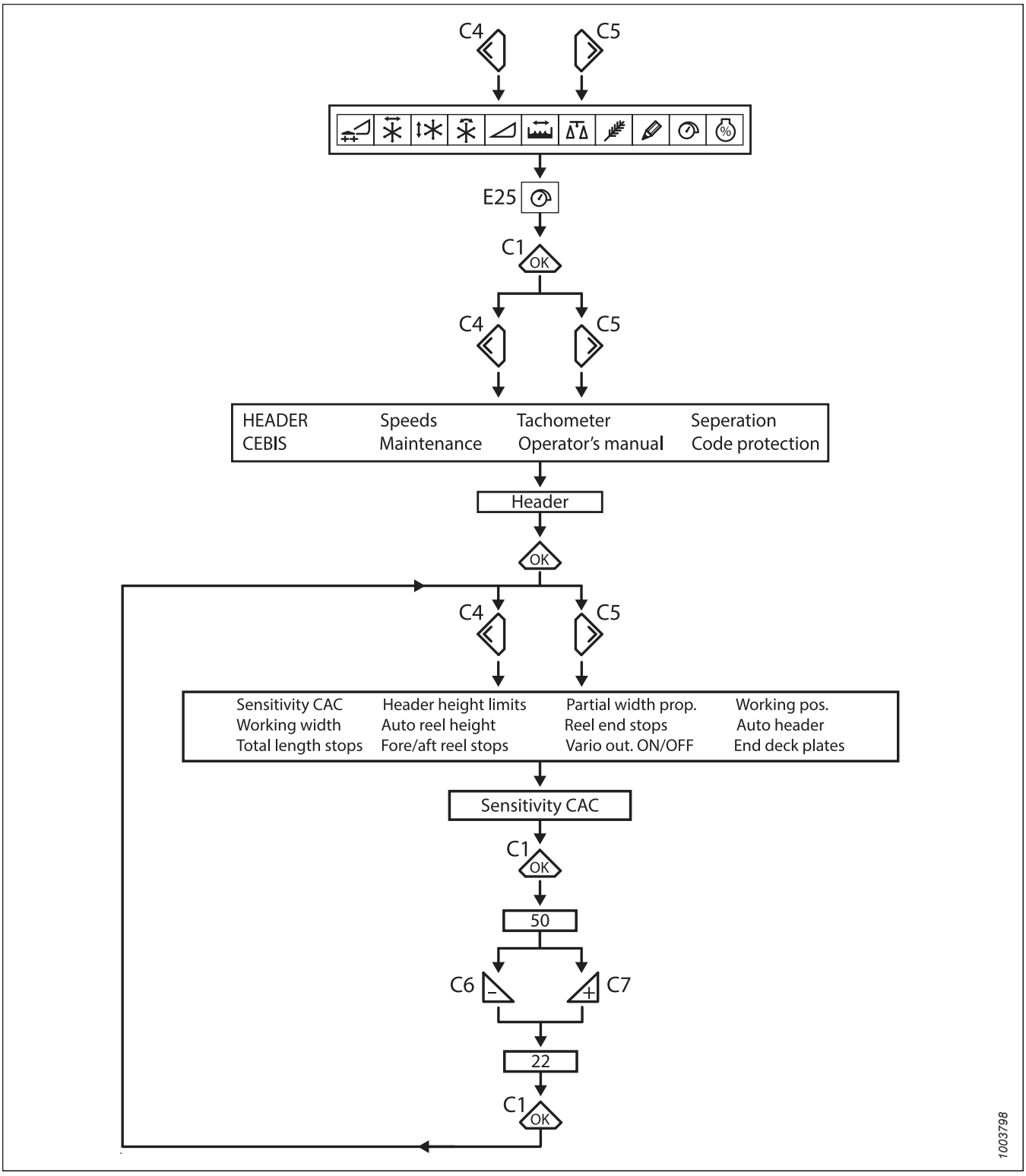


Figure 3.493: Flow Chart for Setting the Sensitivity of the Float Optimizer

Adjusting Auto Reel Speed – CLAAS 500 Series

The preset reel speed can be set when the automatic header functions are activated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press the **<** or **>** key to select REEL WINDOW. Window E15 displays the current advance or retard speed of the reel in relation to the ground speed.

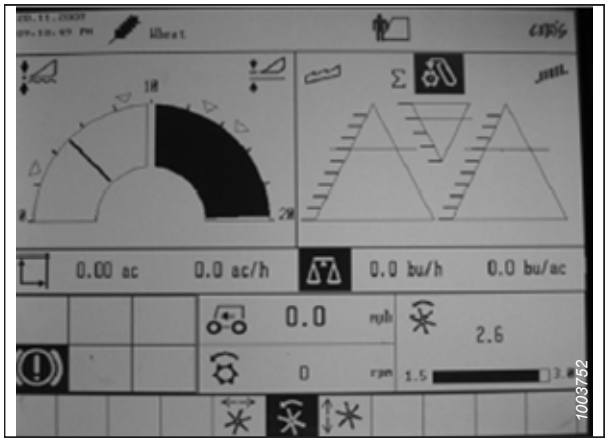


Figure 3.494: CLAAS Combine Display

2. Press OK key (C) to open the REEL SPEED window.
3. Press **–** key (A) or **+** key (B) to set the reel speed in relation to the current ground speed. Window E15 displays the selected reel speed.

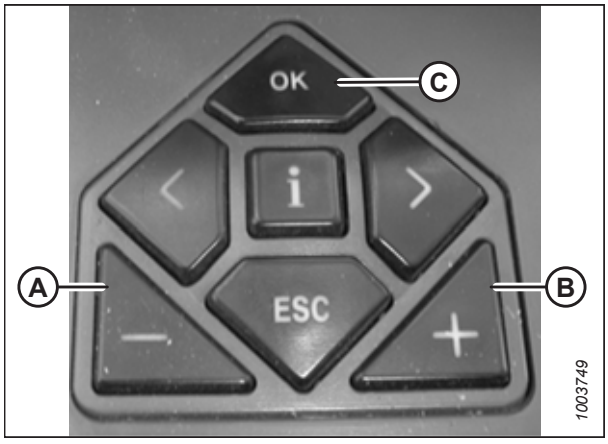


Figure 3.495: CLAAS Combine Controls

4. Adjust the reel speed by rotating the rotary switch to reel position (A).

5. Press the **–** or **+** key to set the reel speed.

Figure 3.496: CLAAS Combine Rotary Switch

6. Press and hold button (A) or button (B) for 3 seconds to store the setting (an alarm sounds when the new setting has been stored).

   NOTE:

   Whenever button (A) or button (B) is pressed for 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 3.497: CLAAS Control Handle Buttons

7. Press the **<** or **>** key to select the REEL WINDOW. Window E15 displays the current advance or retard speed of the reel in relation to the ground speed.

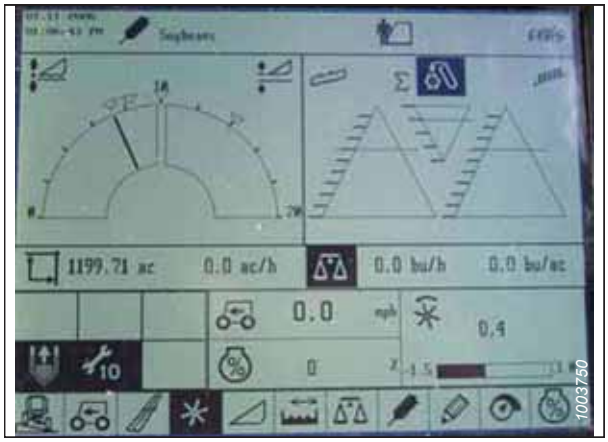


Figure 3.498: CLAAS Combine Display

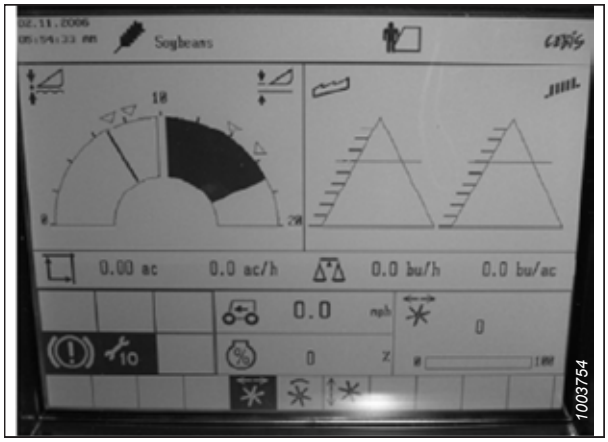


Figure 3.499: CLAAS Combine Display

8. Press OK key (E), and use < key (C) or > key (D) to select the REEL FORE AND AFT window.
9. Use **–** key (A) or **+** key (B) to set the reel fore-aft position.

   NOTE:

   Control handle button (A) or button (B) (as shown in Figure *3.501, page 317*) can also be used to set the reel fore-aft position.

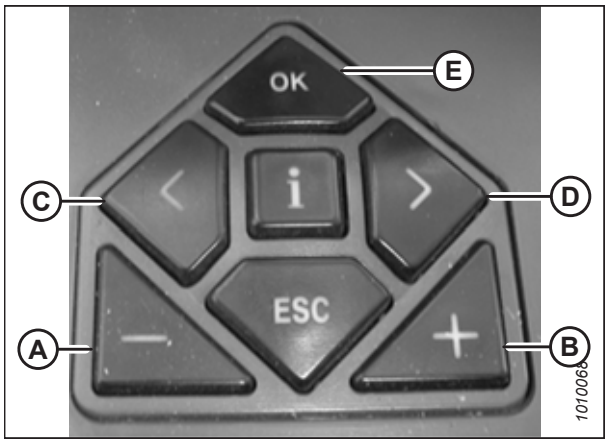


Figure 3.500: CLAAS Combine Controls

10. Press and hold button (A) or button (B) for 3 seconds to store the setting into the CEBIS (an alarm sounds when the new setting has been stored).

    NOTE:

    Whenever button (A) or button (B) is pressed for 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 3.501: CLAAS Control Handle Buttons

3.10.10 CLAAS 600 and 700 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Calibrating Auto Header Height Control – CLAAS 600 and 700 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the AHHC calibration. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For best performance of the AHHC, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Ensure that the center-link is set to **D**.
2. Ensure that the header float is unlocked.
3. Place the wings in the locked position.

4. **Headers from model year 2023 and newer:** Locate feeder house fore/aft tilt sensor (B) on the right side of the combine's feeder house, near header safety prop (A).

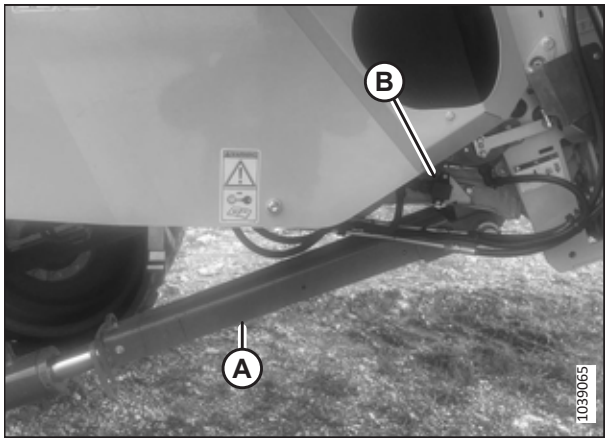


Figure 3.502: Sensor Link Limiter Location – CLAAS Transition Frame

5. **Headers from model year 2023 and newer:** Ensure that the sensor link limiter is in hole (C) as shown. If it is not, undo the nut holding the sensor link limiter, move the link limiter from hole (M) to hole (C), and reinstall the nut.

   IMPORTANT:

   Do **NOT** attempt to calibrate the header when the link limiter is in position (M).

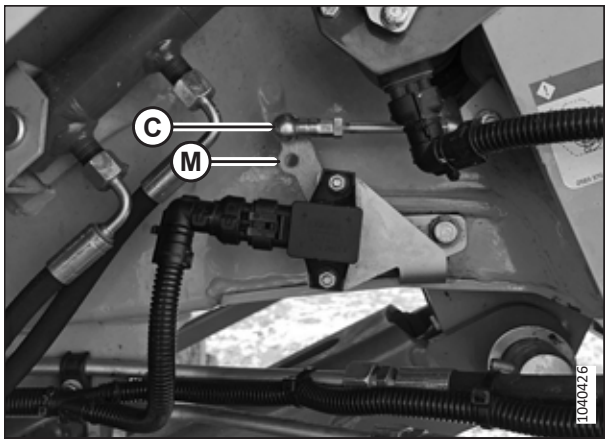


Figure 3.503: Sensor Arm Linkage

6. From the MAIN page, select FRONT ATTACHMENT (A).

Figure 3.504: CEBIS Main Page

7. Use control knob (A) to highlight AUTO CONTOUR icon (B). Press control knob (A) to select it.

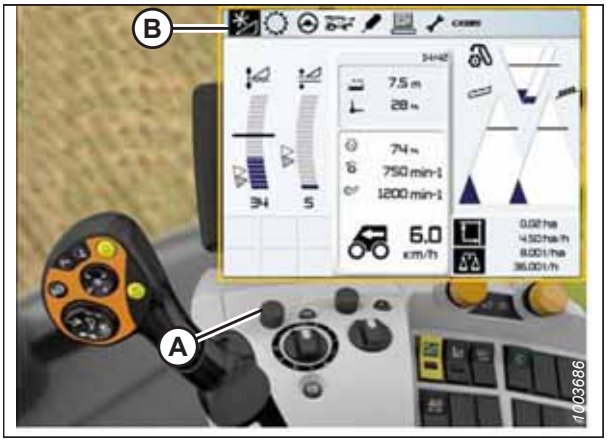


Figure 3.505: CLAAS Combine Display, Console, and Control Handle

8. Use control knob (A) to highlight the icon resembling a header with up and down arrows (not shown). Press control knob (A) to select it. Highlighted header icon (B) will appear on the screen.

Figure 3.506: CLAAS Combine Display, Console, and Control Handle

9. Use control knob (A) to highlight header icon (B) with the up and down arrows. Press control knob (A) to select it.

Figure 3.507: CLAAS Combine Display, Console, and Control Handle

10. Use control knob (A) to highlight screwdriver icon (B).
11. Engage the combine separator and feeder house.
12. Press control knob (A). A progress bar appears.

Figure 3.508: CLAAS Combine Display, Console, and Control Handle

13. Fully raise the feeder house. Progress bar (A) advances to 25%.
14. Fully lower the feeder house. Progress bar (A) advances to 50%.
15. Fully raise the feeder house. Progress bar (A) advances to 75%.
16. Fully lower the feeder house. Progress bar (A) advances to 100%.

Figure 3.509: CLAAS Combine Display, Console, and Control Handle

17. Ensure that progress bar (A) is at 100%. The calibration procedure is now complete.

    NOTE:

    If the voltage is not within the range of 0.7–4.3 V at any time throughout the calibration process, the monitor will indicate that the learning procedure has not concluded.

18. If the float was adjusted for the calibration procedure, check and adjust the float. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

Figure 3.510: CLAAS Combine Display, Console, and Control Handle

19. **Headers from model year 2023 and newer:** Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown. Reinstall the nut.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

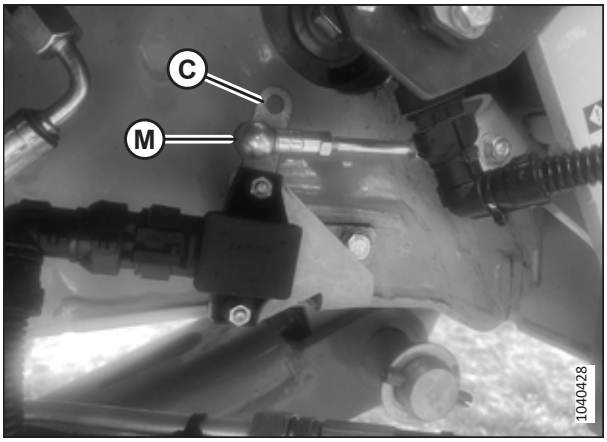


Figure 3.511: Sensor Link Limiter – CLAAS Transition Frame

Setting Cutting Height – CLAAS 600 and 700 Series

The Operator can configure two different cutting height presets. The height presets can be selected using the combine's control handle.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Lower the header to the desired cutting height or to the ground pressure setting. The float indicator box should be set to 1.5.
2. Hold the left side of header raise and lower switch (A) until you hear a ping sound.

Figure 3.512: CLAAS Combine Display, Console, and Control Handle

Setting Auto Header Height Control Sensitivity – CLAAS 600 and 700 Series

The sensitivity adjustment controls the distance the cutterbar must travel before the auto header height control (AHHC) moves the feeder house. When the sensitivity is set to maximum, only small changes in the ground height cause the feeder

house to move. When the sensitivity is set to minimum, only large changes in the ground height cause the feeder house to move.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Use control knob (A) to highlight HEADER/REEL icon (B). Press control knob (A) to select it. The HEADER/REEL dialog box opens.
2. Select the HEADER icon.

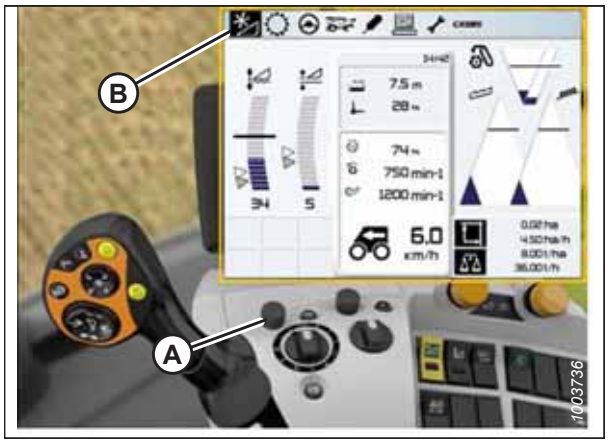


Figure 3.513: CLAAS Combine Display, Console, and Control Handle

3. Select FRONT ATTACHMENT PARAMETER SETTINGS icon (A). A list of settings appears.
4. Select SENSITIVITY CAC (B) from the list.

Figure 3.514: CLAAS Combine Display, Console, and Control Handle

5. Select SENSITIVITY CAC icon (A).

   NOTE:

   To set the sensitivity, change CUTTING HEIGHT ADJUSTMENT (B) from the 0 default. The settings from 1–50 provide a faster response, whereas the settings from -1 to -50 provide a slower response. For the best results, make adjustments in increments of 5.

6. If the reaction time between the header and the float module is too slow while cutting on the ground, increase the CUTTING HEIGHT ADJUSTMENT setting. If the reaction time between the header and the float module is too fast, decrease the CUTTING HEIGHT ADJUSTMENT setting.

7. If the header is lowered too slowly, increase the sensitivity. If the header hits the ground too hard or is lowered too quickly, decrease the sensitivity.

Figure 3.515: CLAAS Combine Display

Adjusting Auto Reel Speed – CLAAS 600 and 700 Series

You can set the preset reel speed after activating the automatic header functions.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Use control knob (A) to highlight HEADER/REEL icon (B). Press control knob (A) to select it. The HEADER/REEL dialog box appears.

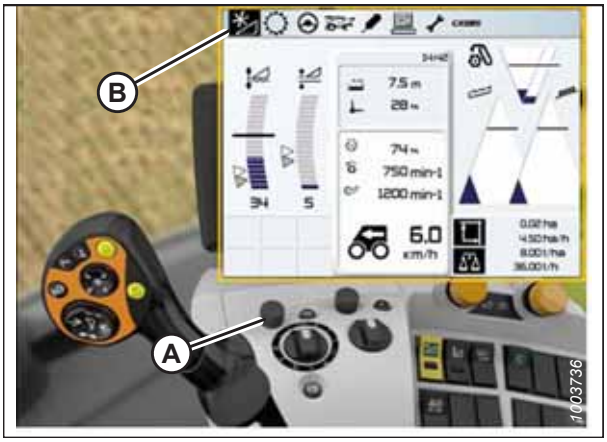


Figure 3.516: CLAAS Combine Display, Console, and Control Handle

2. Use control knob (A) to select REEL SPEED (B), and adjust the reel speed (if you are **NOT** using Auto Reel Speed). A graph appears in the dialog box.

Figure 3.517: CLAAS Combine Display, Console, and Control Handle

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED dialog box (if you are using Auto Reel Speed). The ACTUAL VALUE dialog box indicates the auto reel speed.

Figure 3.518: CLAAS Combine Display, Console, and Control Handle

4. Use control knob (A) to raise or lower the reel speed.

   NOTE:

   This option is only available with the engine at full throttle.

Figure 3.519: CLAAS Combine Display, Console, and Control Handle

Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 600 and 700 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

Calibrating the reel fore-aft sensor is only possible if the optional CLAAS integration kit (B7231) is installed.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) off the ground. Keep the engine running.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

3. Use control knob (A) to highlight FRONT ATTACHMENT icon (B). Press control knob (A) to select it.

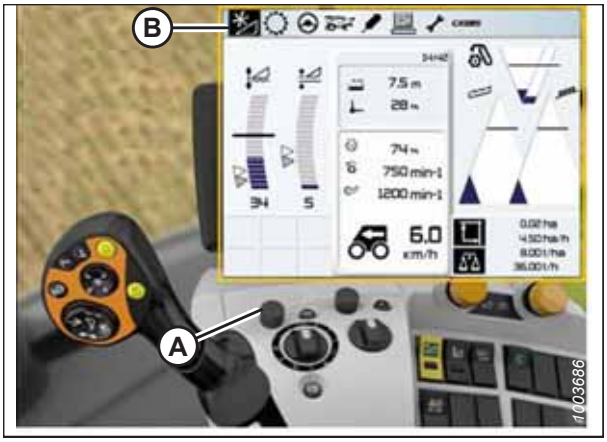


Figure 3.520: CLAAS Combine Display, Console, and Control Handle

4. Use control knob (A) to highlight REEL icon (B). Press control knob (A) to select it.

Figure 3.521: CLAAS Combine Display and Console

5. Highlight REEL HEIGHT icon (A). Press the control knob to select it.
6. Select LEARNING END STOPS (B) from the list.

Figure 3.522: CLAAS Combine Display and Console

7. Use control knob (A) to highlight screwdriver icon (B).
8. Press the control knob.

Figure 3.523: CLAAS Combine Display, Console, and Control Handle

9. Progress bar chart (A) appears on the screen.

10. Follow the prompts on the screen to raise and lower the reel.

Figure 3.524: CLAAS Combine Display, Console, and Control Handle

11. Ensure that progress bar chart (A) displays 100%. When the progress bar chart displays 100%, the calibration procedure is complete.

Figure 3.525: CLAAS Combine Display, Console, and Control Handle

12. **If equipped with CLAAS integration kit (MD #B7231):** Calibrate the reel fore-aft sensor by selecting REEL HORIZONTAL POSITION (A), then LEARNING END STOPS (B).

13. Repeat Step *7, page 326* to Step *11, page 327*.

Figure 3.526: CLAAS Combine Display and Console

Adjusting Auto Reel Height – CLAAS 600 and 700 Series

The auto reel height setting can be configured by accessing the REEL menu on the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Use HOTKEY rotary dial (A) to select REEL icon (B).

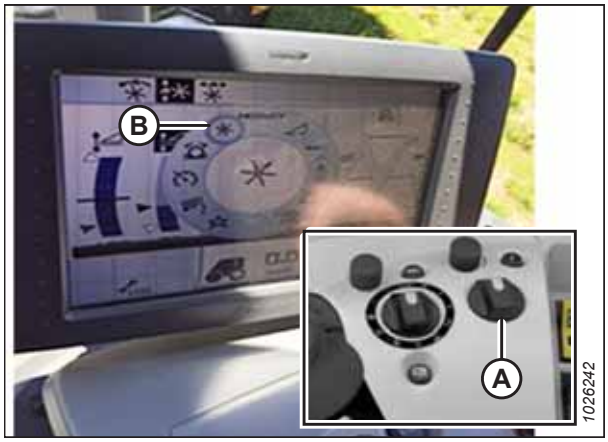


Figure 3.527: CLAAS Combine Display and Console

2. Use control knob (A) to select AUTO REEL HEIGHT icon (B) at the top of the page.

   NOTE:

   AUTO REEL HEIGHT icon (C) at the center of the page should be highlighted black. If it is not black, either the end stops have not been set or the auto header height control (AHHC) is not active. For instructions, refer to *Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 600 and 700 Series, page 325*.

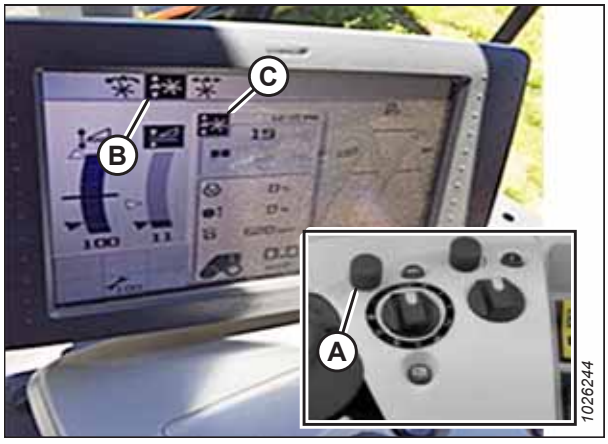


Figure 3.528: CLAAS Combine Display and Console

3. Adjust the auto reel height position for the current AHHC position using outer scroll knob (A). To lower the preset reel position, turn the scroll knob counterclockwise; to raise the preset reel position, turn the scroll knob clockwise. The display will update current setting (B).

   NOTE:

   If the AUTO REEL HEIGHT icon in the center of the page is not black, an AHHC position is not currently active.

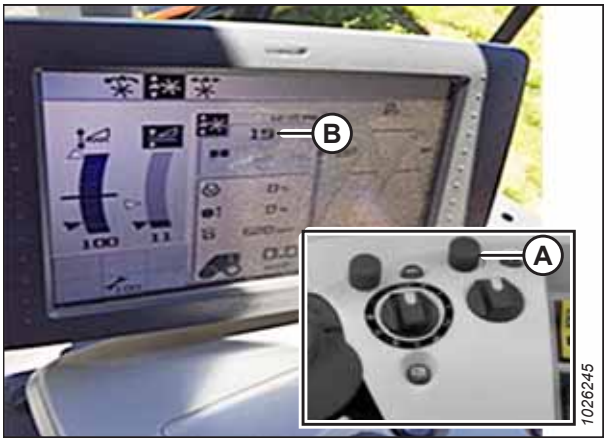


Figure 3.529: CLAAS Combine Display and Console

3.10.11 CLAAS 5000, 6000, 7000, and 8000 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Header Settings Quick Reference – CLAAS 5000, 6000, 7000, and 8000 Series

The recommended auto header height control (AHHC) settings for an FD2 Series FlexDraper® header operating with a CLAAS 5000, 6000, 7000, or 8000 Series combine are provided.

Table 3.38 Header Settings – CLAAS 5000, 6000, 7000, and 8000 Series

Setup Parameter	Suggested Setting
Front attachment type	Flex cutterbar product by other manufacturer
Working width	Set header width
Drop rate with auto contour	Adjust to preference
Reel speed adjust	Adjust to preference

Setting up Header – CLAAS 5000, 6000, 7000, and 8000 Series

To set up a header to work with the auto header height control (AHHC) system, you will need to access the FRONT ATTACHMENT menu using the CEBIS terminal.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.530: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 3.531: Front Attachment Page

3. From the FRONT ATTACHMENT PARAMETERS page, select FRONT ATTACHMENT TYPE (A).
4. From the drop down list, select FLEX CUTTERBAR PRODUCT BY OTHER MANUFACTURER (B).

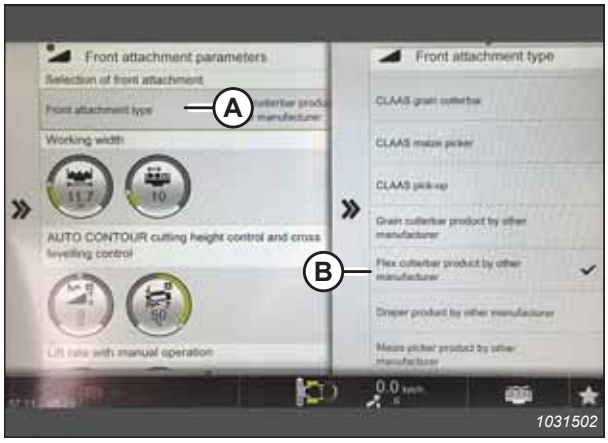


Figure 3.532: Attachment Parameters Page

5. From the FRONT ATTACHMENT PARAMETERS page, select WORKING WIDTH (A).
6. Set the header width by sliding adjuster arrow (B) up or down.
7. Select check mark (C) to save the settings.

Figure 3.533: Attachment Parameters Page

Calibrating Auto Header Height Control – CLAAS 5000, 6000, 7000, and 8000 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly. Newer CLAAS transition frames are equipped with a sensor link limiter, which must be configured before the AHHC system can be calibrated.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. **Headers from model year 2023 and newer:** Locate feeder house fore/aft tilt sensor (B) on the right side of the combine's feeder house, near header safety prop (A).

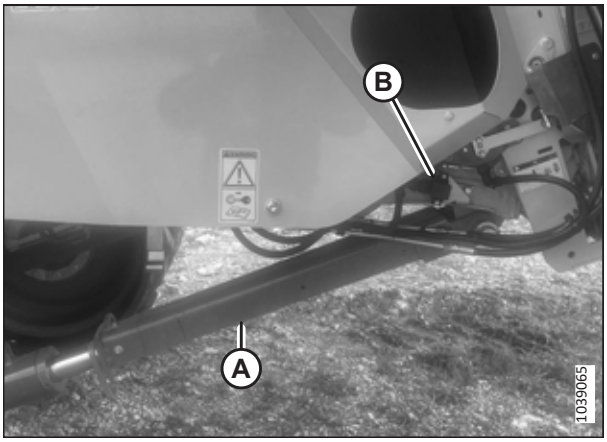


Figure 3.534: Sensor Link Limiter Location – CLAAS Transition Frame

2. **Headers from model year 2023 and newer:** Ensure that the sensor link limiter is in hole (C) as shown. If it is not, undo the nut holding the sensor link limiter, move the link limiter from hole (M) to hole (C), and reinstall the nut.

   IMPORTANT:

   Do **NOT** attempt to calibrate the header when the link limiter is in position (M).

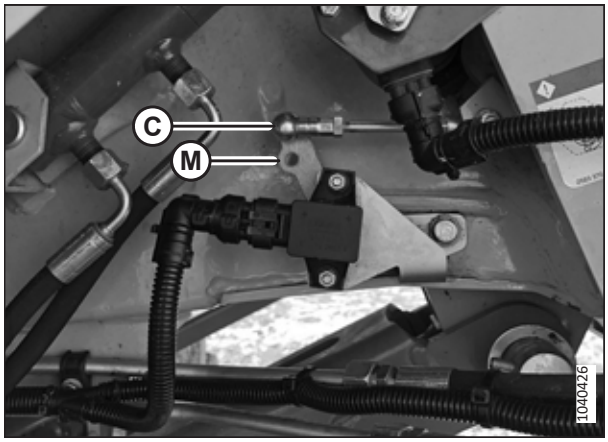


Figure 3.535: Sensor Arm Linkage

3. From the MAIN page, select FRONT ATTACHMENT (A).

Figure 3.536: CEBIS Main Page

4. Select LEARNING PROCEDURES (A) from the menu.
5. Select FRONT ATTACHMENT HEIGHT (B).

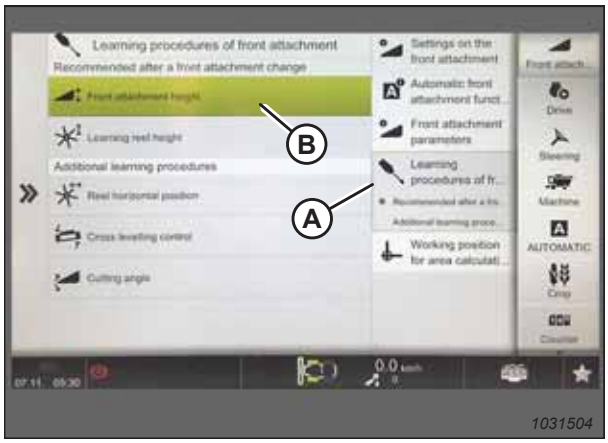


Figure 3.537: Learning Procedures Page

6. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

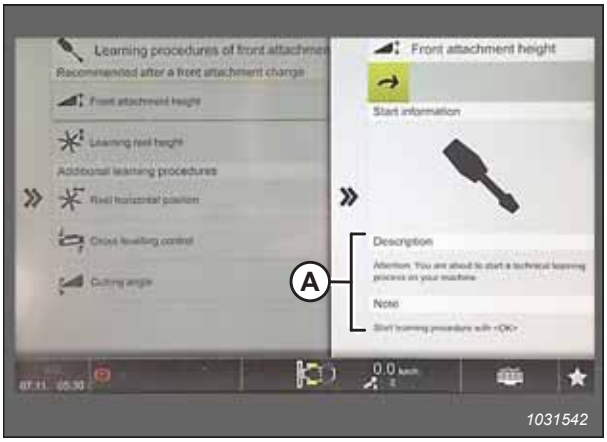


Figure 3.538: Front Attachment Height Page

7. When prompted, press OK button (A) to start the learning procedure.

Figure 3.539: Operator Controls

8. When prompted, raise the front attachment with button (A) on the multifunction lever.
9. When prompted, lower the front attachment with button (B) on the multifunction lever.
10. Repeat the previous steps as prompted until calibration is complete.

Figure 3.540: Multifunction Lever

11. **Headers from model year 2023 and newer:** Remove the nut securing the sensor link limiter. Move the link limiter to position (M) as shown.

    IMPORTANT:

    Do **NOT** attempt to operate the header when the link is in position (C).

12. Reinstall the nut.

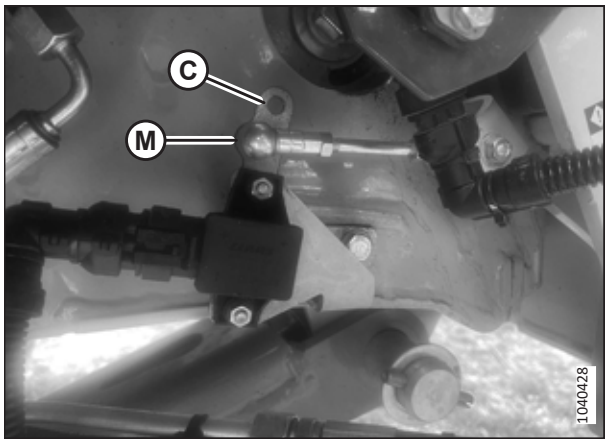


Figure 3.541: Sensor Link Limiter – CLAAS Transition Frame

Setting Cut and Reel Height Preset – CLAAS 5000, 6000, 7000, and 8000 Series

The reel and cut height setting can be stored in the combine. When harvesting, select the setting from the control handle.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Set the desired cutting height with feeder house raise/ lower buttons (A) on the multifunction lever.
2. Set the desired reel position with buttons (B).
3. Press and hold AUTO HEIGHT PRESET button (C) to store the settings.

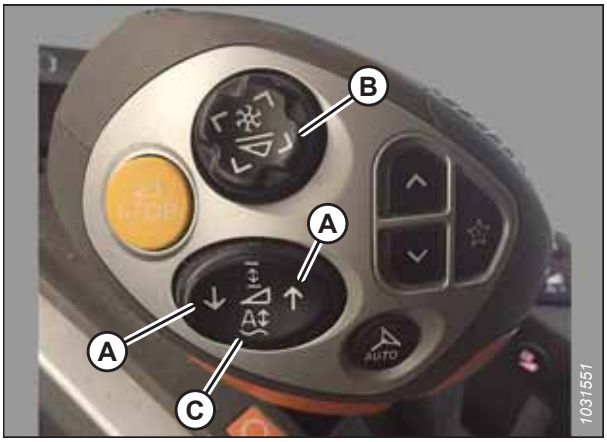


Figure 3.542: Multifunction Lever

NOTE:

Triangle (A) appears on the header height gauge indicating the preset level.

Figure 3.543: CEBIS Main Page

Setting Auto Header Height Control Sensitivity – CLAAS 5000, 6000, 7000, and 8000 Series

The sensitivity adjustment controls the distance the cutterbar must travel before the auto header height control (AHHC) moves the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the system to move the feeder house. When the sensitivity is set to minimum, only large changes in the ground height cause the system to move the feeder house.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.544: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 3.545: Front Attachment Parameters Page

3. Scroll through the list and select DROP RATE WITH AUTO CONTOUR icon (A).
4. Adjust the drop rate by sliding adjuster arrow (B) up or down.
5. Select check mark (C) to confirm the settings.

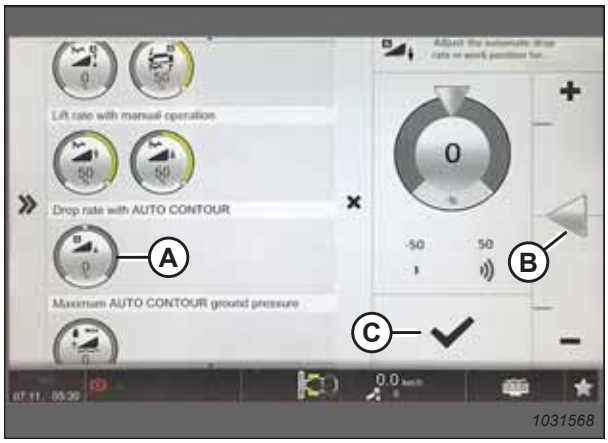


Figure 3.546: Drop Rate with Auto Contour Page

Adjusting Auto Reel Speed – CLAAS 5000, 6000, 7000, and 8000 Series

The preset reel speed can be set after activating the automatic header functions.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.547: CEBIS Main Page

2. From the list, select SETTINGS ON FRONT ATTACHMENT (A).
3. Select REEL TARGET VALUES (B).
4. Select REEL SPEED ADJUST icon (C).

Figure 3.548: Settings on Front Attachment Page

5. Adjust the reel speed target value by sliding adjuster arrow (A) up or down.
6. Select check mark (B) to save the setting.

Figure 3.549: Reel Speed Target Value Page

Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – CLAAS 5000, 6000, 7000, and 8000 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the reel position feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Calibrating the reel fore-aft sensor is only possible if the optional CLAAS integration kit (MD #B7231) is installed.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. **CLAAS 8800** combines need to adjust the limiter link before and after the calibration process.

   NOTE:

   CLAAS 8800 combines require a limiter link (MD #357776) that will modify the sensor range to prevent contact between the center-link tilt cylinder bracket and the dust shroud on the feeder house.

2. Position the header 254–356 mm (10–14 in.) off the ground.

   NOTE:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

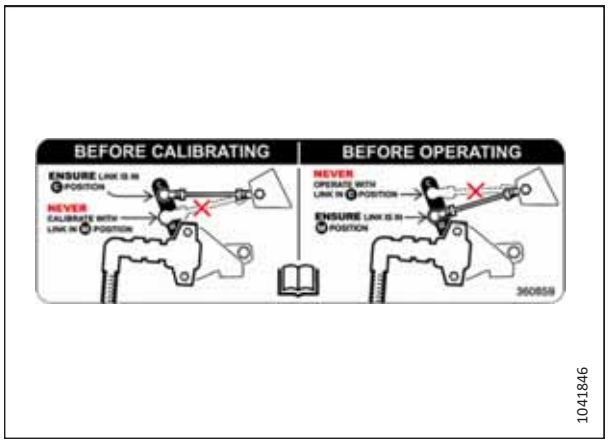


Figure 3.550: CLAAS Limiter Link (MD #357776)

3. From the main page, select FRONT ATTACHMENT (A).

Figure 3.551: CEBIS Main Page

4. Select LEARNING PROCEDURES FOR FRONT ATTACHMENT (A).
5. Select LEARNING REEL HEIGHT (B).

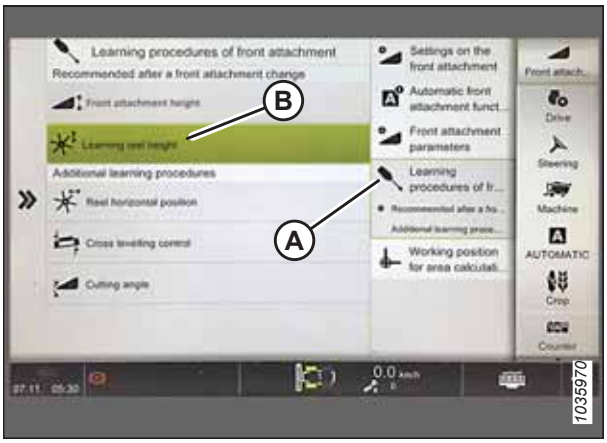


Figure 3.552: Front Attachment Page

6. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

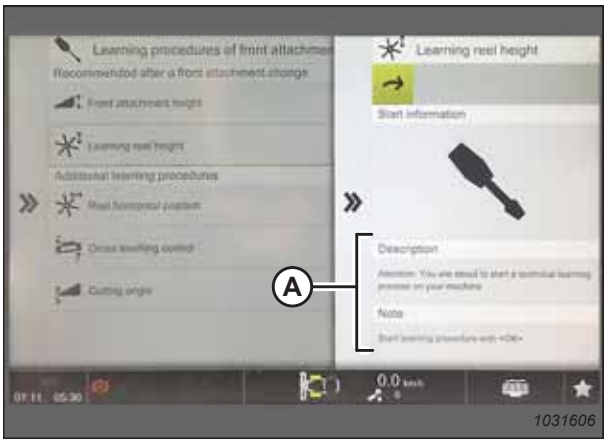


Figure 3.553: Learning Reel Height Page

7. When prompted, select OK button (A) to start the learning procedure.

Figure 3.554: Operator Controls

8. **If equipped with CLAAS integration kit (MD #B7231):** Calibrate the reel fore-aft sensor by selecting REEL HORIZONTAL POSITION (A) as the learning procedure and follow the prompts on the screen.

Figure 3.555: Front Attachment Page

3.10.12 Gleaner® R65, R66, R75, R76, and S Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

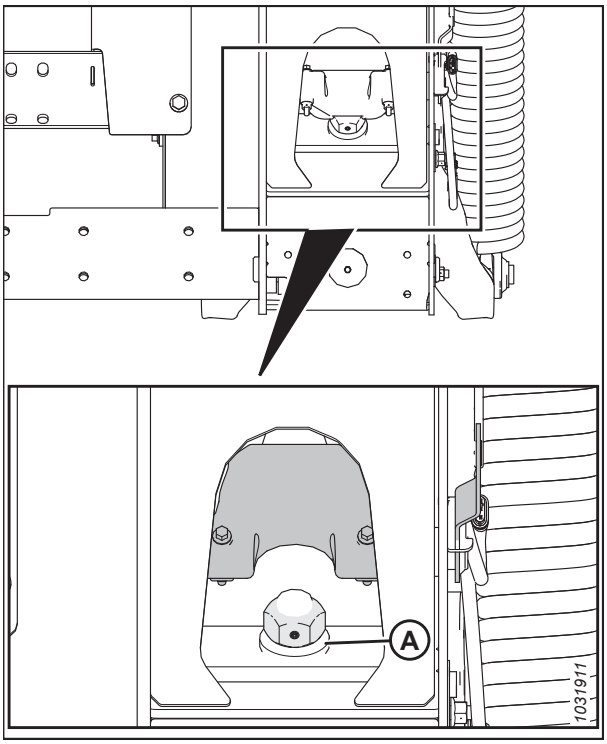


Figure 3.556: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

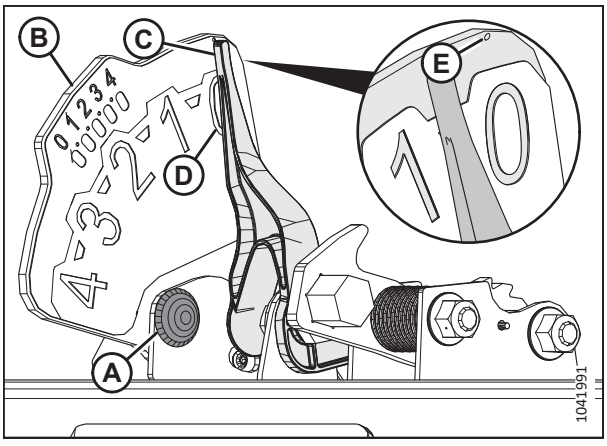


Figure 3.557: Float Indicator

Figure 3.558: Combine Heads-Up Display

7. Ensure that the header float is unlocked.
8. Press and hold button (A) on the heads-up display for 3 seconds to enter diagnostic mode.
9. Scroll down using button (B) until LEFT is displayed on the LCD screen.
10. Press OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the AHHC. Raise and lower the header to see the full range of the voltage readings.

Engaging Auto Header Height Control – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) must be engaged before you can adjust it for height and sensitivity.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

The following system components are required in order for the auto header height control (AHHC) to work:

- Main module and header driver module mounted in card box in fuse panel (FP) module.
- Multifunction control handle operator inputs.
- Operator inputs mounted in the control console (CC) module panel.
- Electrohydraulic header lift control valve.

Figure 3.559: Combine Auto Header Height Controls

1. Press AUTO MODE button (A) until AHHC LED light (B) begins flashing. If the RTC light is flashing, press AUTO MODE button (A) again until it switches to the AHHC.

2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header should drop to the ground. The AHHC is now engaged and can be adjusted for height and sensitivity.

3. Use the controls to adjust the height and sensitivity to the constant changing ground conditions such as shallow gullies and field drainage trenches.

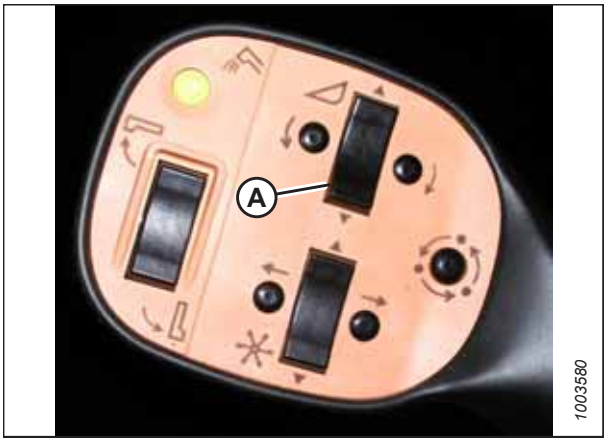


Figure 3.560: Control Handle

Calibrating Auto Header Height Control – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for calibration procedure so the header does not separate from the float module.

Figure 3.561: Combine Auto Header Height Controls

A - AUTO MODE Button
B - AHHC Light
C - CAL1 Button
D - Raise Header Light
E - Lower Header Light
F - AUTO Mode
G - CAL2 Button

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

NOTE:

Calibration should be done on flat, level ground without the header engaged. The header height and header tilt functions must not be in auto or standby modes. The engine rpm must be above 2000 rpm. The header tilt option on 2004 and earlier model combines does not work with MacDon headers. This system will have to be removed and disabled in order to calibrate the AHHC. For instructions, refer to the combine operator's manual.

1. Ensure that the center-link is set to **D**.
2. Press AUTO MODE button (A) until AHHC light (B) lights up.
3. Press and hold CAL1 button (C) until you see the following lights flash: raise header (D), lower header (E), tilt AUTO MODE (F), and AHHC (B).
4. Fully lower the header, and continue to hold the HEADER LOWER button for 5–8 seconds to ensure the float module has separated from the header.
5. Press CAL2 button (G) until lower header light (E) stops flashing, and release it when raise header light (D) begins flashing.
6. Raise the header to its maximum height, and ensure the header is resting on the down stop pads.

7. Press CAL2 button (G) until raise header light (D) turns off.

   NOTE:

   The following steps are applicable only to 2005 and newer combines with the Smartrac feeder house.

8. Wait for the HEADER TILT LEFT light (not shown) to start flashing, and then tilt the header to the maximum left position.

9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing, and release the button when the HEADER TILT RIGHT light (not shown) begins flashing.

10. Tilt the header to the maximum right position.

11. Press CAL2 button (G) until all of the following lights flash: raise header (D), lower header (E), height AUTO MODE (A), right header and left header (not shown), and tilt AUTO MODE (F).

12. Center the header.

13. Press CAL1 button (C) to exit calibration and save all values. All lights should stop flashing.

    NOTE:

    If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

Turning off Accumulator – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The accumulator affects the combine's height adjustment reaction time, which can affect the auto header height control (AHHC) system's performance.

For best performance, turn the feeder house accumulator off. For instructions, refer to the combine operator's manual.

NOTE:

The accumulator is located in front of the front left axle beam.

Figure 3.562: Combine Accumulator ON/OFF Switch
A - Accumulator Lever (Off Position)

Adjusting Header Raise/Lower Rate – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

The auto header height control (AHHC) system's stability is affected by hydraulic flow rates. Adjust the header raise/lower rate to ensure the stability of the auto header height control system.

Adjust header raise restrictor (A) and header lower restrictor (B) in the hydraulic manifold so that it takes approximately 6 seconds to raise the header from the ground to maximum height (that is, to the point at which the hydraulic cylinders are fully extended), and approximately 6 seconds to lower the header from maximum height to ground level.

If there is excessive header movement (for example, hunting) when the header is on the ground, adjust the lower rate so that it takes 7 or 8 seconds for the header to drop down to ground level.

NOTE:

Make this adjustment with the hydraulic system at its normal operating temperature (54.4°C [130°F]) and the engine running at full throttle.

Figure 3.563: Header Raise and Lower Adjustable Restrictors

Adjusting Ground Pressure – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Adjust the header ground pressure setting so that the pressure is as light as possible, but sufficiently heavy that the header does not bounce while in operation.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Ensure that indicator (A) is at position **0** (B) when the header is 254–356 mm (10–14 in.) off the ground. If it is not, check the float sensor output voltage. For instructions, refer to *Checking Voltage Range from Combine Cab – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series, page 340*.

   NOTE:

   When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

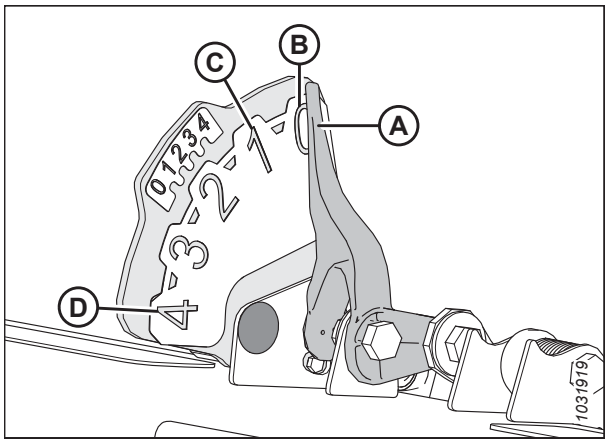


Figure 3.564: Float Indicator

2. Ensure the header is in auto header height control (AHHC) mode. This is indicated by AUTO MODE LED light (A) displaying a continuous, solid light.

3. The header will lower to the height (ground pressure) corresponding to the position selected with height control knob (B). Turn the knob counterclockwise for minimum ground pressure and clockwise for maximum ground pressure.

Figure 3.565: AHHC Console

Adjusting Auto Header Height Control Sensitivity – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Auto header height control (AHHC) sensitivity refers to the distance that the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Figure 3.566: Auto Header Height Control Console

SENSITIVITY ADJUSTMENT dial (A) controls the distance the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

When SENSITIVITY ADJUSTMENT dial (A) is set to maximum (turned completely clockwise), only small changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down

approximately 19 mm (3/4 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

When SENSITIVITY ADJUSTMENT dial (A) is set to minimum (turned completely counterclockwise), large changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 51 mm (2 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

The HEADER SENSE LINE input also changes the range of the sensitivity. When connected to a draper, the counterclockwise position (least sensitive) allows for approximately 102 mm (4 in.) of vertical travel before correction is made.

Troubleshooting Alarms and Diagnostic Faults – Gleaner® R65, R66, R75, R76, and Pre-2016 S Series

Refer to this section to learn the meaning of the alarms and faults related to the auto header height control (AHHC) system. Alarms and diagnostic faults are displayed on the combine's electronic instrument panel (EIP).

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Display type:

Figure 3.567: Tachometer

Displayed on tachometer (A) as XX or XXX.

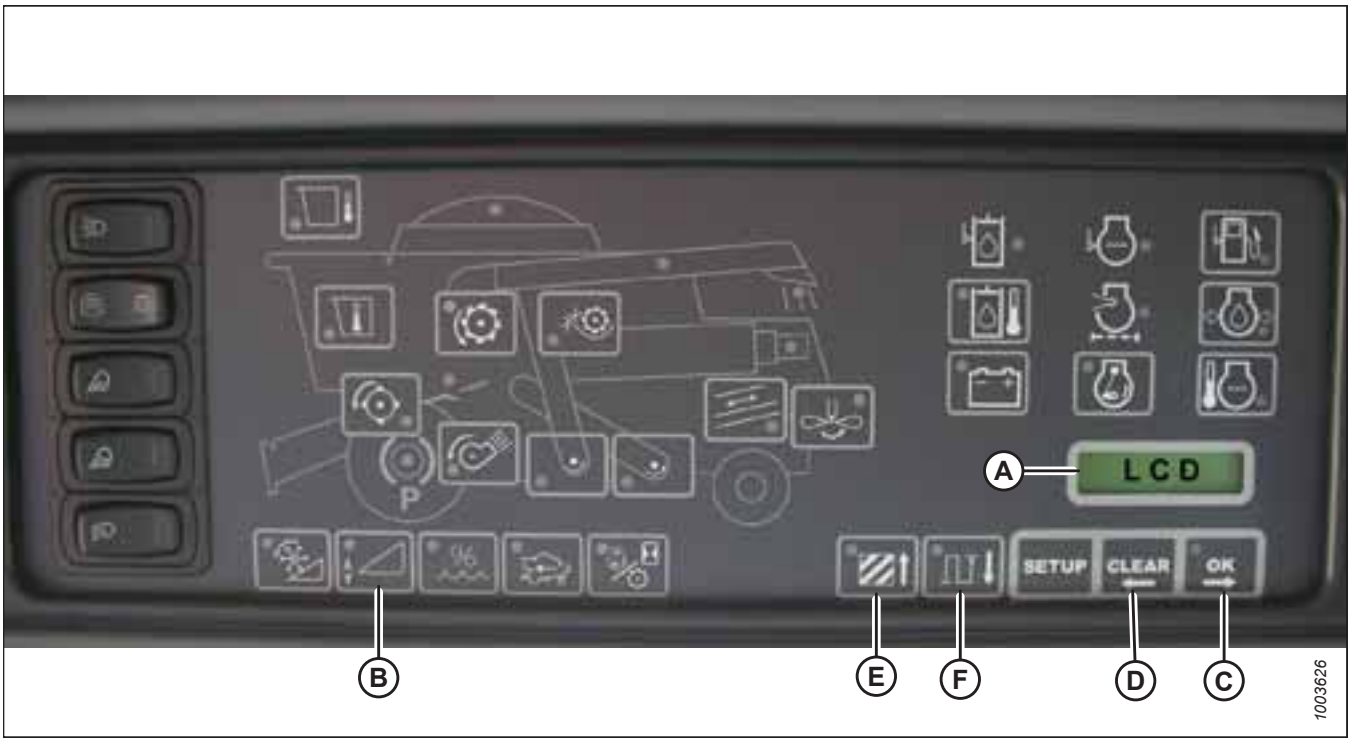


Figure 3.568: Combine Electronic Instrument Panel (EIP)

NOTE:

Displayed on LCD (A) as XX in. or XXX cm.

Alarm conditions:

If an error message is received from the fuse panel, an alarm sounds. The alarm buzzer sounds five times every 10 seconds. LCD (A) on the electronic instrument panel (EIP) indicates the header system in error as HDR CTRL followed by HGT ERR for height, and HDR CTRL followed by TILT ERR for tilt. The header height LED flashes yellow two times every second.

When an alarm condition occurs, a green LED flashes (green, yellow, or red depending on the input). In addition, a message is displayed on the LCD to identify the nature of the alarm. For example, HYD TEMP, OPEN, SHRT will be flashed alternately.

Diagnostic fault failures:

Refer to Figure *3.568, page 348*.

Pressing header height switch (B) for a minimum of 5 seconds will put the EIP in header diagnostic mode. The LCD (shown on previous screen) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after 3 seconds, header fault parameter labels are displayed on the EIP LCD. All the information displayed is read-only.

OK (C) and CLEAR (D) buttons allow you to scroll through the list of parameters. If there are no active fault codes, the EIP LCD will display NO CODE.

When a parameter is displayed, its label is displayed for 3 seconds, after which its value is automatically displayed.

Pressing OK button (C) while the value is displayed will advance to the next parameter and display its label.

When a parameter label is displayed and OK button (C) is pressed before 3 seconds, the parameter's value will be displayed.

Pressing AREA (E) will cycle through the options. When LEFT is displayed on the LCD, press OK button (C), and the auto header height control (AHHC) voltage will be shown on the display.

Press DIST button (F) to cycle back through the table.

Press CLEAR button (D) to exit header diagnostics and return to normal mode.

3.10.13 Gleaner® S9 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Setting up Header – Gleaner® S9 Series

To set up a header to work with the auto header height control (AHHC) system, you will need to access the HEADER SETTINGS menu using the Tyton terminal.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

AGCO Tyton terminal (A) is used to set up and manage a MacDon draper header on Gleaner® S9 Series Combines. Use the touch screen display to select the desired item on the screen.

Figure 3.569: Operator's Station – Gleaner S9®

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right quadrant of the home page, select COMBINE icon (A). The COMBINE MAIN MENU opens.

Figure 3.570: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, select HEADER SETTINGS (A). The HEADER SETTINGS page appears.

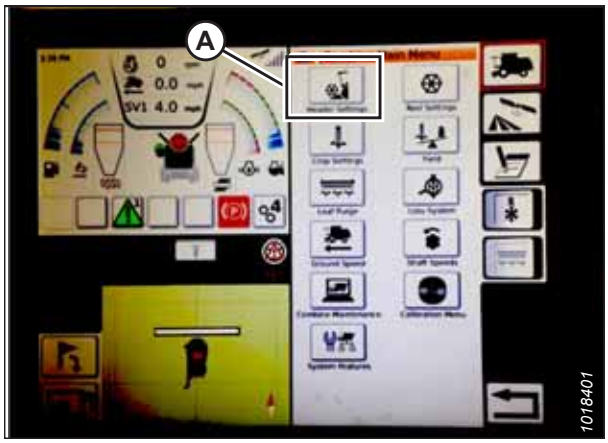


Figure 3.571: Header Settings in Combine Main Menu

3. Select HEADER CONFIGURATION field (A). A dialog box showing predefined headers appears.
   - If your MacDon header is already set up, it appears on the header list. Select MacDon header title (B) to highlight the header in blue, then select green check mark (E) to continue.
   - If only default header (D) is shown, select ABC button (C) and use the on-screen keyboard to enter the MacDon header information. When input is complete, select one of the following options to return to the HEADER SETTINGS page:
     - Green check mark (E) saves the settings
     - Garbage can icon (F) deletes the highlighted header from the list
     - Red X (G) cancels the change(s)

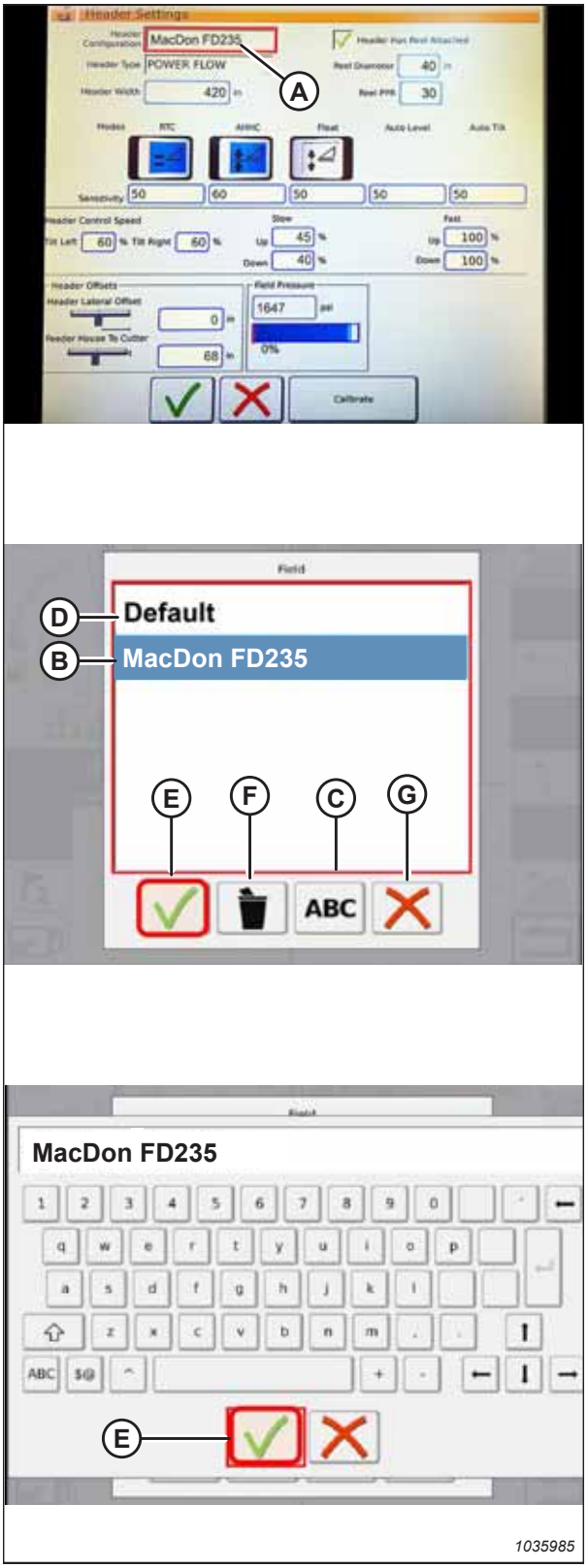


Figure 3.572: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, select HEADER TYPE field (A). A list of predefined header types appears.

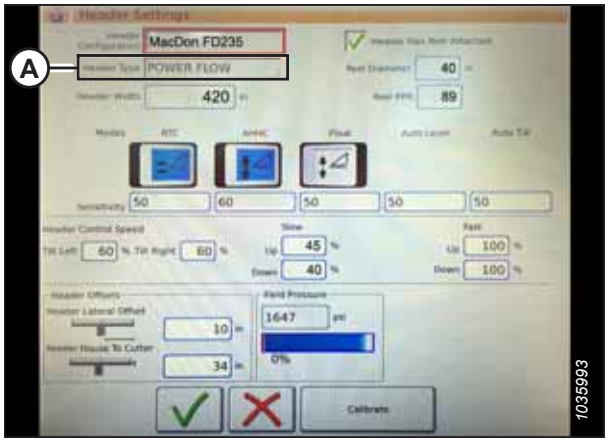


Figure 3.573: Header Settings

5. Select POWER FLOW (A). Select green check mark (B) to save the selection.

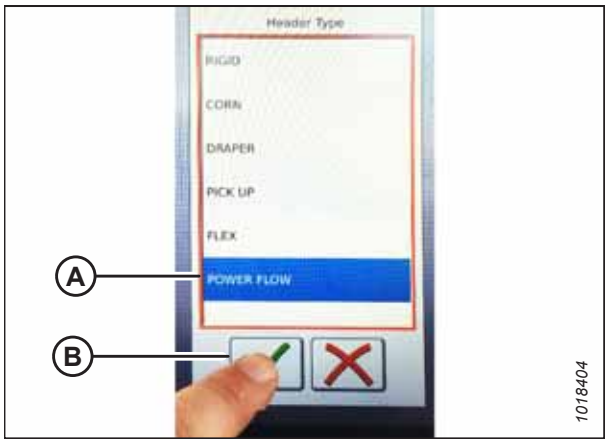


Figure 3.574: Header Type

6. Ensure that HEADER HAS REEL ATTACHED check box (A) is checked.

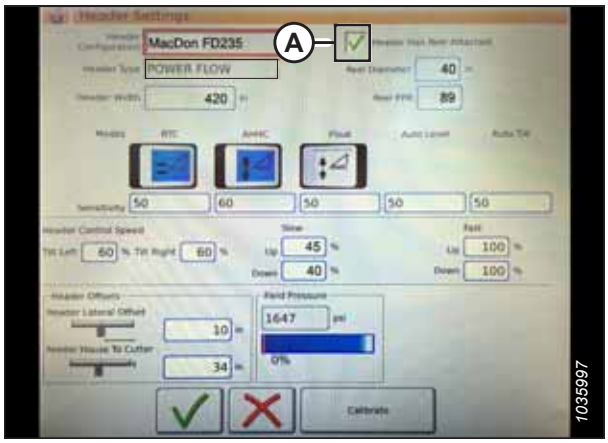


Figure 3.575: Header Settings

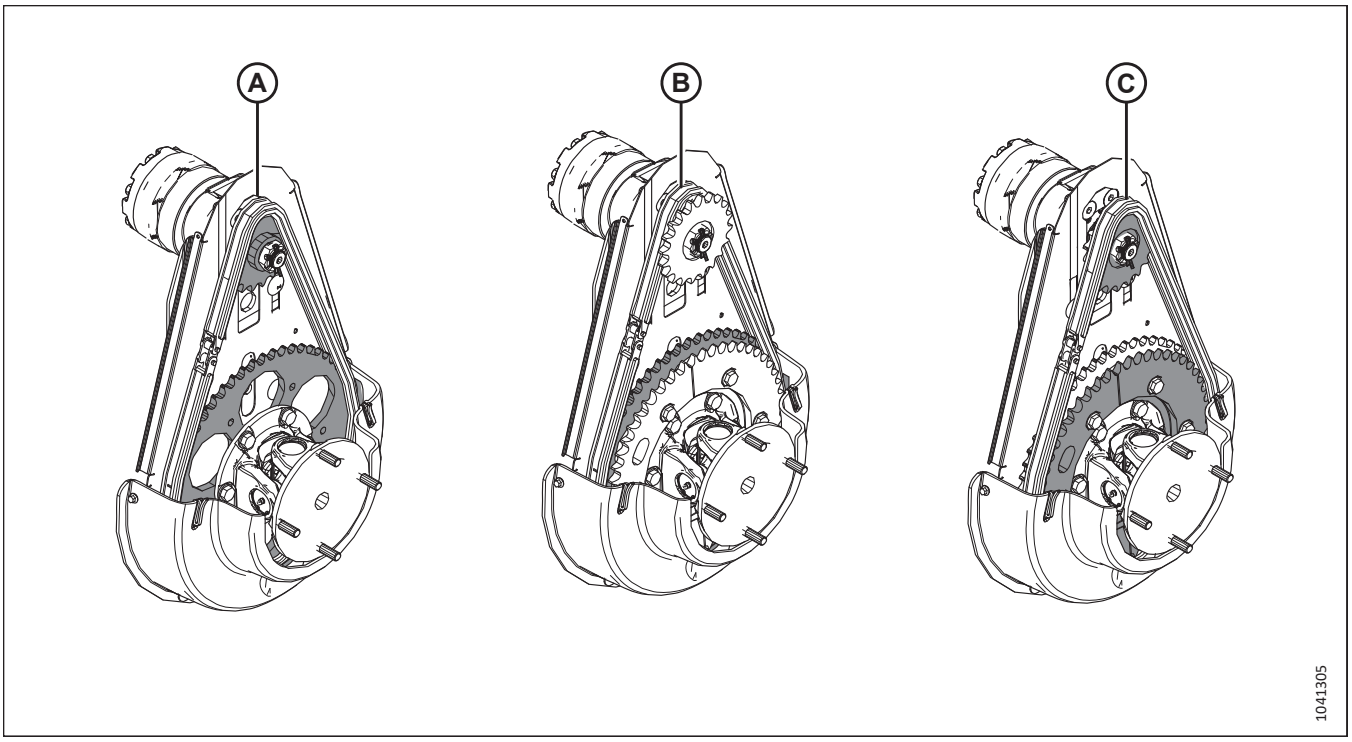


Figure 3.576: Reel Drive Configurations

7. If the type of reel drive configuration installed on the header is not already known, identify it:
   - (A) Standard configuration: One set of sprockets is installed.
   - (B) High torque/low speed: The chain is installed on the inner set of sprockets.
   - (C) High speed/low torque: The chain is installed on the outer set of sprockets.

8. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** for a MacDon reel.

9. Touch REEL PPR (pulses per revolution) field (B). Enter the value according to the type of reel drive sprocket configuration identified in Step *7, page 353*:
   - Standard configuration: **192**
   - High torque/low speed: **303**
   - Low torque/high speed: **169**

   NOTE:

   When AHHC is enabled, the reel should move slightly faster than the combine's ground speed. If the reel moves faster or slower than desired with the above PPR setting, contact the Dealer for assistance.

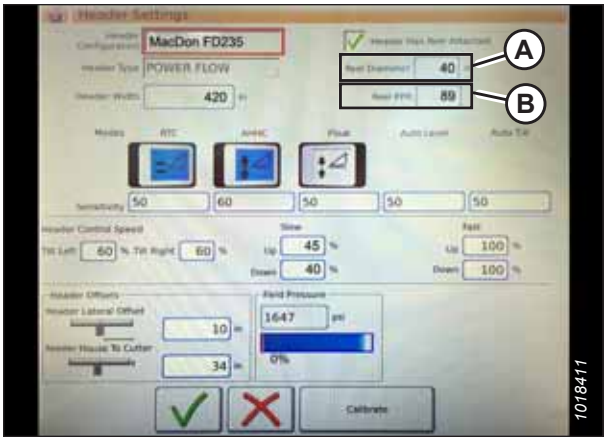


Figure 3.577: Header Settings

10. Select green check mark (B) at the bottom of numeric keypad (A).

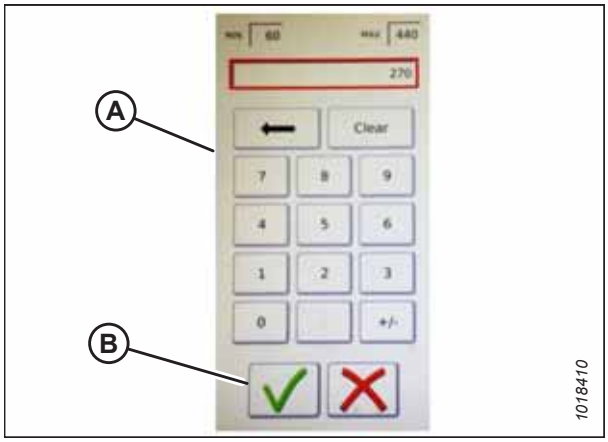


Figure 3.578: Numeric Keypad

11. Select green check mark (A) at the bottom of the HEADER SETTINGS page.

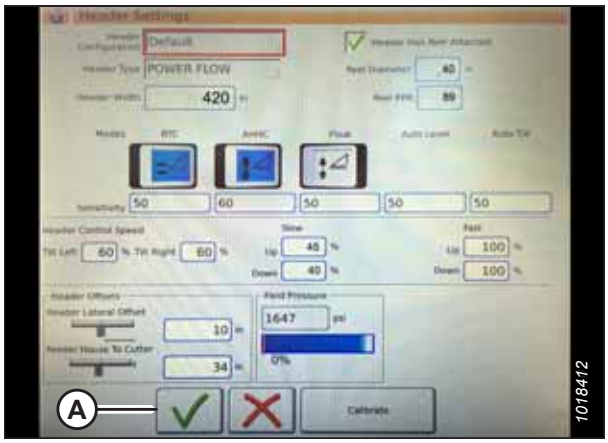


Figure 3.579: Header Settings Page

Setting Minimum Reel Speed and Calibrating Reel – Gleaner® S9 Series

To set up the header's minimum reel speed to work with the auto header height control (AHHC) system and to calibrate the reel, access the REEL SETTINGS menu.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. From the COMBINE MAIN MENU, select REEL SETTINGS (A). The REEL SETTINGS page opens.

Figure 3.580: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, select SPEED MINIMUM FIELD (B). The on-screen keyboard appears.
3. Input the desired value. Select the green check mark to enter the new value or select the red X to cancel input. The reel speed is shown in mph and rpm.

   NOTE:

   At the bottom of the REEL SETTINGS page, the reel diameter and the reel pulses per revolution (PPR) are displayed. These values have already been set in the HEADER SETTINGS page.

4. To calibrate the reel speed, select CALIBRATE button (A) in the top right of the page. The CALIBRATION WIZARD opens and displays a hazard warning.

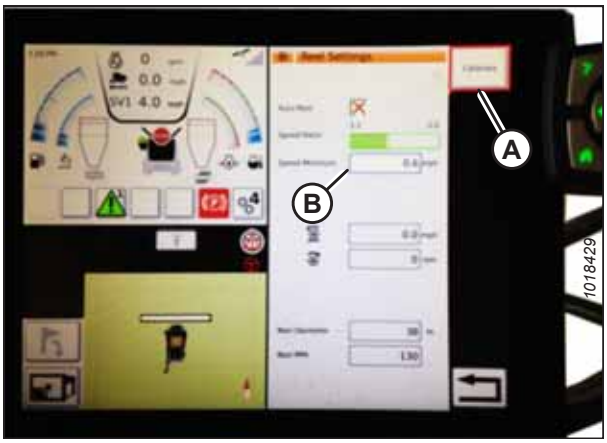


Figure 3.581: Reel Settings Calibration

5. Review the conditions listed in the CALIBRATION WIZARD warning and ensure all of the conditions are met. Press green check mark (A) to accept and start calibration. Pressing red X (B) will cancel the calibration procedure.

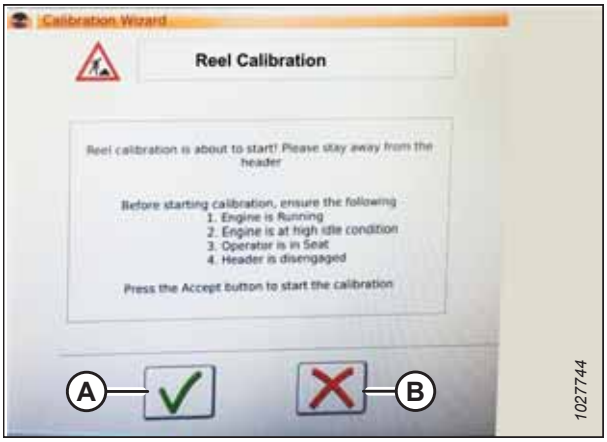


Figure 3.582: Calibration Wizard

6. A message appears in the CALIBRATION WIZARD stating that reel calibration has started. The reel will begin turning slowly and increase in speed. If necessary, select the red X at the bottom of the screen to cancel the calibration process. Otherwise, wait for the message that reel calibration has completed successfully.

7. Select the green check mark at the bottom of the screen to save the calibrated settings.

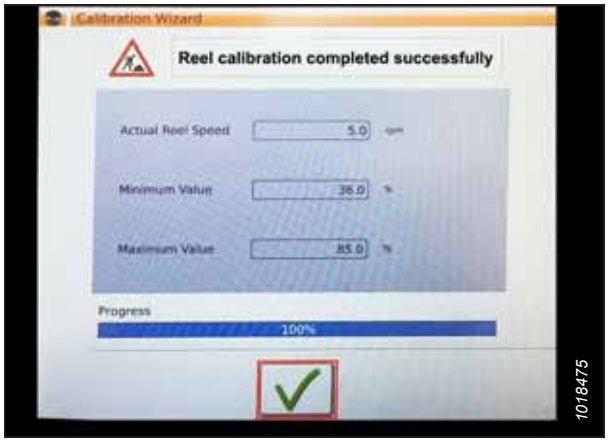


Figure 3.583: Calibration Progress

Setting up Automatic Header Controls – Gleaner® S9 Series

You can configure automatic header functions on the HEADER SETTINGS page.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. **Automatic control functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches are disabled (not highlighted).

2. **Sensitivity:** Setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase the sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease the sensitivity if the combine hunts for a position in Auto Mode.

   NOTE:

   The sensitivity starting points for MacDon headers are as follows:

   - **50** for RTC (A)
   - **60** for AHHC (B)

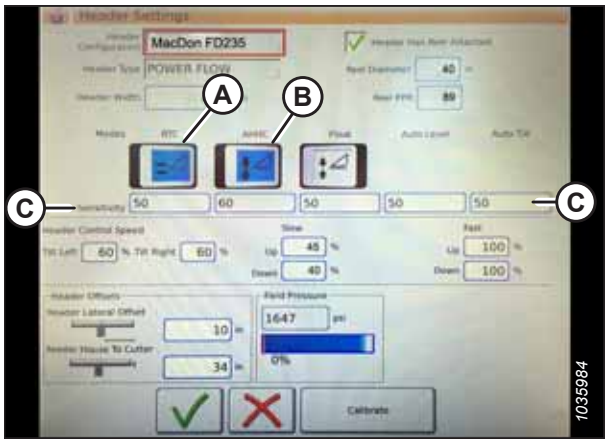


Figure 3.584: Automatic Controls and Sensitivity Settings

3. **Header speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate.
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on the first detent and fast on the second.

   NOTE:

   The control speed starting points for MacDon headers are as follows:

   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

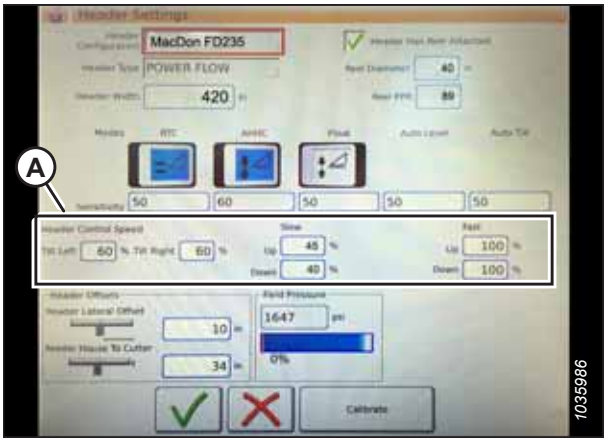


Figure 3.585: Header Speed Control Settings

4. **Header offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:

   - Header Lateral Offset: the distance between the centerline of the header and the centerline of the machine. Set to **0** for a MacDon header.
   - Feeder House to Cutter: the distance from the machine interface to the cutterbar. Set to **68** for a MacDon header.

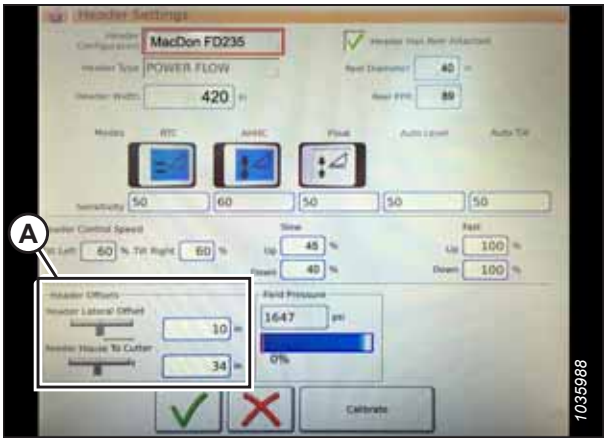


Figure 3.586: Header Offset Settings

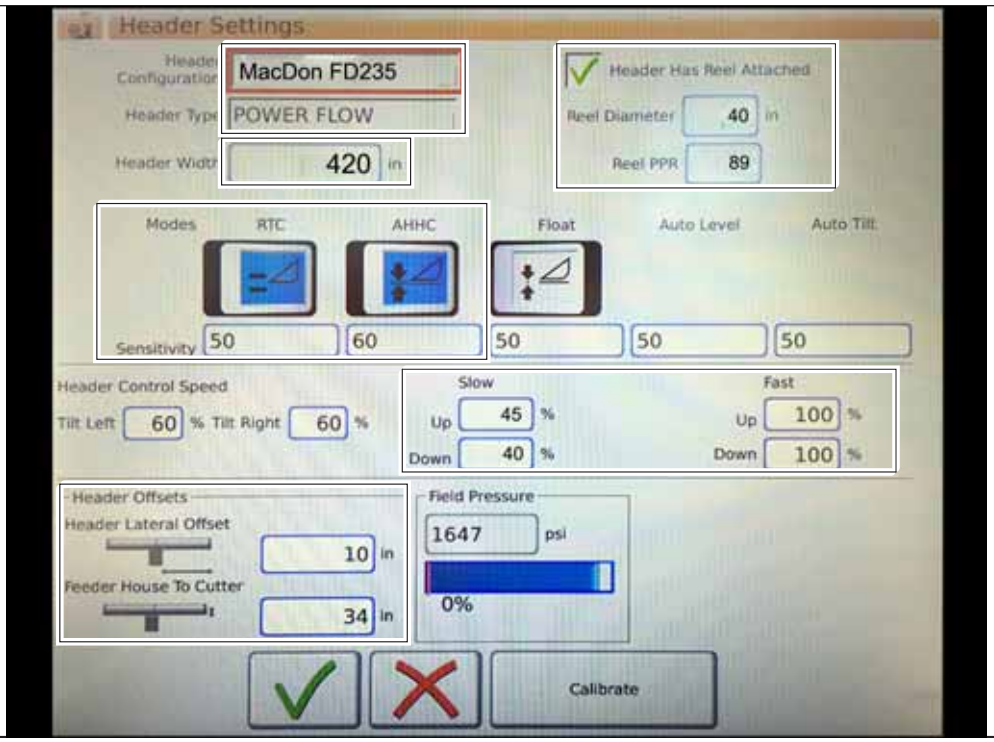


Figure 3.587: MacDon Header Settings Inputs

Calibrating Auto Header Height Control – Gleaner® S9 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. On the COMBINE MAIN MENU, select HEADER SETTINGS (A).

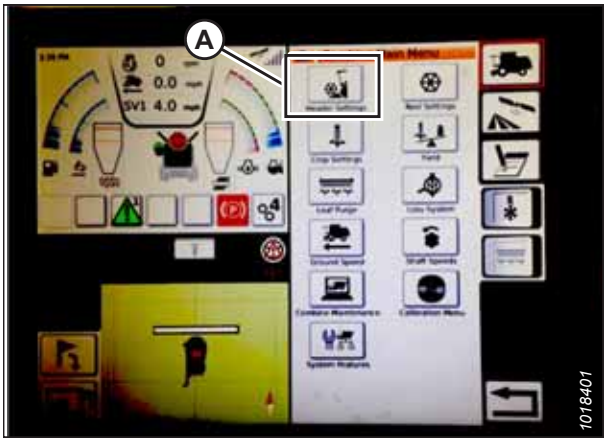


Figure 3.588: Combine Main Menu

2. Select CALIBRATE (A) at the bottom right of the page. The HEADER CALIBRATION page appears.

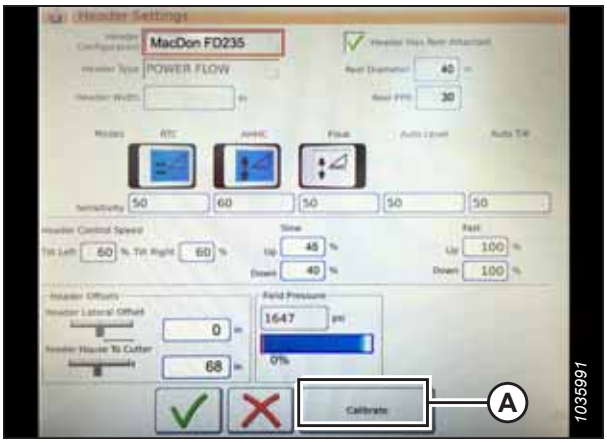


Figure 3.589: Header Settings Page

The right side of the page shows header calibration information (A). The results are shown for a list of sensors (B):

- Left and right header sensor (voltage) (values will be the same with MacDon headers)
- Header height sensor (mA)
- Tilt position sensor (mA)

The following valid modes are shown with check marks (C) below sensor values (B):

- Return to cut
- Automatic header height control

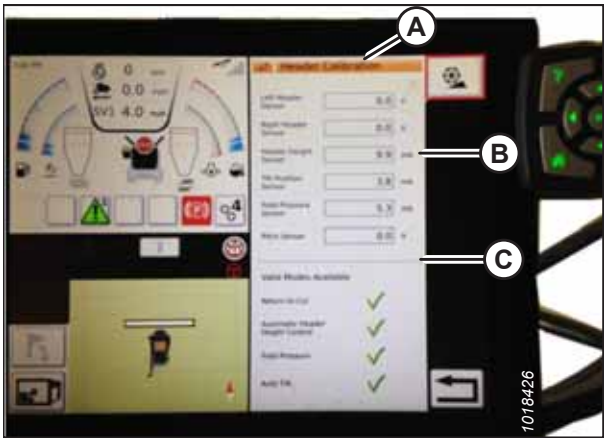


Figure 3.590: Header Calibration Page

3. On the control handle, press HEADER DOWN button (A). The sensor values on the HEADER CALIBRATION page will change as the header falls.

Figure 3.591: Header Down Switch

4. Select CALIBRATE icon (A).

Figure 3.592: Header Calibration

5. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.

6. Select the green check mark at the bottom of the screen to start the CALIBRATION WIZARD.

Figure 3.593: Header Calibration Warning

A progress bar displays at the bottom of the screen. The header will move automatically and erratically during calibration; you can stop the process at any time by selecting the red X below the progress bar.

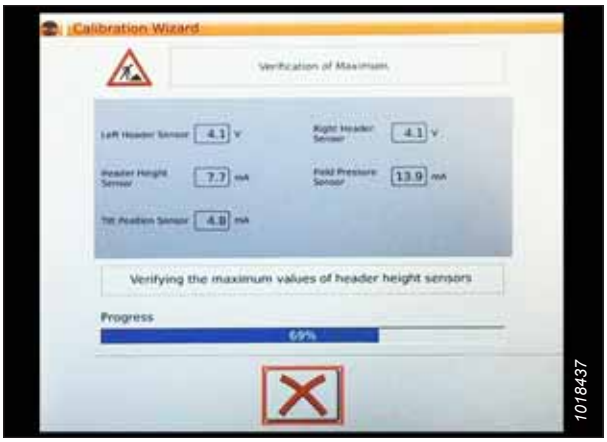


Figure 3.594: Calibration in Progress

7. When the calibration process is complete, a message will appear, showing information (A). The green check marks indicate that functions (B) have been calibrated. Select green check mark (C). at the bottom of the screen to exit the calibration page.

Figure 3.595: Completed Calibration Page

NOTE:

Select CALIBRATION icon (A) on the COMBINE MAIN MENU page. The CALIBRATION MENU appears. On the CALIBRATION MENU, you can calibrate several other features, such as the header and the reel.

Figure 3.596: Direct Calibration Menu

Operating Auto Header Height Control – Gleaner® S9 Series

Once the auto header height control (AHHC) system has been set up, you can engage the AHHC system and fine-tune the position of the header by using a control dial.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

The following controls are used to operate the auto header height control AHHC functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

Use the combine operator's manual to familiarize yourself with the controls.

Figure 3.597: Gleaner® S9 Operator Controls

1. With the header running, set lateral tilt switch (A) to MANUAL.
2. Engage the AHHC by pressing switch (B) to the upward position.

Figure 3.598: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current set point position.

Figure 3.599: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the position.

Figure 3.600: Header Control Cluster

Reviewing Header In-Field Settings – Gleaner® S9 Series

You can review the auto header height control (AHHC) settings by pressing the HEADER icon on the Tyton terminal's home page.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. To view the following header group settings, select HEADER icon (A) on the right side of the home page:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by the red line)
   - HEADER symbol (D) – select to adjust the set point cut-off position using the scroll wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune with the header height set point control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

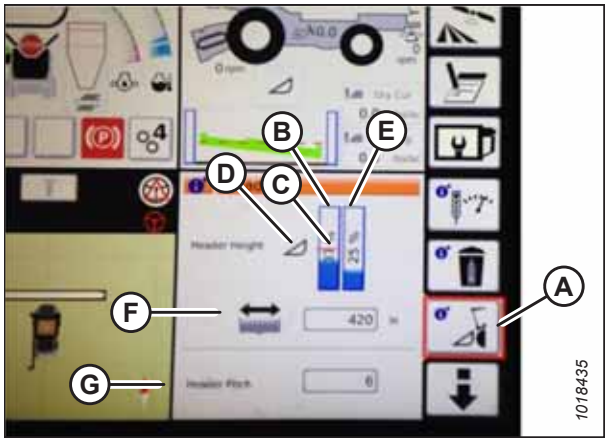


Figure 3.601: Header Groups

2. Selecting a field opens the on-screen keyboard, so that the values can be adjusted. Enter the new value and select the green check mark when complete.

   NOTE:

   Scroll wheel (A) is located on the right side of the Tyton terminal.

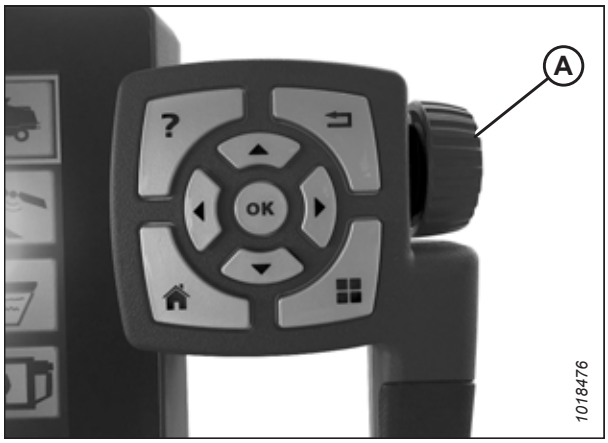


Figure 3.602: Adjustment Wheel on Right Side of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 3.603: Header Control Cluster

Header Settings Quick Reference – Gleaner® S9 Series

The recommended auto header height control (AHHC) settings for an FD2 Series FlexDraper® Header operating with a Gleaner® S9 Series combine are provided.

Table 3.39 Header Settings – Gleaner® S9 Series

Setup Parameter	Suggested Setting
Header type	Power Flow
Header has reel attached check box	Checked
Reel diameter	40
Reel PPR[77]	192
Sensitivity (RTC)	50
Sensitivity (AHHC)	60
Header control speed[78]	Slow: Up 45/Down 40 Fast: Up 100/Down 100
Header lateral offset	0
Feeder house to cutter	68

3.10.14 IDEAL™ Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Header Settings Quick Reference – IDEAL™ Series

The recommended auto header height control (AHHC) settings for a header operating with an IDEAL™ Series combine are provided.

For detailed instructions, proceed to the IDEAL™ combine header setup and calibration procedures.

Table 3.40 Header Settings – IDEAL™

Setup Parameter	Suggested Setting		
Header type	Power Flow		
Reel check box	Checked		
Reel diameter	102 cm (40 in.)[79]		
Reel PPR[77]	Standard - 38	High-torque sprocket - 61	High-speed sprocket - 34
Sensitivity (RTC)	50		
Sensitivity (AHHC)	60		
Header control speed[78]	Slow: Up 45/Down 40 Fast: Up 100/Down 100		
Header lateral offset	0		
Feeder house to cutter	68		

77. Pulses per revolution.
78. A two-stage button with slow speed on the first detent and fast on the second.
79. If the reel speed does not index correctly, then the reel diameter can be increased to 112 cm (44 in.).

Setting up Header – IDEAL™ Series

Set these initial configuration options on your IDEAL™ Series combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Tyton terminal (A) is used to set up and manage the MacDon header on an IDEAL™ Series combine. Use the touch screen display to select the desired item on the page.

Figure 3.604: IDEAL™ Series Operator's Station

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right of the home page, select COMBINE icon (A). The COMBINE MAIN MENU opens.

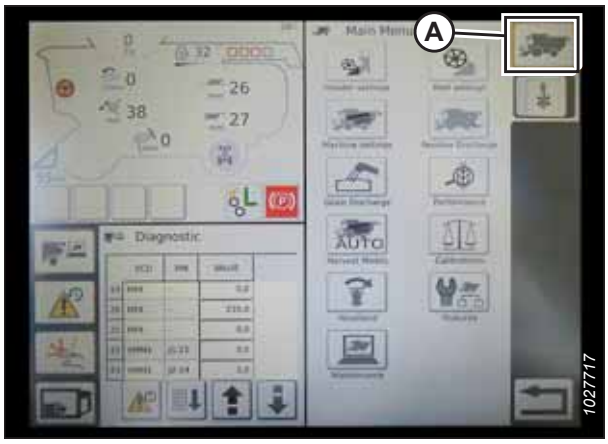


Figure 3.605: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, select HEADER SETTINGS (A). The HEADER SETTINGS page opens.

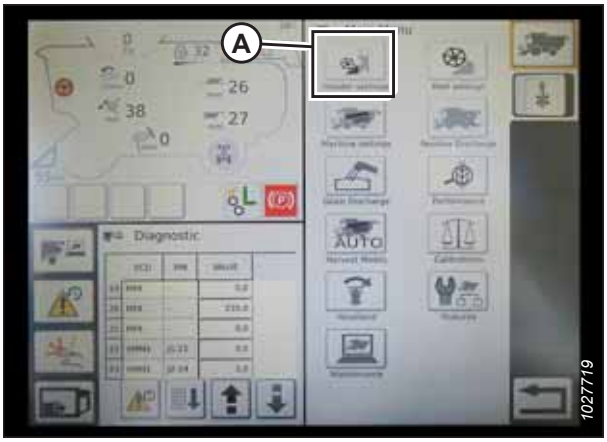


Figure 3.606: Header Settings in Combine Main Menu

3. Select HEADER CONFIGURATION field (A). A dialog box showing a list of predefined header configuration profiles appears.
   - If the MacDon header is already set up, it appears on the header list. Touch MacDon header title (B) to highlight the selection in blue, then touch green check mark (E) to continue setup.
   - If only default header (D) is shown, touch ABC button (C) and use the on-screen keyboard to enter the MacDon header information. When input is complete, select one of the following options to return to the HEADER SETTINGS page:
     – Green check mark (E) saves the settings
     – Garbage can icon (F) deletes the highlighted header from the list
     – Red X (G) cancels the change(s)

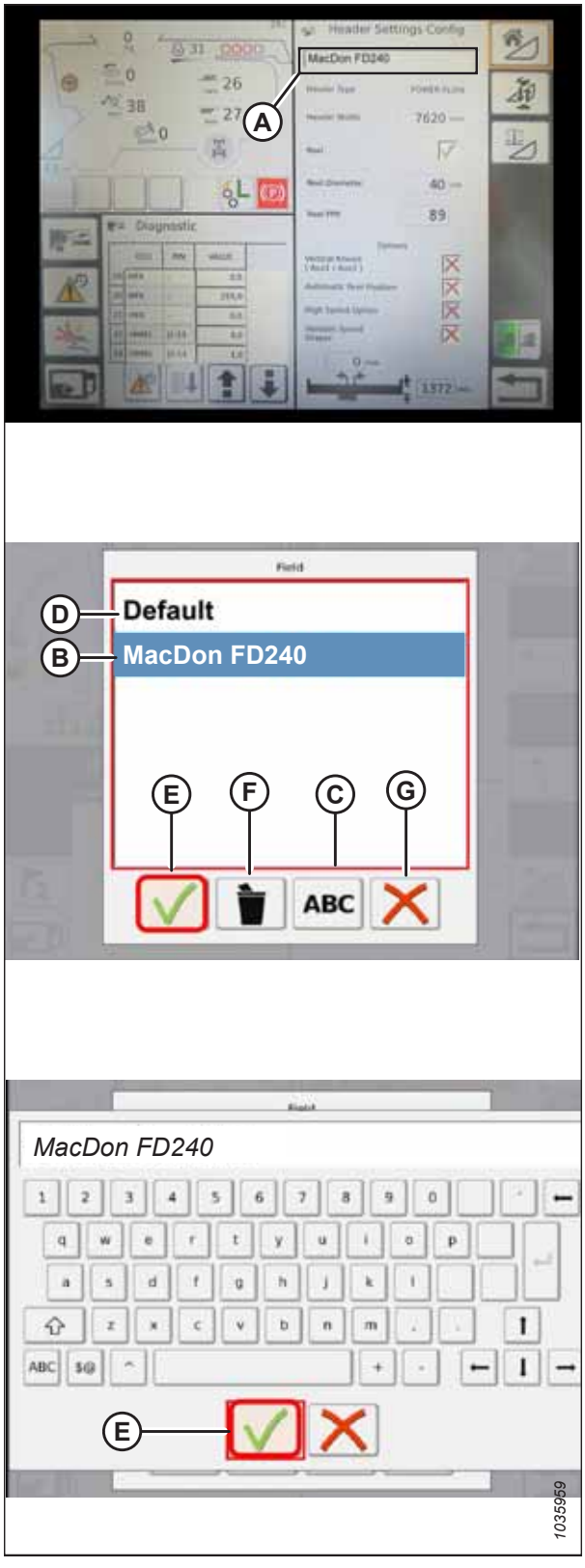


Figure 3.607: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, select HEADER TYPE field (A).

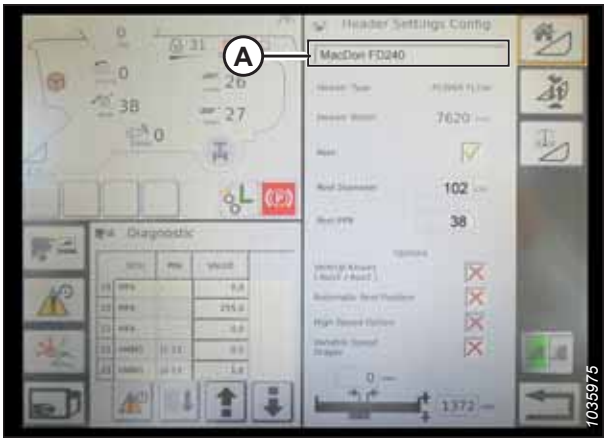


Figure 3.608: Header Settings

5. From the list of predefined header types, select POWER FLOW (A).
6. Select green check mark (B) to save the selection and continue.

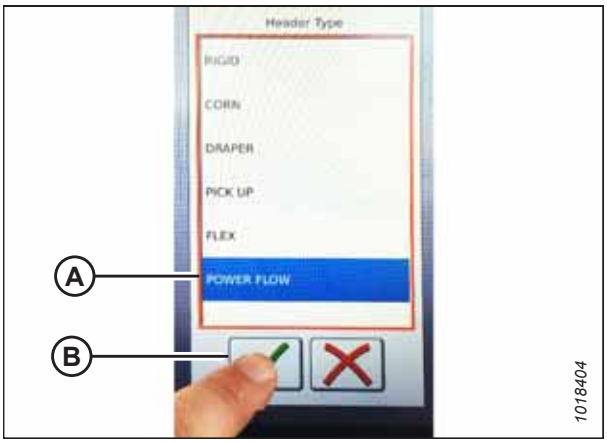


Figure 3.609: Header Type

7. Ensure that REEL check box (A) is checked.

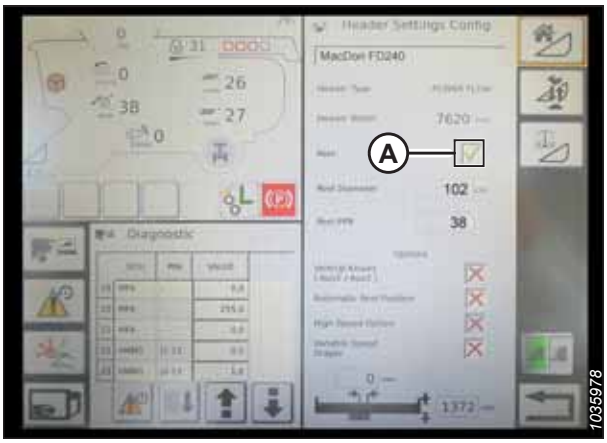


Figure 3.610: Header Settings

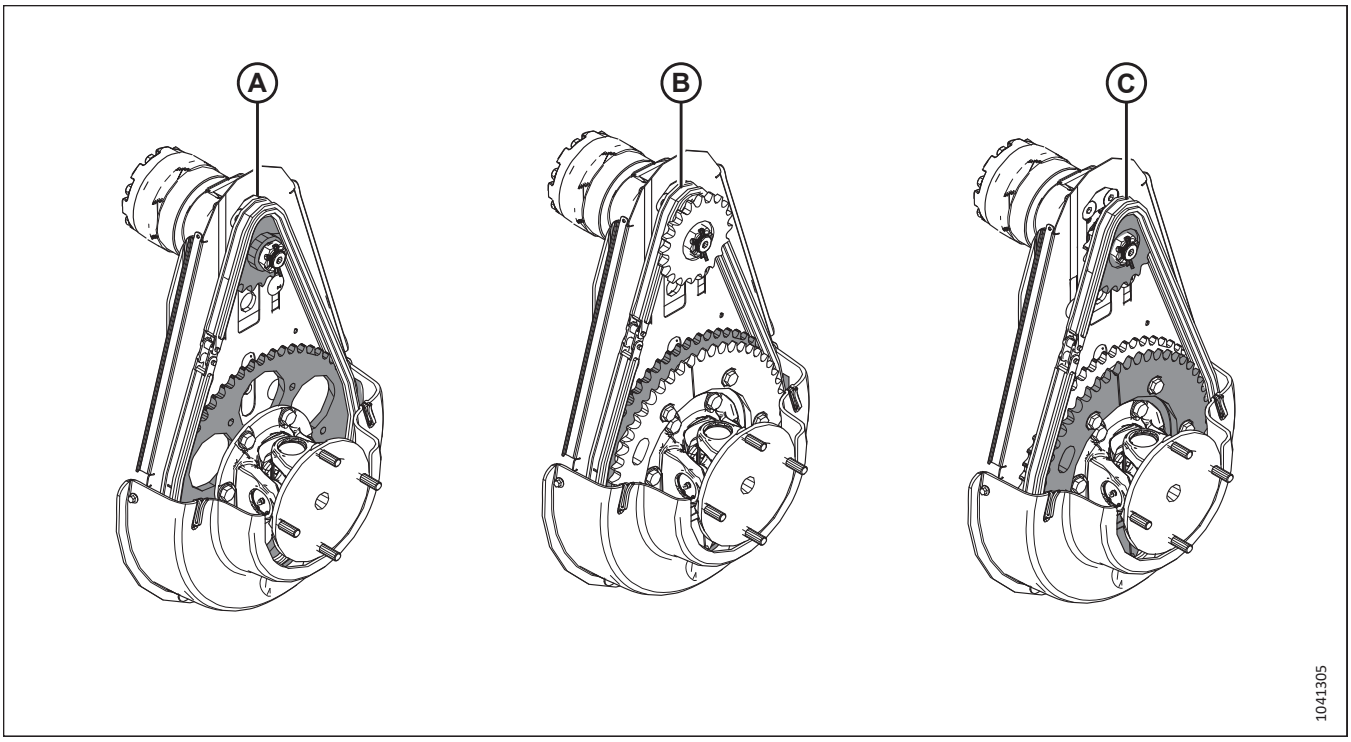


Figure 3.611: Reel Drive Configurations

8. If the type of reel drive configuration installed on the header is not already known, identify it:
   - Standard configuration (A) : One set of sprockets is installed.
   - High torque/low speed (B) : The chain is installed on the inner set of sprockets.
   - High speed/low torque (C) : The chain is installed on the outer set of sprockets.

9. Select REEL DIAMETER field (A). A numeric keypad appears. Enter the following value for a MacDon reel:
   - 102 cm (40 in.)

   NOTE:

   If the reel speed does not index correctly, then the reel diameter can be increased to 112 cm (44 in.).

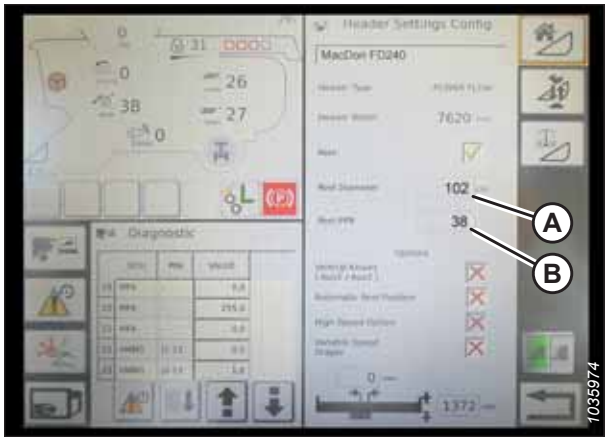


Figure 3.612: Header Settings

10. Select REEL PPR (pulses per revolution) field (B) and enter the relevant value:
    - **Standard:** 38
    - **High torque/low speed:** 61
    - **High speed/low torque:** 34

NOTE:

When AHHC is enabled, the reel should move slightly faster than the combine's ground speed. If the reel moves faster or slower than desired at the above PPR setting, contact the Dealer for assistance.

11. Select green check mark (B) at the bottom of numeric keypad (A).

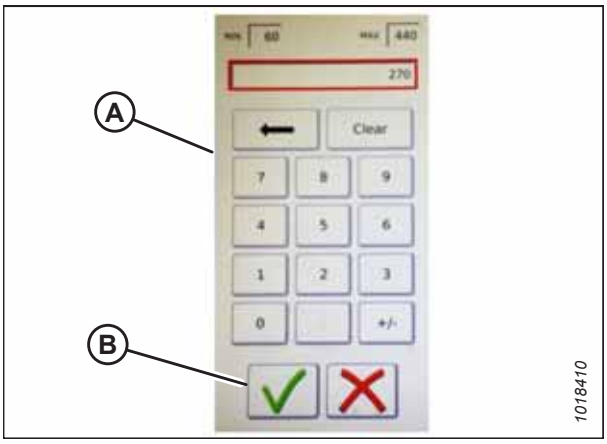


Figure 3.613: Numeric Keypad

12. Select green check mark (A) at the bottom of the HEADER SETTINGS page.

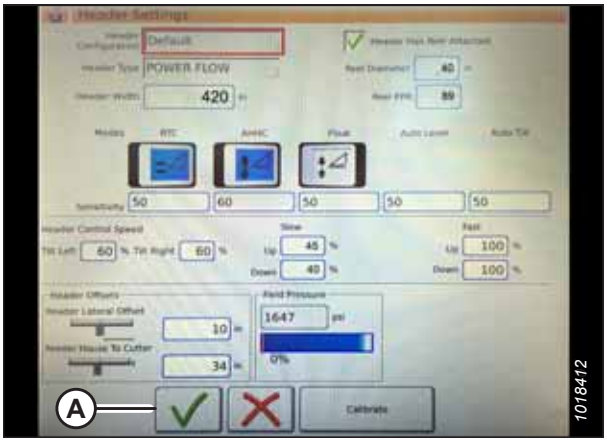


Figure 3.614: Header Settings Page

Setting Minimum Reel Speed and Calibrating Reel – IDEAL™ Series

To configure the reel speed on the header to work with the auto header height control system (AHHC) on an IDEAL™ Series combine, the reel operation parameters must be configured and the combine must run an automatic reel calibration procedure.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. Refer to the combine operator's manual for updated information.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

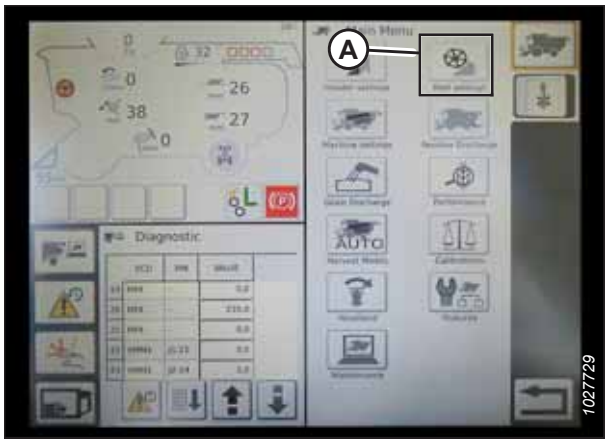


Figure 3.615: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard appears. Enter the desired value. Select the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in miles per hour (mph) and rotations per minute (rpm).

   NOTE:

   The reel diameter and reel pulses per revolution (PPR) are displayed at the bottom of the REEL SETTINGS page. These values have already been set in the HEADER SETTINGS page.

3. Select CALIBRATE button (A) at the top right corner of the REEL SETTINGS page. The CALIBRATION WIZARD appears.

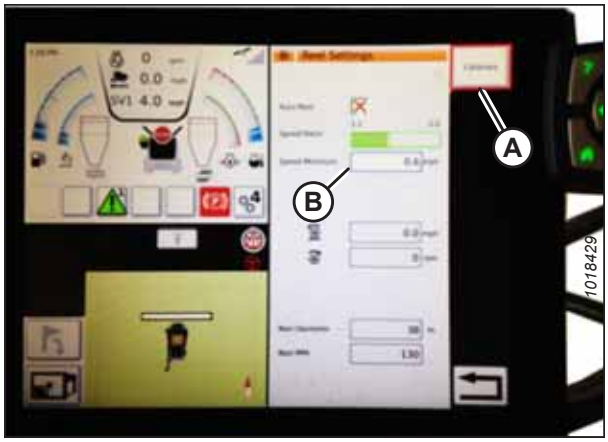


Figure 3.616: Reel Settings Calibration

4. Ensure that all of the conditions listed in the CALIBRATION WIZARD warning have been met. Press the green check mark to start the reel calibration procedure. Pressing the red X will cancel the calibration procedure.

Figure 3.617: Calibration Wizard

5. A message appears in the CALIBRATION WIZARD stating that the reel calibration procedure has started. The reel will begin turning slowly and its speed will gradually increase. If necessary, select the red X (not shown) to cancel the calibration procedure. Otherwise, wait for the message that the reel calibration procedure has completed successfully. Select the green check mark to save the calibrated settings.

Figure 3.618: Calibration Progress

Setting up Automatic Header Controls – IDEAL™ Series

To configure the automatic header height control (AHHC) functions on an IDEAL™ Series combine to work with your header, navigate to the HEADER SETTINGS page on the combine's computer.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. **Automatic Control Functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure that the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches should be disabled (not highlighted).

2. **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase the sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease the sensitivity if the combine continually hunts for a position in Auto Mode.

   NOTE:

   The following sensitivity settings are recommended for MacDon headers:

   - **50** for RTC (A)
   - **60** for AHHC (B)

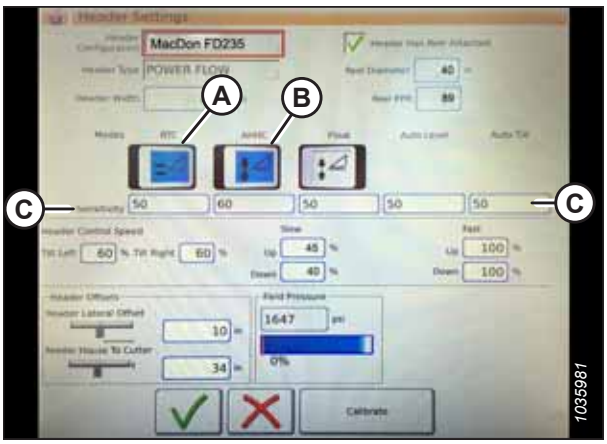


Figure 3.619: Automatic Controls and Sensitivity Settings

3. **Header Speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate.
   - The header raise/lower function uses a two-detent button: the first detent is a slow raise/lower rate; the second detent is a fast raise/lower rate.

   NOTE:

   The recommended header control speed settings are:

   - Slow: Up 45/Down 40
   - Fast: Up 100/Down 100

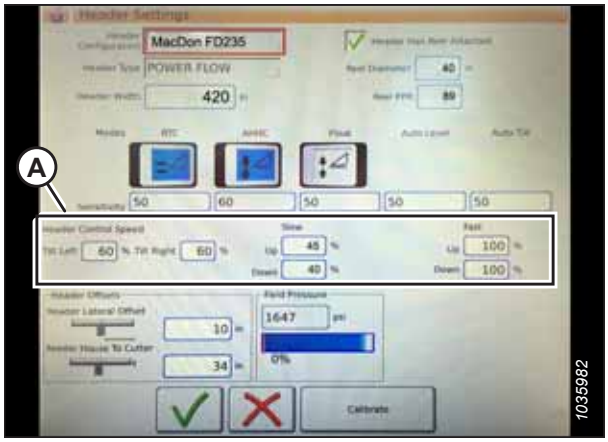


Figure 3.620: Header Speed Control Settings

4. **Header Offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:

   - HEADER LATERAL OFFSET: the distance between the centerline of the header and the centerline of the machine. This should be set at **0** for a MacDon header.
   - FEEDER HOUSE TO CUTTER: the distance from the machine interface to the cutterbar. This should be set at **68** for a MacDon header.

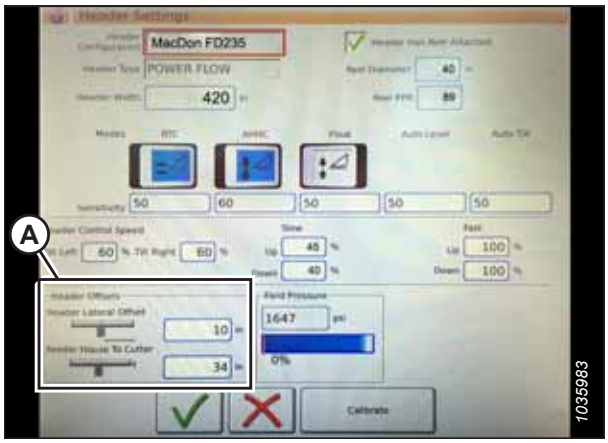


Figure 3.621: Header Offset Settings

Calibrating Header – IDEAL™ Series

The auto header height control (AHHC) sensor output must be calibrated for the combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. On the COMBINE MAIN MENU, select HEADER SETTINGS (A).

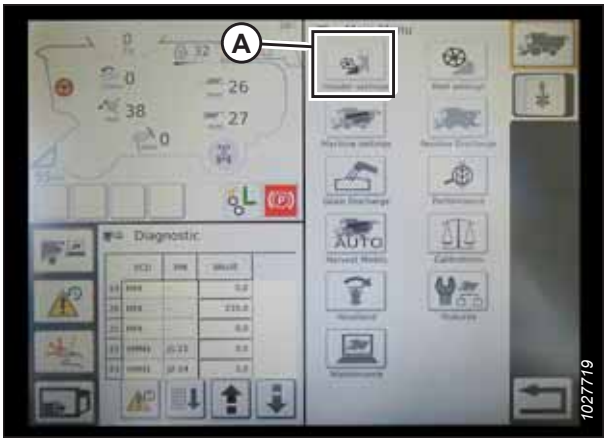


Figure 3.622: Combine Main Menu

2. Select HEADER CALIBRATE (A) at the right side of the HEADER SETTINGS CONFIG page.

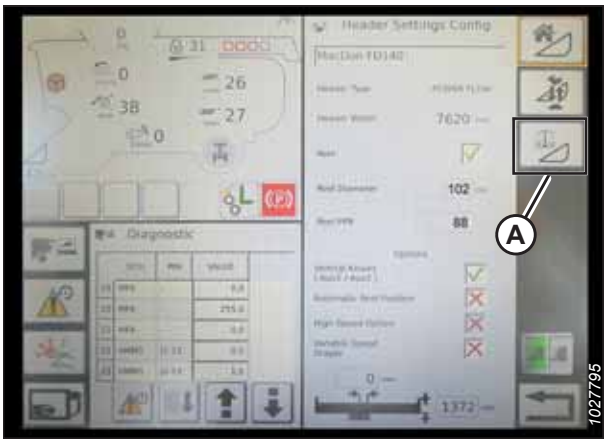


Figure 3.623: Header Settings Page

3. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.
4. Select the green check mark at the bottom of the page to start the calibration procedure and follow the on-screen commands.

Figure 3.624: Header Calibration Warning

A progress bar is provided; the calibration process can be stopped by selecting the red X. The header moves automatically and erratically during this process.

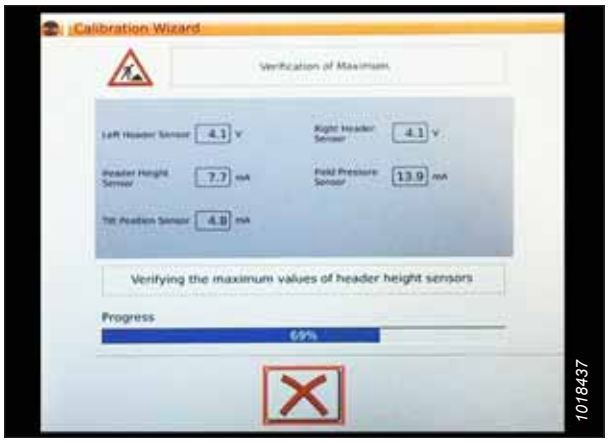


Figure 3.625: Calibration in Progress

5. When the calibration procedure is complete:
   - Review summary information (A)
   - Ensure green check marks confirm calibrated functions (B)
   - Select check mark (C) to save the calibrated settings

Figure 3.626: Completed Calibration Page

NOTE:

Select CALIBRATIONS icon (A) on the MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.

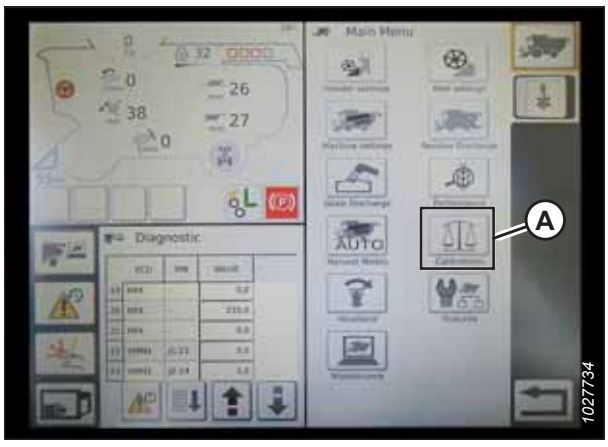


Figure 3.627: Direct Calibration Menu

Operating Header – IDEAL™ Series

Once the auto header height control (AHHC) system has been configured on your IDEAL™ Series combine, you can control the AHHC system from the combine cab.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

The following are used to operate the AHHC functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

Refer to the combine operator's manual to familiarize yourself with the combine's controls.

Figure 3.628: Operator's Station

1. With the header running, set the lateral tilt to MANUAL by pressing switch (A). The light above switch (A) should be off.
2. Engage the AHHC by pressing switch (B). The light above switch (B) should be on.

Figure 3.629: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the configured set point position.

Figure 3.630: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the header position.

Figure 3.631: Header Control Cluster

Reviewing Header In-Field Settings – IDEAL™ Series

Once the auto header height control (AHHC) system is working correctly with your IDEAL™ Series combine, you can fine-tune these AHHC settings to your liking.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select HEADER icon (A) on the right side of the home page to view the following header group settings:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by the red line)
   - HEADER symbol (D) – select this to adjust the set point cut-off position using the adjustment wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune this setting with the header height set point control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

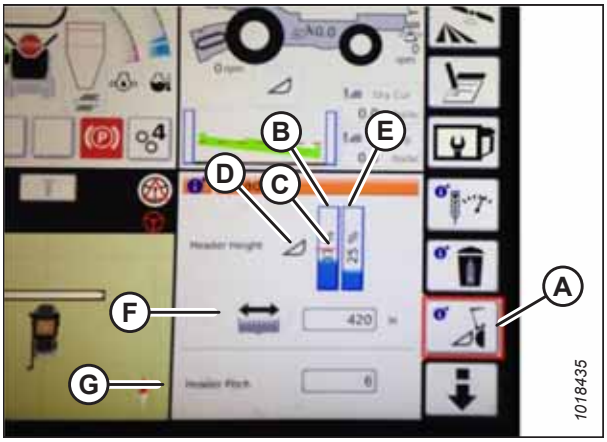


Figure 3.632: Header Groups

2. Selecting a field opens the on-screen keyboard so that the values can be adjusted. Enter the new value and touch the green check mark.

   NOTE:

   Adjustment wheel (A) is located on the right of the Tyton terminal.

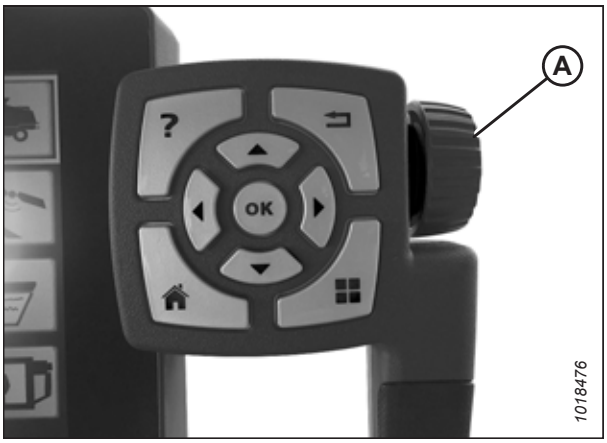


Figure 3.633: Adjustment Wheel on Right of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 3.634: Header Control Cluster

3.10.15 John Deere 70 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – John Deere 70 Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions on leveling the header.

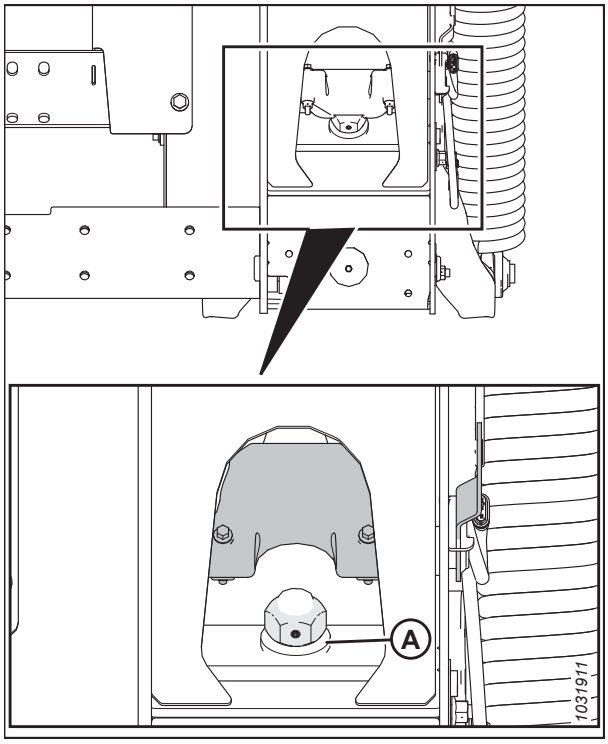


Figure 3.635: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

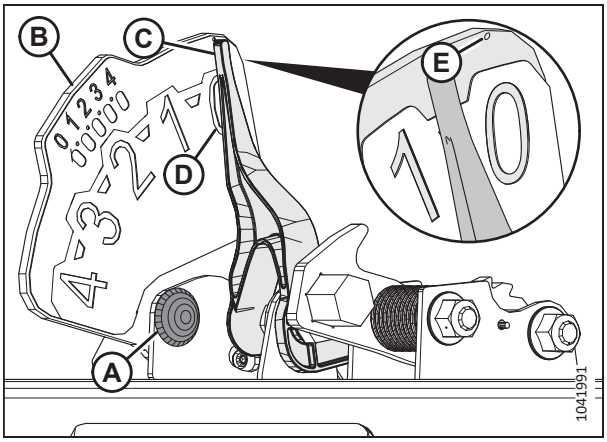


Figure 3.636: Float Indicator

7. Press HOME PAGE button (A) on the main page of the display.

Figure 3.637: John Deere Combine Display

8. Ensure that three icons (A) shown in the illustration at right appear on the display.

Figure 3.638: John Deere Combine Display

9. Use scroll knob (A) to highlight the middle icon (the green i) and press check mark button (B) to select it. The MESSAGE CENTER appears.

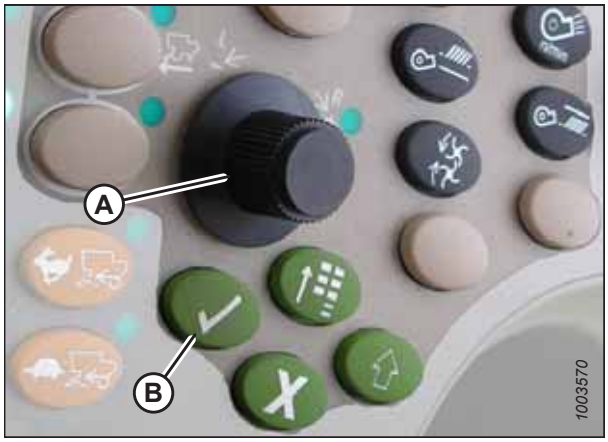


Figure 3.639: John Deere Combine Control Console

10. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column. Select it by pressing the check mark button.
11. Use the scroll knob to highlight drop-down box (B). Press the check mark button to select it.

Figure 3.640: John Deere Combine Display

12. Use the scroll knob to highlight LC 1.001 VEHICLE (A). Press the check mark button to select it.

Figure 3.641: John Deere Combine Display

13. Use the scroll knob to highlight down arrow (A). Press the check mark button to scroll through the list until 029 DATA (B) appears and voltage reading (C) appears on the display.
14. Ensure that the header float is unlocked.
15. Start the engine.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

16. Fully lower the feeder house to the ground.

Figure 3.642: John Deere Combine Display

17. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.
18. Raise the header so that it is just off the ground and recheck the sensor reading.

Calibrating Feeder House Speed – John Deere 70 Series

The feeder house speed must be calibrated before calibrating the auto header height control (AHHC) system.

For instructions, refer to the combine operator's manual.

Adjusting Manual Header Raise/Lower Rate – John Deere 70 Series

The rate at which the header can be raised or lowered using the controls in the combine cab can be adjusted using the combine console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press button (A) and the current raise/lower rate setting will appear on the display (the lower the reading, the slower the speed at which the header moves).
2. Use scroll knob (B) to adjust the rate. The adjustment will be saved automatically.

    NOTE:

    If the display remains idle for a short period of time, it will automatically return to the previous page. Pressing check mark button (C) will also return the display to the previous page.

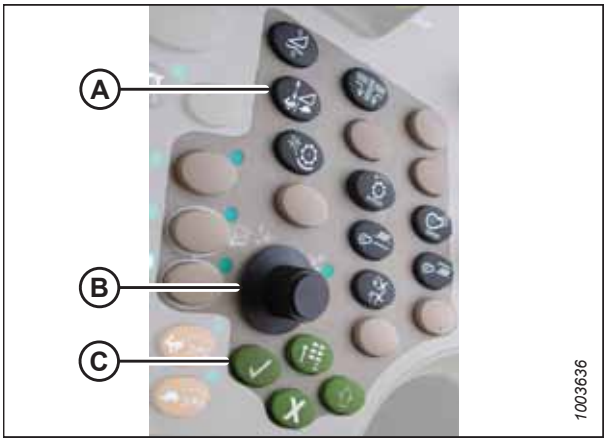


Figure 3.643: John Deere Combine Control Console

NOTE:

The numbers shown on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.644: John Deere Combine Display

Calibrating Auto Header Height Control – John Deere 70 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Start the engine.
2. Ensure the center-link is set to **D**.
3. Rest the header on the down stops.
4. Shut down the engine, and remove the key from the ignition.
5. Put the wings in the locked position.
6. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.

7. Press the button located fourth from the left along the top of display (A) to select the icon that resembles an open book with a wrench on it (B).

8. Press top button (A) a second time to enter diagnostics and calibration mode.

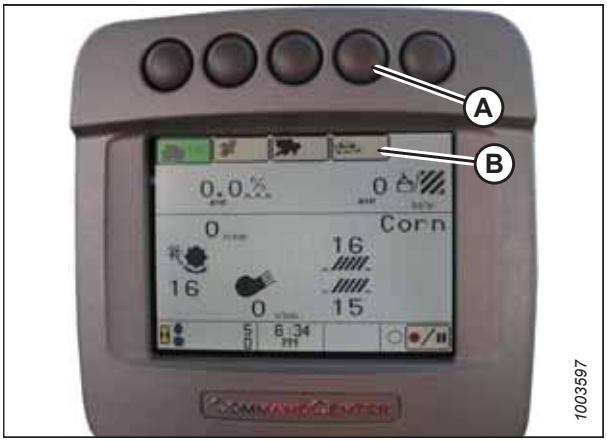


Figure 3.645: John Deere Combine Display

9. Select HEADER in box (A) by scrolling down to the box using the scroll knob, and then pressing the check mark button.

   NOTE:

   The knob and button are shown in Figure *3.647, page 385*.

10. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.

11. Follow the steps listed on the page to perform the calibration.

    NOTE:

    If an error code appears on the display, the sensor is not in the correct working range. Check and adjust the range. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

12. If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

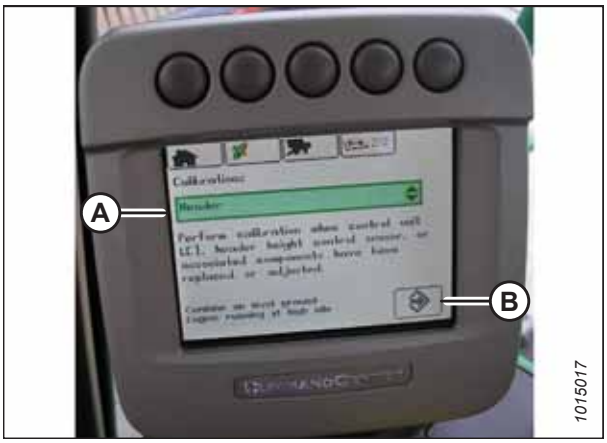


Figure 3.646: John Deere Combine Display

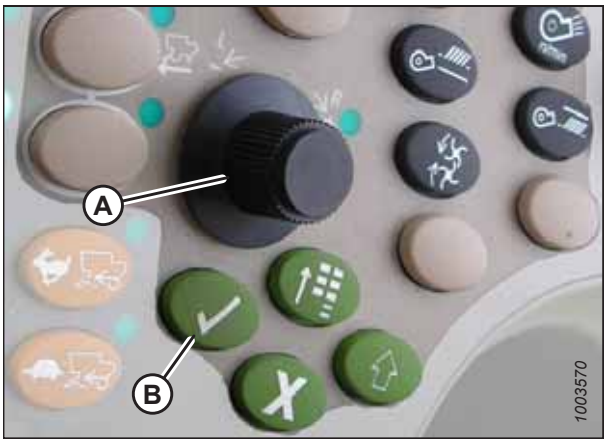


Figure 3.647: John Deere Combine Control Console

A - Scroll Knob **B - Check Mark Button**

Setting Auto Header Height Control Sensitivity – John Deere 70 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press button (A) twice. The current sensitivity setting will appear on the display.

   NOTE:

   The lower the reading, the lower the sensitivity.

2. Use scroll knob (B) to adjust the sensitivity setting. The adjustment will be saved automatically.

   NOTE:

   If the page remains idle for a short period of time, it will automatically return to the previous page. Pressing check mark button (C) also will return the display to the previous page.

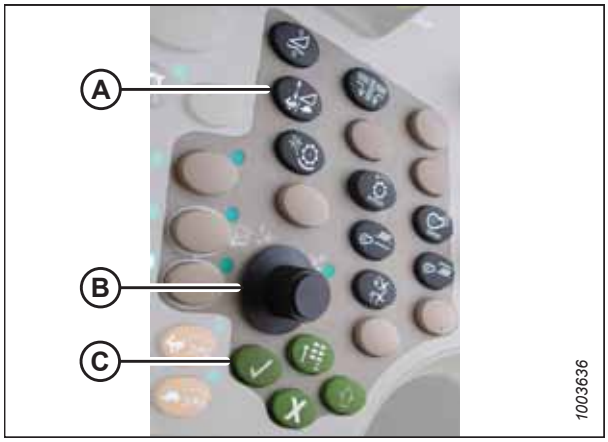


Figure 3.648: John Deere Combine Control Console

NOTE:

The numbers shown on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.649: John Deere Combine Display

3.10.16 John Deere S and T Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Checking Voltage Range from Combine Cab – John Deere S and T Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

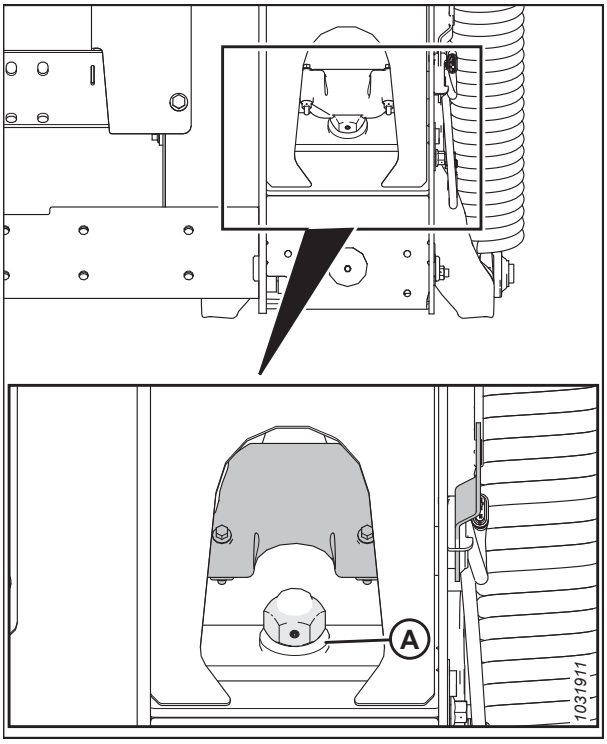


Figure 3.650: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

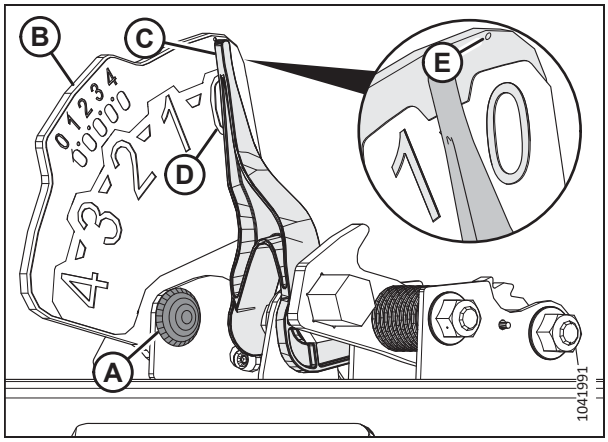


Figure 3.651: Float Indicator

7. Select CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.652: John Deere Combine Display

8. Select DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

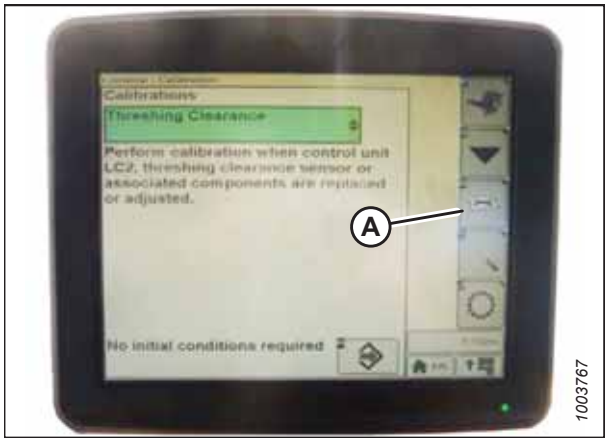


Figure 3.653: John Deere Combine Display

9. Select AHHC RESUME (A) and a list of calibration options appears.

Figure 3.654: John Deere Combine Display

10. Select the AHHC SENSING option.
11. Press icon (A). The AHHC SENSING menu appears and five pages of information appear.

Figure 3.655: John Deere Combine Display

12. Press icon (A) until it reads Page 5 near the top of the page and the following sensor readings appear:
    - LEFT HEADER HEIGHT
    - CENTER HEADER HEIGHT
    - RIGHT HEADER HEIGHT

    A reading is displayed for both the left and right sensors. On the MacDon header, there may be one sensor located in the float indicator box (standard) or two sensors located at the back of the float module side frame (optional).

Figure 3.656: John Deere Combine Display

13. Ensure the header float is unlocked.
14. Start the engine.

15. Fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to fully lower the feeder house.

16. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.

Adjusting Manual Header Raise/Lower Rate – John Deere S and T Series

The rate at which the header can be raised or lowered using the combine controls can be changed from the height sensitivity screen in the combine command center.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Put the wings in the locked position.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. The crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without the header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

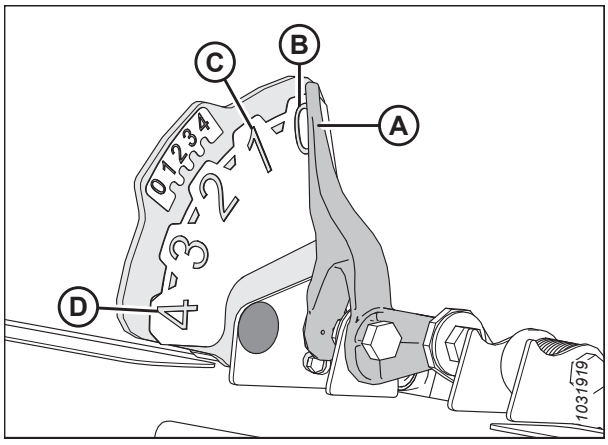


Figure 3.657: Float Indicator

2. Press button (A). The current sensitivity setting will appear on the display.

Figure 3.658: John Deere Combine Command Center

3. Press **–** or **+** icons (A) to adjust the rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.659: John Deere Combine Display

Calibrating Auto Header Height Control – John Deere S and T Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

WARNING

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

If header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so header does not physically separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Start the engine.
2. Ensure the center-link is set to **D**.
3. Rest the header on the down stops.
4. Unlock the float.
5. Shut down the engine, and remove the key from the ignition.
6. Put the wings in the locked position.

7. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.660: John Deere Combine Display

8. Select THRESHING CLEARANCE (A). A list of calibration options appears.

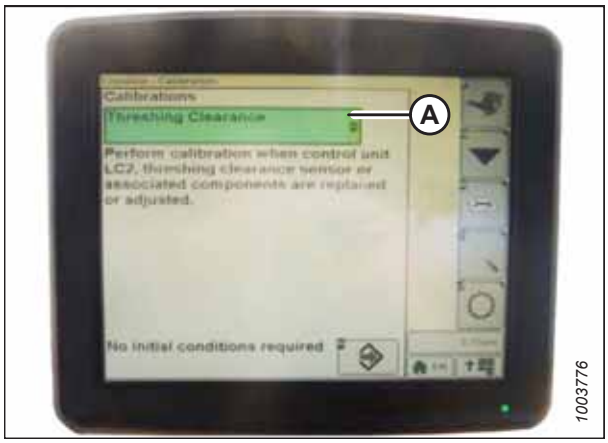


Figure 3.661: John Deere Combine Display

9. Select FEEDER HOUSE SPEED (A) from the list of calibration options.

   NOTE:

   Feeder house speed calibration must be done before header calibration.

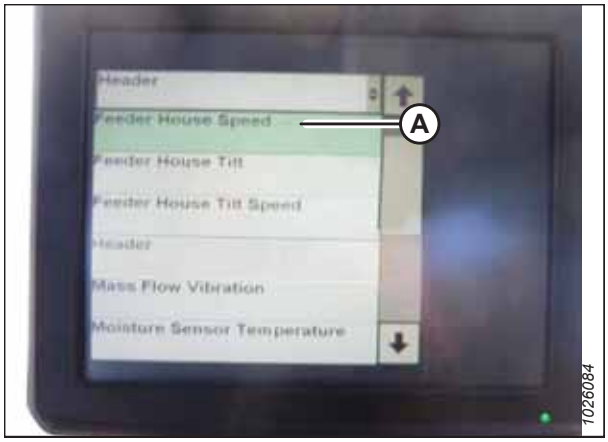


Figure 3.662: John Deere Combine Display

10. With FEEDER HOUSE SPEED selected, select icon (A). The icon turns green.

Figure 3.663: John Deere Combine Display

11. Select icon (A). Instructions will appear on the screen to guide you through the calibration process.

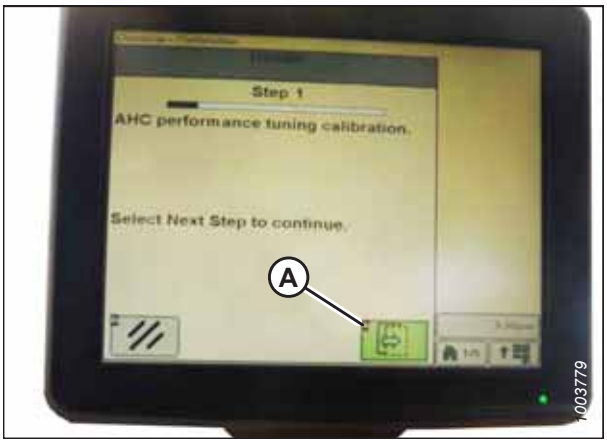


Figure 3.664: John Deere Combine Display

12. Select HEADER (A) from the list of calibration options.

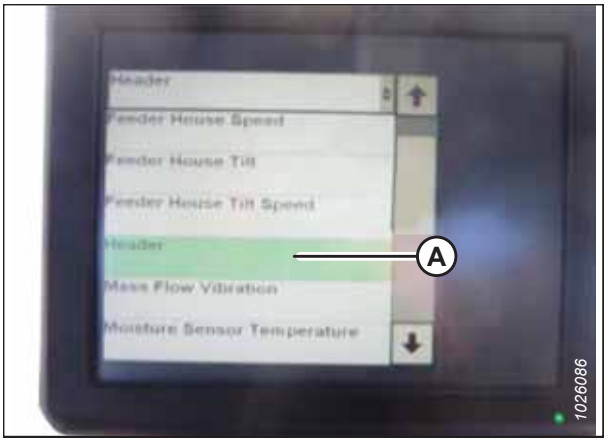


Figure 3.665: John Deere Combine Display

13. With HEADER selected, select icon (A). The icon turns green.

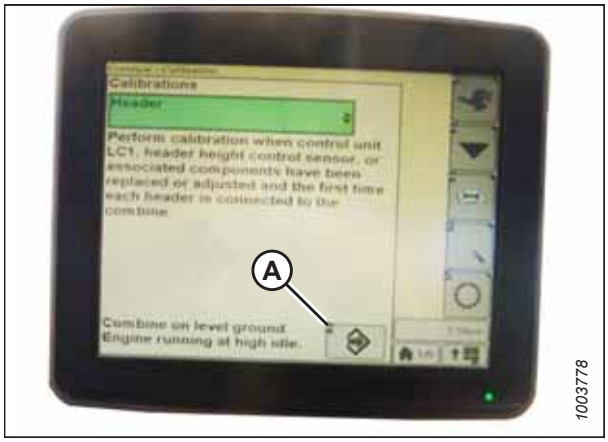


Figure 3.666: John Deere Combine Display

14. Select icon (A). Instructions will appear on the screen to guide you through the calibration process.

    NOTE:

    If an error code appears during calibration, the sensor will require adjustment. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

    NOTE:

    If the float was set heavier to complete the calibration process, adjust the float to the recommended operating float after calibration is complete.

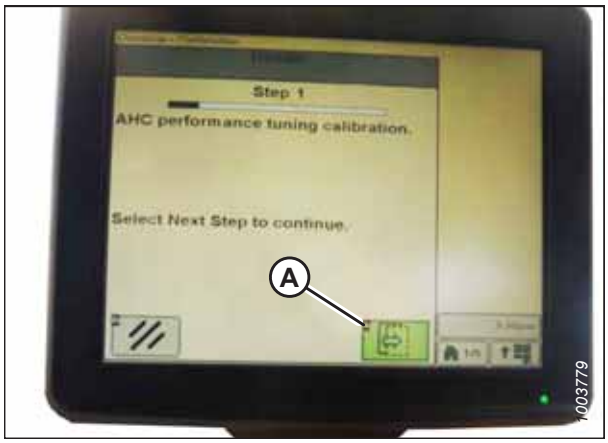


Figure 3.667: John Deere Combine Display

Setting Auto Header Height Control Sensitivity – John Deere S and T Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height will raise or lower the feeder house.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press button (A) twice and the current sensitivity setting will appear on the display.

Figure 3.668: John Deere Combine Command Center

2. Press **–** or **+** icons (A) to adjust the rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.669: John Deere Combine Display

Setting Preset Cutting Height – John Deere S and T Series

The reel and cut height setting can be stored in the combine's computer as presets. These settings can be set and selected using the combine's control handle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Ensure indicator (A) is at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground.

   NOTE:

   When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

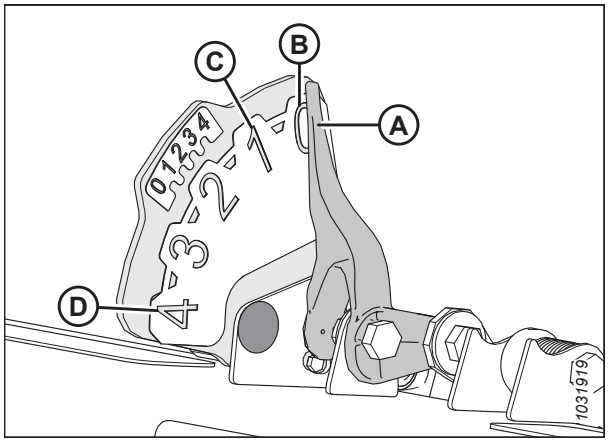


Figure 3.670: Float Indicator

2. Select COMBINE – HEADER SETUP icon (A) on the main page. The COMBINE – HEADER SETUP page appears. This page is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.

Figure 3.671: Combine Display

3. Select COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC page appears.

Figure 3.672: Combine Display

4. Select AUTO HEIGHT SENSING (A), RETURN TO CUT (B), and REEL POSITION (C) icons.

   NOTE:

   If REEL POSITION icon (C) cannot be selected (no check mark), the reel height sensor requires calibration. For instructions, refer to *Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – John Deere S and T Series, page 404*.

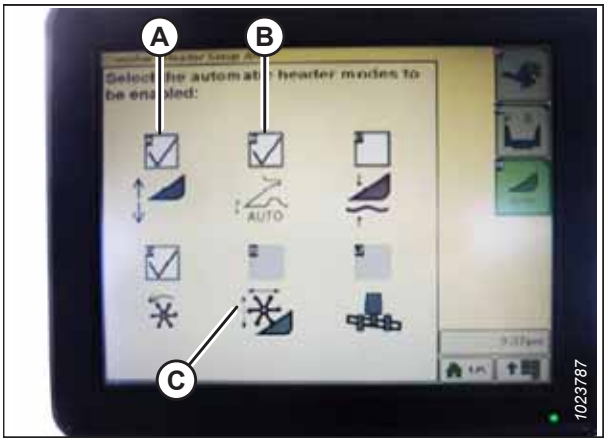


Figure 3.673: Combine Display

5. Engage the header.
6. Move the header to the desired position and use knob (A) to fine tune the position.
7. Move the reel to the desired position.

Figure 3.674: Combine Control Console

8. Press and hold preset switch 2 (B) until the reel height icon flashes on display.
9. Repeat the previous three steps for preset switch 3 (C).
10. Select an appropriate ground pressure setting. Use preset button 2 (B) on the control handle for a low ground pressure setting in muddy or soft soil conditions, and preset 3 (C) for a high ground pressure setting in firm soil conditions and a higher ground speed.

    NOTE:

    Preset button 1 (A) is reserved for header lift on the headland and is not used for cutting on the ground.

Figure 3.675: Control Handle Buttons

NOTE:

When the AHHC is engaged, AHHC icon (A) appears on the display and the number indicating which button was pressed (B) is shown on the page.

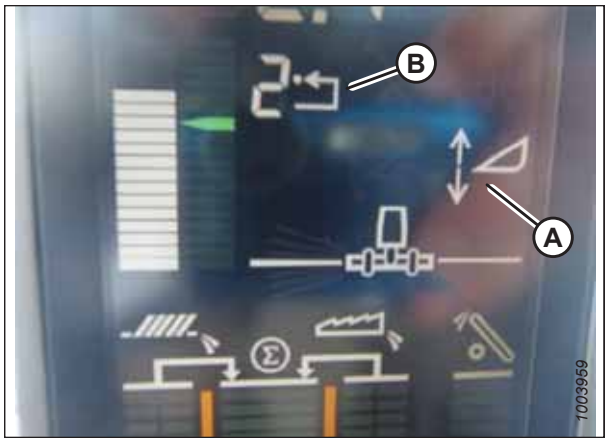


Figure 3.676: Combine Display

Calibrating Feeder House Fore-Aft Tilt Range – John Deere S and T Series

Follow this procedure to properly calibrate the combine feeder house fore-aft tilt range. This procedure applies only to model year 2015 and later John Deere S and T Series Combines.

To ensure the best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the control handle.

Figure 3.677: John Deere Control Handle

NOTE:

The feeder house fore/aft tilt controls can be changed to work with buttons E and F by selecting control handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from drop-down menu (B).

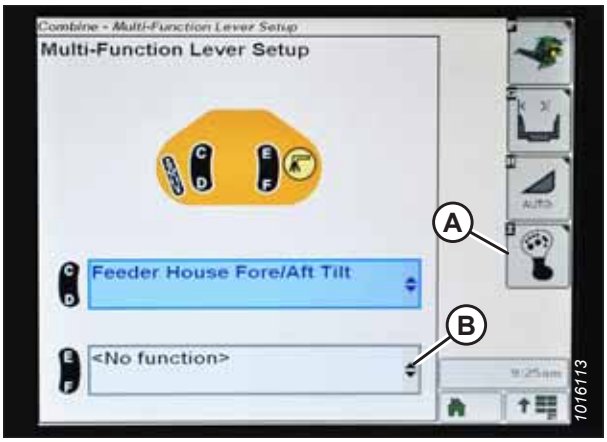


Figure 3.678: John Deere Combine Display

To calibrate the feeder house fore-aft tilt range, follow these steps:

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.679: John Deere Combine Display

5. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.

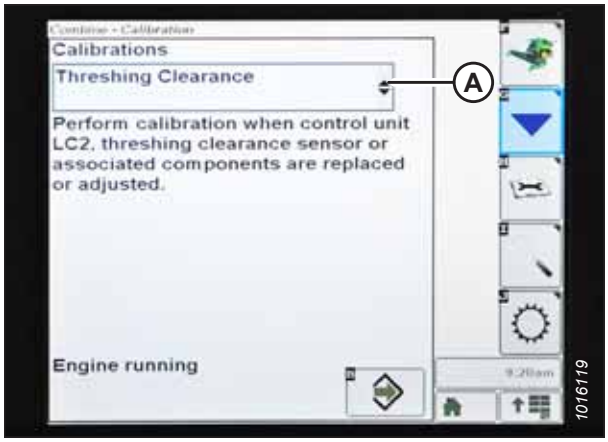


Figure 3.680: John Deere Combine Display

6. Select arrow (A) to cycle up through the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

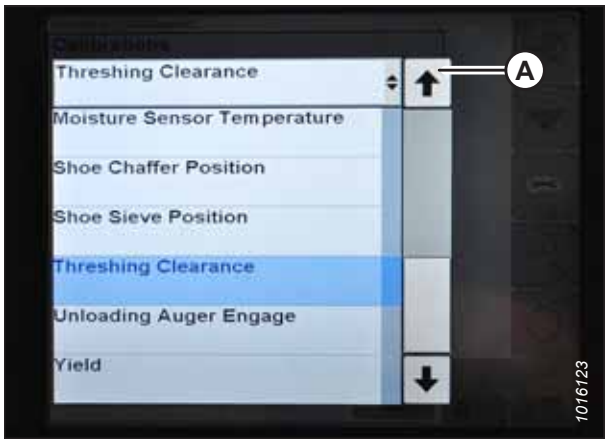


Figure 3.681: John Deere Combine Display

7. Select ENTER icon (A).

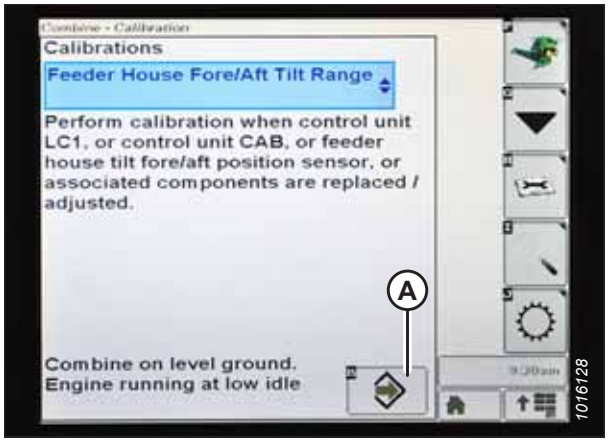


Figure 3.682: John Deere Combine Display

8. Follow the instructions that appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   If an error code appears during calibration, the sensor will require adjustment. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere S and T Series, page 387*.

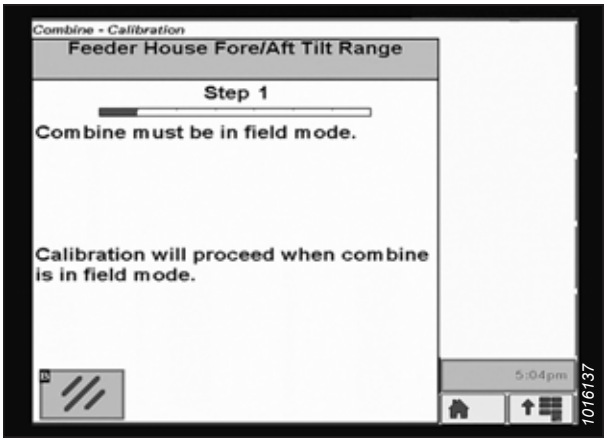


Figure 3.683: John Deere Combine Display

Checking Reel Height Sensor Voltages – John Deere S and T Series

Check the reel height sensor voltages to ensure they are within the prescribed range.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.684: John Deere Combine Display

2. Select DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

Figure 3.685: John Deere Combine Display

3. Select drop-down menu (A) to view the list of calibration options.

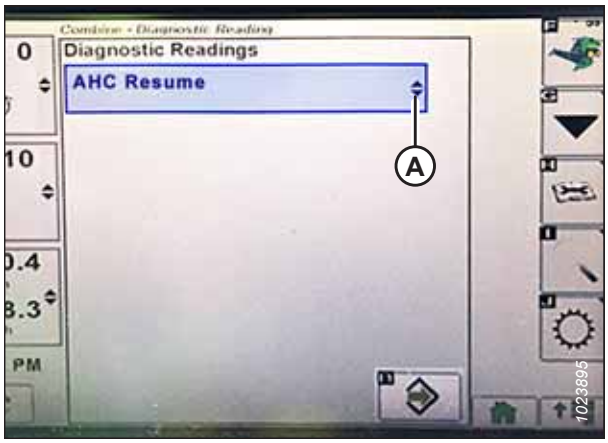


Figure 3.686: John Deere Combine Display

4. Scroll down and select REEL RESUME (A).

Figure 3.687: John Deere Combine Display

5. Select ENTER icon (A). The REEL RESUME page appears.

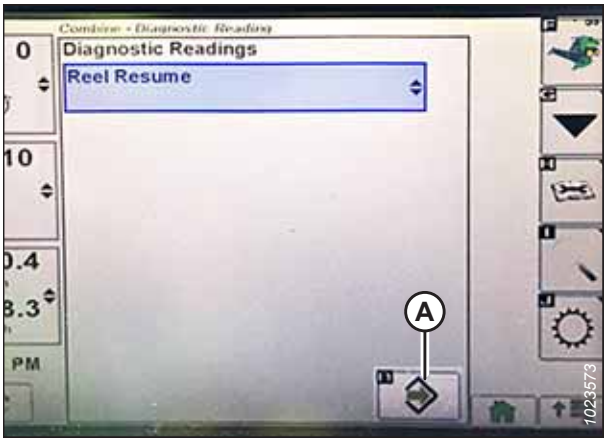


Figure 3.688: John Deere Combine Display

6. Select NEXT PAGE icon (A) to cycle to page 3.
7. Lower the reel to view lower voltage limit (B). The voltage should be within 0.5–0.9 V.

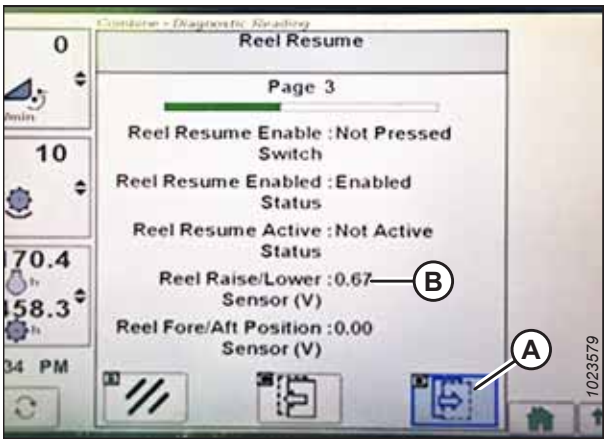


Figure 3.689: John Deere Combine Display

8. Raise the reel to view upper voltage limit (A). The voltage should be within 4.1–4.3 V.
9. If either voltage is not within the correct range, refer to *Checking and Adjusting Reel Height Sensor, page 221*.

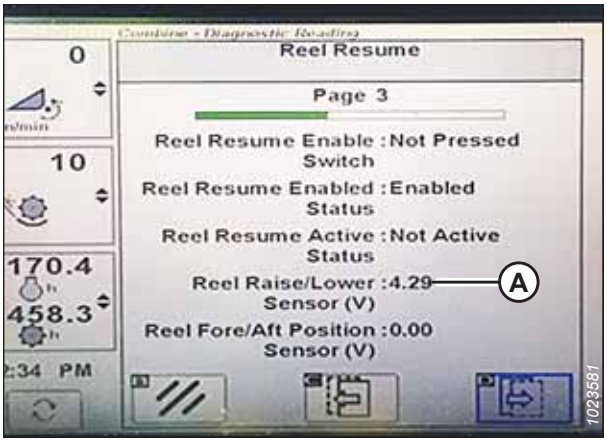


Figure 3.690: John Deere Combine Display

Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – John Deere S and T Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the reel position feature will not work properly. The following procedure applies only to model year 2015 and later John Deere S and T Series Combines.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) off the ground.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at a full idle to properly calibrate the sensors.

3. Select DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page is shown.

Figure 3.691: John Deere Combine Display

4. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.
5. Scroll through the list of options and select REEL POSITION.
6. Select ENTER icon (B).

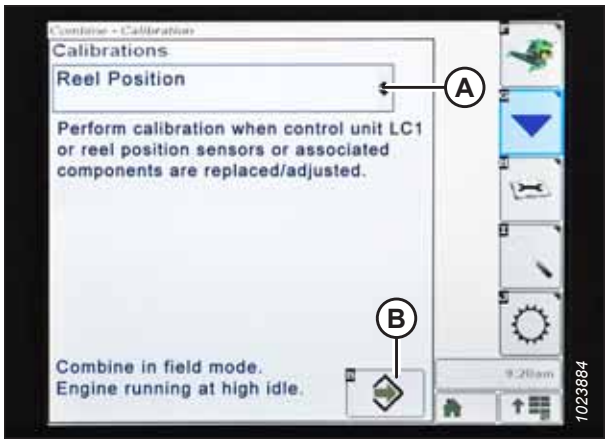


Figure 3.692: John Deere Combine Display

7. Follow the instructions that appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step. This calibration requires you to use reel raise (A) and reel lower (B) switches on the control handle.

Figure 3.693: John Deere Control Handle

8. Press and hold the REEL LOWER switch until the reel is fully lowered. Continue holding the REEL LOWER switch until prompted by the display.

Figure 3.694: John Deere Combine Display

9. Press and hold the REEL RAISE switch until the reel is fully raised. Continue holding the REEL RAISE switch until prompted by the display.

Figure 3.695: John Deere Combine Display

10. When all steps have been completed, CALIBRATION COMPLETE message is displayed on the page. Exit the CALIBRATION menu by pressing ENTER icon (A).

    NOTE:

    If an error code appears during calibration, the sensor will require adjustment. For instructions, refer to *Checking Reel Height Sensor Voltages – John Deere S and T Series, page 401*.

Figure 3.696: John Deere Combine Display

3.10.17 John Deere S7 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere S7 Series combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Setting up Header – John Deere S7 Series

Set these initial configuration options on your combine when setting up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Press header button (A) on the panel below the display. The HEADER page appears.

Figure 3.697: John Deere S7 Display

2. Select HEADER TYPE field (A). The HEADER DETAILS dialog box opens.

Figure 3.698: John Deere S7 Display – Header Page

3. Verify the correct header width is displayed under WIDTH.
4. To change the header width, select field (A). The WIDTH dialog box opens.

Figure 3.699: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then select OK.

Figure 3.700: John Deere S7 Display – Setting Header Width

6. Select close button (A) in the top right corner to return to the HEADER page.

Figure 3.701: John Deere S7 Display – Header Details Dialog Box

7. Raise/lower speed (A), tilt speed (B), height sensitivity (C), and tilt sensitivity (D) can be adjusted from this page. Select the option you would like to adjust. The following example shows the raise/lower speed adjustment.

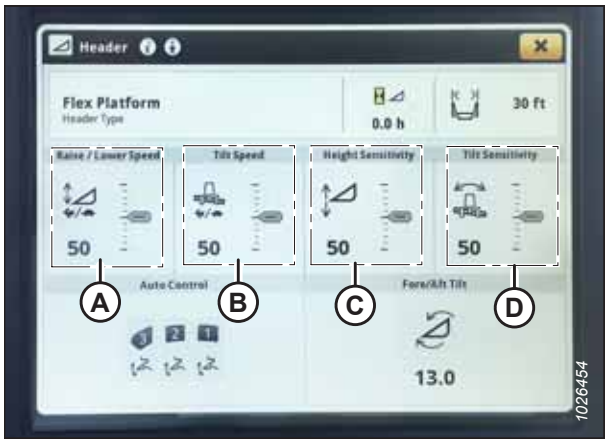


Figure 3.702: John Deere S7 Display – Header Page

8. Use **+** and **–** buttons (A) to adjust the setting.

9. Select the X button in top right corner of the window to return to the HEADER page.

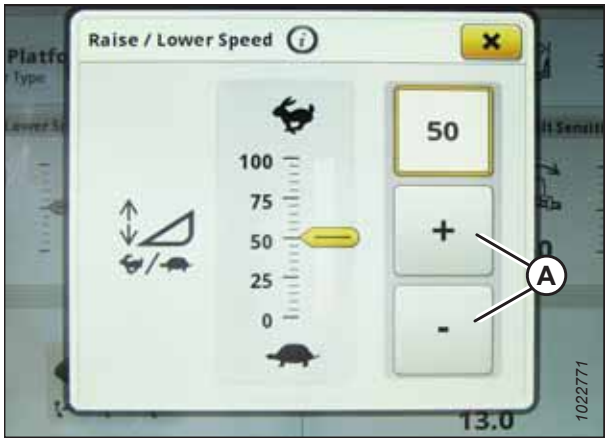


Figure 3.703: John Deere S7 Display – Raise/Lower Speed Adjustment

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

Figure 3.704: John Deere S7 Display – Header Page

11. If the header has not been calibrated yet, an error icon will appear on HEIGHT SENSING button (A). Select button (A) to view the error message.

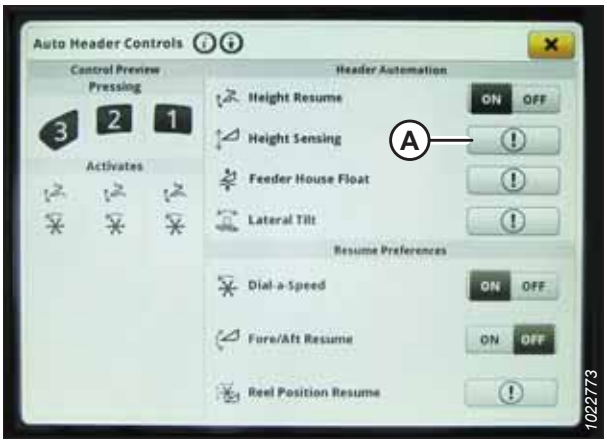


Figure 3.705: John Deere S7 Display – Auto Header Controls

12. Read the error message, then select OK.

13. Proceed to *Checking Voltage Range from Combine Cab – John Deere S7 Series, page 410*.

Figure 3.706: John Deere S7 Display – Height Sensing Error Message

Checking Voltage Range from Combine Cab – John Deere S7 Series

The auto header height control (AHHC) sensor output must be within a specific range, or the feature will not work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the auto header height control (AHHC) system to malfunction.

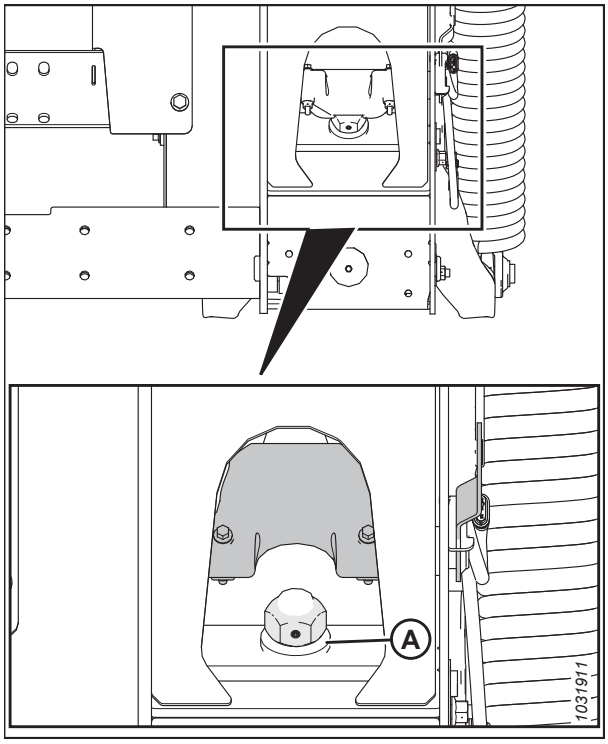


Figure 3.707: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

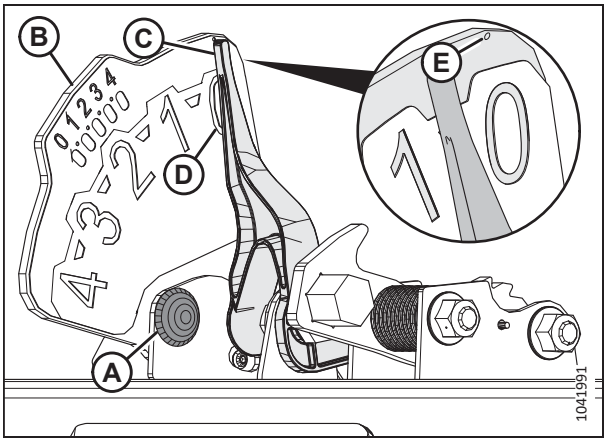


Figure 3.708: Float Indicator

7. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page.

Figure 3.709: John Deere S7 Display – Harvesting Page

8. On the MENU page, select SYSTEM tab (A). The MENU opens.

9. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

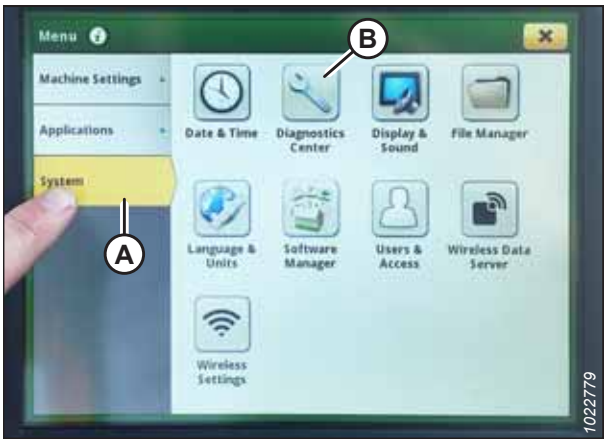


Figure 3.710: John Deere S7 Display – Menu

10. Select AHC - SENSING (A). The AHC - SENSING\DIAGNOSTICS page appears.

Figure 3.711: John Deere S7 Display – Diagnostics Center

11. Select SENSOR tab (A) to view the sensor voltages. Center header height sensor voltage (B) must be between 0.7 and 4.3 V, with at least 3 V of variation between 0 and 4 on the float indicator box.

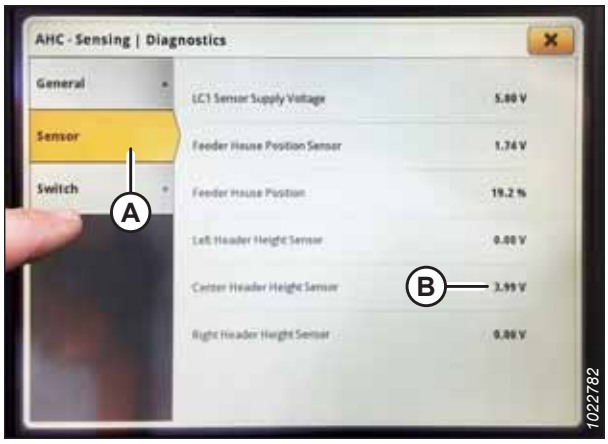


Figure 3.712: John Deere S7 Display – Checking Sensor Voltage

Calibrating Feeder House – John Deere S7 Series

The feeder house must be calibrated before the header is calibrated.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

1. Start the engine.
2. Ensure the center-link is set to **D**.

3. Rest the header on the down stops.
4. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
5. Shut down the engine, and remove the key from the ignition.
6. On the HARVESTING page, select MENU icon (A) in the bottom right corner of page. The MENU opens.

Figure 3.713: John Deere S7 Display – Harvesting Page

7. Select MACHINE SETTINGS tab (A).
8. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

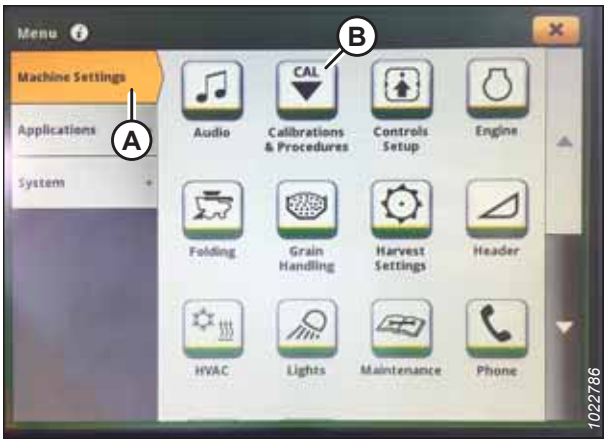


Figure 3.714: John Deere S7 Display – Machine Settings

9. Select HEADER tab (A).
10. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page appears.

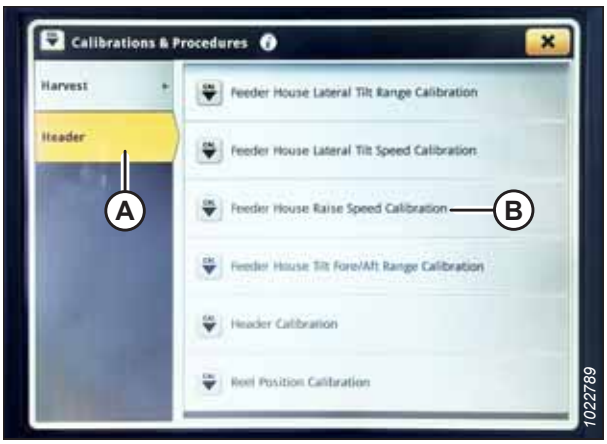


Figure 3.715: John Deere S7 Display – Calibrations and Procedures

11. Select CALIBRATE (A) at the bottom of the page. A calibration overview appears.

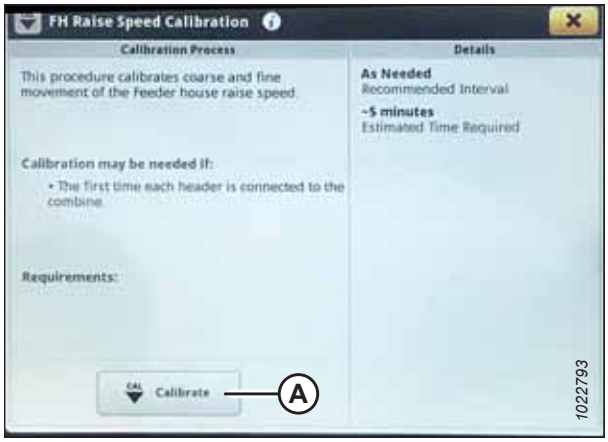


Figure 3.716: John Deere S7 Display – Feeder House Calibration

12. Read the calibration overview, and then press START.

Figure 3.717: John Deere S7 Display – Feeder House Calibration

13. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

Figure 3.718: John Deere S7 Display – Feeder House Calibration

14. When calibration is complete, select SAVE to confirm the calibration.

Figure 3.719: John Deere S7 Display – Feeder House Calibration

Calibrating Header – John Deere S7 Series

Before the auto header height control (AHHC) system can be used, it must be calibrated.

DANGER

Ensure that all bystanders have cleared the area.

The feeder house must be calibrated before calibrating the header. If the feeder house has not yet been calibrated, refer to *Calibrating Feeder House – John Deere S7 Series, page 412*.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Ensure the center-link is set to **D**.
3. Rest the header on the down stops .
4. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
5. Shut down the engine, and remove the key from the ignition.

6. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 3.720: John Deere S7 Display – Harvesting Page

7. Select MACHINE SETTINGS tab (A).
8. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

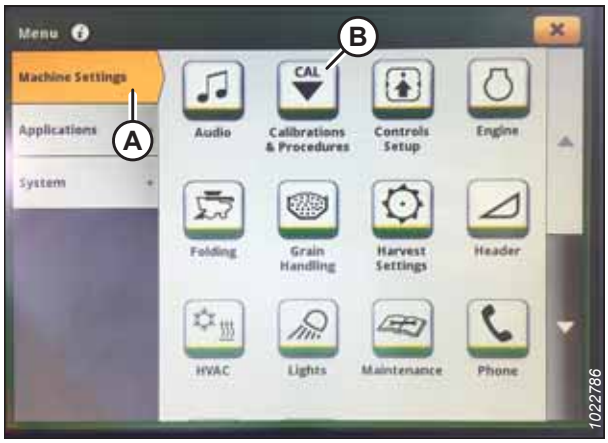


Figure 3.721: John Deere S7 Display – Machine Settings

9. Select HEADER tab (A).
10. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page appears.

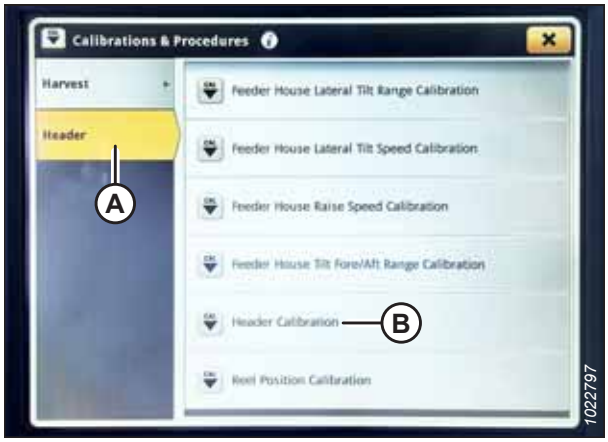


Figure 3.722: John Deere S7 Display – Calibrations and Procedures

11. Select CALIBRATE (A) at the bottom of the page. The calibration overview window opens.

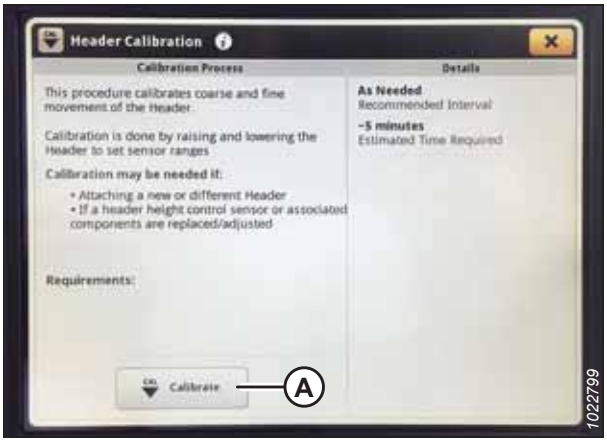


Figure 3.723: John Deere S7 Display – Header Calibration

12. Press button (A) on the console to set the engine to full throttle.

Figure 3.724: John Deere S7 Console

13. Select START on the CALIBRATION OVERVIEW page.

14. Follow the instructions that appear on the combine display. As you proceed through the calibration process, the display will automatically update to show the next step.

Figure 3.725: John Deere S7 Display – Header Calibration

15. When the calibration is complete, select SAVE to confirm the calibration.

Figure 3.726: John Deere S7 Display – Header Calibration

3.10.18 John Deere X9 Series Combines

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the touch screen settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

Setting up Header in CommandCenter™ Display – John Deere X9 Series

The main header auto header height control (AHHC) settings can be configured in the CommandCenter™ Display in the combine cab.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.727: CommandCenter™ Display

3. Ensure that header type (A) and size (B) are correct.

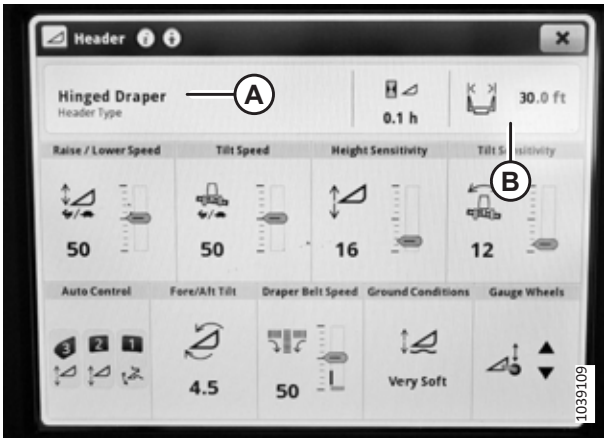


Figure 3.728: CommandCenter™ Display – Header Page

4. Select AUTO CONTROL (A). The AUTO HEADER CONTROLS page opens.

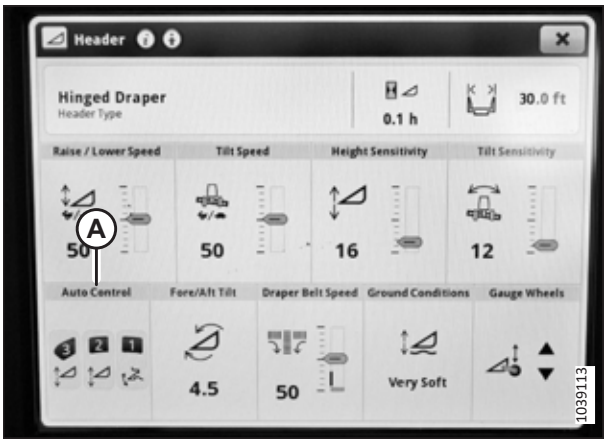


Figure 3.729: CommandCenter™ Display – Auto Header Controls Page

5. On the AUTO HEADER CONTROLS page, ensure that the following HEADER AUTOMATION OPTIONS are set to ON:
   - HEIGHT RESUME
   - HEIGHT SENSING
   - LATERAL TILT
6. Ensure that the following RESUME PREFERENCES are set to ON:
   - AUTO REEL SPEED
   - FORE/AFT RESUME
   - REEL POSITION RESUME
7. Set any other settings in the AUTO HEADER CONTROLS PAGE not referred to in the previous two steps to OFF. Press the X in the corner of the window to exit the page.

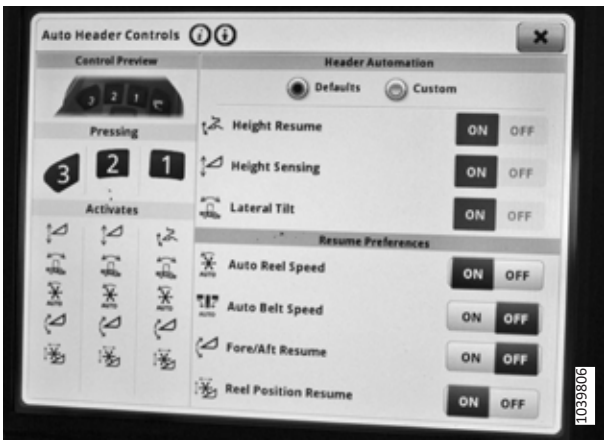


Figure 3.730: CommandCenter™ Display – Auto Header Controls Page

8. On the HEADER page, select HEIGHT SENSITIVITY (A). Change the setting to 10.
9. Select TILT SENSITIVITY (B). Change the setting to 10.
10. Press X (C) to exit the HEADER page.

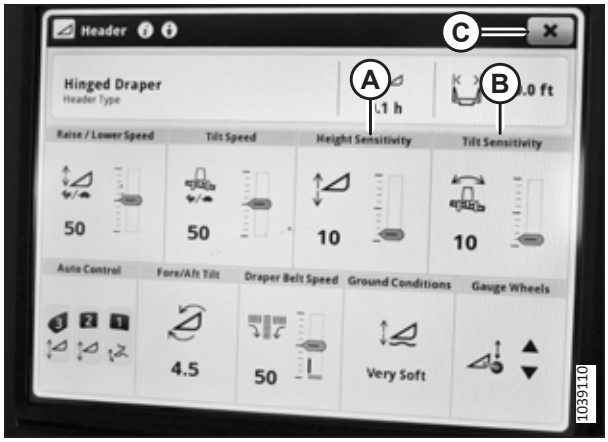


Figure 3.731: CommandCenter™ Display – Header Page

Calibrating Auto Header Height Control – John Deere X9 Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Park the combine on a level surface.
3. Adjust center-link (A) so that indicator (B) is at position D on the gauge.
4. Ensure that the header and the combine faceplate are level.
5. Move the reel to position 6.

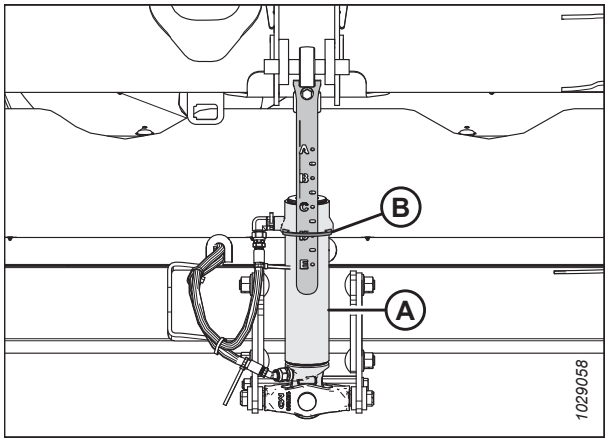


Figure 3.732: Center-Link

6. On the CommandCenter™ display, select MENU icon (A) in the bottom right corner of the HARVESTING page. The MENU appears.

Figure 3.733: John Deere X9 Display – Harvesting Page

7. Select MACHINE SETTINGS tab (A).
8. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

Figure 3.734: John Deere X9 Display – Machine Settings

9. Select HEADER tab (A).
10. Select GAUGE WHEEL RANGE CALIBRATION (B). The GAUGE WHEEL RANGE CALIBRATION page appears.
11. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.
12. Select SAVE to confirm the calibration.

Figure 3.735: John Deere X9 Display – Gauge Wheel Range Calibration

13. Select HEADER CALIBRATION (A). The HEADER CALIBRATION page appears.

    NOTE:

    Unlock the mechanical float locks before calibrating the header.

14. Raise the header to the top of the feederhouse range and ensure that both of the float indicators reach 0. Wait until the indicators stop moving before proceeding.

15. Lower the header until the float indicator reaches 4 and can go no further.

16. Raise the header again to the top of the feederhouse range and ensure that both of the float indicators reach 0. Wait until the indicators stop moving before proceeding.

17. Select SAVE to confirm the calibration.

18. Select REEL AND CUTTERBAR POSITION CALIBRATION (A). The REEL AND CUTTERBAR POSITION CALIBRATION page appears.

19. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

20. Select SAVE.

21. Press the X in the top right corner to exit the CALIBRATION & PROCEDURES page.

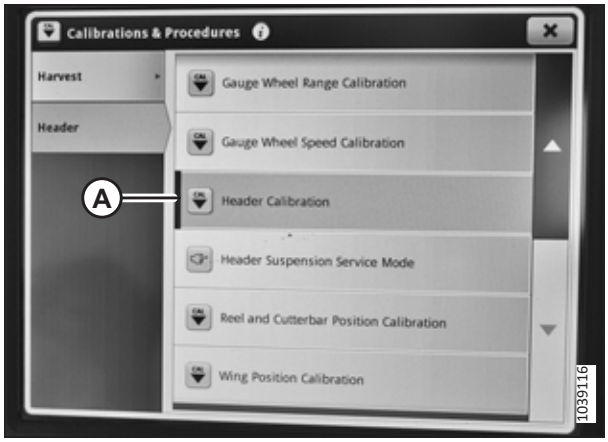


Figure 3.736: John Deere X9 Display – Header Calibration

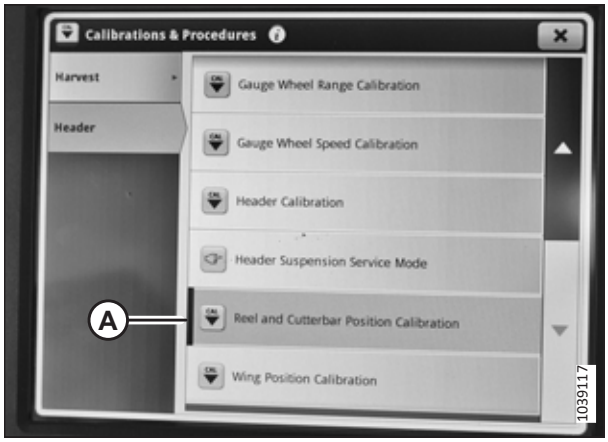


Figure 3.737: John Deere X9 Display – Reel and Cutterbar Position Calibration

Checking Voltage Range from Combine Cab – John Deere X9 Series

The voltage of the auto header height control (AHHC) sensors will need to be verified to ensure the proper operation of the system.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 3.738: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 3.739: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).

5. Select HEADER/HITCH CONTROLLER (B).

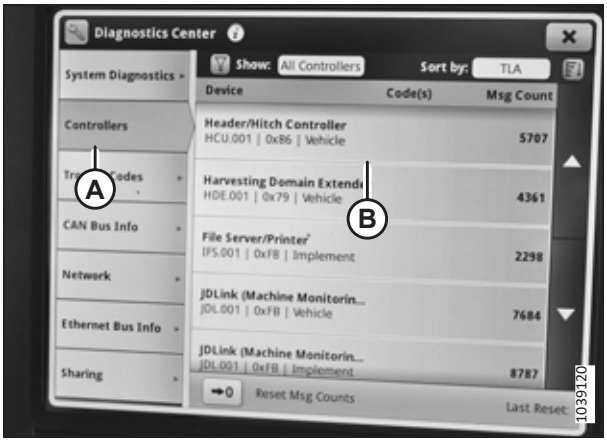


Figure 3.740: John Deere X9 Display – Diagnostics Center

6. Select READINGS (A) on the display and scroll through list (B) to find the desired voltage reading. For information on the appropriate voltage range, refer to *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.
7. Press the X in the top right corner to exit the HEADER/ HITCH CONTROLLER page.

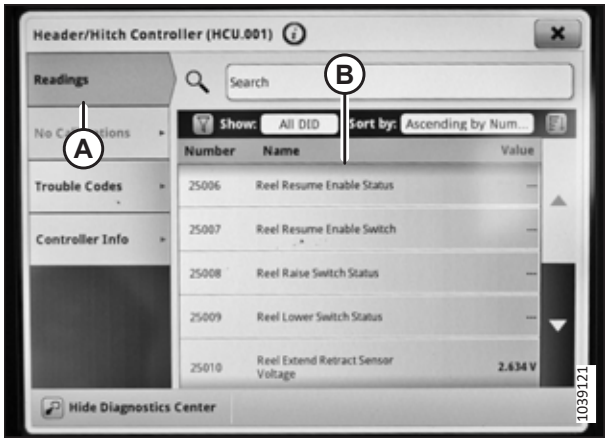


Figure 3.741: John Deere X9 Display – Header/Hitch Controller

Using Auto Header Height Control – John Deere X9 Series

The ground speed lever in the cab of the combine has three buttons which can be used to control the auto header height control (AHHC) system.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.742: CommandCenter™ Display

3. Select AUTO CONTROL (A). The AUTO HEADER CONTROLS page opens.

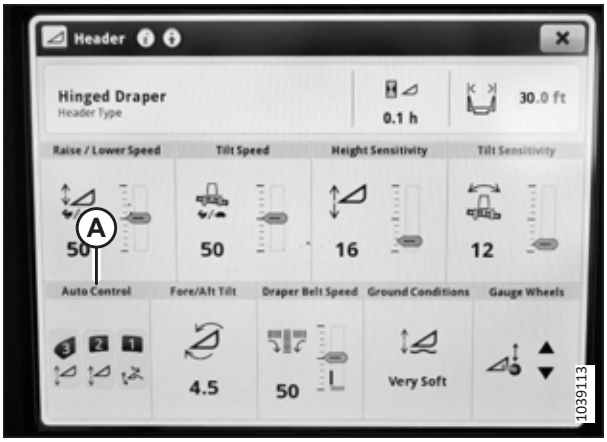


Figure 3.743: CommandCenter™ Display – Auto Header Controls Page

4. On the AUTO HEADER CONTROLS page, locate CONTROL PREVIEW (A).

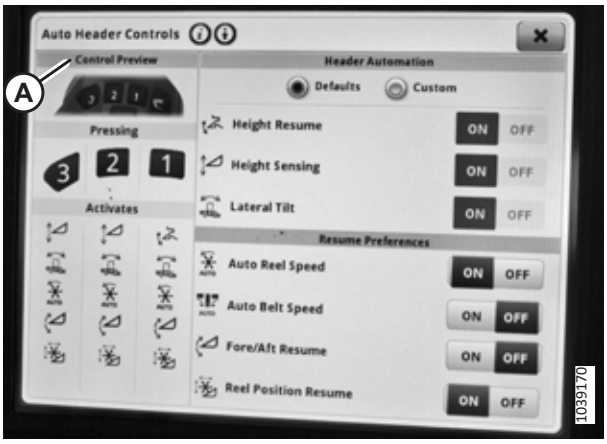


Figure 3.744: John Deere X9 Display – Auto Header Controls Page

NOTE:

When buttons 2 or 3 (A) on the multi-function lever are pressed, the system automatically moves the header to the preset setting. The preset setting can be set by the Operator.

NOTE:

Beneath each button is a list of functions that the button will operate.

NOTE:

Button 1 is used for the RETURN TO HEIGHT function.

Figure 3.745: John Deere X9 – Multi-Function Lever

5. Press button 2 or 3 (B) on the multi-function lever to set the reel position.

6. Press button (A) to adjust the reel fore-aft and reel height positions. Hold the button for 3 seconds to save the setting. This will become the preset reel setting for button 2 or 3.

   NOTE:

   Buttons 2 and 3 can have different settings.

Figure 3.746: John Deere X9 – Multi-Function Lever

7. If the header is equipped with the ContourMax™ option, the GAUGE WHEELS setting will need to be configured, depending on the desired cutting height. Proceed to the relevant topic:

   - *Cutting Above Ground Level – Headers Equipped with ContourMax™, page 426*
   - *Cutting at Ground Level – Headers Equipped with ContourMax™, page 428*

Cutting Above Ground Level – Headers Equipped with ContourMax™

On John Deere X9 Series Combines, the auto header height control (AHHC) system works only when cutting above ground level if the ContourMax™ option is installed on the header. The header float will need to be configured for headers cutting off of the ground which have the ContourMax™ option installed.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.

2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.747: CommandCenter™ Display

3. On the HEADER page, select GAUGE WHEELS (A).

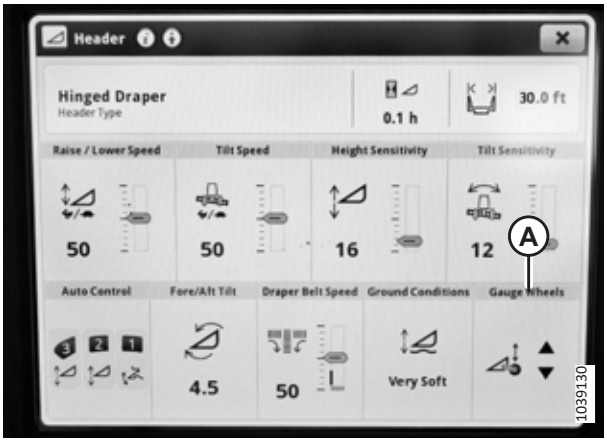


Figure 3.748: John Deere X9 Display – Header Page

4. Adjust the height using the controls on the display or using dial (A) on the console. The setting will be saved automatically to multi-function lever button 2 or 3.

Figure 3.749: John Deere X9 Display – Header Page

5. On the HEADER page, locate GROUND CONDITIONS (A).

   NOTE:

   This setting can be changed only when height sensing mode is enabled.

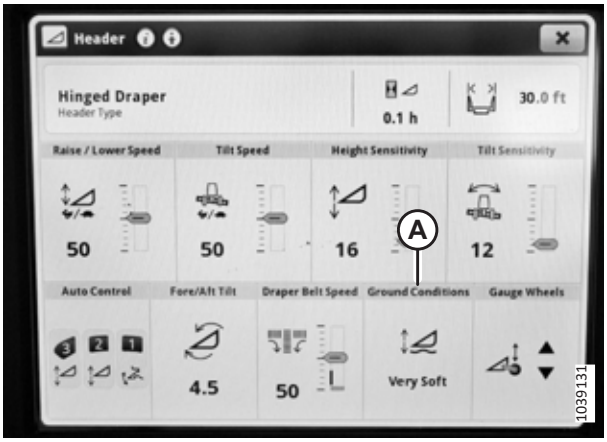


Figure 3.750: John Deere X9 Display – Header Page

6. Choose one of the following header ground pressure settings:
   - VERY FIRM (1 on the float indicator)
   - FIRM (1.5 on the float indicator)
   - TYPICAL (2 on the float indicator)
   - SOFT (2.5 on the float indicator)
   - VERY SOFT (3 on the float indicator)

   NOTE:

   The firmer the setting, the more ground pressure is applied to the header.

   NOTE:

   These settings are automatically saved to button 2 or 3 on the multi-function handle, depending on which one is selected. The selected button is displayed on the corner display post.

Cutting at Ground Level – Headers Equipped with ContourMax™

The header's auto header height control (AHHC) system allows it to follow the contours of the ground during harvesting. If the header is equipped with the ContourMax™ option, the GAUGE WHEELS setting in the HEADER page on the CommandCenter™ in the combine cab will need to be adjusted.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Press HEADER button (A) on the panel below the display. The HEADER page opens.

Figure 3.751: CommandCenter™ Display

3. On the HEADER page, select GAUGE WHEELS (A).

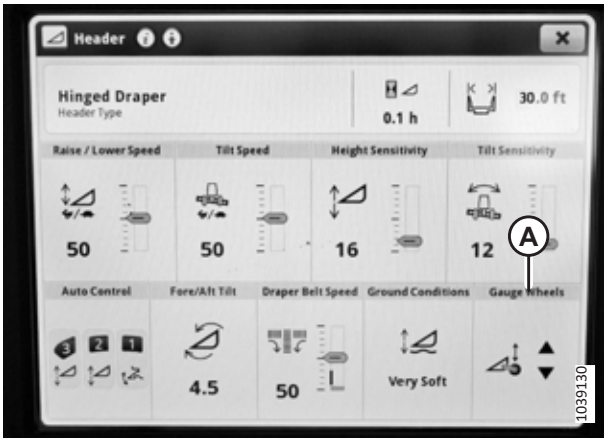


Figure 3.752: John Deere X9 Display – Header Page

4. Fully retract the wheels using the height adjustment on the display or use dial (A) on the console. The setting will be saved automatically to the active multi-function lever button (2 or 3).

5. Engage the header.

Figure 3.753: John Deere X9 Display – Header Page

6. On the HEADER page, locate GROUND CONDITIONS (A).

   NOTE:

   This setting can be changed only when sensing mode is enabled.

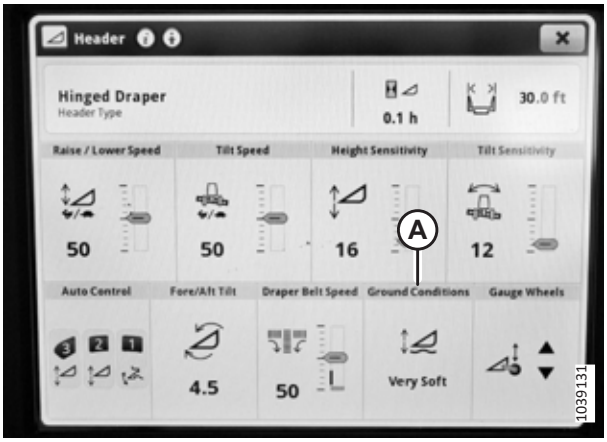


Figure 3.754: John Deere X9 Display – Header Page

7. Choose one of the following header ground pressure settings:
   - VERY FIRM (1 on the float indicator)
   - FIRM (1.5 on the float indicator)
   - TYPICAL (2 on the float indicator)
   - SOFT (2.5 on the float indicator)
   - VERY SOFT (3 on the float indicator)

   NOTE:

   The firmer the setting, the more ground pressure is applied to the header.

   NOTE:

   These settings are saved automatically to the selected multi-function handle button (2 or 3). The active button selected is shown on the corner display post.

Checking Error Codes on Header Controller – John Deere X9 Series

If errors occur while the auto header height control (AHHC) system is operating, the resulting error codes can be viewed in the combine computer's DIAGNOSTICS CENTER.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page. The MENU appears.

Figure 3.755: John Deere X9 Display – Harvesting Page

3. Select SYSTEM tab (A), and then select DIAGNOSTICS CENTER (B).

Figure 3.756: John Deere X9 Display – System

4. Select CONTROLLERS tab (A).
5. Select HEADER/HITCH CONTROLLER (B).

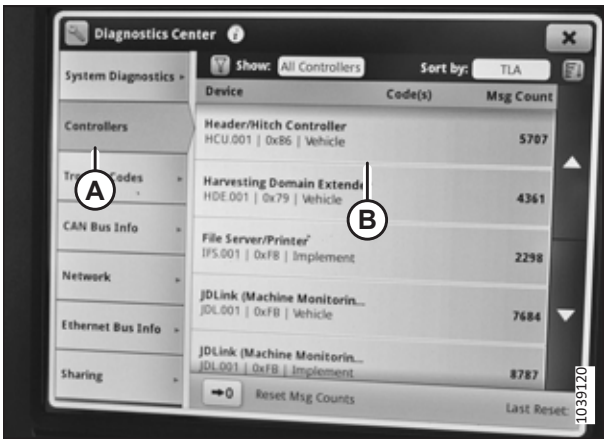


Figure 3.757: John Deere X9 Display – Diagnostics Center

6. Select TROUBLE CODES (A). Trouble codes appear on right side (B) of the display.
7. Press the X in the top right corner to exit the HEADER/ HITCH CONTROLLER page.

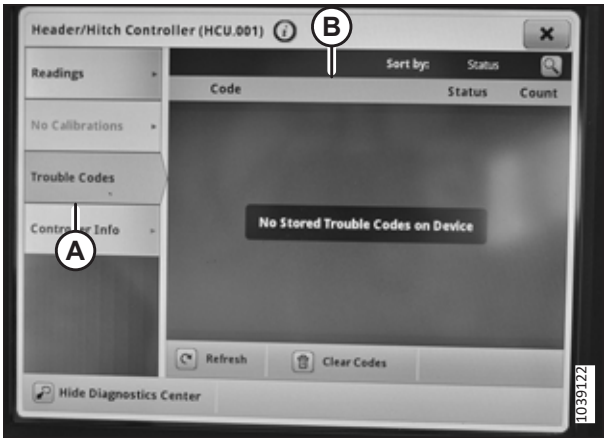


Figure 3.758: John Deere X9 Display – Header/Hitch Controller

3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier

To make your header's auto header height control (AHHC) system compatible with the combine, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

This section applies only to pre-model year 2015 New Holland CR/CX models.

Checking Voltage Range from Combine Cab – New Holland CR and CX Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

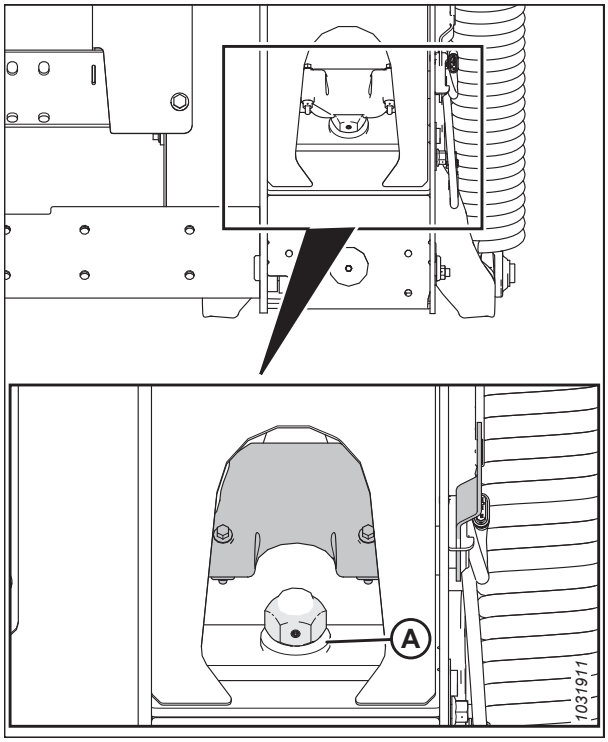


Figure 3.759: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

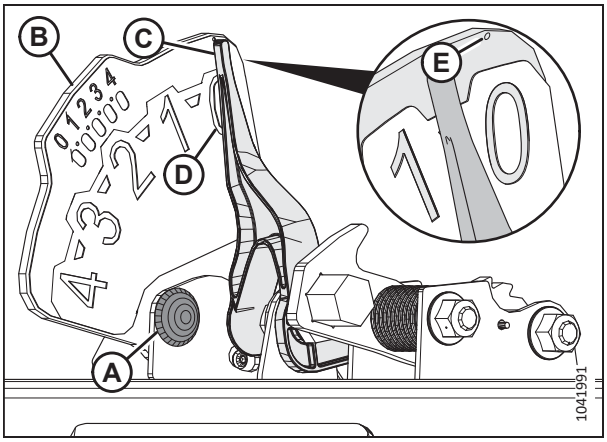


Figure 3.760: Float Indicator

7. Ensure that the header float is unlocked.
8. Select DIAGNOSTICS (A) on the main page.
   The DIAGNOSTICS page appears.
9. Select SETTINGS. The SETTINGS page appears.

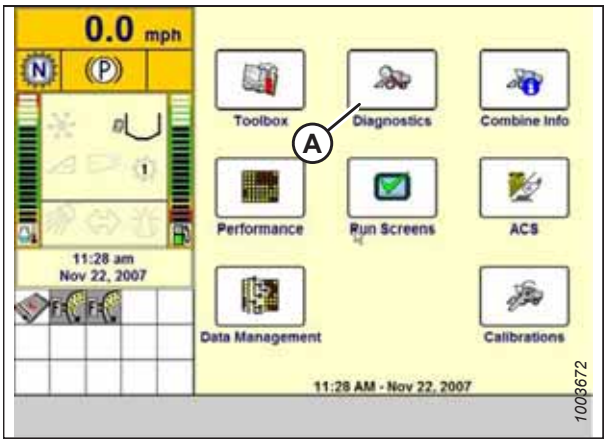


Figure 3.761: New Holland Combine Display

10. Select GROUP drop-down menu (A). The GROUP dialog box appears.

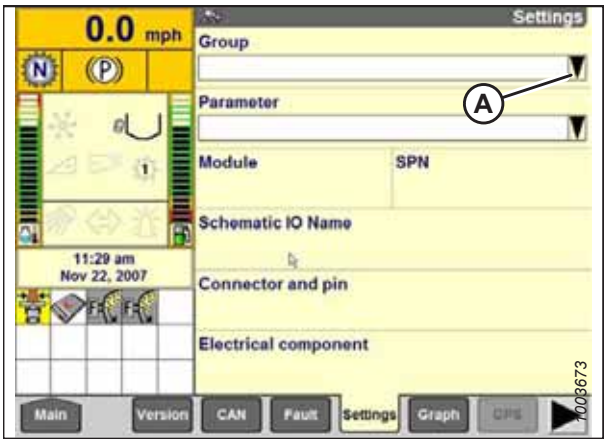


Figure 3.762: New Holland Combine Display

11. Select HEADER HEIGHT/TILT (A). The PARAMETER page appears.

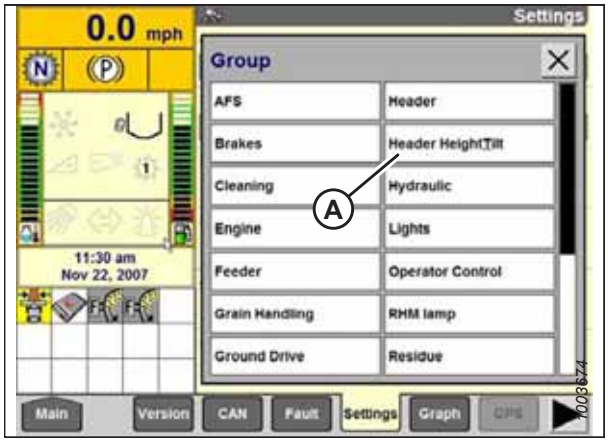


Figure 3.763: New Holland Combine Display

12. Select LEFT HEADER HEIGHT SEN (A), then select GRAPH button (B). The voltage reading appears at the top of the page.
13. Raise and lower the header to see the full range of voltage readings.
14. Compare the voltage readings on the display to voltage ranges specified in *3.10.2 Recommended Sensor Output Voltages for Combines, page 266*.

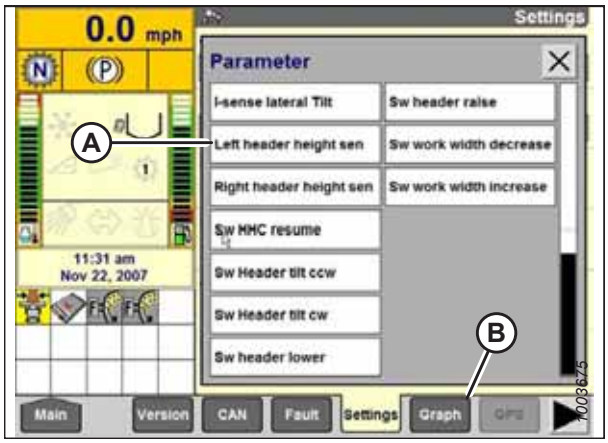


Figure 3.764: New Holland Combine Display

Header Settings Quick Reference – New Holland CR Series

Use the information in the following table to quickly reference the recommended settings for a header paired with a New Holland CR Series combine.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

Table 3.41 Header Settings – New Holland CR Series

Setup Parameter	Suggested Setting
Cutting type	Platform
Header sub type	80/90
Autofloat	Installed
Auto header lift	Installed
Manual HHC raise/lower rate	Set for best performance
HHC height sensitivity	Set for best performance
HHC tilt sensitivity	Set for best performance
Reel height sensor	Yes

Setting up Auto Header Height Control – New Holland CR and CX Series

Use the combine display to set up the auto header height control (AHHC) system.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

1. Select HEADER LATERAL FLOAT on the combine display, and press ENTER.
2. Use the up and down navigation keys to select INSTALLED.

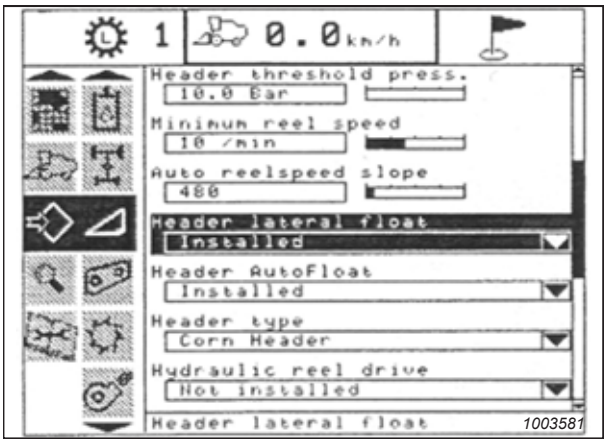


Figure 3.765: New Holland Combine Display

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

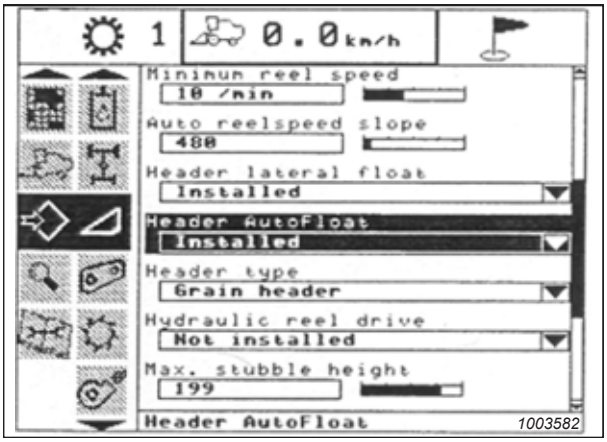


Figure 3.766: New Holland Combine Display

Calibrating Auto Header Height Control – New Holland CR and CX Series

The auto header height control (AHHC) sensor output must be calibrated for each combine.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so that the header does not separate from the float module during the calibration process.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

Check the following conditions before starting the header calibration procedure:

- The header is attached to the combine.
- The combine is on level ground, with the header level to the ground.
- The header is on down stops, and the center-link is set to **D**.
- The engine is running.
- The combine is not moving.
- No faults have been received from the Header Height Controller (HHC) module.
- The header/feeder is disengaged.
- The lateral float buttons are **NOT** pressed.
- The ESC key is **NOT** pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATION on the combine display, and press the RIGHT ARROW navigation key to enter the information box.
2. Select HEADER (A), and press ENTER. The CALIBRATION window opens.

   NOTE:

   You can use the up and down navigation keys to move between the options.

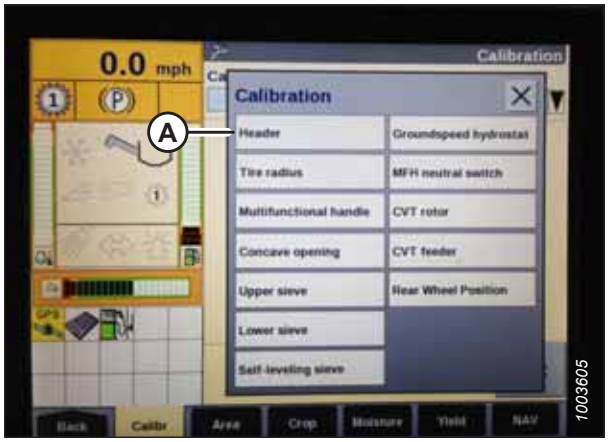


Figure 3.767: New Holland Combine Display

3. Follow the steps in the order in which they appear in the window. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will stop the calibration procedure.

   NOTE:

   Refer to your combine operator's manual for an explanation of any error codes.

Figure 3.768: New Holland Combine Display

4. When all of the steps have been completed, a CALIBRATION SUCCESSFUL message will appear on the screen. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

   NOTE:

   If the float was set heavier to complete the AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

5. If the unit does not function properly, conduct the maximum stubble height calibration. For instructions, refer to *Calibrating Maximum Stubble Height – New Holland CR and CX Series, page 437*.

Calibrating Maximum Stubble Height – New Holland CR and CX Series

This procedure details how to set the height at which the harvest area counter will start and stop counting harvested area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

IMPORTANT:

- If the value is set too low, the area counter may **NOT** be accurate since the header is sometimes raised above this threshold although the combine is still cutting.
- If the value is set too high, the area counter will keep counting even when the header is raised (but below this threshold) and the combine is no longer cutting crop.

DANGER

Ensure that all bystanders have cleared the area.

1. Select the MAXIMUM STUBBLE HEIGHT calibration dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

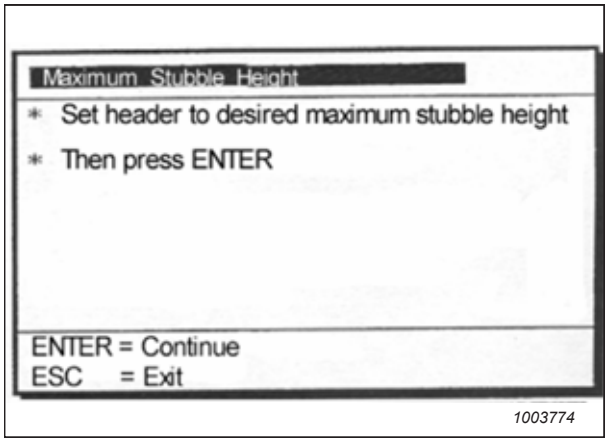


Figure 3.769: New Holland Calibration Dialog Box

2. Move the header to the desired maximum stubble height using the control switch on the multifunction handle.

   NOTE:

   Set the header to a height which will never be attained while harvesting. This will ensure that the harvest area counter never stops recording harvesting data while the auto header height control (AHHC) system is active.

3. Press ENTER to continue. As you proceed through the calibration process, the display will automatically update to show the next step.

4. Press ENTER or ESC to close the calibration screen. The calibration is now complete.

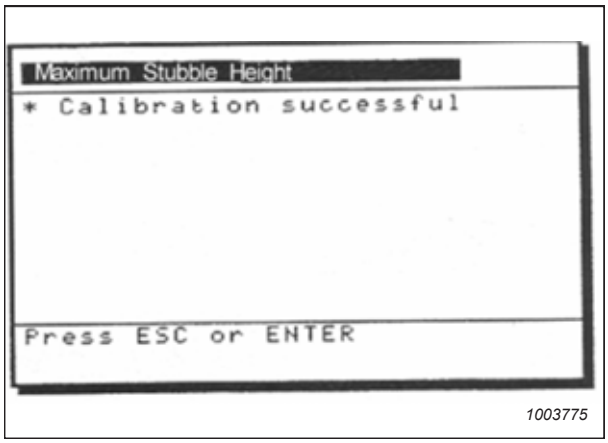


Figure 3.770: New Holland Calibration Dialog Box

Adjusting Header Raise Rate – New Holland CR and CX Series

If necessary, the header raise rate (the first speed on the HEADER HEIGHT rocker switch of the multifunctional handle) can be adjusted.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

1. Select HEADER RAISE RATE on the combine display.
2. Use the + or – buttons to change the setting.
3. Press ENTER to save the new setting.

   NOTE:

   The raise rate can be changed from 32–236 in increments of 34. The factory setting is 100.

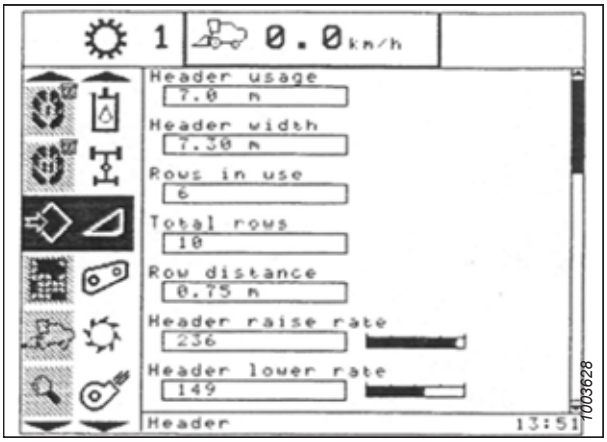


Figure 3.771: New Holland Combine Display

Adjusting Header Lower Rate – New Holland CR and CX Series

If necessary, the header lower rate (the automatic header height control button or second speed on the header height rocker switch of the multifunction handle) can be adjusted.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

1. Select HEADER LOWER RATE on the combine display.
2. Use the + or – buttons to change the setting to 50.
3. Press ENTER to save the new setting.

   NOTE:

   The header lower rate can be changed from 2–247 in increments of 7. It is factory-set to 100.

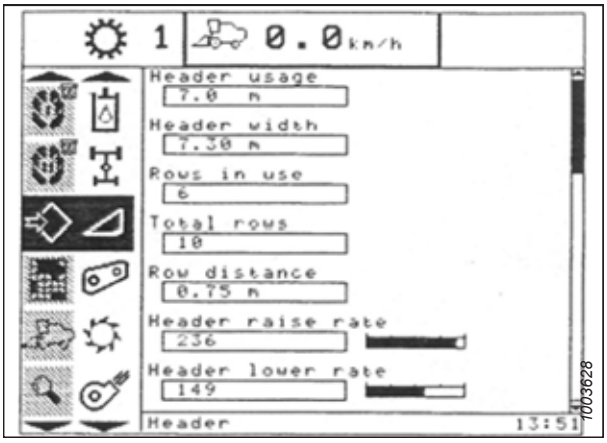


Figure 3.772: New Holland Combine Display

Setting Auto Header Height Control Sensitivity – New Holland CR and CX Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house.

When the sensitivity is set to maximum, only small changes in ground height raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to raise or lower the feeder house.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

DANGER

Ensure that all bystanders have cleared the area.

1. Engage the threshing mechanism and the feeder house.
2. Select HEIGHT SENSITIVITY on the combine display.
3. Use the + or – buttons to change the setting to 200.
4. Press ENTER to save the new setting.

   NOTE:

   The sensitivity can be changed from 10–250 in increments of 10. It is factory-set to 100.

Figure 3.773: New Holland Combine Display

Setting Preset Cutting Height – New Holland CR and CX Series

The reel and cut height setting can be stored in the combine's computer as presets. These settings can be set and selected using the combine's control console.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.10.20 New Holland Combines – CR Series, 2015 and Later, page 442*.

NOTE:

Indicator (A) should be at position **0** (B) with the header 254–356 mm (10–14 in.) off the ground. When the header is on the ground, the indicator should be at position **1** (C) for low ground pressure, and at position **4** (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

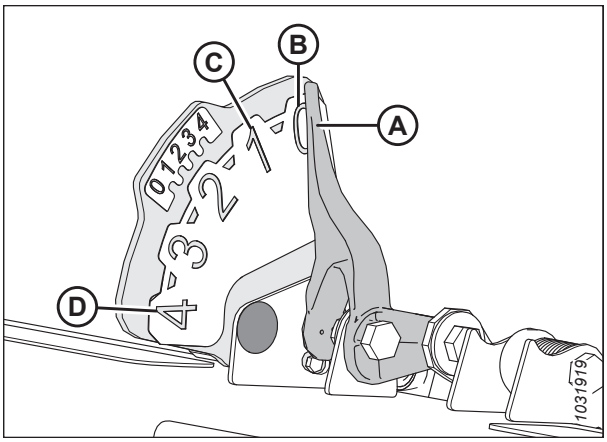


Figure 3.774: Float Indicator

1. Engage the threshing mechanism and the feeder house with switches (A) and (B).
2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT mode position (A) or (B).
3. Raise or lower the header to the desired cutting height using HEADER HEIGHT and HEADER LATERAL FLOAT momentary switch (C).
4. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep confirms the setting.

   NOTE:

   It is possible to store two different header height values by using HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT mode position (A) or (B).
5. Raise or lower the reel to the desired working height using the REEL HEIGHT momentary switch.
6. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep confirms the setting.

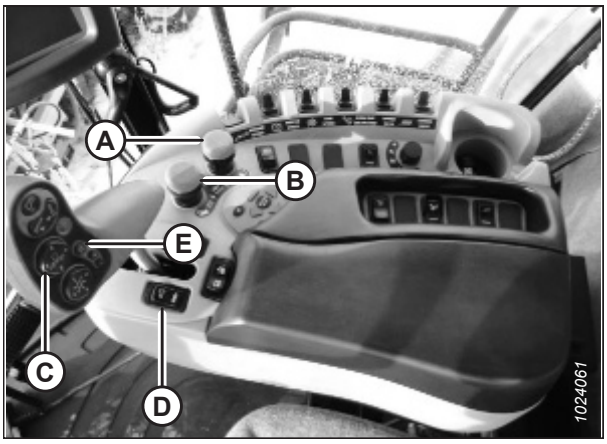


Figure 3.775: New Holland Combine Controls

7. To change one of the memorized header height set points while the combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOAT rocker switch (A) (slow up/down) to raise or lower header to the desired value. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (B) for a minimum of 2 seconds to store the new height position. A beep confirms setting.

   NOTE:

   Fully pressing AUTOMATIC HEADER HEIGHT CONTROL button (B) will disengage float mode.

   NOTE:

   It is not necessary to press rocker switch (C) again after changing header height set point.

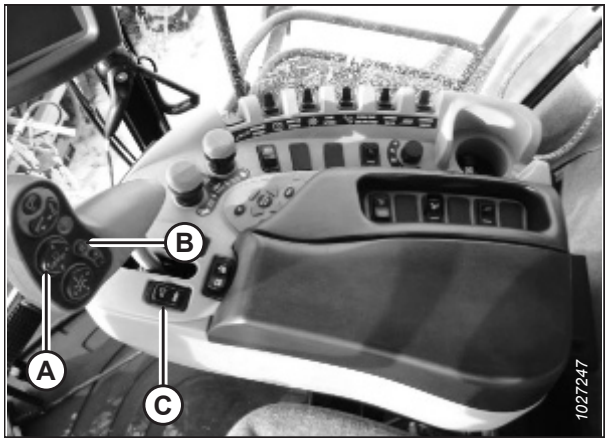


Figure 3.776: New Holland Combine Controls

3.10.20 New Holland Combines – CR Series, 2015 and Later

To make your header's auto header height control (AHHC) system compatible with model year 2015 and newer New Holland CR Series Combines, you must set your combine's header configuration options for the particular model of header, configure the reel speed settings, set up the AHHC controls, and calibrate the AHHC system to ensure that it is working correctly.

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

Checking Voltage Range from Combine Cab – New Holland CR Series

The auto header height control (AHHC) sensor needs to operate in a specific voltage range in order to work properly.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 432*.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) above the ground.
3. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
4. Shut down the engine, and remove the key from the ignition.

5. Ensure that the float lock linkage is on the down stops (washer [A] cannot move) at both locations.

   NOTE:

   If the header is not on the down stops during the next two steps, the voltage may go out of range during operation and cause the AHHC system to malfunction. If the header is not on the down stops, refer to *3.11 Leveling Header, page 471* for instructions.

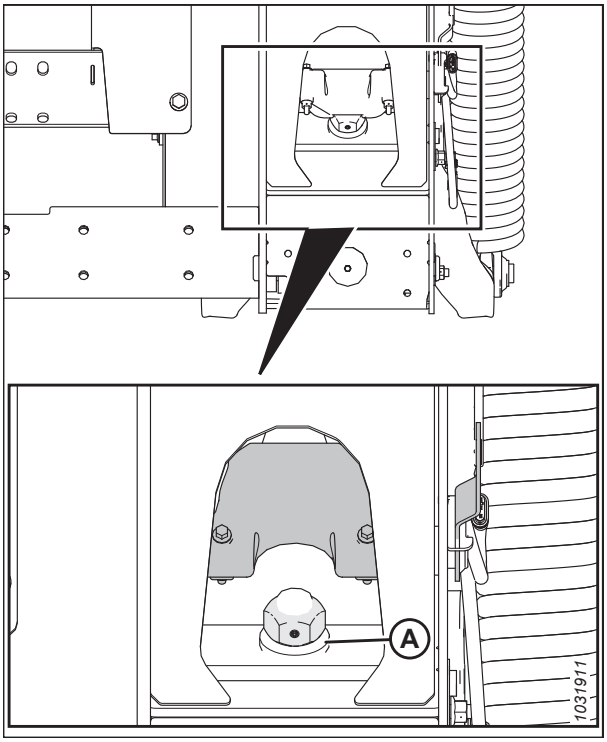


Figure 3.777: Float Lock

6. If the pointer is not on zero, loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

   NOTE:

   Use zero dot (E) above the decal to correctly set the indicator needle.

7. Ensure the header float is unlocked.

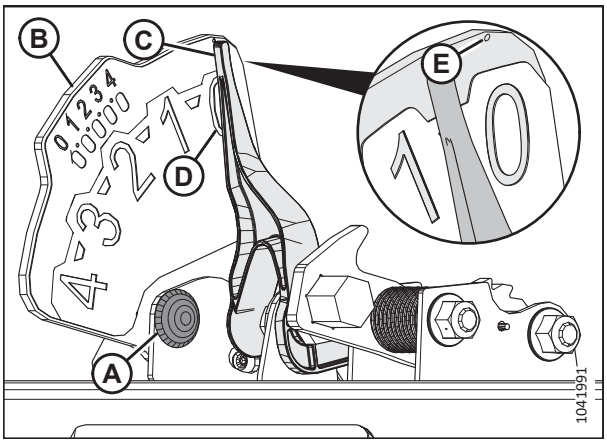


Figure 3.778: Float Indicator

8. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.

Figure 3.779: New Holland Combine Display

9. Select SETTINGS (A). The SETTINGS page appears.

Figure 3.780: New Holland Combine Display

10. Select HEADER HEIGHT/TILT (A) from the GROUP drop-down menu.
11. Select HEADER HEIGHT SENS. L (B) from the PARAMETER drop-down menu.

Figure 3.781: New Holland Combine Display

12. Select GRAPH (A). The exact voltage (B) is displayed at the top of the page.
13. Raise and lower the header to see the full range of voltage readings.

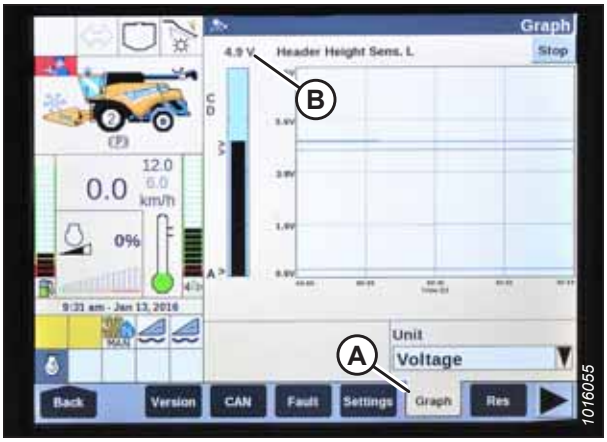


Figure 3.782: New Holland Combine Display

Setting up Auto Header Height Control – New Holland CR Series

Auto header height control (AHHC) is set up using the combine display and control handle.

To ensure the best performance of the AHHC system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to the desired header angle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 432*.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Ensure the center-link is set to **D**.
3. Shut down the engine.
4. Turn the key to the run position.

5. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 3.783: New Holland Combine Display

6. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.

   NOTE:

   Software in some New Holland combines may not allow you to change the header from FLEX to PLATFORM or the header type from DEFAULT to 80/90 at the main menu. This is now a dealer setting. If you need to change the dealer setting, contact your MacDon Dealer.

Figure 3.784: New Holland Combine Controls

7. Select HEAD 1 (A). The HEADER SETUP 1 page displays.
8. Select CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

Figure 3.785: New Holland Combine Display

9. Select HEADER SUB TYPE drop-down arrow, and set HEADER SUB TYPE to 80/90 (A).

Figure 3.786: New Holland Combine Display

10. Select HEAD 2 (A). The HEADER SETUP 2 page displays.

Figure 3.787: New Holland Combine Display

11. Select the AUTOFLOAT drop-down menu and set AUTOFLOAT to INSTALLED (A).

12. Select the AUTO HEADER LIFT drop-down menu and set AUTO HEADER LIFT to INSTALLED (B).

    NOTE:

    With AUTO HEADER LIFT installed and AHHC engaged, the header will lift up automatically when you pull back on the control handle.

13. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.

Figure 3.788: New Holland Combine Display

14. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

Figure 3.789: New Holland Combine Display

15. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 3.790: New Holland Combine Display

Setting up Reel Speed – New Holland CR Series

The reel diameter and reel displacement settings will need to be entered into the combine's computer before the reel can be operated.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

1. Shut down the engine.
2. Turn the key to the run position.
3. Ensure that the combine display software is updated to the relevant version specified below or later:
   - Combines from model years 2015–2018: UCM v38.10.0.0
   - Combines from model year 2019 or newer: UCM v1.4.0.0

4. Ensure the center-link is set to **D**.
5. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 3.791: New Holland Combine Display

6. Access Dealer mode by simultaneously pressing UNLOAD (A) and RESUME (B) buttons on the control handle for approximately 10 seconds. The DEALER SETTING page should appear and is required to change the REEL DIAMETER and REEL DISPLACEMENT PER REVOLUTION settings.

Figure 3.792: New Holland Combine Controls

7. Select HEAD 2 (A). The HEADER SETUP 2 page appears.
8. Select REEL DIAMETER (B) and enter 102 cm (40.16 in).
9. Select REEL DISPLACEMENT PER REVOLUTION (C) and enter the appropriate value according to the specific combination of drive and driven sprocket sizes detailed in the following table.

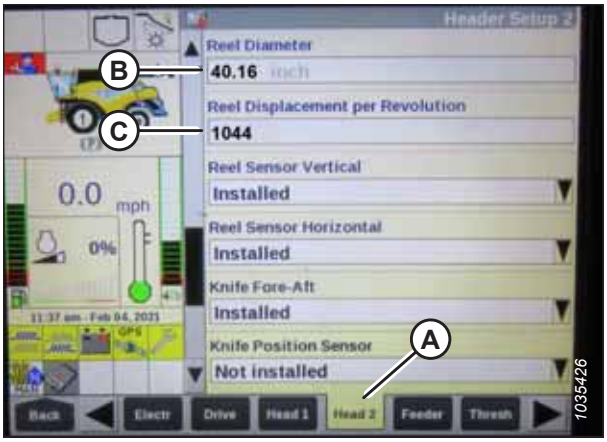


Figure 3.793: New Holland Combine Display

Table 3.42 Reel Displacement per Revolution Chart

Drive Sprocket Size (Number of Teeth)	Driven Sprocket Size (Number of Teeth)	Reel Displacement Per Revolution
19 (standard)	56	769
14 (high torque / low speed)[80]	56	1044
20 (low torque / high speed)[81]	52	679

Calibrating Auto Header Height Control – New Holland CR Series

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 432*.

NOTE:

If the header float is set too light, it can prevent the calibration of the AHHC. You may need to set the float heavier for the calibration procedure so the header does not separate from the float module.

NOTE:

For the best performance of the auto header height control (AHHC) system, perform the ground calibration with the center-link set to **D**. When calibration is complete, adjust the center-link back to the desired header angle. For instructions, refer to *3.9.5 Header Angle, page 212*.

Check the following conditions before starting the header calibration procedure:

- The header is attached to the combine.
- The combine is on level ground, with the header level to the ground.
- The header is on down stops, and the center-link is set to **D**.
- The engine is running.
- The combine is not moving.
- No faults have been received from the header height controller (HHC) module.
- The header/feeder is disengaged.
- The lateral float buttons are **NOT** pressed.
- The ESC key is **NOT** pressed.

80. Two speed kit with chain on inner sprockets.
81. Two speed kit with chain on outer sprockets.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main page. The CALIBRATION page appears.

Figure 3.794: New Holland Combine Display

2. Select CALIBRATION drop-down menu (A).

Figure 3.795: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

Figure 3.796: New Holland Combine Display

4. Follow the calibration steps in the order in which they appear on the page. As you proceed through the calibration process, the display updates to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes stops the calibration procedure.

   NOTE:

   Refer to your combine operator's manual for an explanation of any error codes.

Figure 3.797: New Holland Combine Display

5. When all steps have been completed, the CALIBRATION COMPLETED message appears on the page.

   NOTE:

   If the float was set heavier to complete AHHC calibration procedure, adjust it to the recommended operating float after the calibration is complete.

Figure 3.798: New Holland Combine Display

Calibrating Reel Height Sensor and Reel Fore-Aft Sensor – New Holland CR Series

The reel height sensor and reel fore-aft sensor will need to be calibrated before the auto header height control (AHHC) system can be used. Calibrating the reel position calibrates the reel height sensor and the reel fore-aft sensor.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

To calibrate the reel position, follow these steps:

1. Start the engine.
2. Position the header 254–356 mm (10–14 in.) off the ground.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine must be at a full idle to properly calibrate the sensors.

3. Select CALIBRATIONS (A) on the main page.
   The CALIBRATION page appears.

Figure 3.799: New Holland Combine Display

4. Select CALIBRATION drop-down menu (A).

Figure 3.800: New Holland Combine Display

5. Select REEL POSITION (A) from the list of calibration options.

Figure 3.801: New Holland Combine Display

6. CAUTION statement (A) will appear. Select ENTER.

Figure 3.802: New Holland Combine Display

7. If the statement “Confirm varifeed knife is completely retracted” (A) appears, select ENTER.

   NOTE:

   The varifeed knife is not applicable to MacDon headers.

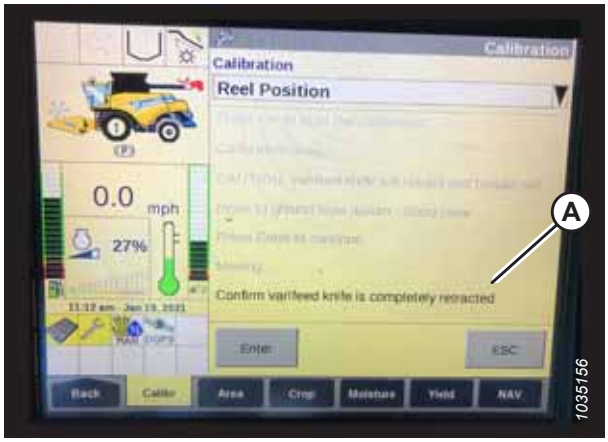


Figure 3.803: New Holland Combine Display

8. Follow calibration steps (A) in the order in which they appear on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will cause the calibration procedure to stop.

   NOTE:

   Refer to your combine operator's manual for an explanation of any error codes.

Figure 3.804: New Holland Combine Display

Checking Reel Height Sensor Voltages – New Holland CR Series

Check the reel height sensor voltages to ensure they are within the prescribed range.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

Figure 3.805: New Holland Combine Display

2. Select SETTINGS tab (A). The SETTINGS page appears.
3. From GROUP menu (B), select HEADER.
4. From PARAMETER menu (C), select REEL VERTICAL POSITION.

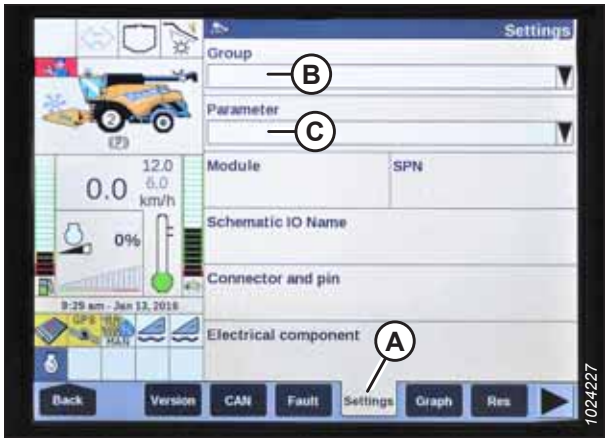


Figure 3.806: New Holland Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Raise the reel to view high voltage (B). The voltage should be within 4.1–4.5 V.
7. Lower the reel to view low voltage (C). The voltage should be within 0.5–0.9 V.

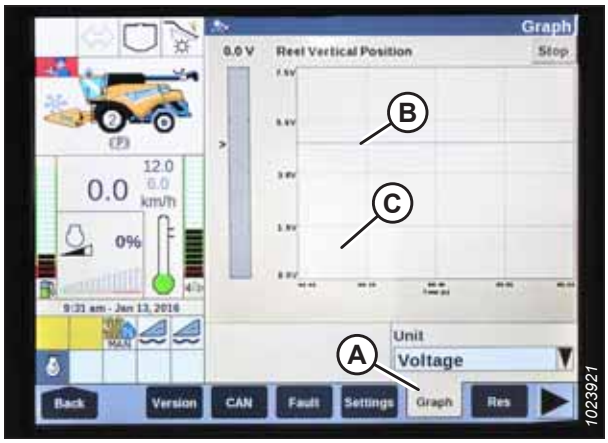


Figure 3.807: New Holland Combine Display

Setting Preset Cutting Height – New Holland CR Series

The cut height setting can be stored in the combine. When harvesting, the setting can be selected from the control handle.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 432*.

The console has two buttons used for auto height presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A) and (B). Third button (C) is not configured.

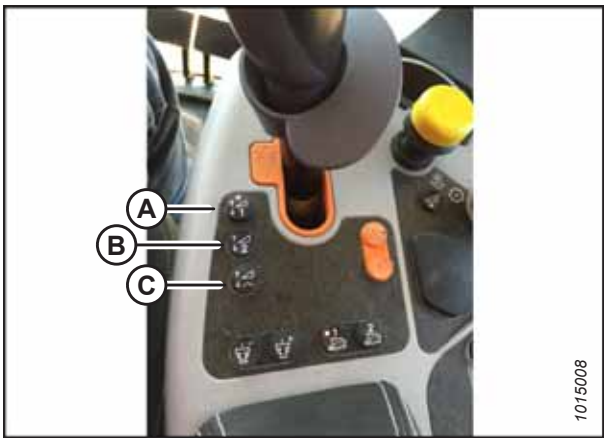


Figure 3.808: New Holland Combine Controls

DANGER

Ensure that all bystanders have cleared the area.

To set a preset cutting height, follow these steps:

1. Engage the separator and the header.
2. Press preset button 1 (A). A yellow light on the button lights up.
3. Move the header to the desired cutting height.

Figure 3.809: New Holland Combine Controls

4. To set the preset, hold RESUME button (C) on the multifunction handle until the monitor beeps.

   NOTE:

   When setting presets, always set the header position before setting the reel position. If the header and the reel are set at the same time, the reel setting will not save.

5. Move the reel to the desired working position.
6. Hold RESUME button (C) on the multifunction handle to set the preset.
7. Repeat Step *2, page 457* to Step *6, page 457*, using preset button 2.

Figure 3.810: New Holland Combine Multifunction Handle

8. Lower the header to the ground.
9. Select RUN SCREENS (A) on the main page.

Figure 3.811: New Holland Combine Display

10. Select the RUN tab that shows MANUAL HEIGHT.

    NOTE:

    The MANUAL HEIGHT field may appear on any of the RUN tabs. When an auto height preset button is pressed, the display changes to AUTO HEIGHT (A).

11. Press one of the auto height preset buttons to select a preset cutting height.

Figure 3.812: New Holland Combine Display

Setting Maximum Work Height – New Holland CR Series

The maximum work height can be set using the combine display.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.10.19 New Holland CR and CX Series Combines – 2014 and Earlier, page 432*.

1. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 3.813: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP page appears.
3. Select MAXIMUM WORK HEIGHT field (B).

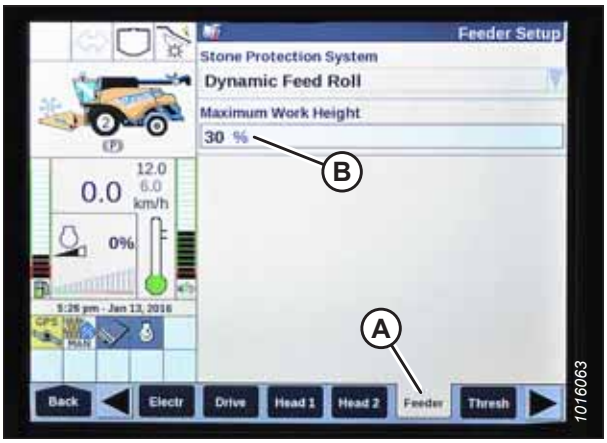


Figure 3.814: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to the desired value.
5. Select SET and then press ENTER.

Figure 3.815: New Holland Combine Display

Configuring Reel Fore-Aft, Header Tilt, and Header Type – New Holland CR Series

The reel fore-aft, header tilt, and header type settings for the auto header height control (AHHC) system can be changed by accessing the HEAD menus.

NOTE:

This procedure applies only to 2016 New Holland CR models 6.90, 7.90, 8.90, and 9.90.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Turn the ignition key to the RUN position.
2. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.

Figure 3.816: New Holland Combine Controls

3. On the HEAD 1 page, change the CUTTING TYPE from FLEX to PLATFORM as shown at location (A).

Figure 3.817: New Holland Combine Display

4. On the HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at location (A).

Figure 3.818: New Holland Combine Display

There are now two different buttons for the ON GROUND presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A) and (B). Third button down (C) is not configured.

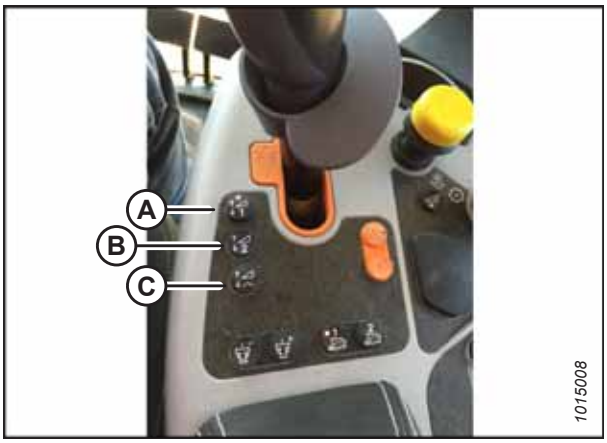


Figure 3.819: New Holland Combine Controls

Reel Reverse Function – New Holland CR Series

You can allow the reel to reverse with the feederhouse on New Holland CR Series combines.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Select TOOLBOX (A) on the MAIN page.
2. Select HEAD 1 tab (A).

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (B).

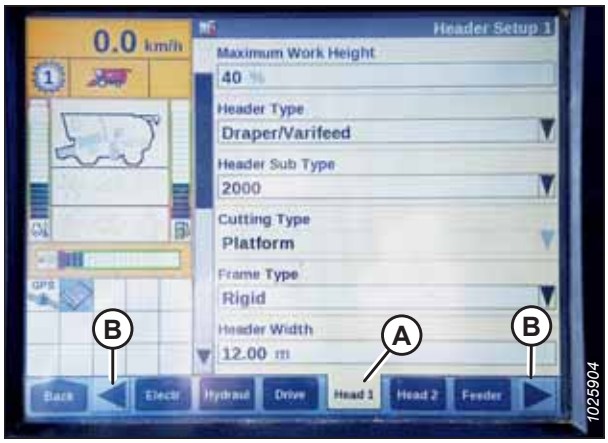


Figure 3.820: New Holland Combine Display

3. Locate the HEADER SUB TYPE field.
4. Select the following value from the HEADER SUB TYPE field:
   - If software version 34 or later is installed, select FD2 SERIES (A).

     NOTE:

     Selecting FD2 SERIES will optimize AHHC performance on FD2, and D2 Series headers.

   - If a software version prior to version 34 is installed, select 2000 (B).

Figure 3.821: New Holland Combine Display

5. Return to the HEAD 1 page and choose FLEX from FRAME TYPE drop-down menu (A).

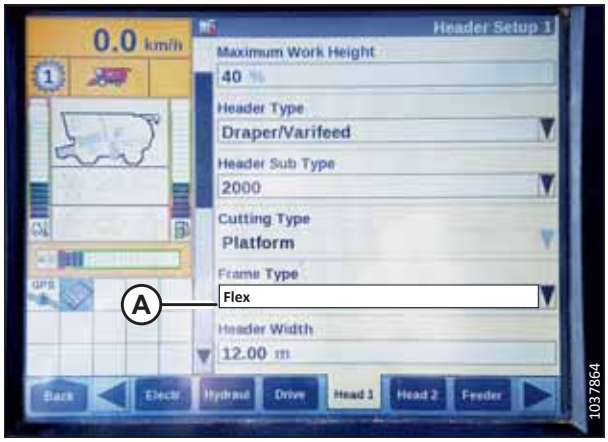


Figure 3.822: New Holland Combine Display

6. Select HEAD 2 tab (A).
7. In HEADER SENSORS field (B), select ENABLE.
8. In HEADER PRESSURE FLOAT field (C), select NO.
9. In HEIGHT/TILT RESPONSE field (D), select FAST.

   NOTE:

   AUTO HEADER LIFT field (E) can be set to the user's preference.

Figure 3.823: New Holland Combine Display

10. Press down arrow (F) to go to the next page.
11. In HYDRAULIC REEL field (A), select YES.
12. In HYDRAULIC REEL REVERSE field (B), select YES.

Figure 3.824: New Holland Combine Display

13. In OVERLAP MODE field (A), select MANUAL.
14. In WORK WIDTH RESET field (B), select MANUAL.

Figure 3.825: New Holland Combine Display

3.10.21 Rostselmash Combines – RSM-081 and RSM-161

Instructions on using the header's auto header height control (AHHC) system with Rostselmash RSM-081 and RSM-161 combines are provided.

Calibrating Auto Header Height Control – Rostselmash RSM-081 and RSM-161

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly. The AHHC feature on Rostelsmash RSM-081 and RSM-161 combines can be calibrated using the automatic calibration procedure.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Set the center-link to **D**. For instructions, refer to *3.9.5 Header Angle, page 212*.
3. Set the engine throttle to operating speed.
4. Park the combine on a level surface.
5. Allow the engine to reach normal operating temperature.
6. Lower the header to the ground.
7. Ensure that needle (A) on the float module's float indicator is pointing to 4 (B), as shown.

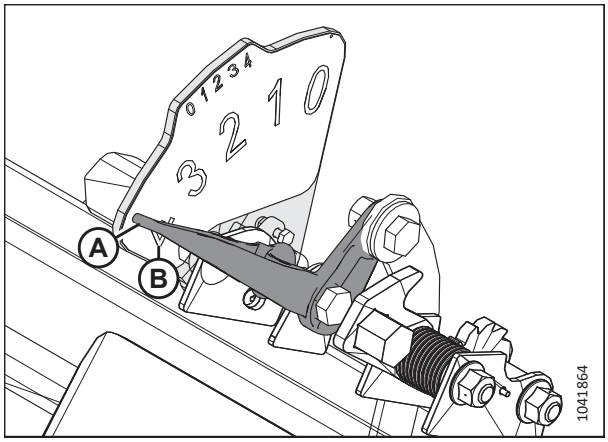


Figure 3.826: Float Indicator

8. Select WRENCH (A). SETTINGS menu (B) appears.

Figure 3.827: Settings Menu

9. Select CALIBRATION (A). The CALIBRATION SETTINGS menu appears.

Figure 3.828: Settings Menu – Calibration Button

10. Select GFCS (A).

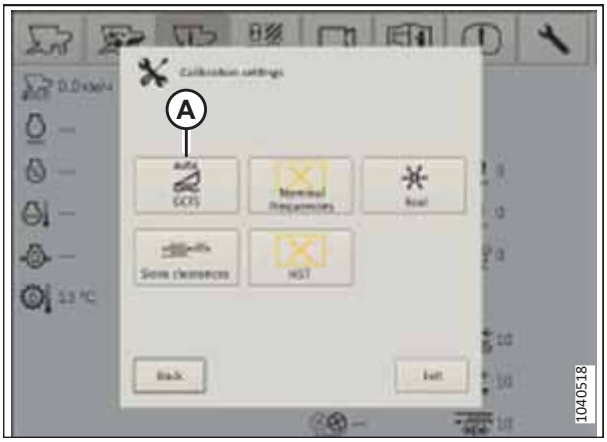


Figure 3.829: Calibration Settings Menu

11. Press START CALIBRATION (A). The header will rise to its maximum height, then fall to the lowest possible position.

    NOTE:

    If the system reports sensor voltages that are out of the acceptable range (0.7–4.3 V), the calibration will fail. The voltage range should be measured at the sensors. For instructions on inspecting the voltage range of the header height sensors, refer to *3.10.3 Manually Checking Voltage Limits, page 266*.

12. Adjust the center-link to the desired setting. For instructions, refer to *3.9.5 Header Angle, page 212*.

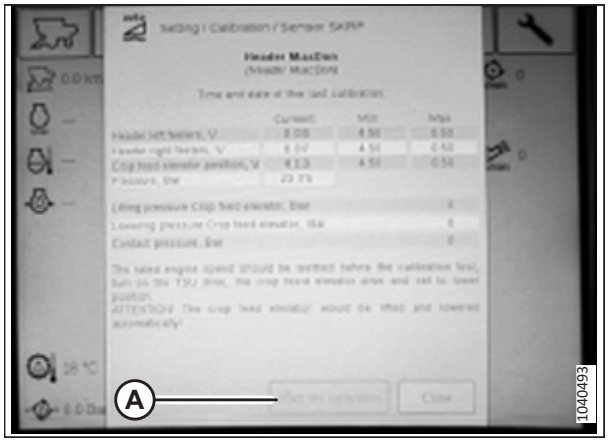


Figure 3.830: Calibration Screen

Engaging Auto Header Height Control – Rostselmash RSM-081 and RSM-161

Once the auto header height control (AHHC) system has been configured on the combine, the AHHC system will need to be activated in the combine's computer.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

DANGER

Ensure that all bystanders have cleared the area.

1. Press WRENCH (A). SETTINGS menu (B) will appear.
2. Press GCFS button (C). The GCFS SETTINGS page will appear.

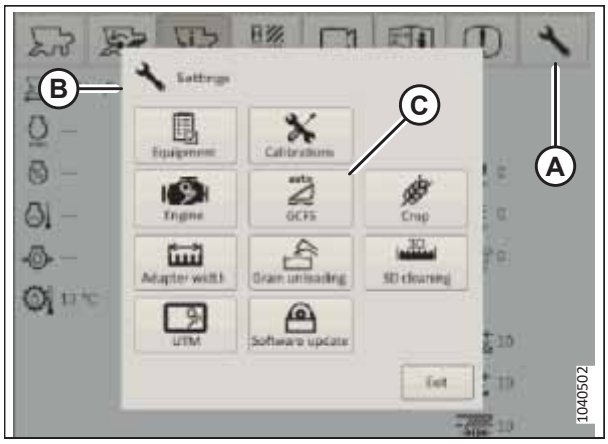


Figure 3.831: Settings Menu

3. Ensure that MODE 1 (A) and MODE 2 (B) are set to CUTTING HEIGHT MAINTAINING MODE.
4. Select OK button (C) to confirm the changes.

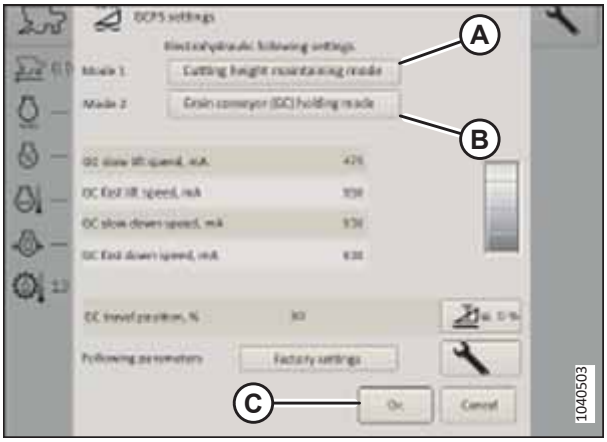


Figure 3.832: Settings Menu

Calibrating Reel Speed – Rostselmash RSM-081 and RSM-161

The reel speed will need to be calibrated before the automatic reel speed feature of the auto header height control (AHHC) system on Rostselmash RSM-081 and RSM-161 combines can be used.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Park the combine on a level surface.
3. Allow the engine to reach normal operating temperature.
4. On the combine's computer, select WRENCH (A). SETTINGS menu (B) appears.

Figure 3.833: Settings Menu

5. Select CALIBRATION (A). The CALIBRATION SETTINGS menu appears.

Figure 3.834: Settings Menu – Calibration Button

6. Select REEL (A). The REEL CALIBRATION page appears.

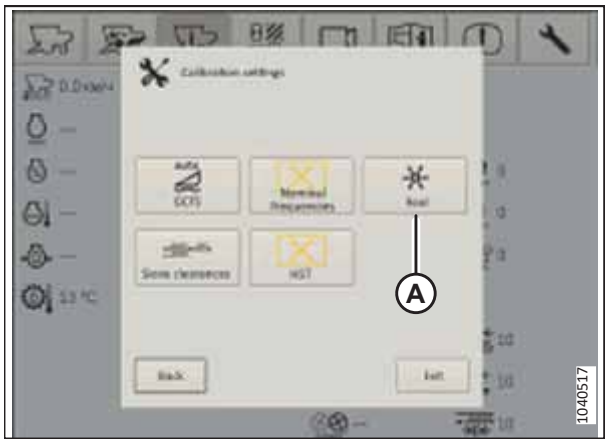


Figure 3.835: Calibration Settings Menu

7. Select START CALIBRATION (A). The display will emit a beep to indicate that the procedure has begun. The reel will begin rotating and will stop when calibration is complete. This procedure may take several minutes to complete.
8. Select OK (B).

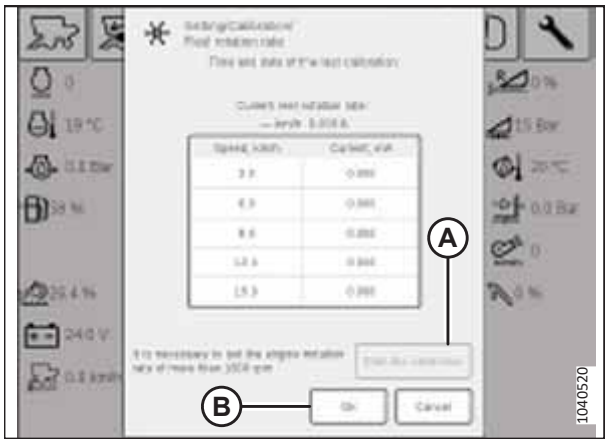


Figure 3.836: Reel Calibration Page

Operating Header – Rostselmash RSM-081 and RSM-161

Once the auto header height control (AHHC) system has been calibrated, the header settings can be optimized using the controls in the combine's cab.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For the most up-to-date information, refer to the combine operator's manual.

1. Start the engine.
2. Engage the combine's feeder house. For instructions, refer to the combine operator's manual.
3. Engage the header. For instructions, refer to the combine operator's manual.
4. On the combine control handle, use raise/lower header button (A) to move the header to the desired height.

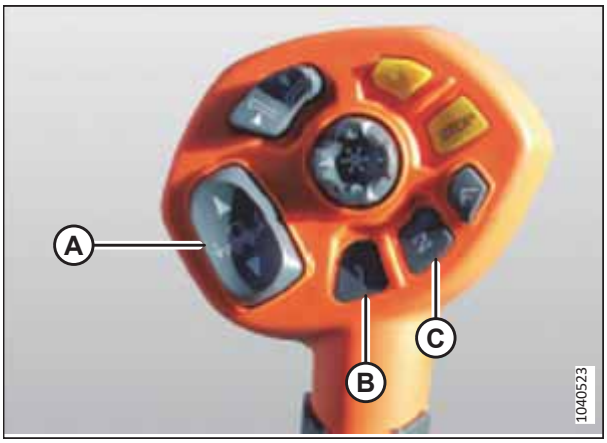


Figure 3.837: Combine Control Handle

NOTE:

Preset height settings should be between 10 and 50% ground pressure, as indicated on GROUND PRESSURE BAR (A).

Figure 3.838: Combine Operating Page

5. Press and hold button (B) for 3 seconds to save the height preset. Press and release button (B) again to cause the header to move to the preset height.
6. If you wish to set another preset on button (C):
   a. Use raise/lower header button (A) to move the header to another desired height.
   b. Press and hold button (C) for 3 seconds to save the second height preset. Press and release button (C) again to move the header to the second preset height.

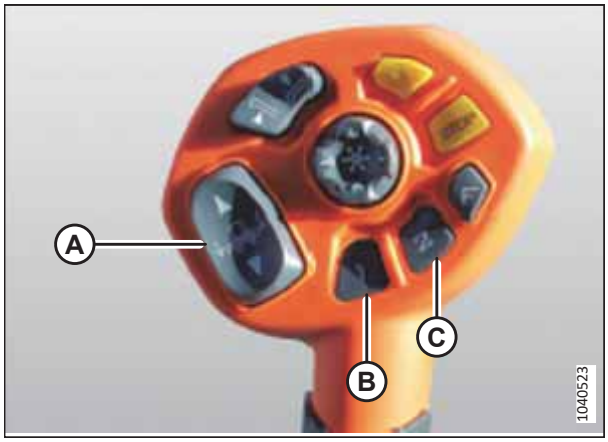


Figure 3.839: Combine Control Handle

3.11 Leveling Header

The float module is set at the factory to provide the proper level for the header and should not normally require adjustment. However, if adjustment is required, a procedure for doing so is provided.

Before attempting to level the header, ensure the following:

- Ensure that the combine's tires are inflated to the correct pressure.
- Ensure that the combine's feeder house is level. For instructions, refer to the combine operator's manual.
- Ensure that the top of the float module is level and is parallel with the combine's feeder house by checking the spirit level on the float module.

IMPORTANT:

The float springs are **NOT** used to level the header.

If the header still is not level, perform the following steps:

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Inspect the header to determine which side is too high, and which side is too low.
4. Shut down the engine, and remove the key from the ignition.
5. Lock the header wings. For instructions, refer to *Operating in Rigid Mode, page 205*.
6. Check, and if necessary, adjust the float. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

7. Disengage both of the header float locks by pulling float lock handle (A) away from the float module and push the float lock handle down and into position (B) (UNLOCK).

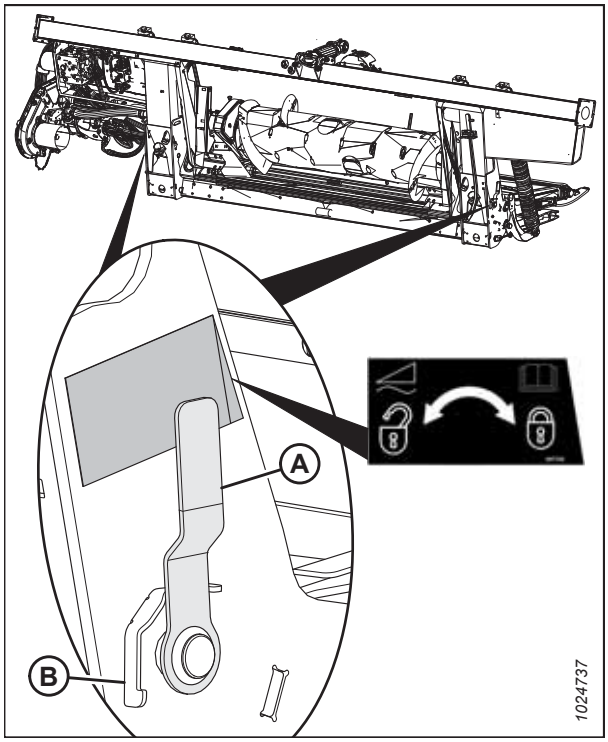


Figure 3.840: Header Float Lock in Locked Position

8. On the high side of the header, make one small (1/4–1/2 turn) counterclockwise adjustment to nut (A). Do **NOT** make any further adjustments to the float lock nut on this side of the header yet.

   IMPORTANT:

   Adjusting nut (A) more than two turns in either direction may adversely affect the header float.

   NOTE:

   Turning the float lock nut clockwise raises that side of the header; turning it counterclockwise lowers that side of the header.

   NOTE:

   Set screw (B) does not require loosening for adjustments of up to one-half turn of nut (A).

9. Make the same adjustment to the float lock nut on the low side of the header in the counterclockwise direction. For example, if an adjustment of 1/4 turn counterclockwise was made on the high side of the header, make an adjustment of 1/4 turn clockwise on the low side of the header.

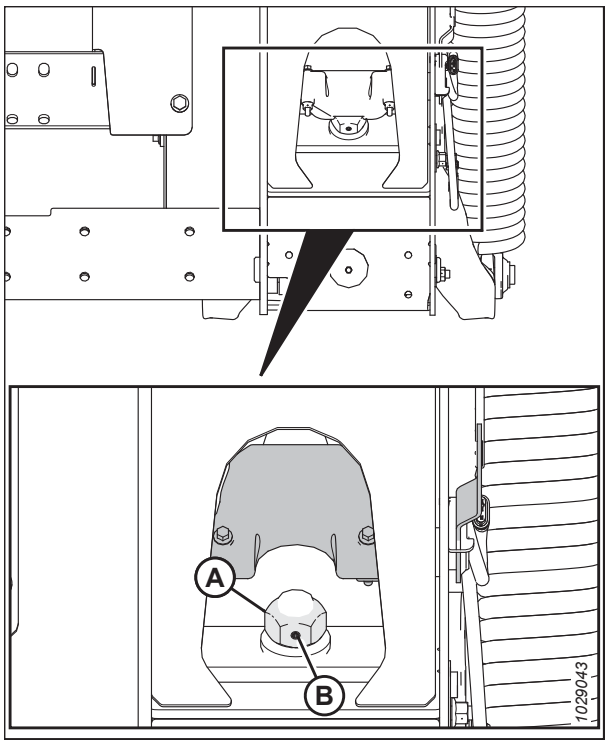


Figure 3.841: Float Lock – Right

10. Reset the float indicator to zero by loosening bolt (A) and sliding float indicator plate (B) until pointer (C) is on **0** (D). Tighten the nut on bolt (A).

    NOTE:

    Use zero dot (E) above the decal to correctly set the indicator needle.

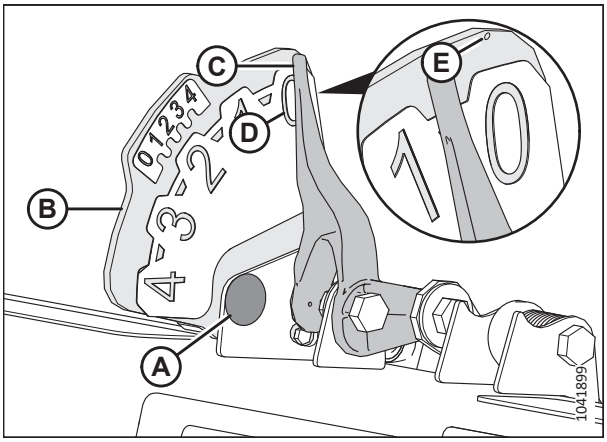


Figure 3.842: Float Indicator

11. Ensure that there is a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.
12. Check the float after leveling the header. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

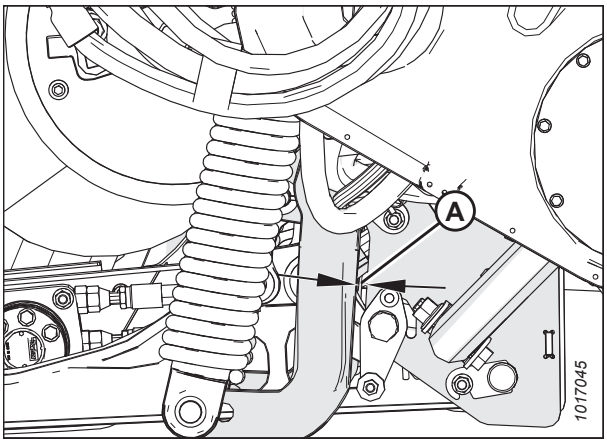


Figure 3.843: Bell Crank

3.12 Unplugging Cutterbar

If the cutterbar is not working correctly, clear the cutterbar of any obstructions.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

Wear heavy gloves when working around or handling knives.

IMPORTANT:

Lowering a rotating reel on a plugged cutterbar will damage the reel components.

1. Start the engine.
2. Stop the forward movement of the machine and disengage the header drives.
3. Raise the header to prevent it from filling with dirt.
4. Reverse the combine feeder house and the engine header drive. If the cutterbar is still plugged, proceed to the next step.
5. If the plug does **NOT** clear, disengage the header drive clutch and raise the header fully.
6. Shut down the engine, and remove the key from the ignition.
7. Engage the header safety props. For instructions, refer to the combine operator's manual.
8. Clean the cutterbar.

3.13 Unplugging Float Module Feed Draper

Crop sometimes gets wedged between the feed draper and the feed deck. Follow this procedure to safely clear any obstructions in the float module's feed draper.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Stop the forward movement of the machine and disengage the header drives.
3. Raise the header slightly off the ground, and raise the reel.
4. Turn the side draper speed down to 0.
5. Reverse the combine feed according to the manufacturer specifications (the reverse feed varies among different combine models) and engage the header drive.
6. Slowly increase the side draper speed to the previous settings once the plug has been cleared.

3.14 Transport

There are two ways to transport the header: you can attach it to the front of a combine or tow it behind a combine or an agricultural tractor.

For more information, refer to:

- *3.14.1 Transporting Header on Combine, page 476*
- *3.14.2 Towing, page 476*

3.14.1 Transporting Header on Combine

In conditions with good visibility, you can transport the header while it is attached to a combine.

WARNING

Do NOT drive the combine with the header attached at night, or in conditions which reduce visibility, such as fog or rain. The width of the header may not be apparent under these conditions.

CAUTION

- **Check the local laws for width regulations and any lighting or marking requirements before transporting on roads.**
- **Follow all of the recommended procedures in your combine operator's manual for transporting, towing, etc.**
- **Disengage the header drive clutch when travelling to and from the field.**
- **Before driving on a roadway, be sure the lights are clean and working properly. Pivot the amber lamps for best visibility by approaching traffic. Always use lamps when travelling on roads.**
- **Do NOT use field lamps on roads—they may confuse other drivers.**
- **Before driving on a roadway, clean vehicle signs and reflectors, adjust the rear view mirrors, and clean the windows.**
- **Lower the reel fully and raise the header unless you are transporting the header across hills.**
- **Watch out for roadside obstructions, oncoming traffic, and bridges.**
- **When travelling downhill, reduce your speed and keep the header at a minimum height to provide maximum stability in case you stop for any reason. At the bottom of the hill, raise the header completely to avoid contacting the ground.**

3.14.2 Towing

Headers with the EasyMove™ Transport option can be towed behind a combine or an agricultural tractor at a maximum speed of 32 km/h (20 mph).

For instructions, refer to the towing vehicle's operator's manual.

Attaching Header to Towing Vehicle

The header can be towed using a combine or agricultural tractor.

CAUTION

Follow the instructions below to prevent loss of control leading to bodily injury and/or machine damage:

- **The weight of the towing vehicle must exceed the weight of the header to ensure adequate control and braking performance.**
- **Only use a combine or an agricultural tractor to tow the header.**
- **Ensure that the reel is fully lowered and back on the support arms to stabilize the header transport. For headers with hydraulic reel fore-aft, never connect the fore-aft couplers to each other or the circuit will be complete and the reel could creep forward during transport.**
- **Ensure that all of the pins are properly secured in the transport position at the wheel supports, the cutterbar support, and the hitch.**
- **Check the condition of the tires and the tire pressure before transporting the header.**
- **Connect the hitch to the towing vehicle using a proper hitch pin with a spring locking pin or another suitable fastener.**
- **Attach the hitch safety chain to the towing vehicle. Adjust the safety chain length to provide only enough slack to permit turning.**
- **Connect the header seven-pole plug wiring harness to the mating receptacle on towing vehicle. (The seven-pole receptacle is available from your Dealer parts department.)**
- **Ensure that the lights are functioning properly and clean the slow moving vehicle sign and other reflectors. Use the flashing warning lights unless prohibited by law.**

Precautions for Towing Header

Review this list of precautions before attaching and towing a header behind a combine or an agricultural tractor.

CAUTION

Adhere to the following instructions to prevent loss of control leading to bodily injury and/or machine damage:

- **Do NOT exceed 32 km/h (20 mph).**
- **For slippery or rough conditions, reduce the transport speed to less than 8 km/h (5 mph).**
- **Turn corners at only very low speeds (8 km/h [5 mph] or less) as the header is less stable when turning corners. Do NOT accelerate when making or coming out of a turn.**
- **Obey all of the highway traffic regulations in your area when transporting the header on public roads. Use flashing amber lights unless prohibited by law.**

3.14.3 Converting from Transport to Field Position (Option)

Convert the header back to field position after you have towed it to a new location.

Moving Left Outboard Wheel From Transport to Working Position – ContourMax™ Option

The left outboard wheel need to be repositioned to the working position after being in the transport position.

DANGER

To avoid bodily injury or death from unexpected startup or fall of raised header, stop the engine, remove the key, and engage the safety props before going under the header. If you are using a lifting device to support the header, be sure that the header is secure before proceeding.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props or support the header on blocks on level ground. If you are using blocks to support the header, ensure that the header is approximately 914 mm (36 in.) off the ground.
5. Remove lynch pin (A).
6. Remove locking pin (B).
7. Slide wheel assembly (C) out of storage bracket (D).

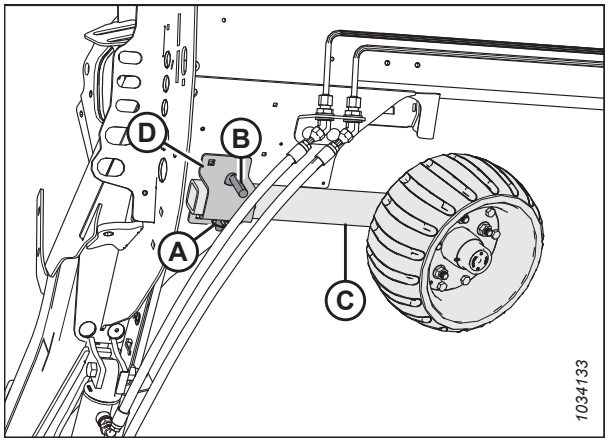


Figure 3.844: Left Wheel Assembly

8. With the wheel facing inboard, align wheel assembly (C) with the isolator assembly and slide it toward the front of the header until the pin holes line up.
9. Install locking pin (B).
10. Install lynch pin (A).

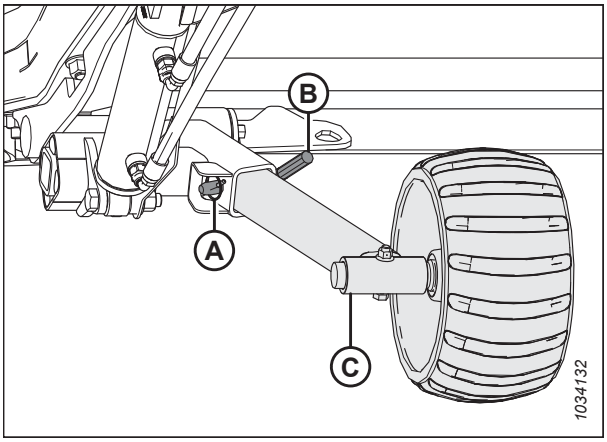


Figure 3.845: Left Wheel Assembly

Removing Tow-Bar

Remove the tow bar from the transport location when converting the header from the transport position.

1. Block the header tires with wheel chocks (A) to prevent the header from rolling.

Figure 3.846: Tire Blocking

2. Disconnect electrical connector (A) and safety chain (B) from the towing vehicle and store it as shown.
3. If removing a tow-bar with an extension, proceed to Step *4, page 480*. If removing a tow-bar without an extension, proceed to Step *16, page 481*.

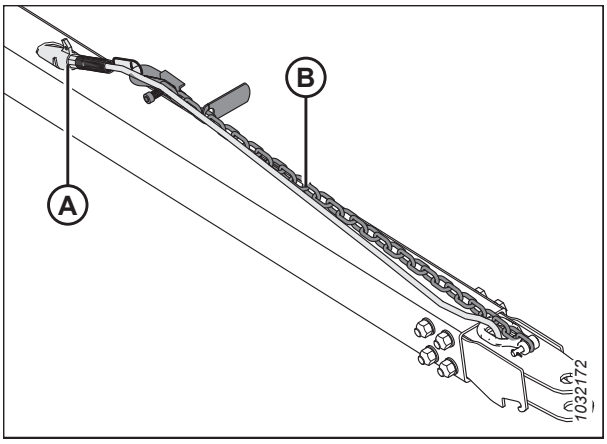


Figure 3.847: Tow-Bar Assembly

Removing tow-bar installed with an extension:

4. Disconnect tow-bar harness (A) from extension harness (B).
5. Remove lynch pin (C) from the latch.

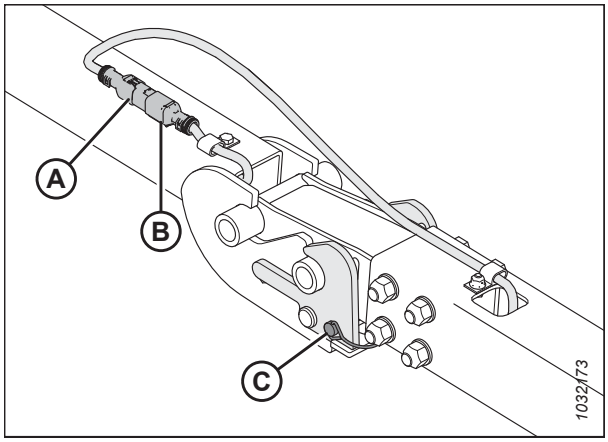


Figure 3.848: Tow-Bar / Extension Harness

6. Secure tow-bar harness (A) in storage location.
7. Lift up on the hitch near the latch connection to take weight off of the latch. While lifting, pull up on latch handle (B) to clear the tow-bar lug, then slowly lower the assembly to the ground.
8. Lift the end of tow-bar (C) and pull it away from extension (D).

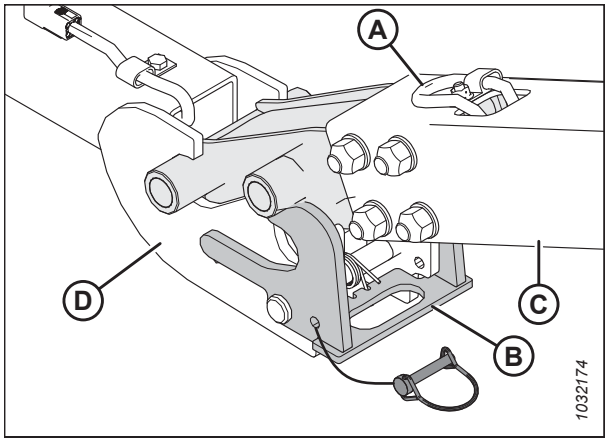


Figure 3.849: Tow-Bar / Extension Joint

9. Unplug tow-bar extension electrical harness (A) from left transport pivot harness (B).

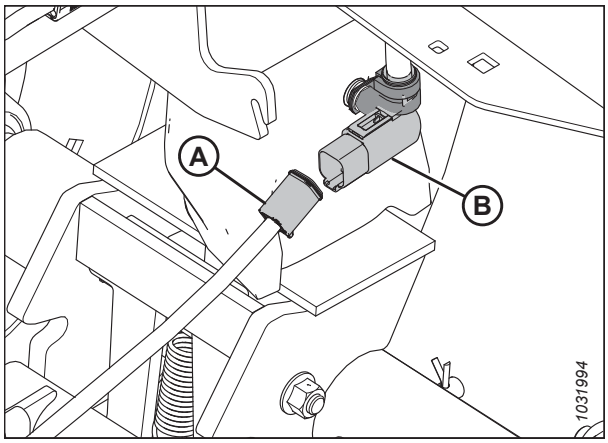


Figure 3.850: Tow-Bar Electrical Connection

10. Remove lynch pin (A) from transport pivot (B).
11. Push back on latch (C) to free extension (D).

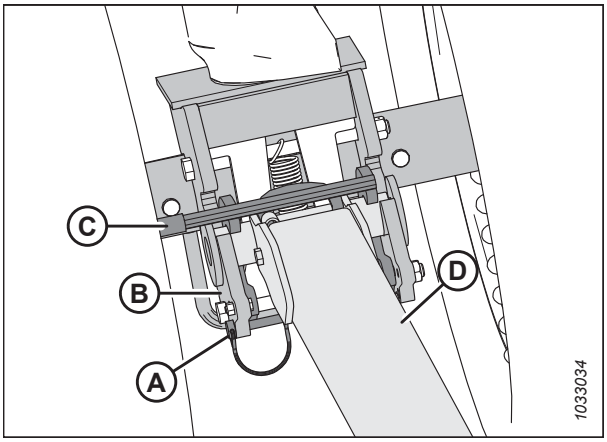


Figure 3.851: Tow-Bar Extension and Transport Pivot

12. Lift extension (A) and pull it away from transport pivot (B).
13. Secure extension harness (C) inside tow-bar extension tube (A).
14. Reinstall the lynch pin in the left transport pivot for safe keeping.
15. For tow-bar storage, refer to *Storing Tow-Bar, page 482*.

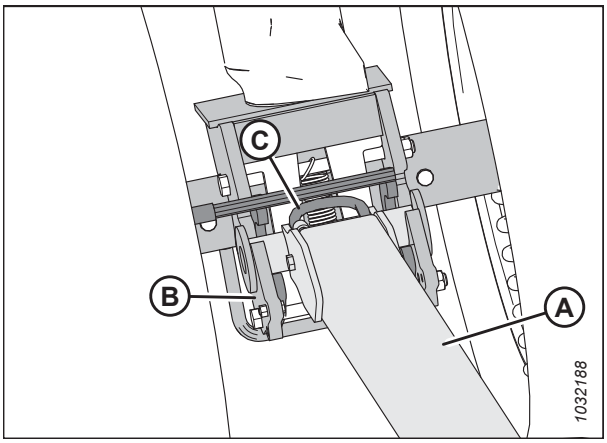


Figure 3.852: Latch Disengaged from Extension

Removing tow-bar installed without an extension:

16. Unplug tow-bar extension electrical harness (A) from left transport pivot harness (B).

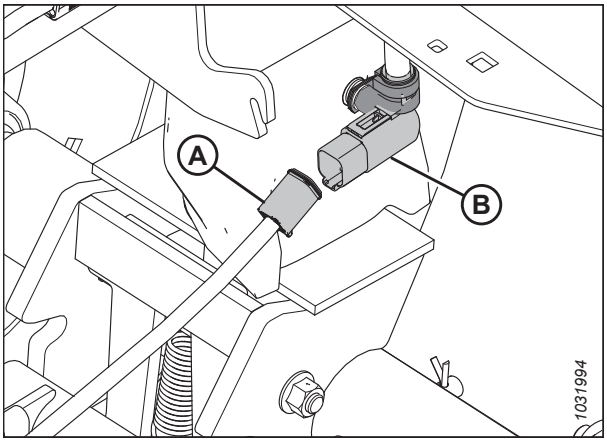


Figure 3.853: Tow-Bar Electrical Connection

17. Remove lynch pin (A), then push back on latch (B) to free the tow-bar.

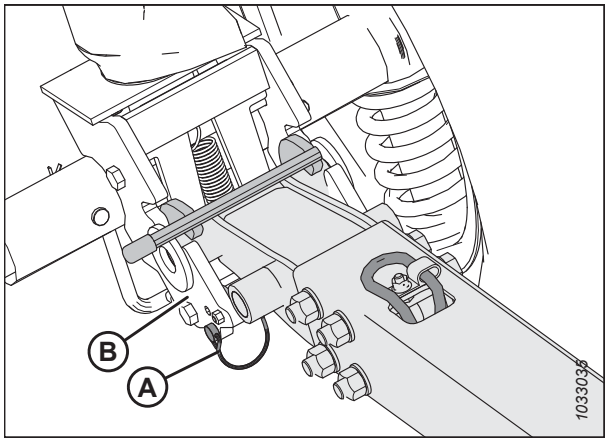


Figure 3.854: Tow-Bar and Left Transport Pivot

18. Lift tow-bar (A) and pull it away from transport pivot (B).
19. Reinstall the lynch pin in the left transport pivot for safe keeping.
20. For tow-bar storage, refer to *Storing Tow-Bar, page 482*.

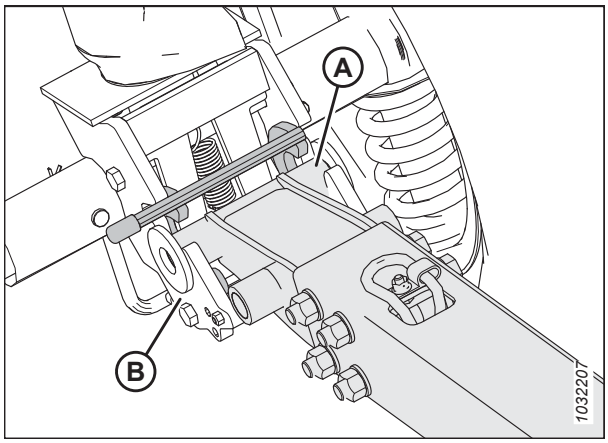


Figure 3.855: Tow-Bar and Left Transport Pivot

Storing Tow-Bar

Store the tow bar in the backtube when it is not in use.

Tow-bar Extension

1. Insert tube end (B) of tow-bar extension (A) onto pin (C).
2. Rotate the tow-bar extension to cradle (D).

   NOTE:

   To prevent the tow-bar extension from shaking loose, ensure the extension bar engages the groove in bracket (E).

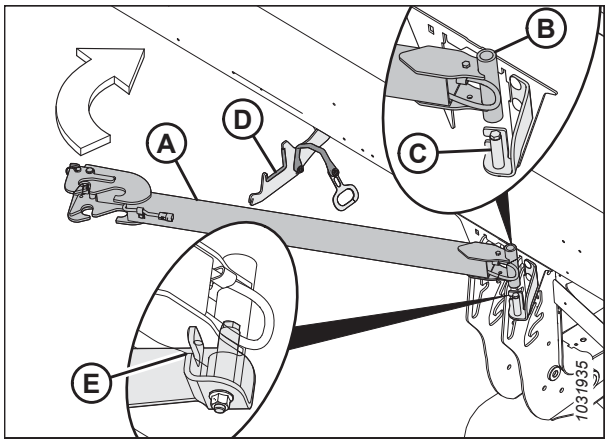


Figure 3.856: Tow-Bar Extension Storage

3. Secure the tow-bar extension by hooking strap handle (A) onto the notch in cradle (B).

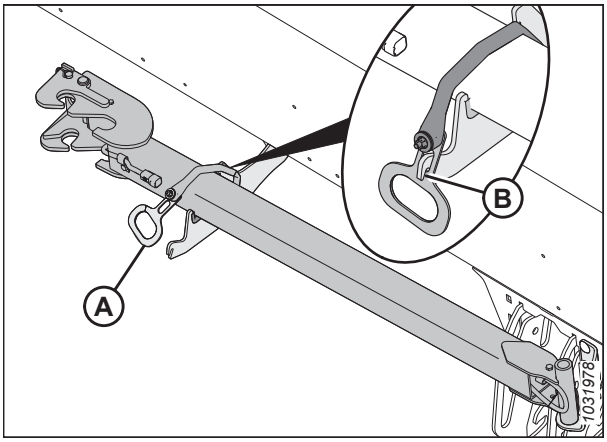


Figure 3.857: Tow-Bar Extension Storage

Tow-bar

4. Open the left endshield. For instructions, refer to *Opening Header Endshields, page 39*.

5. With the tow chain and harness (A) facing up, insert hitch end (B) of tow-bar into the left backtube.

   IMPORTANT:

   The header endshield has been removed from the illustration for clarity.

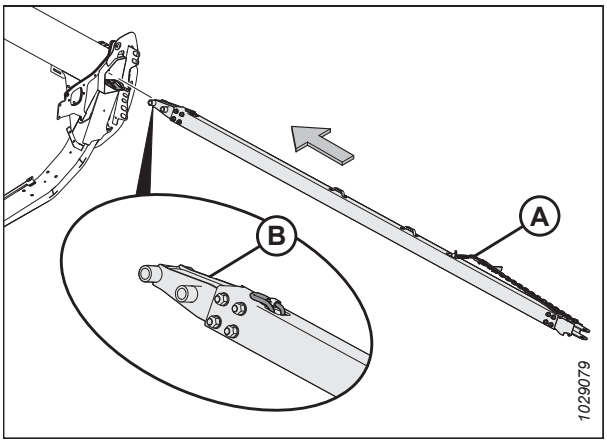


Figure 3.858: Hitch End

6. Slide the tow-bar inside the backtube until hooks (A) engage the slots of support angle (B).

7. Close the header endshield. For instructions, refer to *Closing Header Endshields, page 40*.

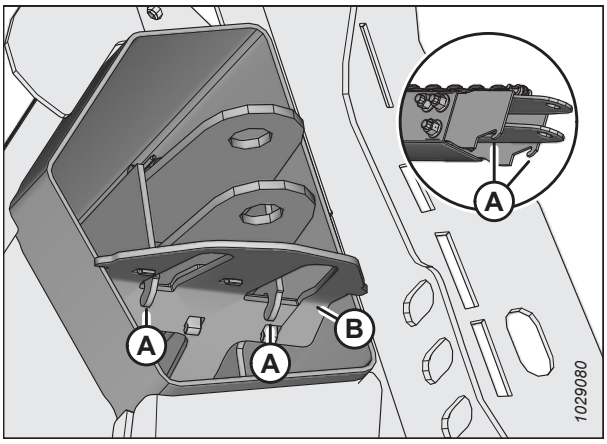


Figure 3.859: Clevis End Retainer Hooks

Moving Front (Left) Wheels into Field Position

This procedure explains how to move the wheels to the highest storage position, but you may want to use a lower position, depending on whether or not you want the wheels to support the header during field operations.

NOTE:

This procedure assumes that the tow-bar has been removed. For instructions on removing the tow-bar, refer to *Removing Tow-Bar, page 479*.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header until the transport wheels are 51–102 mm (2–4 in.) off the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. Turn left transport wheel assembly (A) 90° in the direction shown.

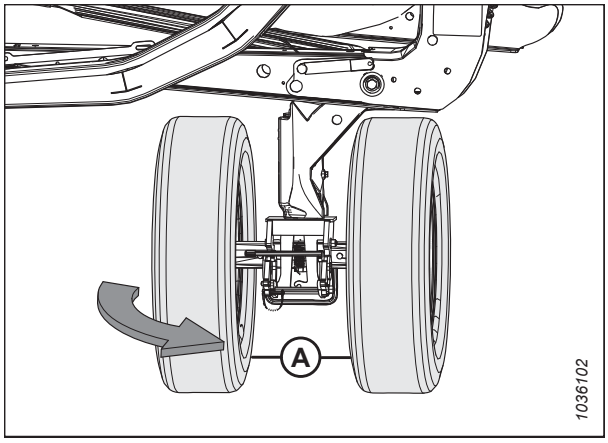


Figure 3.860: Left Transport Wheels in Transport Mode

6. Remove lynch pin (A). Pull handle (B) to engage latch (C)—this will prevent the transport wheel assembly from rotating.

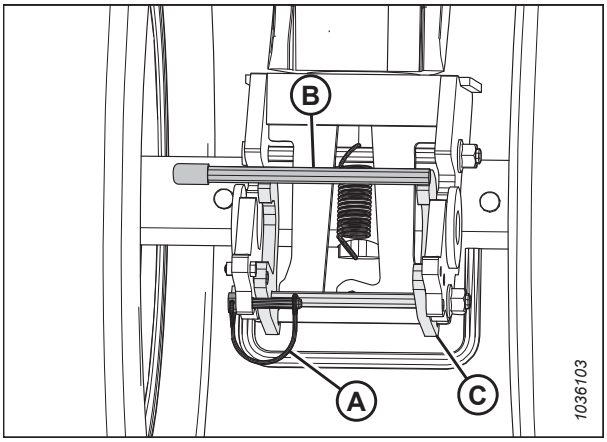


Figure 3.861: Left Transport Wheels – Rotation Lock Latch Disengaged

7. Secure latch (B) with lynch pin (A).

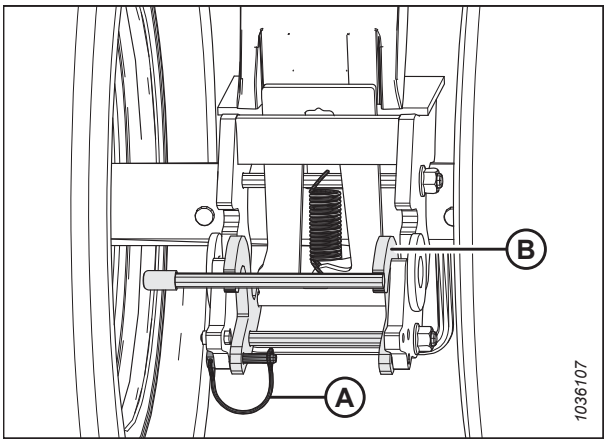


Figure 3.862: Left Transport Wheels – Rotation Lock Latch Engaged

8. To unlock the pivot, use your foot to apply pressure to bolt (B) while pushing handle (A) downward.

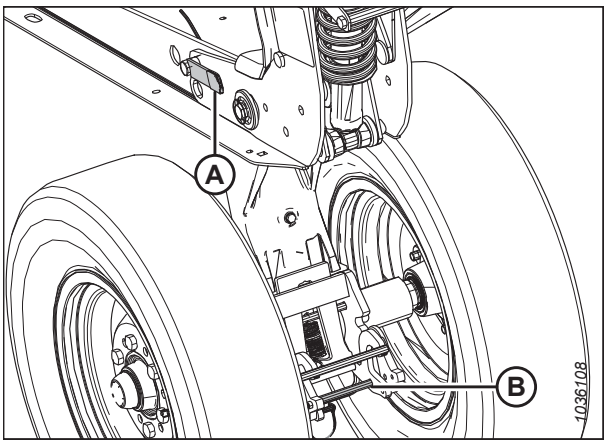


Figure 3.863: Left Transport Wheels – Pivot Released

9. Lift up on handle (A) while pulling back on handle (B) to lift the left wheel assembly into the highest storage position.

   NOTE:

   Parts have been removed from the illustration for clarity.

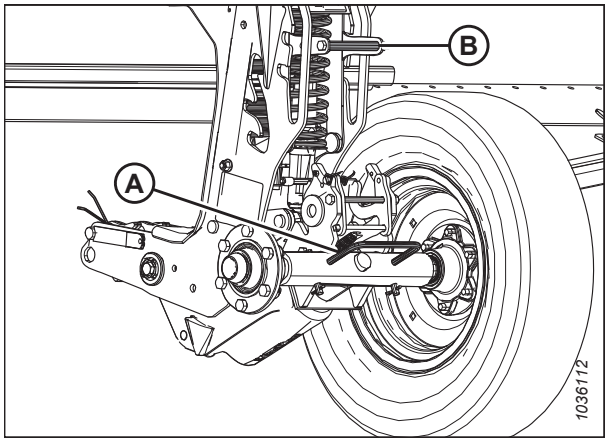


Figure 3.864: Left Transport Wheels in Highest Storage Position

10. Ensure that pin (A) is visible at the highest storage position in plate (B).

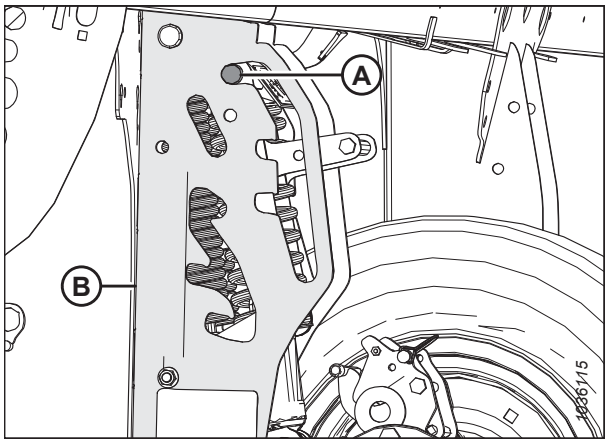


Figure 3.865: Left Transport Wheel Pivot Pin in Highest Storage Position

Moving Rear (Right) Wheels into Field Position

This procedure explains how to move the wheels to the highest storage position, but you may want to use a lower position, depending on whether or not you want the wheels to support the header during field operations.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header until the transport wheels are 51–102 mm (2–4 in.) off the ground.

   NOTE:

   Raise the header high enough to engage the safety props — you will need to work under the header to complete this procedure.

NOTE:

If engaging the safety props requires raising the header to a height where it is inconvenient to work on, use blocks to support the header so that the transport wheels are 51–102 mm (2–4 in.) off the ground.

3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. On the right transport axle, remove lynch pin (A) from the right transport axle latch.
6. Support the right transport axle using wheel handle (B), then push handle (C) to release the right transport axle from the header frame.
7. Lower the right transport axle to the ground using wheel handle (B).
8. Reinstall lynch pin (A) into the latch.

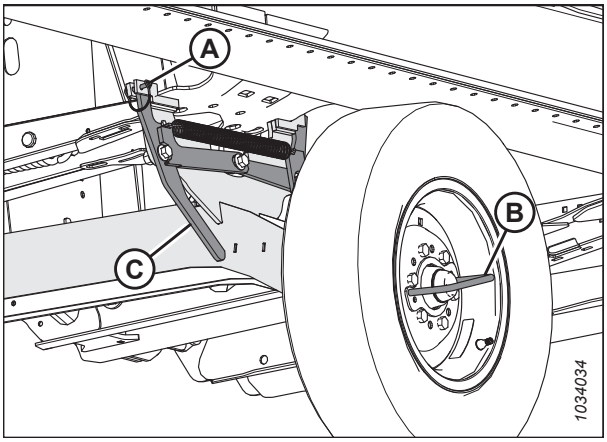


Figure 3.866: Right Transport Axle Latched in Transport Position

9. Lift and rotate right transport axle (A) in the direction shown using the wheel handle.

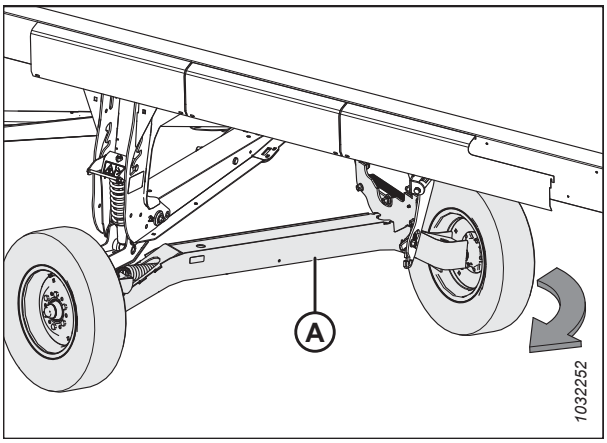


Figure 3.867: Right Transport Axle Rotation

10. Using wheel handle (A), lift and position right transport axle (B) to field support (C) to engage latch (D).

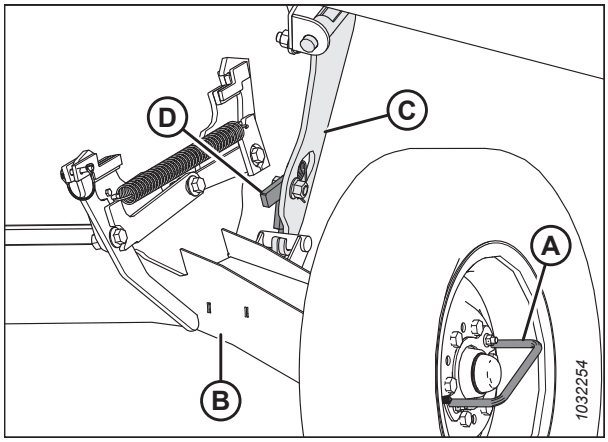


Figure 3.868: Right Transport Axle Latched in Field Position

11. Pull transport height adjustment handle (A) and lift axle pivot handle (B) to move the axle to the highest storage position. Ensure that pin (C) is visible at the highest storage position as shown.

12. Adjust the skid shoe position at the right transport leg to match the other skid shoes. For instructions, refer to *Adjusting Inner Skid Shoes, page 188*.

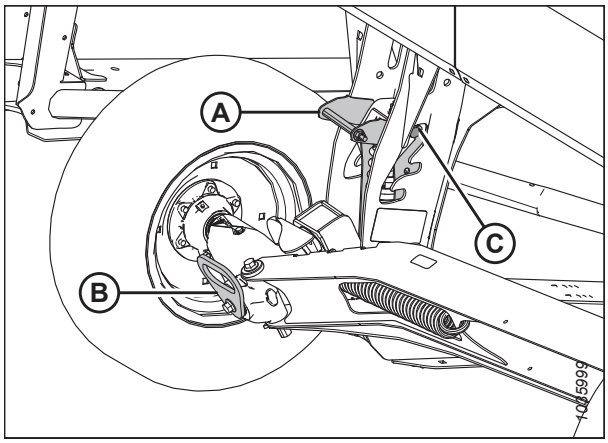


Figure 3.869: Right Transport Wheels in Highest Storage Position

3.14.4 Converting from Field to Transport Position (Option)

Convert the header to the transport position before towing it to a new location.

Moving Left Outboard Wheel From Working to Transport Position

The left outboard wheel need to be moved to the transport position before you can tow the header.

DANGER

To avoid bodily injury or death from unexpected startup or fall of raised header, stop the engine, remove the key, and engage the safety props before going under the header. If you are using a lifting device to support the header, be sure that the header is secure before proceeding.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.

2. Raise the header fully.

3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props or support the header on blocks on level ground. If you are using blocks to support the header, ensure that the header is approximately 914 mm (36 in.) off the ground.
5. Remove lynch pin (A).
6. Remove locking pins (B).
7. Slide left wheel assembly (C) towards the back of the header.

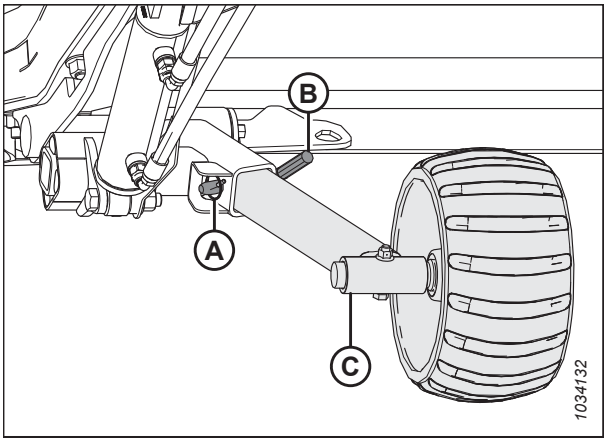


Figure 3.870: Left Wheel Assembly

8. With the wheel facing out, slide left wheel assembly (C) into storage bracket (D).
9. Install locking pin (B).
10. Install lynch pin (A).

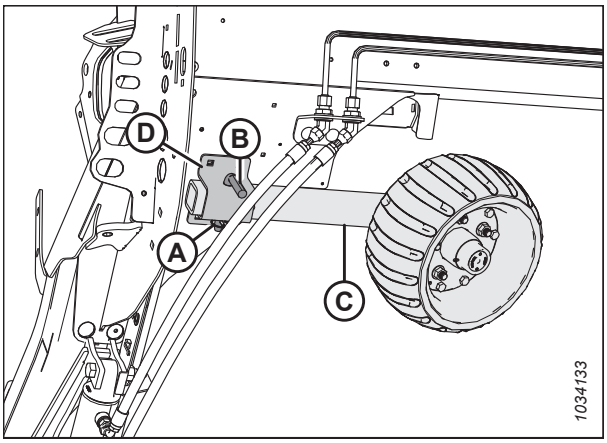


Figure 3.871: Left Wheel Assembly

Moving Front (Left) Wheels into Transport Position

The front (left) wheels are located closest to the towing vehicle. To prepare the header for transport, lower the wheels to the ground and rotate them to face the direction of travel.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

CAUTION

Stand clear of the wheels and release the linkage carefully; the wheels will drop suddenly once the mechanism is released.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props or support the header on blocks on level ground. If you are using blocks to support the header, ensure that the header is approximately 914 mm (36 in.) off of the ground.
5. Adjust the gauge wheel height to transport position (lowest slot). Pull suspension handle (A) outward and push down on axle pivot handle (B) until transport position is reached.

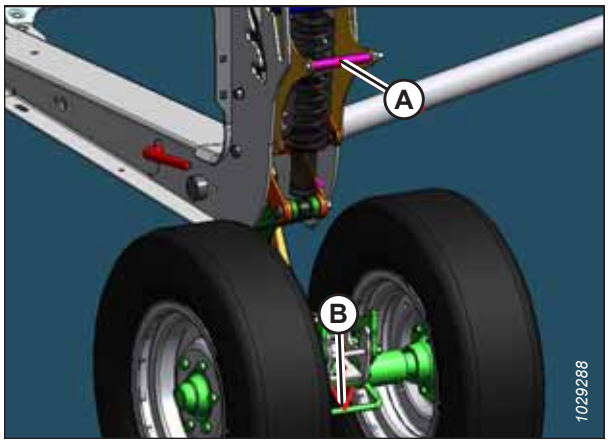


Figure 3.872: Gauge Wheel

6. Secure the left transport pivot by pushing pivot handle (A) forward until the latch is engaged.
7. Pull back on the pivot handle to ensure that the latch is fully engaged.

Figure 3.873: Gauge Wheel

8. Remove clevis pin (A) securing the latch.
9. Push pivot handle (B) up to unlock the wheel assembly.

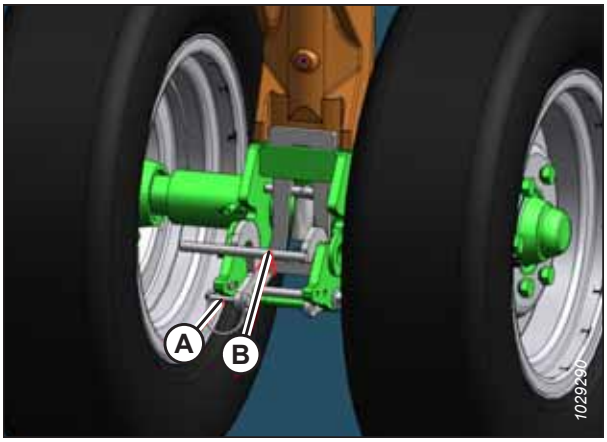


Figure 3.874: Gauge Wheel

10. Turn front wheel assembly (A) 90° clockwise.

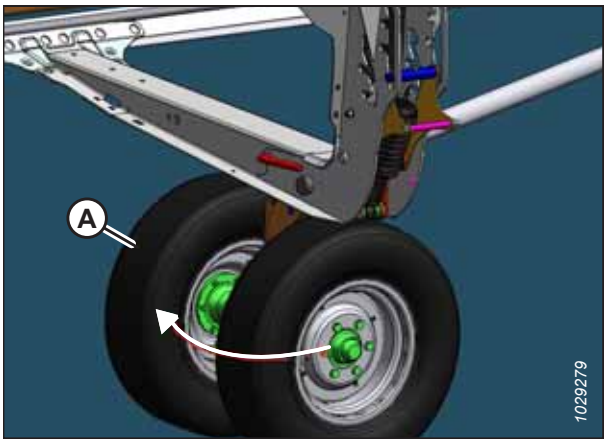


Figure 3.875: Gauge Wheel

Moving Rear (Right) Wheels into Transport Position

The header must be converted into transport position before towing the header.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

CAUTION

Stand clear of the wheels and release the linkage carefully; the wheels will drop suddenly once the mechanism is released.

1. Fully raise the skid shoe at the right transport axle. For instructions, refer to *Adjusting Inner Skid Shoes, page 188*.
2. Adjust the gauge wheel height to transport position (lowest slot) as follows:
   - If in the top slot, push on handle (A) to release it.
   - If in the mid slot, pull on handle (A) to release it.
3. Pull suspension handle (A) outward and push down on axle pivot handle (B).

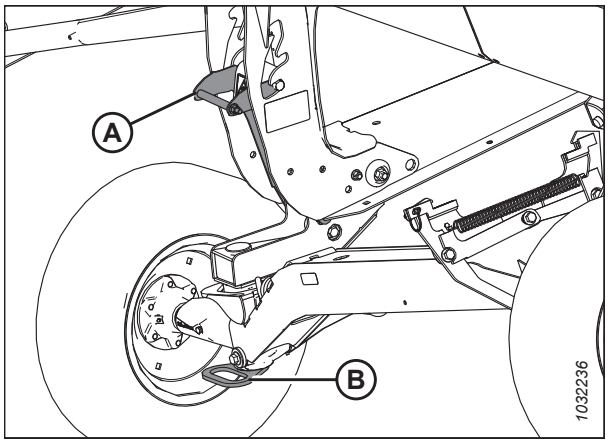


Figure 3.876: Gauge Wheels

4. Push down on latch (A) at right field support (B) to unlock it.

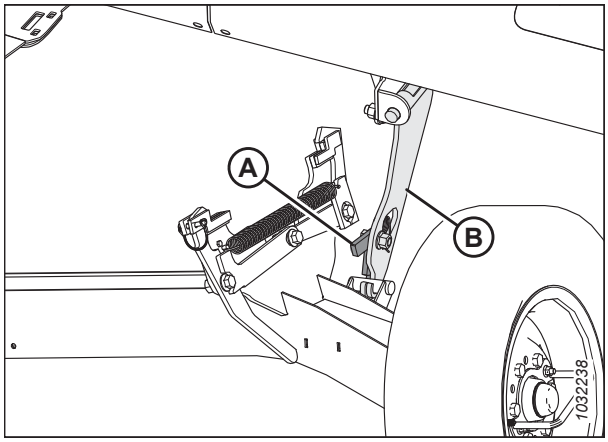


Figure 3.877: Right Field Support

5. Lift wheel handle (A) to remove right transport axle (B) from right field support (C), then lower the right transport axle to the ground.

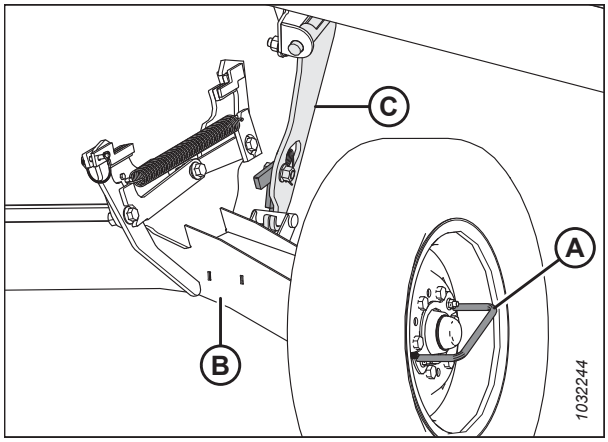


Figure 3.878: Right Field Support

6. Use the wheel handle and rotate right transport axle (A) under the header frame.

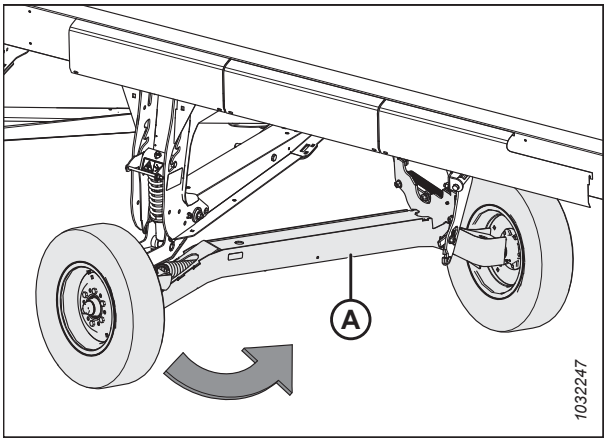


Figure 3.879: Right Transport Axle

7. Remove clevis pin (A) from the right transport axle latch.
8. Lift the right transport axle with wheel handle (B) until the latch engages.
9. Push down on wheel handle (B) to ensure the latch is engaged.
10. Secure the latch by reinstalling clevis pin (A).

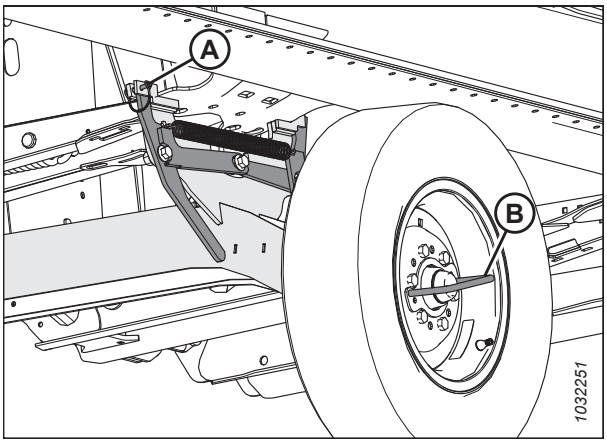


Figure 3.880: Right Transport Axle

Removing Tow-Bar from Storage

When you are converting the header to the transport position, you must remove the tow-bar from its backtube storage location.

Tow-Bar Extension

1. Remove strap (A) from cradle (B) to release tow-bar extension (C).
2. Rotate the tow-bar extension to unlock it from pin (D).
3. Lift tow-bar extension (C) away from pin (D).

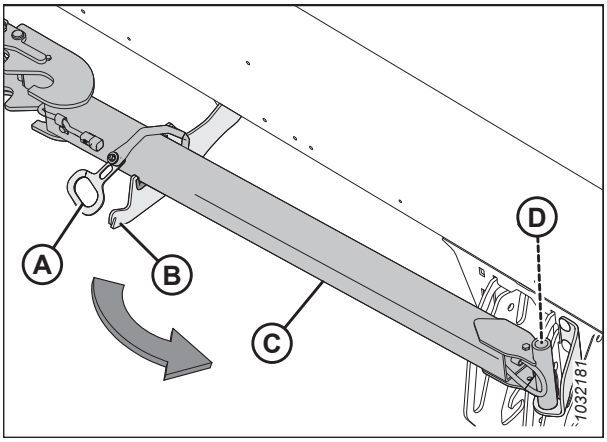


Figure 3.881: Tow-Bar Extension in Storage

Tow-Bar

4. Open the left endshield. For instructions, refer to *Opening Header Endshields, page 39*.
5. Pull the tow-bar forward until it hits the stop. Lift the tow-bar to release clevis stop (C) and hook (A) from support angle (B), then pull it out of the tube.

   NOTE:

   The backtube is transparent in the illustration.
6. Slide the tow-bar out from the header backtube.

   NOTE:

   Avoid contact with any nearby hydraulic or electrical hoses and lines.

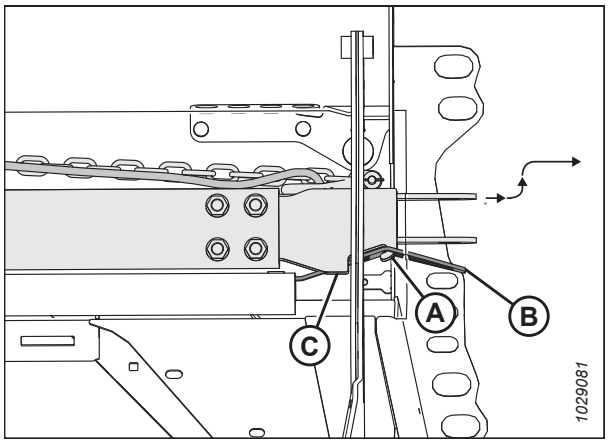


Figure 3.882: Tow-Bar in Storage

Attaching Tow-Bar

The tow-bar consists of two sections which make storage and handling easier.

1. Block the header tires with wheel chocks (A) to prevent the header from rolling.
2. Remove the tow-bar from storage. For instructions, refer to *Removing Tow-Bar from Storage, page 493*.
3. If installing a tow-bar and extension, proceed to Step *4, page 495*. If installing a tow-bar only, proceed to Step *18, page 496*.

Figure 3.883: Tire Blocking

Installing tow-bar and extension:

4. Remove lynch pin (A) from left transport pivot (B).
5. Push extension (D) into the lugs of the left transport pivot until latch (C) engages.
6. Reinstall lynch pin (A) onto the transport pivot to secure the extension.
7. Retrieve the end of extension harness (E) from inside of the extension tube.

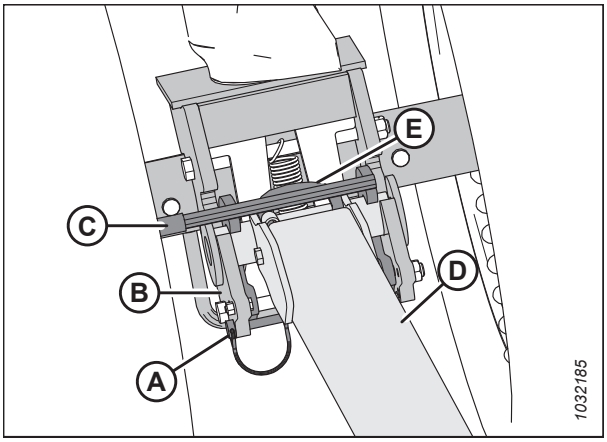


Figure 3.884: Tow-Bar Extension to Left Transport Pivot

8. Connect extension wiring harness (A) to left transport pivot harness (B).

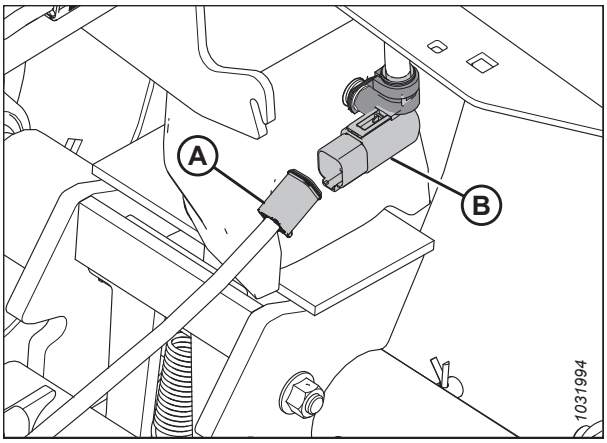


Figure 3.885: Tow-Bar Electrical Connection

9. Remove lynch pin (E) from latch (B).
10. Position end of tow-bar (C) on the extension lugs, then lower the tow-bar to the ground.
11. Lift extension (D) for latch (B) to engage to tow-bar (C).
12. Retrieve the end of tow-bar harness (A) from its storage location.

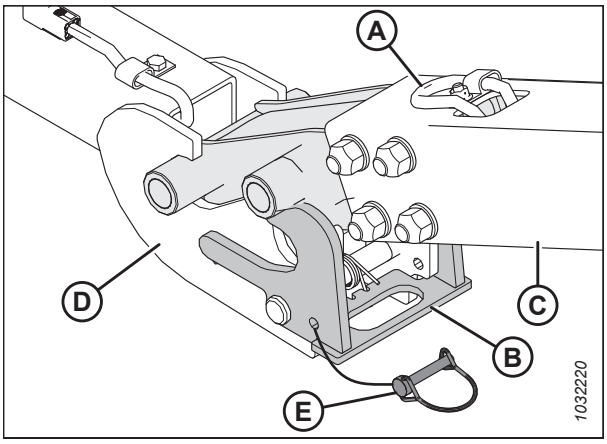


Figure 3.886: Tow-Bar to Extension

13. Connect tow-bar harness (A) to extension harness (B).
14. Reinstall lynch pin (C) onto the latch to secure the tow-bar.

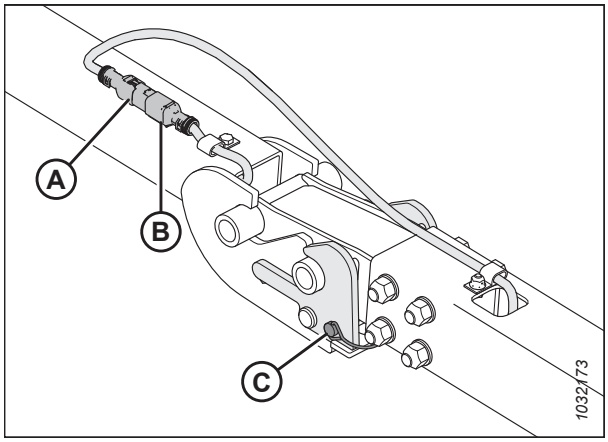


Figure 3.887: Tow-Bar / Extension Harness

15. Retrieve tow-bar wiring harness (A) and safety chain (B) from its storage location.
16. Connect the tow-bar wiring harness to the vehicle, and secure the safety chain from the tow-bar to the tow vehicle.
17. Turn on the tow vehicle's 4-way flashers and check that all of the lights on the header are working.

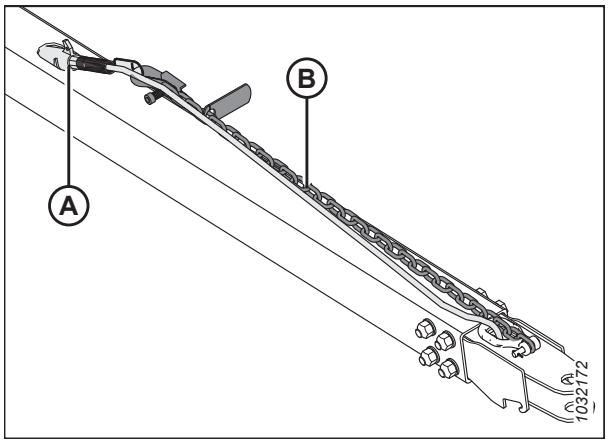


Figure 3.888: Tow-Bar Wiring Harness

Installing tow-bar only:

18. Remove lynch pin (A) from left transport pivot (B).
19. Push tow-bar (C) into the lugs of the left transport pivot until latch (D) engages.
20. Reinstall lynch pin (A) onto the transport pivot to secure the tow-bar.
21. Retrieve the end of tow-bar harness (E).

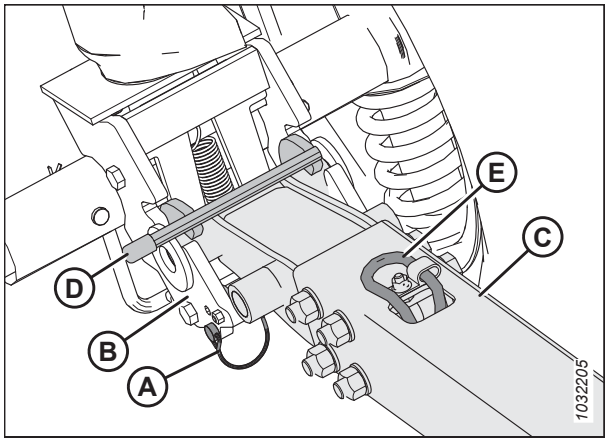


Figure 3.889: Tow-Bar and Left Transport Pivot

22. Connect extension wiring harness (A) to left transport pivot harness (B).

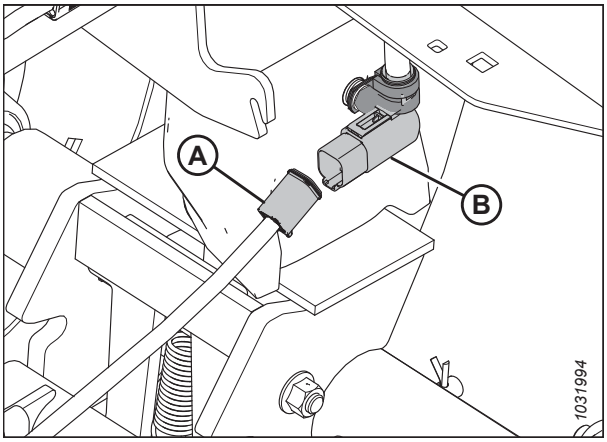


Figure 3.890: Tow-Bar Electrical Connection

23. Retrieve tow-bar wiring harness (A) and safety chain (B) from its storage location.
24. Connect the tow-bar wiring harness to the vehicle, and secure the safety chain from the tow-bar to the tow vehicle.
25. Turn on the tow vehicle's 4-way flashers and check that all of the lights on the header are working.

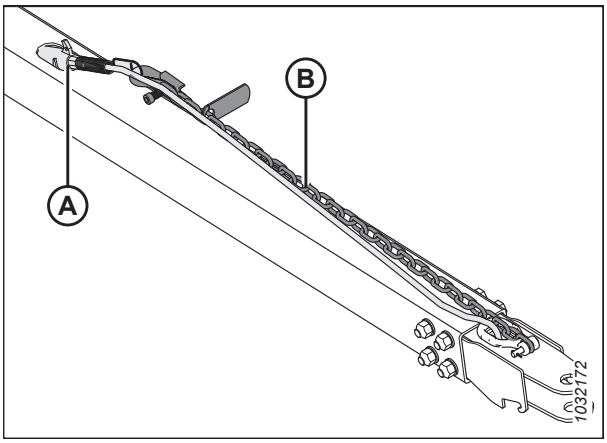


Figure 3.891: Tow-Bar Wiring Harness

3.15 Storing the Header

Storing the header properly helps to extend its service life.

WARNING

Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

CAUTION

Cover the cutterbar and the knife guards to prevent injury from accidental contact.

1. Clean the header thoroughly.
2. Store the header in a dry, protected place if possible. If storing the header outdoors, cover it with a waterproof canvas or another protective material.

   NOTE:

   If you are storing the header outdoors, remove the drapers and store them in a dark, dry place. If you are not removing the drapers, lower the cutterbar so that water and snow cannot accumulate on the drapers. The weight of water and snow accumulating on the header puts significant stress on the drapers and the header frame.
3. Lower the header onto blocks to keep the cutterbar off of the ground.
4. Lower the reel completely. If you are storing the header outdoors, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust from forming.
6. Loosen the drive belts.
7. Lubricate the header thoroughly. Leave excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to the exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair them as necessary.
10. Check for broken components and order replacements from your Dealer. Immediately repairing these items will save time and effort next season.
11. Replace any missing hardware. Tighten loose hardware to the recommended torque value. For more information, refer to Chapter *7.1 Torque Specifications, page 759*.

Chapter 4: Maintenance and Servicing

This chapter contains the information necessary to perform routine maintenance and occasional servicing tasks on your machine. The word “maintenance” refers to scheduled tasks that help your machine operate safely and effectively; “Service” refers to tasks that must be performed when a part needs to be repaired or replaced. For advanced service procedures, contact your Dealer.

A parts catalog is provided in the plastic manual case at the rear by the right header leg.

Log hours of operation and use the maintenance record provided (refer to *4.2.1 Maintenance Schedule/Record, page 500*) to keep track of your scheduled maintenance.

4.1 Preparing Machine for Servicing

Observe all safety precautions before beginning service on the machine.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator’s seat, and always engage the safety props before going under the machine for any reason.

CAUTION

To avoid personal injury, follow all the safety precautions listed before servicing header or opening drive covers.

DANGER

Ensure that all bystanders have cleared the area.

Before servicing the machine, follow these steps:

1. Start the engine.
2. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the park brake.
5. Wait for all of the moving parts to stop.

4.2 Maintenance Requirements

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following the maintenance schedule will increase your machine's life. Log hours of operation, use the maintenance record, and keep copies of your maintenance records (refer to *4.2.1 Maintenance Schedule/Record, page 500*).

Periodic maintenance requirements are organized according to service intervals. If a service interval specifies more than one timeframe, (e.g., 100 hours or annually), service the machine at whichever interval is reached first.

IMPORTANT:

The recommended intervals are for average conditions. Service the machine more often if you are operating the machine under adverse conditions (severe dust, extra heavy loads, etc.).

When servicing the machine, refer to the appropriate section in this chapter and use only the specified fluids and lubricants. Refer to the inside back cover for the recommended fluids and lubricants.

CAUTION

Follow all safety messages. For instructions, refer to *1 Safety, page 1* and *4.1 Preparing Machine for Servicing, page 499*.

4.2.1 Maintenance Schedule/Record

Recording maintenance allows the user to keep track of when maintenance is performed.

Action:	✓ – Check	♦ – Lubricate	▲ – Change
Hour meter reading			
Service date			
Serviced by			
First Use	Refer to *4.2.2 Break-in Inspection, page 502*.		
End of Season	Refer to *4.2.4 Equipment Servicing – End-of-Season, page 503*.		
10 Hours or Daily (Whichever Occurs First)			
✓	Hydraulic hoses and lines; refer to *4.2.5 Checking Hydraulic Hoses and Lines, page 504*[82]		
✓	Knife sections, guards, and hold-downs; refer to *4.8 Knife, page 567*[82]		
✓	Tire pressure; refer to *4.16.3 Checking Tire Pressure, page 716*[82]		
♦	Feed draper rollers; refer to *Every 10 Hours, page 506*		
✓	Link holder hooks; refer to *4.10.7 Checking Link Holder Hooks, page 633*[82]		
✓	Axle bolt torque; refer to *4.16.2 Checking Transport Assembly Bolt Torque, page 714*		
25 Hours			
✓	Hydraulic oil level at reservoir; refer to *4.4.1 Checking Oil Level in Hydraulic Reservoir, page 526*[82]		
♦	Knifeheads; refer to *Every 25 Hours, page 507*[82]		
50 Hours or Annually			
♦	Driveline and driveline universals; refer to *Every 50 Hours, page 508*		
♦	Upper cross auger right bearing; refer to *Every 50 Hours, page 508*		
♦	Upper cross auger sliding hubs; refer to *Every 50 Hours, page 508*		

82. MacDon recommends keeping a record of daily maintenance as evidence of a properly maintained machine.

♦	Upper cross auger center support and U-joint; refer to *Every 50 Hours, page 508*																	
♦	Float module auger pivots; refer to *Every 50 Hours, page 508*																	
♦	Feed draper roller bearings, 3 locations; refer to *Every 50 Hours, page 508*																	
♦	Reel drive chain (If chain is dry at next oiling interval – consider decreasing oiling interval.); refer to *Every 50 Hours, page 508*																	
▲	Knife drive box lubricant (first 50 hours only); refer to *Changing Oil in Knife Drive Box, page 607*																	
▲	Header drive main gearbox lubricant (first 50 hours only); refer to *Changing Oil in Header Drive Main Gearbox, page 521*																	
▲	Header drive completion gearbox lubricant (first 50 hours only); refer to *Changing Oil in Header Drive Completion Gearbox, page 524*																	
✓	Auger to pan and feed draper clearance; refer to *4.7.1 Adjusting Feed-Auger-to-Pan Clearance, page 543*																	
✓	Main gearbox lubricant level; refer to *Checking Oil Level in Header Drive Main Gearbox, page 520*																	
✓	Completion gearbox lubricant level; refer to *Checking Oil Level in Header Drive Completion Gearbox, page 522*																	
✓	Reel drive chain tension; refer to *4.14.1 Reel Drive Chain, page 688*																	
✓	Reel finger/cutterbar clearance; refer to *4.13.1 Reel to Cutterbar Clearance, page 658*																	
✓	Wheel bolt torque; refer to *4.16.1 Checking Wheel Bolt Torque, page 714*																	
✓	Knife drive box lubricant level; refer to *Checking Oil Level in Knife Drive Box , page 606*																	
✓	Knife drive box mounting bolts; refer to *Checking Mounting Bolts, page 607*																	
100 Hours or Annually (Whichever Occurs First)																		
♦	Auger drive chain; refer to *Every 100 Hours, page 512*																	
♦	Float pivots; refer to *Every 100 Hours, page 512*																	
♦	Float spring tensioners; refer to *Every 100 Hours, page 512*																	
250 Hours or Annually (Whichever Occurs First)																		
♦	Reel shaft bearings; refer to *Every 250 Hours, page 514*																	

♦	Reel drive U-joint; refer to *Every 250 Hours, page 514*																	
♦	Flex linkage; refer to *Every 250 Hours, page 514*																	
✓	Contour wheel end play; refer to *4.15.4 Checking Contour Wheel End Play, page 710*																	
♦	Contour wheel hub; refer to *4.15.3 Lubricating Contour Wheel System, page 708*																	
▲	Hydraulic oil filter; refer to *4.4.4 Changing Oil Filter, page 528*																	
500 Hours or Annually (Whichever Occurs First)																		
♦	Gauge wheel / slow speed transport wheel bearings; refer to *Every 500 Hours, page*																	
✓	Header drive main gearbox chain tension; refer to *4.6.5 Adjusting Chain Tension – Main Gearbox, page 540*																	
✓	Header drive completion gearbox chain tension; refer to *4.6.6 Adjusting Chain Tension – Completion Gearbox, page 541*																	
1000 Hours or 3 Years (Whichever Occurs First)																		
▲	Knife drive box lubricant; refer to *Changing Oil in Knife Drive Box, page 607*																	
▲	Header drive main gearbox lubricant; refer to *Changing Oil in Header Drive Main Gearbox, page 521*																	
▲	Header drive completion gearbox lubricant; refer to *Changing Oil in Header Drive Completion Gearbox, page 524*																	
▲	Hydraulic oil; refer to *4.4.3 Changing Oil in Hydraulic Reservoir, page 527*																	

4.2.2 Break-in Inspection

Break-in inspection involves checking belts, fluids, and performing general machine inspections for loose hardware or other areas of concern. Break-in inspections ensure that all components can operate for an extended period without requiring service or replacement. The break-in period is the first 50 hours of operation after the machine's initial start up.

Inspection Interval	Item	Refer to
5 Minutes	Check the hydraulic oil level in the reservoir (check the oil level after the first run-up and after the hydraulic hoses have filled with oil).	*4.4.1 Checking Oil Level in Hydraulic Reservoir, page 526*
5 Hours	Check for loose hardware and tighten any loose hardware to the required torque specification.	*7.1 Torque Specifications, page 759*
10 Hours	Check the auger drive chain tension.	*Checking Feed Auger Drive Chain Tension – Thorough Method, page 547*
10 Hours	Check the knife drive box mounting bolts.	*Checking Mounting Bolts, page 607*

Inspection Interval	Item	Refer to
10 Hours	Grease the feed draper bearings.	*Every 10 Hours, page 506*
50 Hours	Change the float module gearbox oil.	*Changing Oil in Header Drive Main Gearbox, page 521*
50 Hours	Change the float module hydraulic oil filter.	*4.4.4 Changing Oil Filter, page 528*
50 Hours	Change the knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 607*
50 Hours	Check the gearbox chain tension.	*4.6.5 Adjusting Chain Tension – Main Gearbox, page 540* and *4.6.6 Adjusting Chain Tension – Completion Gearbox, page 541*

4.2.3 Equipment Servicing – Preseason

Equipment should be inspected and serviced at the beginning of each operating season.

CAUTION

- **Review this manual to refresh your memory on the safety and operating recommendations.**
- **Review all of the safety decals and the other decals on the header. Note the hazard areas.**
- **Be sure all of the shields and guards are properly installed and secured. Never alter or remove safety equipment.**
- **Be sure you understand and have practiced the safe use of all controls. Know the capacity and operating characteristics of the machine.**
- **Ensure you have a first aid kit and fire extinguisher. Know where they are and how to use them.**

1. Lubricate the machine completely. For instructions, refer to *4.3 Lubrication, page 506*.
2. Perform all annual maintenance tasks. For instructions, refer to *4.2.1 Maintenance Schedule/Record, page 500*.

4.2.4 Equipment Servicing – End-of-Season

Inspect and service the necessary equipment at the end of each operating season.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

CAUTION

Cover the cutterbar and the knife guards to prevent injury from accidental contact.

1. Clean the header thoroughly.
2. Store the header in a dry, protected place, if possible. If storing the header outdoors, cover the header with a waterproof canvas or another protective material.

   NOTE:

   If you are storing the header outdoors, remove the drapers and store them in a dark, dry place. If you are **NOT** removing the drapers, lower the cutterbar so that water and snow cannot accumulate on the drapers. The weight of water and snow accumulating on the header puts significant stress on the drapers and the header frame.
3. Lower the header onto blocks to keep the cutterbar off of the ground.
4. Lower the reel completely. If you are storing the header outdoors, tie the reel to the frame to prevent rotation caused by the wind.
5. Repaint all worn or chipped painted surfaces to prevent rust.
6. Loosen the drive belts.
7. Lubricate the header thoroughly and leave excess grease on the fittings to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and the sliding surfaces of components.
9. Lubricate the knife. Refer to the inside back cover for the recommended lubricants.
10. Check for broken components and order replacements from your Dealer. Immediately repairing these items will save time and effort at the beginning of the next season.
11. Tighten any loose hardware. For torque specifications, refer to Chapter *7.1 Torque Specifications, page 759*.

4.2.5 Checking Hydraulic Hoses and Lines

Check the hydraulic hoses and the hydraulic lines daily for signs of leaks.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

- **Avoid high-pressure fluids. Escaping fluid can penetrate the skin and cause serious injury. Relieve the pressure before disconnecting the hydraulic lines. Tighten all of the hydraulic connections before applying pressure. Keep your hands and body away from pin holes and nozzles which can eject fluids under high pressure.**

Figure 4.1: Hydraulic Pressure Hazard

- **If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.**

- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. Allowing dust, dirt, water, or foreign material to enter the hydraulic system is the major cause of hydraulic system damage. Do **NOT** attempt to service hydraulic systems in the field. Precise fits require a perfectly clean connection during overhaul.

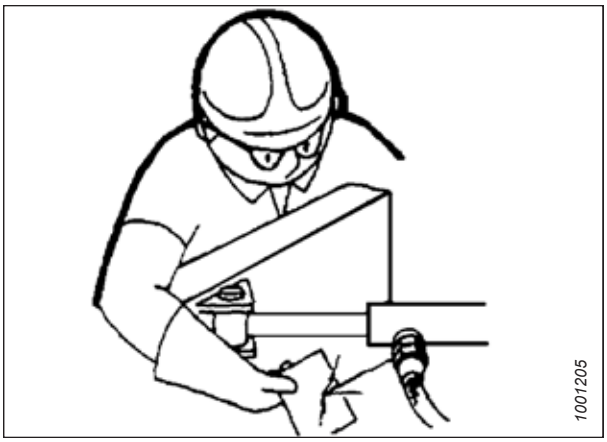


Figure 4.2: Testing for Hydraulic Leaks

1. Start the engine.
2. Engage the header. While it is running, raise and lower the header and the reel. Extend and retract the reel. Run it for 10 minutes.
3. Shut down the engine, and remove the key from the ignition.
4. Once the machine has been sitting still for several hours, walk around it and check for hoses, lines, or fittings that are visibly leaking oil.

4.3 Lubrication

Grease zerk locations are marked on the machine by decals showing a grease gun and the greasing interval, which will be specified in terms of hours of header operation.

Refer to the inside back cover for information on the recommended lubricants.

Log the header's hours of operation. Use the maintenance record provided in this manual to keep track of what maintenance procedures have been performed on the header, and when. For more information, refer to *4.2.1 Maintenance Schedule/Record, page 500*.

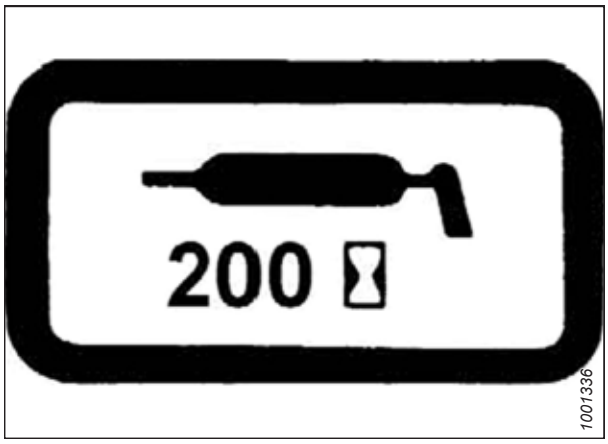


Figure 4.3: Grease Interval Decal

4.3.1 Lubrication Intervals

The lubrication intervals are specified in terms of hours of header operation. Maintaining accurate maintenance records is the best way to ensure these procedures are performed in a timely fashion.

Every 10 Hours

Daily maintenance is required to keep your machine operating at peak performance. It also allows you to inspect the machine so that you can identify issues early.

Use high-temperature extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

IMPORTANT:

When greasing bearing (A), clear any debris and excess grease from around the bearing. Inspect the condition of the bearing and the bearing housing. Grease the feed draper drive roller bearing until grease comes out of the seal. Wipe any excess grease from the area after greasing.

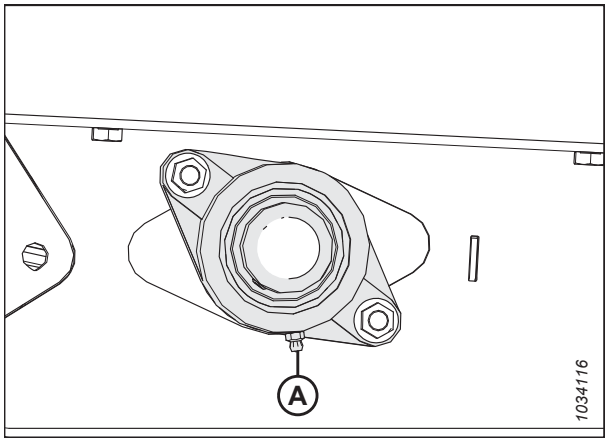


Figure 4.4: Feed Draper Drive Roller

IMPORTANT:

When greasing bearing (A), clear any debris and excess grease from around the bearing housing. Inspect the condition of the roller and the bearing housing. Grease the feed draper idler roller bearing until grease comes out of the seal. The initial greasing on a new header may require an additional 5-10 pumps of grease. Wipe any excess grease from the area after greasing.

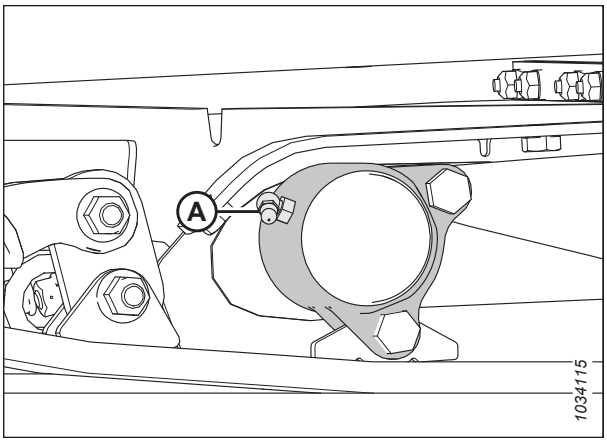


Figure 4.5: Feed Draper Idler Roller

Every 25 Hours

Regular maintenance is required to keep your machine operating at peak performance. It also allows you to inspect the machine so that you can identify issues early.

Use high-temperature extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Lubricate knifehead (A) every 25 hours. After lubricating the knifehead, check for any signs of excessive heating on the first few guards. If it is required, relieve pressure on the knifehead by pressing the check-ball in the grease fitting.

IMPORTANT:

Do **NOT** overgrease the knifehead. Overgreasing the knifehead puts pressure on the knife, causing it to rub against the guards, resulting in excessive wear from binding. Apply only one to two pumps of grease using a mechanical grease gun (do **NOT** use an electrical grease gun). If you require more than six to eight pumps of grease to fill the cavity, replace the seal in the knifehead. For instructions, refer to *4.8.3 Removing Knifehead Bearing, page 569*.

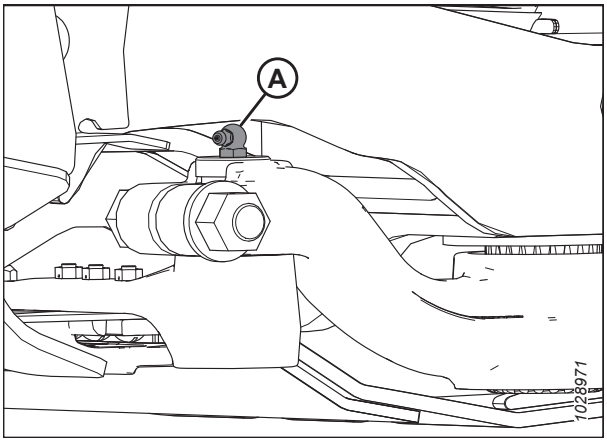


Figure 4.6: Knifehead

Every 50 Hours

Maintenance is required to keep your machine operating at peak performance. It also allows you to inspect the machine so that you can identify issues early.

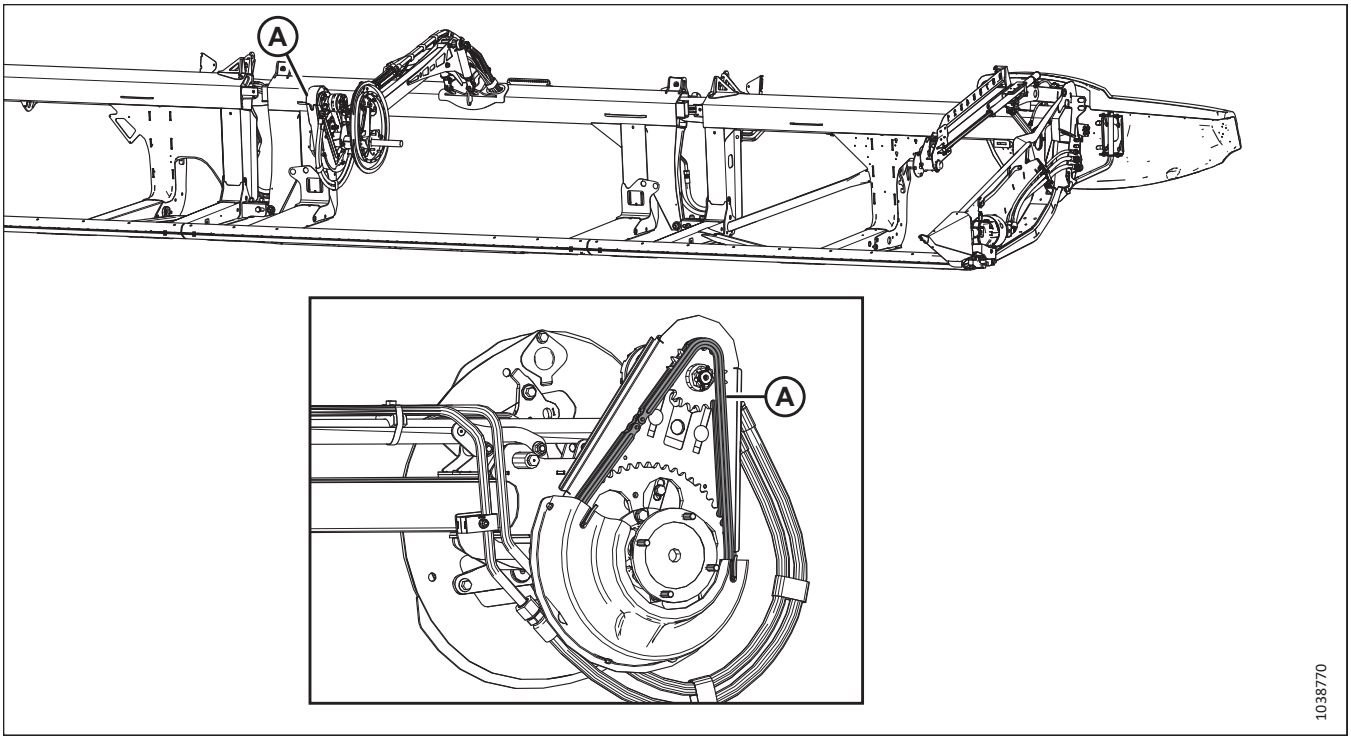


Figure 4.7: Reel

A - Reel Drive Chain. To lubricate, refer to *4.3.3 Lubricating Reel Drive Chain, page 517*.

IMPORTANT:

Use chain oil that has a viscosity of 100–150 cSt at 40°C (typically medium to heavy chain oil) or mineral oil Sae 20W50 that has no detergents or solvents.

NOTE:

If the chain is dry by the next oiling interval, lubricate it more often.

Use high-temperature extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

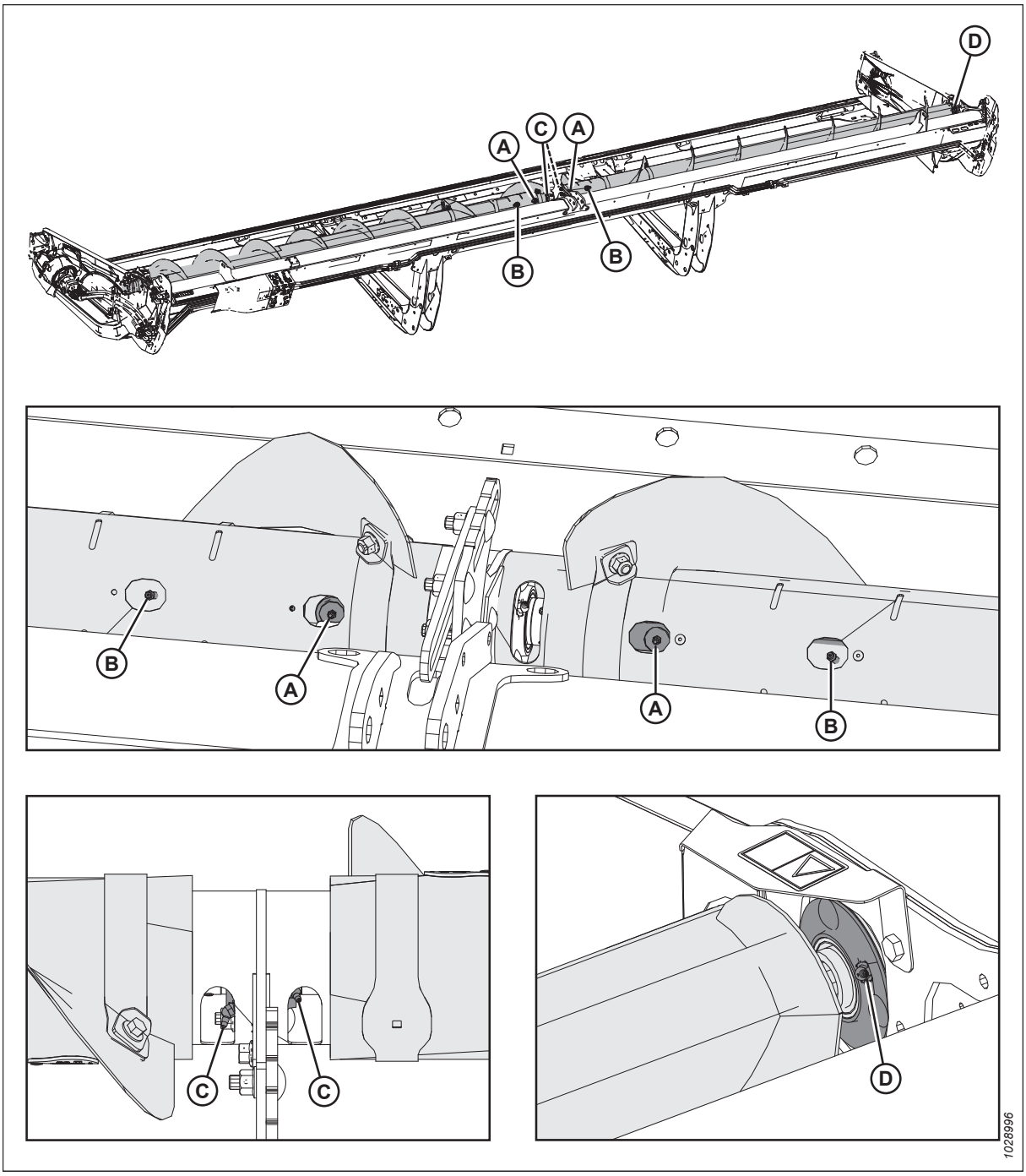


Figure 4.8: Two-Piece Upper Cross Auger

A - Upper Cross Auger U-joints (Two Places)
B - Upper Cross Auger Sliding Hubs (Two Places)
C - Upper Cross Auger Center Bearings (Two Places)
D - Right End Bearing

IMPORTANT:

The upper cross auger (UCA) must be greased regularly even when it is turned off as components of the UCA move when the header flexes, regardless of whether the auger is turning or not.

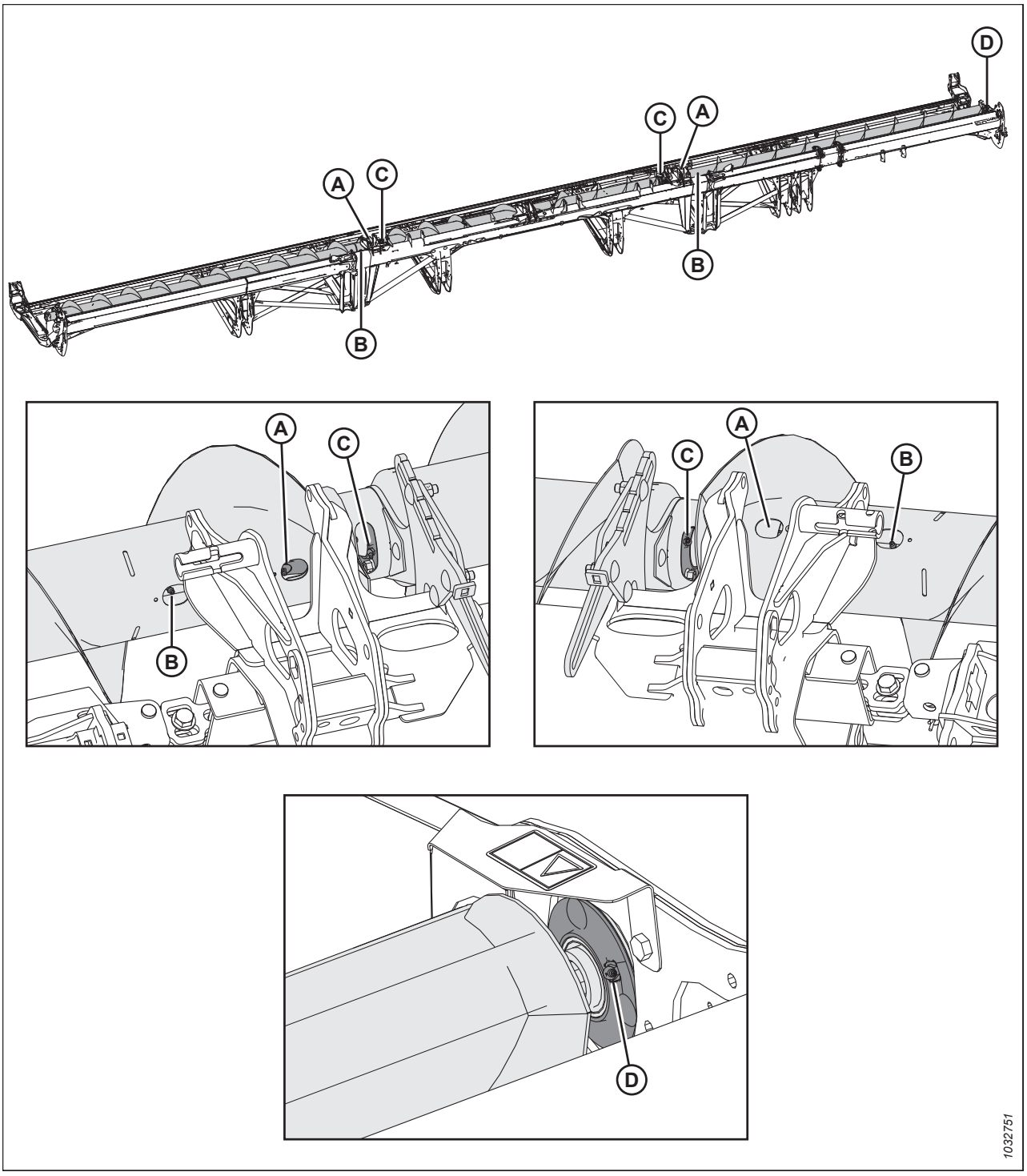


Figure 4.9: Three-Piece Upper Cross Auger

A - Upper Cross Auger U-joints (Two Places)
B - Upper Cross Auger Sliding Hubs (Two Places)
C - Upper Cross Auger Center Bearings (Two Places)
D - Right End Bearing

IMPORTANT:

The upper cross auger (UCA) must be greased regularly even when it is turned off as components of the UCA move when the header flexes, regardless of whether the auger is turning or not.

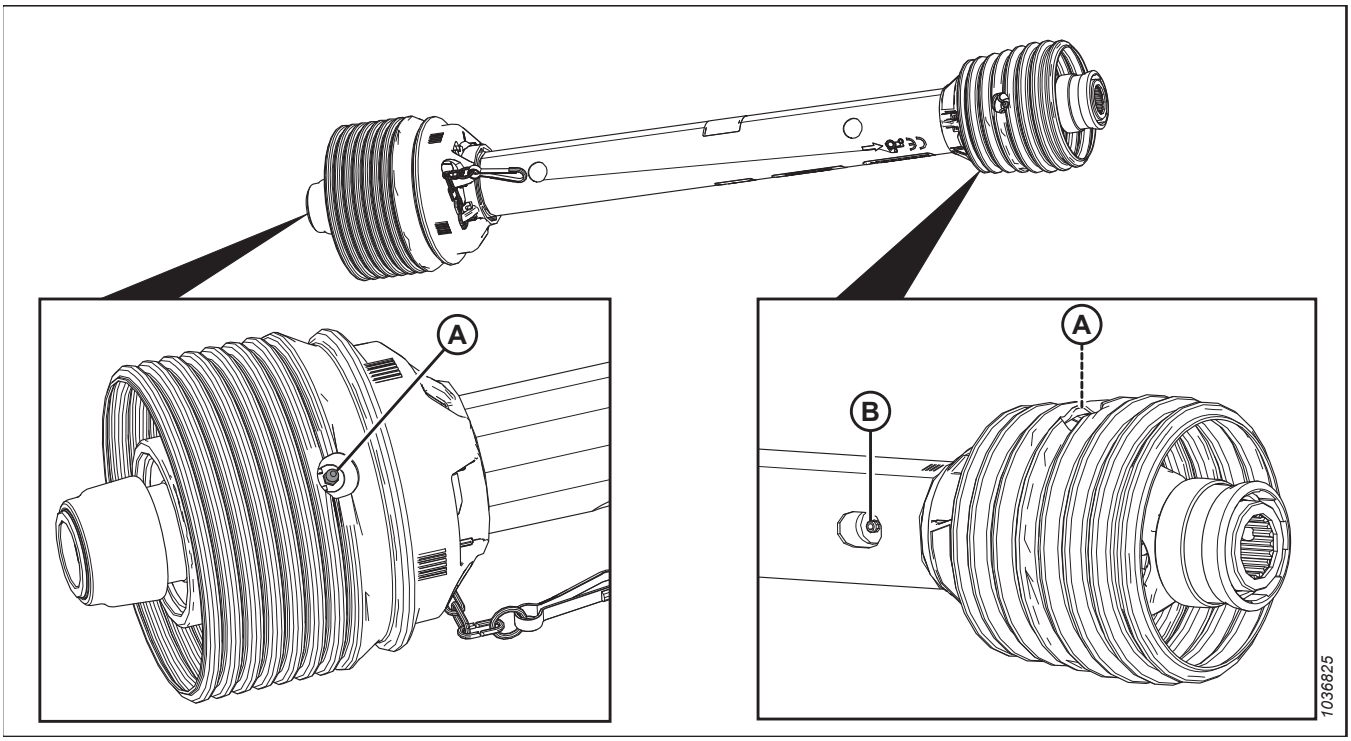


Figure 4.10: FM200

A - Driveline Universal (Two Places)

B - Driveline Slip Joint[83]

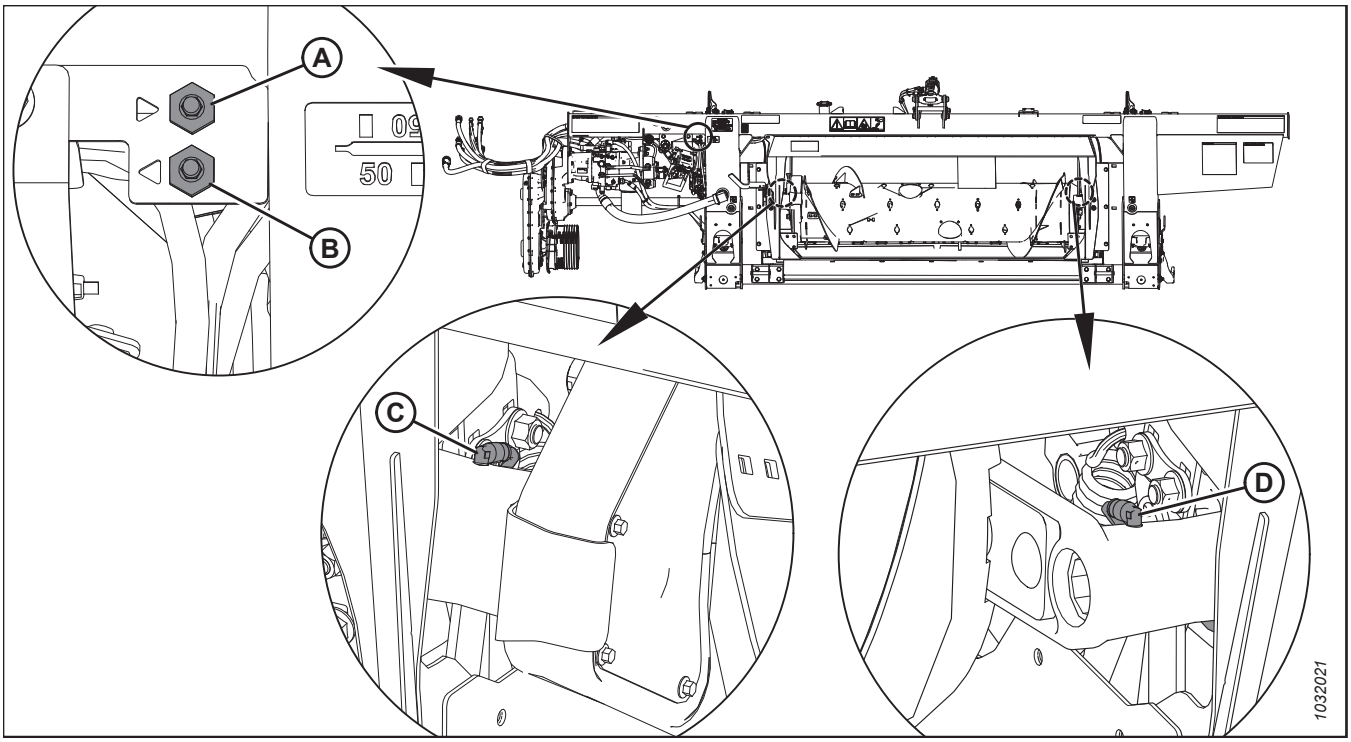


Figure 4.11: FM200

A - Remote Grease Line for Auger Pivot (Right Side)

B - Remote Grease Line for Auger Pivot (Left Side)

C - Auger Pivot (Left Side)

D - Auger Pivot (Right Side)

83. Use high-temperature extreme-pressure (EP2) performance grease with 10% max molybdenum disulphide (NLGI Grade 2) lithium base.

Every 100 Hours

Maintenance is required to keep your machine operating at peak performance. It also allows you to inspect the machine so that you can identify issues early.

Use high-temperature extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

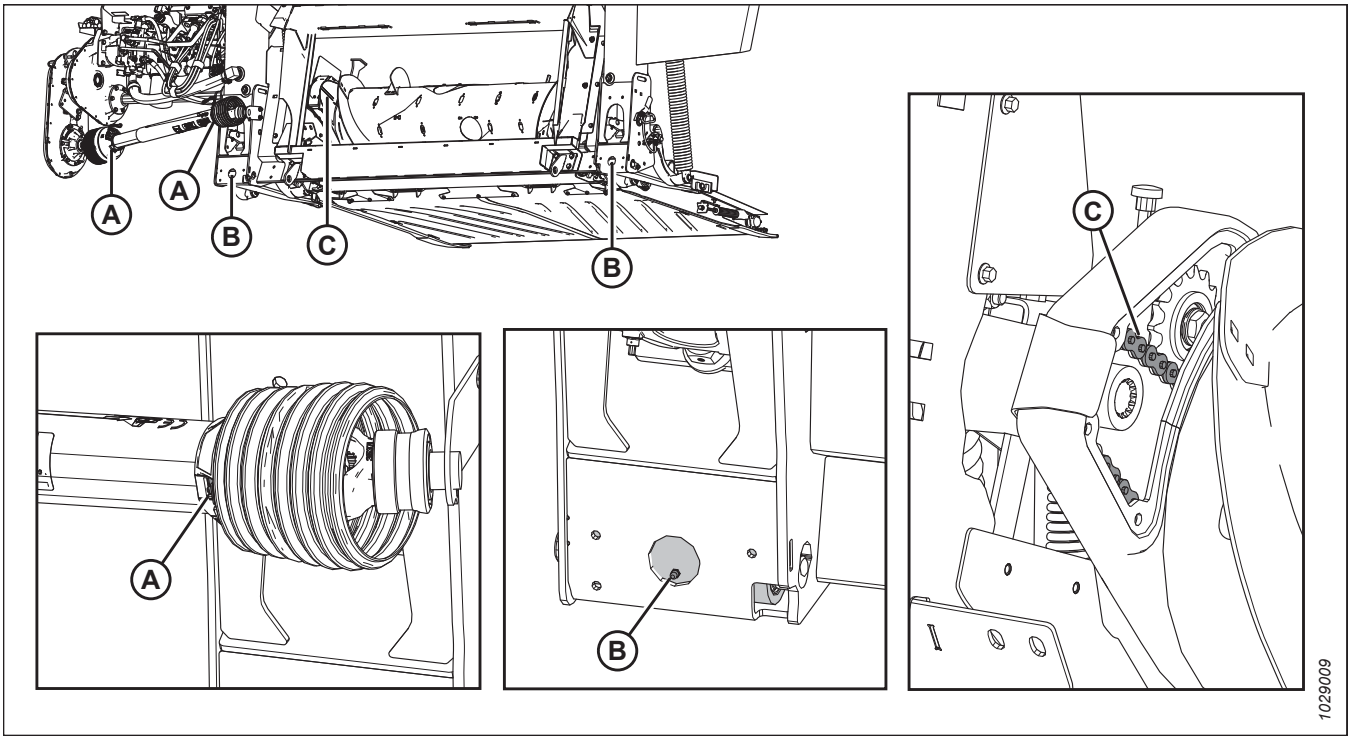


Figure 4.12: FM200

A - Driveline Guards (Both Ends)
B - Float Pivots (Right and Left)
C - Auger Drive Chain. To lubricate the chain, refer to *4.3.4 Lubricating Auger Drive Chain, page 518*.

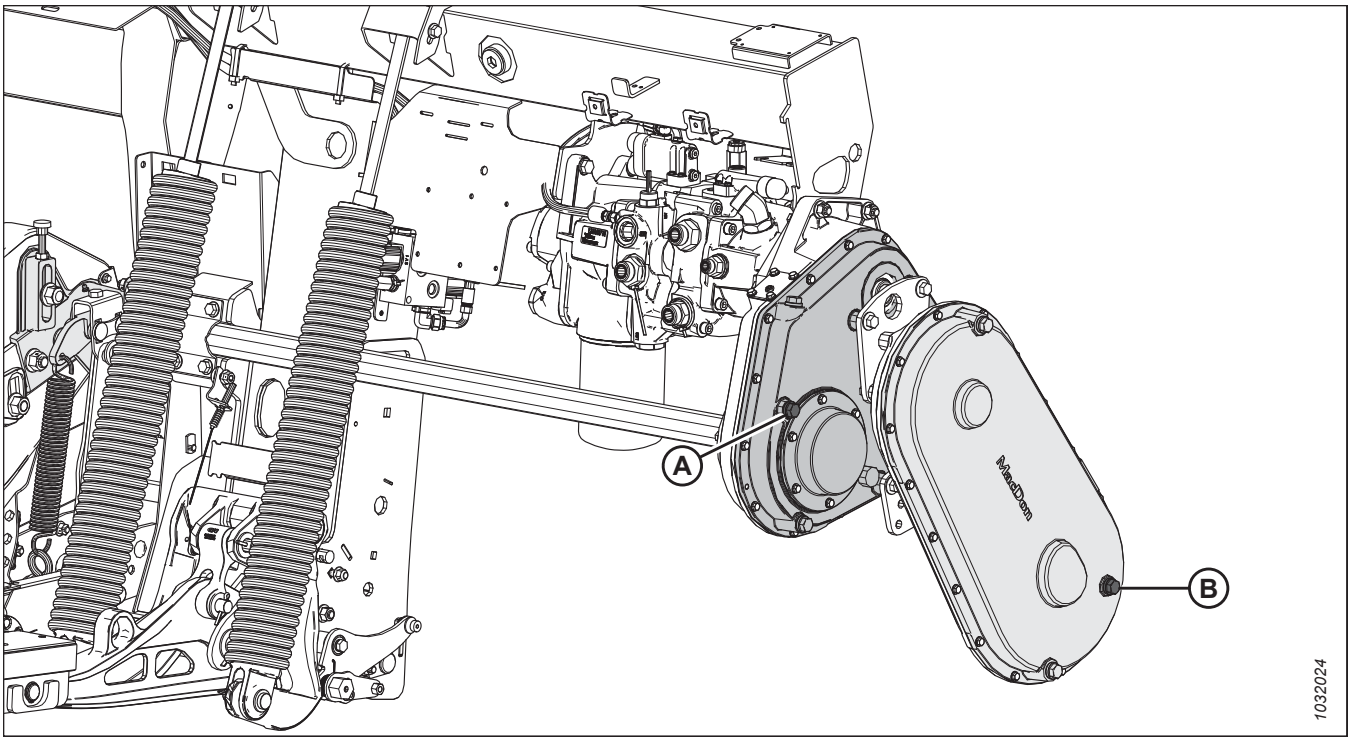


Figure 4.13: FM200

A - Main Gearbox Oil Level. To lubricate the main gearbox, refer to *4.3.5 Lubricating Header Drive Main Gearbox, page 520*.
B - Completion Gearbox Oil Level. To lubricate the completion gearbox, refer to *4.3.6 Lubricating Header Drive Completion Gearbox, page 522*.

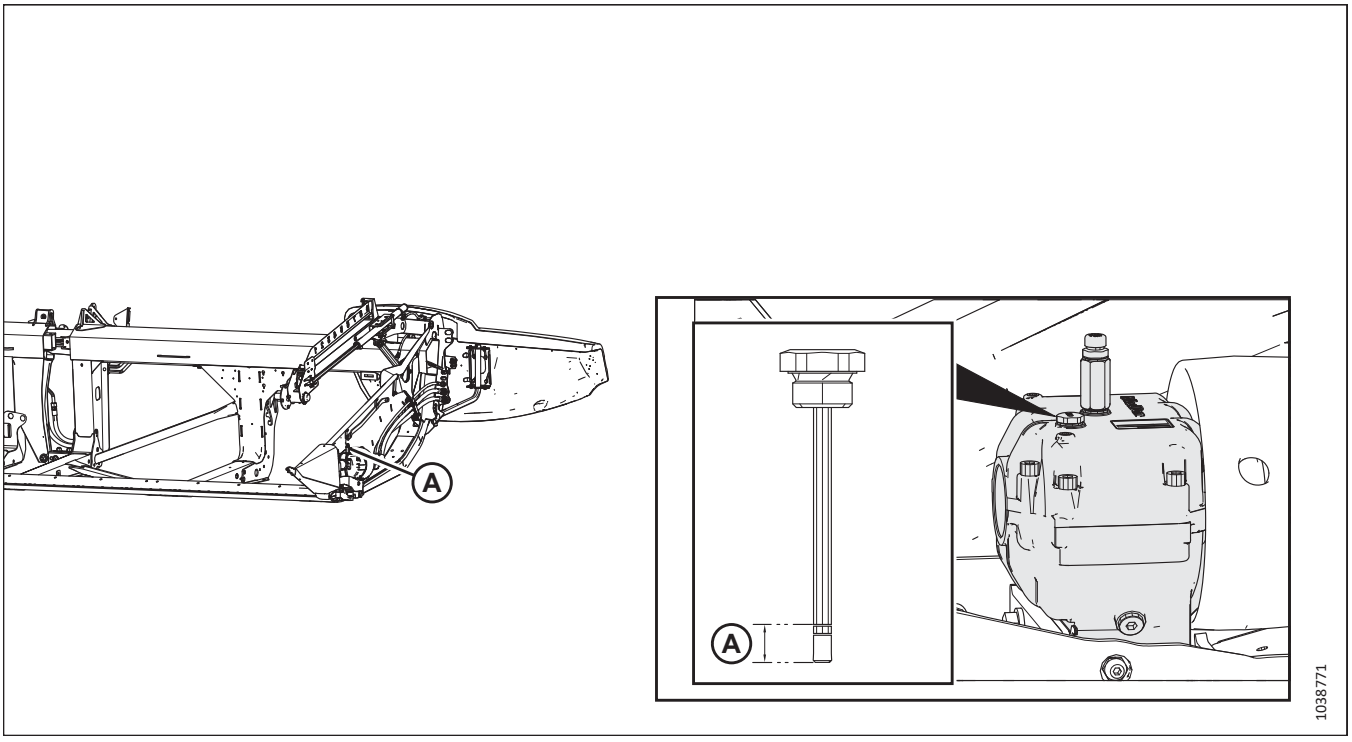


Figure 4.14: Knife Drive Box

A - Knife Drive Box Oil Level. To lubricate the knife drive box, refer to *Checking Oil Level in Knife Drive Box , page 606*.

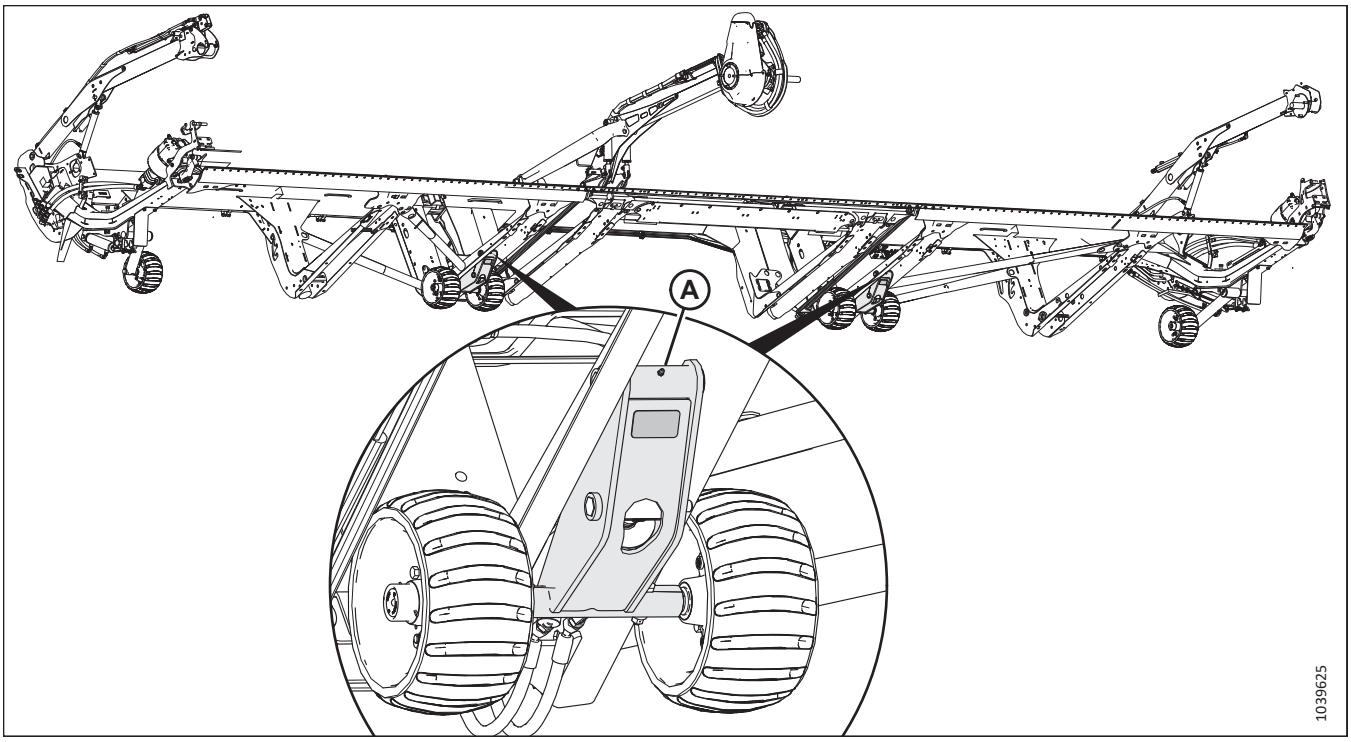


Figure 4.15: Inner Contour Wheel Assemblies

A - Inner Wheel Assemblies (Two Places)

Every 250 Hours

Maintenance is required to keep your machine operating at peak performance. It also allows you to inspect the machine so that you can identify issues early.

Use high-temperature extreme-pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

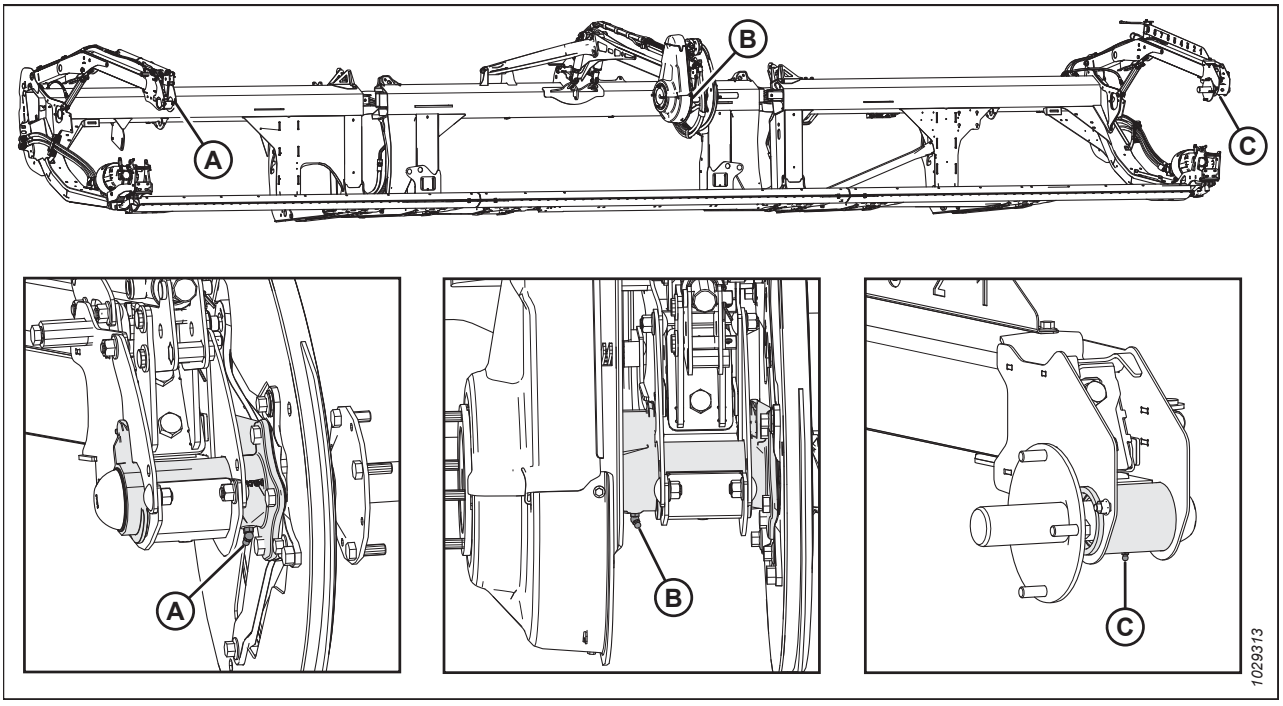


Figure 4.16: Reel

A - Reel Right Bearing (One Place) B - Reel Center Bearing (One Place) C - Reel Left Bearing (One Place)

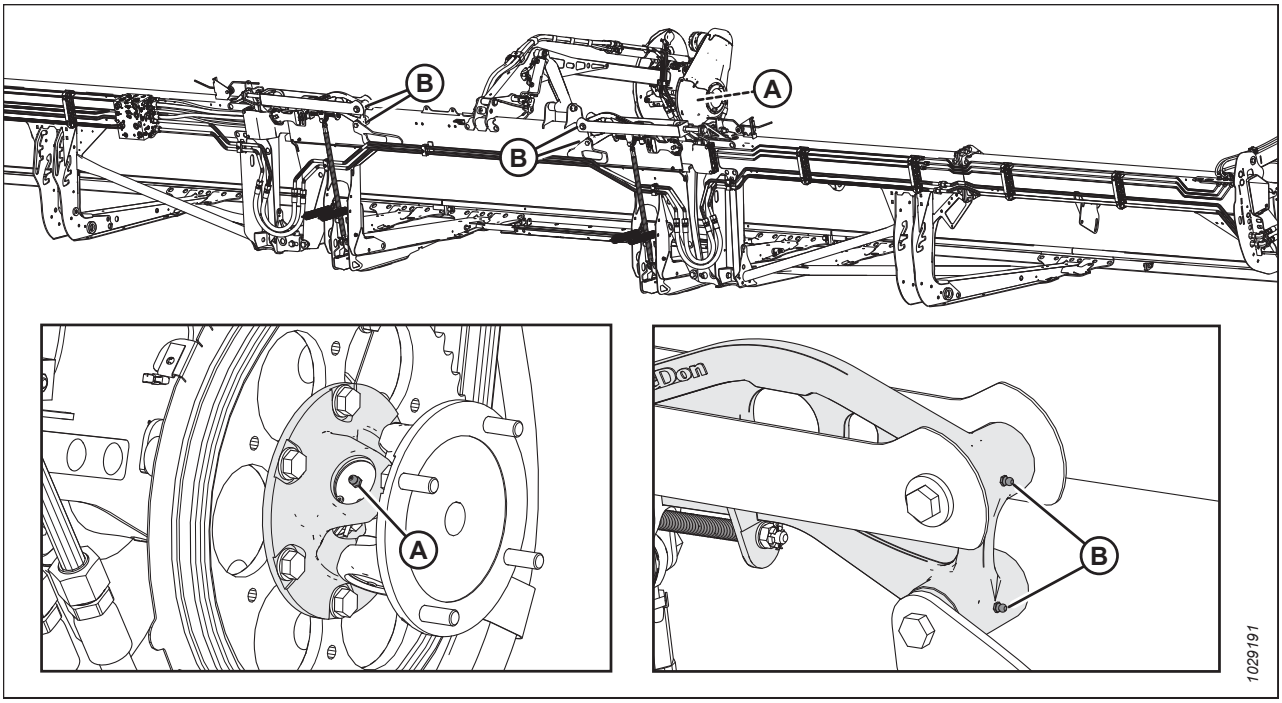


Figure 4.17: Reel

A - Reel U-joint (One Place)[84] B - Flex Linkage (Two Places) – Both Sides

Every 500 Hours

Maintenance is required to keep your machine operating at peak performance. It also allows you to do a visual inspection of the machine that may help identify issues early.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

84. The U-joint has an extended lubrication cross and bearing kit. Stop greasing the U-joint when greasing becomes difficult or if it stops taking grease. Overgreasing the U-joint will damage it. Six to eight pumps are sufficient for the first greasing. Grease the U-joint more frequently as it wears down and requires more than six pumps.

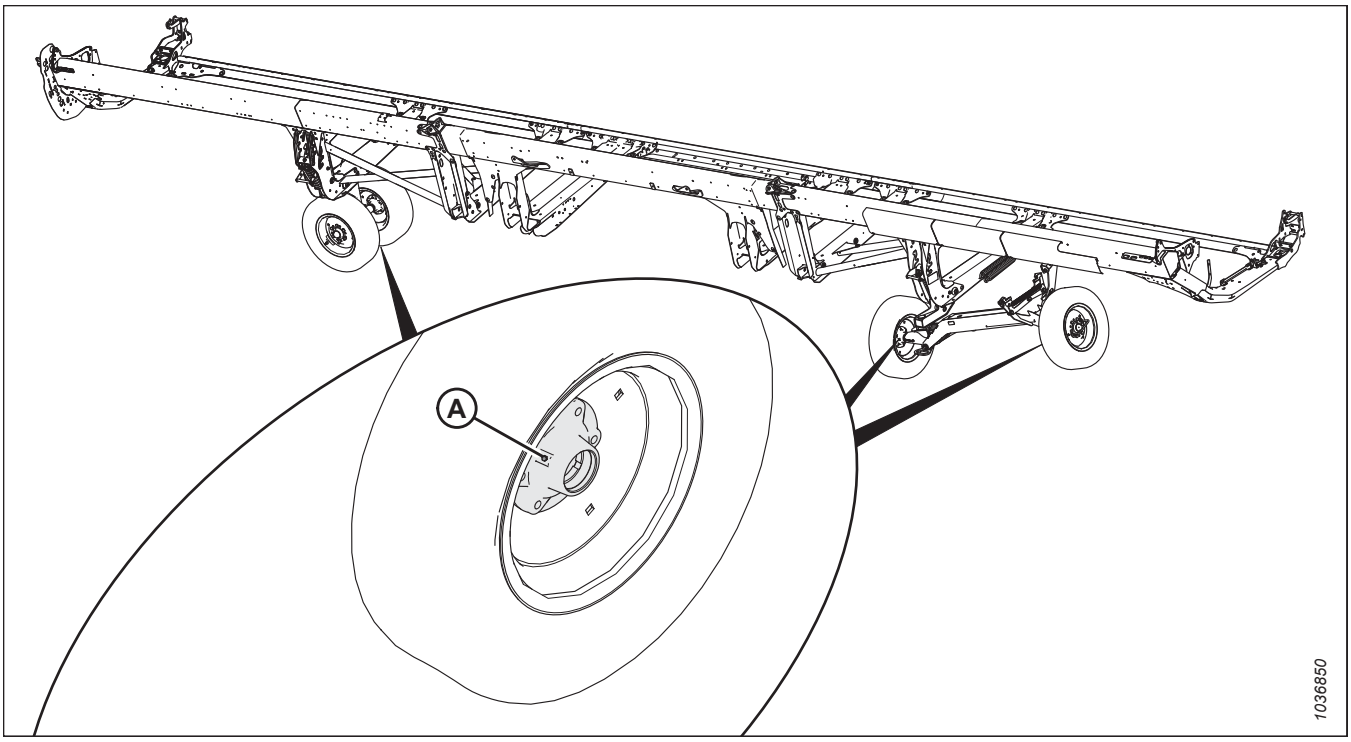


Figure 4.18: Every 500 Hours

A - Wheel Bearings (Four Places)

4.3.2 Greasing Procedure

Greasing points are identified on the machine by decals showing a grease gun and grease interval in hours of operation. Grease point layout decals are located on the header and on the right side of the float module.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

Refer to the inside back cover for the recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance; refer to *4.2.1 Maintenance Schedule/Record, page 500*.

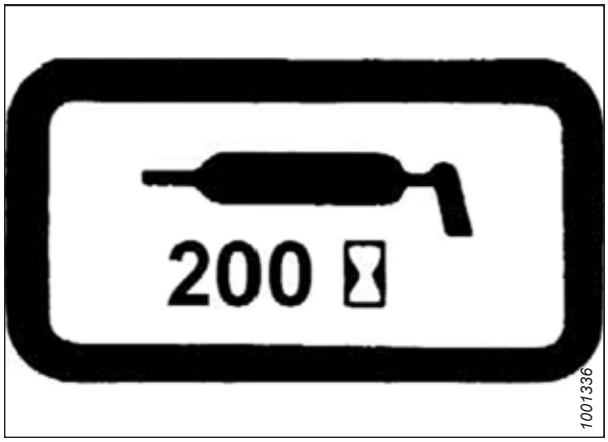


Figure 4.19: Greasing Interval Decal

1. Wipe the grease fitting with a clean cloth before greasing it to avoid injecting dirt and grit.

   IMPORTANT:

   Use clean, high-temperature, extreme-pressure grease only.

2. Inject the grease through the fitting with a grease gun until the grease overflows the fitting (except where noted).

3. Leave the excess grease on the fitting to keep the dirt out.

4. Replace any loose or broken grease fittings immediately.

5. Remove and thoroughly clean any fitting that will not take grease. Clean the lubricant passageway. Replace the fitting if necessary.

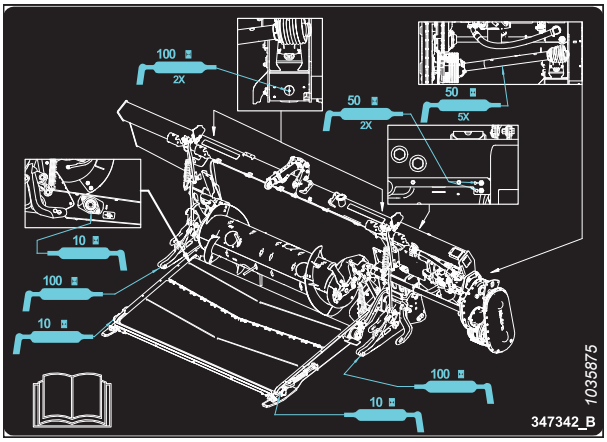


Figure 4.20: FM200 Grease Point Layout Decal

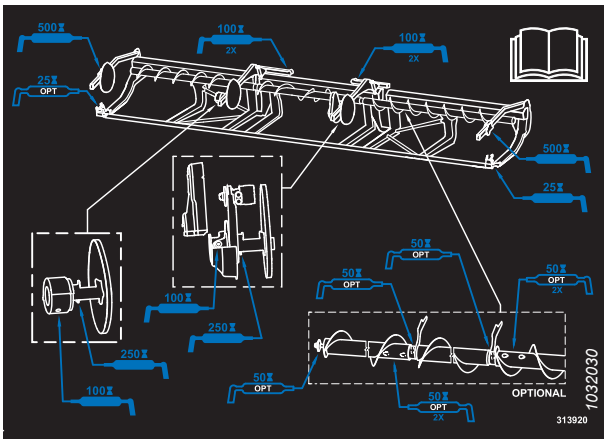


Figure 4.21: FD2 Series Grease Point Layout Decal

4.3.3 Lubricating Reel Drive Chain

Lubrication protects the chain and the drive sprockets against wear.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Do **NOT** use grease or motor oils to lubricate the reel drive chain.

1. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.

   IMPORTANT:

   Use a chain oil with a viscosity of 100–150 cSt at 40°C (104°F) (typically medium to heavy chain oil) or a mineral oil (SAE 20W50) that has no detergents or solvents.

2. Apply a liberal amount of chain oil to the inside of chain (A) with an oil can, brush, or aerosol. Manually rotate the reel to lubricate all of the chain.
3. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.
4. Start the engine. For instructions, refer to the combine operator's manual.
5. Run the header and the reel for a few minutes so that the oil will spread into the chain.

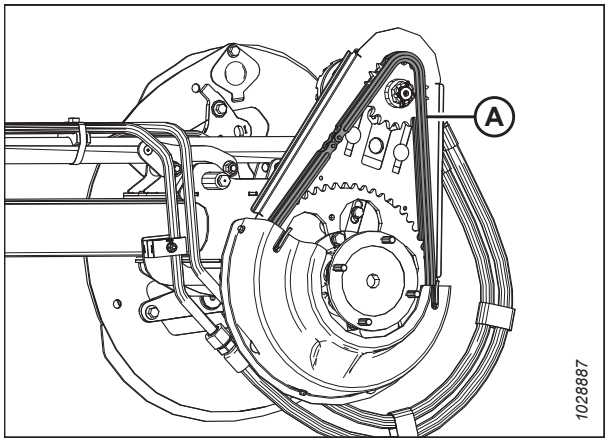


Figure 4.22: Drive Chain

4.3.4 Lubricating Auger Drive Chain

Lubricate the auger drive chain according to the interval specified in the maintenance schedule. You can lubricate the auger drive chain with the float module attached to the combine, but this procedure is easier to perform when the float module is detached from the header.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

The auger drive cover consists of an upper cover, a lower cover, and a metal inspection panel. Only the metal inspection panel needs to be removed to perform this procedure.

1. Shut down engine, and remove the key from the ignition.
2. Remove four bolts (A) and metal inspection panel (B).

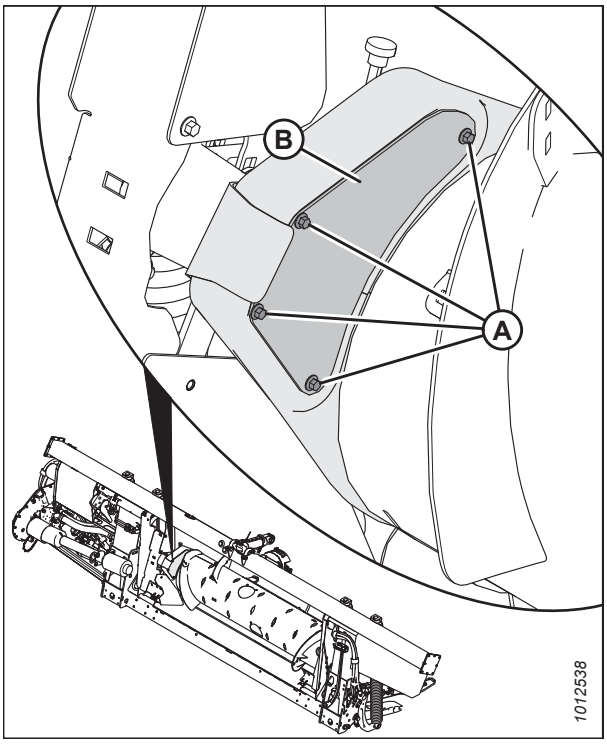


Figure 4.23: Auger Drive Inspection Panel

3. Apply a liberal amount of grease to chain (A), drive sprocket (B), and idler sprocket (C).
4. Rotate the auger and apply grease to more areas of the chain, if necessary.

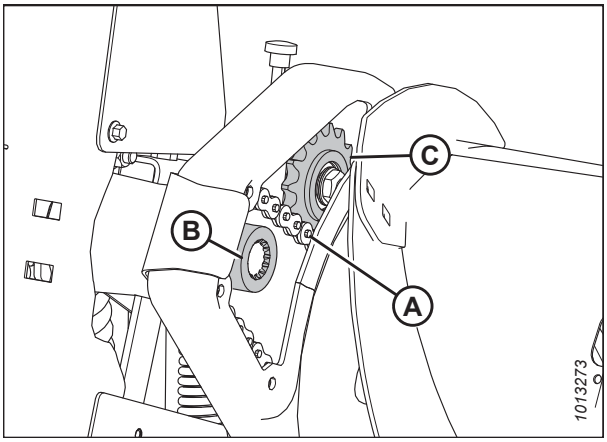


Figure 4.24: Auger Drive Chain

5. Reinstall metal inspection panel (B). Secure the panel with four bolts (A).

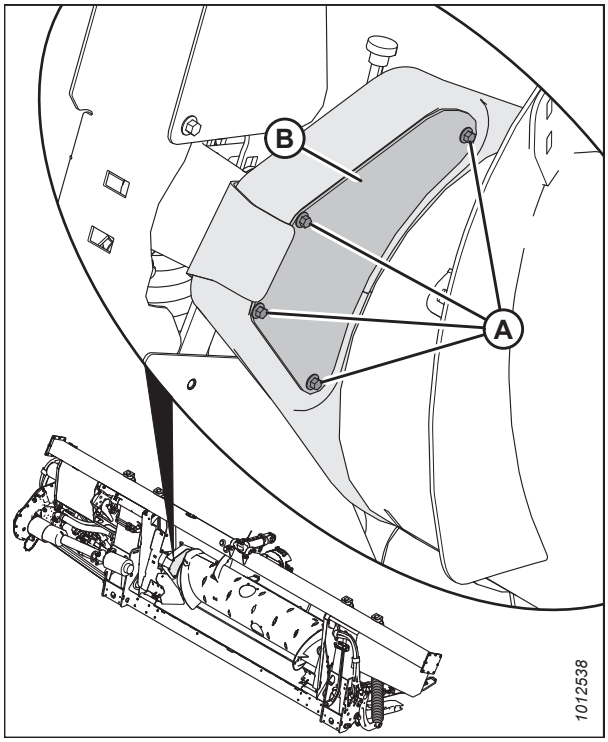


Figure 4.25: Auger Drive Inspection Panel

4.3.5 Lubricating Header Drive Main Gearbox

Checking Oil Level in Header Drive Main Gearbox

Check the header drive gearbox oil level every 100 hours.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.

4. Remove oil level plug (A) from main gearbox (B) and ensure that the oil level is up to the bottom of the hole.
5. Add oil if required. For instructions, refer to *Adding Oil to Header Drive Main Gearbox, page 521*.
6. Reinstall oil level plug (A).

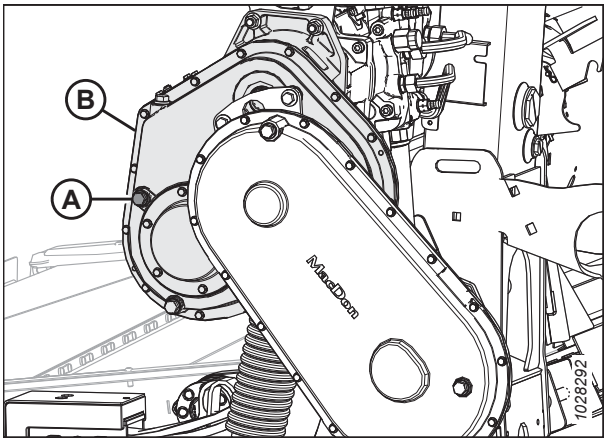


Figure 4.26: Header Drive Main Gearbox

Adding Oil to Header Drive Main Gearbox

The main gearbox includes fill, check, and drain plugs for quickly checking and servicing the gear lubricant while it is mounted to the float module.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove filler plug (B) and oil level plug (A) from the main gearbox.
3. Add oil into filler hole (B) until it runs out of oil level plug hole (A). Refer to the inside of the back cover for recommended fluids and lubricants.
4. Replace oil level plug (A) and filler plug (B).

   NOTE:

   The oil drain plug is magnetic. Ensure that the magnetic plug is installed in the oil drain position.

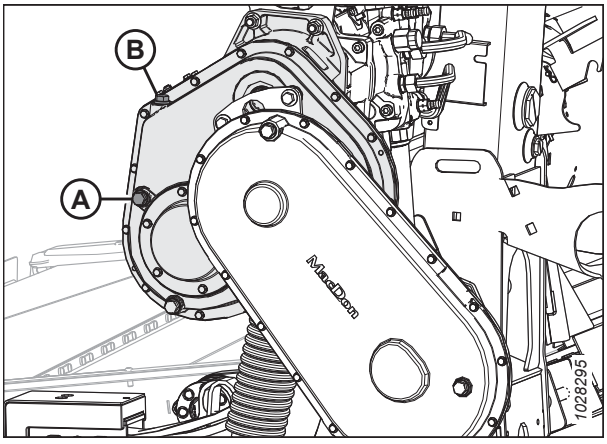


Figure 4.27: Header Drive Main Gearbox

Changing Oil in Header Drive Main Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Engage the header to warm up the oil.
3. Raise or lower the header to position oil drain plug (A) at its lowest point.
4. Shut down the engine, and remove the key from the ignition.
5. Place a suitable container (approximately 4 liters [1 US gal]) underneath the gearbox drain to collect the oil.
6. Remove oil drain plug (A) and filler plug (C). Allow the oil to drain.
7. Replace oil drain plug (A) and remove oil level plug (B).
8. Add the oil through filler plug (C) until it runs out of oil level hole (B). Refer to the inside back cover for the recommended lubricants.

   NOTE:

   The main gearbox holds approximately 2.75 liters (2.9 quarts) of oil.
9. Replace oil level plug (B) and filler plug (C).

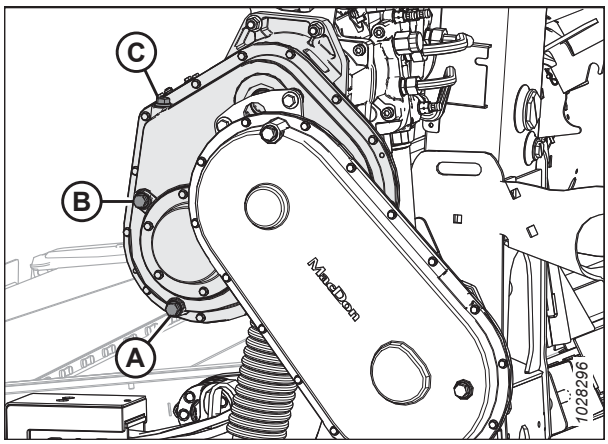


Figure 4.28: Header Drive Main Gearbox

4.3.6 Lubricating Header Drive Completion Gearbox

Checking Oil Level in Header Drive Completion Gearbox

Check the header drive gearbox oil level every 100 hours.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.

4. Remove oil level plug (A) from the completion gearbox. The oil should be at the level of the port.
5. If there is an insufficient amount of oil in the completion gearbox, add oil through filler plug (B). For instructions, refer to *Adding Oil to Header Drive Completion Gearbox, page 523*.
6. Reinstall oil level plug (A).

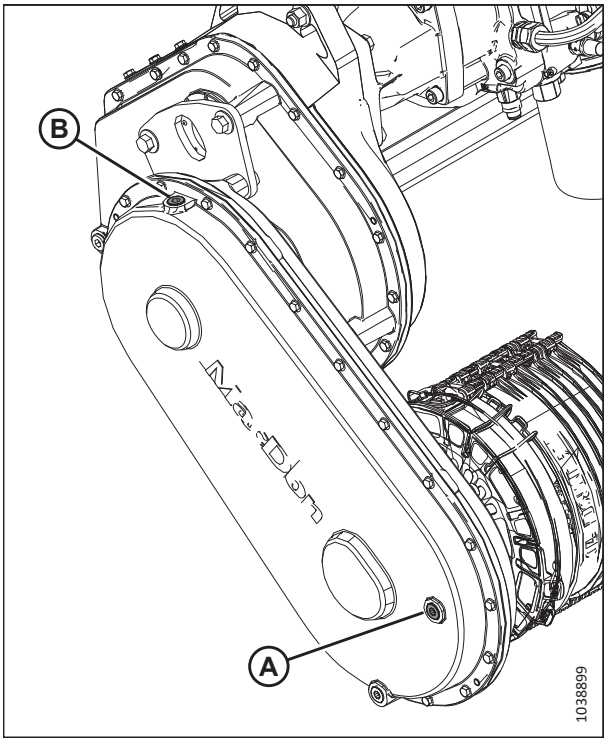


Figure 4.29: Header Drive Completion Gearbox

Adding Oil to Header Drive Completion Gearbox

The completion gearbox includes fill, check, and drain plugs for quickly checking and servicing the gear lubricant while it is mounted to the float module.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the cutterbar to the ground and ensure that the completion gearbox is in working position.
3. Shut down the engine, and remove the key from the ignition.

4. Remove filler plug (B) and oil level plug (A).
5. Add oil into filler hole (B) until it runs out of oil level plug hole (A). Refer to the inside of the back cover for recommended fluids and lubricants.
6. Replace oil level plug (A) and filler plug (B). Torque the plugs to 30–40 Nm (22–30 lbf·ft).

   NOTE:

   The oil drain plug is magnetic. Ensure that the magnetic plug is installed in the oil drain position.

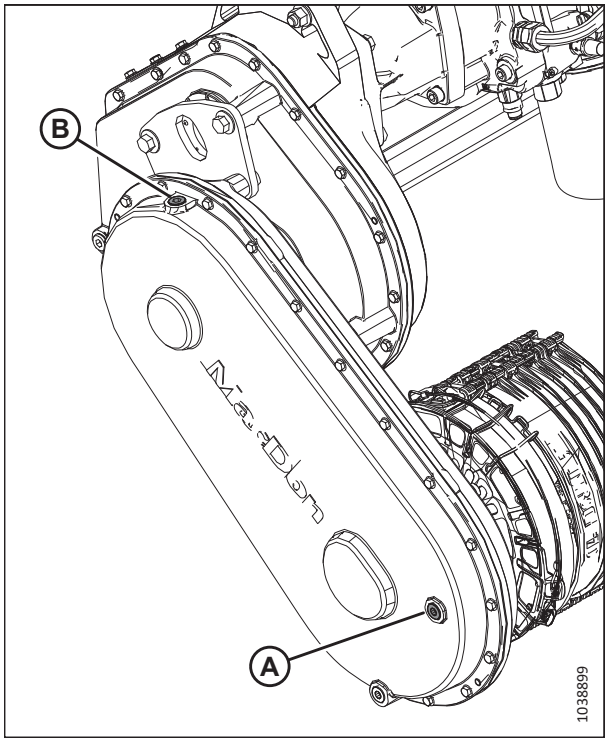


Figure 4.30: Header Drive Completion Gearbox

Changing Oil in Header Drive Completion Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Engage the header to warm up the oil.

3. Raise or lower the header to position oil drain plug (A) at its lowest point.
4. Shut down the engine, and remove the key from the ignition.
5. Place a suitable container (approximately 4 liters [1 US gal]) underneath the gearbox drain to collect the oil.
6. Remove oil drain plug (A) and filler plug (C). Allow the oil to drain.
7. Replace oil drain plug (A).

   IMPORTANT:

   The oil drain plug is magnetic. Ensure that the magnetic plug is installed in oil drain position (A) and not in oil level check position (B).

8. Remove oil level plug (B).
9. Add the oil through filler plug (C) until it runs out of oil level hole (B). Refer to the inside of the back cover for the recommended lubricants.

   NOTE:

   The header drive gearbox holds approximately 2.25 liters (2.4 quarts) of oil.

10. Replace oil level plug (B) and filler plug (C).

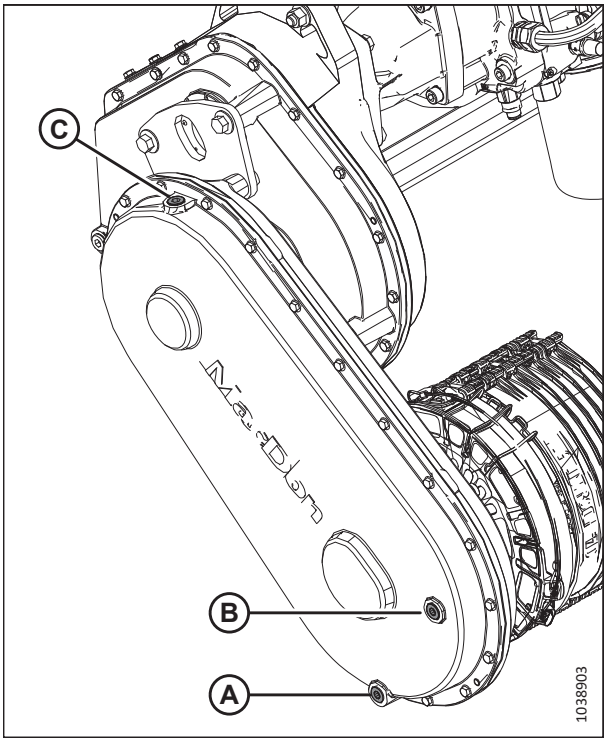


Figure 4.31: Header Drive Completion Gearbox

4.4 Hydraulics

The float module frame acts as an oil reservoir. Refer to the inside back cover for more information on the float module's oil requirements.

4.4.1 Checking Oil Level in Hydraulic Reservoir

You can inspect the oil level in the header's hydraulic oil reservoir via the sight glass on the float module.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

The hydraulic oil level should be inspected when the hydraulic oil is cold.

1. Start the engine.
2. Lower the header to the ground.
3. Fully retract the center-link.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure that the oil is at the appropriate level for the terrain as follows:
   - **Level terrain:** Oil level should fill approximately one half (A) of the gauge.
   - **Sloped terrain:** Oil level should fill approximately three quarters (B) of the gauge.

   NOTE:

   It may be necessary to slightly reduce the oil level when the ambient temperatures exceeds 35°C (95°F); this will prevent overflow at the breather tube.

   NOTE:

   The sloped terrain oil level specification can be referred to even when the header is being operated in level terrain, as long as the Filler Neck Extension kit (B6057) is installed.

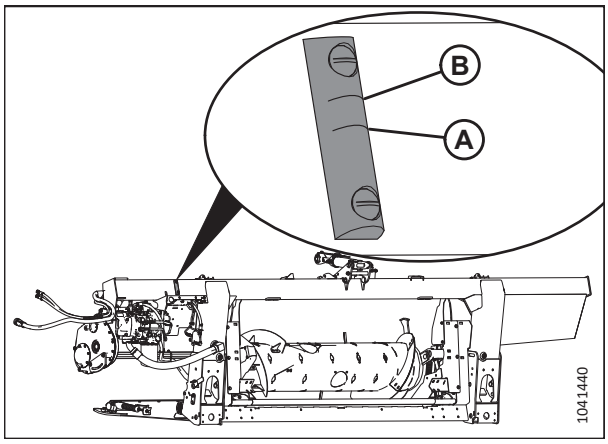


Figure 4.32: Oil Level Sight Gauge

4.4.2 Adding Oil to Hydraulic Reservoir

If the oil level in the hydraulic reservoir is low, or if the oil has been drained, you will need to add more oil.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Engage the header to warm the oil.
3. Shut down the engine, and remove the key from the ignition.
4. Clean any dirt or debris from filler cap (A).

CAUTION

The oil reservoir may be under pressure; remove the cap slowly.

5. Turn filler cap (A) counterclockwise to remove it.
6. Fill the hydraulic oil reservoir with warm oil (approximately 21°C [70°F]) until the appropriate fill level is reached. Refer to *4.4.1 Checking Oil Level in Hydraulic Reservoir, page 526* for information on how to check the hydraulic oil level.

   IMPORTANT:

   Warm oil will flow through the mesh filler screen better than cold oil. Do **NOT** remove the screen.

   NOTE:

   The hydraulic oil tank capacity is approximately 95 L (25 gal).

7. Reinstall filler cap (A).
8. Recheck the oil level.

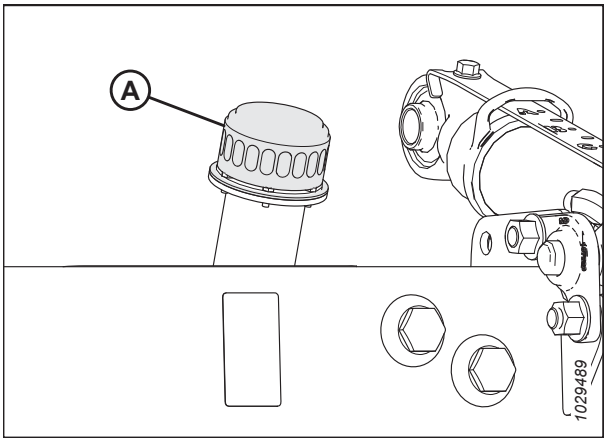


Figure 4.33: Oil Reservoir Filler Cap

4.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Engage the header to warm up the oil.
3. Shut down the engine, and remove the key from the ignition.

4. Place a container with a capacity of at least 50 L (13 gal) under both oil drain plugs (A).
5. Remove oil drain plugs (A) with a 7/8 in. hex socket. Allow the oil to drain completely.
6. Replace oil drain plugs (A).
7. If necessary, change the oil filter. For instructions, refer to *4.4.4 Changing Oil Filter, page 528*.
8. Add oil to the reservoir. For instructions, refer to *4.4.2 Adding Oil to Hydraulic Reservoir, page 526*.

   NOTE:

   The hydraulic oil tank capacity is approximately 95 L (25 gal).

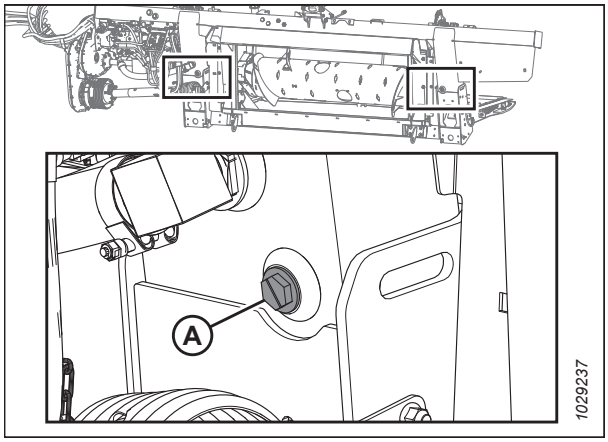


Figure 4.34: Reservoir Drain

4.4.4 Changing Oil Filter

The hydraulic oil filter removes solid contaminants that may interfere with the operation of the header's hydraulic system. The oil filter will need to be changed periodically.

Use filter kit (MD #320360) to replace the filter.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Clean around the mating surfaces of filter (A) and integrated pump (B).
3. Place a suitably sized container (approximately 1 liter [0.26 gallons]) under the filter to collect oil runoff.
4. Twist off filter (A) by hand and clean the exposed filter port in the integrated pump.
5. Apply a thin film of clean oil to the O-ring provided with the new filter.
6. Turn the new filter onto integrated pump (B) until the O-ring contacts the mating surface. Tighten the filter an additional 1/2 to 3/4 turn by hand.

   IMPORTANT:

   Do **NOT** use a filter wrench to install the new filter. Overtightening can damage the O-ring and filter.

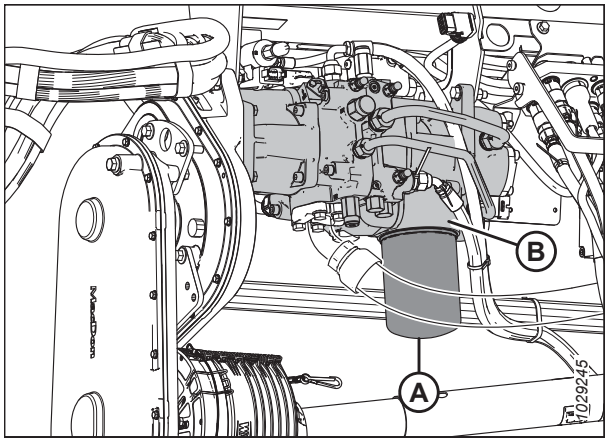


Figure 4.35: FM200 Integrated Pump

4.5 Electrical System

The electrical system for the header is powered by the combine. The header has various lights and sensors that require power.

4.5.1 Replacing Light Bulbs

Lights are an important safety feature. Replace damaged or malfunctioning bulbs or lamps immediately.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

Use bulb trade #1156 for amber transport lights and #1157 for the red tail light (Slow Speed Transport option).

Clearance Lights (North America Only)

1. Shut down the engine, and remove the key from the ignition.
2. Use a Phillips screwdriver to remove three screws (A) from the fixture, and remove the plastic lens. Retain the screws.
3. Replace the bulb and reinstall the plastic lens and screws.

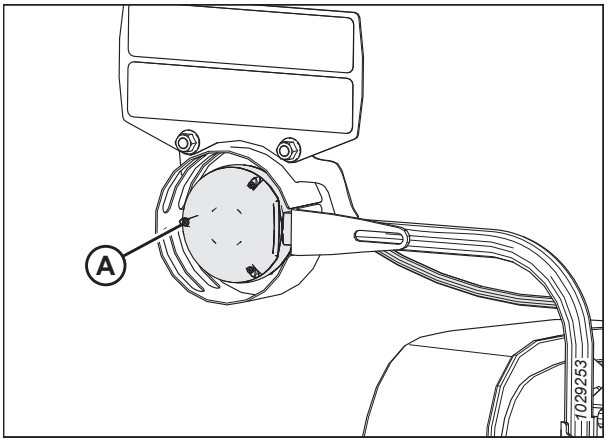


Figure 4.36: Left Clearance Light

Slow Speed Transport Lights

4. Use a Phillips screwdriver to remove screws (A) from the fixture, and remove the plastic lens. Retain the screws.
5. Replace the bulb and reinstall the plastic lens and screws.

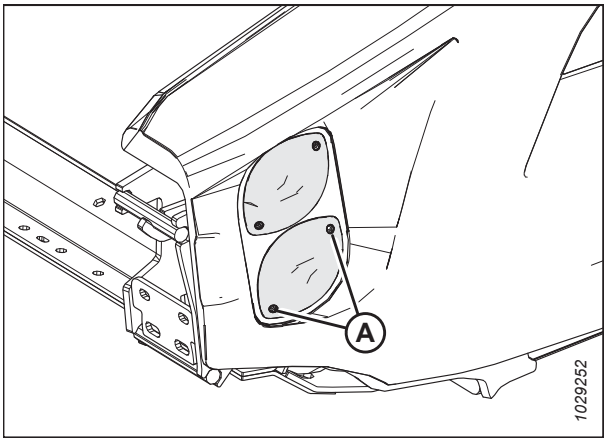


Figure 4.37: Optional Slow Speed Transport – Red and Amber Lights

4.6 Header Drive

The header drive consists of a driveline from the combine to the FM200 Float Module gearbox that drives the feed auger and hydraulic pumps. The pumps provide hydraulic power to the drapers, knives, and optional equipment.

4.6.1 Removing Driveline

The driveline transfers power from the combine power take-off (PTO) to the header float module completion gearbox. A quick release collar allows the driveline to be removed when disconnecting the header float module from the combine.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Disconnect driveline safety chain (A) from the slot on the aluminum plate.

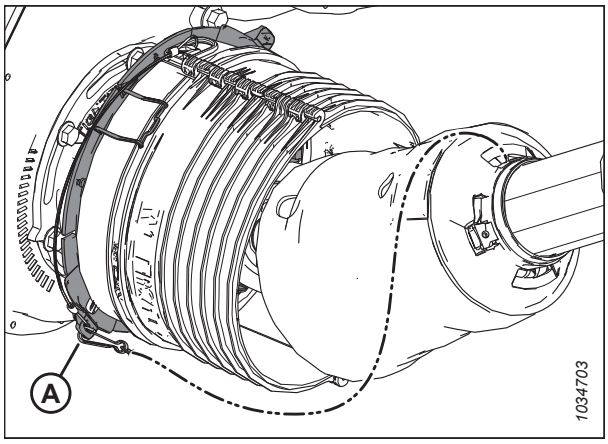


Figure 4.38: Driveline Shield

6. Pry clips (A) up to release shield (B).

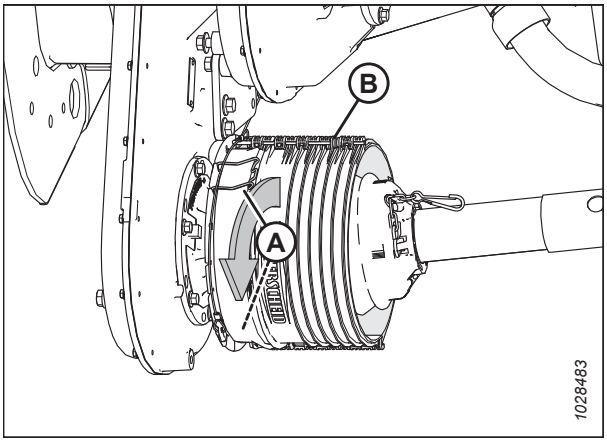


Figure 4.39: Driveline Shield

7. Slide shield (A) along the driveline to access quick disconnect collar (B).

   NOTE:

   If the shield does not slide, use a prying tool.

8. Pull back quick disconnect collar (B) to release the driveline yoke. Slide the driveline off of the gearbox shaft.

9. Slide the driveline through the shield, then lower it to the ground.

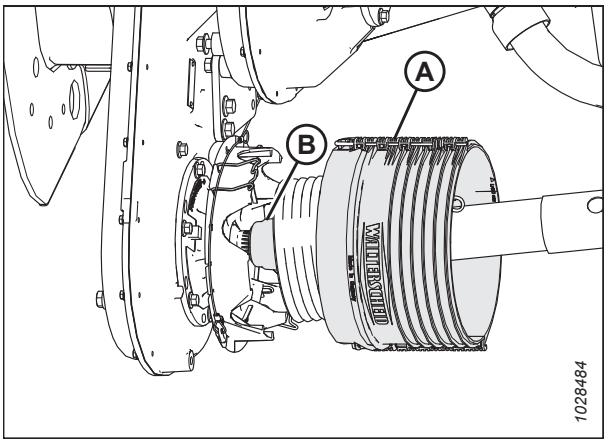


Figure 4.40: Driveline Shield

10. Disconnect chain (D) from support bracket (B).
11. On the opposite end of driveline (C), pull back quick disconnect collar (A) to release the driveline yoke.
12. Slide the yoke off of support bracket (B).
13. Remove driveline (C).

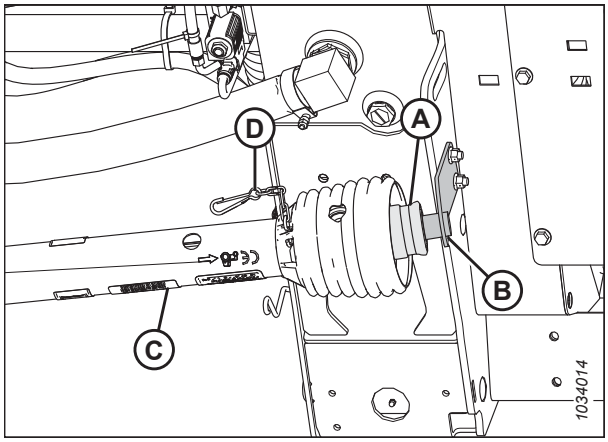


Figure 4.41: Driveline Shield

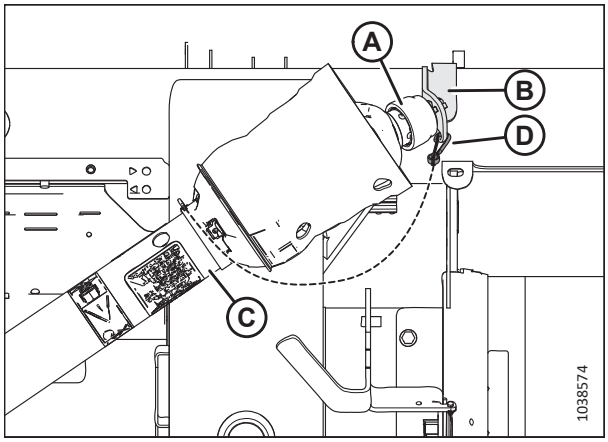


Figure 4.42: Optional Side-Hill Driveline Shield

4.6.2 Installing Driveline

The driveline transfers power from the combine power take-off (PTO) to the header's float module completion gearbox. It will need to be installed on the float module.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

If the driveline has been disassembled, ensure that the two halves are in phase before the driveline is installed on the header and combine. The image illustrates correct phasing (A) and incorrect phasing (B).

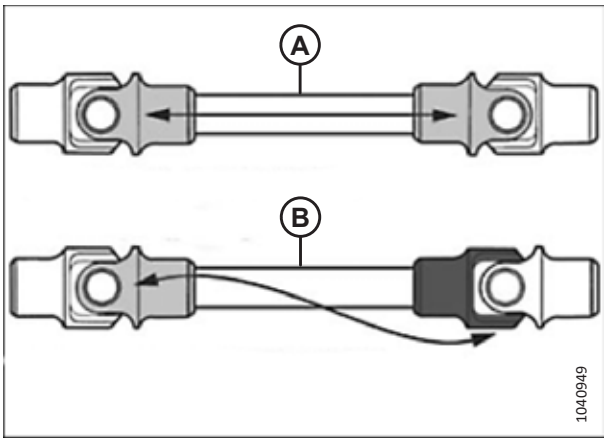


Figure 4.43: Determining Driveline Phase

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Position driveline support bracket (A) (supplied with the driveline) on the left inside of the float module as shown. Secure the bracket with two M10, 30 mm bolts and flange nuts (B).

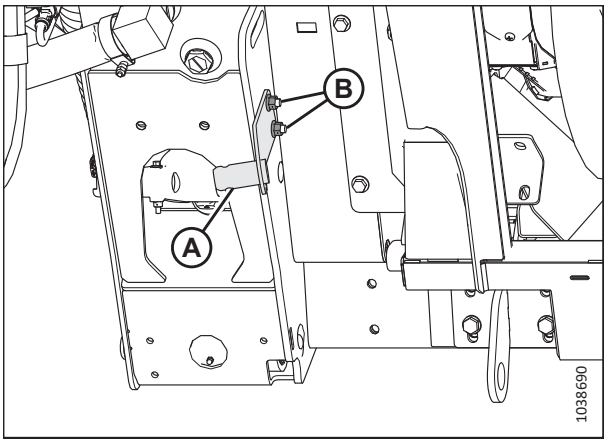


Figure 4.44: Driveline Support Bracket

6. On the end of driveline (D) which has arrow (C) pointing toward the collar, pull back quick disconnect collar (A).
7. Slide the yoke onto support bracket (B).
8. Connect safety chain (E) to the support bracket.

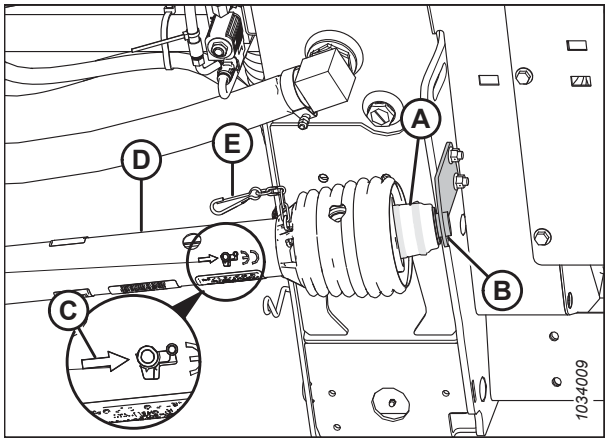


Figure 4.45: Driveline Shield

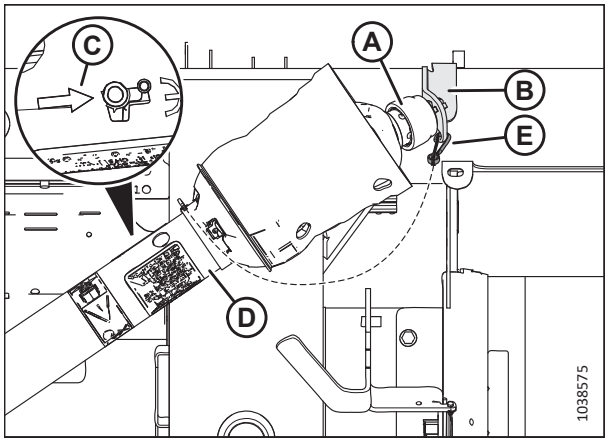


Figure 4.46: Optional Side-Hill Driveline Shield

9. Pry clips (A) up to release shield (B).

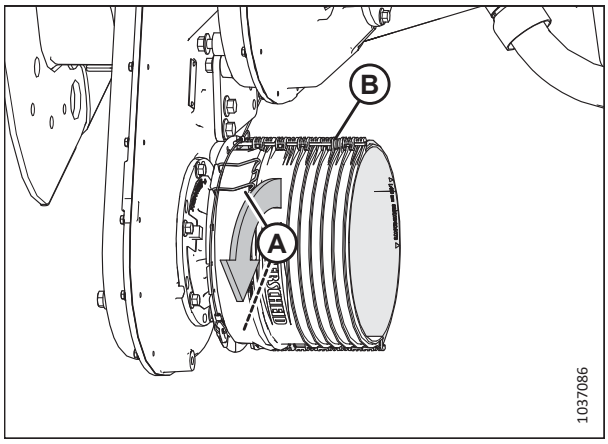


Figure 4.47: Driveline Shield

10. Slide the driveline through shield (A). Pull back quick disconnect collar (B) to release the driveline yoke.

11. Slide the driveline onto the gearbox shaft until it locks onto the shaft.

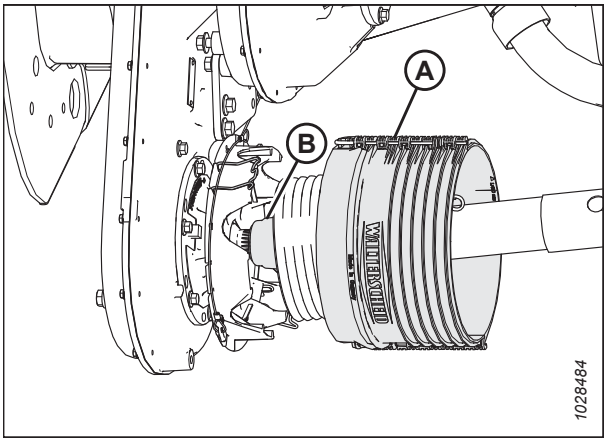


Figure 4.48: Driveline Shield

12. Slide the shield towards the gearbox until clips (A) secure shield (B).

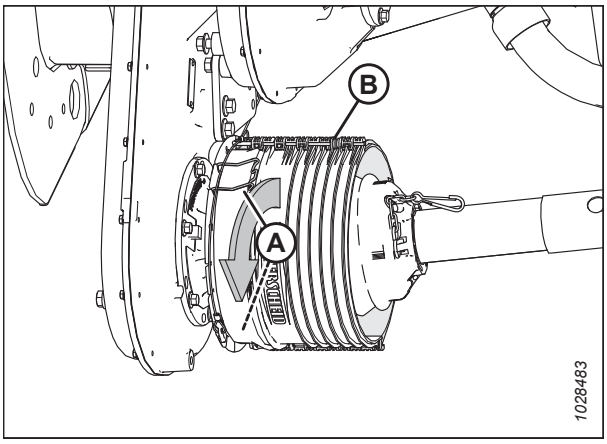


Figure 4.49: Driveline Shield

13. Attach driveline safety chain (A) to the slot on the aluminum plate.

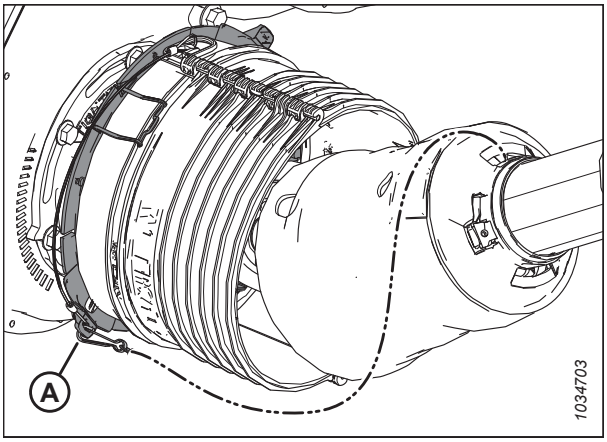


Figure 4.50: Driveline Shield

4.6.3 Removing Driveline Guard

The main driveline guard must remain attached to the driveline during operation, but you can remove it for maintenance purposes.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

NOTE:

The driveline does **NOT** need to be removed from the float module in order to remove the driveline guard.

1. Shut down the combine, and remove the key from the ignition.

2. Detach tether (D) and pull driveline collar (A) away from power take-off (PTO) support (B). Slide yoke (C) off of support (B), and release collar (A).

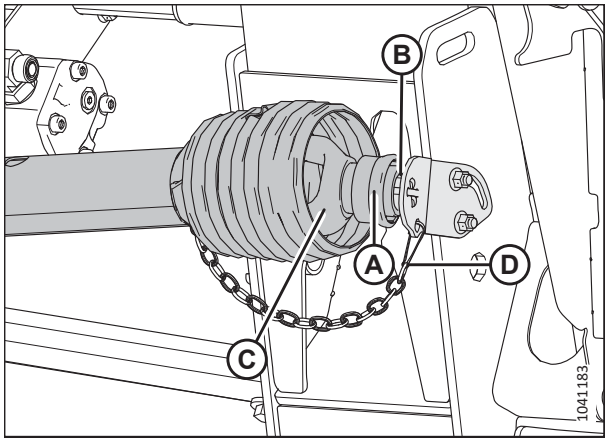


Figure 4.51: Combine End of Driveline

3. Lift the combine end of driveline (A) from the hook, and extend the driveline until it separates. Hold the float module end of driveline (B) to prevent it from dropping and hitting the ground.

Figure 4.52: Separated Driveline

4. Use a slotted screwdriver to release grease fitting/lock (A).

Figure 4.53: Driveline Guard

5. Rotate driveline guard locking ring (A) counterclockwise using a screwdriver until lugs (B) line up with the slots in the guard.
6. Pull the guard off the driveline.

Figure 4.54: Driveline Guard

4.6.4 Installing Driveline Guard

Install the driveline guard before operating the header.

1. Slide the guard onto the driveline, and line up the slotted lug on locking ring (A) with arrow (B) on the guard.

Figure 4.55: Driveline Guard

2. Push the guard onto the ring until the locking ring is visible in slots (A).

Figure 4.56: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise.

Figure 4.57: Driveline Guard

4. Push grease fitting (A) back into the guard.

Figure 4.58: Driveline Guard

5. Assemble the driveline.

   IMPORTANT:

   The splines are keyed to align the universals. Align weld (A) with missing spline (B) when assembling. Failing to align the halves of the shaft can cause excessive vibration and feed auger/gearbox failures.

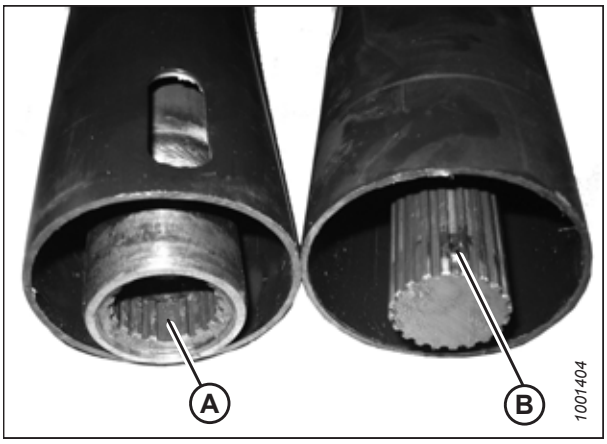


Figure 4.59: Driveline

6. Position the combine end of driveline on power take-off (PTO) storage support (B). Pull back collar (A) on the driveline and slide the driveline onto the support until driveline yoke (C) locks onto the support. Release collar (A) and attach tether (D).

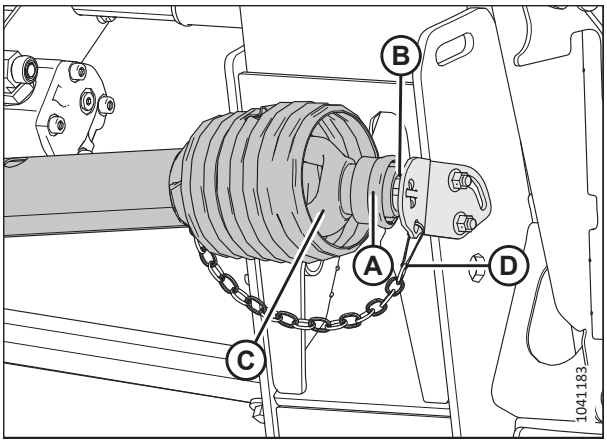


Figure 4.60: Combine End of Driveline

4.6.5 Adjusting Chain Tension – Main Gearbox

The tension of the gearbox drive chain is set at the factory, but adjustment is required after the first 50 hours, then every 500 hours or annually (whichever comes first). With the exception of oil changes, the gearbox drive chain requires no other regular maintenance.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Extend the hydraulic center-link fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Remove four bolts (A), cover (B), and gasket (C) from the main gearbox.

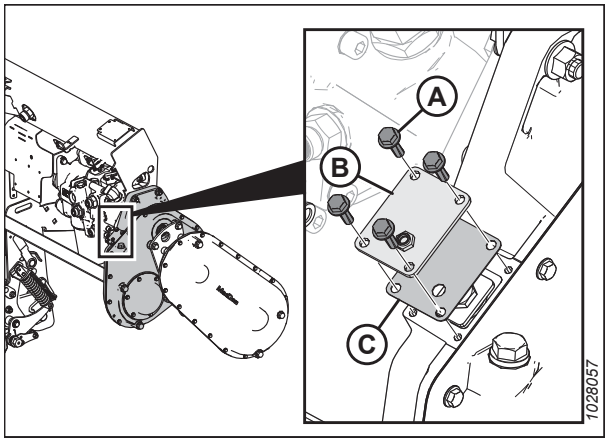


Figure 4.61: Main Gearbox Chain Tensioner Cover

6. Remove retainer plate (A).
7. Tighten bolt (B) to 2.5 Nm (22 lbf·in).
8. Loosen bolt (B) by 3 flats (1/2 turn).

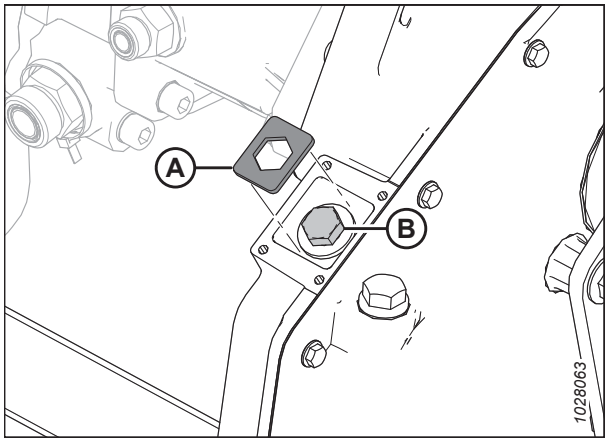


Figure 4.62: Main Gearbox Chain Tensioner

9. If necessary, turn bolt (B) slightly until retainer plate (A) can be installed.

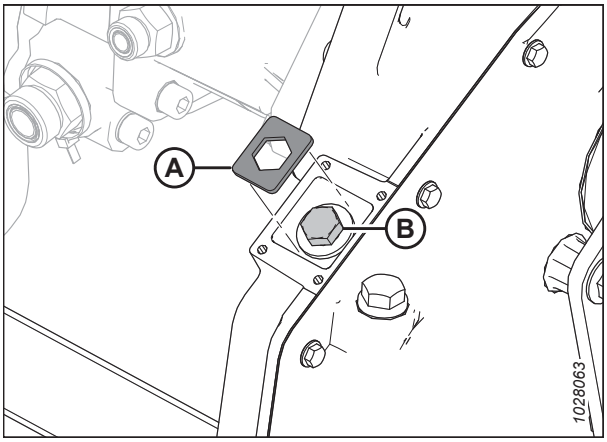


Figure 4.63: Main Gearbox Chain Tensioner

10. Reinstall chain adjusting cover (B) and gasket (C).
11. Install four bolts (A). Torque the hardware to 9.5 Nm (84 lbf·in).

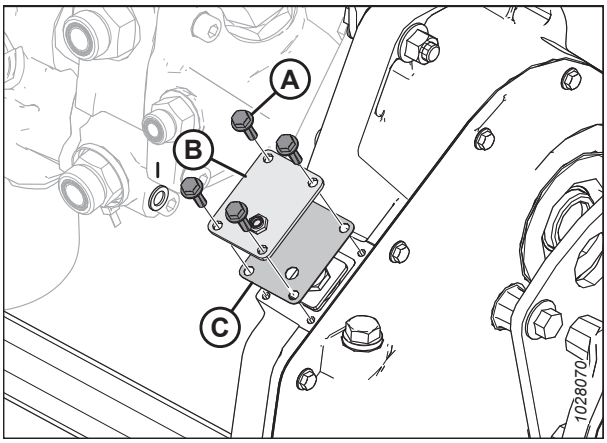


Figure 4.64: Main Gearbox Chain Tensioner Cover

4.6.6 Adjusting Chain Tension – Completion Gearbox

The tension of the gearbox drive chain is set at the factory, but adjustment is required after the first 50 hours, then every 500 hours or annually (whichever interval comes first). With the exception of oil changes, the gearbox drive chain requires no other regular maintenance.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Remove the driveline. For instructions, refer to *4.6.1 Removing Driveline, page 530*.

5. Remove three bolts (A) that secure input driveline guard base (B).

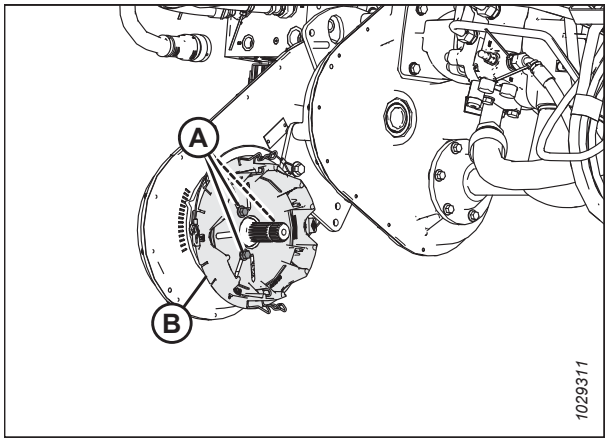


Figure 4.65: Completion Gearbox Chain Tensioner Cover

6. Loosen six bolts (B), that secure chain tension hub (A) to the gearbox.
7. Locate machined feature (C). Using a wrench, turn hub (A) clockwise to tighten the chain.
8. With light pressure on the wrench, determine which mark (D) on the gearbox housing aligns with the indicator pointer on the hub.
9. Set the proper chain tension by slightly turning hub (A) back one mark.
10. On cover (A), tighten six bolts (B). Torque the bolts to 25 Nm (221 lbf·in).

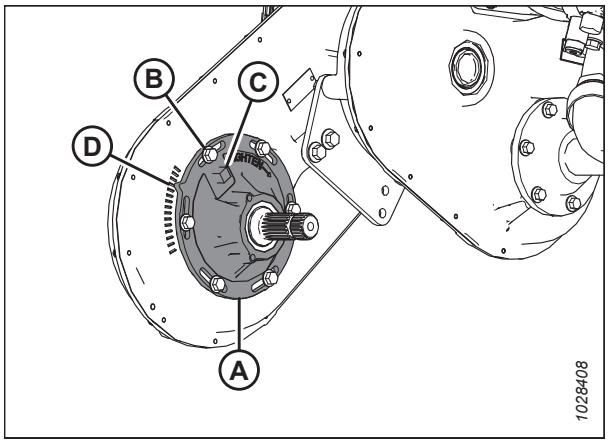


Figure 4.66: Completion Gearbox Chain Tensioner Cover

11. Install driveline guard base (B). Secure the base with three bolts (A).
12. Install the driveline. For instructions, refer to *4.6.2 Installing Driveline, page 532*.

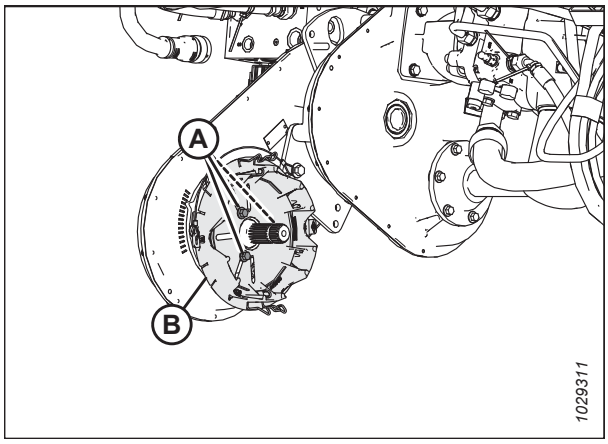


Figure 4.67: Completion Gearbox Chain Tensioner Cover

4.7 Feed Auger

The FM200 Float Module feed auger feeds the cut crop from the draper decks into the combine feeder house.

4.7.1 Adjusting Feed-Auger-to-Pan Clearance

There must be an adequate clearance between the feed auger and the pan on the float module to ensure that the crop feeds smoothly.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Maintain an appropriate distance between the feed auger and the feed auger pan. Too little of a clearance may result in the fingers or the flighting contacting and damaging the feed draper or the pan when operating the header at certain angles. Look for any evidence of contact when greasing the float module.

1. Start the engine.
2. Extend the center-link to the steepest header angle (setting E), and position the header 254–356 mm (10–14 in.) off of the ground.
3. Lock the header wings. For instructions, refer to *Operating in Rigid Mode, page 205*.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure that the float lock linkage is on the down stops (washer [A] cannot be rotated) at both locations.

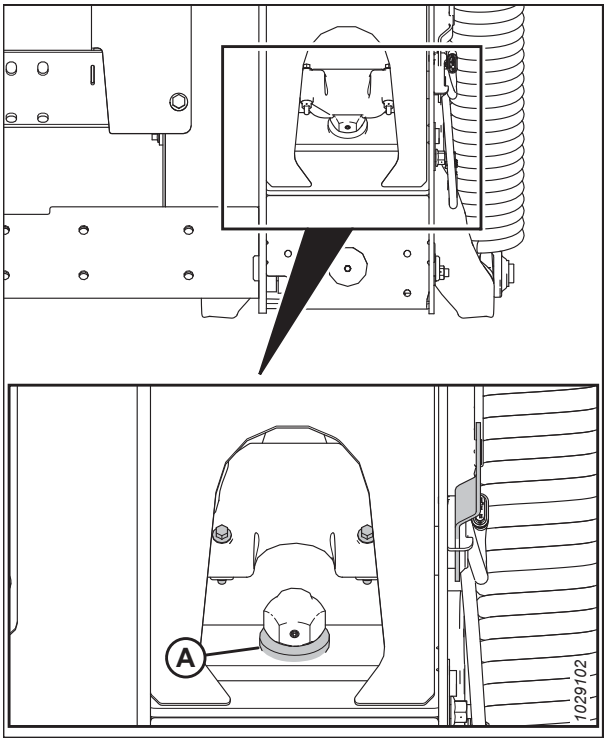


Figure 4.68: Down Stop Washer

6. Before adjusting the auger-to-pan clearance, check the auger float position to determine how much of a clearance is required:

   IMPORTANT:

   Ensure that bolts (A) are set at the same location on both ends of the header to prevent damage to the machine during operation.

   - If bolt head (A) is closest to floating symbol (B), the auger is in the floating position.

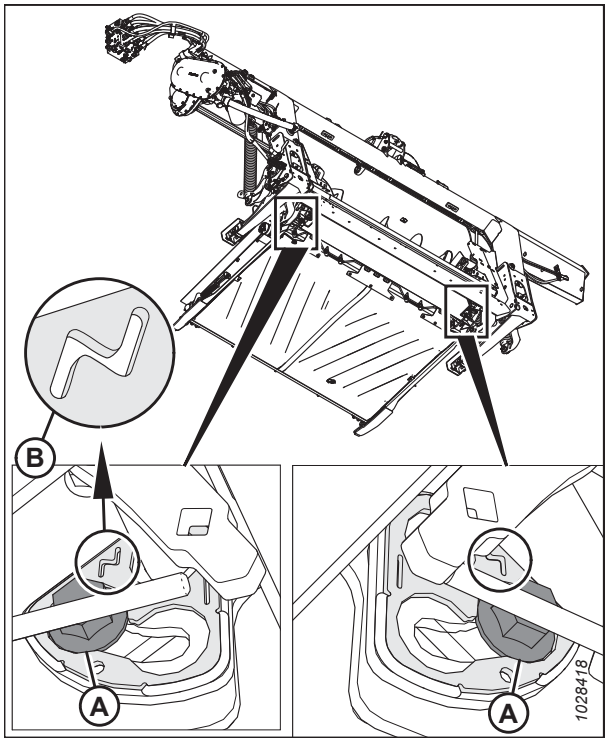


Figure 4.69: Floating Position

   - If bolt head (A) is closest to fixed symbol (B), the auger is in the fixed position.

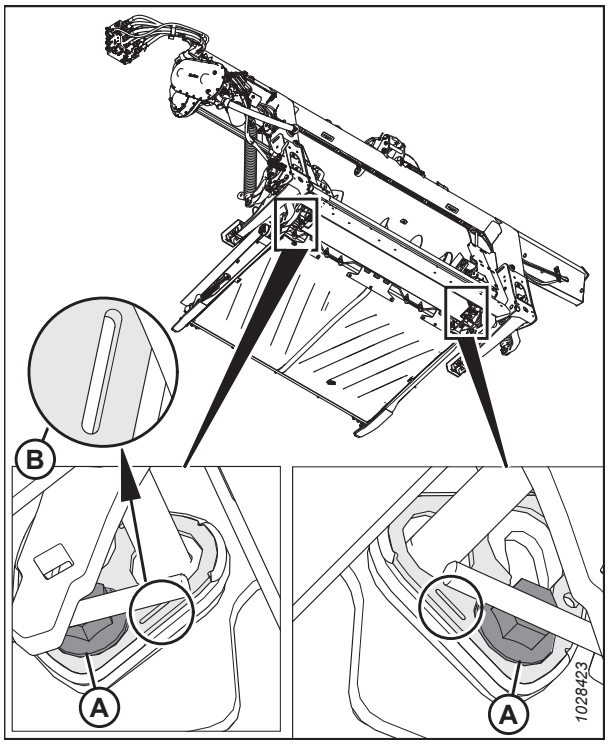


Figure 4.70: Fixed Position

7. Check clearance (C) between the feed auger flighting and the pan.
   - If the feed auger is in the fixed position, the clearance should be 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, the clearance should be 11.5–15.5 mm (7/16–5/8 in.).
8. If the clearance requires adjustment, loosen two nuts (B) and rotate the auger to position the flighting over the feed pan.
9. Turn bolt (A) clockwise to increase clearance (C); turn bolt (A) counterclockwise to decrease clearance (C).
   - If the feed auger is in the fixed position, set the clearance to 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, set the clearance to 11.5–15.5 mm (7/16–5/8 in.).

   NOTE:

   The clearance increases between 25–40 mm (1–1 1/2 in.) when the center-link is fully retracted.
10. Repeat Step *7, page 545* and Step *9, page 545* on the opposite end of the auger.

    IMPORTANT:

    Adjusting one side of the auger can affect the other side. Always double-check both sides of the auger after making final adjustments.
11. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 96 Nm (70 lbf·ft).
12. Rotate the feed auger and double-check the clearances.

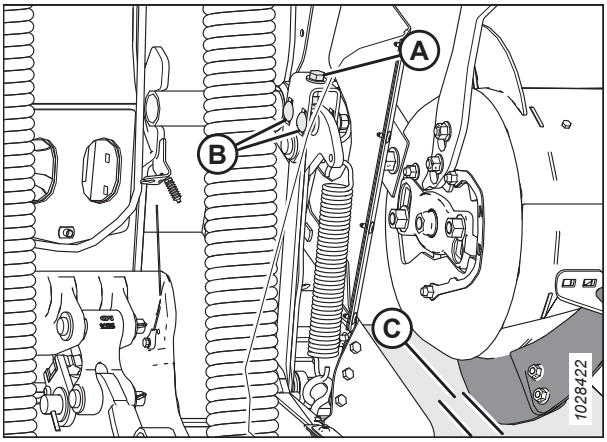


Figure 4.71: Auger Clearance

4.7.2 Checking Feed Auger Chain Tension

The feed auger is chain-driven by the float module drive system sprocket attached to the side of the auger.

There are two methods for checking the feed auger drive chain tension: the quick method is intended for frequent checks; the thorough method is more accurate and should be used when replacing or reinstalling the chain.

Refer to the appropriate procedure for checking the feed auger chain tension:

- *Checking Feed Auger Drive Chain Tension – Quick Method, page 545*
- *Checking Feed Auger Drive Chain Tension – Thorough Method, page 547*

Checking Feed Auger Drive Chain Tension – Quick Method

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Ensure that all bystanders have cleared the area.

NOTE:

There are two methods for checking the auger drive chain tension: the quick method is intended for frequent checks; the thorough method (refer to *Checking Feed Auger Drive Chain Tension – Thorough Method, page 547*) is more accurate and should be used when the auger drive chain is reinstalled or replaced.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Rotate auger (A) by hand in the reverse direction until it cannot turn anymore.
7. Mark a line (B) across the drum and bottom cover.

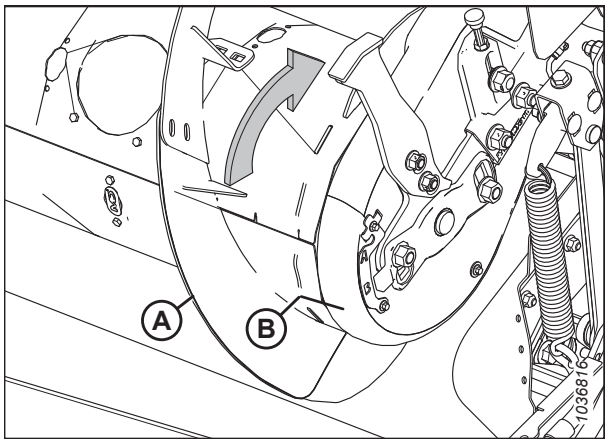


Figure 4.72: Feed Auger Drive

8. Rotate auger (A) by hand in the forward direction until it cannot turn anymore. The marked line will split.

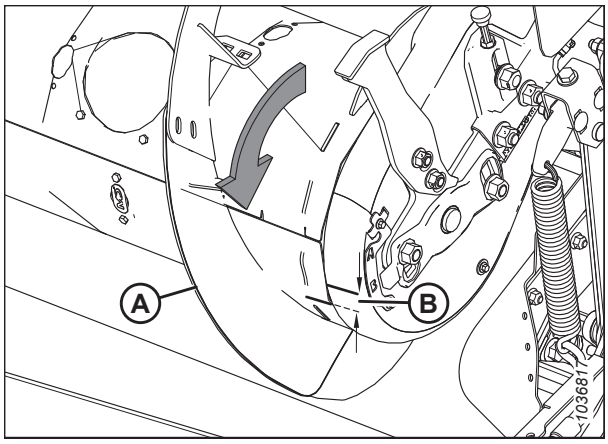


Figure 4.73: Feed Auger Drive

9. Measure the distance between two lines (B).

   For a new chain:

   - If distance (B) is 1–4 mm (0.04–0.16 in.), no adjustment is required.
   - If distance (B) is greater than 4 mm (0.16 in.), the auger drive chain tension needs adjusting. For instructions, refer to *4.7.5 Adjusting Feed Auger Drive Chain Tension, page 556*.

   For a used chain:

   - If distance (B) is 3–8 mm (0.12–0.31 in.), no adjustment is required.
   - If distance (B) is greater than 8 mm (0.31 in.), the auger drive chain tension needs adjusting. For instructions, refer to *4.7.5 Adjusting Feed Auger Drive Chain Tension, page 556*.

Checking Feed Auger Drive Chain Tension – Thorough Method

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Ensure that all bystanders have cleared the area.

NOTE:

There are two methods for checking the auger drive chain tension: the thorough method is more accurate and should be used when reinstalling or replacing the chain; the quick method (refer to *Checking Feed Auger Drive Chain Tension – Quick Method, page 545*) is intended for frequent checks.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.
6. Shut down the engine, and remove the key from the ignition.

7. On the left side of the feed auger, remove four bolts (A) and inspection panel (B).
8. Remove bolts (C) and remove indicator/clamp (D) that holds the two covers together.
9. Remove bolt (E).
10. Remove bolt and washer (H) that secure the bottom cover.
11. Rotate bottom cover (F) forward to remove it.

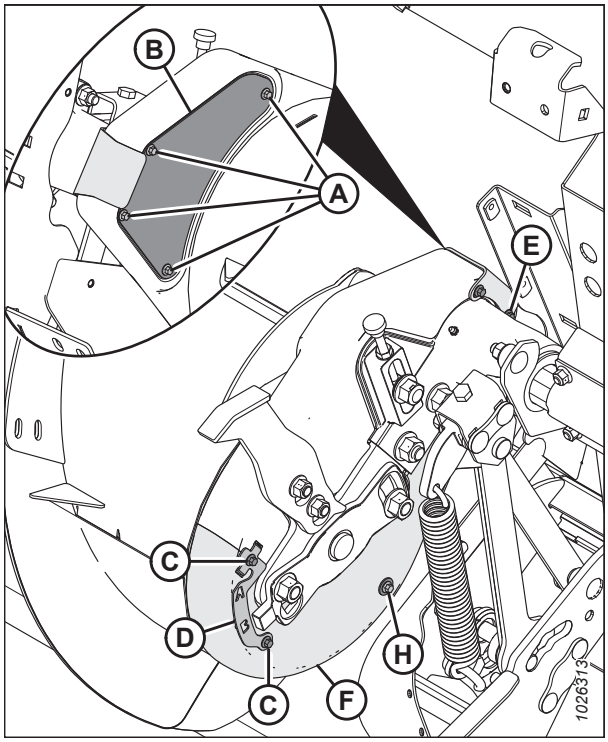


Figure 4.74: Feed Auger Drive – Rear View

12. Check the chain at midspan (A). There should be 4 mm (0.16 in.) of deflection. If adjustment is required, refer to *4.7.5 Adjusting Feed Auger Drive Chain Tension, page 556*.

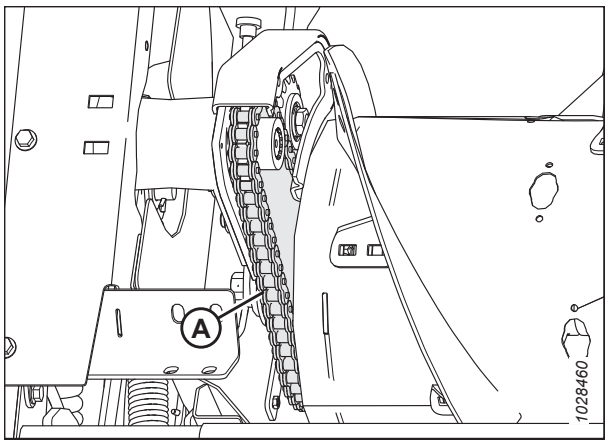


Figure 4.75: Feed Auger Chain – Rear View

13. Position bottom cover (F) and secure the cover with bolt and washer (H).
14. Install bolt (E).
15. Secure the bottom cover to the top cover with clamp/ indicator (D) and bolts (C).
16. Install inspection panel (B) and secure it with four bolts (A). Tighten bolts (A) and torque the bolts to 3.5 Nm (30 lbf·in).

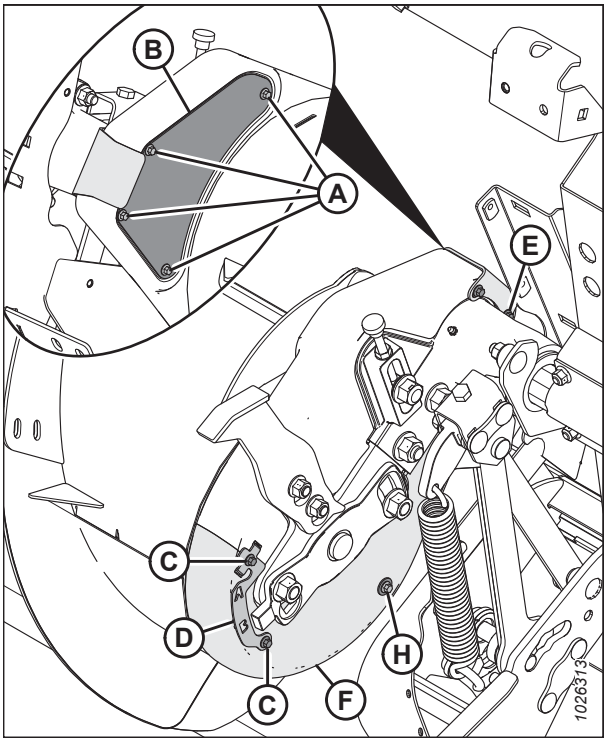


Figure 4.76: Feed Auger Drive – Rear View

4.7.3 Removing Auger Drive Chain

The chain tensioner can take up slack for only a single pitch. Replace the chain when it has worn or stretched beyond the limits of the tensioner.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Replace the chain with endless chain (MD #220317).

NOTE:

The illustrations show the left side of the auger.

1. Start the engine.
2. Tilt the header fully back to maximize the space between the auger and the feed pan.
3. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.

4. Place wooden blocks (A) under the auger to prevent the auger from dropping onto the feed draper and damaging it.

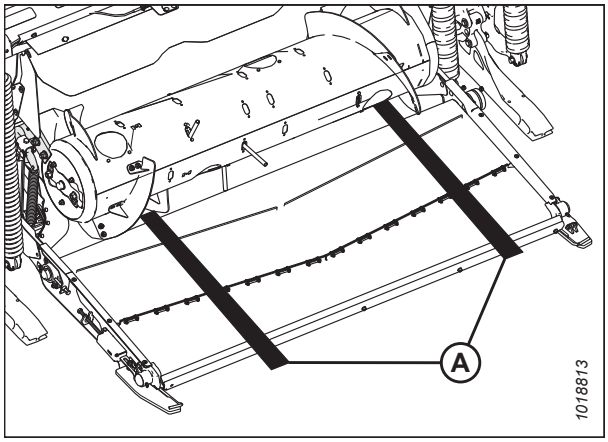


Figure 4.77: Blocks under the Auger

5. Loosen two bolts (A) and remove bumper (B). Repeat this step on the opposite side.

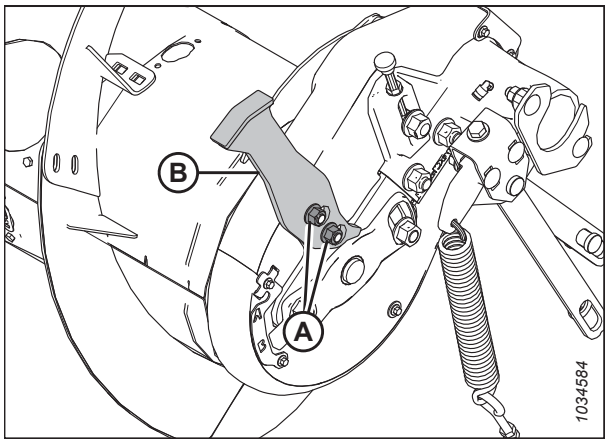


Figure 4.78: Auger Bumper – Left Side

6. On the left side of the auger, remove bolts (E) and cover retainer (F).
7. Remove four bolts (A) and inspection panel (B).
8. Remove bolts (C) and indicator/clamp (D) that hold top cover (G) and bottom cover (H) together.
9. Remove bolt and washer (J) that secure bottom cover (H).
10. Rotate top cover (G) and bottom cover (H) forward to remove them from the auger.

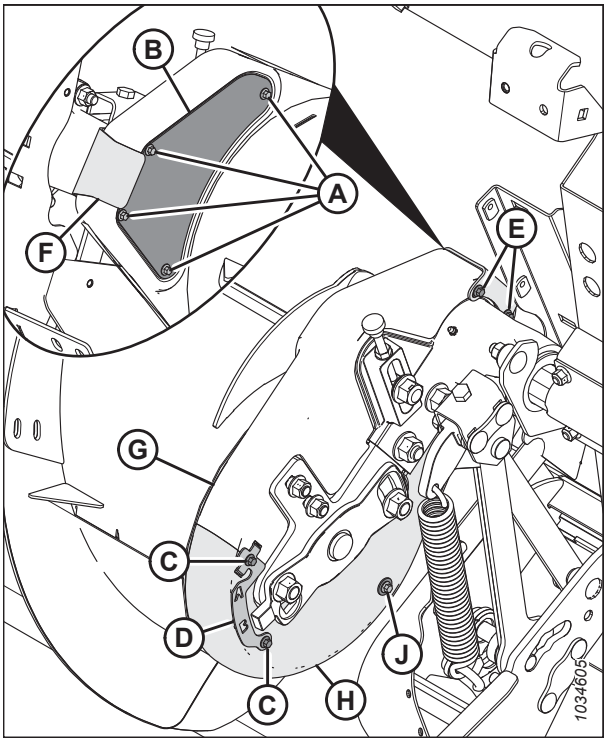


Figure 4.79: Auger Drive

11. To release the chain tension, loosen jam nut (C) and turn thumbscrew (D) counterclockwise to release the bolt holding sprocket (B), preventing it from raising up.

    IMPORTANT:

    Do **NOT** loosen thin nut (E) on the inboard side of the idler sprocket spindle.

12. Loosen idler sprocket nut (A) and raise sprocket (B) to the uppermost position to release the tension on the chain. Tighten nut (A) to hold the sprocket in place.
13. Remove screw (F) and washer (G).

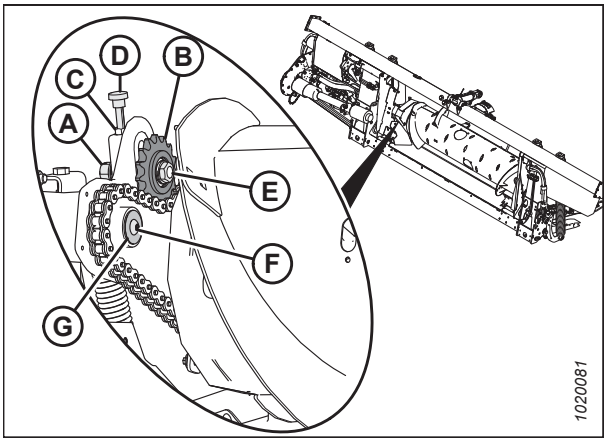


Figure 4.80: Auger Drive

14. Remove two bolts and nuts (A).

    NOTE:

    You may need a second person to support the auger in order to completely remove the bolts.

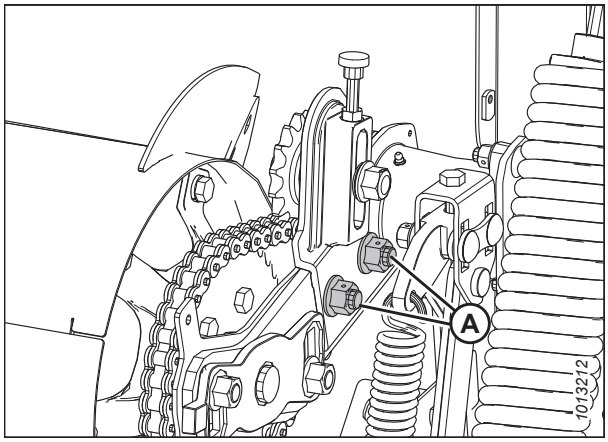


Figure 4.81: Auger Support Arm

15. Using a pry bar at location (A) between support arm (C) and auger pivot (B), pry the auger to the right.

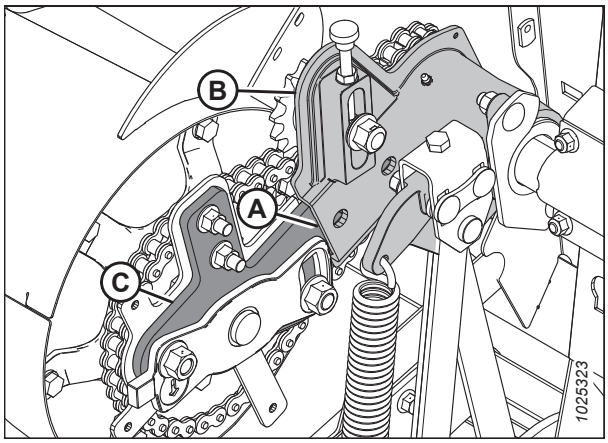


Figure 4.82: Auger

16. Remove drive sprocket (A) and chain (B) from the spline shaft.

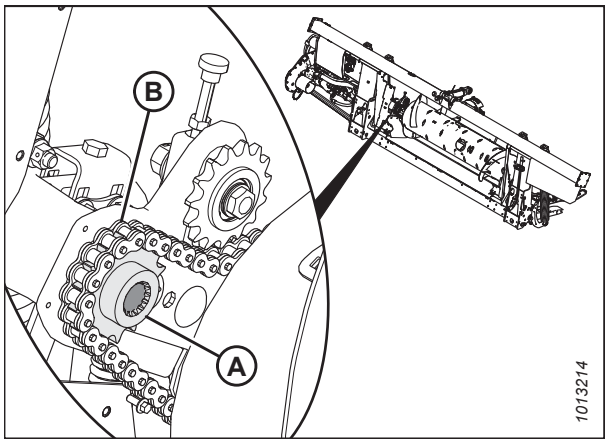


Figure 4.83: Auger Drive

17. Maneuver auger (A) sideways and forward so that you can remove chain (B) from the auger.

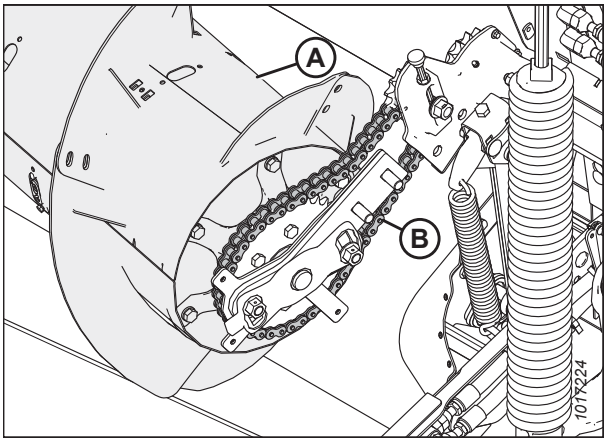


Figure 4.84: Auger Drive

4.7.4 Installing Auger Drive Chain

The auger drive chain transfers power from the main gearbox to the feed auger.

NOTE:

The illustrations show the left side of the auger.

1. Place drive chain (B) over the sprocket on the drive side of auger (A).

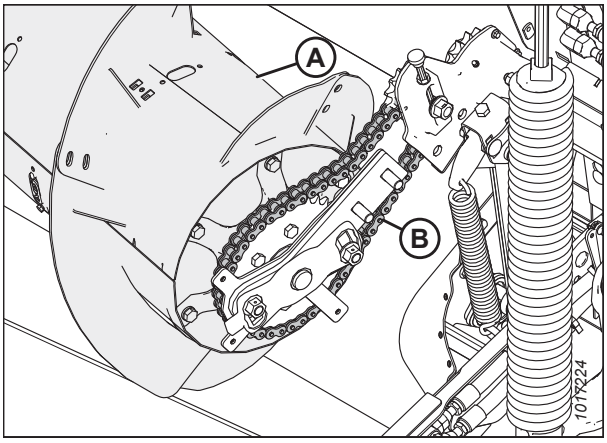


Figure 4.85: Auger Drive

2. Place drive sprocket (B) into chain (A) and align the sprocket onto the shaft.

   NOTE:

   The shoulder of drive sprocket (B) should face the auger.

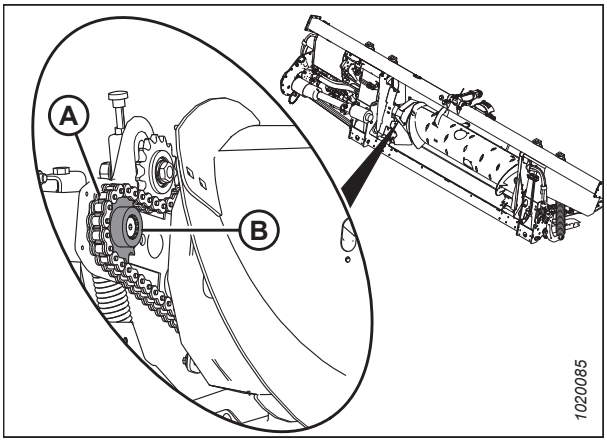


Figure 4.86: Auger Drive

3. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of screw (A).
4. Install washer (B) and secure it with screw (A).

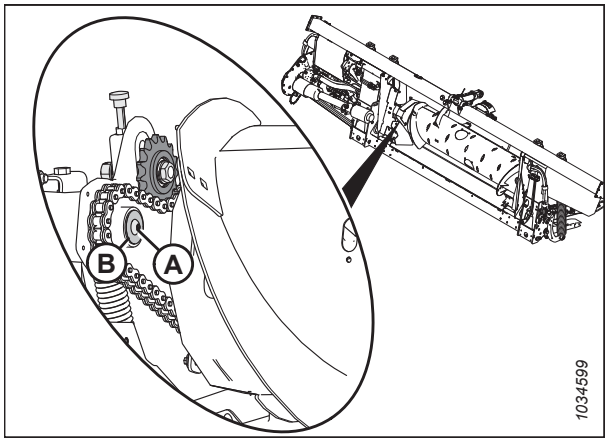


Figure 4.87: Auger Drive

5. Slide the auger drum assembly toward the casting, then reinstall two bolts and nuts (A).

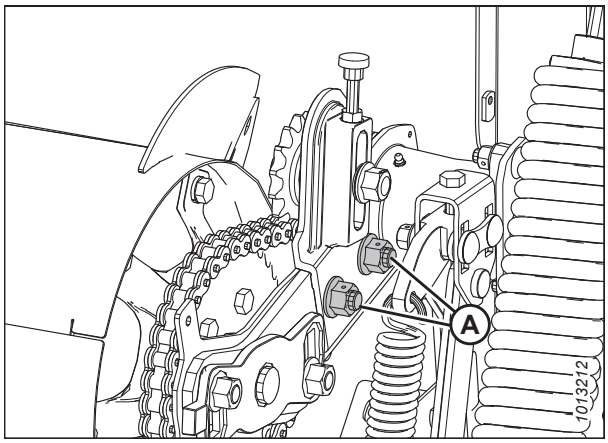


Figure 4.88: Auger Drive

6. Rotate the auger in reverse to take up the slack in the lower strand of the chain.

   IMPORTANT:

   Do **NOT** loosen thin nut (C) on the inboard side of the idler sprocket spindle.

7. Turn adjuster thumbscrew (D) clockwise to move idler sprocket (B) until it is **FINGER TIGHT ONLY.**

   IMPORTANT:

   Do **NOT** overtighten the sprocket.

8. Tighten idler nut (A) and torque it to 265 Nm (195 lbf·ft).

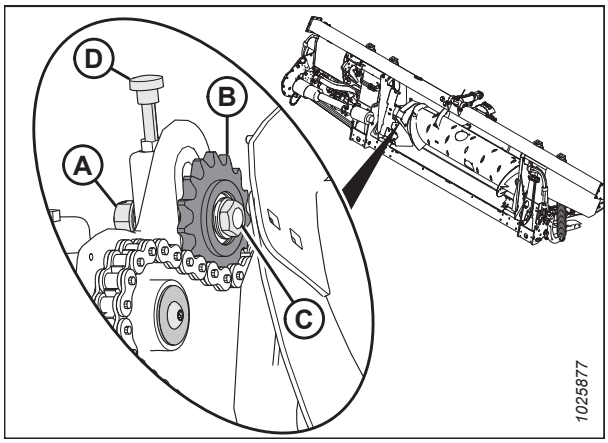


Figure 4.89: Auger Drive

9. Tighten jam nut (A).

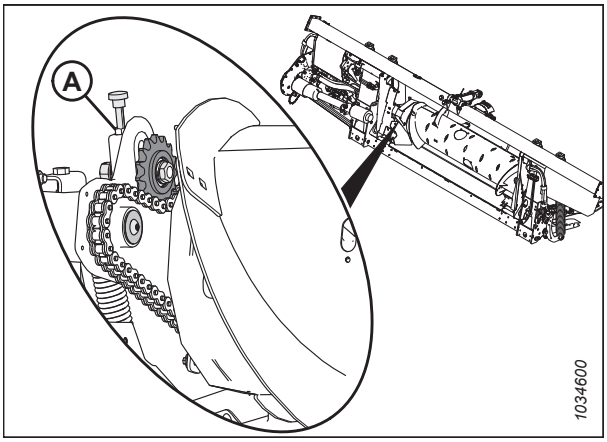


Figure 4.90: Auger Drive

10. Position bottom cover (H) and secure the cover with bolt and washer (J).
11. Position top cover (G). Secure the top and bottom covers with clamp/indicator (D) and bolts (C).
12. Install inspection panel (B) and secure it with four bolts (A). Tighten the bolts and torque them to 3.5 Nm (30 lbf·in).
13. Install cover retainer (F) and secure it with two bolts (E).

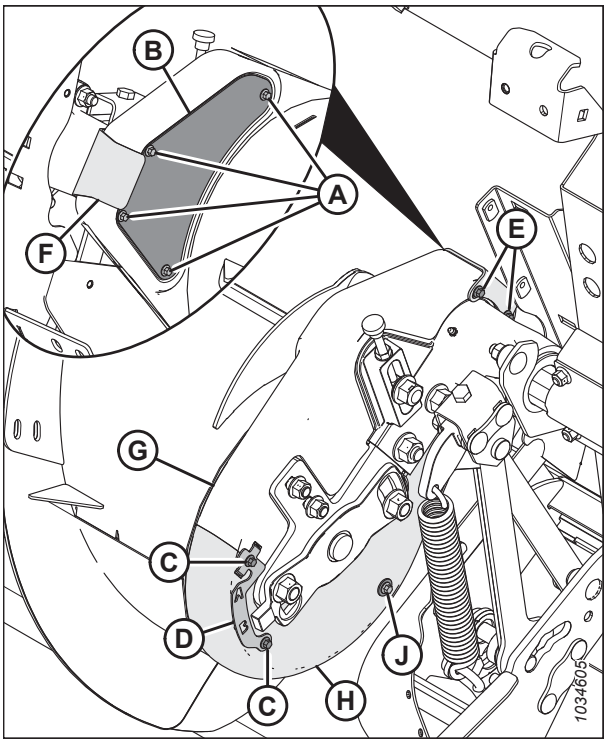


Figure 4.91: Auger

14. Remove wooden blocks (A) from the feed draper.

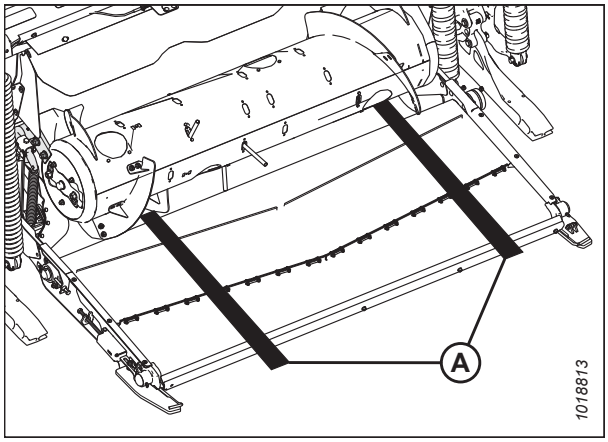


Figure 4.92: Blocks under the Auger

4.7.5 Adjusting Feed Auger Drive Chain Tension

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger. An insufficient tension on the chain can prematurely wear the sprockets or damage the chain.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.
6. Shut down the engine, and remove the key from the ignition.

7. Remove four bolts (A) and inspection panel (B) to view the chain.

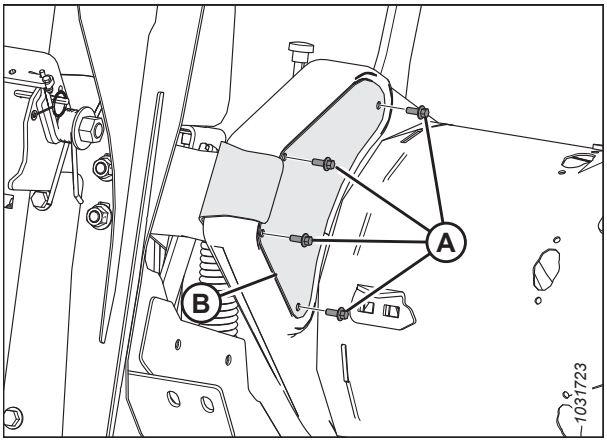


Figure 4.93: Left Side of Auger Drive – Rear View

8. Loosen jam nut (B).
9. Loosen idler nut (A) slightly to allow the idler to move by turning adjuster (C).
10. Rotate the auger in reverse to take up slack in the upper strand of the chain.

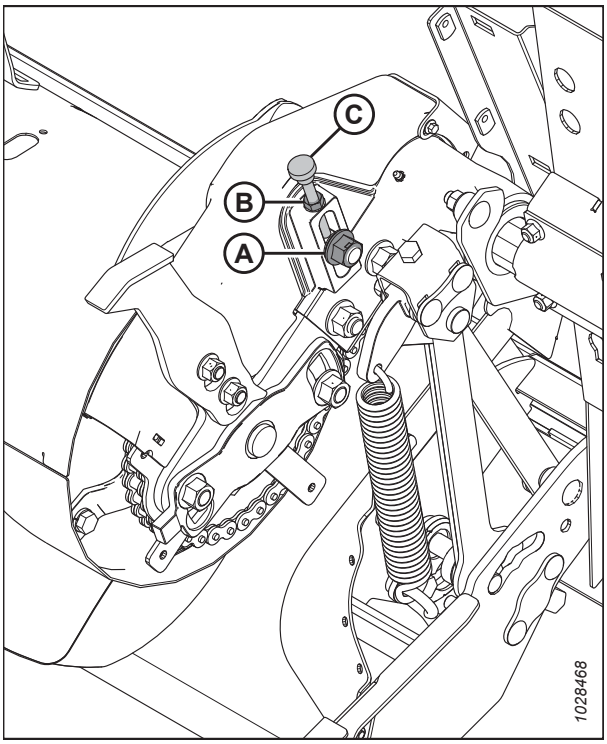


Figure 4.94: Left Side of Auger Drive – Front View

11. Turn adjuster thumbscrew (A) clockwise to increase the tension until chain deflection (B) is 4 mm (0.16 in.) at midspan.

    IMPORTANT:

    Do **NOT** overtighten the chain.

    NOTE:

    The covers have been removed from the illustration for clarity.

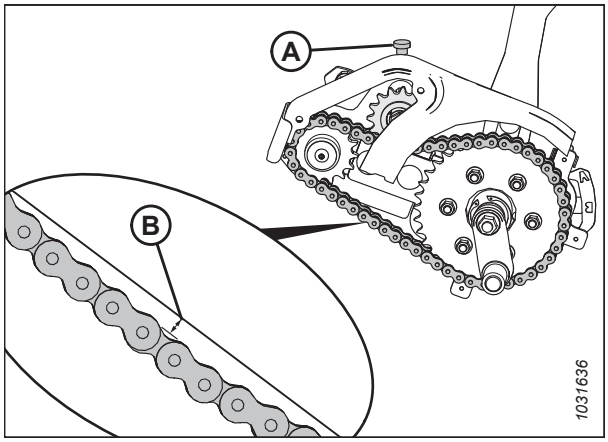


Figure 4.95: Feed Auger Chain Deflection

12. After adjusting the tension, tighten jam nut (A).
13. Tighten idler nut (B) and torque it to 265 Nm (195 lbf·ft).
14. Recheck the midspan chain deflection after tightening the idler and jam nut.

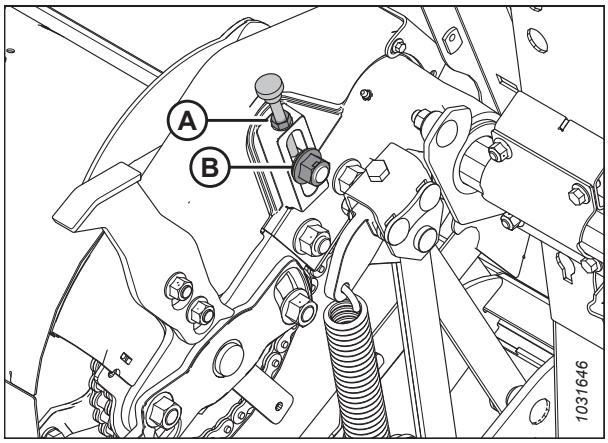


Figure 4.96: Feed Auger Chain – Front View

15. Install inspection panel (B) and secure it with four bolts (A).
16. Torque bolts (A) to 3.5 Nm (30 lbf·in).

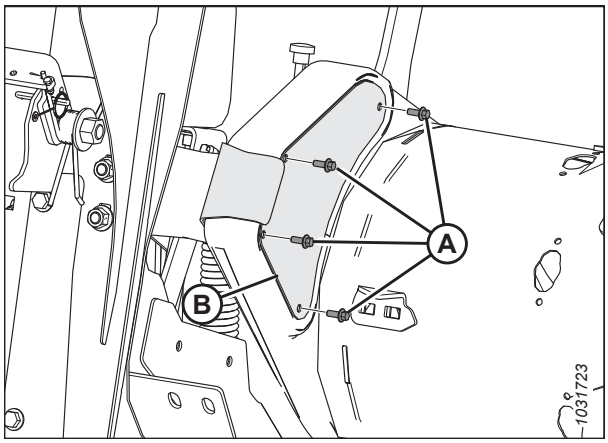


Figure 4.97: Left Side of Auger Drive – Rear View

4.7.6 Auger Flighting

The auger flighting on the FM200 can be configured for particular harvesting and crop conditions.

For instructions, refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148* for combine/crop specific configurations.

4.7.7 Auger Fingers

The FM200 feed auger uses retracting tines to feed the crop into the combine feeder house. Some conditions may require removing or installing the fingers for optimal crop feeding. Replace any worn or damaged fingers.

Removing Feed Auger Fingers

The feed auger has fingers that extend and retract to pull crop into the feeder house on the combine. Remove fingers from the auger drum to change its configuration profile.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

When removing auger fingers, work from the outside inward. Make sure there is an equal number of fingers on both sides of the auger when complete.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Locate the access cover closest to the finger to be removed. Remove and retain bolts (A) and access cover (B).

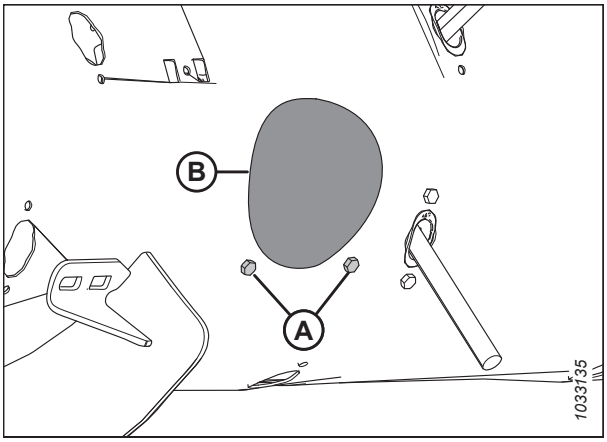


Figure 4.98: Auger Access Hole Cover

6. Remove hairpin (A). Pull finger (B) out of finger holder (C).

7. If the finger is broken, remove any remnants from holder (C) and from inside the drum.

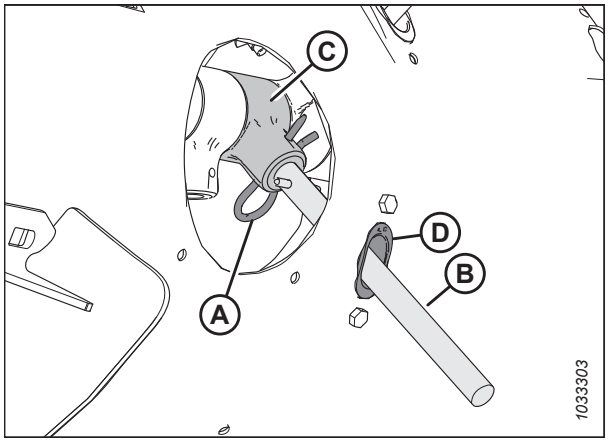


Figure 4.99: Auger Finger

8. Remove and retain two bolts (A) and the tee nuts (not shown) securing finger guide (B) to the auger. Remove guide (B).

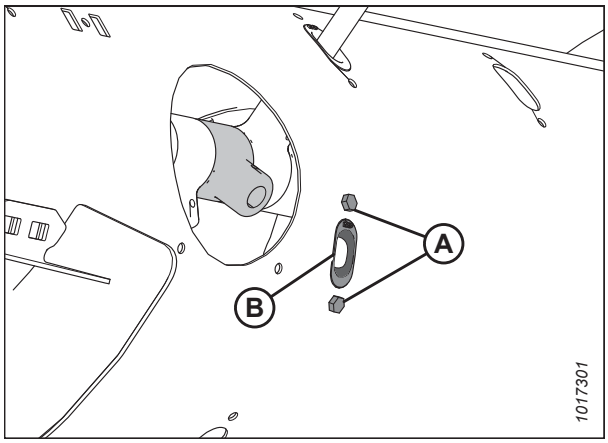


Figure 4.100: Auger Finger Hole

9. Place plug (A) in the hole from inside the auger. Secure the plug with two M6 hex head bolts (B) and tee nuts. Torque the bolts to 9 Nm (80 lbf·in).

   NOTE:

   Bolts (B) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (B), apply medium-strength threadlocker (Loctite® 243 or equivalent) before installation.

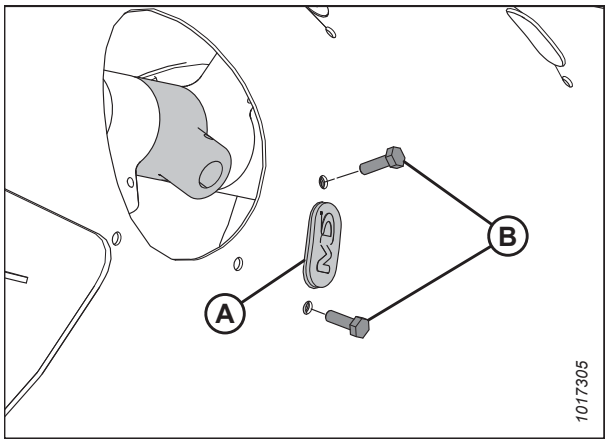


Figure 4.101: Plug Installed in Auger

10. Secure access cover (B) with bolts (A). Torque the bolts to 9 Nm (80 lbf·in).

    NOTE:

    Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If you are reusing bolts (A), apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the bolts before installation.

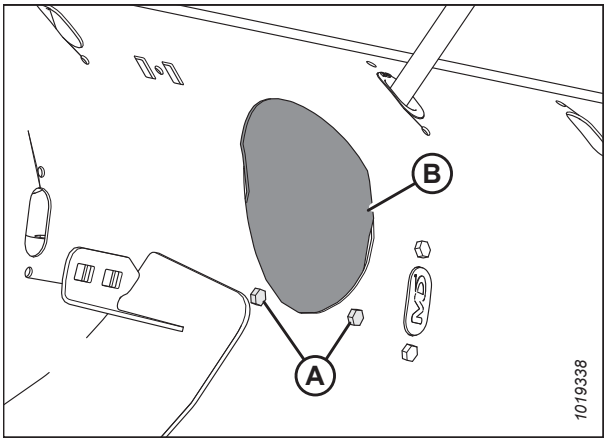


Figure 4.102: Auger Access Hole Cover

Installing Feed Auger Fingers

The feed auger has fingers that extend and retract to pull crop into the feeder house on the combine. Install fingers onto the auger drum to change its configuration profile.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

When installing additional fingers, ensure you install an equal number on each side of the auger.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.

5. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain the parts for reinstallation.

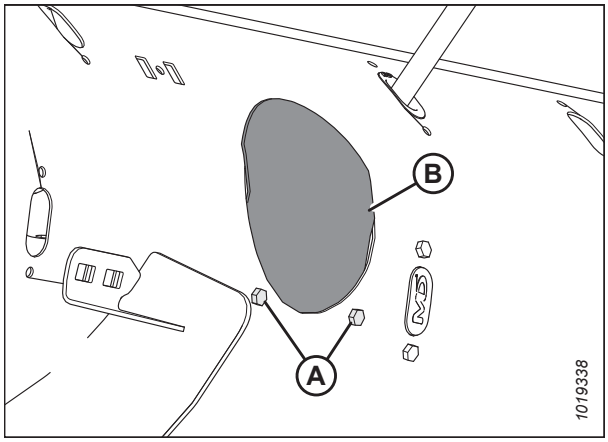


Figure 4.103: Auger Access Hole Cover

6. Remove two bolts (B), tee nuts (not shown), and plug (A).

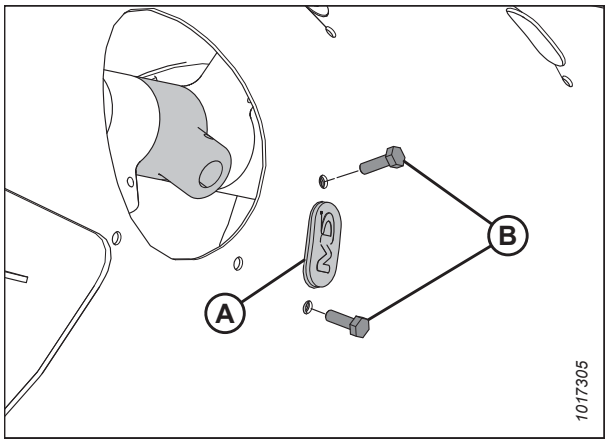


Figure 4.104: Auger Finger Hole

7. Insert guide (B) from inside the auger and secure it with bolts (A) and tee nuts (not shown).

   IMPORTANT:

   Always install a new guide when replacing a solid finger.

   NOTE:

   Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (A), apply medium-strength threadlocker (Loctite® 243 or equivalent) before installation.

8. Torque bolts (A) to 9 Nm (80 lbf·in).

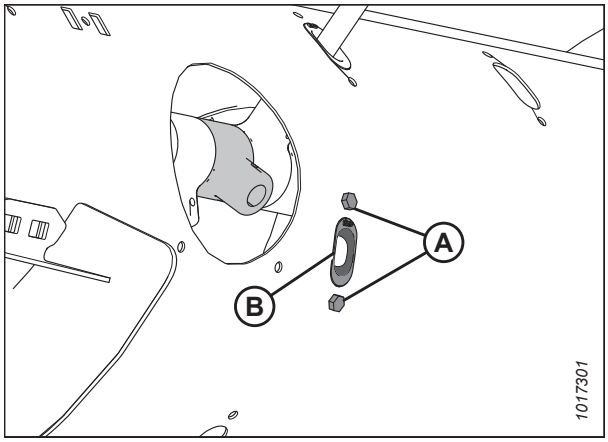


Figure 4.105: Auger Finger Hole

9. Place auger finger (A) from inside of the drum. Insert auger finger (A) up through the bottom of guide (B) and insert the other end into holder (C).

10. Secure the finger by inserting hairpin (D) into the holder. Ensure that the round end (the S-shaped side) of the hairpin faces the chain drive side of the auger.

    IMPORTANT:

    Position the hairpin as described in this step to prevent the hairpin from falling out during operation. If fingers are lost, the header might not be able to feed crop into the combine properly. Furthermore, fingers that fall into the drum might damage internal components.

    NOTE:

    Make sure the closed end of the hairpin points in the direction in which the auger rotates.

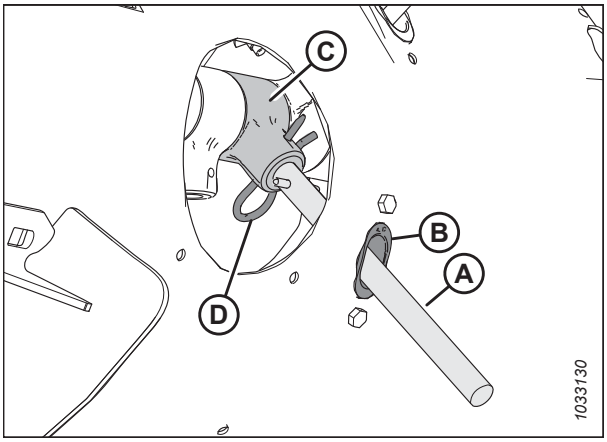


Figure 4.106: Auger Finger

11. Secure access cover (B) in place with bolts (A). Torque the bolts to 9 Nm (80 lbf·in).

    NOTE:

    Bolts (A) come with a threadlocker patch that will wear off if the bolts are removed. If reinstalling bolts (A), apply medium-strength threadlocker to the threads of the bolts (Loctite® 243 or equivalent) before installation.

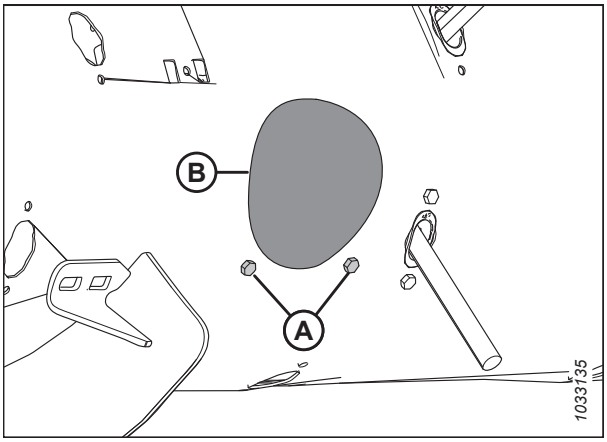


Figure 4.107: Auger Access Hole Cover

Checking Auger Finger Timing

The feed auger has fingers that extend and retract to pull crop into the feeder house on the combine. This procedure determines where the fingers are when they are fully extended from the auger.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the reel fully.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
4. Shut down the engine, and remove the key from the ignition.

5. Check that indicator (C) is set to the same position at each end of the auger.

   NOTE:

   There are two different auger tine extension positions: **A** and **B**. Position **A** is used for canola and position **B** is used for grains. The factory setting for the indicator is position **B**.

   IMPORTANT:

   Both finger timing indicators **MUST** be set to the same position; if not, the auger will be damaged beyond repair.

6. To adjust the indicator position, refer to *Adjusting Auger Finger Timing, page 564*.

7. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 38*.

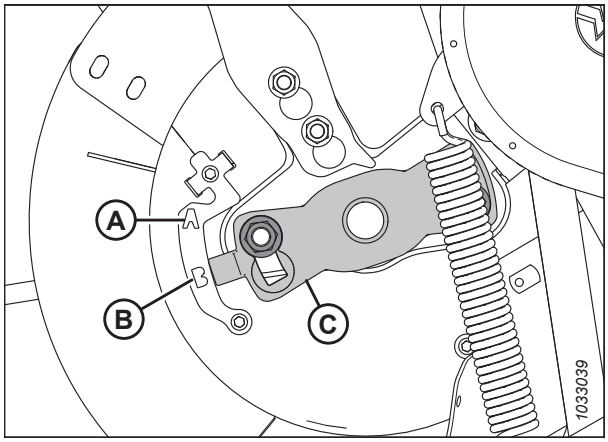


Figure 4.108: Auger Tine Timing – Left Side of Auger Shown

Adjusting Auger Finger Timing

The feed auger fingers extend and retract to pull crop into the feeder house on the combine. This procedure determines where the fingers are when they are fully extended from the auger.

NOTE:

The illustrations show only the left side of the auger; however, this procedure applies to both sides.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the reel fully.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
4. Shut down the engine, and remove the key from the ignition.

5. Locate finger timing indicator (C) at the end of the auger. There are two auger tine extension positions: Position **A** and position **B**.

6. Loosen nuts (D) and adjust finger timing indicator (C) to the desired position.

   IMPORTANT:

   Both finger timing indicators **MUST** be set to the same position; if not, the auger will be damaged beyond repair.

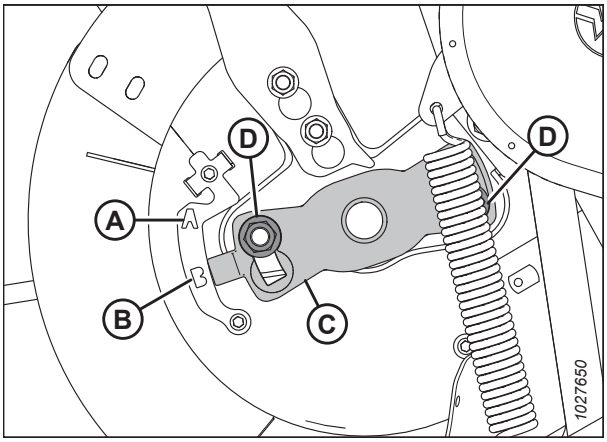


Figure 4.109: Auger Tine Timing Indicator

NOTE:

If the finger timing indicator is pointing at position **A**, it indicates that the auger fingers will be fully extended at this point. This allows the crop to be engaged and released earlier before it enters the feeder house. This setting is best used for canola or bushy crops.

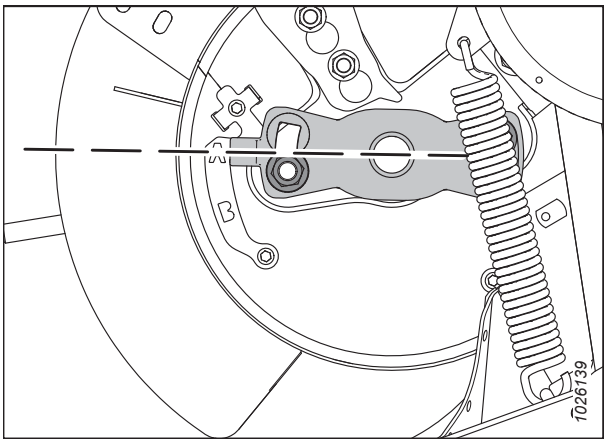


Figure 4.110: Auger Position A

NOTE:

If the indicator is pointing at position **B**, it indicates that the auger fingers will be fully extended at that point. This allows the crop to be engaged and released later before it enters the feeder house. This setting is best used for grains or beans.

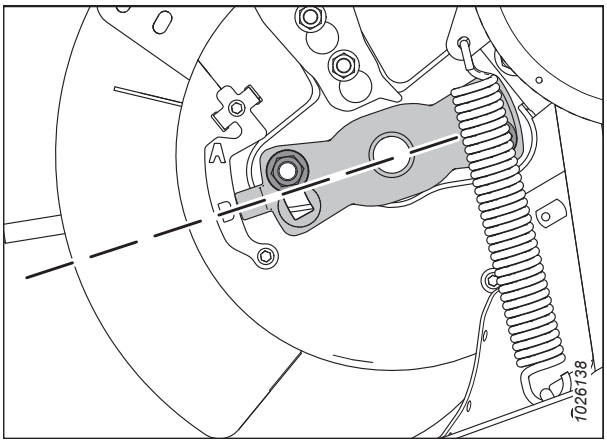


Figure 4.111: Auger Position B

7. Tighten nuts (A) once adjustment is complete. Torque the nuts to 115 Nm (85 lbf·ft).

8. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 38*.

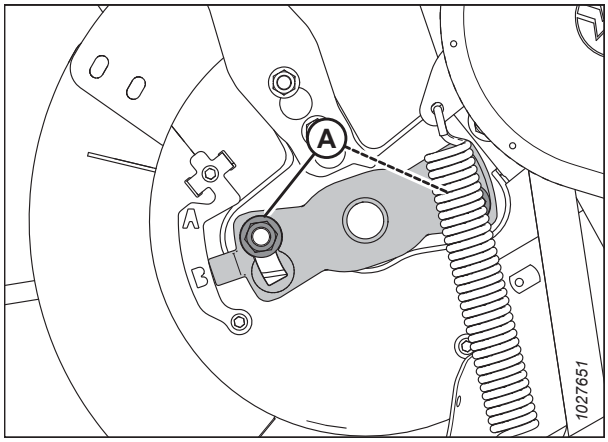


Figure 4.112: Auger Tine Timing Indicator

4.8 Knife

The knives on the cutterbar cut the crop. The knives, guards, and knifehead will require maintenance from time to time.

WARNING

Keep hands clear of the area between guards and knife at all times.

WARNING

Wear heavy gloves when working around or handling knives.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *4.1 Preparing Machine for Servicing, page 499*.

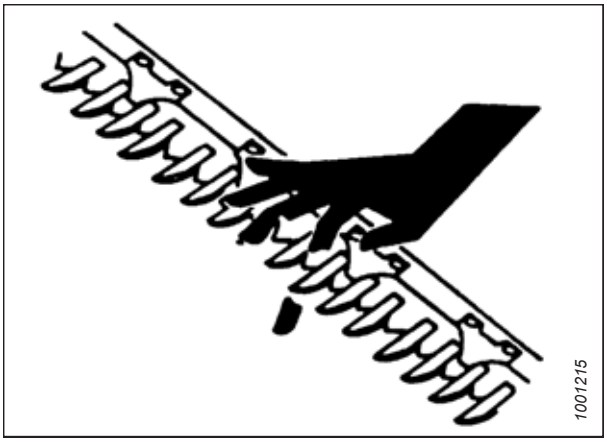


Figure 4.113: Cutterbar Hazard

4.8.1 Replacing Knife Section

Individual worn or damaged sections on a knife can be replaced without removing the knife from the cutterbar.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.

5. Identify the damaged knife section. If there is a hold-down, loosen nuts (A) that secure hold-down (B) to access the damaged knife section.

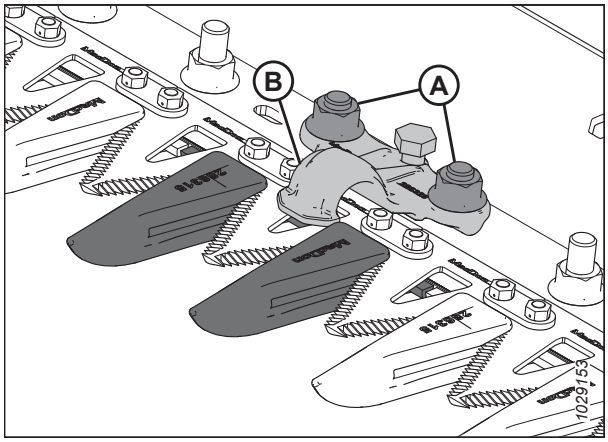


Figure 4.114: Cutterbar

6. Remove bolts and nuts (B). Retain the hardware.

   NOTE:

   If the knife hardware is under a hold-down, rotate the knife flywheel to reposition the knife.

7. For knife sections near the drive end, remove bars (C) and lift knife section (A) off of the knife back bar.

8. Clean the knife back bar, and position the new knife section onto the back bar.

   NOTE:

   The cut quality may be affected if both fine and coarsely serrated knife sections are used on the same knife.

9. For knife sections near the drive end, reposition bars (C).

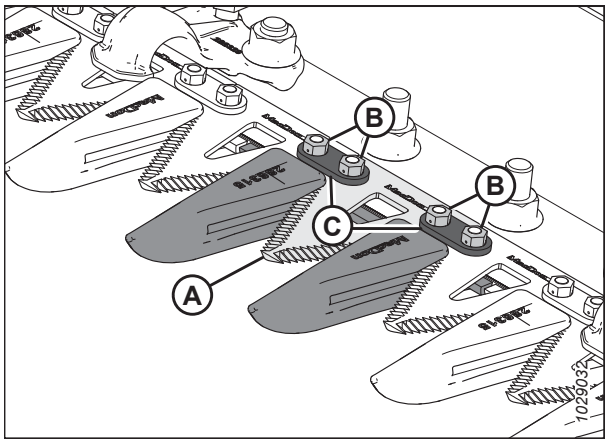


Figure 4.115: Cutterbar

10. If a hold-down was removed earlier, reinstall it along with bolts and nuts (B).

    NOTE:

    Ensure that the bolt heads fully engage into the oblong holes on the knife back bar.

11. Torque nuts (B) to 12 Nm (106 lbf·in).

12. To check the hold-down adjustment, refer to *Checking Hold-Down – Pointed Knife Guards, page 585* or *Checking Hold-Down – Short Knife Guards, page 598*.

4.8.2 Removing Knife

If the knife is damaged, it will need to be removed.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

NOTE:

On single-knife headers, the knifehead is located on the left side of the knife. On double-knife headers, there are two knifeheads located on the right and left sides of the knife. For double-knife headers, check which knife needs to be removed before starting the procedure.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
3. Position the knife to the middle of its stroke range by rotating the flywheel attached to the knife drive box.
4. Clean the area around the knifehead.
5. Remove grease fitting (A) from the pin.

   NOTE:

   Removing the grease fitting will make it easier to reinstall the knifehead pin later.
6. Remove bolt and nut (B).
7. Use a screwdriver or a chisel in slot (C) to release the load on the knifehead pin.
8. Use a screwdriver or a chisel to pry the knifehead pin upwards in the pin groove until the pin is clear of the knifehead.

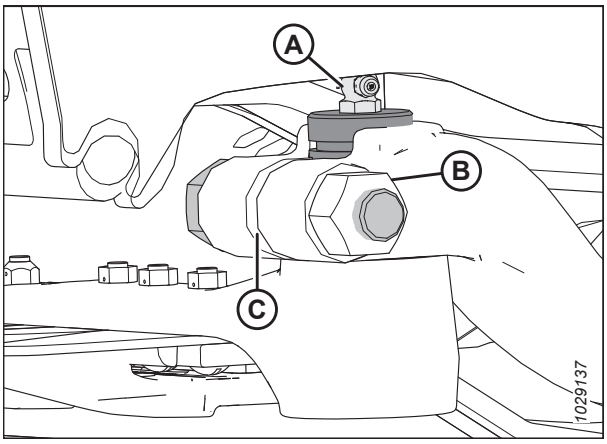


Figure 4.116: Knifehead

9. Push knife assembly (A) inboard until it is clear of drive arm (B).

   NOTE:

   The frame and the endshield parts have been removed from the illustration to reveal the knifehead components.
10. Unless it is being replaced, seal knifehead bearing (C) with plastic or tape to keep out dirt and debris.
11. Pull knife drive arm (B) to the outside position to give clearance for the knife.

    NOTE:

    If the knifehead or knifehead bearing is being removed, pull the knife out far enough to access these parts.
12. Remove knife (A).

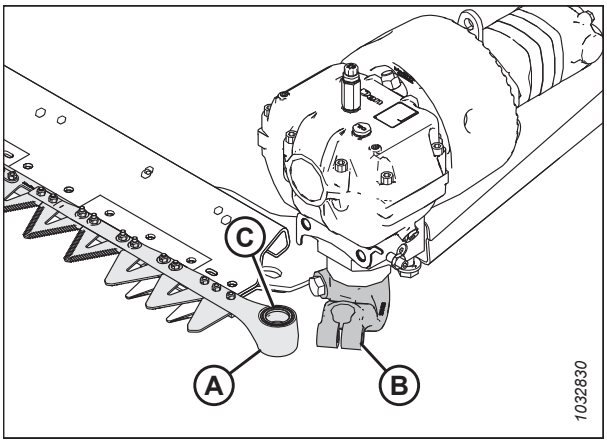


Figure 4.117: Left Knifehead

4.8.3 Removing Knifehead Bearing

The knifehead bearing allows the knifehead pin to rotate within the knifehead as the drive arm strokes the knife back and forth. If the bearing is worn or damaged, it will need to be replaced.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Start the engine.
2. Lower the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Remove the knife. For instructions, refer to *4.8.2 Removing Knife, page 568*.

   NOTE:

   Because the bearing is being replaced, it is not necessary to wrap the knifehead to protect the bearing.

5. Use a flat-ended tool with the same diameter as pin (A). Tap seal (B), bearing (C), plug (D), and O-ring (E) from the underside of the knifehead.

   NOTE:

   Seal (B) can be replaced without removing the bearing. When changing the seal, check the pin and the needle bearing for wear, and replace the seal if necessary.

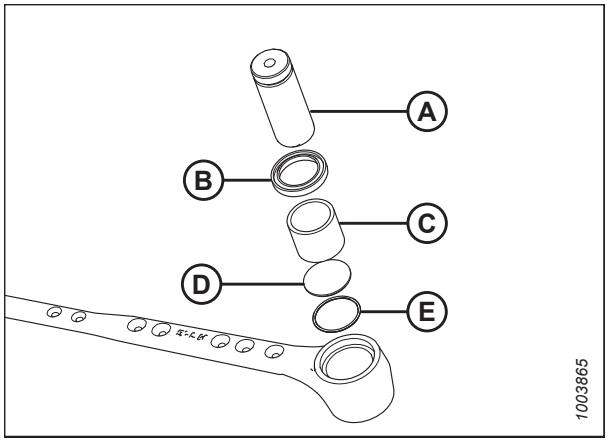


Figure 4.118: Knifehead Bearing Assembly

4.8.4 Installing Knifehead Bearing

The knifehead bearing allows the knifehead pin to rotate within the knifehead as the drive arm strokes the knife back and forth. Once the old bearing has been removed from the knifehead, a new one can be installed.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Shut down the engine, and remove the key from the ignition.
2. Place O-ring (E) and plug (D) into the knifehead.
3. Use a flat-ended tool (A) with the same approximate diameter as bearing (C), and push the bearing into the knifehead until the top of the bearing is flush with the step in the knifehead.

   IMPORTANT:

   Install the bearing with the identification markings facing up.
4. Install seal (B) into the knifehead with the lip facing outwards.

   IMPORTANT:

   To prevent premature knifehead or knife drive box failure, ensure that there is a tight fit between the knifehead pin and the needle bearing, and a tight fit between the knifehead pin and the output arm.

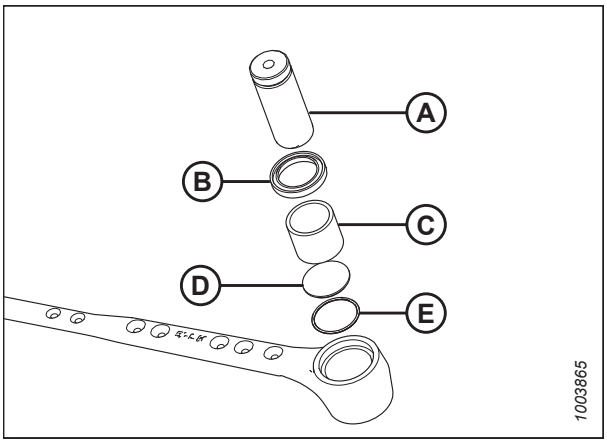


Figure 4.119: Knifehead Bearing Assembly

4.8.5 Installing Knife

If the knife is removed, follow this procedure to install it.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.

   NOTE:

   The installation illustrations show the left knife being installed. The procedure is the same for installing the right knife.

3. Lubricate knifehead bearing (A), then install the knife assembly onto the header.

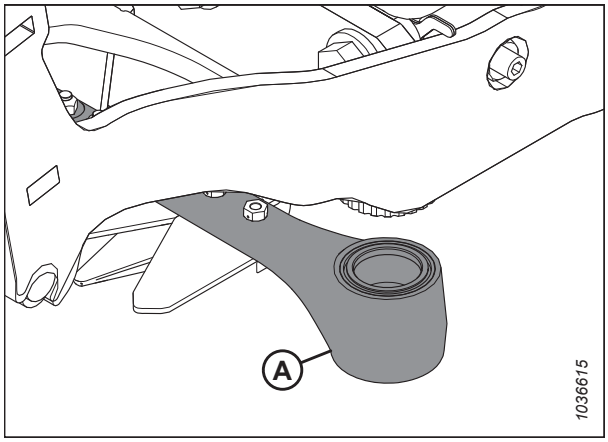


Figure 4.120: Knifehead

4. Install knifehead pin (A) through the drive arm and into the knifehead.
5. Position knifehead pin (A) so that groove (B) is 2 mm (0.08 in.) above the drive arm.

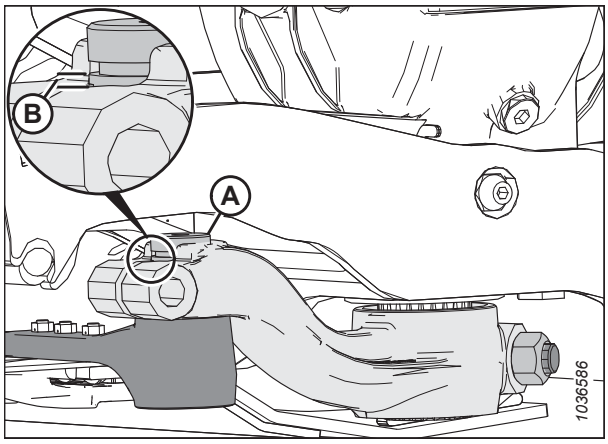


Figure 4.121: Knifehead

6. Secure the knifehead pin with M16 x 85 mm bolt (A) and nut (B). Install the bolt from the inboard side of the arm. Torque the bolt to 220 Nm (162 lbf·ft).
7. Rotate the flywheel attached to the knife drive box to position knife arm (A) to the inside limit of travel. Ensure that there is still 0.2–1.2 mm (0.02–0.05 in.) of clearance (C) between the drive arm and the knifehead.
8. If the drive arm does not need adjustment, proceed to Step *9, page 573*. If adjustment is needed, contact your MacDon dealer.

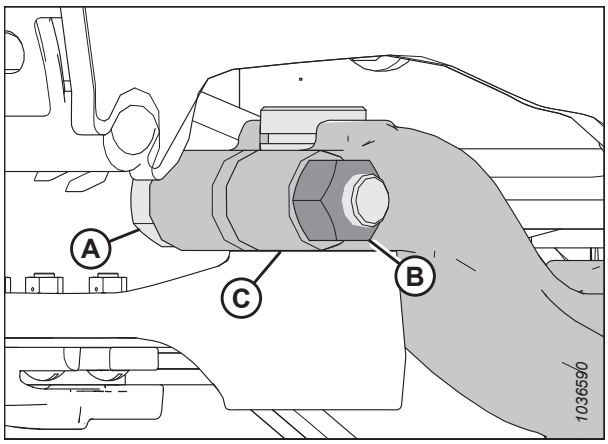


Figure 4.122: Knifehead

9. Reinstall grease fitting (A). Apply grease to the fitting until the knifehead has a slight downward movement.

   IMPORTANT:

   Do **NOT** overgrease the knifehead. Overgreasing the knifehead can misalign the knives, causing the guards to overheat and strain the knife drive motor. If you have applied too much grease to the fitting, remove the grease fitting to release the pressure.

   NOTE:

   If air is trapped in the bearing cavity, the knifehead will begin to move down before it has filled with grease.

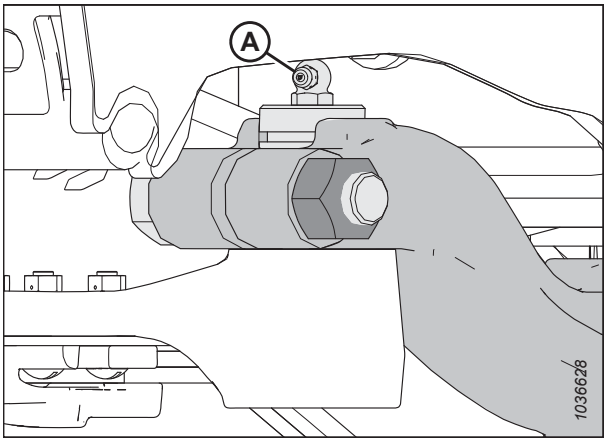


Figure 4.123: Knifehead

10. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

4.8.6 Spare Knives

Two spare knives (A) can be stored in the header backtube at the right end of the header. Ensure that the spare knives are secured in place with latch (B) and hairpin (C).

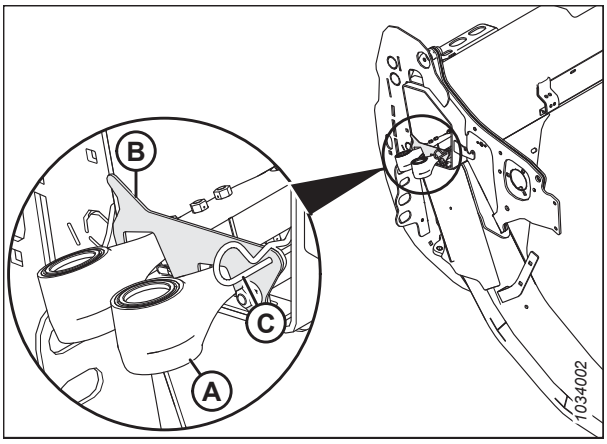


Figure 4.124: Spare Knives

4.8.7 Pointed Knife Guards and Hold-Downs

Knife guards help align the knife bar. Hold-downs hold the sections on the knife bar down against the knife guards to ensure proper cutting.

The following knife guards and hold-downs are used in pointed guard configurations:

NOTE:

Pointed knife guard configurations require two short knife guards, one at each end of the cutterbar.

NOTE:

A Four-Point Guard kit can be used to replace the knife guards. Four point guards are ideal for use in rocky conditions or for harvesting shatter-prone crops such as lentils. For more information, refer to the header parts catalog.

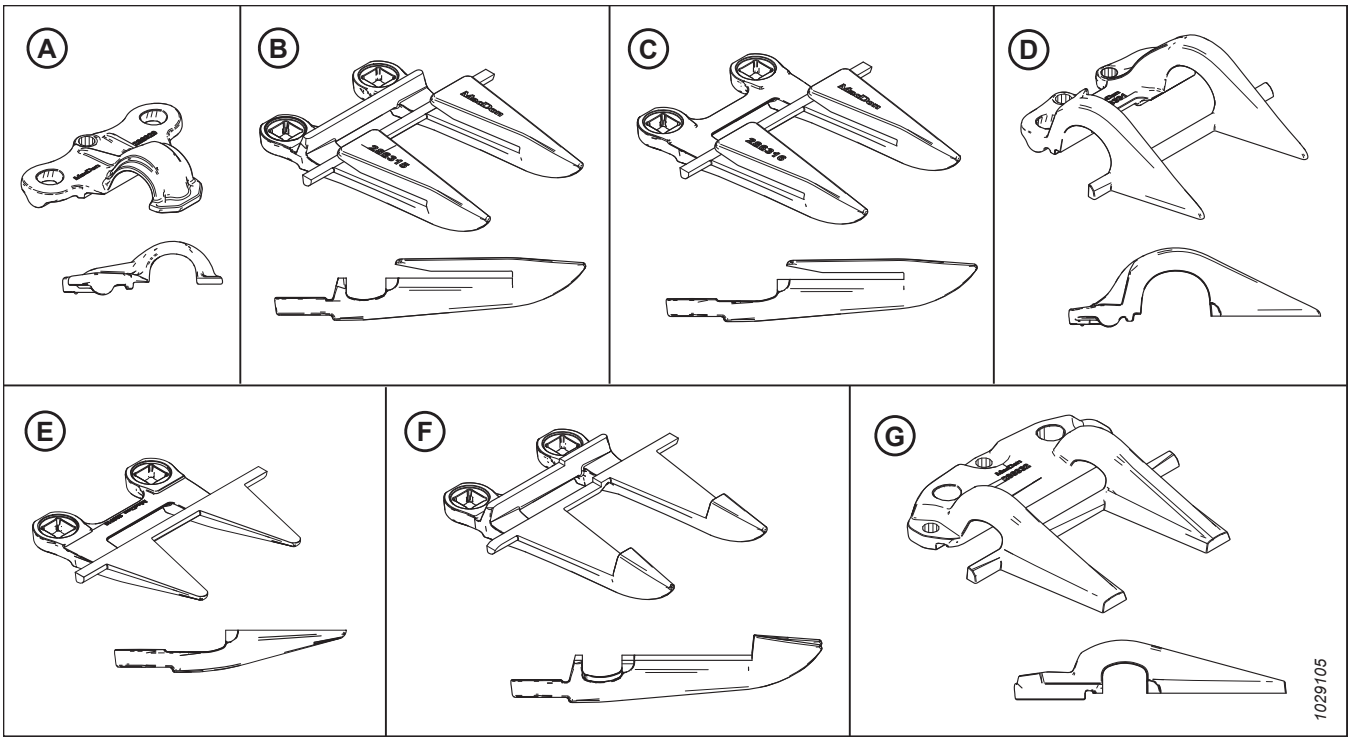


Figure 4.125: Guard and Hold-Down Types Used in Pointed Knife Guard Configurations

A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed-End Knife Guard (without Wear Bar) (MD #286316)[85]
D - PlugFree™ End Hold-Down (MD #286331)
E - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[86]
F - Pointed Center Knife Guard (MD #286317)[87]
G - Pointed Center Hold-Down (MD #286332)[87]

The guards are configured differently on different headers. When replacing pointed guards and hold-downs, ensure that you follow the correct replacement sequence for your header. Refer to the relevant topic:

- *Pointed Knife Guard Configuration on Single-Knife Headers, page 575*
- *Pointed Knife Guard Configuration on Double-Knife Header – FD235, page 576*
- *Pointed Knife Guard Configuration on Double-Knife Header – FD240, page 577*
- *Pointed Knife Guard Configuration on Double-Knife Header – FD241, page 578*
- *Pointed Knife Guard Configuration on Double-Knife Header – FD245, page 579*
- *Pointed Knife Guards Configuration on Double-Knife Header – FD250, page 580*

85. Installed in positions 2, 3, and 4 on the drive side(s). Refer to *Replacing Pointed Knife Guards, page 583*.
86. Installed in position 1 on the drive side(s). Single-knife headers use standard guard (MD #286318) on the right end.
87. Double-knife headers only.

Pointed Knife Guard Configuration on Single-Knife Headers

Guards are configured differently on different sized headers. The illustration provided here shows pointed knife guards installed on single-knife headers.

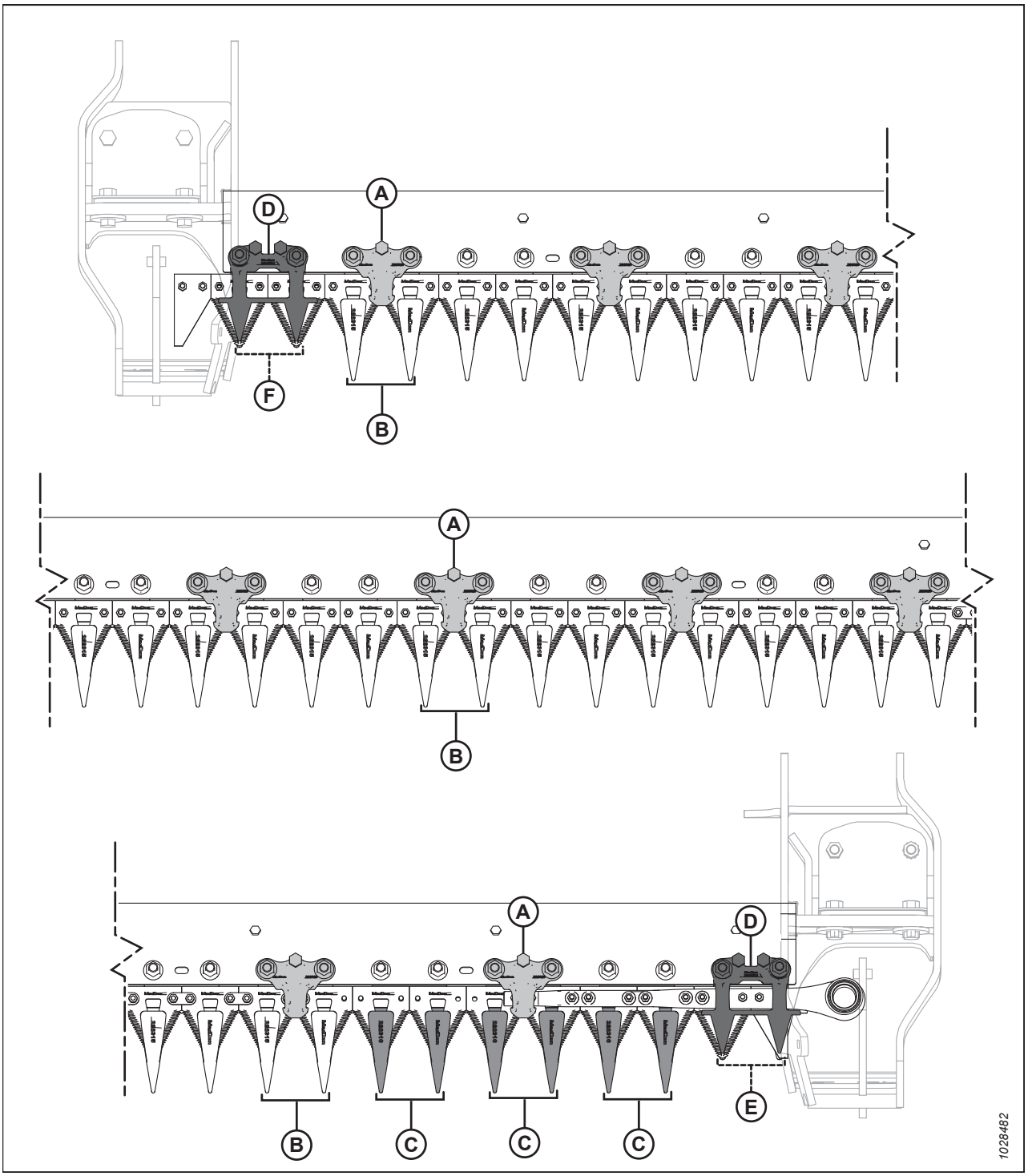


Figure 4.126: Pointed Knife Guard and Hold-Down Locations – Single-Knife Headers

A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed End Knife Guard (without Wear Bar) (MD #286316)
D - PlugFree™ Hold-Down (MD #286331)
E - PlugFree™ Guard (without Wear Bar) (MD #286319)
F - Short Knife Guard (MD #286318)

Pointed Knife Guard Configuration on Double-Knife Header – FD235

Guards are configured differently on different headers. The illustration provided here shows pointed knife guards installed on double-knife headers.

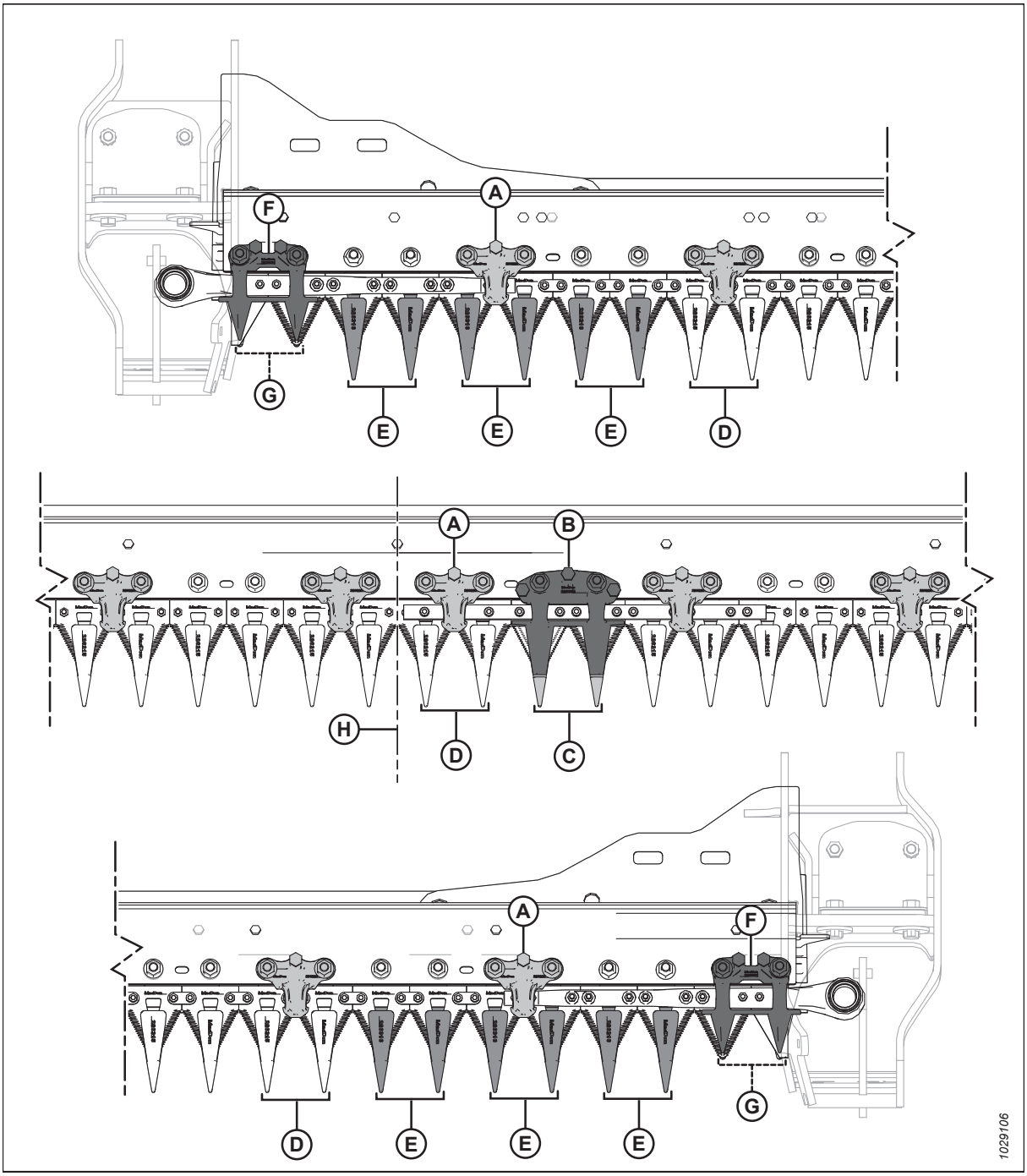


Figure 4.127: Pointed Knife Guard and Hold-Down Locations – FD235 Double-Knife Header

A - Pointed Hold-Down (MD #286329)[88]
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - PlugFree™ Hold-Down (MD #286331)
G - PlugFree™ Guard (without Wear Bar) (MD #286319)
H - Center of Header

88. There should always be a hold-down on the guard to the right of the center guard, regardless of the configuration.

Pointed Knife Guard Configuration on Double-Knife Header – FD240

Knife guards help align the knife bar. Hold-downs hold the sections on the knife bar down against the knife guards to ensure proper cutting.

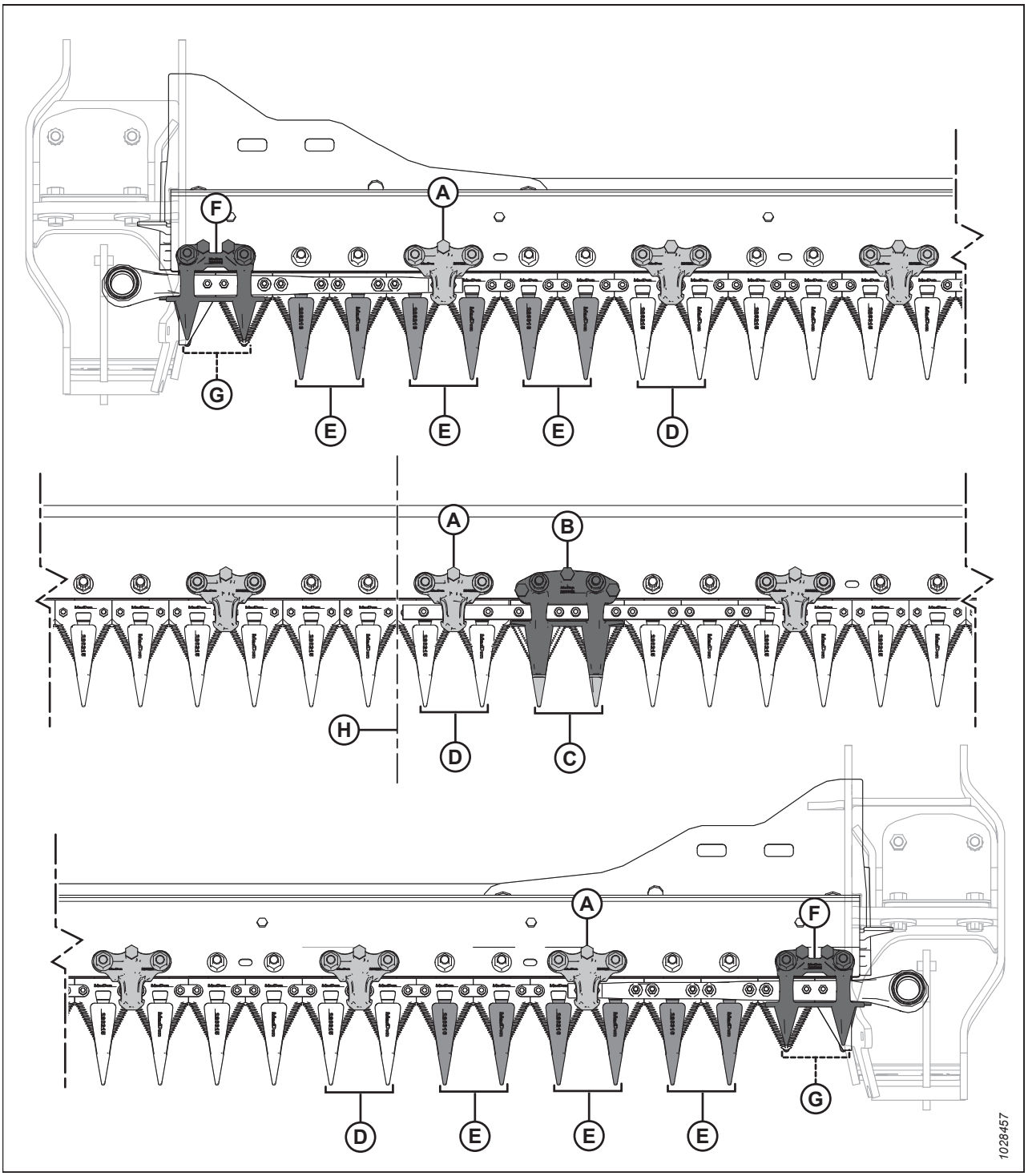


Figure 4.128: Pointed Knife Guard and Hold-Down Locations – FD240 Double-Knife Header

A - Pointed Hold-Down (MD #286329)
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - Short Knife Hold-Down (MD #286331)
G - Short Knife Guard (without Wear Bar) (MD #286319)
H - Center of Header

Pointed Knife Guard Configuration on Double-Knife Header – FD241

Guards are configured differently on different sized headers. The illustration provided here shows pointed knife guards installed on double-knife headers.

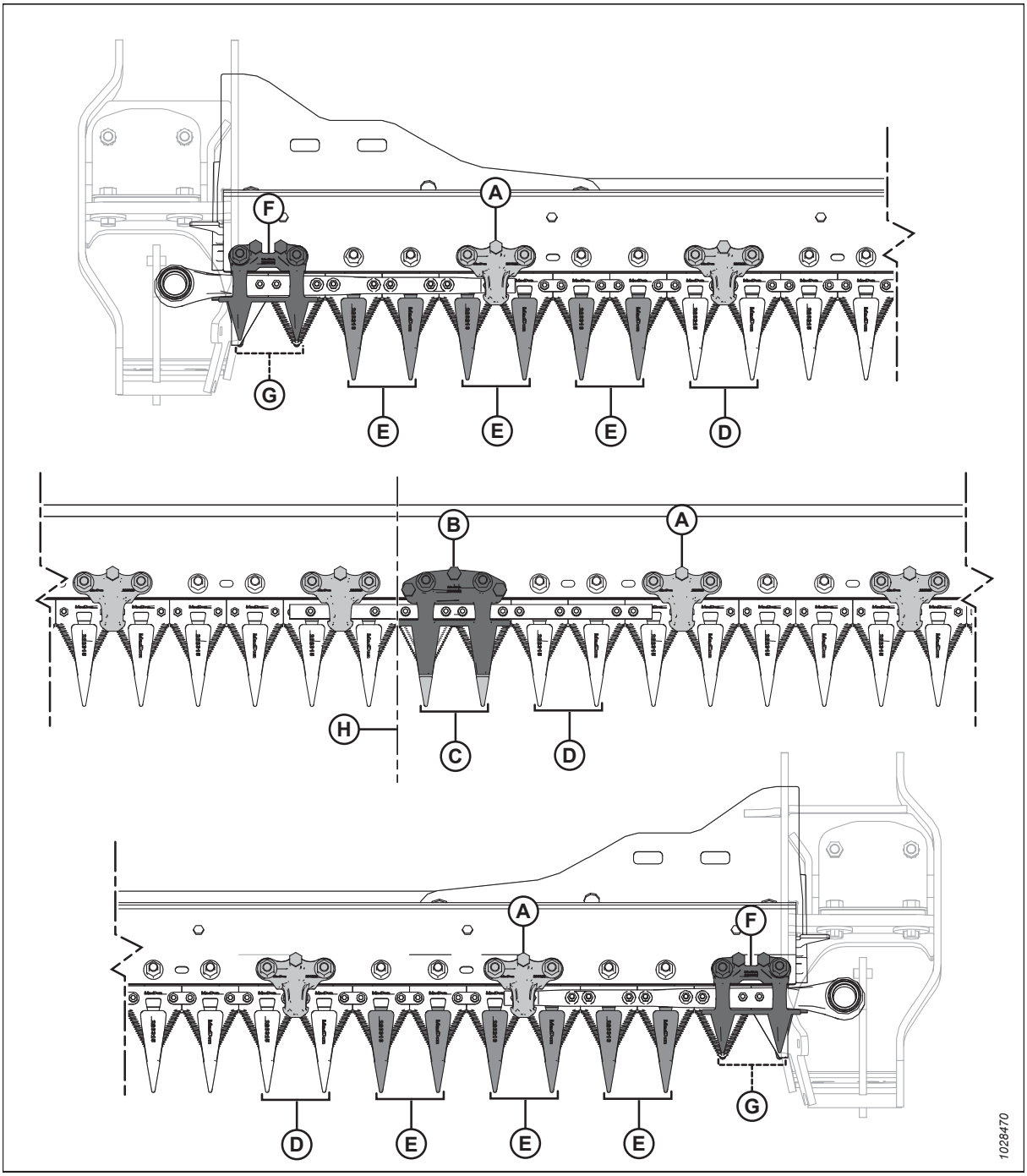


Figure 4.129: Pointed Knife Guard and Hold-Down Locations – FD241 Double-Knife Header

A - Pointed Hold-Down (MD #286329)[89]
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - PlugFree™ Hold-Down (MD #286331)
G - PlugFree™ Guard (without Wear Bar) (MD #286319)
H - Center of Header

89. There should always be a hold-down on the guard to the right of the center guard, regardless of the configuration.

Pointed Knife Guard Configuration on Double-Knife Header – FD245

Guards are configured differently on different sized headers. The illustration provided here shows pointed knife guards installed on double-knife headers.

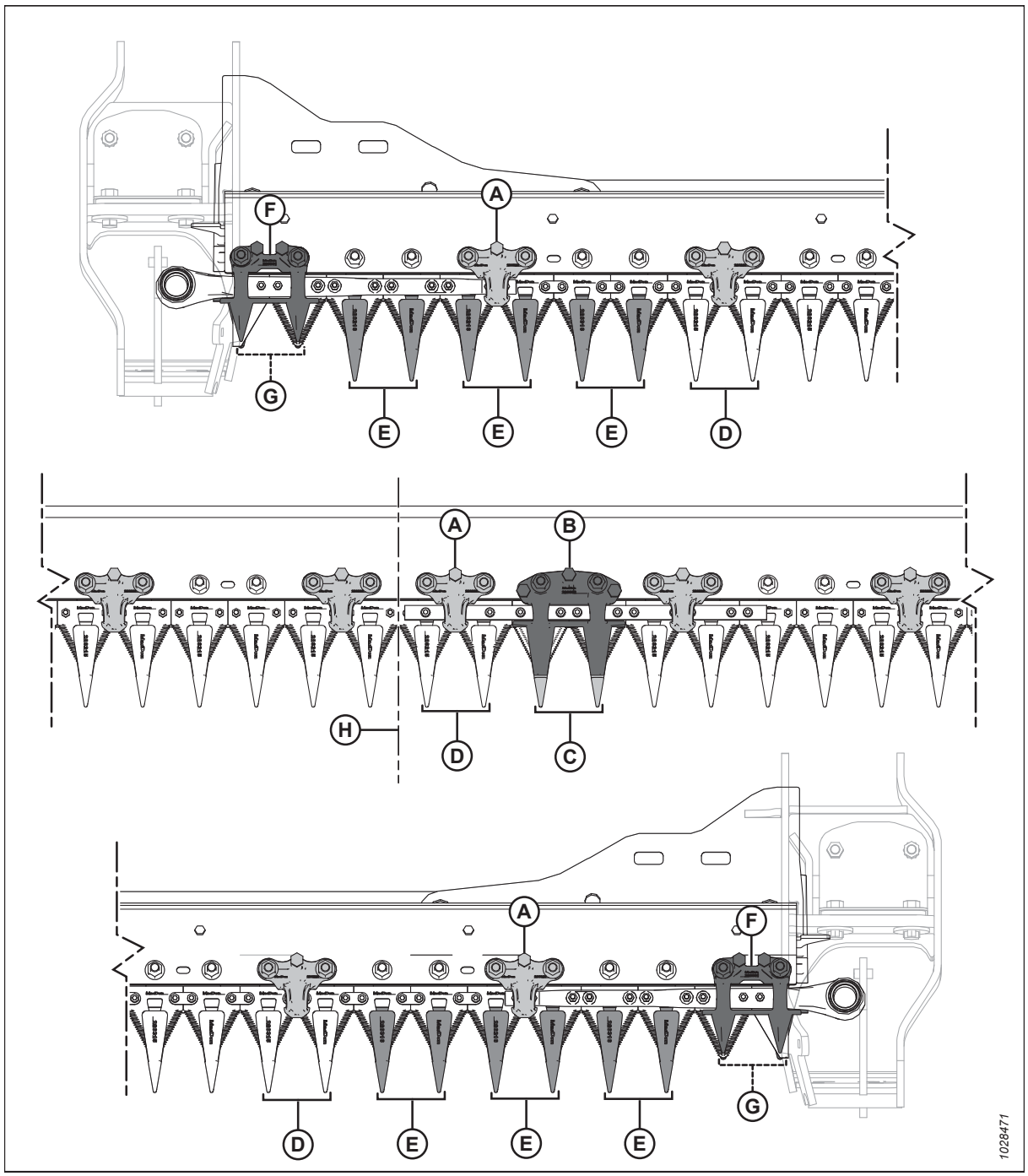


Figure 4.130: Pointed Knife Guard and Hold-Down Locations – FD245 Double-Knife Header

A - Pointed Hold-Down (MD #286329)[90]
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - PlugFree™ Hold-Down (MD #286331)
G - PlugFree™ Guard (without Wear Bar) (MD #286319)
H - Center of Header

90. There should always be a hold down on the guard to the right of the center guard, regardless of the pattern.

Pointed Knife Guards Configuration on Double-Knife Header – FD250

Guards are configured differently on different sized headers. The illustration provided here shows pointed knife guards installed on double-knife headers.

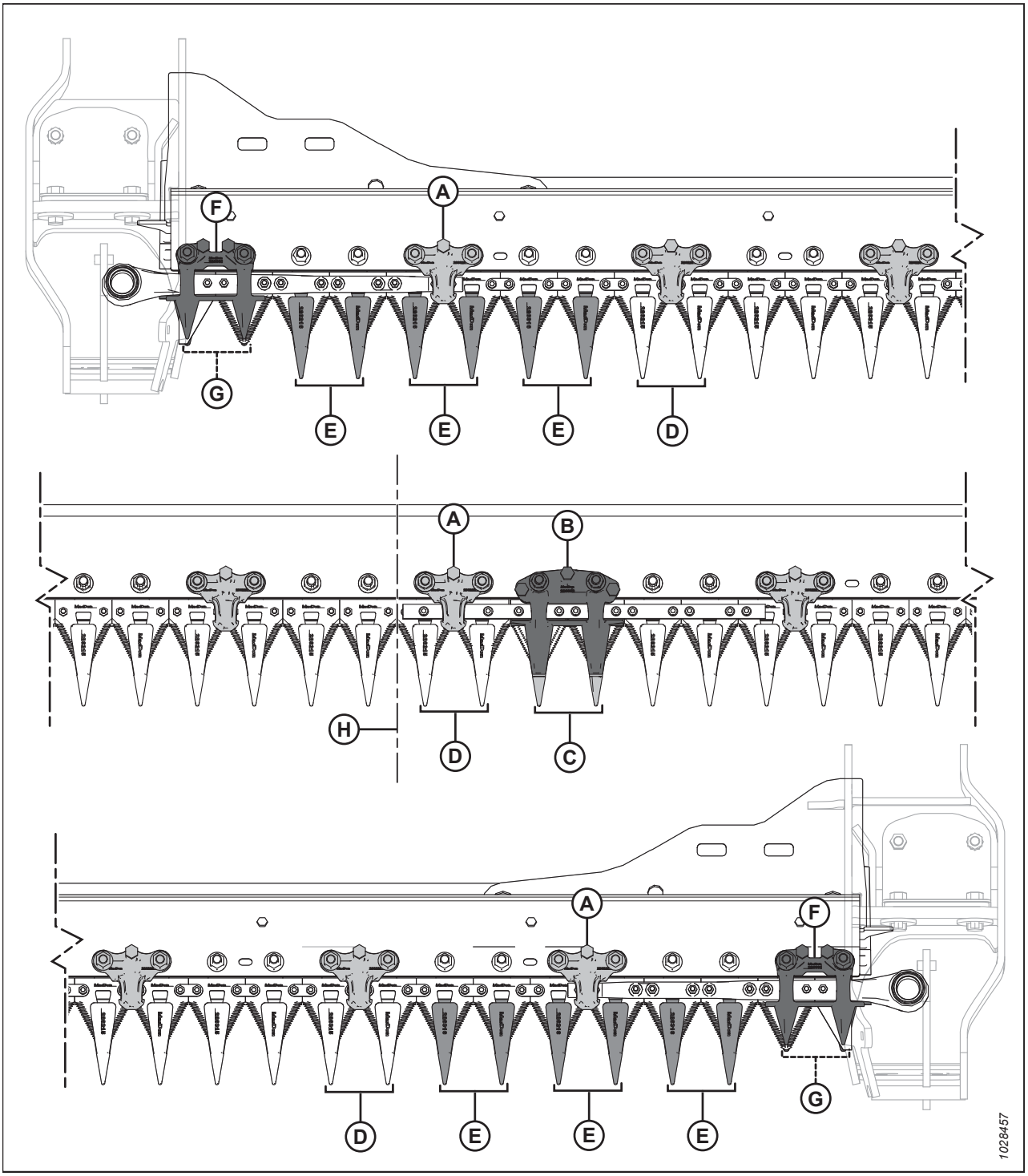


Figure 4.131: Pointed Knife Guard and Hold-Down Locations – FD250 Double-Knife Header

A - Pointed Hold-Down (MD #286329)
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Guard (without Wear Bar) (MD #286316)
F - Short Knife Hold-Down (MD #286331)
G - Short Knife Guard (without Wear Bar) (MD #286319)
H - Center of Header

Adjusting Knife Guards and Guard Bar

If a knife guard or the guard bar is misaligned due to contact with a rock or obstruction, use the guard straightening tool to correct the alignment.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. To adjust the guard tips upwards, position the tool as shown and pull up.

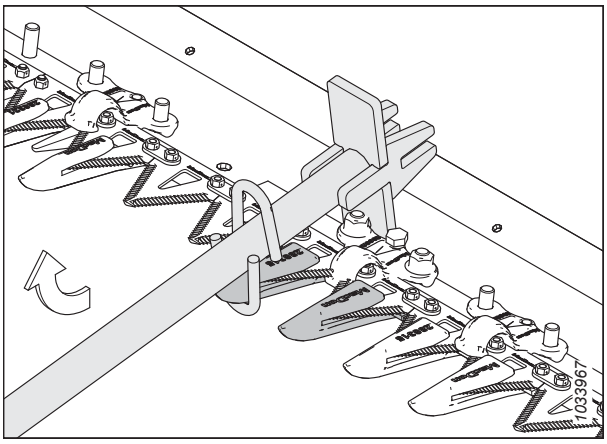


Figure 4.132: Upward Adjustment – Pointed Guard

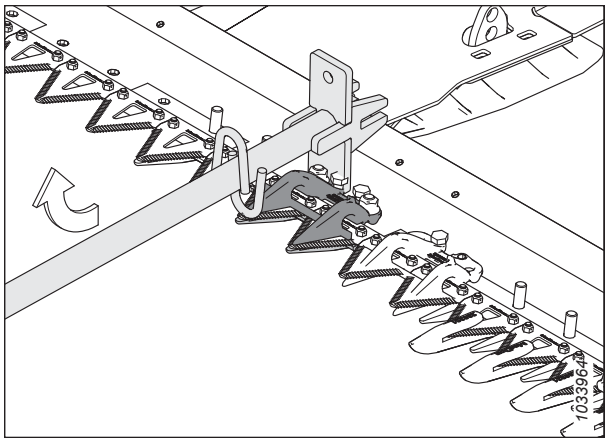


Figure 4.133: Upward Adjustment – Short Knife Guard

6. To adjust the guard tips downwards, position the tool as shown and push down.

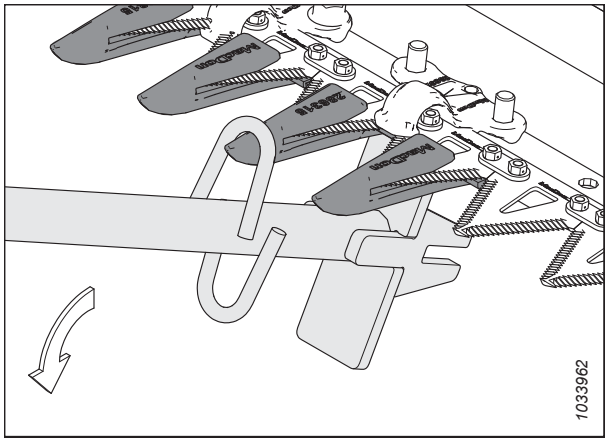


Figure 4.134: Downward Adjustment – Pointed Guard

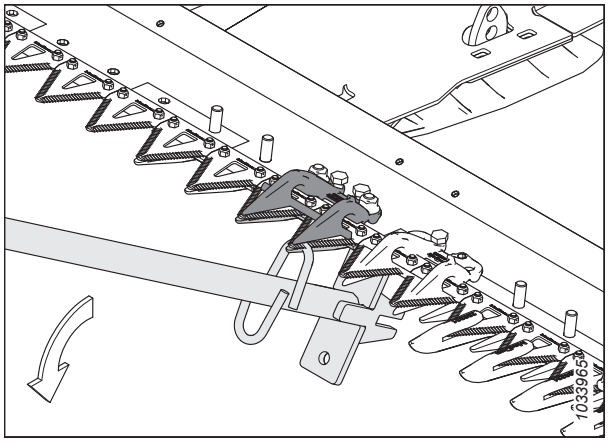


Figure 4.135: Downward Adjustment – Short Knife Guard

7. To adjust the guard bar, position the tool as shown, then push down or pull up on the tool accordingly.

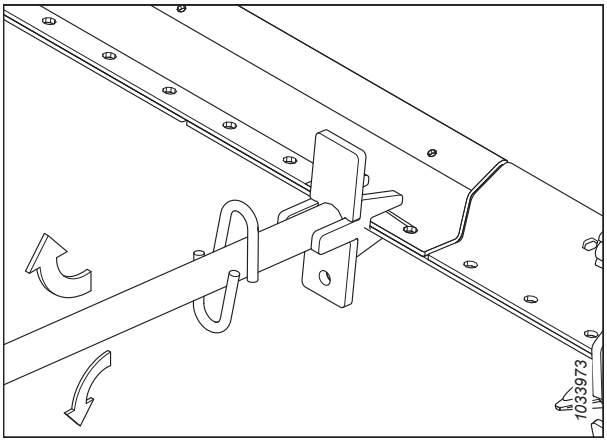


Figure 4.136: Guard Bar Adjustment – No Guards

Replacing Pointed Knife Guards

The guards eventually become dull and need to be replaced. This procedure is for replacing standard guards and the special (drive side) guards closest to the knife drive motor.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

IMPORTANT:

When replacing the pointed knife guards, ensure that the hold-down sequence is correct for your header type and width. For more information, refer to *4.8.7 Pointed Knife Guards and Hold-Downs, page 573*.

NOTE:

A Four-Point Guard kit can be used to replace the knife guards. The four-point guard is ideal for use in rocky conditions, or for harvesting shatter-prone crops such as lentils. For more information, refer to the header parts catalog.

IMPORTANT:

Single- and double-knife headers: On both ends of the header, position 1 (outboard guard) is a short knife guard. On the drive side(s) of the header, positions 2, 3, and 4 are pointed end knife guards (without wear bars). Starting at position 5, the remaining guards are pointed knife guards. Ensure that the proper replacement guards are installed at these locations.

IMPORTANT:

Double-knife headers: A pointed center knife guard is installed where the two knives overlap. The pointed center knife guard has a slightly different replacement procedure. For instructions, refer to *Replacing Pointed Center Knife Guard – Double-Knife Header, page 587*.

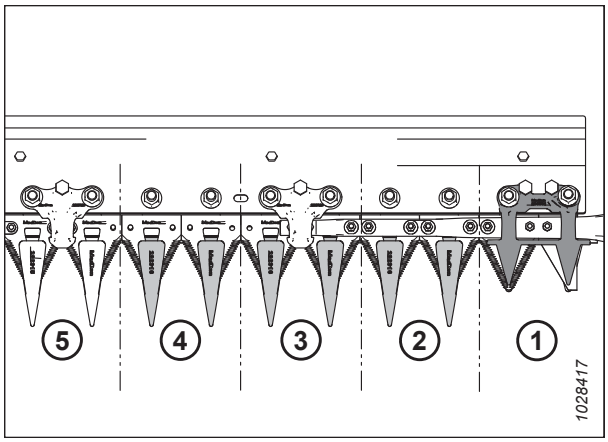


Figure 4.137: Drive Side Pointed Knife Guards

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
6. Rotate the flywheel attached to the knife drive box to adjust the knife position until the knife sections are spaced midway between the guards.
7. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.
8. Remove two nuts and bolts (B) securing pointed knife guard (A) and hold-down (C) (if applicable) to the cutterbar.
9. Remove pointed knife guard (A), hold-down (C), and the plastic wearplate. Discard the pointed knife guard.

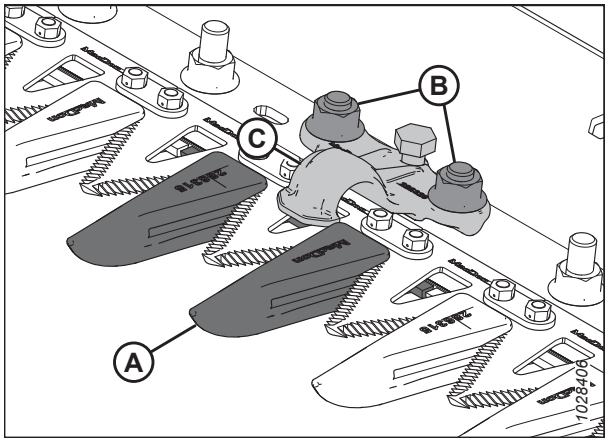


Figure 4.138: Pointed Knife Guards

10. Position plastic wearplate (A) and replacement pointed knife guard (B) under the cutterbar.

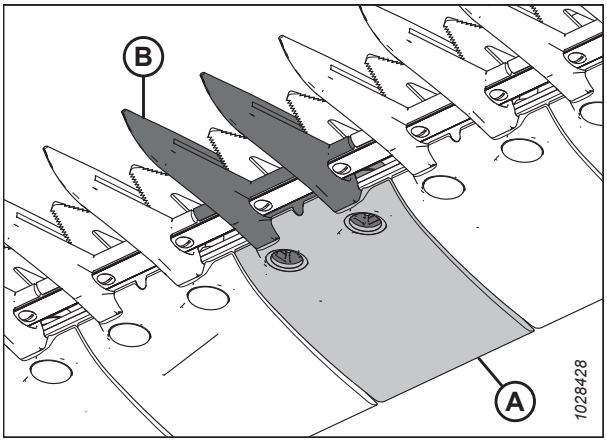


Figure 4.139: Pointed Knife Guard and Wearplate

11. Position hold-down (A) (if applicable), then loosen adjustment bolt (C) so that it does not protrude from the bottom of the hold-down.
12. Secure the pointed knife guard, the wearplate, and the hold-down (if applicable) with two bolts and nuts (B). Torque the nuts to 85 Nm (63 lbf·ft).
13. If there is a hold-down at this location, refer to *Adjusting Hold-Down – Pointed Knife Guards, page 586*.

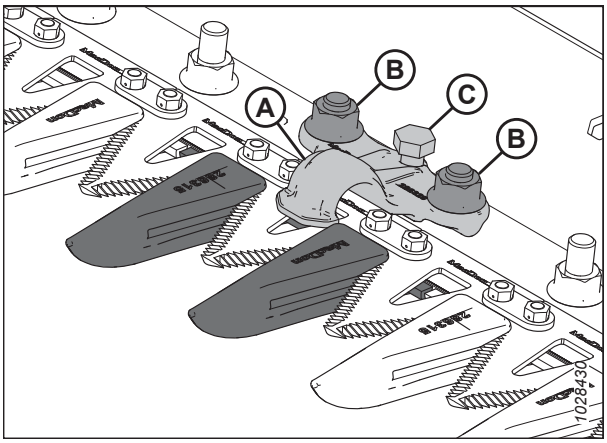


Figure 4.140: Pointed Knife Guards

Checking Hold-Down – Pointed Knife Guards

The pointed knife guard hold-downs prevent the knife sections on the cutterbar from lifting off of the guards, while still allowing the knife to slide. Inspect the hold-downs to ensure that there is an adequate clearance between the hold-downs and knife sections.

This procedure is for standard hold-downs. To check the center hold-down on double-knife headers, refer to *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 590*.

NOTE:

Align the guards before adjusting the hold-down. For instructions, refer to *Adjusting Knife Guards and Guard Bar, page 581*.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
6. Rotate the flywheel attached to the knife drive box to position knife section (A) under hold-down (B), and between guard (C).
7. Push down on knife section (A) with approximately 44 N (10 lbf) of force, and use a feeler gauge to measure the clearance between hold-down (B) and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).
8. If adjustment is necessary, refer to *Adjusting Hold-Down – Pointed Knife Guards, page 586*.
9. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

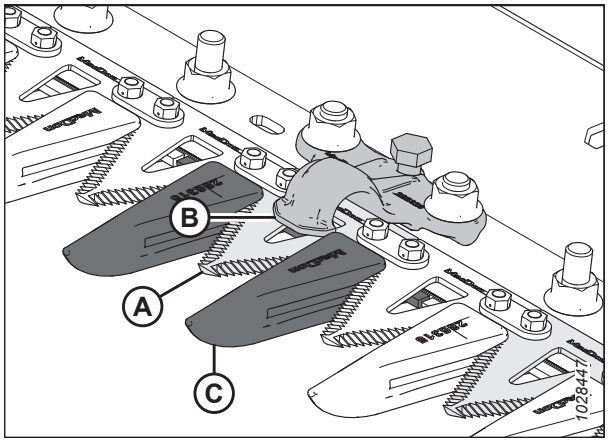


Figure 4.141: Pointed Guard Hold-Down

Adjusting Hold-Down – Pointed Knife Guards

If a pointed or four-point knife guard hold-down is binding the knife, adjust the hold-down.

This procedure applies to standard hold-downs. To adjust the center hold-down on double-knife headers, refer to *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 591*.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Align the guards. For instructions, refer to *Adjusting Knife Guards and Guard Bar, page 581*.
2. Start the engine.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Adjust the hold-down clearance as follows:
   - To lower the front of hold-down (A) and decrease the clearance, rotate adjuster bolt (B) clockwise.
   - To raise the front of hold-down (A) and increase the clearance, rotate adjuster bolt (B) counterclockwise.

   NOTE:

   For larger adjustments, it may be necessary to loosen nuts (C)before rotating adjuster bolt (B). After adjustment, retighten the nuts to 85 Nm (63 lbf·ft).
7. Check the hold-down clearance. For instructions, refer to *Checking Hold-Down – Pointed Knife Guards, page 585*.

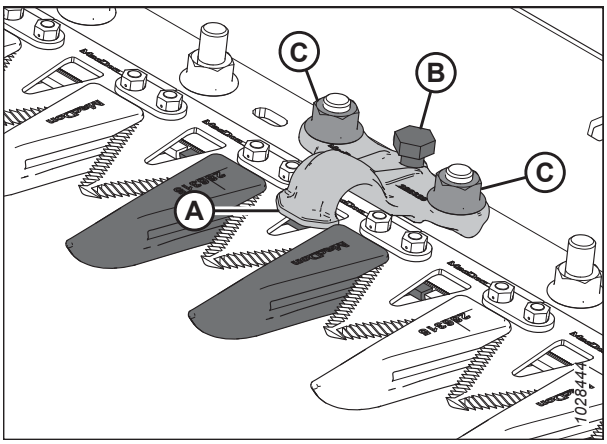


Figure 4.142: Pointed Hold-Down

8. Run the engine at a low idle and listen for noise caused by insufficient clearance. Repeat Step *6, page 587* to Step *7, page 587* if necessary.

   IMPORTANT:

   An insufficient hold-down clearance will cause the knife and the guards to overheat.

Replacing Pointed Center Knife Guard – Double-Knife Header

The guard at the center of a double-knife header (where the two knives overlap) requires a different replacement procedure than a pointed knife guard.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.

5. Remove two nuts and bolts (C) securing guard (A) and hold-down (B) to the cutterbar.

6. Remove guard (A), plastic wearplate, and hold-down (B).

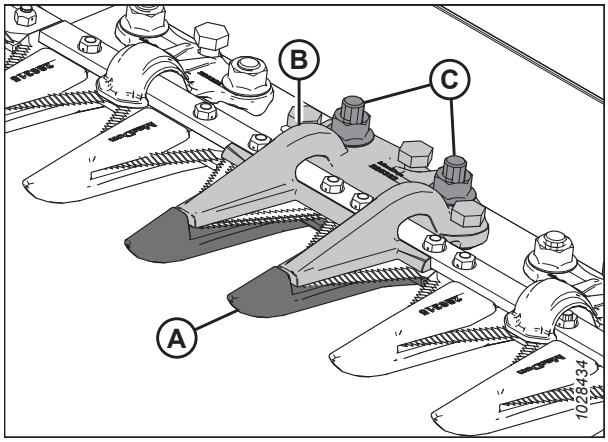


Figure 4.143: Pointed Center Knife Guard

IMPORTANT:

Ensure that the replacement guard is the correct guard with offset cutting surfaces (A).

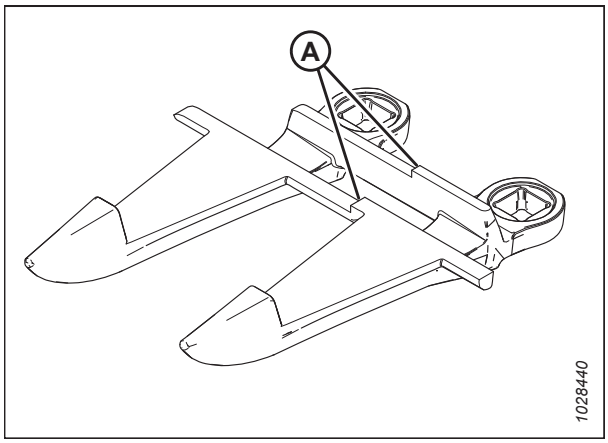


Figure 4.144: Pointed Center Knife Guard

7. Before installing the new pointed center knife guard, ensure overlap shim (A) is present under the cutterbar, and that the thick end of the shim is positioned under the center guard.

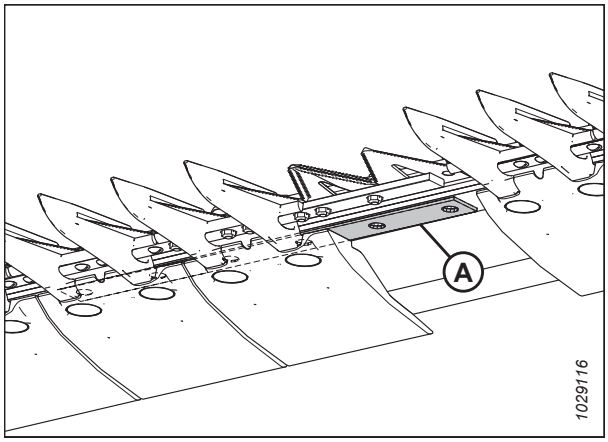


Figure 4.145: Cutterbar

8. Position plastic wearplate (A) and new guard (B) under the cutterbar.

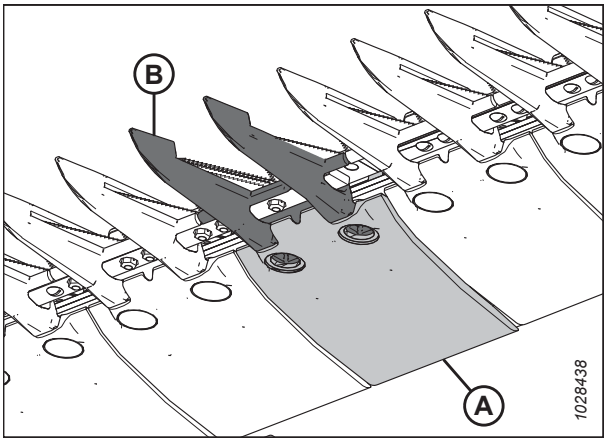


Figure 4.146: Pointed Center Knife Guard and Wearplate

9. Install three adjustment bolts (A) so that they are protruding 4 mm (5/32 in.) from the bottom of pointed center hold-down (B).
10. Position center hold-down (B) onto the cutterbar.

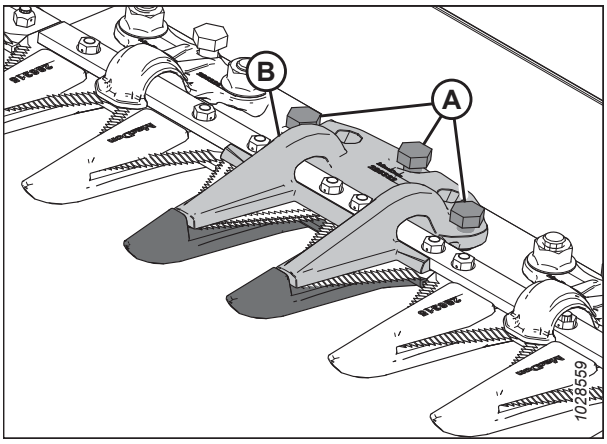


Figure 4.147: Pointed Center Knife Guard

11. Secure pointed center hold-down (A) with two bolts and nuts (B), but do **NOT** tighten the hardware at this time.

    IMPORTANT:

    Hold-down (A) must accommodate two overlapping knives at the center guard location. Ensure that the proper replacement guard is installed at this location.

12. Adjust the hold-down until the clearance is acceptable.
    - For adjustment instructions, refer to *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 591*.
    - For clearance specifications, refer to *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 590*.
13. Torque nuts (B) to 85 Nm (63 lbf·ft).

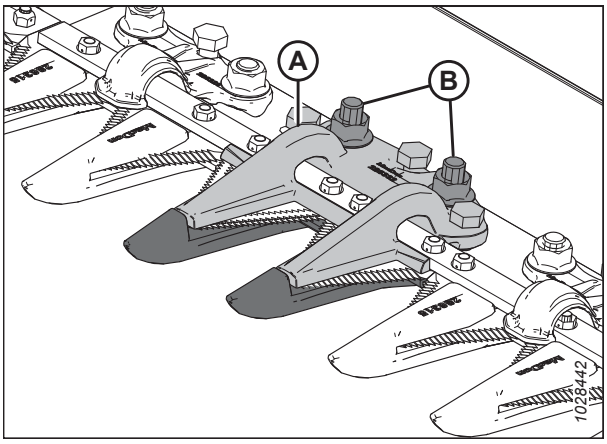


Figure 4.148: Pointed Center Knife Guard

Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards

The pointed center knife guard hold-down prevents the center knife section on the cutterbar from lifting off of the guard while still allowing the knives to slide. Inspect the center hold-down to ensure that there is adequate clearance between the hold-down and the center knife section.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
6. Rotate the flywheel attached to the knife drive box to position the knife fully inboard until the knife sections are under hold-down (A). Repeat this step to move the other knife.
7. Push down on the knife section with approximately 44 N (10 lbf) of force, and use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure the clearance is as follows:
   - At tip (B) of hold-down: 0.1–0.5 mm (0.004–0.020 in.)
   - At rear (C) of hold-down: 0.1–1.0 mm (0.004–0.040 in.)
8. If adjustment is required, refer to *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 591*.
9. After tightening nuts (D), recheck the clearance and adjust if necessary.
10. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

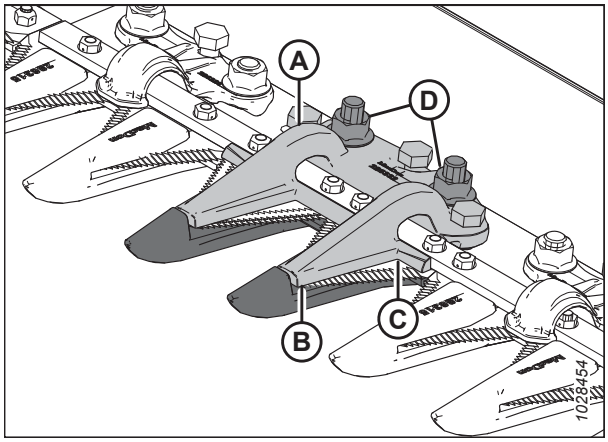


Figure 4.149: Pointed Center Hold-Down

Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards

If the pointed center knife guard hold-down is binding the knife, adjust the center hold-down.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Loosen mounting hardware (B).
6. Adjust the hold-down clearance as follows:
   - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten).
   - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen).
7. To adjust the clearance at the hold-down tip only, use adjustment bolt (C) as follows:
   - To increase the clearance, rotate adjuster bolt (C) counterclockwise (loosen).
   - To decrease the clearance, rotate adjuster bolt (C) clockwise (tighten).

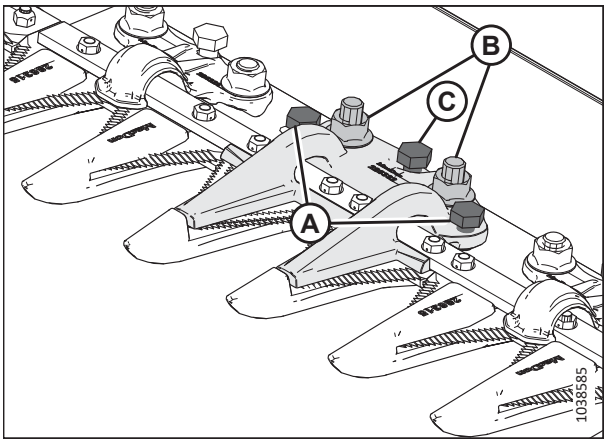


Figure 4.150: Pointed Center Hold-Down

8. Tighten nuts (B) to 85 Nm (63 lbf·ft).
9. Run the engine at a low idle, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   An insufficient hold-down clearance will cause the knife and the guards to overheat.
10. Check the center guard clearance. For more information, refer to *Checking Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 590*.

4.8.8 Short Knife Guards and Hold-Downs

Short knife guards make the knife less likely to plug in wet or muddy conditions and in tough crops such as grasses and canola.

The following knife guards and hold-downs are used in short knife guard configurations:

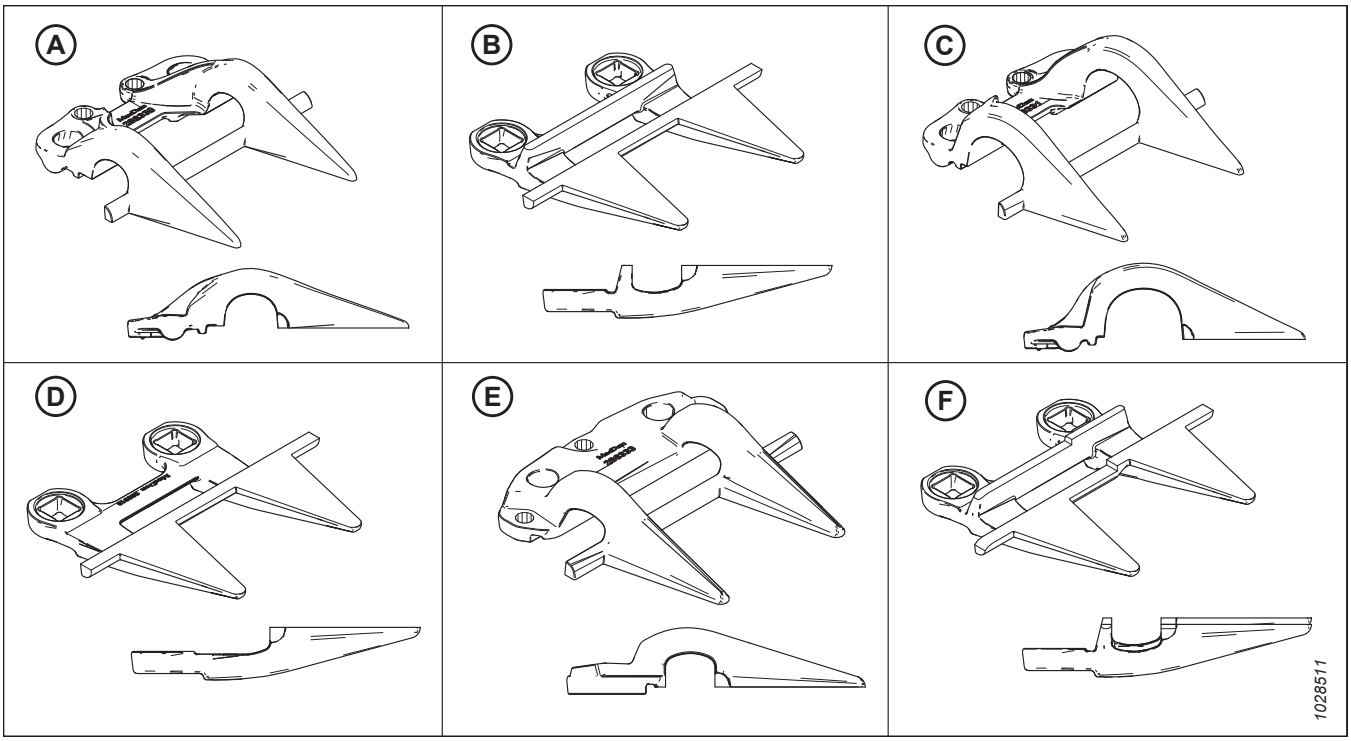


Figure 4.151: Guard and Hold-Down Types used in Short Knife Guard Configurations

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down (MD #286331)[91]
D - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[92]
E - PlugFree™ Center Hold-Down (MD #286333)[93]
F - PlugFree™ Center Knife Guard (MD #286320)[93]

The guards are configured differently on different headers. When replacing the short knife guards and the hold-downs, ensure that you use the correct sequence for your header. The following list will guide you to the different guard configurations:

- *Short Knife Guard Configuration on Single-Knife Headers, page 593*
- *Short Knife Guard Configuration on Double-Knife Headers – All Sizes Except D241, page 594*
- *Short Knife Guard Configuration on Double-Knife Headers – FD241, page 595*

91. Installed in positions 1–3 on the drive side(s); installed in position 1 at the right end of single-knife headers.
92. Installed in positions 1–4 on the drive side(s). Single-knife headers use a standard guard (MD #286318) on the right end.
93. Double-knife headers only.

Short Knife Guard Configuration on Single-Knife Headers

The guards are configured differently on different sized headers. The illustration provided here shows short knife guards installed on single-knife headers.

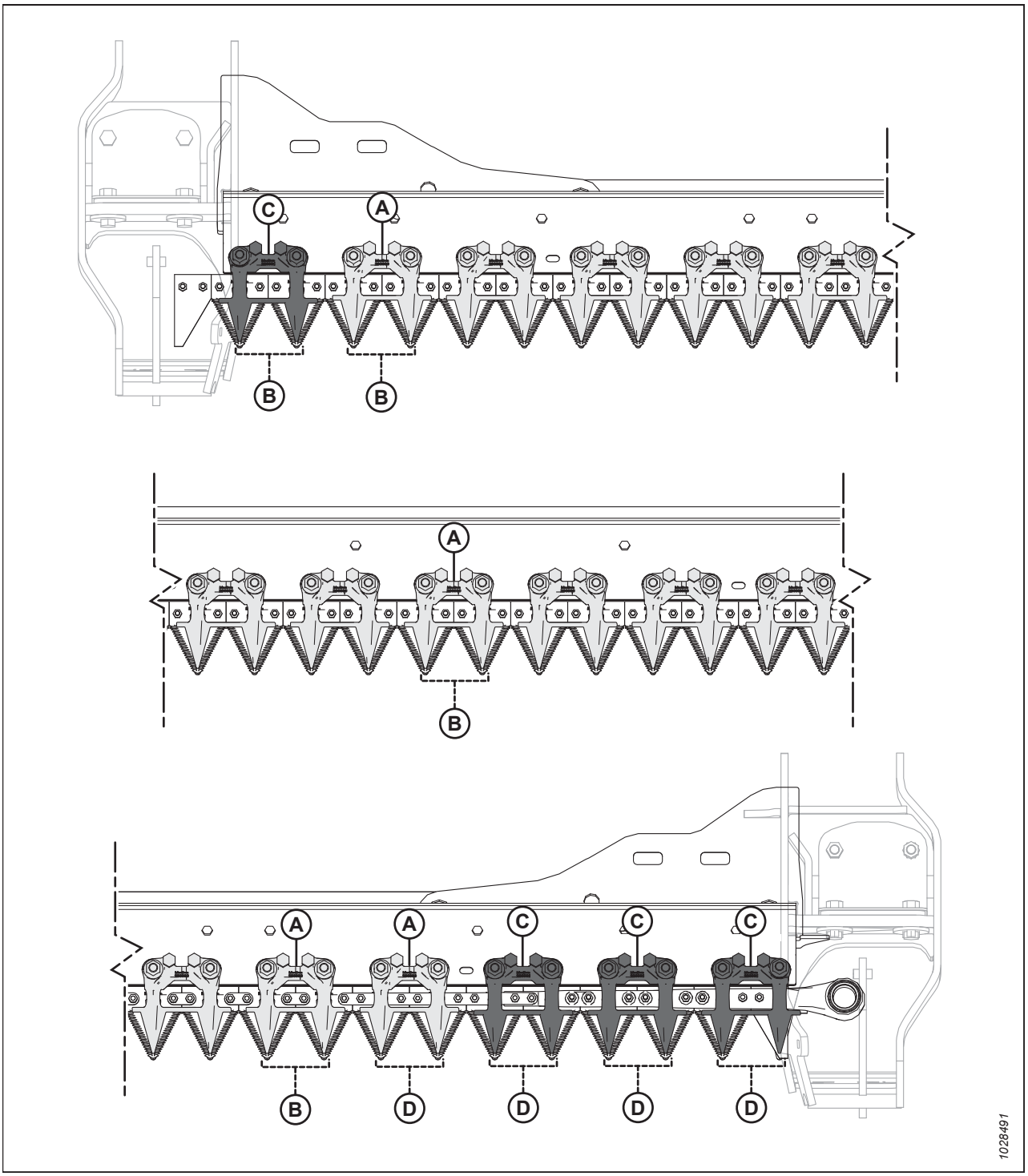


Figure 4.152: Short Knife Guard and Hold-Down Locations – Single-Knife Headers

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Guard (MD #286318)
C - PlugFree™ End Hold-Down (x4) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x5) (MD #286319)

Short Knife Guard Configuration on Double-Knife Headers – All Sizes Except D241

Guards are configured differently on different sized headers. This illustration shows short knife guards installed on double-knife headers.

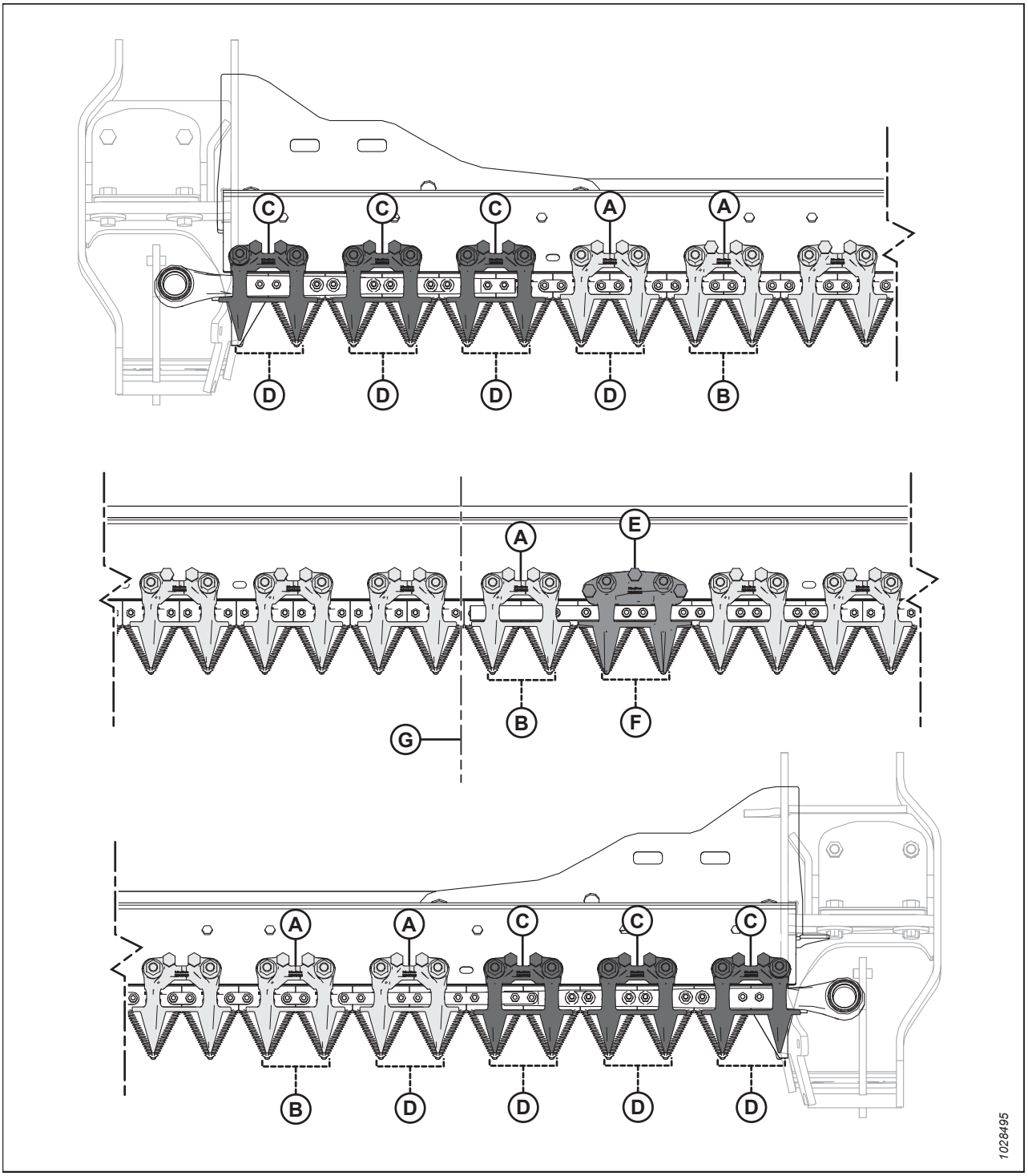


Figure 4.153: Short Knife Guard and Hold-Down Locations – Double-Knife Headers

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Guard (MD #286318)
C - PlugFree™ End Hold-Down (x6) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x8) (MD #286319)
E - PlugFree™ Center Hold-Down (MD #286333)
F - PlugFree™ Center Knife Guard (MD #286320)
G - Center of Header

Short Knife Guard Configuration on Double-Knife Headers – FD241

The guards are configured differently on different sized headers. The illustration provided here shows short knife guards installed on double-knife headers.

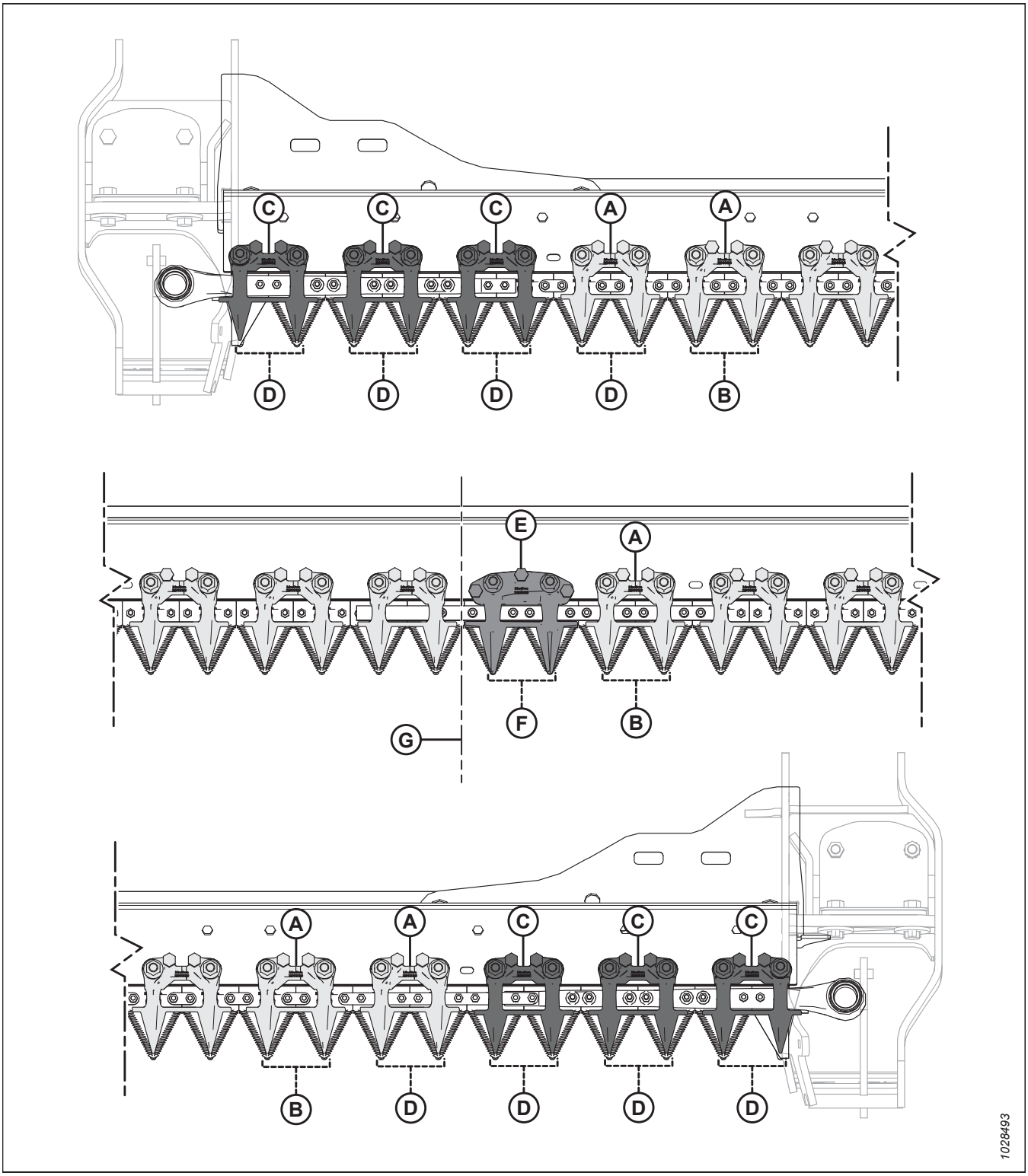


Figure 4.154: Short Knife Guard and Hold-Down Locations – FD241 Double-Knife Header

A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Guard (MD #286318)
C - PlugFree™ End Hold-Down (x6) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x8) (MD #286319)
E - PlugFree™ Center Hold-Down (MD #286333)
F - PlugFree™ Center Knife Guard (MD #286320)
G - Center of Header

Replacing Short Knife Guards or End Knife Guards

Short knife guards or end knife guards are installed at the factory and make the knife less likely to plug in wet or muddy conditions and in tough crops such as grasses and canola.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

IMPORTANT:

The center knife guard for a double-knife header has a slightly different replacement procedure. For instructions, refer to *Replacing Center Knife Guard – Double-Knife Headers, page 600*.

To replace a short knife guard or an end knife guard, follow these steps:

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Remove two nuts and bolts (A) securing short knife guard (B) and hold-down (C) to the cutterbar.
6. Remove short knife guard (B), hold-down (C), and the plastic wearplate.

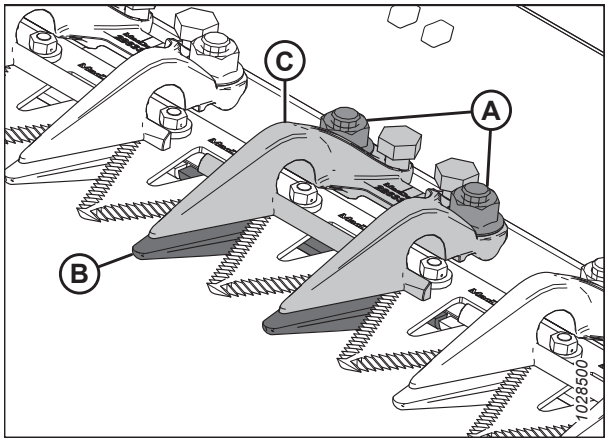


Figure 4.155: Short Knife Guards

IMPORTANT:

End knife guards are the first four knife guards (A) on the drive sides of the header and do **NOT** have wear bars. Install the proper replacement knife guards at these locations.

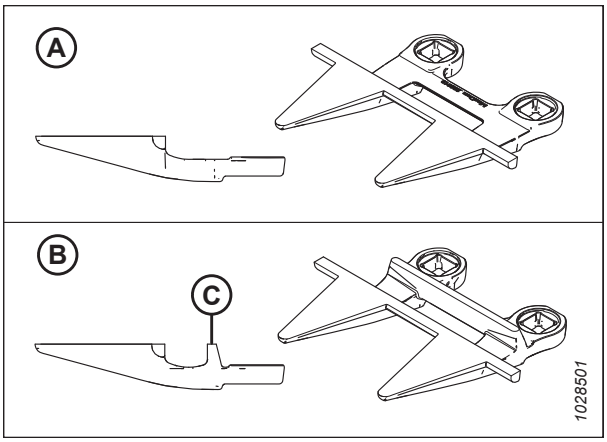


Figure 4.156: End Knife Guard and Short Knife Guards

A - Plug Free™ End Knife Guard (MD #286319)
B - Plug Free™ Guard (with Wear Bar [C]) (MD #286318)

7. Position plastic wearplate (A) and replacement short knife guard (B) under the cutterbar.

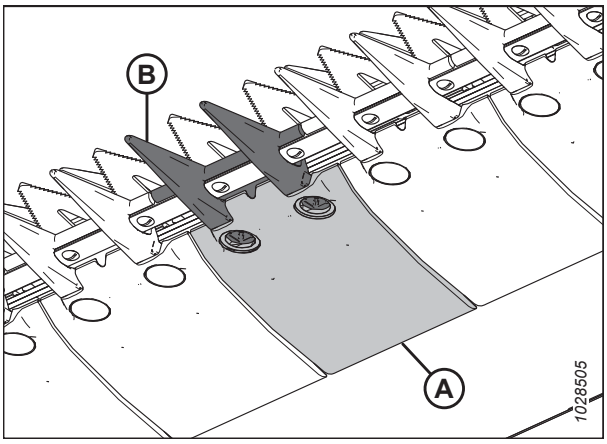


Figure 4.157: Short Knife Guard and Wearplate

8. Position hold-down (A) and loosen adjustment bolts (B) so that they are not protruding from the bottom of the hold-down.
9. Secure the short knife guard, the wearplate, and the hold-down with bolts and nuts (C). Do **NOT** tighten the nuts yet.
10. Adjust the hold-down until the clearance is acceptable.
    - For adjustment instructions, refer to *Adjusting Hold-Down – Short Knife Guards, page 599*.
    - For clearance specifications, refer to *Checking Hold-Down – Short Knife Guards, page 598*.
11. Tighten nuts (C) to 85 Nm (63 lbf·ft).

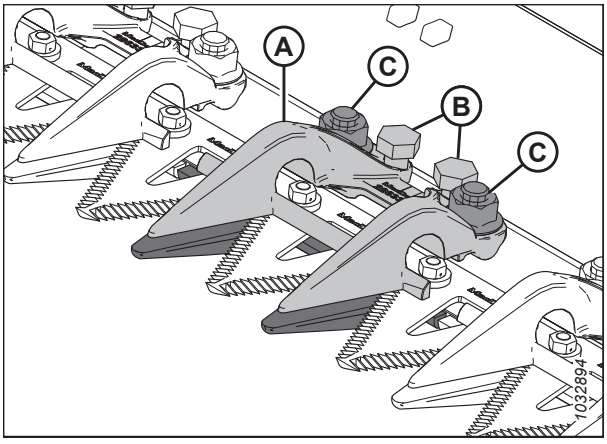


Figure 4.158: Short Knife Guard

12. Check the clearance.
    - If the clearance is acceptable, the installation of the hold-down is complete.
    - If the clearance is unacceptable, repeat Step *10, page 597* to Step *12, page 598*.
13. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 38*.

Checking Hold-Down – Short Knife Guards

The short knife guard hold-downs prevent the knife sections on the cutterbar from lifting off of the guards while still allowing the knife to slide. Inspect the hold-downs to ensure that there is adequate clearance between the hold-downs and knife sections.

To check the center hold-down on double-knife headers, refer to *Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 602*.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Rotate the flywheel attached to the knife drive box to position the knife inboard until the knife sections are under hold-down (A).
6. Push down on the knife section with approximately 44 N (10 lbf) of force and use a feeler gauge to measure the clearance between the tip of hold-down (B) and the knife section. Ensure that the clearance is 0.1–0.5 mm (0.004–0.020 in.).
7. If adjustment is required, refer to *Adjusting Hold-Down – Short Knife Guards, page 599*.

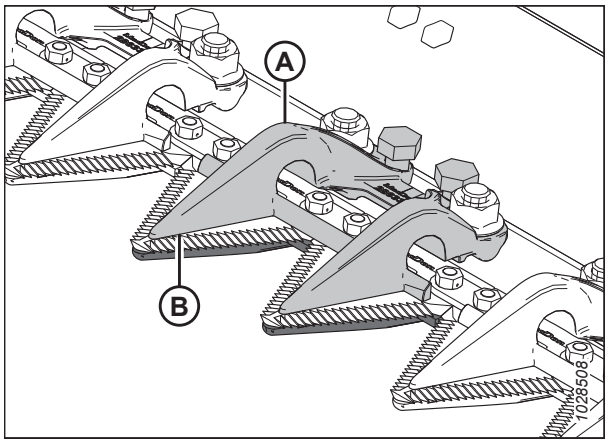


Figure 4.159: Short Knife Guards

Adjusting Hold-Down – Short Knife Guards

If a short knife guard hold-down is binding its knife, adjust the hold-down.

To adjust the center hold-down on double-knife headers, refer to *Adjusting Center Hold-Down – Short Knife Guards, page 603*.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Adjust the hold-down clearance as follows:
   - To decrease the clearance, rotate adjuster bolts (A) clockwise.
   - To increase the clearance, rotate adjuster bolts (A) counterclockwise.

   NOTE:

   For larger adjustments, loosen nuts (B) before rotating adjuster bolts (A). After adjustment, retighten the nuts to 85 Nm (63 lbf·ft).

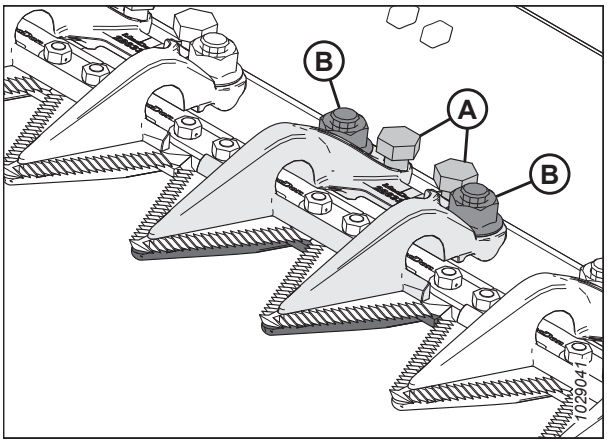


Figure 4.160: Short Knife Guard Hold-Down

6. Run the header at a low idle, and listen for noise caused by insufficient clearance. Adjust the header as necessary.

   IMPORTANT:

   An insufficient hold-down clearance will cause the knife and the guards to overheat.

7. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 38*.

Replacing Center Knife Guard – Double-Knife Headers

The offset guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure than a standard guard.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Remove two nuts and bolts (C) securing center knife guard (A) and hold-down (B) to the cutterbar.
6. Remove center knife guard (A), plastic wearplate, and hold-down (B).

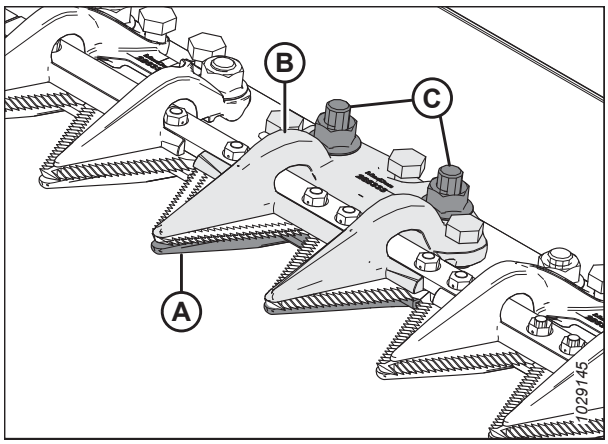


Figure 4.161: Center Knife Guard

IMPORTANT:

Ensure that the replacement center knife guard is the correct guard with offset cutting surfaces (A).

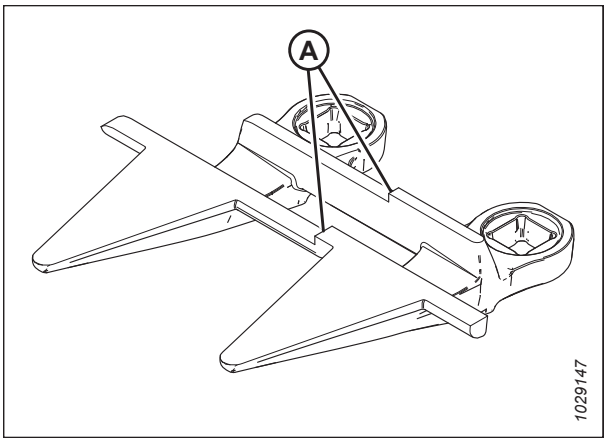


Figure 4.162: Center Knife Guard

7. Before installing the new center knife guard, ensure overlap shim (A) is under the cutterbar, and that the thick end of the shim is positioned under the center knife guard.

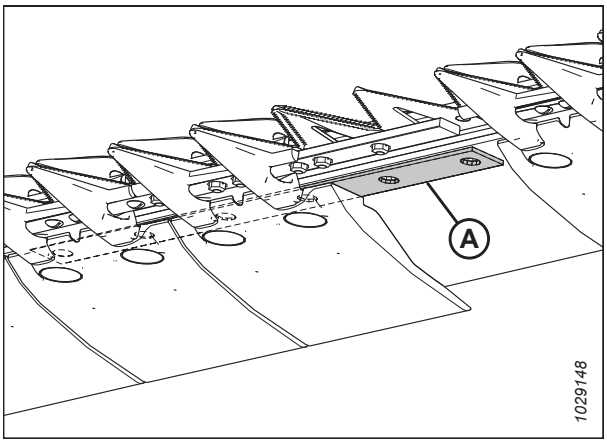


Figure 4.163: Cutterbar

8. Position plastic wearplate (A) and new center knife guard (B) under the cutterbar.

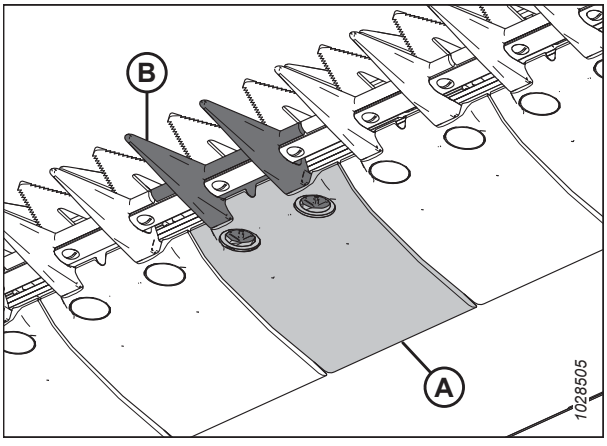


Figure 4.164: Center Knife Guard and Wearplate

9. Thread three adjustment bolts (A) so that they protrude 4 mm (5/32 in.) from the bottom of center hold-down (B).

10. Position center hold-down (B) onto the cutterbar.

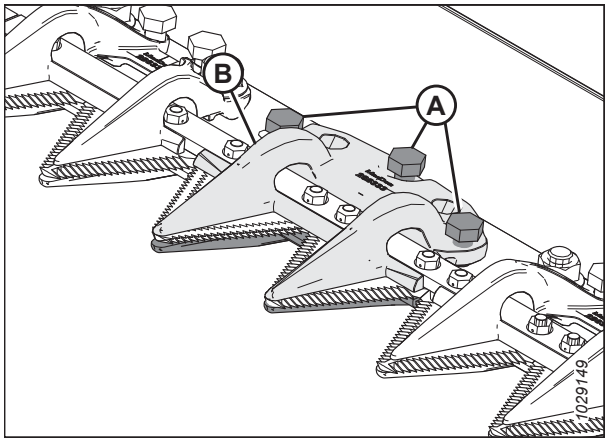


Figure 4.165: Center Knife Guard

11. Secure center hold-down (A) with two bolts and nuts (B), but do **NOT** tighten the nuts at this time.

    IMPORTANT:

    Hold-down (A) must accommodate two overlapping knives at the center knife guard location. Install the proper replacement center knife guard at this location.

12. Adjust the hold-down until the clearance is acceptable.

    - For adjustment instructions, refer to *Adjusting Center Hold-Down – Short Knife Guards, page 603*.
    - For clearance specifications, refer to *Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards, page 602*.

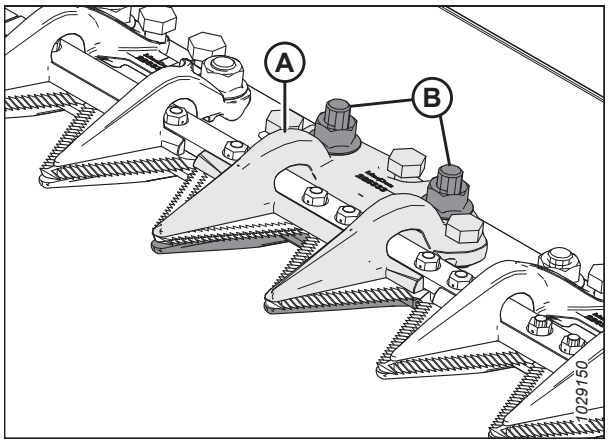


Figure 4.166: Center Knife Guard

13. Tighten nuts (B) to 85 Nm (63 lbf·ft).

Checking Center Hold-Down on Double-Knife Headers – Short Knife Guards

The short center knife guard hold-down prevents the center knife sections on the cutterbar from lifting off of the guard while still allowing the knife to slide. Inspect the center hold-down to ensure that there is adequate clearance between the hold-down and the center knife sections.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
6. Rotate the flywheel attached to the knife drive box to position the knife inboard until the knife section is under hold-down (A). Repeat this step to move the other knife.
7. Push down on the knife section with approximately 44 N (10 lbf) of force. Use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure that the clearance is as follows:
   - At tip (B) of hold-down: 0.1–0.5 mm (0.004–0.020 in.)
   - At rear (C) of hold-down: 0.1–1.0 mm (0.004–0.040 in.)
8. If adjustment is required, refer to *Adjusting Center Hold-Down – Short Knife Guards, page 603*.
9. Tighten nuts (D), recheck the clearance, and adjust if necessary.
10. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

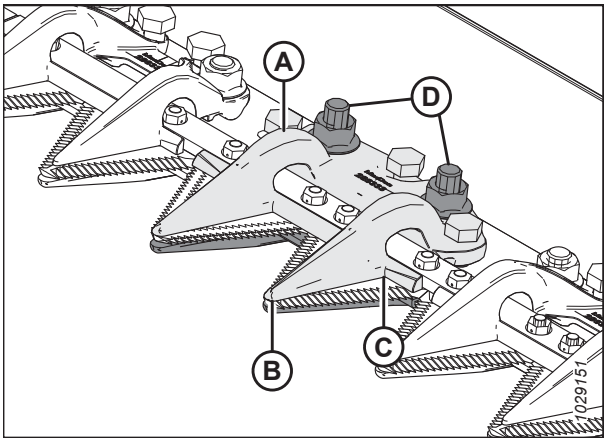


Figure 4.167: Center Knife Guard Hold-Down

Adjusting Center Hold-Down – Short Knife Guards

If a short knife guard hold-down is binding the knife, adjust the hold-down.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

WARNING

Wear heavy gloves when working around or handling knives.

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.

4. Loosen mounting hardware (B).
5. Adjust the hold-down clearance as follows:
   - To increase the clearance, rotate adjuster bolts (A) clockwise (tighten).
   - To decrease the clearance, rotate adjuster bolts (A) counterclockwise (loosen).
6. To adjust the clearance at the tip of the hold-down, turn adjustment bolt (C) as follows:
   - To increase the clearance, turn adjuster bolt (C) counterclockwise (loosen).
   - To decrease the clearance, turn adjuster bolt (C) clockwise (tighten).

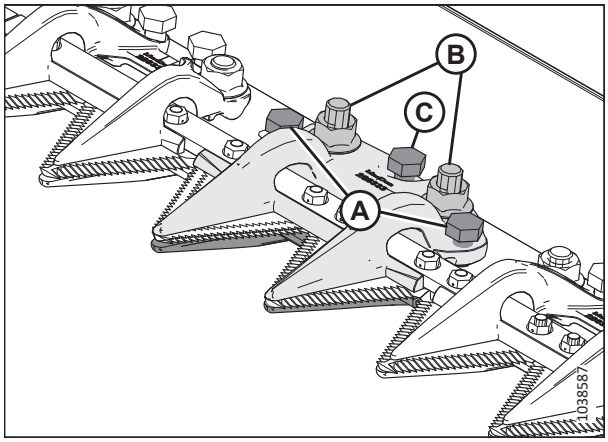


Figure 4.168: Center Hold-Down

7. Torque nuts (B) to 85 Nm (63 lbf·ft).
8. Run the engine at a low idle while listening for noise caused by insufficient clearance. Adjust the knives as necessary.

   IMPORTANT:

   An insufficient hold-down clearance will cause the knife and the guards to overheat.

4.8.9 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cutout.

IMPORTANT:

Remove the shields when using the cutterbar on the ground in muddy conditions. The mud may pack into the cavity behind the shield, resulting in knife drive box failure.

Installing Knifehead Shield

The knifehead shield is primarily used in rice and fine grasses to keep the crop from getting caught in the delivery opening. The knifehead shield is not recommended in all conditions.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

Wear heavy gloves when working around or handling knives.

IMPORTANT:

Remove the shields when using the cutterbar on the ground in muddy conditions. The mud may pack into the cavity behind the shield, resulting in knife drive box failure. If the shields are required in muddy conditions, check the cavity behind the shield frequently and remove any packed mud.

1. Start the engine.
2. Raise the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Retrieve the knifehead shields from the manual storage case.
7. Place knifehead shield (A) against the endsheet as shown. Align the shield so that the cutout matches the profile of the knifehead and/or the hold-downs.
8. Align the mounting holes and secure the shield with two M10 x 30 hex head bolts, washers (B), and nuts.
9. Tighten bolts (B) just enough to hold knifehead shield (A) in place while allowing the shield to be adjusted as close to the knifehead as possible.
10. Manually rotate the knife drive box pulley to move the knife and check for areas of contact between the knifehead and knifehead shield (A). If necessary, adjust the shield to eliminate any interference with the knife.
11. Torque bolts (B) to 11 Nm (97 lbf·in).

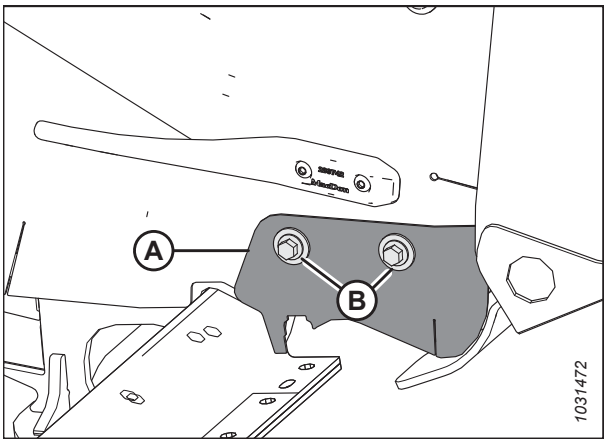


Figure 4.169: Knifehead Shield

4.9 Knife Drive System

The knife drive system transforms pumped hydraulic pressure into a mechanical motion that strokes a series of serrated knife blades at the front of the header to cut a variety of crops.

4.9.1 Knife Drive Box

The knife drive box is driven by a hydraulic motor and converts rotational motion into the reciprocating motion of the knife.

Single-knife headers have a knife drive box (A) and motor (B) on the left side of the header; double-knife headers have a knife drive box and motor at each end of the header.

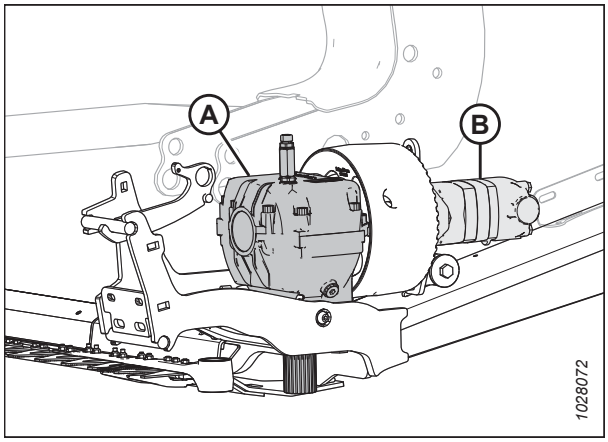


Figure 4.170: Left Knife Drive Box Shown – Right Similar

Checking Oil Level in Knife Drive Box

There must be a sufficient level of oil in each knife drive box for the knife drive to work correctly. You can inspect the oil level using the dipstick installed in each knife drive.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Ensure that the header is level.
3. Lower the header fully.
4. Adjust the header angle so that the top of the knife drive box is level with the ground.
5. Shut down the engine, and remove the key from the ignition.
6. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.

7. Remove oil level dipstick (A). Check the oil level. The oil level must be within range (B), between the lines near the bottom of the dipstick.
8. Reinstall oil level dipstick (A). Tighten the dipstick to 23 Nm (204 lbf·in).
9. If the header has two knife drives, repeat this procedure to check the oil level on the other knife drive.

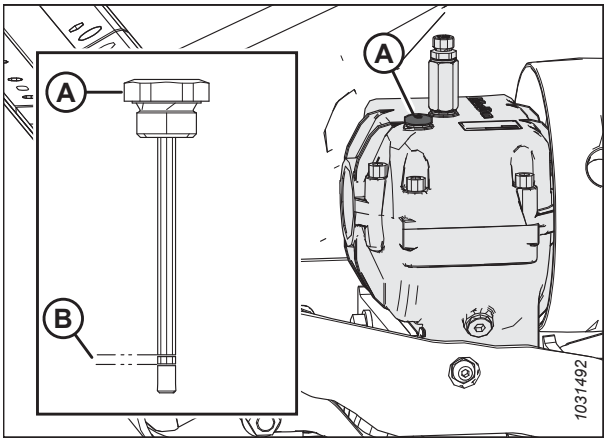


Figure 4.171: Knife Drive Box

Checking Mounting Bolts

After the first 10 hours of operation, check the torque on the four knife drive box mounting bolts (A) and (B) and every 100 hours thereafter.

1. Ensure that all bolts are torqued to 343 Nm (253 lbf·ft). Torque side bolts (A) first, then bottom bolts (B).

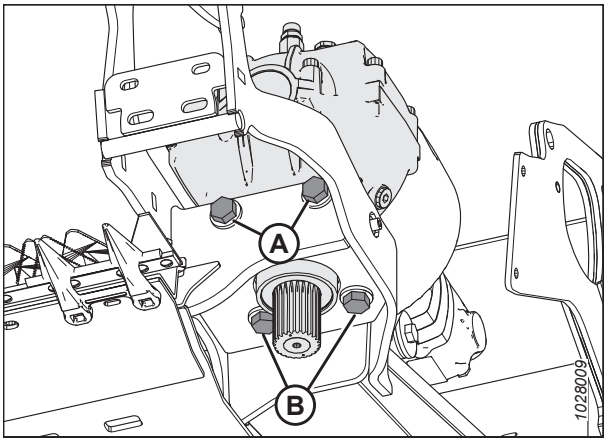


Figure 4.172: Knife Drive Box – View from Below

Changing Oil in Knife Drive Box

After the first 50 hours of operation, change the knife drive box lubricant and every 1000 hours (or 3 years) thereafter.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.

4. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.

5. Under the knife drive box, place a container large enough to hold approximately 1.5 L (0.4 US gal) of oil.

6. Remove dipstick (A) and drain plug (C).

7. Allow the oil to drain from the knife drive box and into the container placed below it.

8. Reinstall drain plug (C).

9. Add 1.5 L (0.4 US gal) of oil to the knife drive box.
   Refer to the inside of the back cover for the recommended fluids and lubricants.

   NOTE:

   Check the oil level with the top of the knife drive box horizontal and with oil level dipstick (A) screwed in.

10. Check that the oil level is within range (B).

11. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

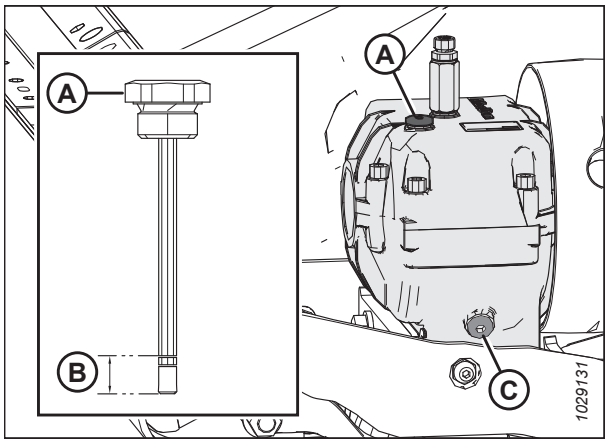


Figure 4.173: Knife Drive Box

4.10 Feed Deck

The feed deck is located on the FM200 Float Module. It consists of a motor and a feed draper that conveys the cut crop to the feed auger.

4.10.1 Replacing Feed Draper

The feed draper on the float module delivers harvested crop into the combine's feeder house. If the feed draper is torn, cracked, or missing slats, replace it.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. On the underside of the feed deck, rotate latch (A) to unlock handle (B).
2. Repeat the previous step on the other side of the feed deck.

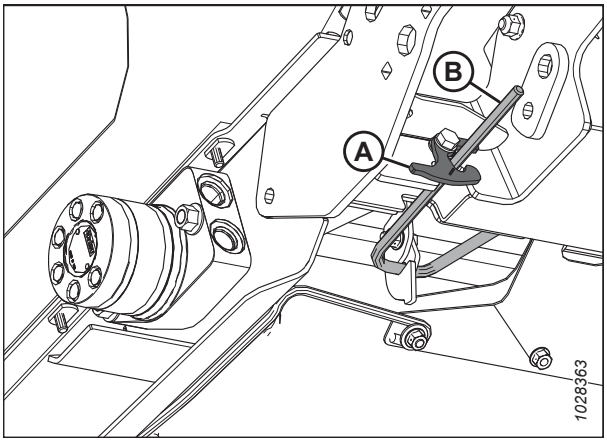


Figure 4.174: Underside of Feed Deck

3. Hold pan (A) and rotate handle (B) downward to release the pan.

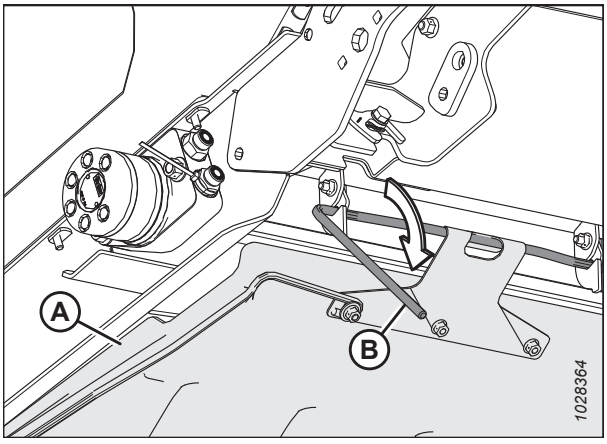


Figure 4.175: Underside of Feed Deck

4. Lower feed deck pan (A).

   NOTE:

   Lowering the feed deck pan improves access to the hardware securing the feed draper.

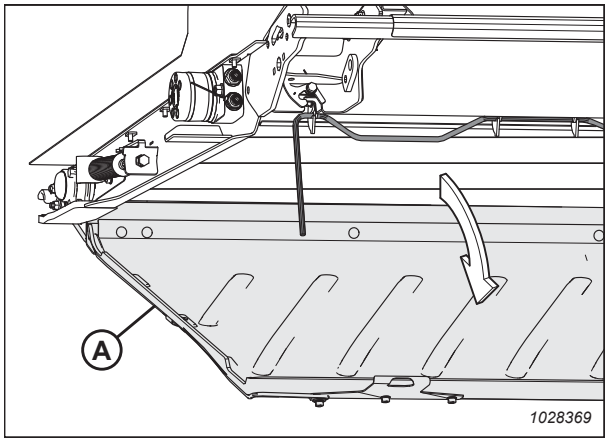


Figure 4.176: Feed Deck Pan

5. Start the engine.
6. Raise the header fully.
7. Raise the reel fully.
8. Shut down the engine, and remove the key from the ignition.
9. Engage the header safety props. For instructions, refer to the combine operator's manual.
10. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
11. Remove five countersunk screws (A) and retainer (B).
12. Remove one button head screw and washer (C).
13. Flip mid-filler (D) over.
14. Repeat Steps *11, page 610* to *13, page 610* on the other side of the feed deck.

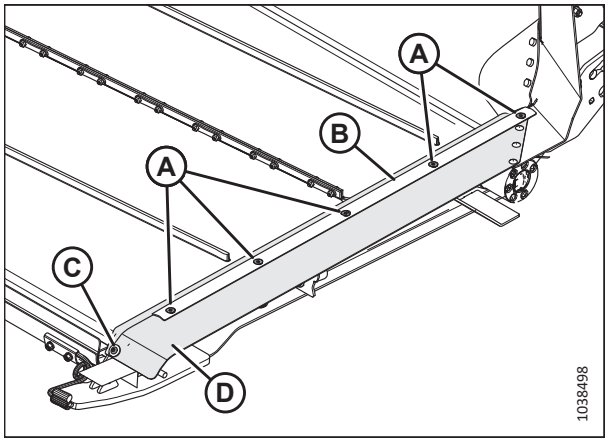


Figure 4.177: Feed Draper Seal

15. Locate the feed draper tensioner. Loosen jam nut (A). Turn bolt (B) counterclockwise to relieve the tension on the draper.

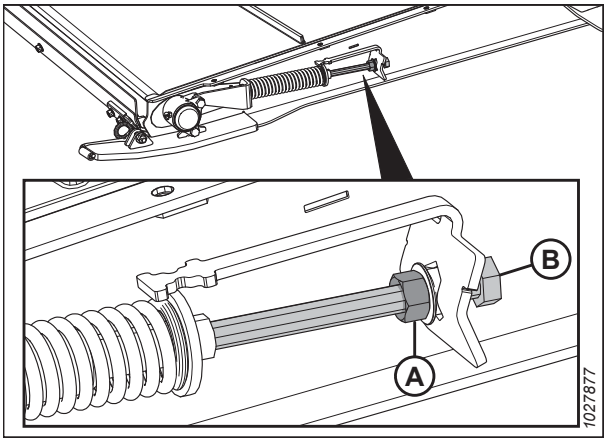


Figure 4.178: Feed Draper Tensioner

16. On the left side of the deck, remove hardware (A) from idler roller casting (B).

    NOTE:

    Note whether the idler casting drops down or moves upward when the hardware is removed. It will be easier to start reinstalling the casting hardware on the side where the idler casting drops down.

17. Repeat the previous step on the right side of the deck.

18. Move the idler roller back inside of the cutout in the frame.

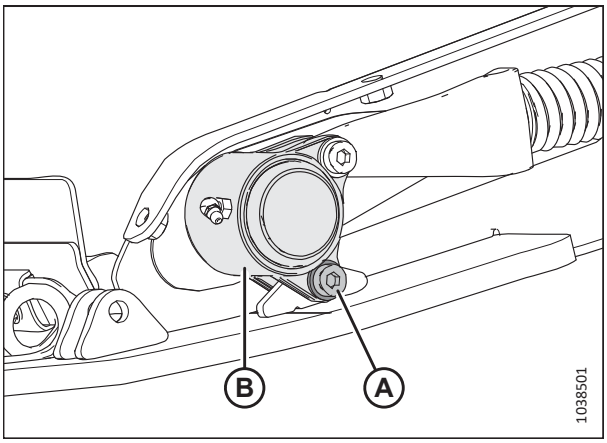


Figure 4.179: Idler Roller Bearing Casting

19. Remove nuts and screws (A). Remove draper connector straps (B).

20. Pull the draper from the deck.

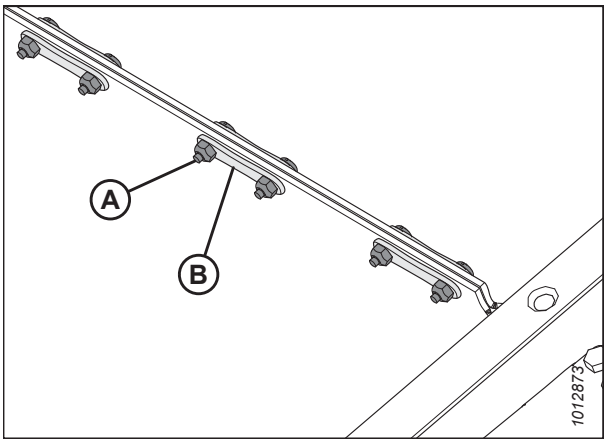


Figure 4.180: Draper Connector

21. Install the new draper over drive roller (A). Ensure that the draper guides fit into drive roller grooves (B).
22. Pull the draper along the bottom of the feed deck and over idler roller (C).

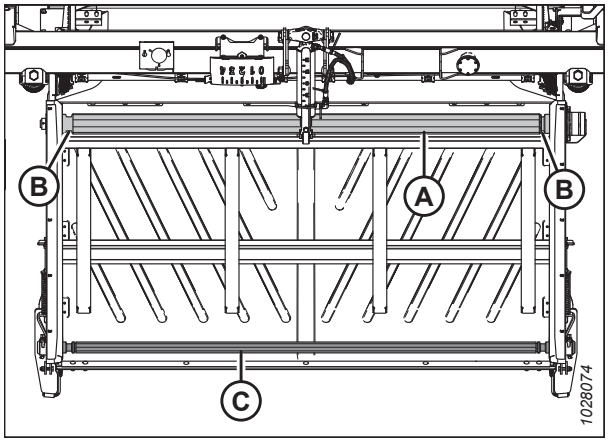


Figure 4.181: Float Module Feed Draper

23. Connect the draper joint with connector straps (B). Secure the straps with nuts and screws (A).

    IMPORTANT:

    Ensure that the screw heads face the rear of the deck. Tighten the screws **only** until the ends of the screws are flush with the nuts.

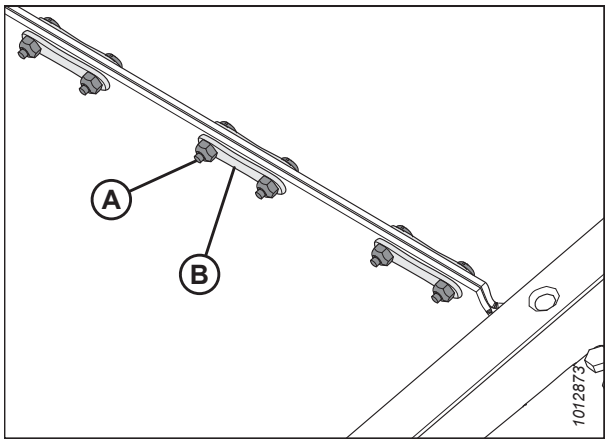


Figure 4.182: Draper Connector Straps

24. Move the idler roller back to the operating position.
25. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of hardware (A).
26. On the side of the feed deck where the casting dropped when the hardware was removed, reinstall hardware (A) to secure idler roller casting (B) to the frame.
27. Repeat the previous two steps on the opposite side of the feed deck.
28. Tighten bolt (A) to 12 Nm (106 lbf·in).

    IMPORTANT:

    Do **NOT** fully tighten bolt (A).

29. Adjust the draper tension. For instructions, refer to *4.10.2 Checking and Adjusting Feed Draper Tension, page 614*.

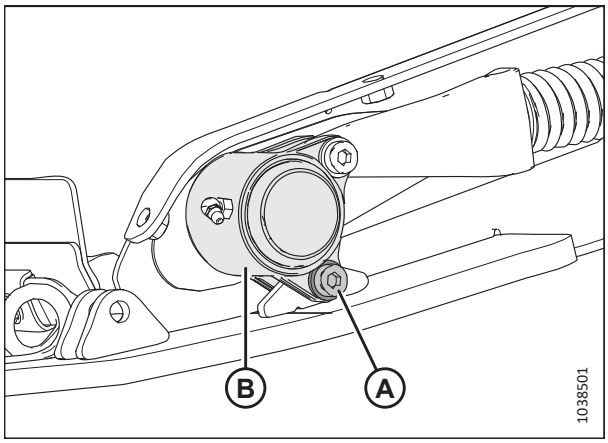


Figure 4.183: Idler Roller Bearing Casting

30. Position mid-filler (D) as shown. Reinstall retainer (B).
31. Secure the retainer and the mid-filler with one button head screw and washer (C) and five countersunk screws (A).
32. Repeat the previous two steps on the opposite side of the feed deck.

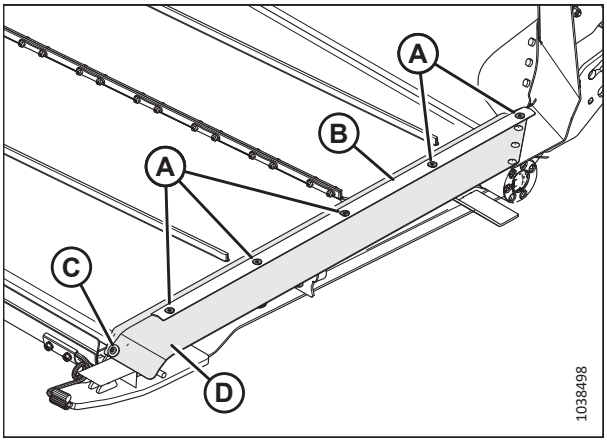


Figure 4.184: Feed Draper Seal

33. Raise feed deck pan (A).

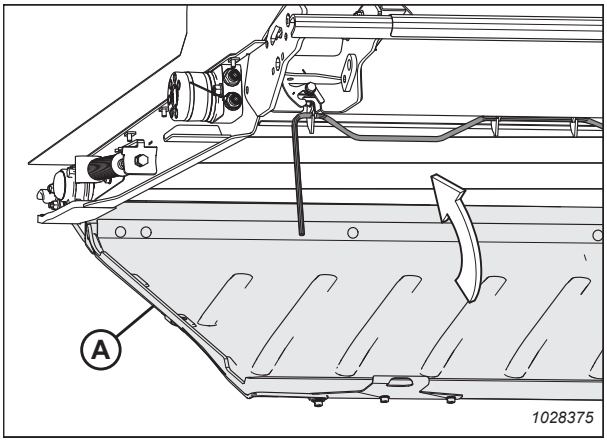


Figure 4.185: Feed Deck Pan

34. Engage lock handle (A) in three feed deck pan hooks (B).

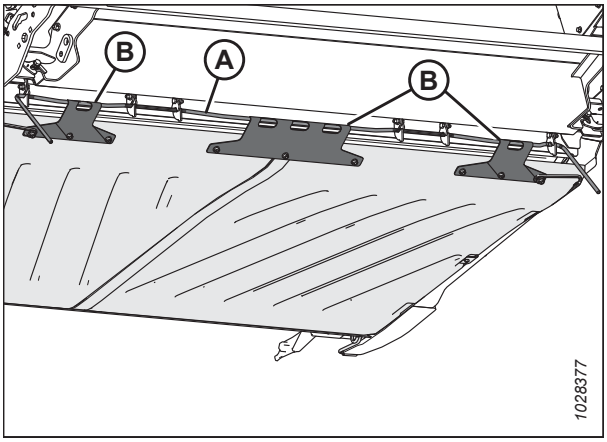


Figure 4.186: Underside of Feed Deck Pan

35. Rotate handles (A) upward to bring the feed deck pan into the locked position.

    NOTE:

    Ensure that all three deck pan hooks (B) are secured on the lock handle.

36. Hold the feed deck pan in place and rotate latch (C) to lock handle (A).

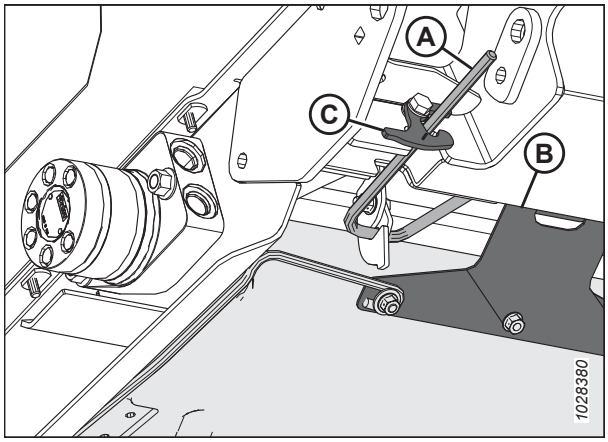


Figure 4.187: Underside of Feed Deck Pan

4.10.2 Checking and Adjusting Feed Draper Tension

In order for the draper to operate correctly, it must be tensioned properly. Inspect the tension on the draper and if necessary, adjust it.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

The illustrations in this procedure show the left side of the header; the right side of the header is similar.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.

Checking the feed draper tension

5. Ensure that the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove on the drive roller and that the idler roller is between the guides.

6. Check the position of spring retainer disc (A). If the feed draper tracks properly and the spring retainers on both sides of the draper are correctly positioned, then no adjustment is necessary.

   NOTE:

   The starting position of spring retainer disc (A) is centered within the U shape on indicator (B); however, the position of disc (A) will vary after the draper tracking is adjusted.

7. If adjustment is necessary, proceed to Step *8, page 615*.

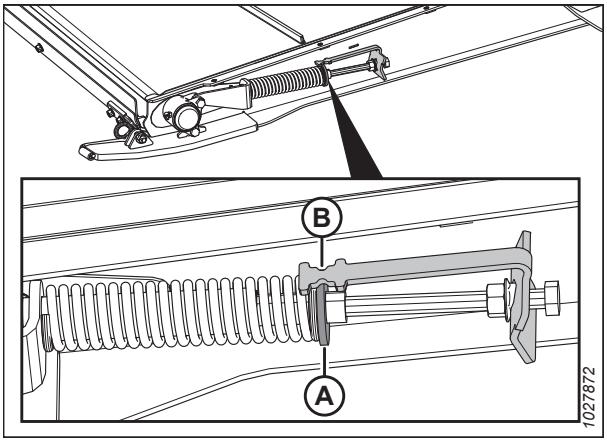


Figure 4.188: Feed Draper Tensioner

Adjusting the feed draper tension

8. Adjust the draper tension by loosening jam nut (A) and turning bolt (B) clockwise to increase the tension on the draper (or counterclockwise to decrease the tension on the draper). Retainer disc (C) should be in the middle of indicator (D).

   IMPORTANT:

   For small tension adjustments, only one side of the draper needs to be adjusted. To prevent uneven draper tracking for larger tension adjustments, both sides of the draper will need to be adjusted.

9. If the draper is not tracking properly, adjust retainer disc (C) so that it is **NOT** in the middle of indicator (D), but within the following range:

   - When loosened to 3 mm (1/8 in.), retainer disc (C) will move toward the front of the deck from center of indicator (D).
   - When tightened to 6 mm (1/4 in.), retainer disc (C) will move toward the back of the deck from the center of indicator (D).

10. Tighten jam nut (A). Ensure that flange nut (E) is tight against the indicator bracket.

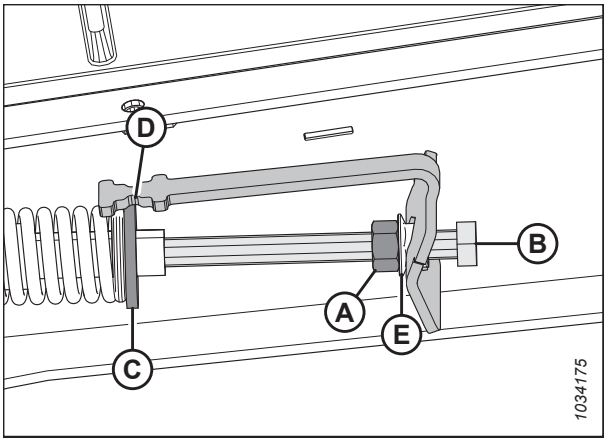


Figure 4.189: Feed Draper Tensioner – Left Side

4.10.3 Feed Draper Drive Roller

The feed draper drive roller is hydraulically driven to rotate the feed draper and convey the crop toward the feeder house auger.

Removing Feed Draper Drive Roller

The feed draper drive roller needs to be removed when repairing or replacing it.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Engage the header safety props. For instructions, refer to the combine operator's manual.
7. Locate the feed draper tensioner. Loosen jam nut (A). Turn bolt (B) counterclockwise to relieve the tension on the draper.

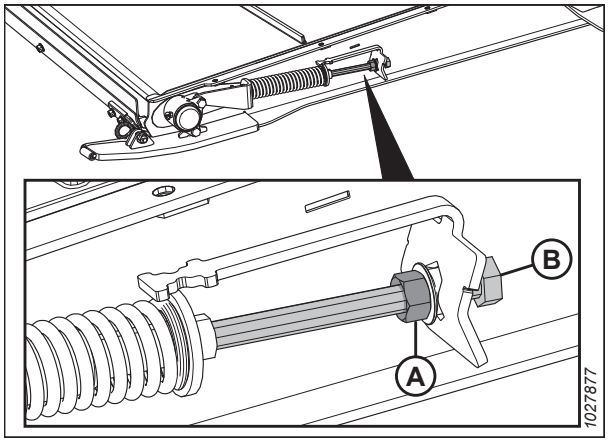


Figure 4.190: Feed Draper Tensioner

8. Remove nuts and screws (A). Remove draper connector straps (B).

9. Lift the sides of the draper to expose the rollers.

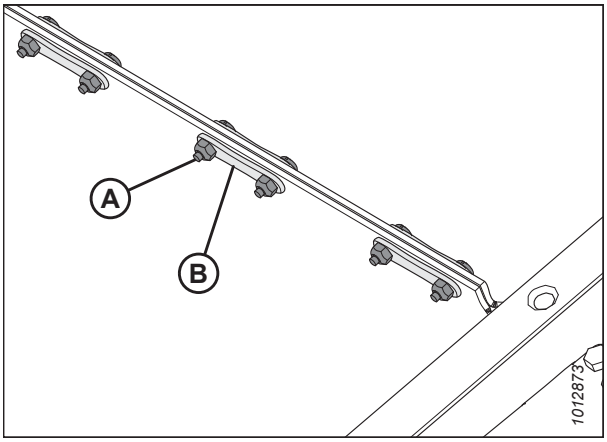


Figure 4.191: Draper Connector

10. On the right side of the deck, remove two nuts (A) and bolts from drive roller bearing housing (B).

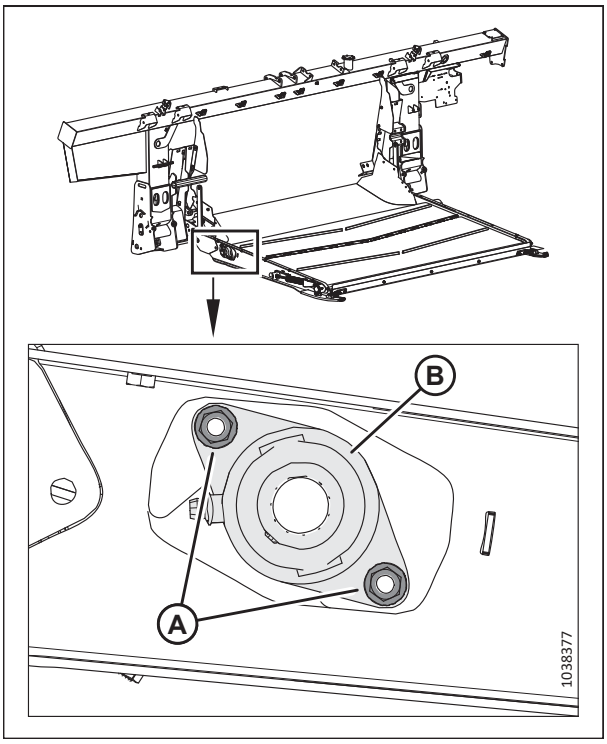


Figure 4.192: Drive Roller Bearing

11. Slide the drive roller with bearing assembly (A) to the right until the left end comes off of the motor spline.
12. Remove both covers (B).

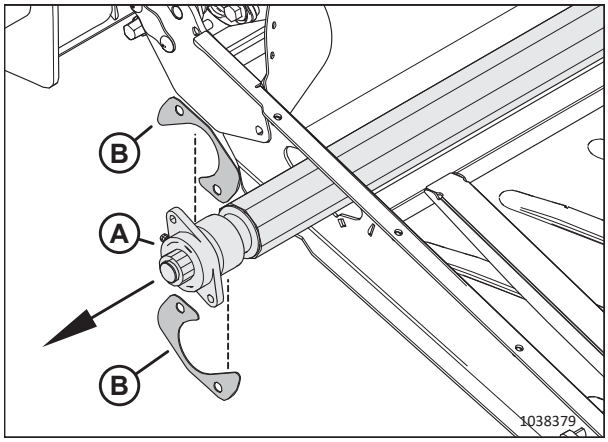


Figure 4.193: Drive Roller

13. Lift the left end out of the frame.
14. Slide assembly (A) to the left, guiding bearing housing (B) through frame opening (C).
15. Remove roller (A).

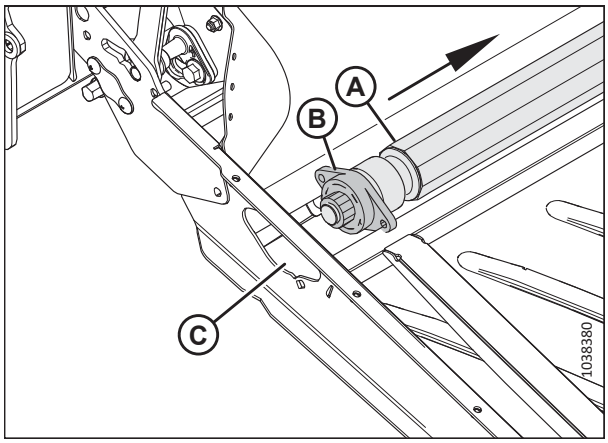


Figure 4.194: Drive Roller

Installing Feed Draper Drive Roller

The feed draper drive roller needs to be installed after it has been repaired or replaced.

1. Apply grease to the motor spline.
2. Guide bearing end (A) of the drive roller through frame opening (B).

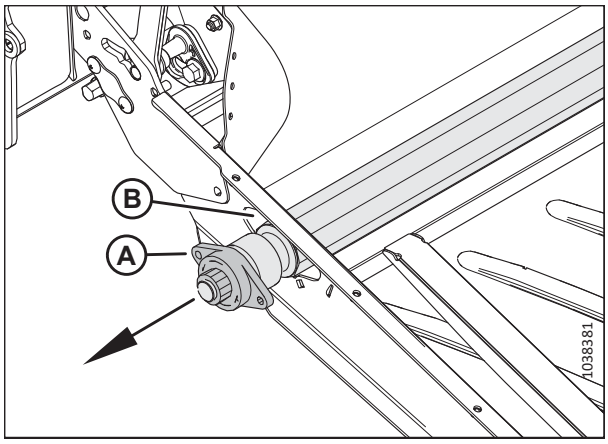


Figure 4.195: Drive Roller – Bearing End

3. Slide the left end of drive roller (A) onto spline of motor (B).

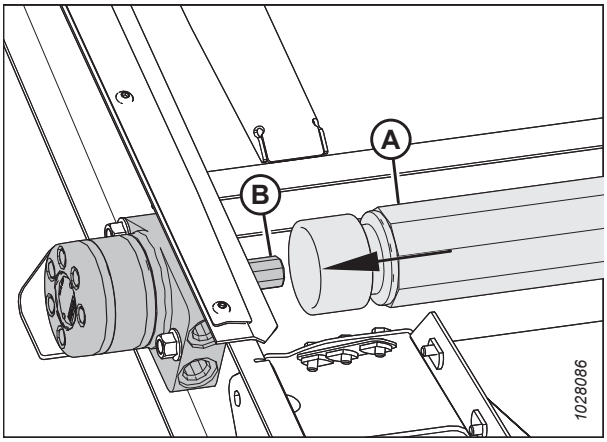


Figure 4.196: Feed Draper Motor

4. Install two bolts (A) into the feed deck.
5. Install both covers (B) onto the two bolts.

   IMPORTANT:

   Position the covers in the order shown.
6. Secure the drive roller bearing housing using two nuts (C).
7. Install the feed deck draper. For instructions, refer to *4.10.1 Replacing Feed Draper, page 609*.
8. Tension the feed draper. For instructions, refer to *4.10.2 Checking and Adjusting Feed Draper Tension, page 614*.

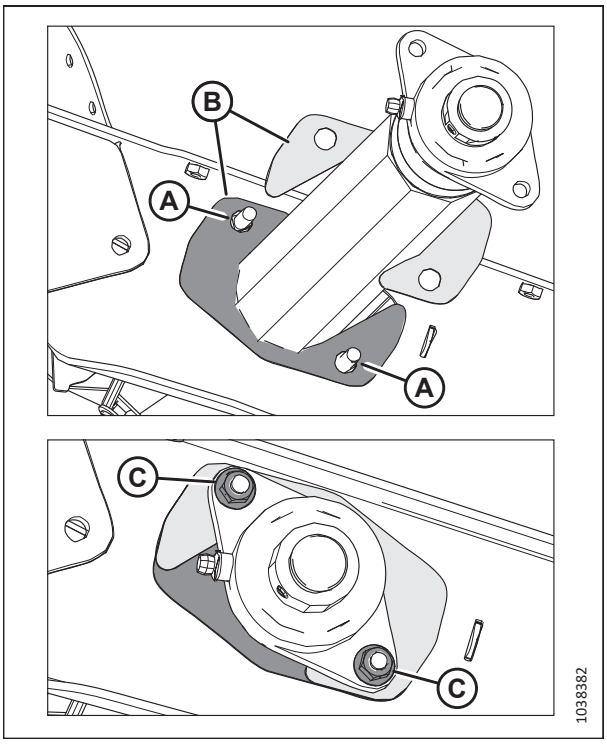


Figure 4.197: Drive Roller – Bearing End

Removing Feed Draper Drive Roller Bearing

The feed draper drive roller bearing helps the roller turn. The bearing needs to be removed when replacing it.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

1. Raise the reel fully.
2. Raise the header fully.

3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. Locate the feed draper tensioner. Loosen jam nut (A). Turn bolt (B) counterclockwise to relieve the tension on the draper.

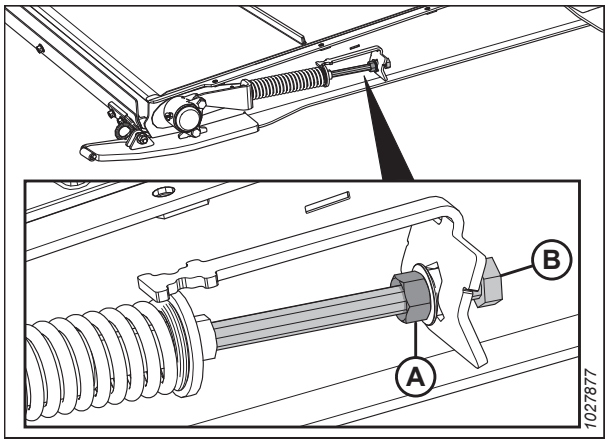


Figure 4.198: Feed Draper Tensioner

7. Loosen set screw (A) on bearing lock (B).
8. Using a hammer and punch, tap bearing lock (B) in the direction opposite of the auger's rotation to release the lock.

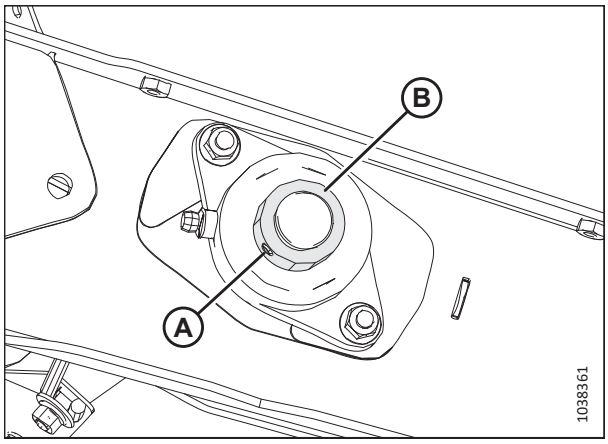


Figure 4.199: Feed Draper Drive Roller Bearing

9. Remove two nuts (A).

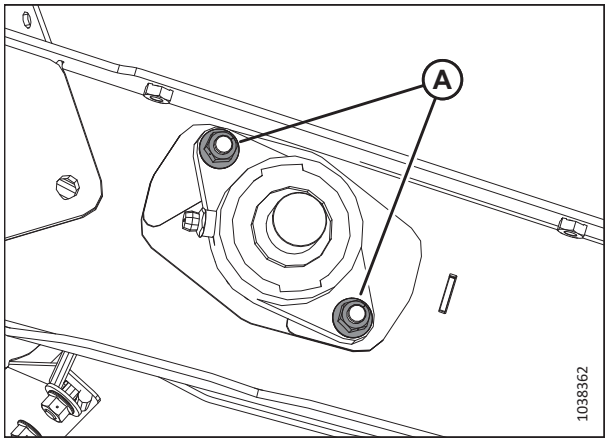


Figure 4.200: Feed Draper Drive Roller Bearing

10. Remove bearing housing (A).

    NOTE:

    If the bearing is seized on the shaft, it may be easier to remove the drive roller assembly. For instructions, refer to *Removing Feed Draper Drive Roller, page 616*.

11. Inspect both covers (B) for damage. If they are damaged, replace them with the parts in kit MD #347553.

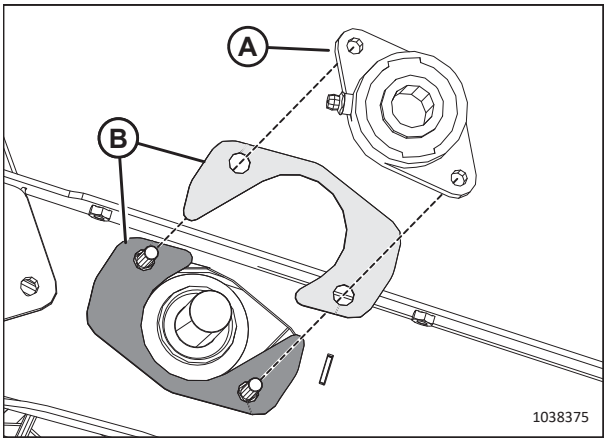


Figure 4.201: Feed Draper Drive Roller Bearing

Installing Feed Draper Drive Roller Bearing

The bearing is held in place with bolts and a lock collar.

1. Install two bolts (A) into the feed deck.
2. Install both covers (B) onto the two bolts.

    IMPORTANT:

    Position the covers in the order shown.

3. Install drive roller bearing housing (C) onto the shaft.
4. Secure the housing using two nuts (D).
5. Install bearing lock collar (E) onto the shaft.
6. Using a hammer and punch, tap the bearing lock in the direction of the auger's rotation to lock it.
7. Tighten bearing lock set screw (F).
8. Tension the feed draper. For instructions, refer to *4.10.2 Checking and Adjusting Feed Draper Tension, page 614*.

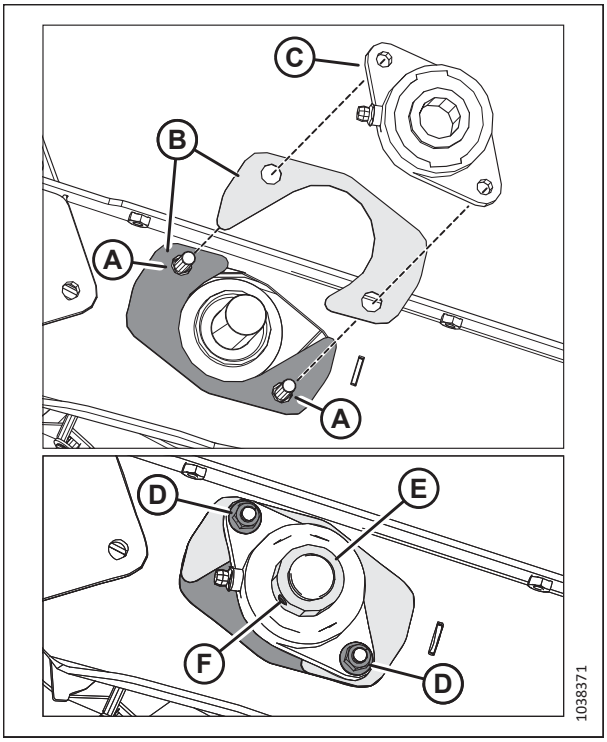


Figure 4.202: Feed Draper Drive Roller Bearing

4.10.4 Feed Draper Idler Roller

The feed draper idler roller is driven by the friction of the feed draper being turned by the drive roller. Like the drive roller, the idler roller helps the feed draper convey the crop to the auger.

Removing Feed Draper Idler Roller

The feed draper idler roller needs to be removed when it is being repaired or replaced.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

1. Raise the reel fully.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. Locate the feed draper tensioner. Loosen jam nut (A). Turn bolt (B) counterclockwise to relieve the tension on the draper.

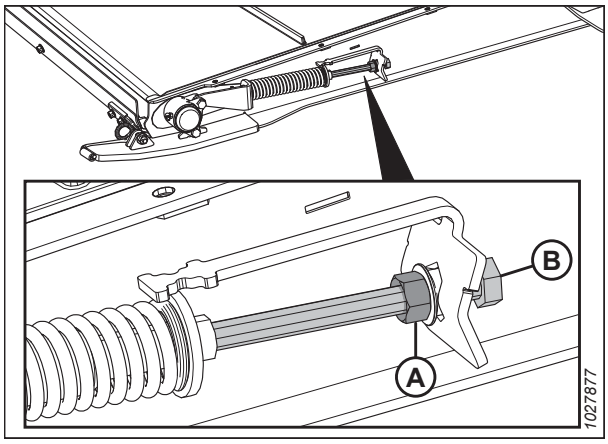


Figure 4.203: Feed Draper Tensioner

7. Remove nuts and screws (A). Remove draper connector straps (B).
8. Separate the draper.
9. Lower the front of the feed deck.

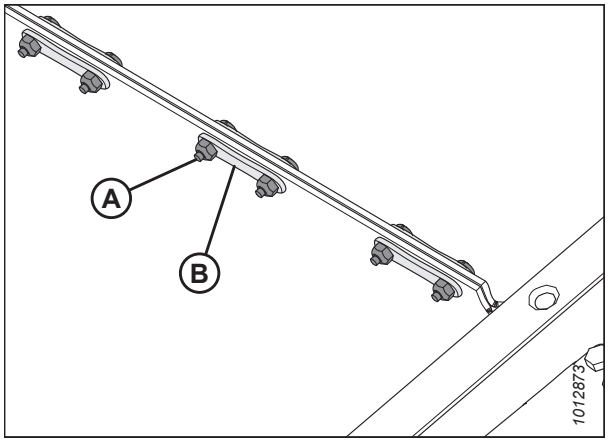


Figure 4.204: Draper Connector

10. Remove dust cap (A) and nut (B) from bearing housing (C).

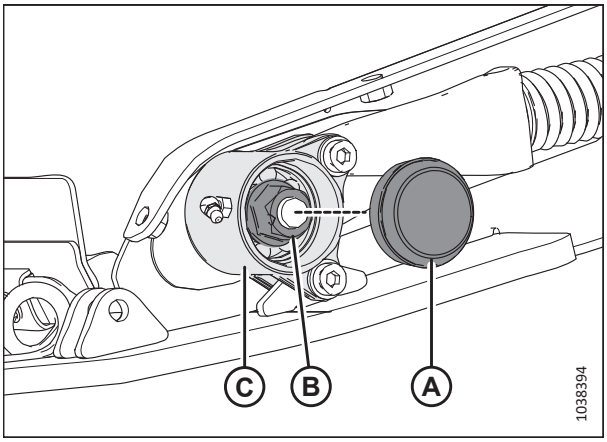


Figure 4.205: Idler Roller Bearing Housing

11. Remove the hardware that secures the bearing housing to the deck skid and the tensioner from location (A).
12. Remove bearing housing (B) from the idler roller.
13. Repeat Step *10, page 623* to Step *12, page 623* for the opposite side of the feed deck.

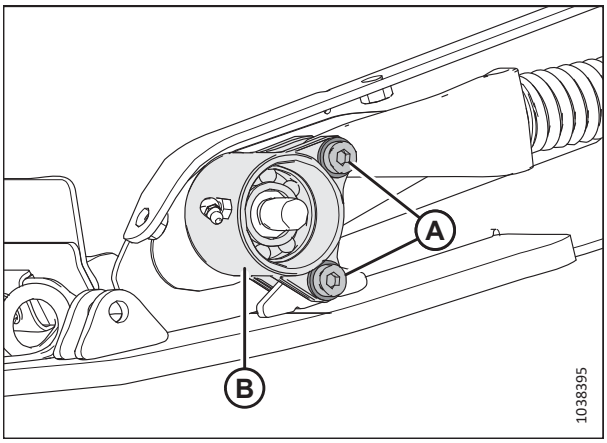


Figure 4.206: Idler Roller Bearing Housing

14. On one side of the deck frame, remove nut (A) and cover (B).

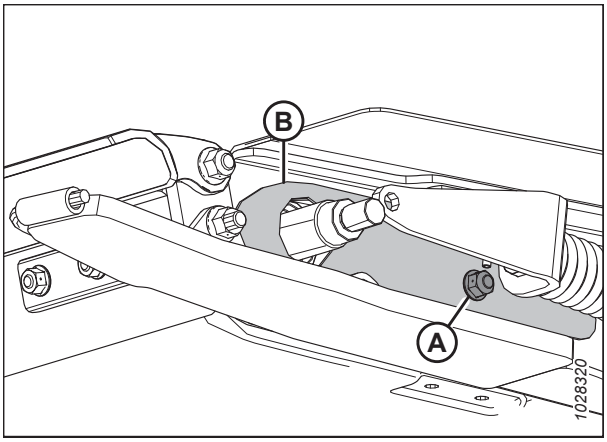


Figure 4.207: Idler Roller Cover

15. Slide idler roller (A) out through the other side of the deck frame.

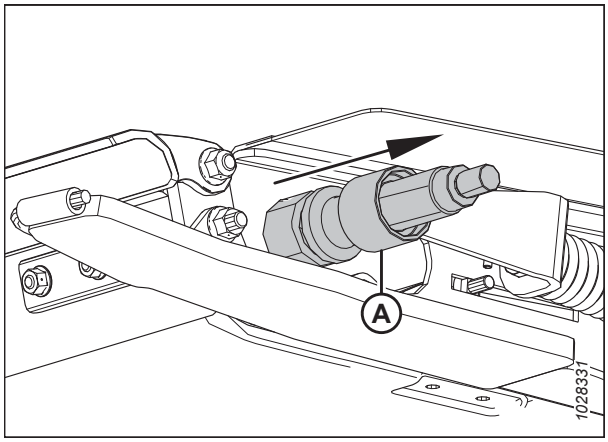


Figure 4.208: Idler Roller

Installing Feed Draper Idler Roller

The feed draper idler roller needs to be installed after it has been repaired or replaced.

1. Slide cover (A) over one end of the idler roller.
2. Brush idler roller shaft (B) with oil.
3. Carefully rotate bearing assembly (C) onto the shaft by hand to prevent damage to the seal.

   IMPORTANT:

   Ensure that the bearing assembly is square to the shaft to prevent damage to the seal during installation.

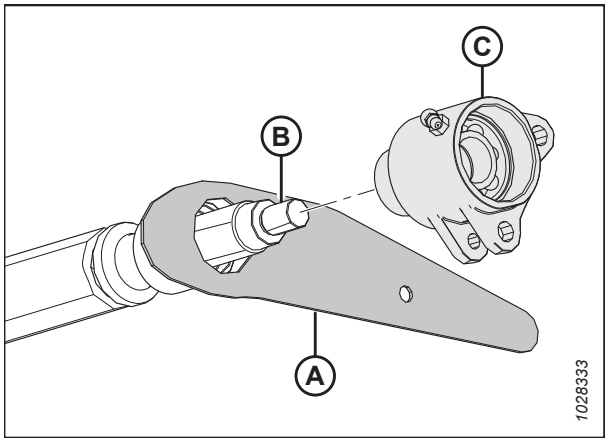


Figure 4.209: Idler Roller

4. After the bearing and both of the seals are seated around the shaft, install nut (A) and torque the nut to 81 Nm (60 lbf·ft).

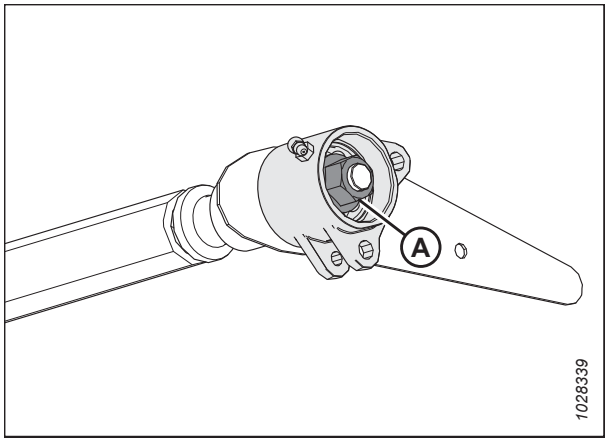


Figure 4.210: Left Idler Roller Bearing

5. Slide idler roller (A) through the cutout in the deck frame.

   NOTE:

   The right end of the idler roller should protrude from the right deck frame.

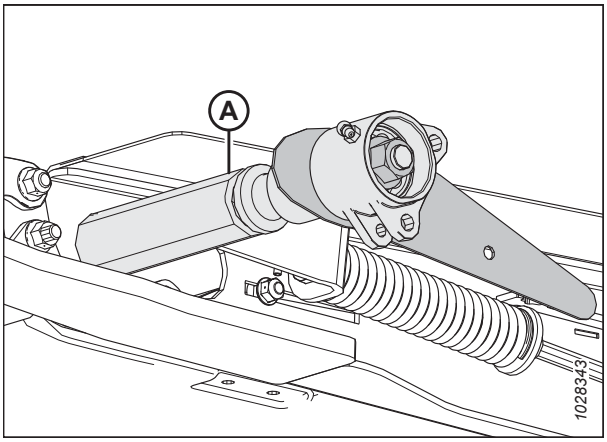


Figure 4.211: Feed Deck – Left Side

6. Install the bolt from inside of the feed deck to secure idler cover (A).
7. Install nut (B). Do **NOT** overtighten the nut. The nut should hold the idler cover in place and move with the idler roller.

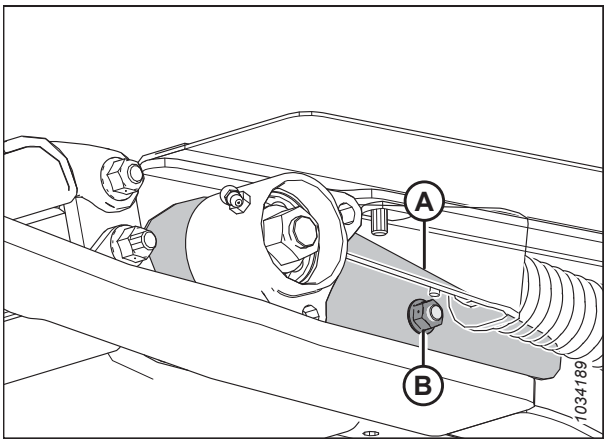


Figure 4.212: Idler Cover – Left Side

8. On the right side of the deck frame, brush the opposite end of the idler roller shaft (A) with oil.
9. Carefully rotate bearing assembly (B) onto shaft (A) by hand to prevent damage to the seal.

   IMPORTANT:

   Ensure that the bearing assembly is square to the shaft to prevent damage to the seal during installation.

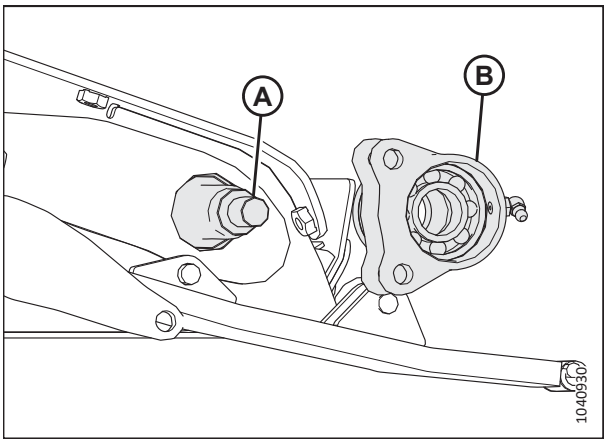


Figure 4.213: Feed Deck – Right Side

10. After the bearing and both of the seals are seated around the right shaft, install nut (A) and torque the nut to 81 Nm (60 lbf·ft).

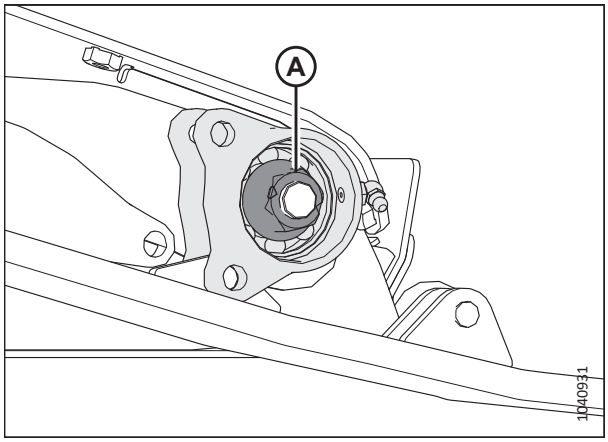


Figure 4.214: Feed Deck – Right Side

11. Rotate idler roller housing (A) until the holes in the lower tabs align with the hole in welded tab (B).
12. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the socket head bolt, then secure the roller housing to the welded tab with the bolt, the washer, and the nut at location (C).
13. Align the hole in cast support (D) with the holes in the upper tab on idler roller housing (A).
14. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the socket head bolt, then secure the cast support to the roller housing with the bolt, the washer, and the nut at location (E)
15. Tighten bolts (C) and (E) to 12 Nm (106 lbf·in).

    IMPORTANT:

    Do **NOT** overtighten bolts (C) and (E).

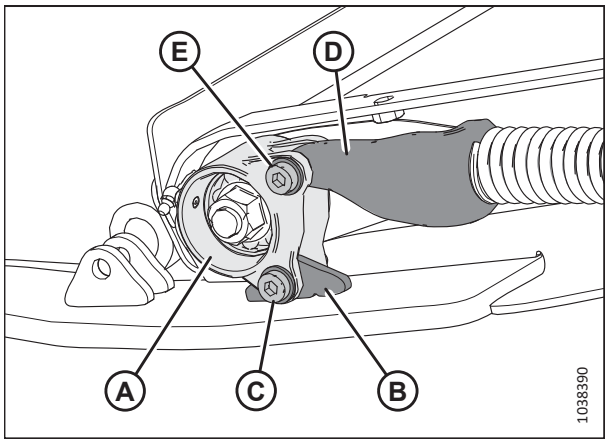


Figure 4.215: Left Idler Roller Bearing

16. Lubricate the bearing cavity with grease, then install dust cap (A).
17. Ensure that the grease fitting is working. Grease the feed draper idler roller bearing until grease comes out of the seal. Wipe any excess grease from the area after greasing.
18. Repeat Step *11, page 626* to Step *17, page 626* on the right side of the feed draper idler roller.

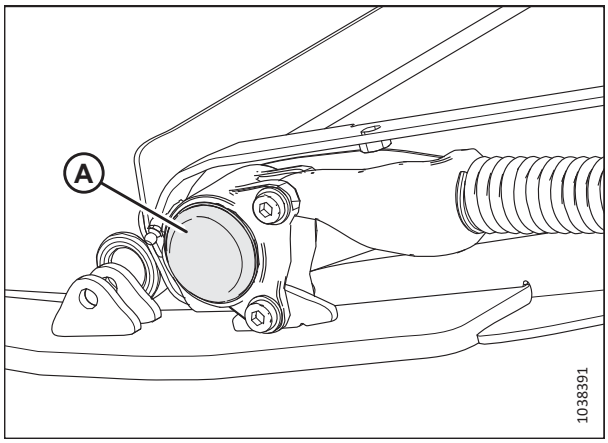


Figure 4.216: Feed Deck – Left Side

19. Close the feed draper and secure it with screws (A), connector straps (B), and nuts.
20. Tension the feed draper. For instructions, refer to *4.10.2 Checking and Adjusting Feed Draper Tension, page 614*.

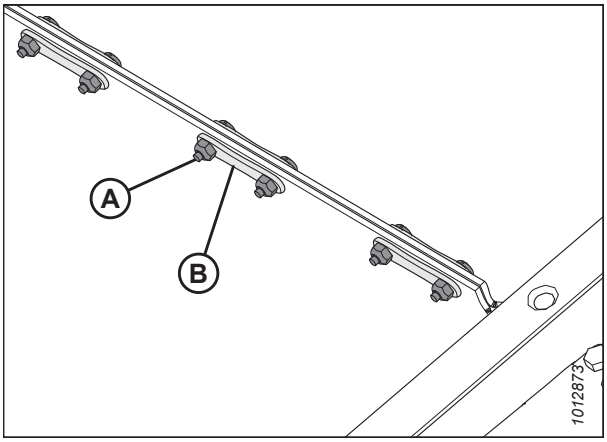


Figure 4.217: Draper Connector

Replacing Feed Draper Idler Roller Bearing

The feed draper idler roller bearing helps the roller turn. The bearing needs to be removed when replacing it.

NOTE:

The procedure is the same for both sides of the feed draper idler roller. The left side of the roller is shown in the illustrations below.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Raise the reel fully.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.

6. Locate the feed draper tensioner. Loosen jam nut (A). Turn bolt (B) counterclockwise to relieve the tension on the draper.

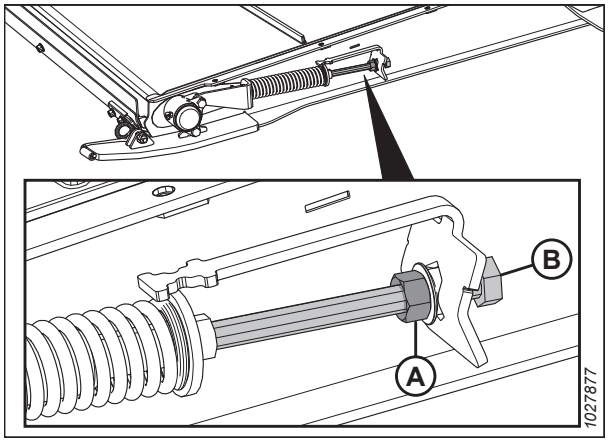


Figure 4.218: Feed Draper Tensioner

7. Remove the socket head bolts, washers, and nuts (A) that secure the bearing housing to the deck skid and tensioner.
8. Remove dust cap (B).

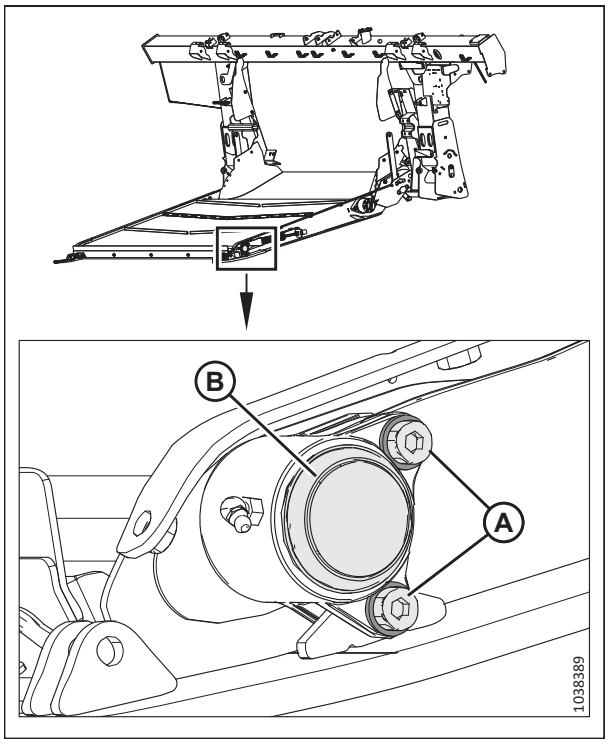


Figure 4.219: Left Idler Roller Bearing

9. Remove nut (A), then remove bearing housing (B) from the deck. Retain the nut and the bearing housing.

   NOTE:

   If the bearing is seized on the shaft, it may be easier to remove the idler roller assembly. For instructions, refer to *Removing Feed Draper Idler Roller, page 622*.

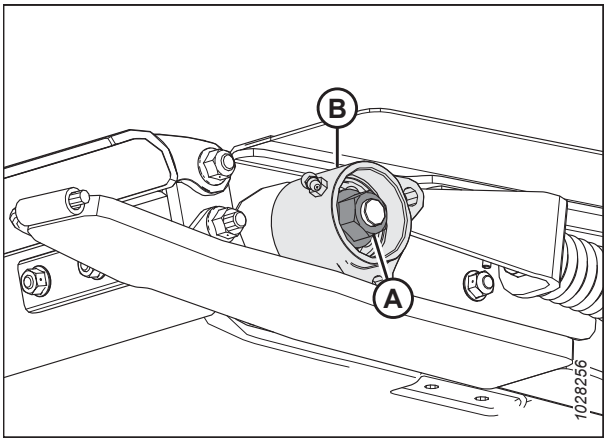


Figure 4.220: Idler Roller Bearing – Left Side

10. Remove retaining ring (A), bearing (B), and seals (C) from bearing housing (D).
11. Apply oil to the bore before assembling the parts.
12. Install seals (C) into bearing housing (D).

    NOTE:

    Ensure that the flat side of the seal is facing inward.

13. Lubricate bearing (B) with grease, then install the bearing as shown.
14. Install retaining ring (A).

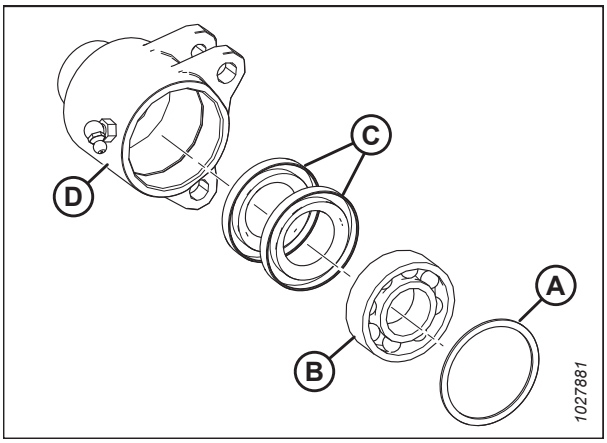


Figure 4.221: Bearing Assembly

15. Brush idler roller shaft (A) with oil.
16. Carefully rotate bearing assembly (B) onto shaft (A) by hand to prevent damage to the seal.

    IMPORTANT:

    Ensure that the bearing assembly is square to the shaft to prevent damage to the seal during installation.

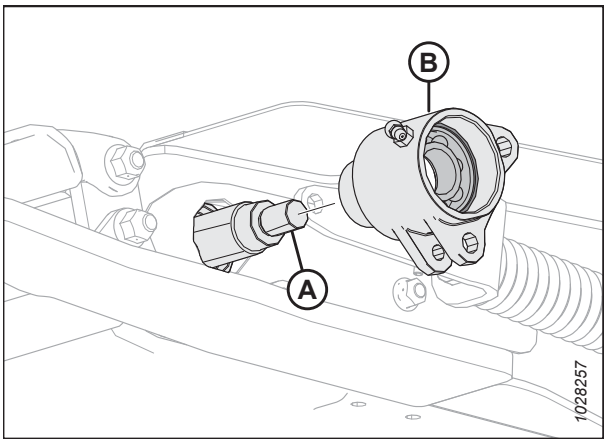


Figure 4.222: Idler Roller Bearing – Left Side

17. After installing the bearing and both of the seals around the shaft, install nut (A) and torque the nut to 81 Nm (60 lbf·ft).

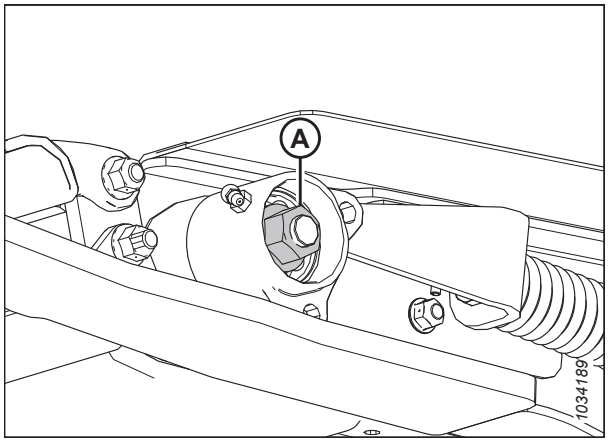


Figure 4.223: Idler Roller Bearing – Left Side

18. Rotate idler roller housing (A) until the holes in the lower tabs align with the hole in welded tab (B).
19. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the socket head bolt, then install the bolt, the washer, and the nut at location (C).
20. Align the hole in cast support (D) with the holes in the upper tab on idler roller housing (A).
21. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the socket head bolt, then install the bolt, the washer, and the nut at location (E).
22. Tighten bolts (C) and (E) to 12 Nm (106 lbf·in).

    IMPORTANT:

    Do **NOT** overtighten bolts (C) and (E).
23. Repeat Step to Step *22, page 630* on the opposite side.
24. Fill the bearing cavity with grease, then install dust cap (A) on both ends of the idler roller.
25. Ensure that the grease fitting is working.
26. Repeat Step *24, page 630* to Step *25, page 630* on the opposite side.
27. Tension the feed draper. For instructions, refer to *4.10.2 Checking and Adjusting Feed Draper Tension, page 614*.

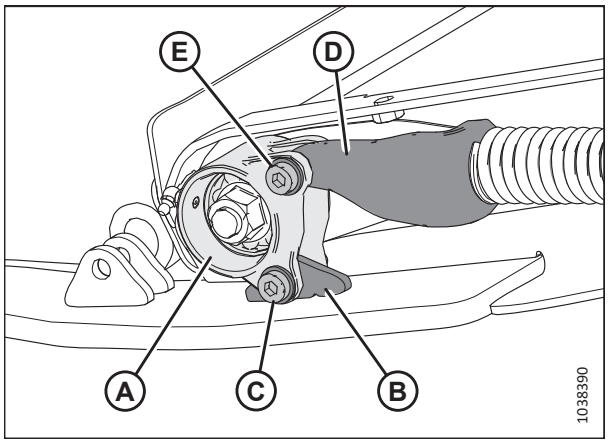


Figure 4.224: Idler Roller Bearing – Left Side

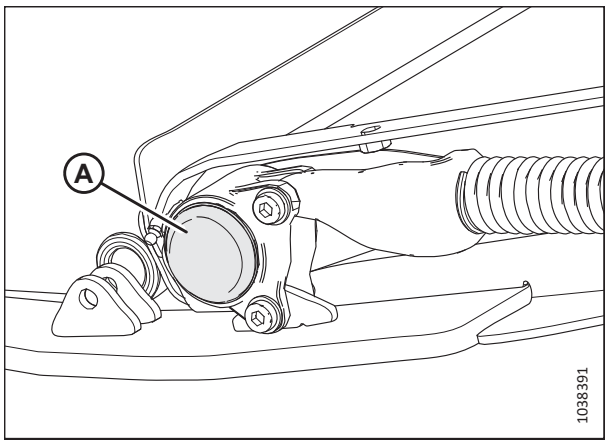


Figure 4.225: Feed Deck – Left Side

4.10.5 Lowering Feed Deck Pan

The feed deck pan protects the feed draper from items on the ground. It can be opened and closed to access the feed draper.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. On the underside of the feed deck, rotate latch (A) to unlock handle (B). Repeat this step at the opposite end of the feed deck.

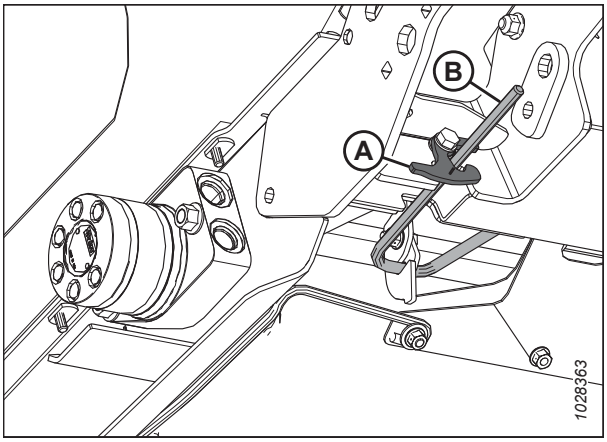


Figure 4.226: Underside of Feed Deck

6. Hold pan (A) and rotate handle (B) downward to release the pan.

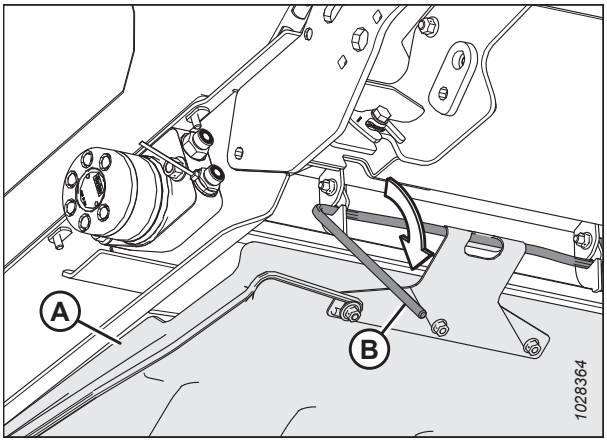


Figure 4.227: Underside of Feed Deck

7. Lower feed deck pan (A).

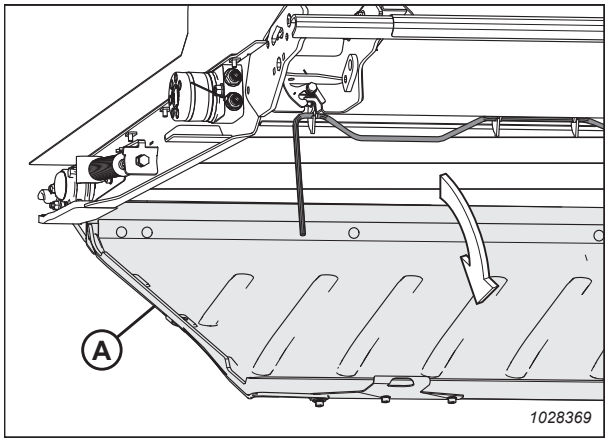


Figure 4.228: Feed Deck Pan

4.10.6 Raising Feed Deck Pan

The feed deck pan protects the feed draper from items on the ground. It can be opened and closed to access the feed draper.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

1. Raise feed deck pan (A).

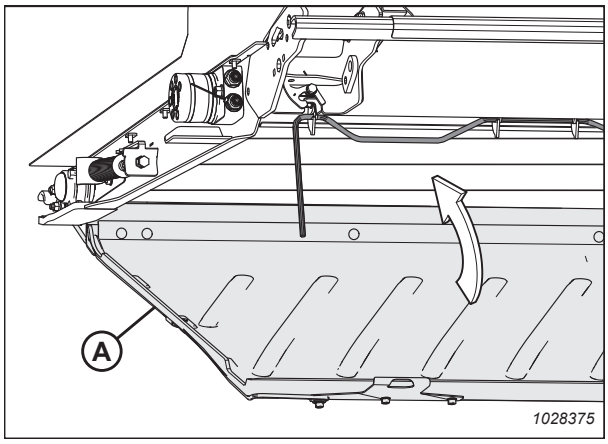


Figure 4.229: Feed Deck Pan

2. Engage lock handle (A) in three feed deck pan hooks (B).

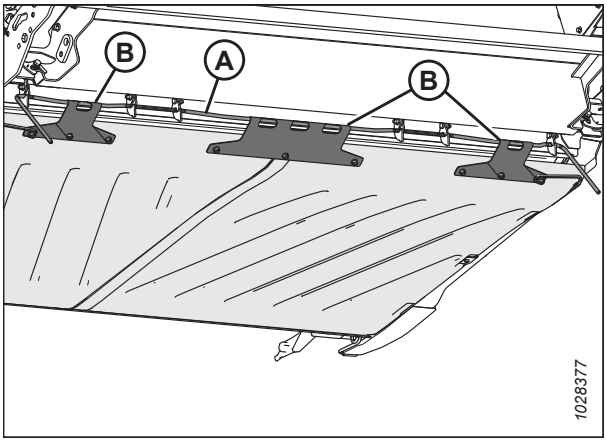


Figure 4.230: Underside of Feed Deck Pan

3. Rotate handles (A) upwards, bringing the feed deck pan into the locked position.

   NOTE:

   Ensure that all three deck pan hooks (B) are secured on the lock handle.

4. Hold the feed deck pan in place, and rotate latch (C) to lock handle (A).

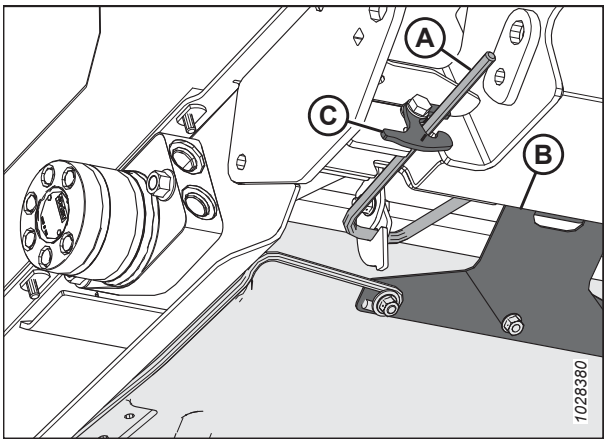


Figure 4.231: Underside of Feed Deck Pan

4.10.7 Checking Link Holder Hooks

Check the left and the right link holder hooks **DAILY** to ensure that they are not cracked or broken.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.

5. Before operation, ensure that both link holder hooks (A) are engaged on the float module under the feed deck.

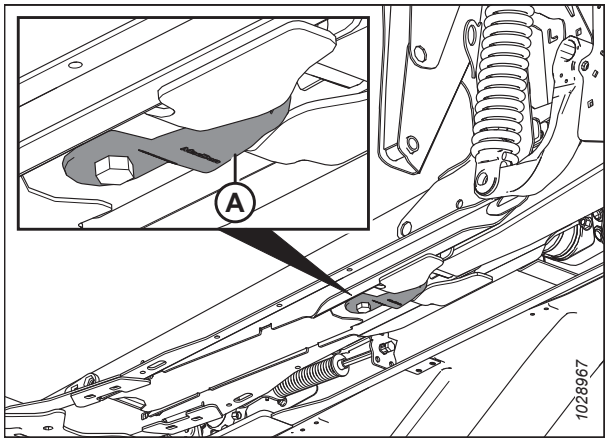


Figure 4.232: Feed Deck – View from Below

- Undamaged link holder hook (A)
- Damaged/broken link holder hook (B)
- Stretched link holder (not shown)

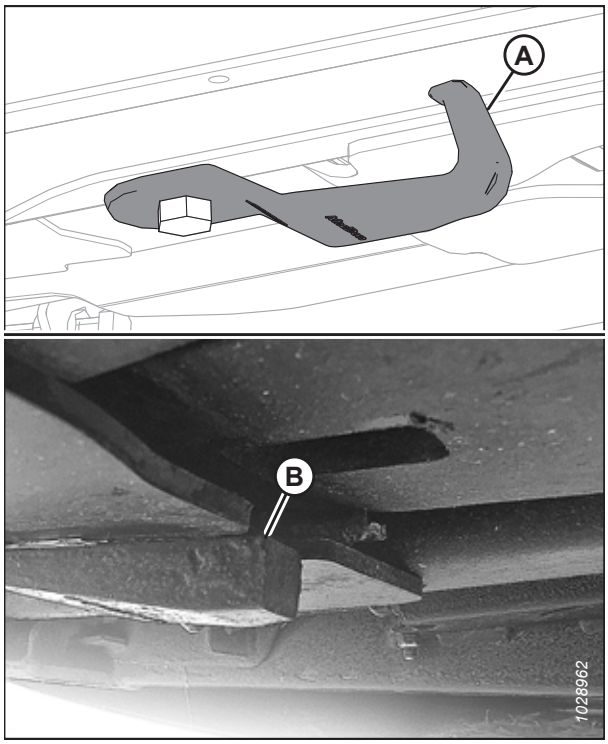


Figure 4.233: Link Holder Hooks

NOTE:

To move hook (A) to the storage position, loosen bolt (B) and rotate the hook by 90°.

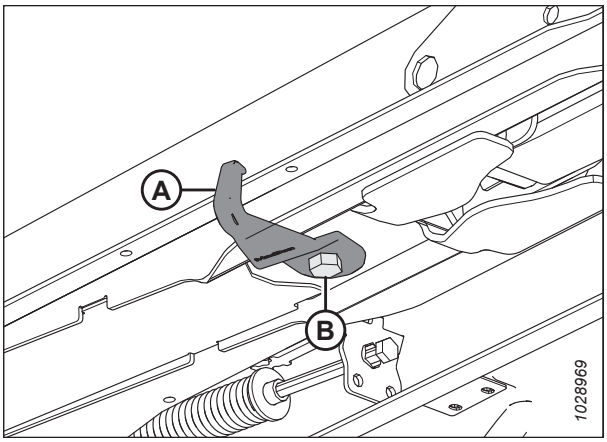


Figure 4.234: Link Holder Hook in Storage Position

4.11 Stripper Bars

Stripper bars are installed into the float module opening to improve feeding in crops such as rice. They may need to be removed depending on the desired float module configuration.

4.11.1 Removing Stripper Bars

The stripper bars are secured to the float module frame with four bolts and nuts.

1. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.
2. Remove four bolts and nuts (A) securing stripper bar (B) to the float module frame, and remove the stripper bar.

   NOTE:

   There may only be two upper bolts on stripper bar (B).
3. Repeat the previous step at the opposite side of the float module.

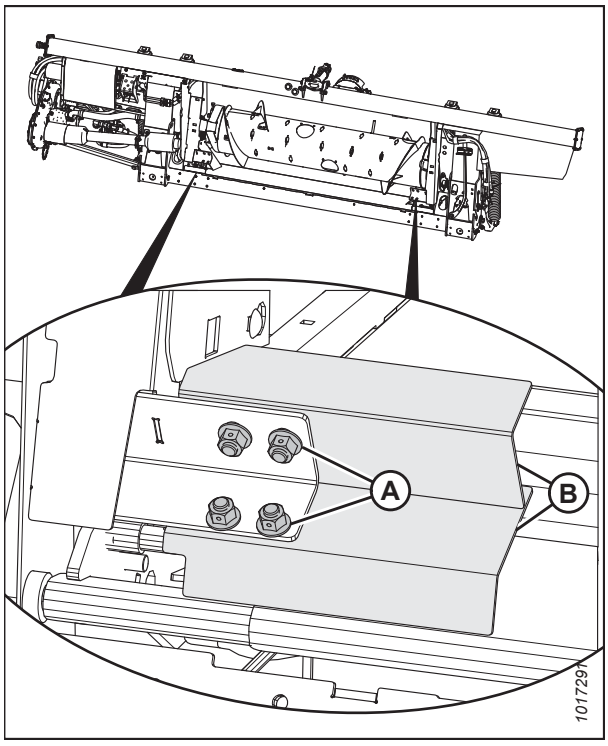


Figure 4.235: Stripper Bars

4.11.2 Installing Stripper Bars

The stripper bars are installed in the lower corners of the float module opening.

1. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.

2. Position stripper bar (B) as shown so the notch is at the corner of the frame.
3. Secure stripper bar (B) to the float module with four bolts and nuts (A). Ensure the nuts face the combine.

   NOTE:

   If the lower bolts and nuts are too difficult to install, install the upper two bolts only.
4. Repeat Step *2, page 637* and Step *3, page 637* at the opposite side of the float module.

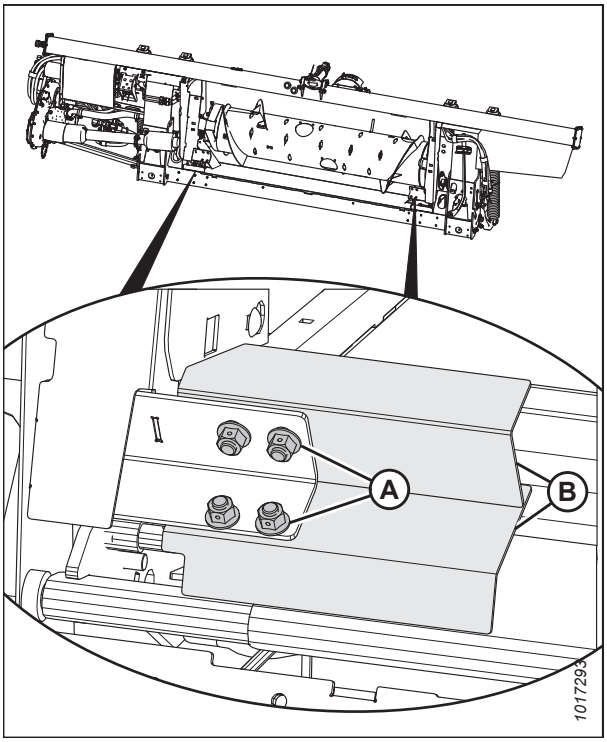


Figure 4.236: Stripper Bars

4.11.3 Replacing Feeder Deflectors on Float Modules for New Holland CR and CX Combines

Follow this procedure to replace deflectors, or to change the type of deflector (wide or narrow) installed on the float module.

1. Detach the header from the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.
2. Remove two bolts and nuts (B) securing feed deflector (A) to the float module frame. Remove the feeder deflector.
3. Position replacement feeder deflector (A) as shown. Secure the feeder deflector with bolts and nuts (B). Ensure that the nuts face the combine. Do **NOT** tighten the nuts yet.

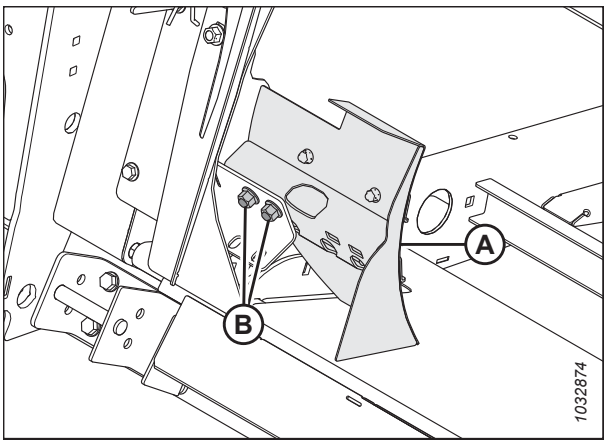


Figure 4.237: Feed Deflector

4. Adjust deflector (A) so that distance (C) between the pan and the deflector is 4–6 mm (5/32–1/4 in.).
5. Tighten nuts (B).
6. Repeat this procedure to install the other deflector.
7. Attach the header to the combine. For instructions, refer to *3.6 Header Attachment/Detachment, page 75*.
8. After attaching the header to the combine, fully extend the center-link and check the gap between the deflector and the pan. Ensure that the gap is 4–6 mm (5/32–1/4 in.).

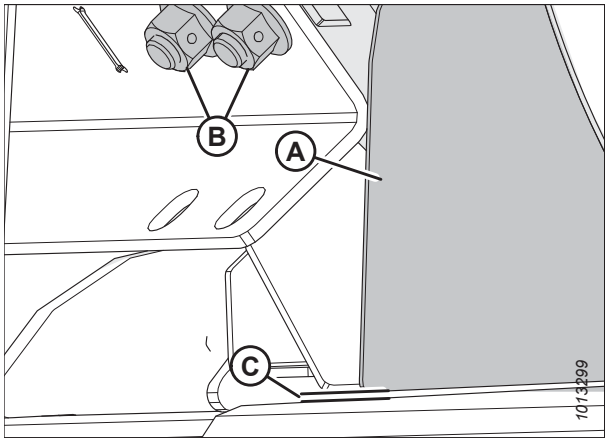


Figure 4.238: Pan and Deflector Distance

4.12 Header Side Drapers

There are two side drapers, one on each side of the header. They convey cut crop to the float module feed draper and auger. Replace the drapers if they are torn, cracked, or missing slats.

4.12.1 Removing Side Drapers

Replace the drapers if they are torn, cracked, or missing slats.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
7. Move the draper until the draper joint is in the work area.
8. Turn bolt (A) counterclockwise to decrease the tension on the draper. Tensioner indicator (B) will move outboard to show that the draper is loosening.

   IMPORTANT:

   To avoid premature failure of the draper, draper rollers, and/or tightener components, do **NOT** operate the header when the tension indicator is not visible.

   IMPORTANT:

   Do **NOT** adjust nut (C). This nut is used for draper alignment only.

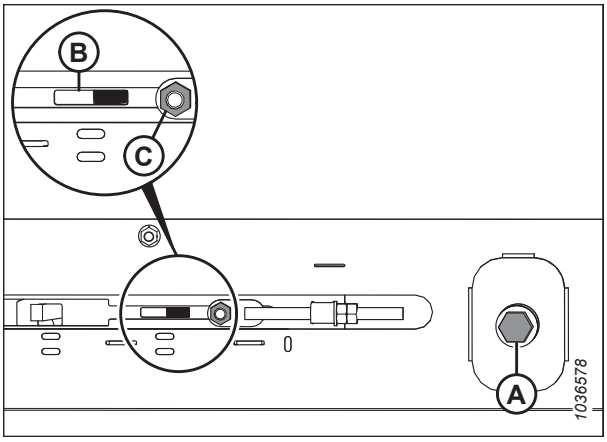


Figure 4.239: Adjusting Left Tensioner

9. Remove nuts and screws (A), and tube connectors (B) from the draper joint.
10. Remove screws (C), bridge connector (D), and nuts from the front end of the draper joint.
11. Pull the draper from the deck.

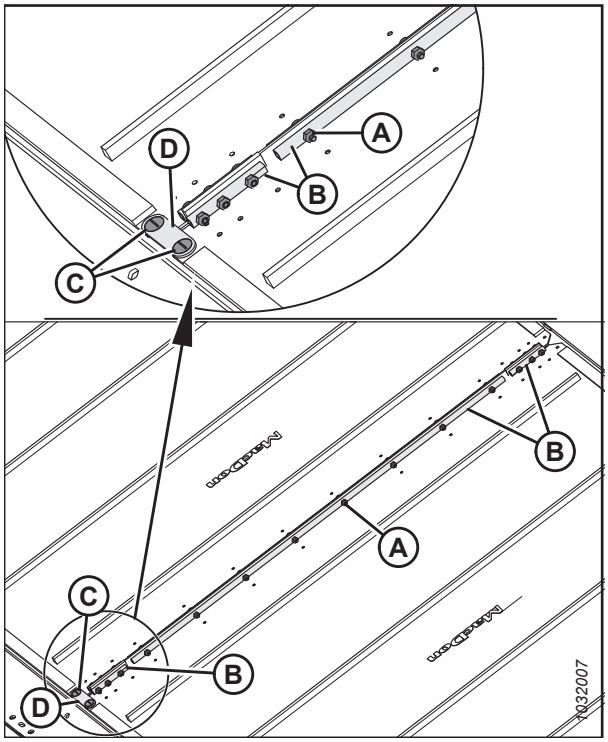


Figure 4.240: Draper Connectors

4.12.2 Installing Side Drapers

The side drapers bring cut crop to the center of the header.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
7. Apply talcum powder to the underside of the draper guides and to the draper surface that forms the seal with the cutterbar.
8. Insert the draper into the deck at the inboard end at the drive roller. Pull the draper into the deck while feeding it at the end.

9. Feed in the draper until it can be wrapped around the drive roller.
10. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.
11. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.

    NOTE:

    The two short tube connectors are attached at the front and the rear of the draper.
12. Install bridge connector (D) using screws (C) and the nuts at the front end of the draper joint.

    NOTE:

    Hold screws (C) at a 90° angle to bridge connector (D) while tightening the nuts. Holding the screws will prevent the bridge connector from bowing up.
13. Torque the nuts to 9.5 Nm (84 lbf·in).
14. Adjust the draper tension. For instructions, refer to *4.12.4 Adjusting Side Draper Tension, page 644*.
15. Operate the drapers with the engine at idle so that the talcum powder adheres to the draper seal surfaces.

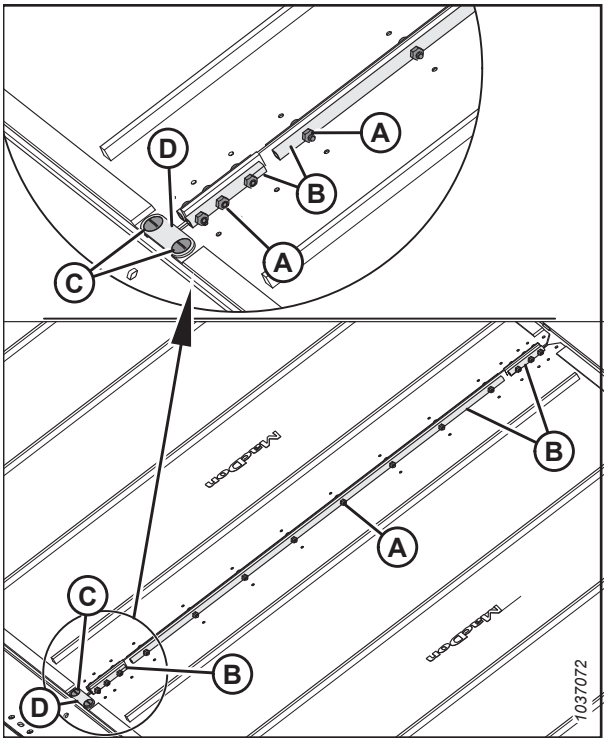


Figure 4.241: Draper Connectors

4.12.3 Adjusting Side Draper Deck Height

A properly adjusted deck height will prevent material from entering into the side drapers and stalling them.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the safety props before going under the header for any reason.

IMPORTANT:

New factory-installed drapers are pressure and heat checked at the factory. The gap between the draper and the cutterbar is set to 1–3 mm (0.04–0.12 in.).

1. Lower the header onto four blocks (A) (305–356 mm [12–14 in.]).

   NOTE:

   Place one block at each end of the header, and one block at each wing hinge point.

2. Shut down the engine, and remove the key from the ignition.

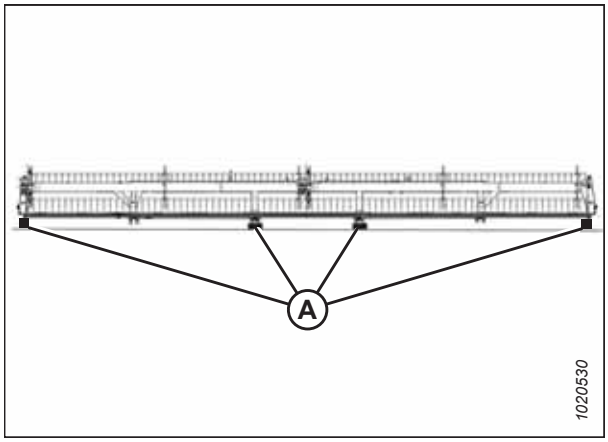


Figure 4.242: Header on Blocks

NOTE:

Take measurements at deck supports (A) when the header is in the working position. Depending on the size of the header, there will be two, three, or four supports per deck.

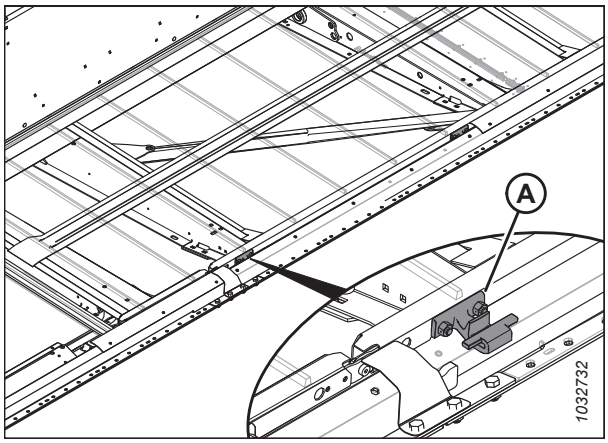


Figure 4.243: Draper Deck Supports

3. Ensure that clearance (C) between draper (A) and metal seal (D) is 1–4 mm (0.04–0.16 in.).

4. Relieve the tension on the draper. For instructions, refer to *4.12.4 Adjusting Side Draper Tension, page 644*.

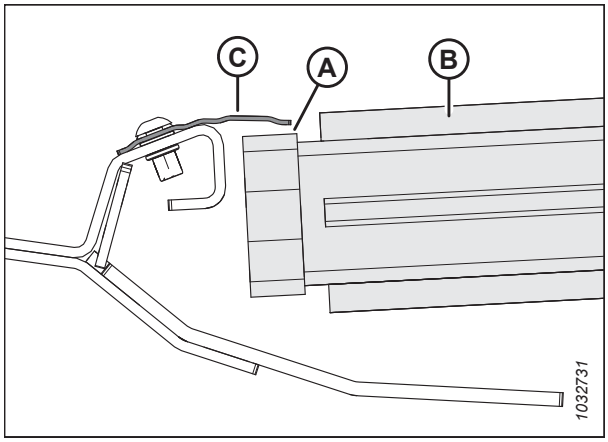


Figure 4.244: Draper Seal

5. Lift front edge of draper (A) past cutterbar (B) to expose the deck support.
6. Measure and note the thickness of the draper belt.

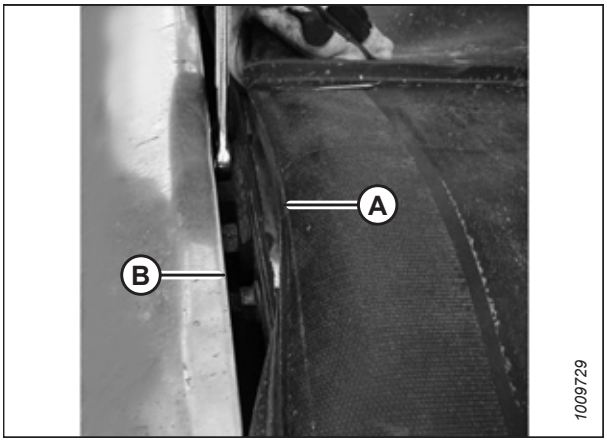


Figure 4.245: Deck Support

NOTE:

The draper has been removed in the image to show the deck.

7. Loosen two lock nuts (A) on deck support (B) by one half-turn **ONLY**.
8. Tap deck (C) with a hammer and a block of wood to lower the deck relative to the deck supports. Tap deck support (B) using a punch to raise the deck relative to the deck supports.

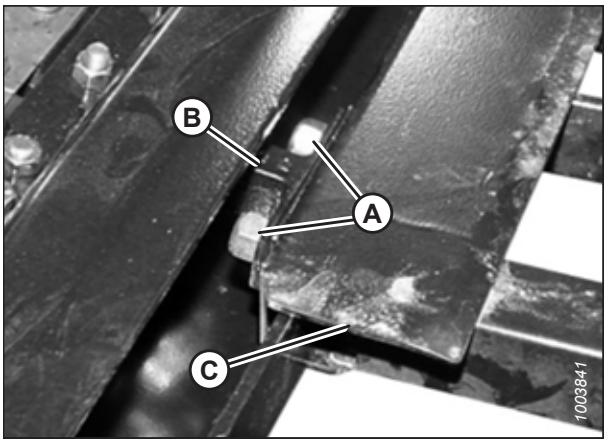


Figure 4.246: Deck Support

Table 4.1 Number of Deck Supports (B)

Model	Quantity
FD225	6
FD230	8
FD235, FD240, FD241	10
FD250	14

9. Use a feeler gauge that is the same thickness as the draper belt, plus 1 mm (0.04 in.). Slide the gauge along deck (A) under metal seal (C) to properly set the gap.
10. To create a seal, adjust deck (A) so that clearance (B) between metal seal (C) and the deck is the same thickness as the draper belt plus 1 mm (0.04 in.).

NOTE:

To check the clearance at a draper roller, begin measuring from the roller tube, **NOT** the deck.

11. Tighten deck support hardware (D).
12. Recheck gap (B) with the feeler gauge. For instructions, refer to Step *9, page 643*.

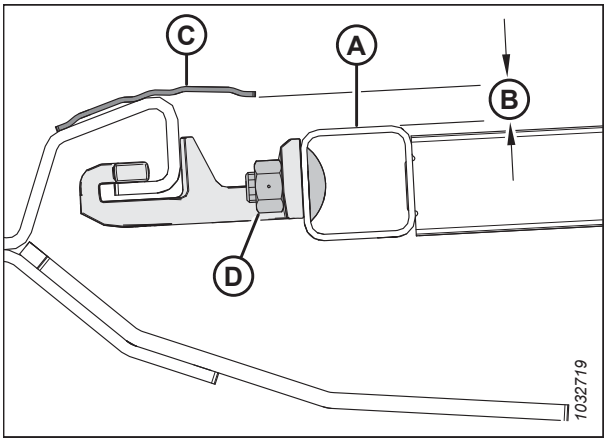


Figure 4.247: Deck Support

4.12.4 Adjusting Side Draper Tension

The tension on the side drapers can be adjusted using the adjusters on the end of each draper.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine, remove the key, and engage the vehicle's safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

The draper tension is set at the factory, and should not require adjustment. If adjustment is necessary, ensure that the tension is set so that the draper does not slip or sag below the cutterbar. Excessive tension on the draper can damage the draper drive and rollers.

1. Ensure that tension indicator (A) covers the inboard half of the window.

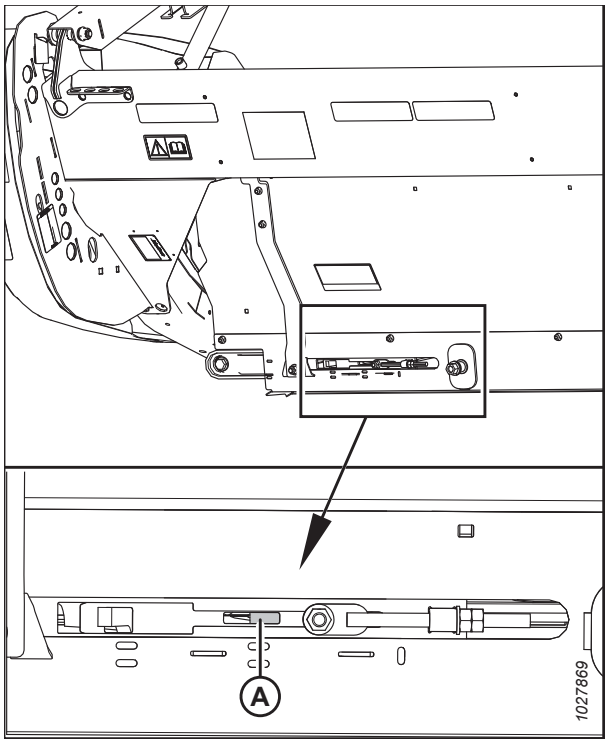


Figure 4.248: Checking Left Tension Adjuster

2. Start the engine.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.

6. Ensure that the draper guide (the rubber track on the underside of the draper) is properly engaged in groove (A) of the drive roller.

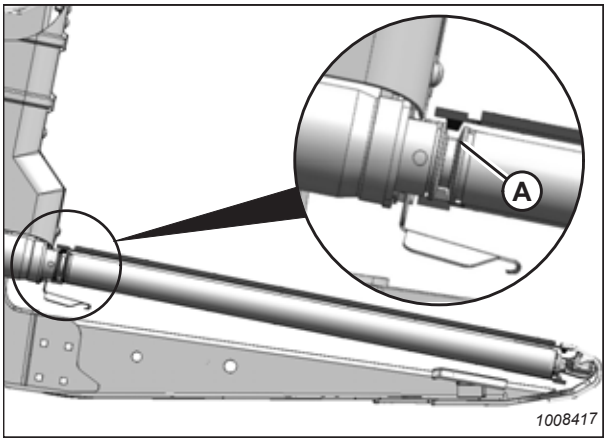


Figure 4.249: Drive Roller

7. Ensure that idler roller (A) is between guides (B).

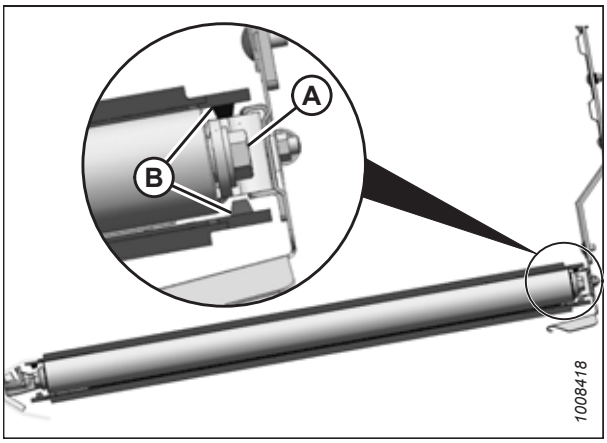


Figure 4.250: Idler Roller

8. Turn adjuster bolt (A) clockwise to increase the tension on the draper; turn bolt (A) counterclockwise to decrease the tension on the draper. Tensioner indicator (B) will move inboard to show that the draper is tightening. Tighten the adjuster bolt until the tensioner indicator covers the inboard half of the window.

   IMPORTANT:

   To avoid premature failure of the draper, draper rollers, and/or tightener components, do **NOT** operate the header when the tension indicator is not visible.

   IMPORTANT:

   Do **NOT** adjust nut (C). This nut is used for draper alignment only.

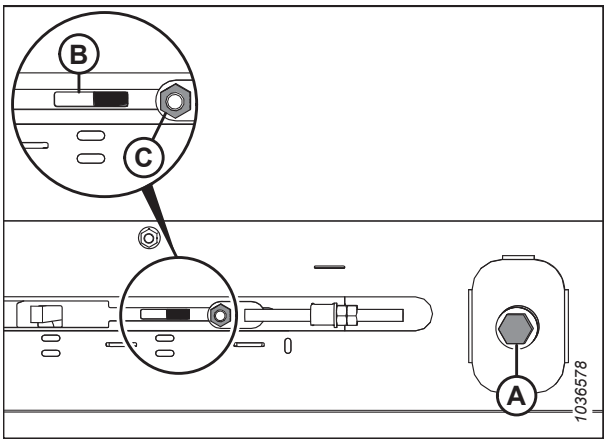


Figure 4.251: Adjusting Left Tensioner

4.12.5 Adjusting Side Draper Tracking

To ensure that the side drapers rotate smoothly without rubbing the side of the header frame, the side draper tracking may need to be adjusted.

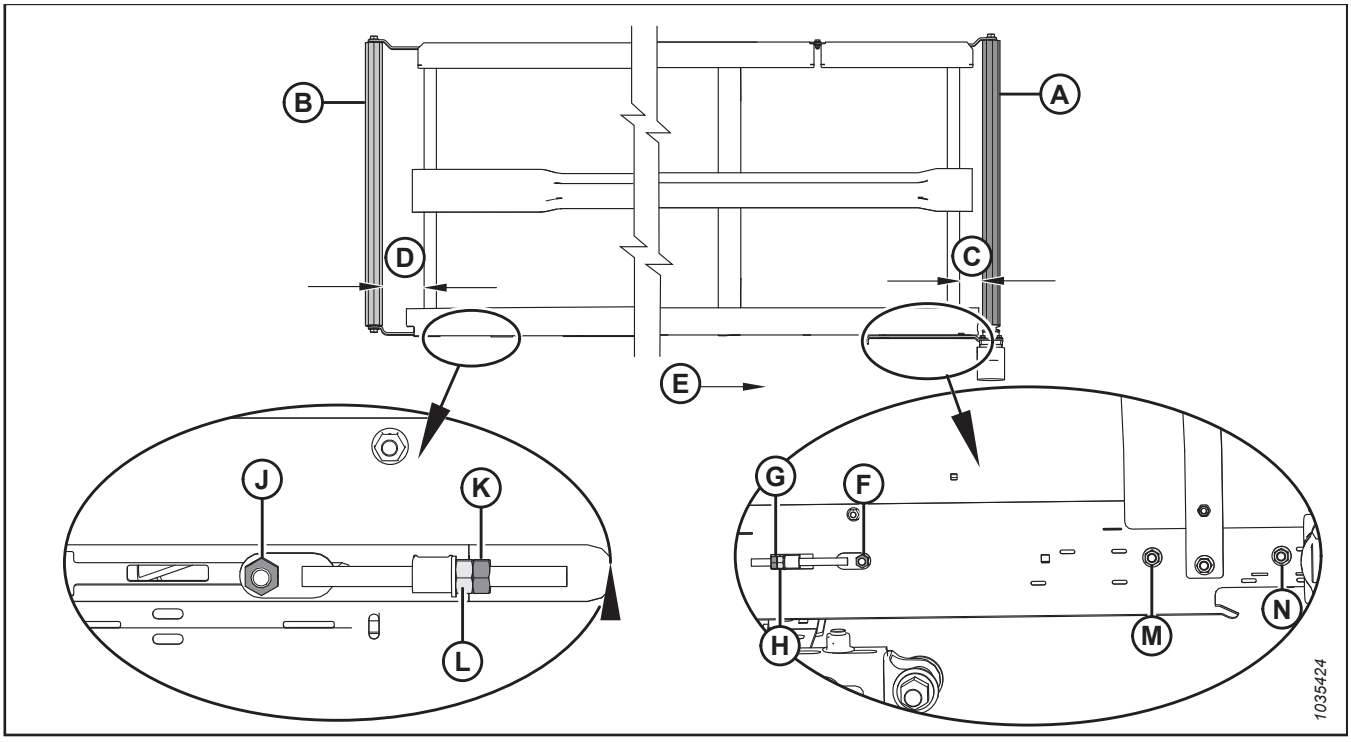


Figure 4.252: Draper Tracking Adjustments – Left Draper

A - Drive Roller
B - Idler Roller
C - Drive Roller Adjust
D - Idler Roller Adjust
E - Draper Direction
F - Nut on Drive Roller Side
G - Jam Nut for Drive Roller
H - Adjuster Nut for Drive Roller
J - Nut on Idler Roller Side
K - Jam Nut for Idler Roller
L - Adjuster Nut for Idler Roller
M - Nut on Drive Roller Side
N - Nut on Drive Roller Side

1. To determine which roller requires adjustment and which adjustments are necessary, refer to the following table:

Table 4.2 Draper Tracking

If tracking towards	Location	Adjustment	Method
Backsheet	Drive roller	Increase **C**	Tighten adjuster nut (H)
Cutterbar	Drive roller	Decrease **C**	Loosen adjuster nut (H)
Backsheet	Idler roller	Increase **D**	Tighten adjuster nut (L)
Cutterbar	Idler roller	Decrease **D**	Loosen adjuster nut (L)

2. Adjust drive roller (A) to change **C** (refer to Table *4.2, page 646* and Figure *4.252, page 646*) as follows:
   a. Loosen nuts (F), (M), and (N), and jam nut (G).
   b. Turn adjuster nut (H).
   c. Tighten nuts (F), (M), and (N), and jam nut (G).
3. Adjust idler roller (B) to change **D** (refer to Table *4.2, page 646* and Figure *4.252, page 646*) as follows:
   a. Loosen nut (J) and jam nut (K).
   b. Turn adjuster nut (L).

   NOTE:

   If the draper does not track at the idler roller end after the idler roller has been adjusted, the drive roller is likely not in line with the deck. Adjust the drive roller, and then readjust the idler roller.

   c. Tighten nut (J) and jam nut (K).

4.12.6 Inspecting Draper Roller Bearing

The draper rollers have non-greaseable bearings; however, the external seal should be checked every 200 hours (more frequently in sandy conditions) to achieve maximum bearing life.

Using an infrared thermometer, check for faulty draper roller bearings as follows:

1. Engage the header and run the drapers for approximately 3 minutes.
2. Check the temperature of the draper roller bearings at each of roller arms (A), (B), and (C) on each deck. Ensure the temperature does not exceed 44°C (80°F) above the ambient temperature.

   Replace roller bearings that exceed the maximum recommended temperature. For instructions, refer to:

   - *4.12.8 Replacing Side Draper Deck Idler Roller Bearing, page 649*
   - *4.12.11 Replacing Side Draper Drive Roller Bearing, page 655*

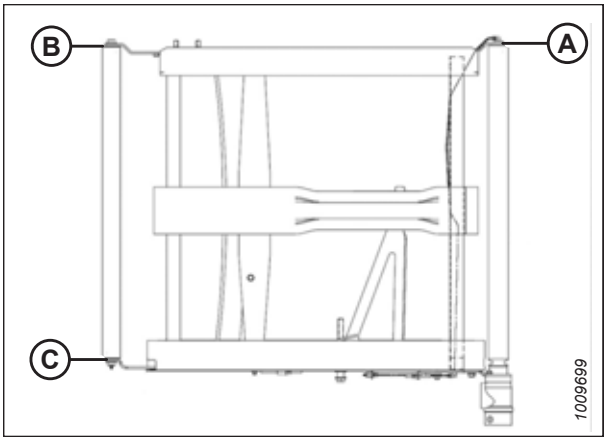


Figure 4.253: Roller Arms

4.12.7 Removing Side Draper Deck Idler Roller

The side draper deck has a roller on either end of the deck. One is the idler roller and one is the drive roller.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine and engage the header until the side draper connector is accessible (preferably close to the outboard end of the deck).

2. Raise the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props. For instructions, refer to the combine operator's manual.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
7. Loosen the draper by turning adjuster bolt (A) counterclockwise until the adjuster bolt runs out of adjustment and hits a hard stop.

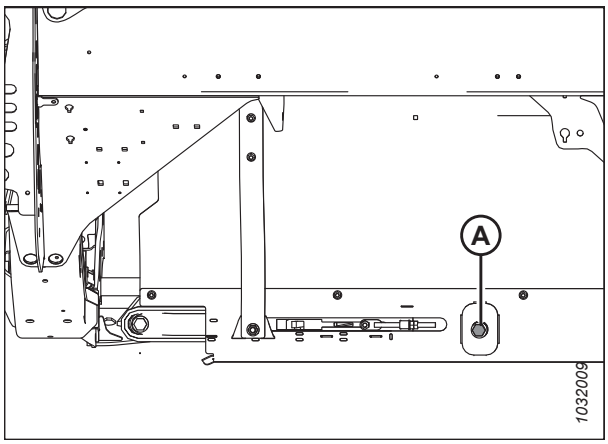


Figure 4.254: Tensioner – Left Side Shown

8. Remove screws (C), bridge connector (D), and nuts from the front end of the draper joint.
9. Remove nuts and screws (A) and tube connectors (B) from the draper joint.
10. Pull the draper off the idler roller.

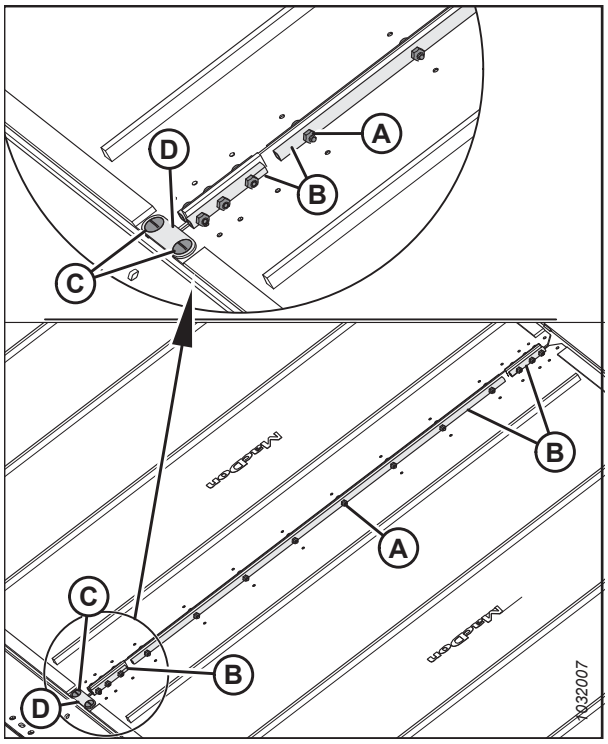


Figure 4.255: Draper Connectors

11. Remove bolt (A) and washer from the idler roller at the back of the header deck.
12. Remove bolt (B) and washer from the idler roller at the front of the header deck.
13. Spread roller arms (C) and (D), and remove the idler roller.

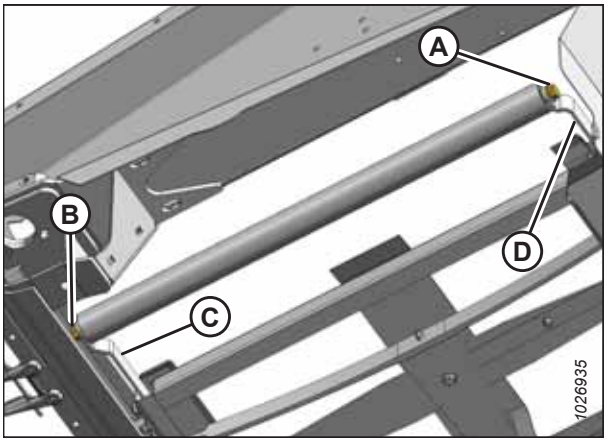


Figure 4.256: Idler Roller

4.12.8 Replacing Side Draper Deck Idler Roller Bearing

The side draper deck idler rollers have bearings installed to allow the roller to turn.

1. Remove the draper deck idler roller. For instructions, refer to *4.12.7 Removing Side Draper Deck Idler Roller, page 647*.
2. Clamp idler roller tube (C) in a vise with a cloth wrapped around the roller to prevent damage to the roller.
3. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
   a. Attach slide hammer (D) to threaded shaft (E) in the bearing assembly.
   b. Tap out bearing assembly (A) and seal (B).
4. Clean the inside of roller tube (C) and check the tube for signs of wear or damage. Replace the tube if necessary.

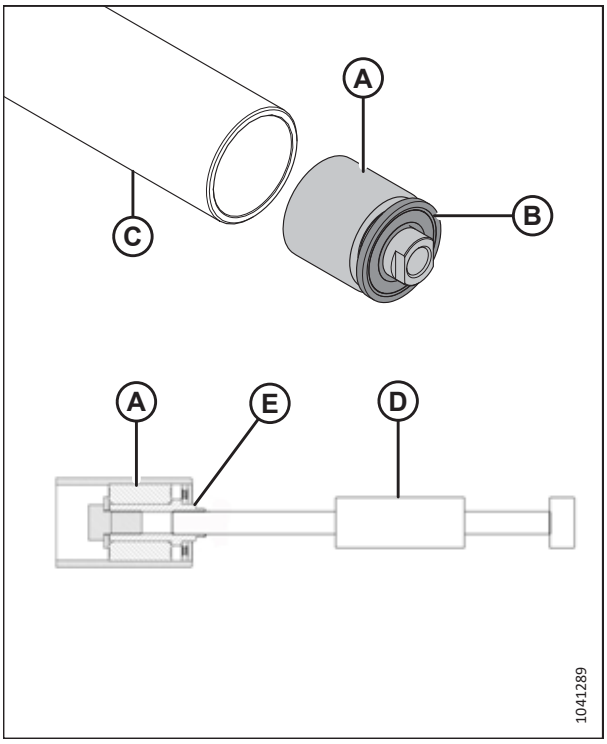


Figure 4.257: Idler Roller Bearing and Seal

IMPORTANT:

When installing the new bearing, do **NOT** place the end of the roller directly onto the ground. Bearing assembly (A) protrudes past roller tube (B), and placing the end of the roller on the ground will push the bearing farther into the tube.

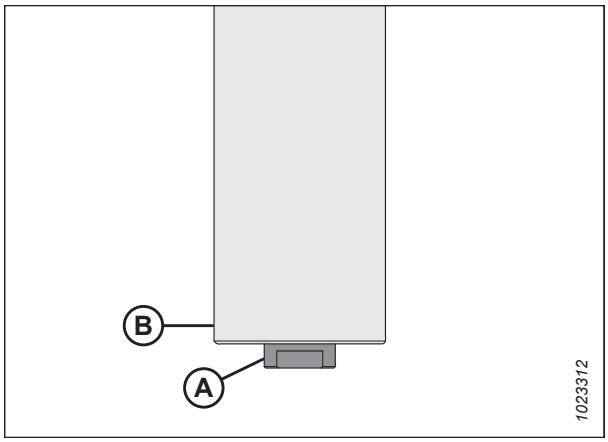


Figure 4.258: Idler Roller

5. Cut relief (A) into a block of wood.
6. Place the end of idler roller (B) onto the block of wood, with the protruding bearing assembly inside of relief (A).

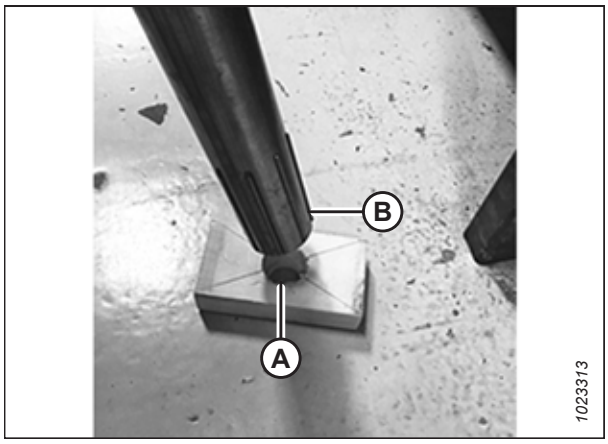


Figure 4.259: Idler Roller

7. Install new bearing assembly (C) by pressing the outer race of the bearing into the tube until it is 14–15 mm (9/16–19/32 in.) (B) from the outside edge of the tube.

   NOTE:

   Before installing a new seal, fill area (A) with approximately 8 pumps of grease.

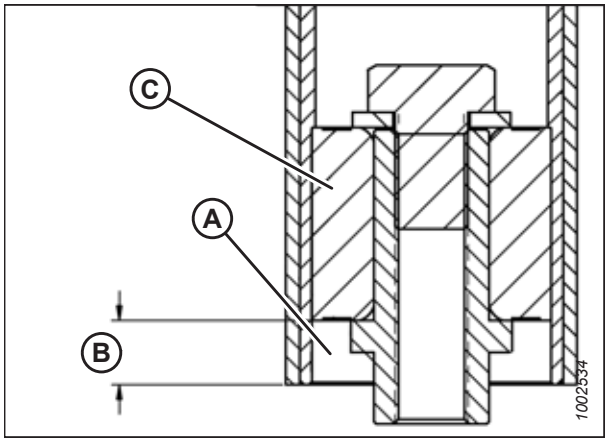


Figure 4.260: Idler Roller Bearing

8. Install new seal (A) by pressing on the inner and outer race of the seal until it is 3–4 mm (1/8–3/16 in.) (B) from the outside edge of the tube.

   NOTE:

   The seal can be oriented in either direction.

9. Reinstall the idler roller. For instructions, refer to *4.12.9 Installing Side Draper Deck Idler Roller, page 651*.

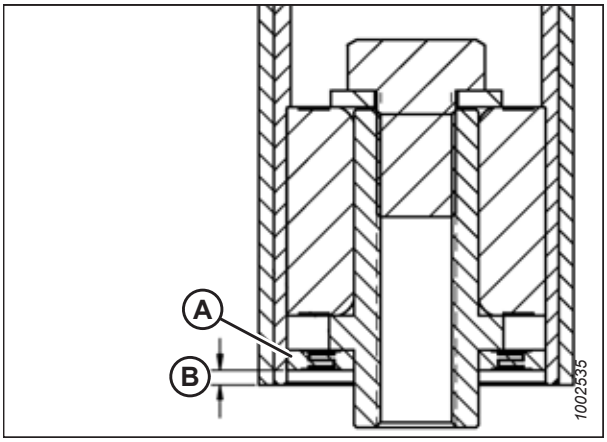


Figure 4.261: Idler Roller Bearing

4.12.9 Installing Side Draper Deck Idler Roller

The side draper deck has a roller on each end of the deck. One is the idler roller and one is the drive roller. If the idler roller is worn or damaged, it will need to be replaced.

1. Install idler roller (A) between idler arms (B).
2. Secure the roller with two bolts and washers (C). Tighten the bolts to 95 Nm (70 lbf·ft).

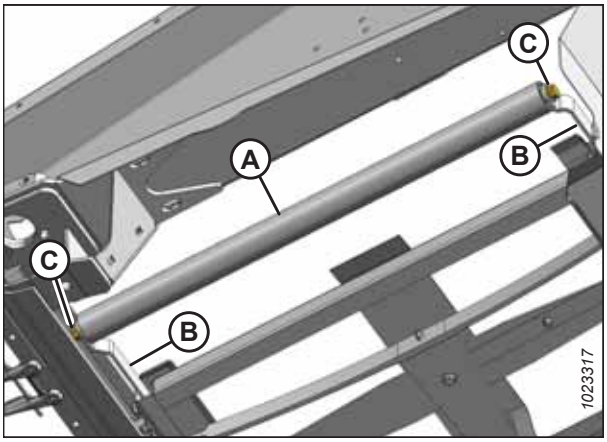


Figure 4.262: Idler Roller

3. Secure the ends of the draper with tube connectors (B) and screws and nuts (A).

   IMPORTANT:

   Install the screws so that the heads face inboard.

   NOTE:

   The two short tube connectors are attached at the front and rear of the draper.

4. Install bridge connector (D) using screws (C) and the nuts at the front end of the draper joint.

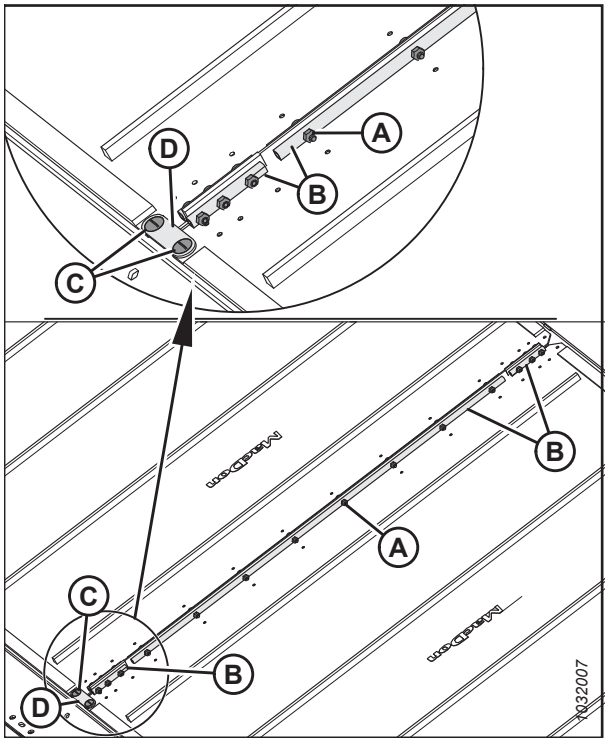


Figure 4.263: Draper Connector

5. Tighten the draper by turning adjuster bolt (A) clockwise. For instructions, refer to *4.12.4 Adjusting Side Draper Tension, page 644*.

6. Disengage the reel and header safety props.

DANGER

Ensure that all bystanders have cleared the area.

7. Start the engine.

8. Fully lower the header and the reel.

9. Engage the header. Ensure that the side drapers track correctly. For instructions on adjusting the drapers, refer to *4.12.4 Adjusting Side Draper Tension, page 644*.

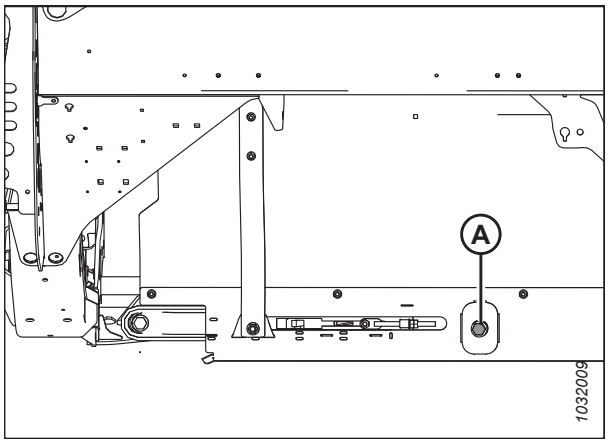


Figure 4.264: Draper Tensioner

4.12.10 Removing Side Draper Drive Roller

The side draper deck has a roller on either end of the deck. One is the idler roller and one is the drive roller.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Raise the reel fully.
4. If the draper connector is not visible, engage the header until the connector is accessible at the outboard end of the deck.
5. Shut down the engine, and remove the key from the ignition.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
7. Engage the header safety props. For instructions, refer to the combine operator's manual.
8. Loosen the draper by turning adjuster bolt (A) counterclockwise until the adjuster bolt runs out of adjustment and hits a hard stop.

   IMPORTANT:

   Do **NOT** adjust nut (B). This nut is used for draper alignment only.

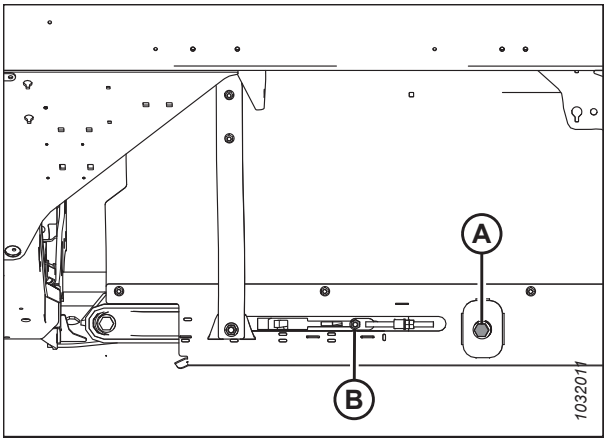


Figure 4.265: Draper Tensioner

9. Remove nuts and screws (A), and tube connectors (B) from the draper joint.
10. Remove screws (C), bridge connector (D), and the nuts from the front end of the draper joint.
11. Pull the draper off the drive roller.

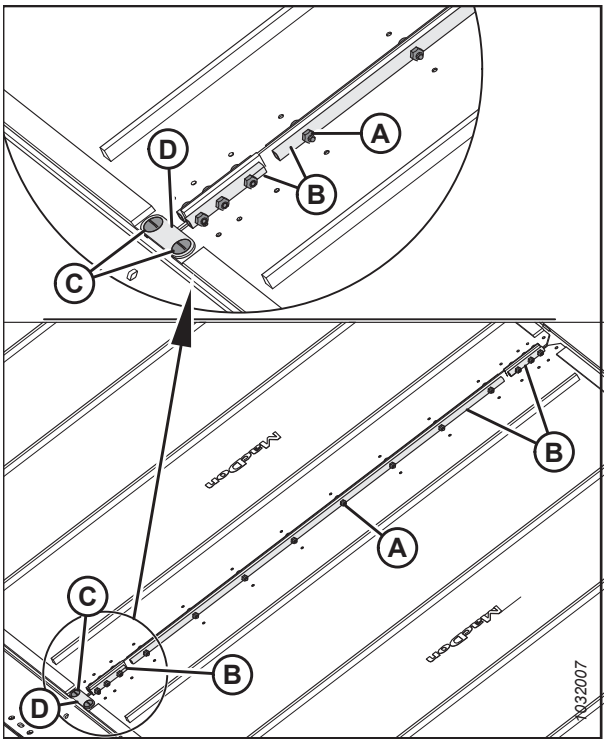


Figure 4.266: Draper Connectors

12. Align the set screws with guard hole (A). Remove the two set screws securing the motor to the drive roller.

    NOTE:

    The set screws are 1/4 turn apart.

13. Loosen two bolts (B) securing the motor to the drive roller arm.

    NOTE:

    It may be necessary to remove plastic shield (C) to gain access to the top bolt.

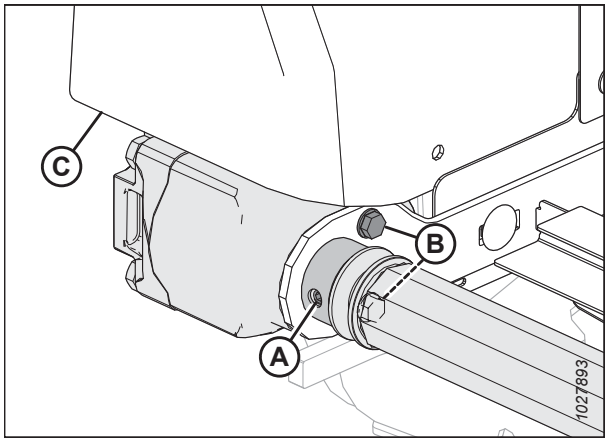


Figure 4.267: Drive Roller

NOTE:

It may be necessary to pry between the roller and bracket (A) to remove the roller from shaft. Take care not to lose the straight key.

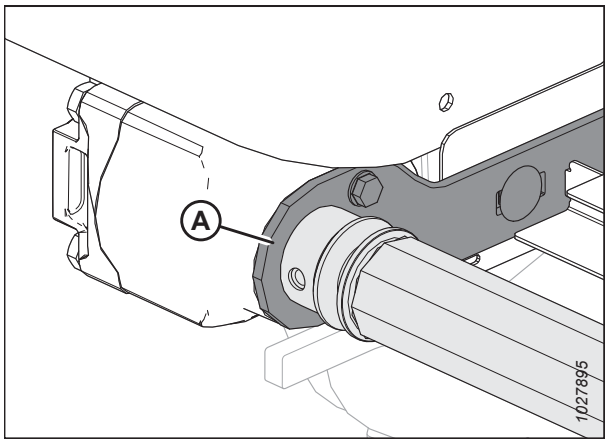


Figure 4.268: Drive Roller

14. Loosen two bolts (A) securing support arm (B).

15. Remove bolt (C) and the washer securing the opposite end of the drive roller to support arm (B).

16. Remove drive roller (D).

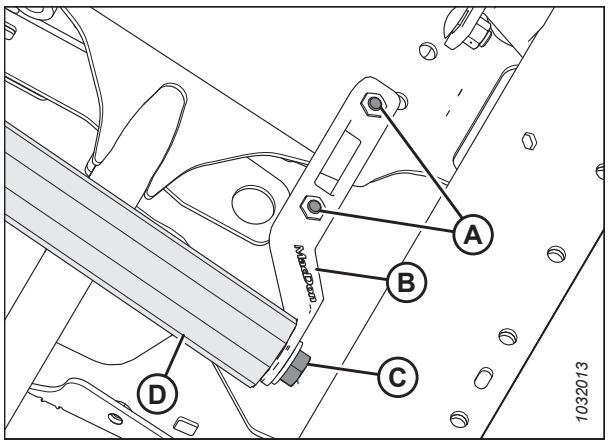


Figure 4.269: Drive Roller

4.12.11 Replacing Side Draper Drive Roller Bearing

You will need a slide hammer to replace the bearing on a drive roller.

1. Remove the draper idler roller assembly. For instructions, refer to *4.12.10 Removing Side Draper Drive Roller, page 652*.
2. Clamp the drive roller in a vise with a cloth wrapped around the roller to prevent damage to the roller.
3. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
   a. Attach slide hammer (D) to threaded shaft (E) in the bearing assembly.
   b. Tap out bearing assembly (A) and seal (B).
4. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace it if necessary.

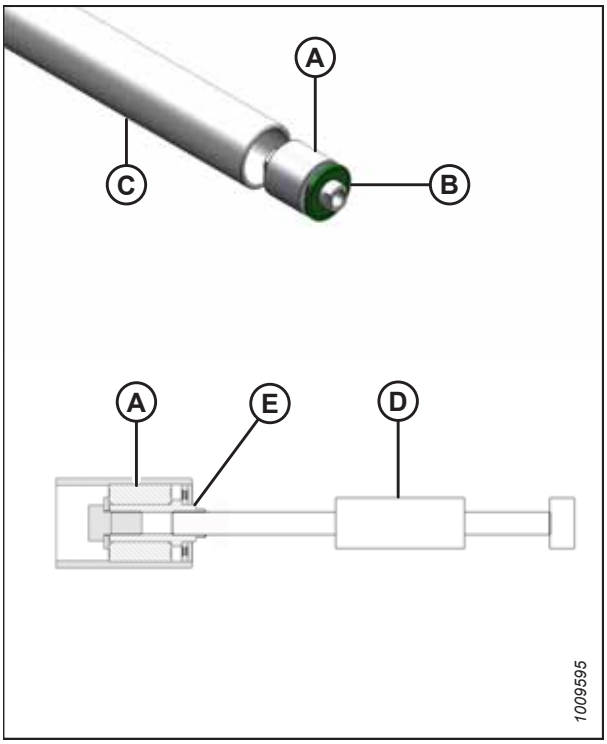


Figure 4.270: Roller Bearing

5. Install new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 14–15 mm (9/16–19/32 in.) (B) from the outside edge of the tube.
6. Apply grease in front of bearing assembly (A). Refer to the inside back cover of this manual for grease specifications.
7. Install new seal (C) at the roller opening, and install a flat washer (1.0 in. I.D. x 2.0 in. O.D.) on the seal.
8. Tap seal (C) into the roller opening with a suitably sized socket. Tap the washer and bearing assembly (A) until the seal is 3–4 mm (1/8–3/16 in.) (D) from the outside edge of the tube.

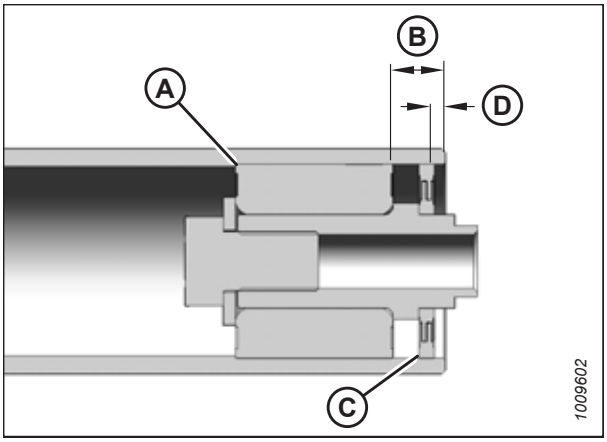


Figure 4.271: Roller Bearing

4.12.12 Installing Side Draper Drive Roller

The side draper deck has a roller on either end of the deck. One is the idler roller and one is the drive roller.

1. Position drive roller (A) between the roller support arms.
2. Secure the drive roller with washer and bolt (B).
3. Tighten bolts (C) on the support arm.
4. Torque bolt (B) to 95 Nm (70 lbf·ft).
5. Grease the motor shaft and insert it into the end of drive roller (A).

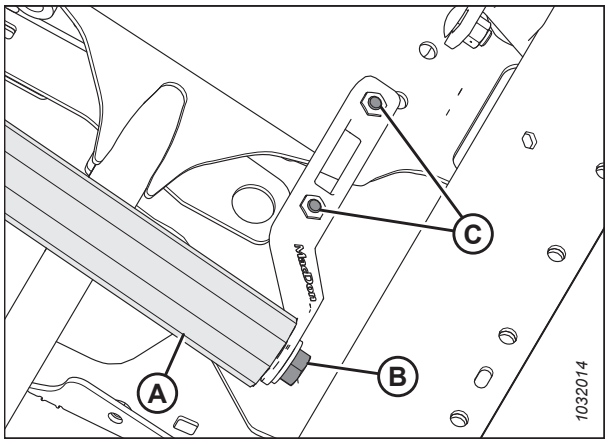


Figure 4.272: Drive Roller

6. Secure the motor to the roller support with two bolts (B). Torque the bolts to 27 Nm (239 lbf·in).
7. Ensure the straight key is in place on the motor shaft, then insert the motor shaft all the way into the roller.
8. Using a hex key, tighten the two set screws (not shown) through access hole (A).

   NOTE:

   Tighten any loosened bolts and reinstall plastic shield (C), if it was previously removed.

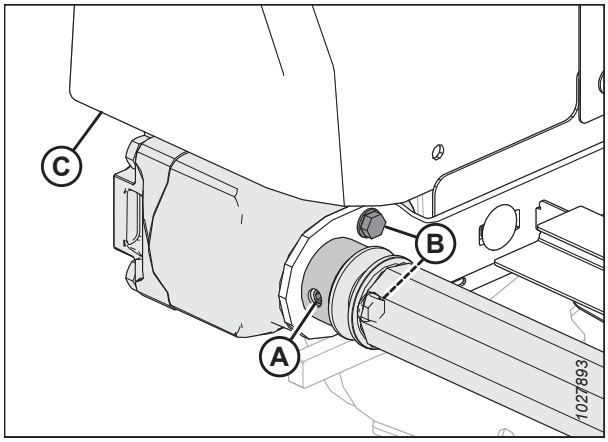


Figure 4.273: Drive Roller

9. Wrap the draper over the drive roller and attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.

   NOTE:

   The two short tube connectors are attached at the front and rear of the draper.

10. Install bridge connector (D) using screws (C) and nuts at the front end of the draper joint.

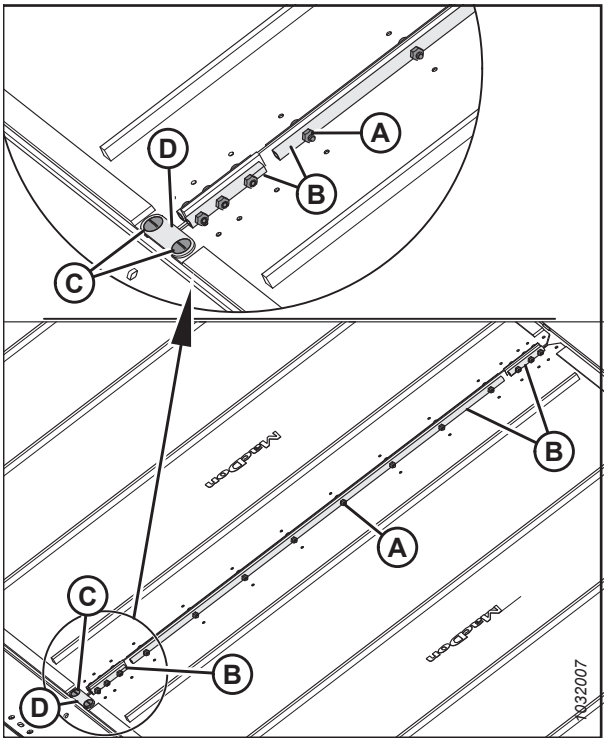


Figure 4.274: Draper Connector

11. Tighten the draper by turning adjuster bolt (A) clockwise. For instructions, refer to *4.12.4 Adjusting Side Draper Tension, page 644*.

12. Disengage the reel and header safety props. For instructions, refer to *Disengaging Reel Safety Props, page 38*.

DANGER

Ensure that all bystanders have cleared the area.

13. Start the engine and lower the header and reel.

14. Run the machine to ensure that the draper tracks correctly. If additional adjustment is necessary, refer to *4.12.5 Adjusting Side Draper Tracking, page 646*.

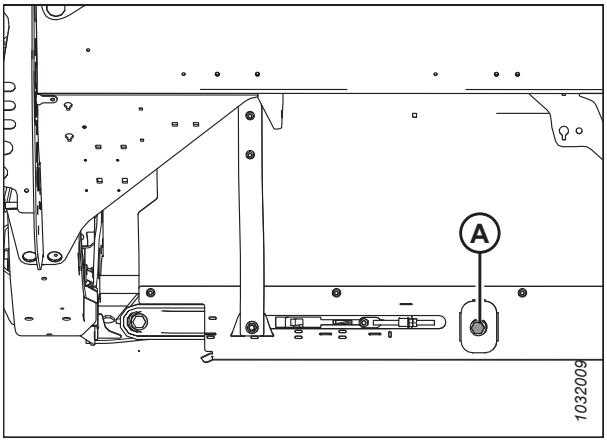


Figure 4.275: Draper Tensioner – Left Side Shown

4.13 Reel

The reel features a uniquely shaped cam, which allows the fingers to get underneath lodged crop and pick it up before it is cut.

CAUTION

To avoid personal injury, before servicing the machine or opening the drive covers, refer to *4.1 Preparing Machine for Servicing, page 499*.

4.13.1 Reel to Cutterbar Clearance

There must be a sufficient clearance between the reel fingers and the cutterbar to ensure that the reel fingers do not contact the cutterbar during operation. The clearance is set at the factory, but some adjustment may be necessary before operating the header.

Measure clearance (A) between the tip of the reel finger and the guard (guard [B] or short guard [C], depending on the configuration of the header). Compare the measurement to the specifications listed in the table below:

Table 4.3 Finger to Guard Clearance – Single-Reel Headers

Header Model	End Panels	Beside Center Arm
FD225	50 mm (1.97 in.)	—

Table 4.4 Finger to Guard Clearance – Double-Reel Headers

Header Model	End Panels	Beside Center Arm
FD230	20 mm (0.80 in.)	45 mm (1.77 in.)
FD235 FD240 FD241	20 mm (0.80 in.)	20 mm (0.80 in.)

Table 4.5 Finger to Guard Clearance – Triple-Reel Headers

Header Model	Outer End Panels	Beside Center Arms
FD240 FD241 FD245 FD250	20 mm (0.80 in.)	20 mm (0.80 in.)

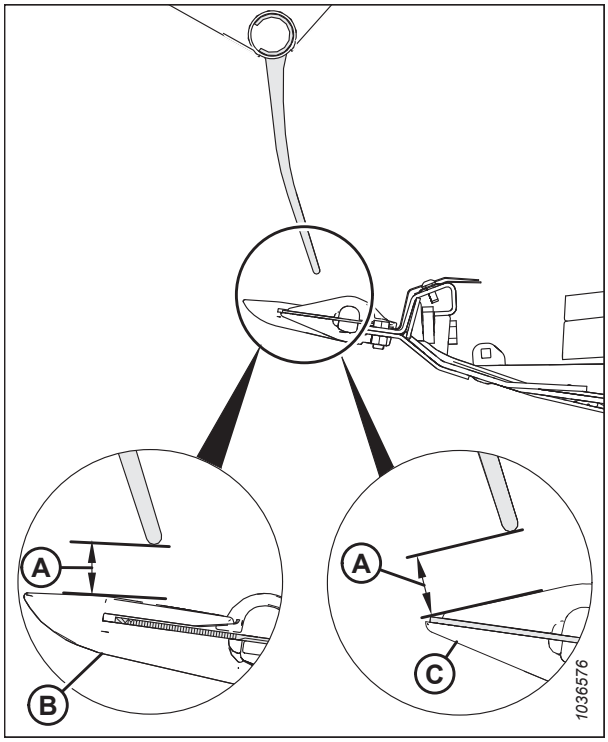


Figure 4.276: Finger Clearance

Measuring Reel-to-Cutterbar Clearance

The reel-to-cutterbar clearance refers to the gap between the ends of the reel fingers and the cutterbar. Depending on the configuration of the header, the reel-to-cutterbar clearance can vary across the length of the header. To determine if the clearance is acceptable, it must be measured.

NOTE:

This procedure can be performed with the reel fore-aft cylinders in either the standard position or the canola-harvesting position, as long as the fore-aft cylinders remain in the same position for the duration of the procedure.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Park the combine on a level surface.
3. Adjust the reel fore-aft position until the **7** on fore-aft indicator (A) is hidden by sensor support (B).

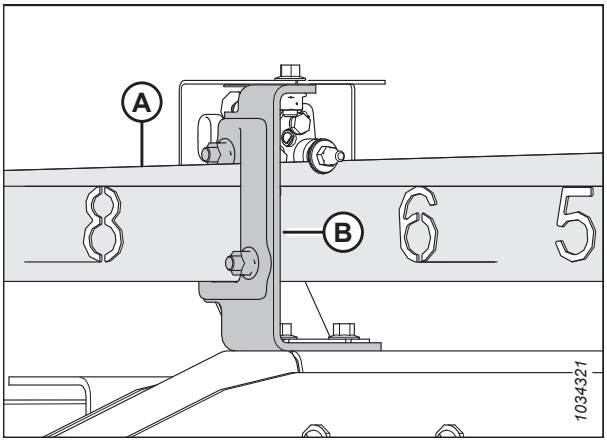


Figure 4.277: Reel Fore-Aft Position

4. **Single-reel headers:** Raise the header high enough to place two 254 mm (10 in.) high blocks (A) under the cutterbar, just inboard of the wing flex points.

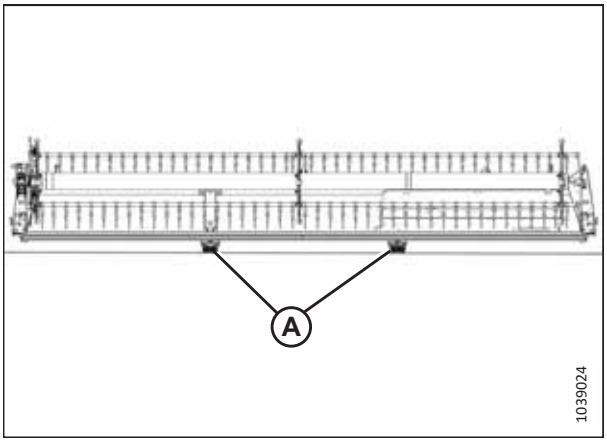


Figure 4.278: FlexDraper® Block Locations – Single Reel

5. **Double-reel headers:** Raise the header high enough to place two 254 mm (10 in.) high blocks (A) under the cutterbar, just inboard of the wing flex points.

   NOTE:

   You do not need blocks to support the wings of triple-reel headers.

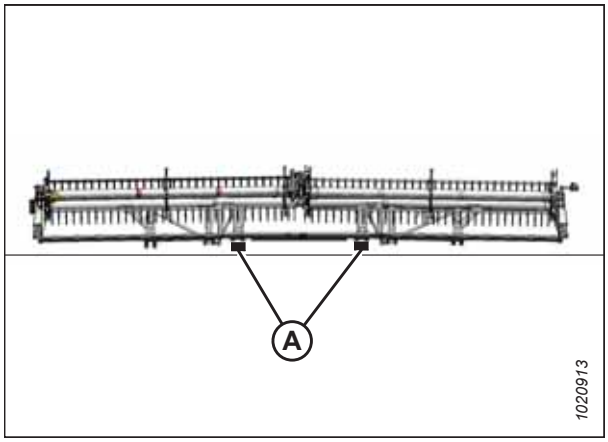


Figure 4.279: FlexDraper® Block Locations – Double Reel

6. **Single-reel and double-reel headers:** Move wing lock spring handles (A) down to the UNLOCK position.

   NOTE:

   The reel clearance of triple-reel headers must be measured while the wings are locked.

7. Lower the header fully. The wings of single-reel and double-reel headers should be in a full frown position; the wings of triple-reel headers should be level with the center deck.

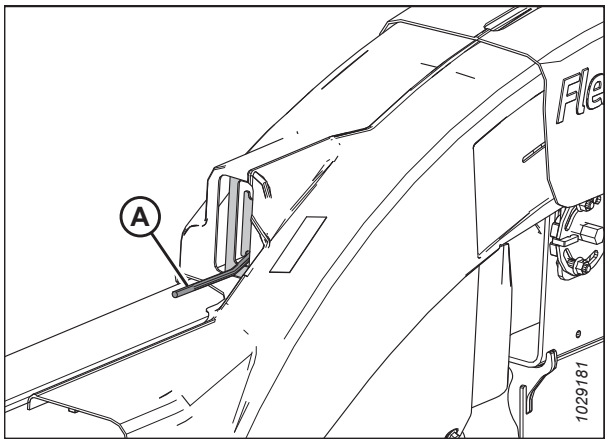


Figure 4.280: Wing Lock in UNLOCK Position

8. Rotate the reel by hand until a tine tube is directly above the cutterbar.
9. Measure and record clearance (A) between the tip of the fingers and one of the guards at the end of the reels, either pointed guard (B) or short guard (C). For the clearance specifications, refer to *4.13.1 Reel to Cutterbar Clearance, page 658*.

   For the measurement locations, refer to the relevant figure:

   - Single-reel headers: Figure *4.282, page 661*
   - Double-reel headers: Figure *4.283, page 662*
   - Triple-reel headers: Figure *4.284, page 662*

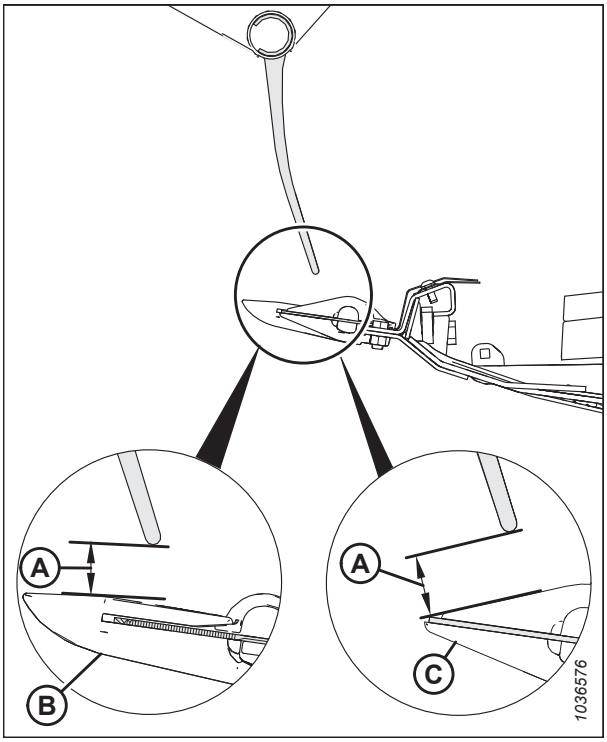


Figure 4.281: Finger Clearance

Single-reel measurement locations (A): Outer ends of the reel (two places).

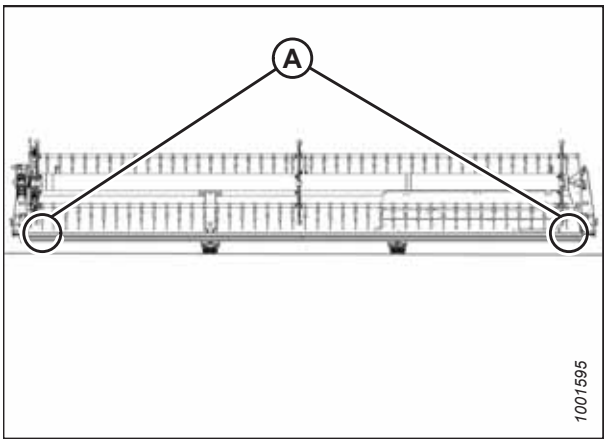


Figure 4.282: FlexDraper® Measurement Locations – Single Reel

Double-reel measurement locations (A): Outer ends of the reels and at both hinge points (four places).

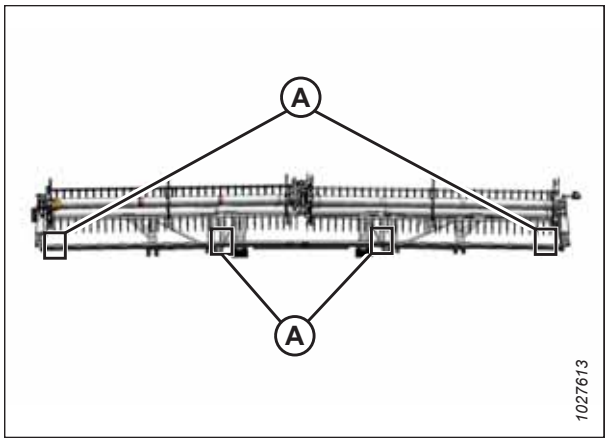


Figure 4.283: FlexDraper® Measurement Locations – Double Reel

Triple-reel measurement locations (A): Both ends of three reels (six places).

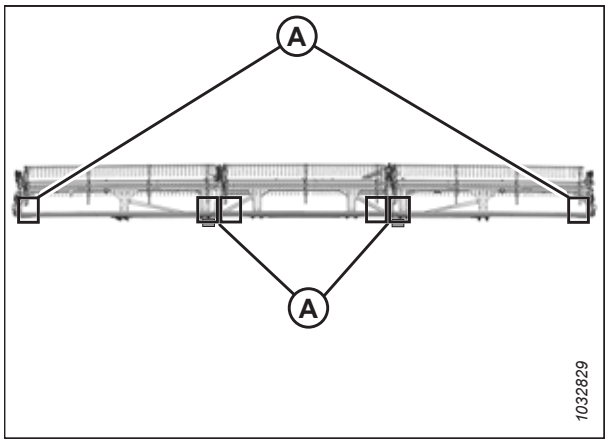


Figure 4.284: FlexDraper® Measurement Locations – Triple Reel

10. Adjust the reel-to-cutterbar clearance, if necessary. For instructions, refer to *Adjusting Reel-to-Cutterbar Clearance, page 662*.

Adjusting Reel-to-Cutterbar Clearance

If the clearance between the reel fingers and the cutterbar is insufficient, it will need to be adjusted to prevent the equipment from being damaged.

NOTE:

This procedure can be performed with the reel fore-aft cylinders in either the standard position or the canola-harvesting position, as long as the fore-aft cylinders remain in the same position for the duration of the procedure.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

Ensure that all bystanders have cleared the area.

1. Measure the reel-to-cutterbar clearance. For instructions, refer to *Measuring Reel-to-Cutterbar Clearance, page 658*.
2. Start the engine.

3. Adjust the reel fore-aft position until the **7** on fore-aft indicator (A) is hidden by sensor support (B).

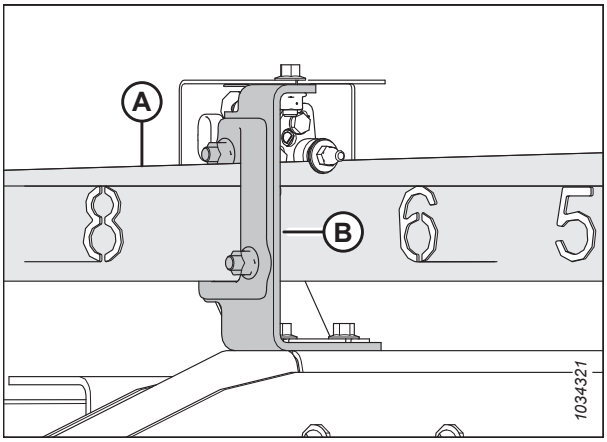


Figure 4.285: Fore-Aft Position

4. Raise the header high enough to place two 254 mm (10 in.) high blocks (A) under the cutterbar, just inboard of the wing flex points.

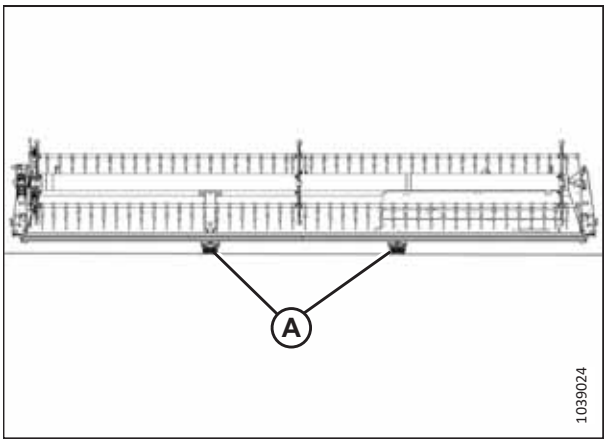


Figure 4.286: FlexDraper® Block Locations – Single Reel

5. Raise the header high enough to place two 254 mm (10 in.) high blocks (A) under the cutterbar, just inboard of the wing flex points.

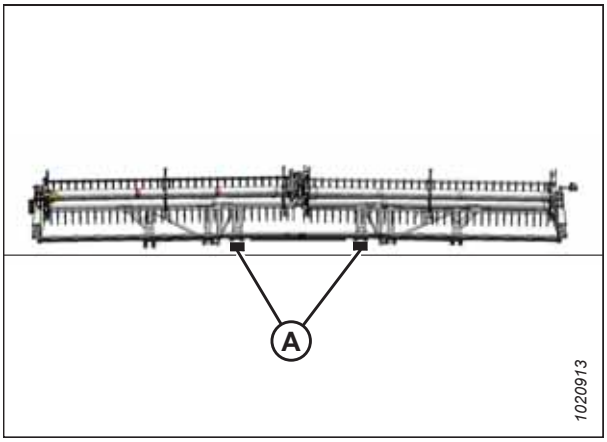


Figure 4.287: FlexDraper® Block Locations – Double Reel

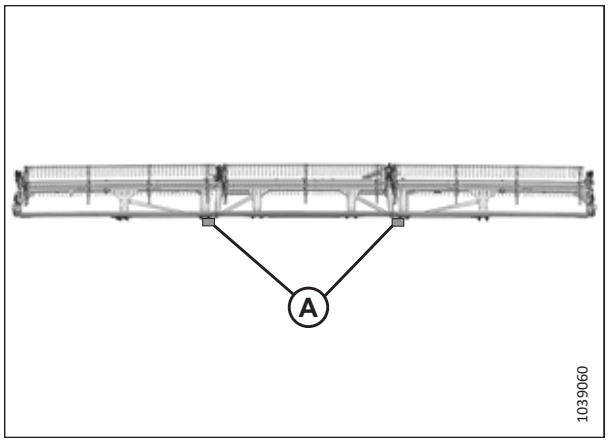


Figure 4.288: FlexDraper® Block Locations – Triple Reel

6. Lower the reel fully and continue holding the control button down to phase the cylinders.
7. Shut down the engine, and remove the key from the ignition.
8. Adjust the clearance at the outboard ends of the reel as follows:
   a. Loosen bolt (A) on the outer arm cylinder.
   b. Adjust cylinder rod (B) as needed:
      - To increase the clearance between the reel fingers and the cutterbar, turn cylinder rod (B) out of the clevis.
      - To decrease the clearance between the reel fingers and the cutterbar, turn cylinder rod (B) into the clevis.
   c. Tighten bolt (A).
9. Repeat Step *8, page 664* on the opposite side of the header.

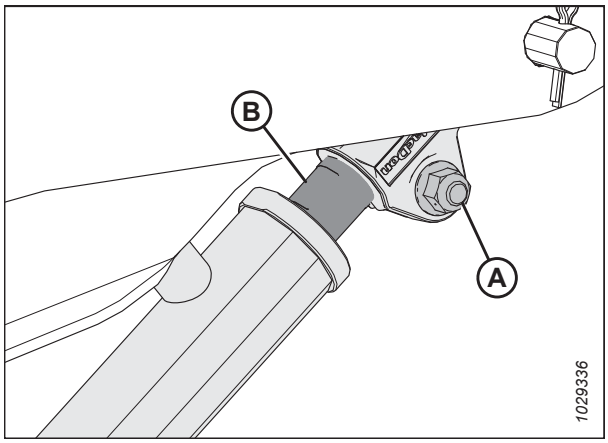


Figure 4.289: Outside Arm Cylinder

10. Loosen bolts (A) on both center arm cylinders.
11. Adjust the clearance as follows:

    IMPORTANT:

    Adjust both cylinder rods equally.

    - To increase the clearance between the reel fingers and the cutterbar, turn cylinder rods (D) out of the clevis.
    - To decrease the clearance between the reel fingers and the cutterbar, turn cylinder rods (D) into the clevis.
12. Ensure that measurement (B) is identical on both cylinders.

    NOTE:

    Measurement (B) runs from the center of mounting pins (C) to the tops of the notches in cylinder rods (D).
13. Ensure that both mounting pins (C) **CANNOT** be rotated by hand. If one of the mounting pins can be rotated, adjust cylinder rods (D) as needed:

    - Turn the cylinder rod out of the clevis to increase the load on the cylinder rod.
    - Turn the cylinder rod into the clevis to decrease the load on the cylinder rod.

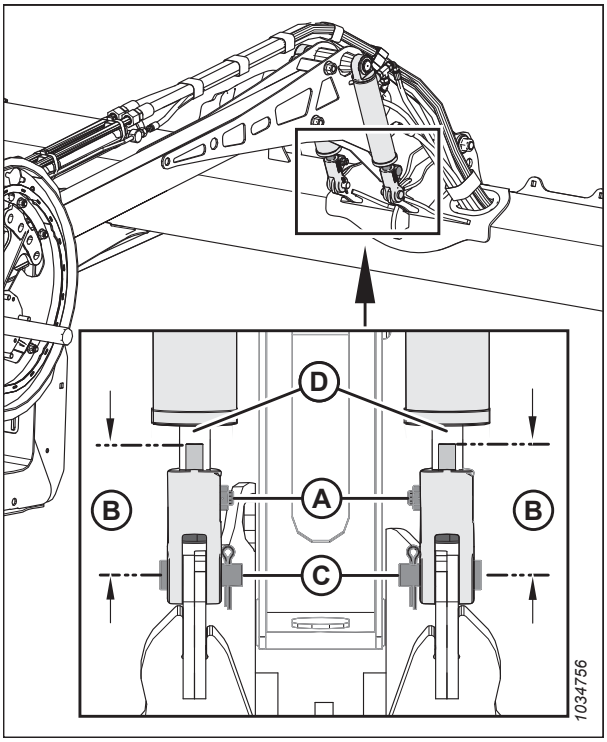


Figure 4.290: Center Arm Cylinders

14. Tighten bolts (A).
15. **Triple-reel headers:** Repeat Step *10, page 665* to Step *14, page 665* to set the reel-to-cutterbar clearance on the other center reel arm.
16. Start the engine.
17. Raise the reel fully.
18. Lower the reel fully and continue holding the control button down to phase the cylinders.
19. Shut down the engine, and remove the key from the ignition.
20. Check the reel-to-cutterbar clearance measurements again. If necessary, repeat the adjustment procedures.
21. Move the reel back to ensure that the reel fingers do not contact the deflector shields.
22. If the reel fingers contact the deflector shields, adjust the reel upward to maintain the clearance at all reel fore-aft positions. If contact still occurs after the reel is adjusted, trim the fingers as needed.
23. Periodically check for evidence of contact during operation. Adjust the reel-to-cutterbar clearance as needed.

4.13.2 Reel Frown

The reel must be set up to frown (providing more clearance at the center of the reel than at the ends) to compensate for reel flexing.

Adjusting Reel Shape

The reel tine tubes must be set up to frown (provide more clearance at the center of the reel than at the ends) to compensate for reel flexing.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Position the reel over the cutterbar (between **4** and **5** on fore-aft position indicator [A]) to provide adequate clearance at all reel fore-aft positions. Bracket (B) is the position marker.
2. Shut down the engine, and remove the key from the ignition.
3. Record the measurement at each reel disc location for each reel tube.

   NOTE:

   Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.

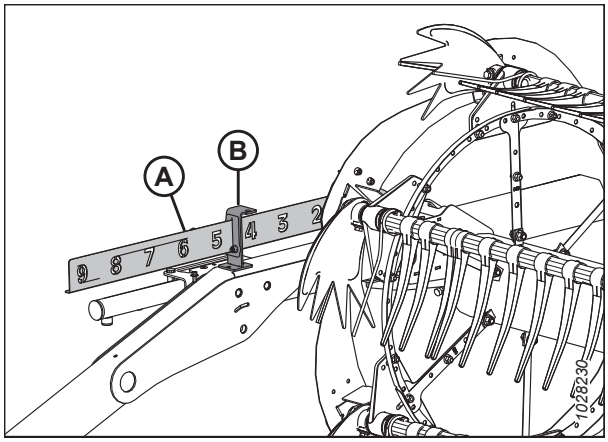


Figure 4.291: Fore-Aft Position Indicator

4. Start with the reel disc closest to the center of the header and proceed outward towards the ends, adjusting the header profile as follows:
   a. Remove bolts (A).
   b. Loosen bolt (B) and adjust arm (C) until the desired measurement is obtained between the reel tube and cutterbar.

      NOTE:

      Allow the reel tubes to curve naturally and position the hardware accordingly.

   c. Reinstall bolts (A) in the aligned holes and tighten them.

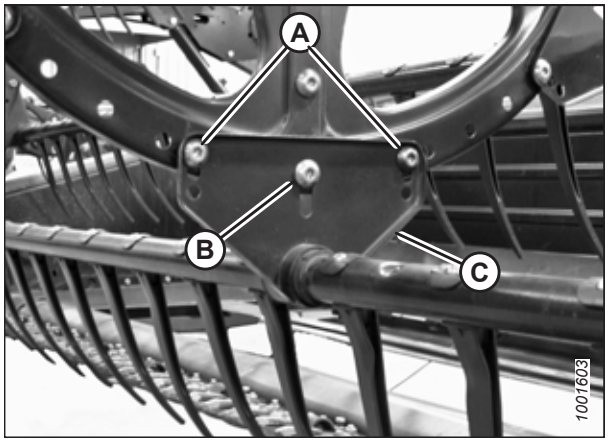


Figure 4.292: Center Reel Disc

4.13.3 Centering Reel

The reel needs to be centered on the header to avoid any contact with the end panels.

DANGER

To prevent bodily injury or death from the unexpected startup of the machine, always stop the engine and remove the key before adjusting the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Measure clearance (A) at locations (B) between the reel tine tube and the endsheet at both ends of the header. The clearances should be the same if the reel is centered.

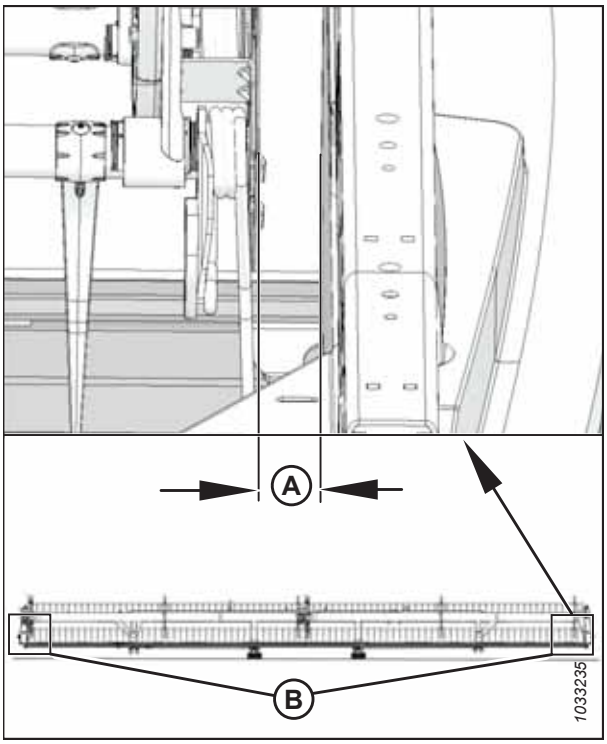


Figure 4.293: Clearance between Reel and Endsheet

6. Loosen bolt (A) on brace (B) at the center support arm.
7. Move the forward end of reel support arm (C) laterally as needed to center the reel.
8. Tighten bolt (A). Torque the bolt to 457 Nm (337 lbf·ft).

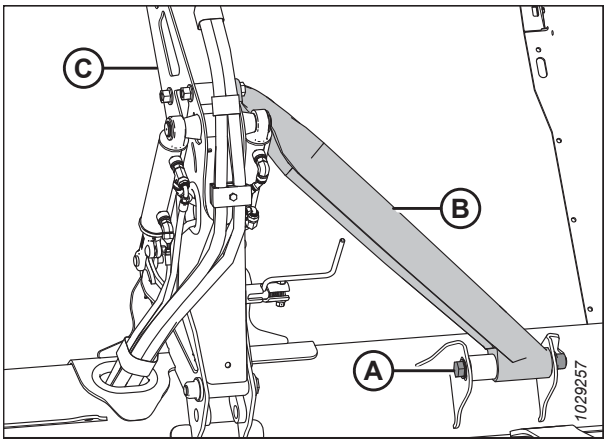


Figure 4.294: Center Support Arm

4.13.4 Reel Fingers

If a reel finger is damaged or worn, it will need to be removed so it can be replaced. Reel fingers are either steel or plastic.

IMPORTANT:

Keep the reel fingers in good condition and straighten or replace them as necessary.

Removing Steel Reel Fingers

Damaged steel fingers will need to be cut off of the reel tine tube.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Support the tine tube at all times to avoid damaging it and other components.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Remove the tine tube bushings from the applicable tine tube at the center and left reel discs. For instructions, refer to *Removing Bushings from Reels, page 671*.
7. Attach tine tube arms (B) to the reel disc at original attachment locations (A).
8. Cut the damaged finger to remove it from the tine tube.
9. Remove the bolts from the existing fingers and slide the fingers over to replace the finger that was cut off in Step *8, page 668*. Remove tine tube arms [B] from the tine tubes as necessary.

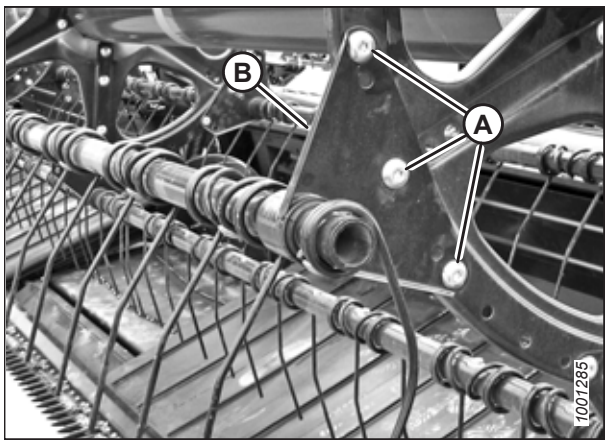


Figure 4.295: Tine Tube Arm

Installing Steel Reel Fingers

Once the old steel finger has been removed, a new finger can be pushed onto the tine tube.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Support the tine tube at all times to prevent damage to the tube and other components.

NOTE:

This procedure assumes a finger has been removed from the machine. For instructions about removing fingers, refer to *Removing Steel Reel Fingers, page 668*.

1. Slide the new finger and tine tube arm (A) onto the end of the tube.
2. Install the tine tube bushings. For instructions, refer to *Installing Bushings onto Reels, page 674*.
3. Attach the fingers to the tine tube with bolts and nuts (B).

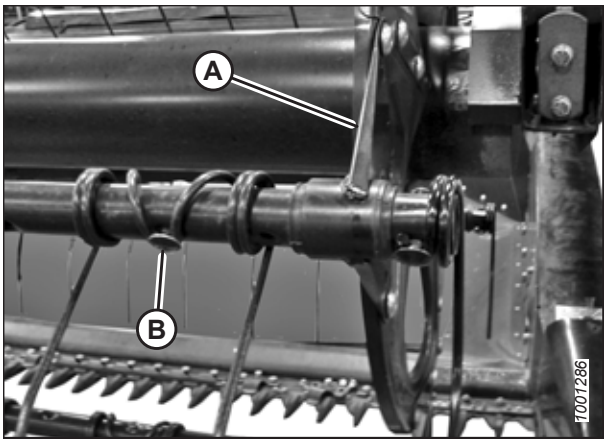


Figure 4.296: Tine Tube

Removing Plastic Reel Fingers

Plastic reel fingers are secured to the tine tube with a single Torx® screw.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.
6. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

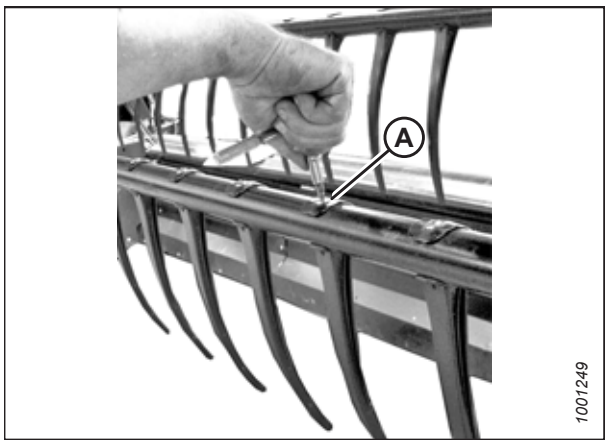


Figure 4.297: Removing Plastic Finger

7. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.

Figure 4.298: Removing Plastic Finger

Installing Plastic Reel Fingers

Once the old plastic reel finger has been removed, the new one can be installed.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

NOTE:

This procedure assumes a finger has been removed from the machine. For information about removing fingers, refer to *Removing Plastic Reel Fingers, page 669*.

1. Position the new finger on the rear of the tine tube. Engage the lug at the bottom of the finger in the lower hole in the tine tube.
2. Lift the top flange and rotate the finger as shown until the lug in the top of the finger engages the upper hole in the tine tube.

Figure 4.299: Installing Plastic Finger

3. Install screw (A) using a Torx® Plus 27 IP socket wrench and torque it to 8.5–9.0 Nm (75–80 lbf·in).

   IMPORTANT:

   Do **NOT** apply force to the finger prior to tightening the mounting screw. Applying force without tightening the mounting screw will break the finger or shear the locating pins.

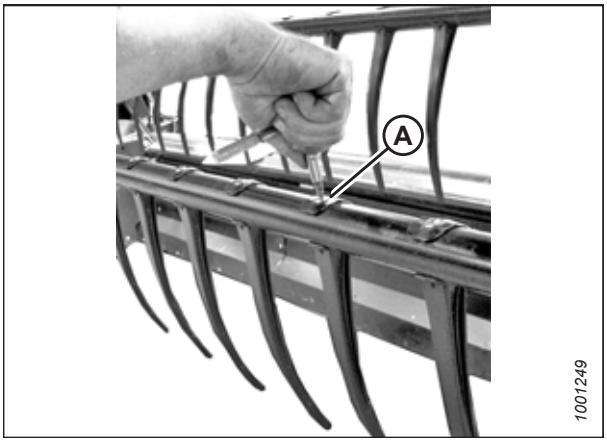


Figure 4.300: Installing Plastic Finger

4.13.5 Tine Tube Bushings

The reel tine tube rests in a tine tube bushing, which is secured to the reel disc. If a tine tube bushing is damaged or worn, it will need to be replaced.

Removing Bushings from Reels

The bushing clamps securing the tine tube to the bushing will need to be released so that the bushing halves can be removed.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Support the tine tube at all times to prevent damage to the tube and other components.

1. Start the engine.
2. Lower the header fully.
3. Raise the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 37*.

   NOTE:

   If you are only replacing the cam end bushing, proceed to Step *11, page 673*.

Center disc and tail end bushings

6. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

   NOTE:

   There are no endshields on the center disc.

7. Remove bolts (A) securing tine tube arm (B) to the disc.

   IMPORTANT:

   Note the hole locations in the arm and disc and ensure bolts (A) are reinstalled at the original locations.

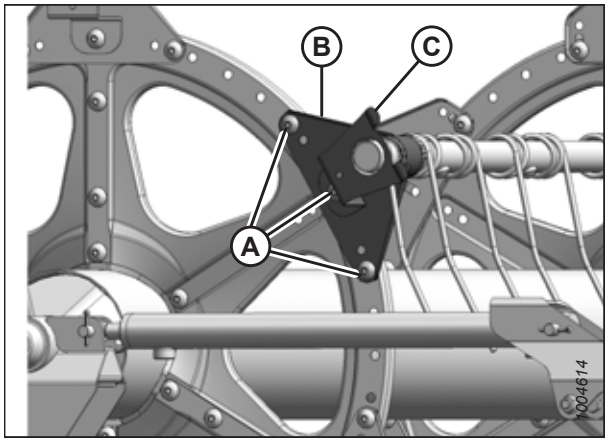


Figure 4.301: Tail End

8. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

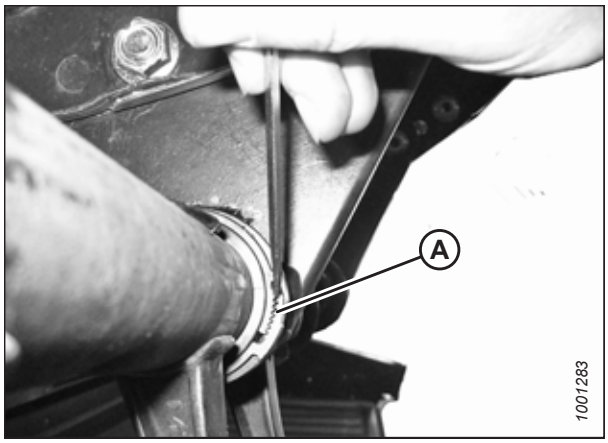


Figure 4.302: Bushing Clamp

9. Rotate tine tube arm (A) until it is clear of the disc then slide the arm inboard off of bushing (B).

10. Remove bushing halves (B). If necessary, remove the next finger, so that the arm can slide off of the bushing. Refer to the following procedures as needed:

    - *Removing Plastic Reel Fingers, page 669*
    - *Removing Steel Reel Fingers, page 668*

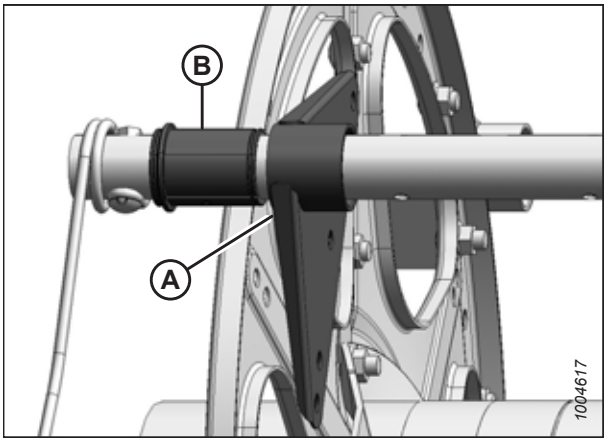


Figure 4.303: Bushing

Cam end bushings

11. Remove the endshields and endshield support (A) from the applicable tine tube location on the cam end.

    NOTE:

    Removing the cam end bushings requires moving the tine tube through the disc arms to expose the bushing.

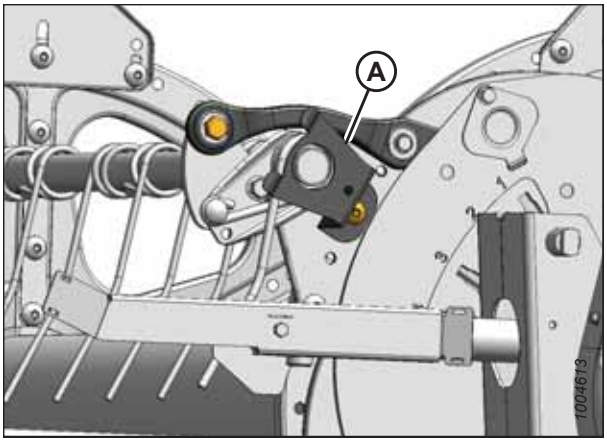


Figure 4.304: Cam End

12. Remove the reel endshields and endshield support (C) from the tail end of the reel at the applicable tine tube location.

    NOTE:

    There are no endshields on the center disc.

13. Remove bolts (A) securing tine tube arms (B) to the tail and the center discs.

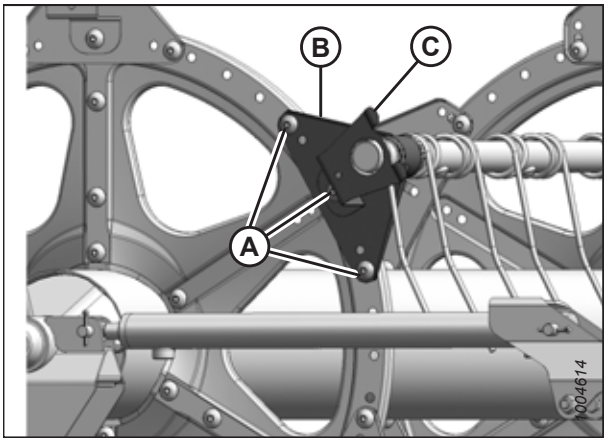


Figure 4.305: Tail End

Installing Bushings onto Reels

Once the old tine tube bushing halves have been removed, the new ones can be installed.

NOTE:

This procedure assumes the steps for *Removing Bushings from Reels, page 671* have been completed.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

IMPORTANT:

Ensure the tine tube is supported at all times to prevent damage to the tube or other components.

1. Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure the pliers in a vise and grind notch (B) into the end of each arm to fit the clamp as shown.

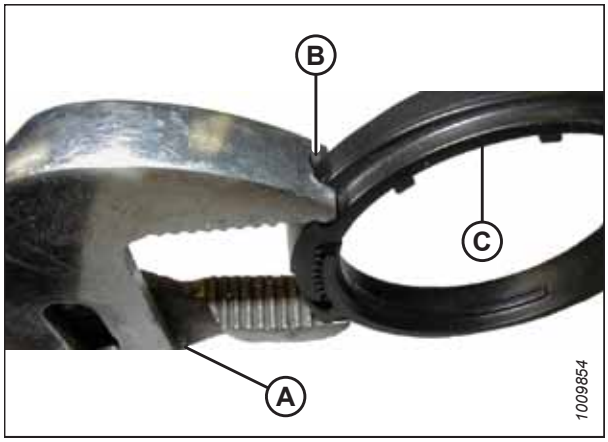


Figure 4.306: Modified Channel Lock Pliers

Cam end bushings

2. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
3. Slide tine tube (A) toward the tail end of the reel to insert bushing (B) into the tine tube arm. If the tine tube supports are installed, ensure that the bushings at those locations slide into the support.
4. Reinstall the previously removed fingers. Refer to the following procedures as needed:
   - *Removing Plastic Reel Fingers, page 669*
   - *Removing Steel Reel Fingers, page 668*

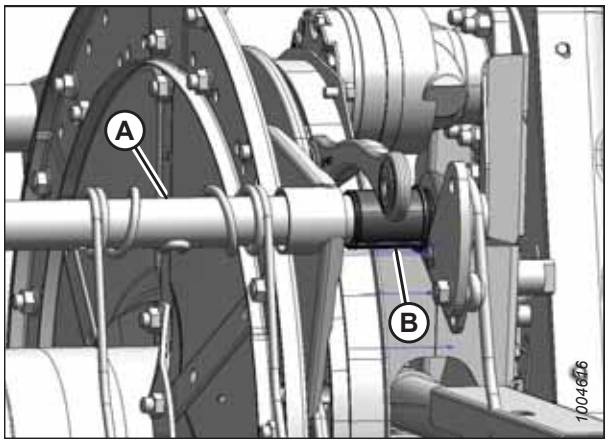


Figure 4.307: Cam End

5. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

6. Position clamp (A) on bushing (B) so that the edges of the clamp and the bushing are flush when the clamp fits into the groove on the bushing and when the lock tabs are engaged.

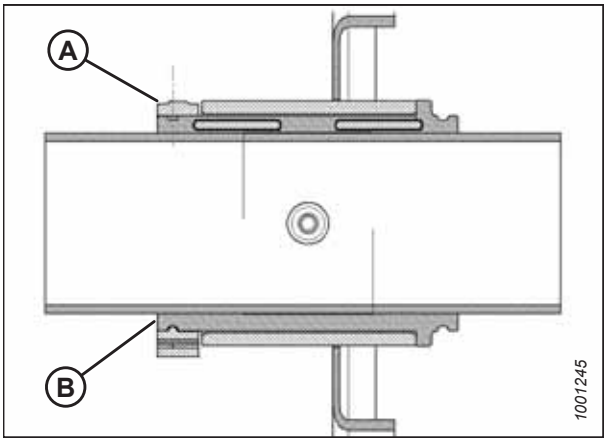


Figure 4.308: Bushing

7. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

   IMPORTANT:

   Overtightening the clamp may result in breakage.

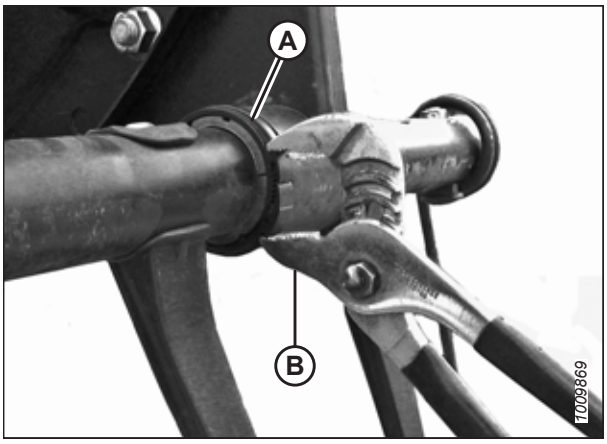


Figure 4.309: Installing Clamp

8. Line up tine tube (B) with the cam arm and install bolt (A). Torque the bolt to 165 Nm (120 lbf·ft).

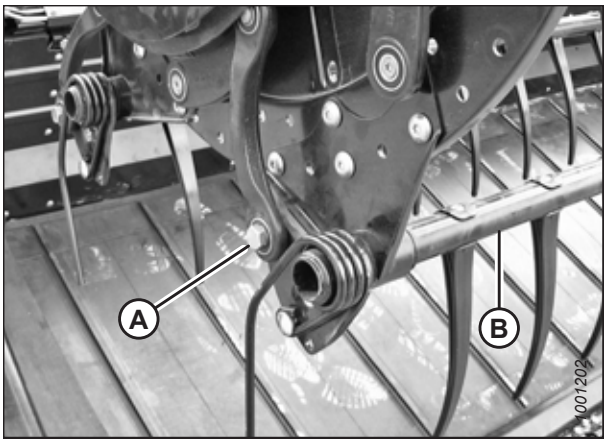


Figure 4.310: Cam End

9. Install bolts (A) securing tine tube arm (B) to the center disc.
10. Install tine tube arm (B) and endshield support (C) onto the tail end of the reel at the applicable tine tube location. Secure the support with bolts (A).

    NOTE:

    There are no endshields on the center discs.

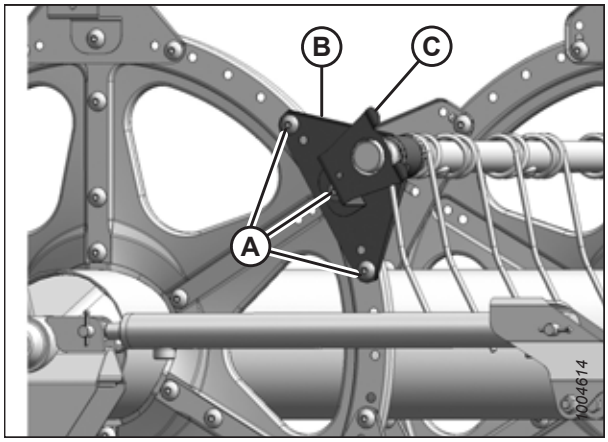


Figure 4.311: Tail End

11. Install endshield support (A) at the applicable tine tube location at the cam end of the reel.
12. Reinstall the reel endshields. For instructions, refer to *4.13.6 Reel Endshields, page 677*.

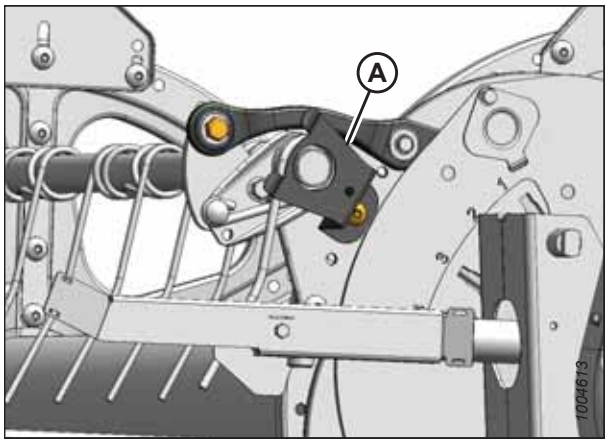


Figure 4.312: Cam End

Center disc and tail end bushings

13. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
14. Slide tine tube (A) onto bushing (B). Position the tine tube against the disc at its original location.
15. Reinstall the previously removed fingers. For instructions, refer to:
    - *Removing Plastic Reel Fingers, page 669*
    - *Removing Steel Reel Fingers, page 668*

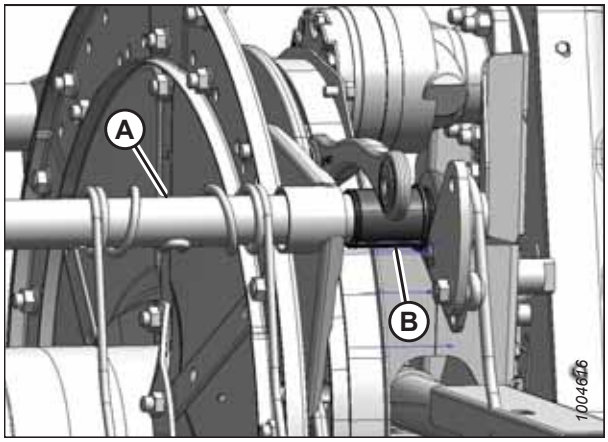


Figure 4.313: Cam End

16. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

17. Position clamp (A) on bushing (B) so that the edges of the clamp and the bushing are flush when the clamp fits into the groove on the bushing and when the lock tabs are engaged.

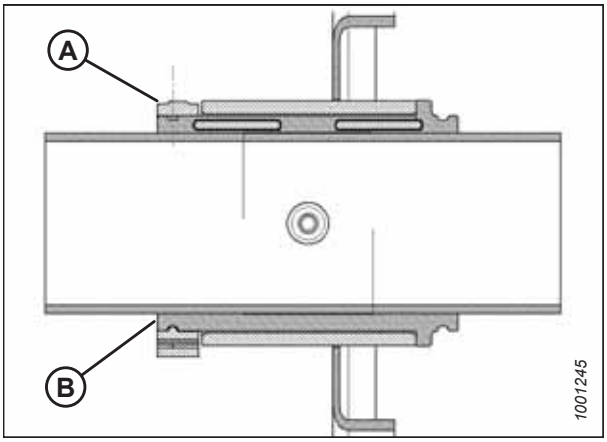


Figure 4.314: Bushing

18. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:

    Overtightening the clamp may result in breakage.

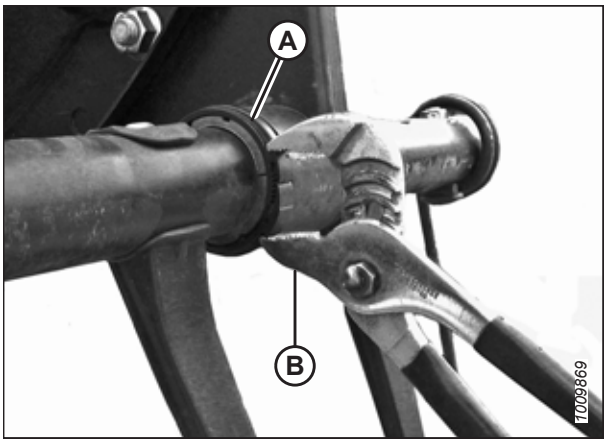


Figure 4.315: Installing Clamp

19. Install bolts (A) securing tine tube arm (B) to the center disc.

20. Install tine tube arm (B) and endshield support (C) onto the tail end of the reel at the applicable tine tube location. Secure the support with bolts (A).

    NOTE:

    There are no endshields on the center discs.

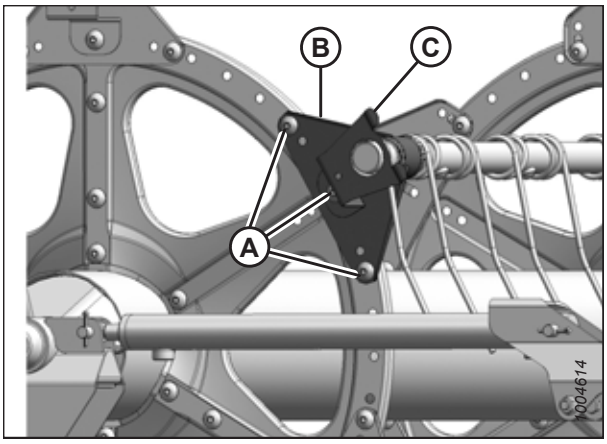


Figure 4.316: Tail End

4.13.6 Reel Endshields

The reel endshields and the supports do not require regular maintenance, but they should be checked periodically for damage and loose or missing fasteners. Slightly dented or deformed endshields and supports are repairable, but it is necessary to replace severely damaged components.

There are four kinds of reel endshields. Ensure that you are installing the correct reel endshield to the proper location as shown in Figure *4.317 Reel Endshields, page 678*.

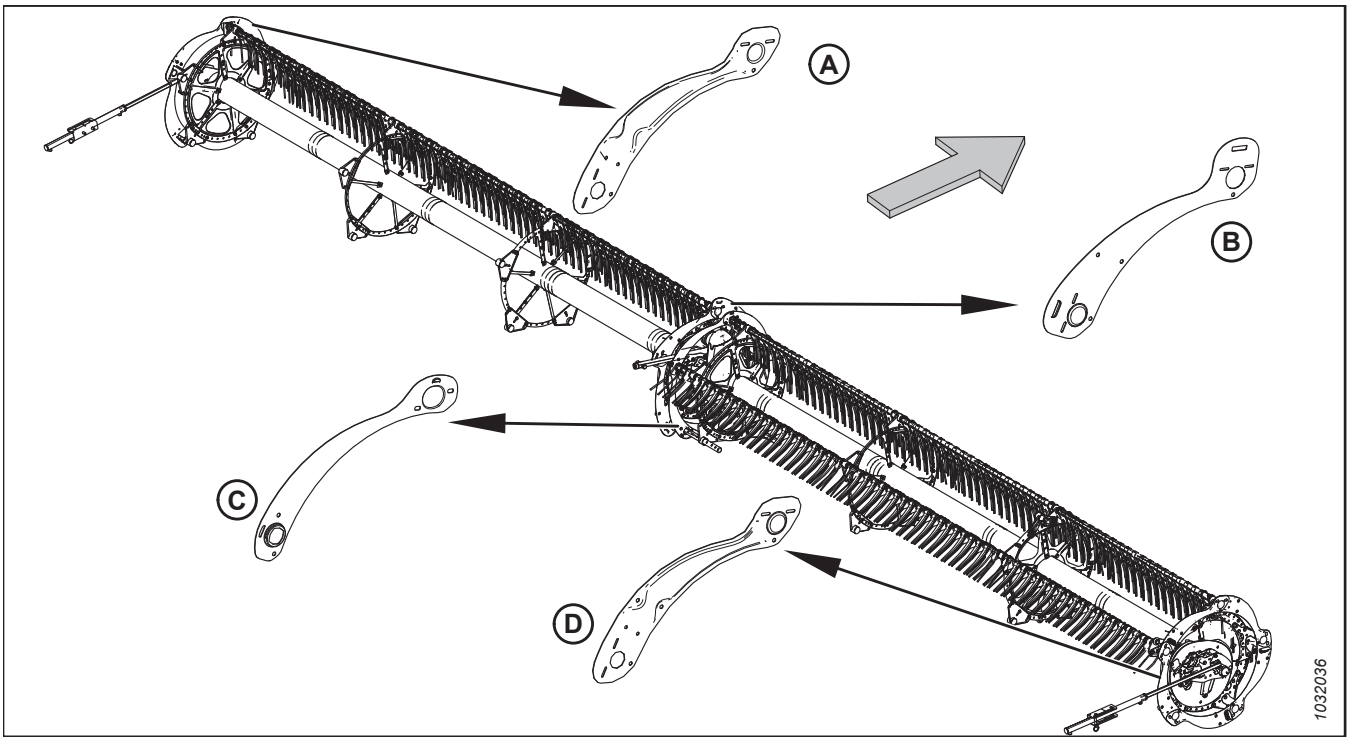


Figure 4.317: Reel Endshields

A - Tail End, Outboard (MD #311695)
B - Cam End, Inboard (MD #273823)
C - Tail End, Inboard (MD #311795)
D - Cam End, Outboard (MD #311694)

NOTE:

The arrow in the illustration points to the front of the machine.

Replacing Reel Endshields at Outboard Cam End

The procedure for replacing reel endshields is applicable to the outboard cam end, except where noted.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

The arrows in the illustrations in this procedure indicate the front of the header.

NOTE:

Retain all removed parts unless directed to do otherwise.

1. Start the engine.
2. Lower the header and the reel fully.
3. Shut down the engine, and remove the key from the ignition.

4. Rotate the reel manually until reel endshield requiring replacement (A) is accessible.
5. Remove three bolts (B).

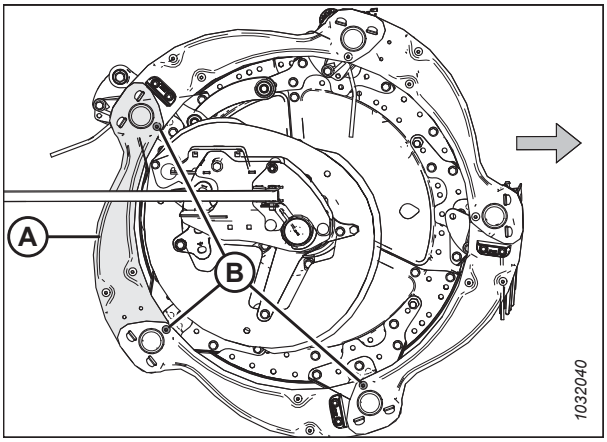


Figure 4.318: Reel Endshields – Outboard Cam End

6. Remove two screws and nuts (A). Remove the outboard cam deflector.
7. Lift the end of reel endshield (B) off of support (C).

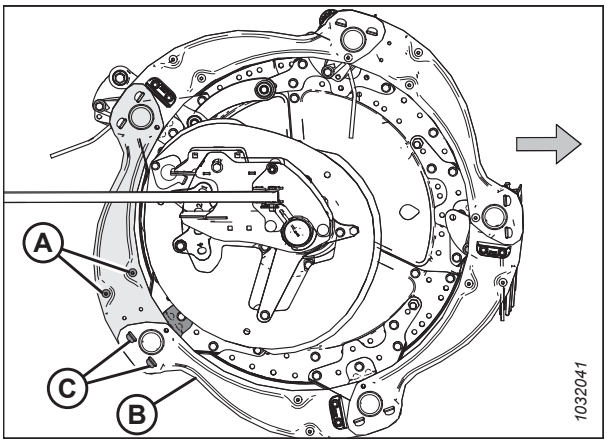


Figure 4.319: Reel Endshields – Outboard Cam End

8. Remove the reel endshield from supports (A).

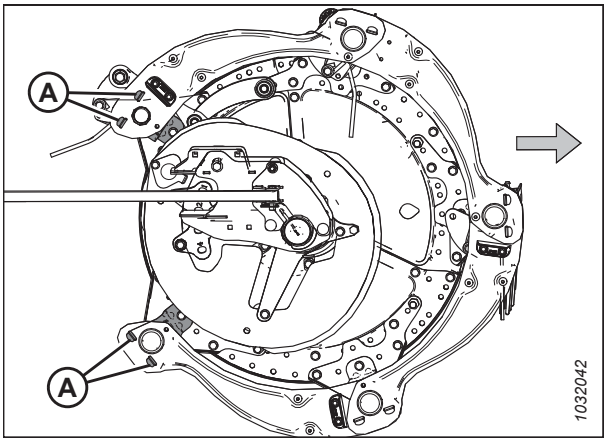


Figure 4.320: Reel Endshield Removed – Outboard Cam End

9. Slightly lift the end of existing reel endshield (A) off of support (B).
10. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
11. Position the other end of new reel endshield (C) onto other support (D) over existing reel endshield (E).
12. Reinstall three bolts (F).
13. Reinstall two screws (G), the outboard cam deflector, and the nuts (removed in Step *6, page 679*) on the new reel endshield.
14. Tighten all of the installed hardware.

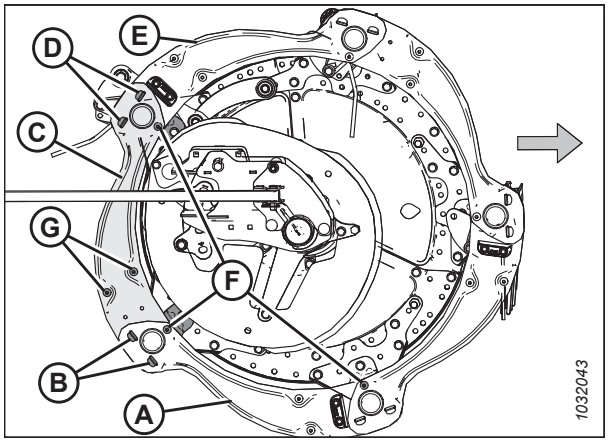


Figure 4.321: Reel Endshields – Outboard Cam End

Replacing Reel Endshields at Inboard Cam End

The procedure for replacing reel endshields is applicable to the inboard cam end.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

The endshields are different for the inboard and outboard cam ends. For reference, refer to Figure *4.317, page 678*.

NOTE:

The arrows in the following illustrations point to the front of machine.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.

5. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
6. Remove three bolts (B).

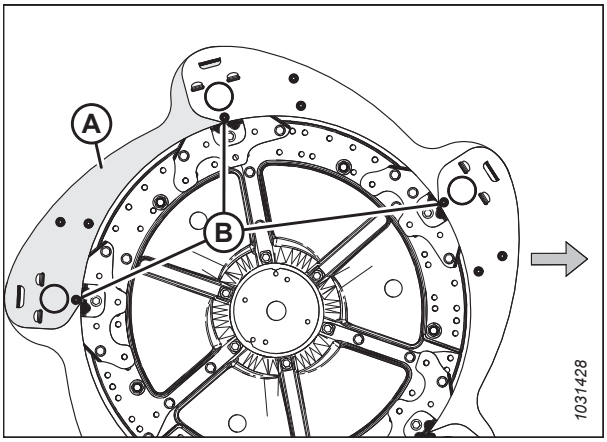


Figure 4.322: Reel Endshields – Inboard Cam End

7. Remove and retain two screws (A), cam deflector, and nuts from the reel endshield.
8. Lift the end of reel endshield (B) off support (C).

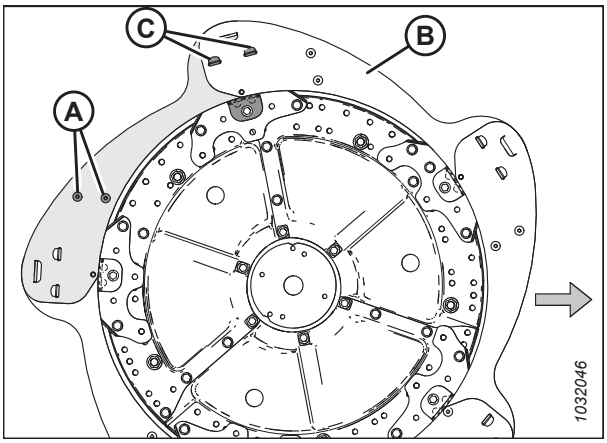


Figure 4.323: Reel Endshields – Inboard Cam End

9. Remove the reel endshield from supports (A).

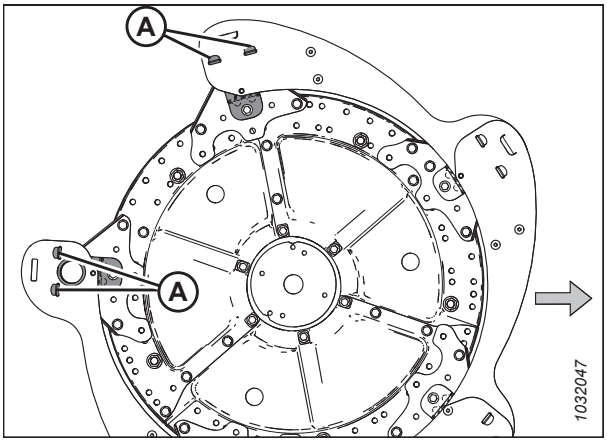


Figure 4.324: Reel Endshield Removed – Inboard Cam End

10. Slightly lift the end of existing reel endshield (A) off of support (B).
11. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
12. Position the other end of new reel endshield (C) onto other support (D) over existing reel endshield (E).
13. Reinstall three bolts (F).
14. Reinstall two screws (G), cam deflector, and nuts (removed in Step *7, page 681*) on the new reel endshield.
15. Tighten all of the installed hardware.

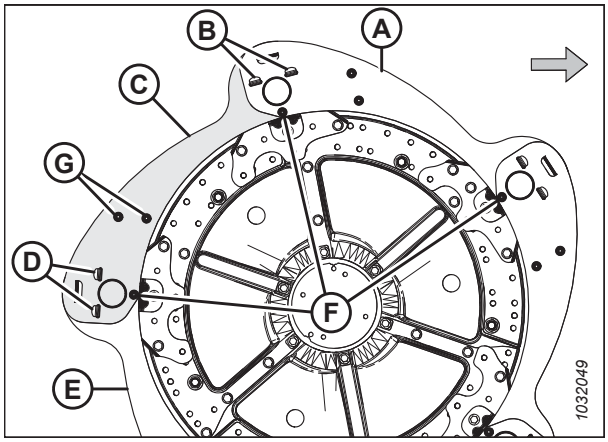


Figure 4.325: Reel Endshields – Inboard Cam End

Replacing Reel Endshields at Outboard Tail End

If the reel endshield is damaged, it will need to be replaced.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Rotate the reel manually until reel endshield requiring replacement (A) is accessible.
6. Remove three bolts (B).

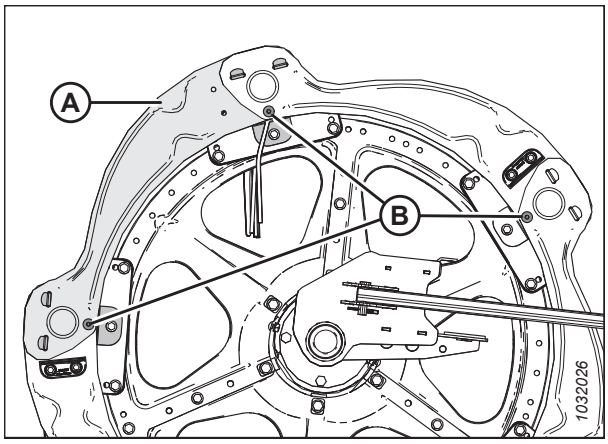


Figure 4.326: Reel Endshields – Outboard Tail End

7. Lift the end of reel endshield (A) off support (B).

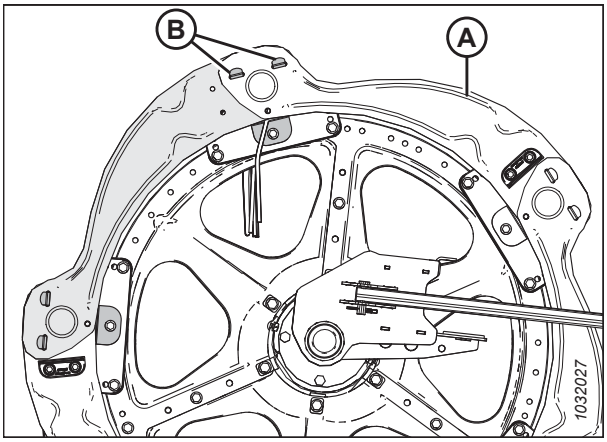


Figure 4.327: Reel Endshields – Outboard Tail End

8. Remove the reel endshield from supports (A).
9. Remove the reel paddle, if it is installed on the reel endshield.

   NOTE:

   Reel end paddles (B) are installed alternately on the reel endshields.

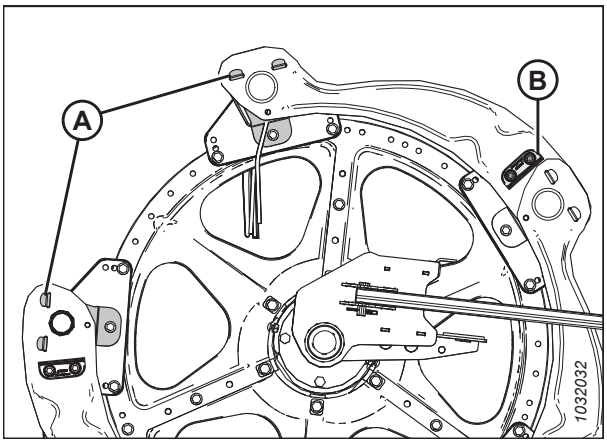


Figure 4.328: Reel Endshield Removed – Outboard Tail End

10. Slightly lift the end of reel endshield (A) off of support (B).
11. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
12. Position the other end of new reel endshield (C) on other support (E) over the existing reel endshield.
13. Reinstall three bolts (D).
14. Reinstall the paddle (removed in Step *9, page 683*) onto the new reel endshield, if previously installed.
15. Tighten all of the installed hardware.

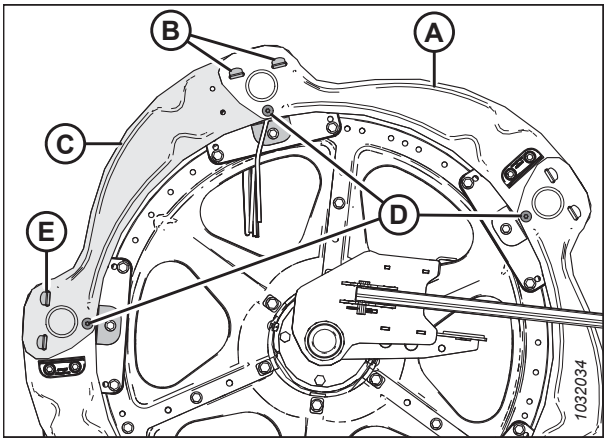


Figure 4.329: Reel Endshields – Outboard Tail End

Replacing Reel Endshields at Inboard Tail End

The reel endshields need to be replaced if they are damaged.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

Retain all removed parts, unless directed to do otherwise.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Rotate the reel manually until reel endshield requiring replacement (A) is accessible.
6. Remove six M10 screws and nuts (B).

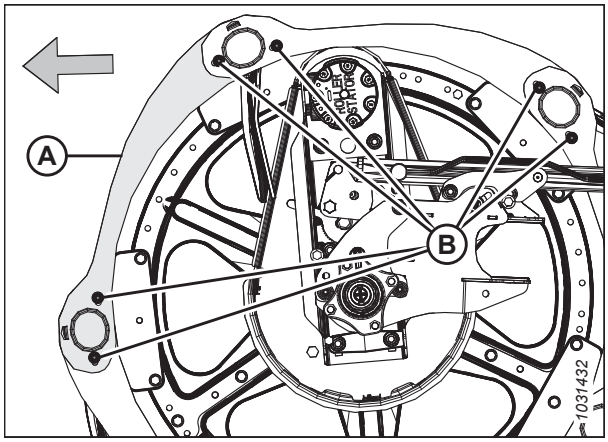


Figure 4.330: Reel Endshields – Inboard Tail End

7. Lift other endshield (A) to disengage the tab from endshield (B).
8. Lift the end of reel endshield (B) off endshield (C), and rotate endshield (B) downward.

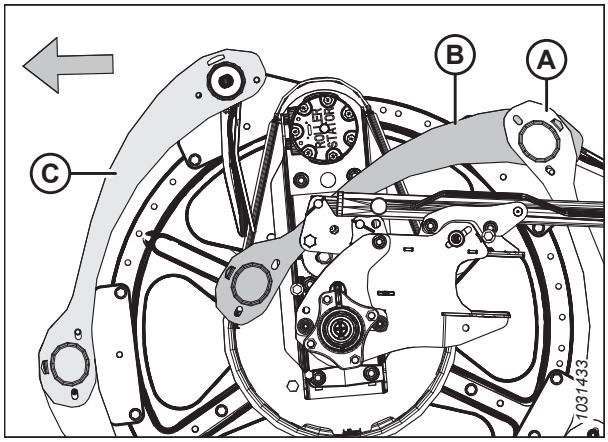


Figure 4.331: Reel Endshields – Inboard Tail End

9. Remove M10 bolt (A), nut (B), and end finger retainer (C) from the tine tube securing the bushing and tail end finger.
10. Remove endshield bushing (D).
11. Remove and discard damaged reel endshield (E).

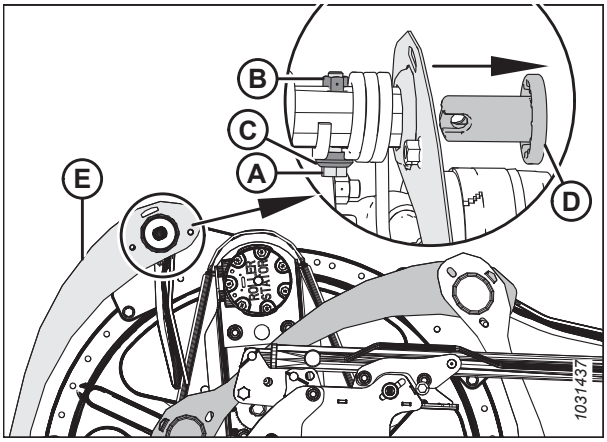


Figure 4.332: Reel Endshields – Inboard Tail End

12. Position new reel endshield (A) as shown. Insert the endshield tab into neighboring endshield (B).
13. Position the other end of new endshield (A) on the tine tube. Secure the endshield with bushing (C).

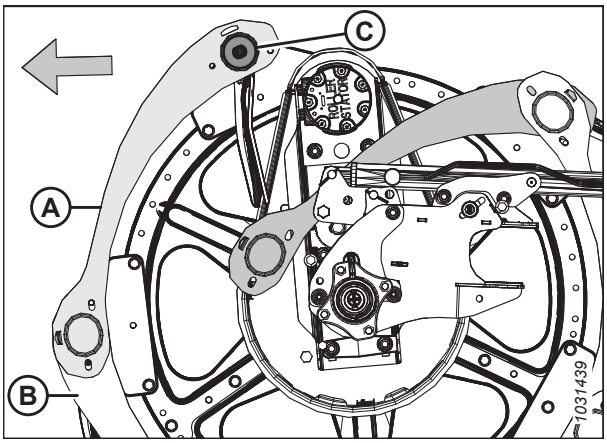


Figure 4.333: Reel Endshields – Inboard Tail End

14. Position tail end finger (A) as shown.
15. Secure tail end finger (A) and the bushing (installed in Step *13, page 685*) with M10 bolt (B), end finger retainer (C), and nut (D).

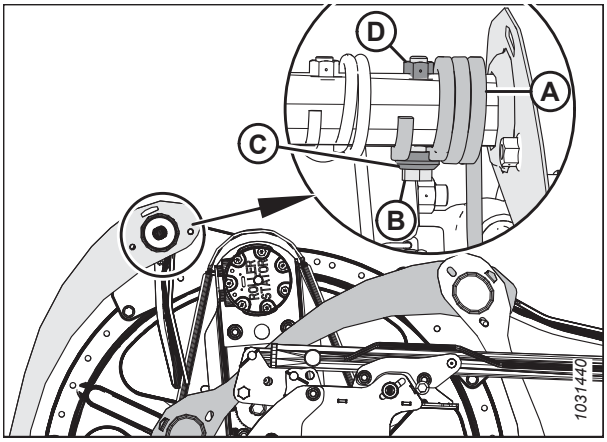


Figure 4.334: Reel Endshields – Inboard Tail End

16. Rotate reel endshield (A) upward. Engage tabs (B) on both ends.
17. Secure the reel endshields using six M10 screws and nuts (C).
18. Torque nuts (C) to 35 Nm (26 lbf·ft).

    IMPORTANT:

    Do **NOT** overtighten the nuts.

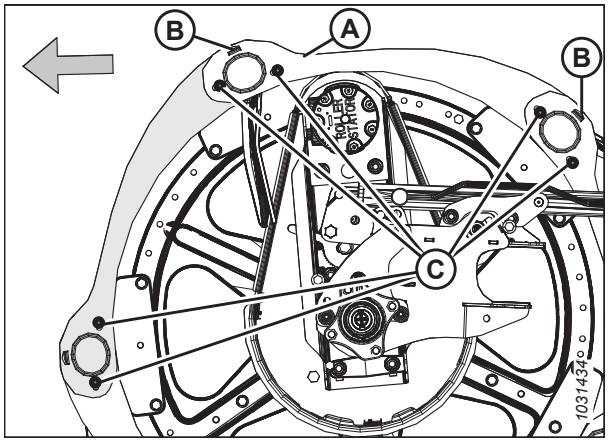


Figure 4.335: Reel Endshields – Inboard Tail End

Replacing Reel Endshield Supports

The reel endshield supports need to be replaced if they are damaged.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

DANGER

Ensure that all bystanders have cleared the area.

NOTE:

All of the illustrations shown show the outboard cam end.

1. Start the engine.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Rotate the reel manually until the reel endshield support requiring replacement is accessible.
6. Remove bolt (B) securing the reel endshields to support (A).
7. Remove bolts (C) from support (A) and from the two adjacent supports.

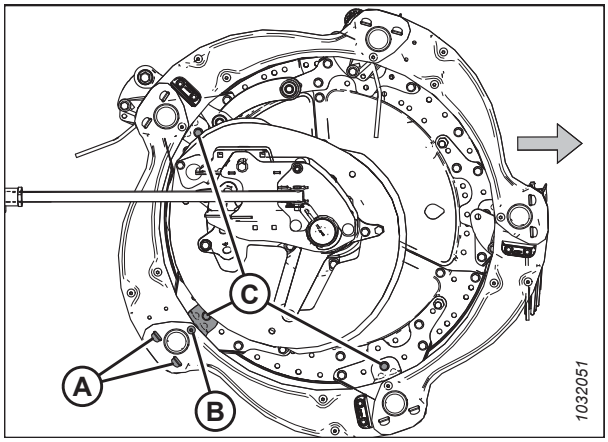


Figure 4.336: Reel Endshield Supports

8. Move reel endshields (A) and support (B) away from the tine tube. Remove the support from the endshields.

9. Insert the tabs of new support (B) into the slots in reel endshields (A). Ensure that the tabs engage both reel endshields.

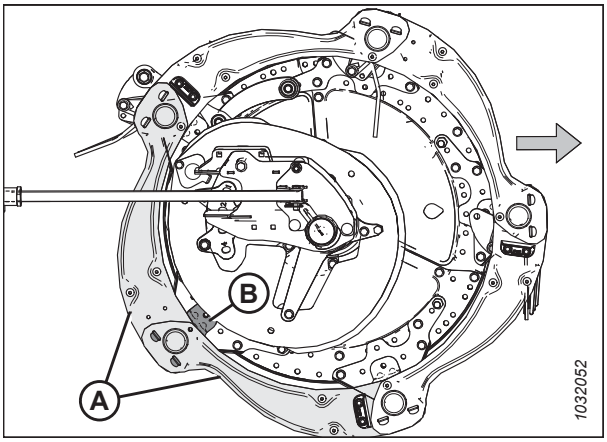


Figure 4.337: Reel Endshield Supports

10. Secure support (A) to the disc sector with bolt and nut (B). Do **NOT** tighten the hardware yet.

11. Secure reel endshields (C) to support (A) with bolt and nut (D). Do **NOT** tighten the hardware yet.

12. Reattach the other supports with bolts and nuts (E).

13. Ensure that there is adequate clearance between the tine tube and the reel endshield support.

14. Torque the nuts to 27 Nm (239 lbf·in).

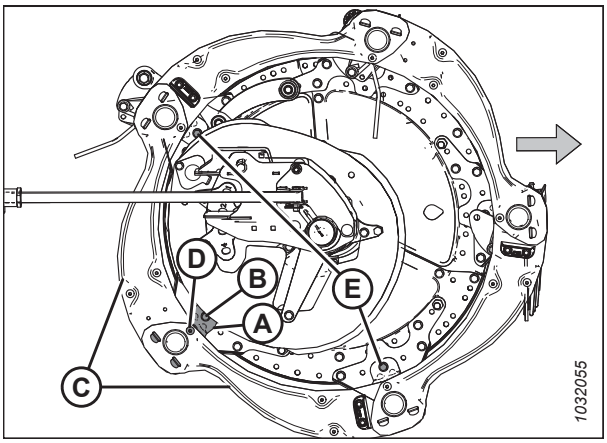


Figure 4.338: Reel Endshield Supports

4.14 Reel Drive

The hydraulically driven reel motor drives a chain that is attached to the center arm between the reels on a double-reel header, and to the left-center arm on a triple-reel header.

4.14.1 Reel Drive Chain

The reel drive chain transfers power from the hydraulically driven reel motor to the sprockets that rotate the reels.

Loosening Reel Drive Chain

The tension on the reel drive chain can be loosened to allow access to drive components.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header fully.
3. Adjust the reel fully forward.
4. Shut down the engine, and remove the key from the ignition.
5. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.
6. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
7. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.
8. Remove multi-tool (B), and reinstall the hairpin on the bracket.

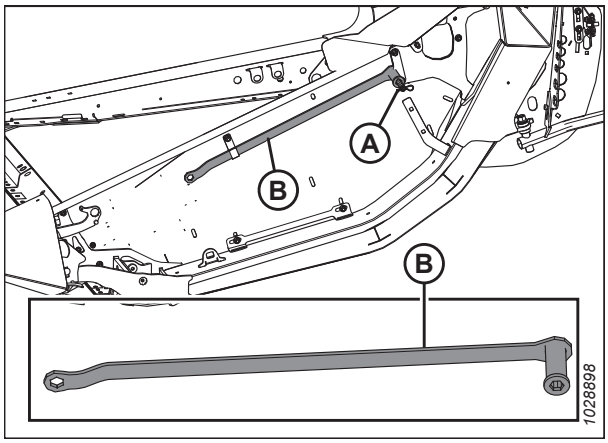


Figure 4.339: Multi-Tool Storage Location

IMPORTANT:

Do **NOT** loosen the motor mount, as it is factory-adjusted and secured with Belleville washers. Adjust the chain tension without loosening the drive mounting bolts.

9. Push tension retainer (A) clockwise with your thumb, and hold it in the unlocked position.
10. Place multi-tool (B) onto chain tensioner (C), and rotate the multi-tool upwards to loosen the chain tension.
11. Return the multi-tool to the storage position.

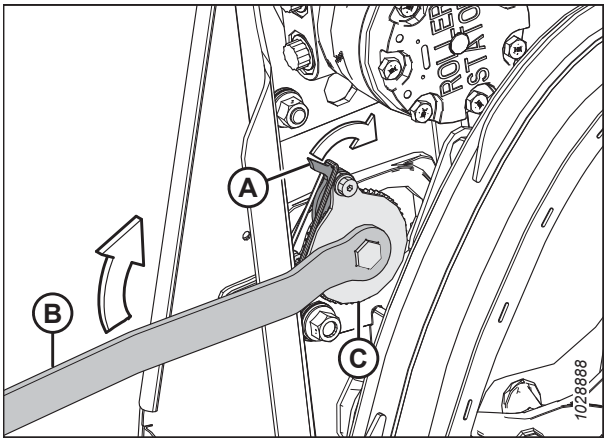


Figure 4.340: Reel Drive

Tightening Reel Drive Chain

A correctly tensioned drive chain ensures optimum power transfer while minimizing component wear.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 39*.
3. Remove hairpin (A) securing multi-tool (B) to the bracket on the left endsheet.
4. Remove multi-tool (B), and reinstall the hairpin on the bracket.

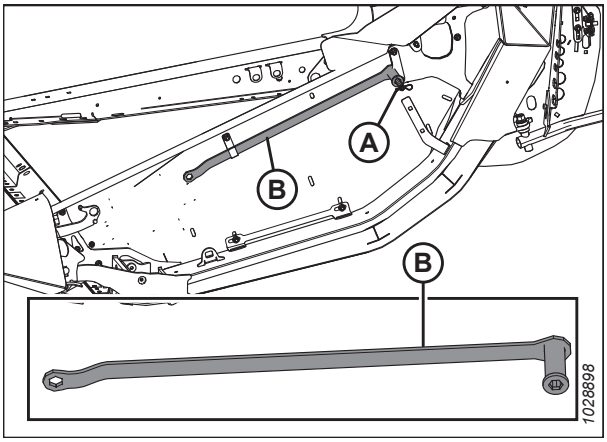


Figure 4.341: Multi-Tool Storage Location – Left Side

5. Place multi-tool (A) onto chain tensioner (B).

   IMPORTANT:

   Do **NOT** loosen the motor mount, as it is factory-adjusted and secured with Belleville washers. Adjust the chain tension without loosening the drive mounting bolts.

6. Rotate multi-tool (A) downward until the chain is tight.

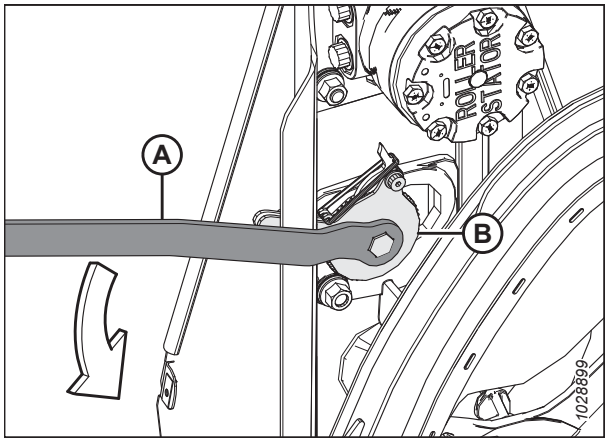


Figure 4.342: Reel Drive

7. Once the chain is tight, rotate the multi-tool upward to properly engage the teeth from the lock/latch into the tightener teeth. If the tightener will not skip a tooth before tightening, do **NOT** force the tightener to the next notch.

   IMPORTANT:

   Do **NOT** overtighten the chain. If the chain is too tight, it can put an excessive load on the sprockets, causing the motor bearings and/or other components to fail prematurely.

   IMPORTANT:

   There should be approximately 38 mm (1 1/2 in.) of play on one side (A) of the chain, while it is tight on the other side (B). This level of tension and play in the chain is required to skip one notch on the chain tightener.

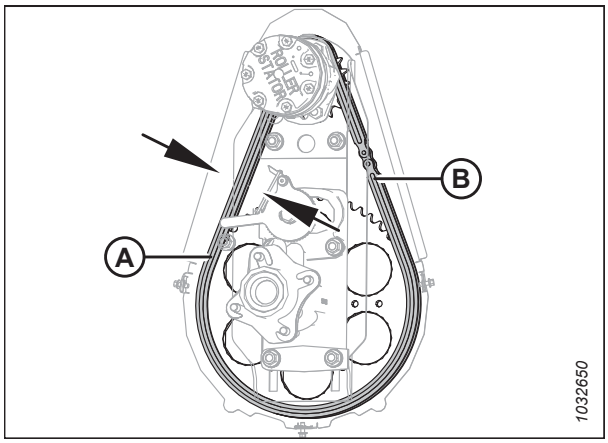


Figure 4.343: Reel Drive

8. Rotate the reel by hand to ensure that the chain properly engages all teeth on lower sprocket (A). To prevent damage, ensure that the chain does not become too tight as the reel rotates.

9. Return the multi-tool to the storage position.

10. Close the endshield. For instructions, refer to *Closing Header Endshields, page 40*.

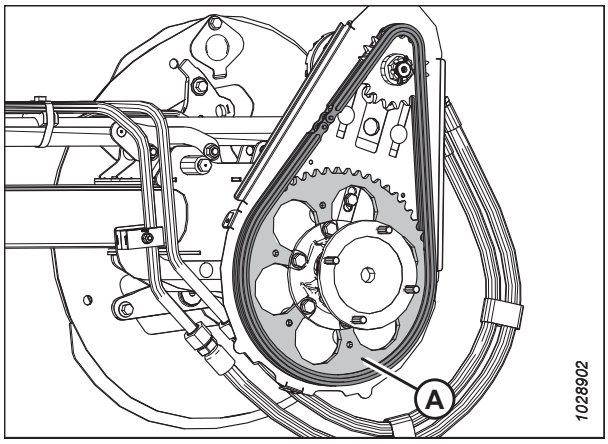


Figure 4.344: Reel Drive

4.14.2 Reel Drive Sprocket

The reel drive sprocket is attached to the reel drive motor.

Removing Reel Drive Single Sprocket

The reel drive sprocket is attached to the reel drive motor. The speed and torque of the reel can be changed by changing the drive and driven sprockets.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.
3. Loosen reel drive chain (A). For instructions, refer to *Loosening Reel Drive Chain, page 688*.
4. Remove reel drive chain (A) from reel drive sprocket (B).

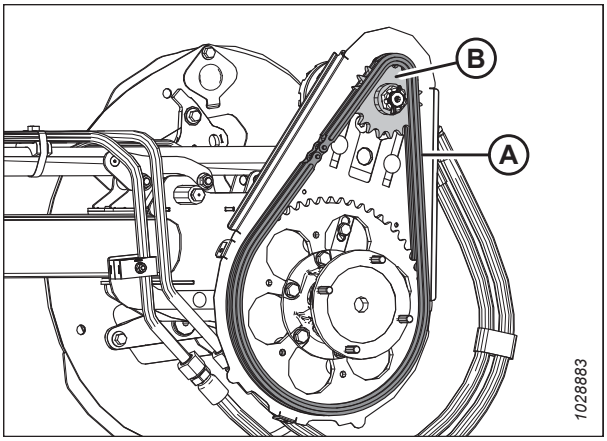


Figure 4.345: Single Sprocket

5. Remove the cotter pin and slotted nut (A) from the motor shaft.
6. Remove reel drive sprocket (B). Ensure the key remains in the shaft.

   IMPORTANT:

   To avoid damaging the motor, use a puller if drive sprocket (B) does not come off by hand. Do **NOT** use a pry bar and/or hammer to remove the drive sprocket.

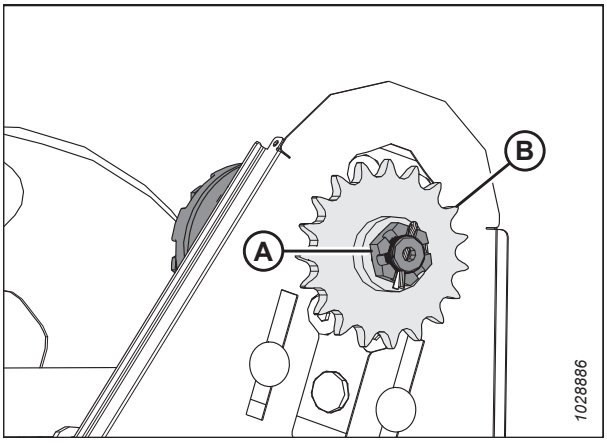


Figure 4.346: Single Sprocket

Installing Reel Drive Single Sprocket

The reel drive sprocket is attached to the reel drive motor. The speed and torque of the reel can be changed by changing the drive and driven sprockets.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Align the keyway in sprocket (B) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure it with slotted nut (A).
2. Torque slotted nut (A) to 12 Nm (106 lbf·in).
3. Install the cotter pin. If necessary, tighten slotted nut (A) to the next slot to install the cotter pin.

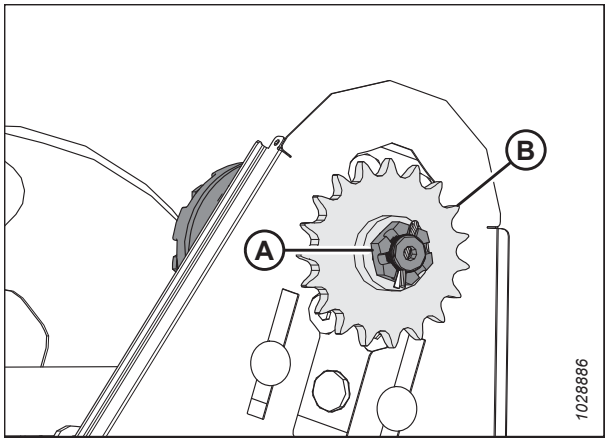


Figure 4.347: Single Sprocket

4. Install drive chain (A) onto drive sprocket (B).
5. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 689*.
6. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.

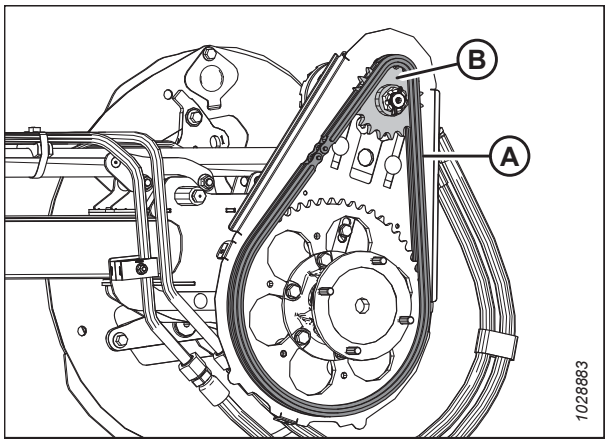


Figure 4.348: Single Sprocket

4.14.3 Changing Reel Speed Chain Position with Two Speed Kit Installed

The reel drive sprocket is attached to the reel drive motor. The speed and torque of the reel can be changed by changing the drive and driven sprockets.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.

3. Loosen the reel drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 688*.

4. Move chain (A) from the current set of sprockets to other set (B).

   NOTE:

   The inner set of sprockets are for high torque applications, and the outer set of sprockets are for high speed applications.

   NOTE:

   - If converting from the high speed setting to the high torque setting, move the chain on the top driver sprocket first. This will allow for more chain slack to make the change on the bottom driver sprocket.
   - If converting from the high torque setting to the high speed setting, move the chain on the bottom driven sprocket first. This will allow for more slack to make the change on the top driver sprocket.

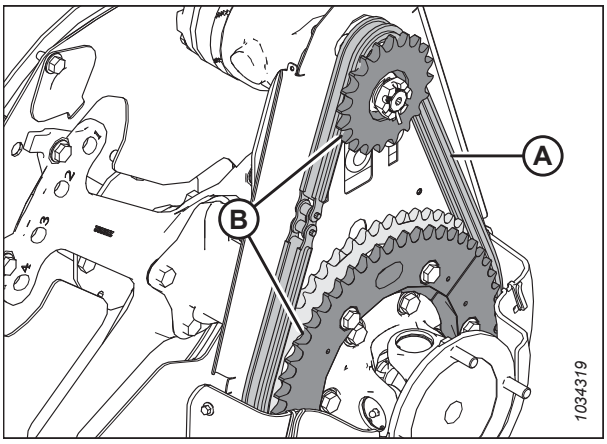


Figure 4.349: Reel Drive Sprocket

5. Tighten the reel drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 689*.

4.14.4 Double-Reel or Triple-Reel Drive U-Joint

On headers equipped with a double reel, the double-reel drive U-joint allows each reel to move independently.

Lubricate the U-joint according to the specifications. For instructions, refer to *4.3 Lubrication, page 506*.

Replace the U-joint if severely worn or damaged. For instructions, refer to *Removing Reel Drive U-Joint – Double-Reel or Triple-Reel, page 693*.

Removing Reel Drive U-Joint – Double-Reel or Triple-Reel

If the double-reel U-joint is worn or damaged, it will need to be replaced.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.

2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.

3. Support the inboard end of the right reel with a front-end loader and nylon slings (A) or an equivalent lifting device.

   IMPORTANT:

   To avoid damaging the center tube, support the reel as close to the end disc as possible.

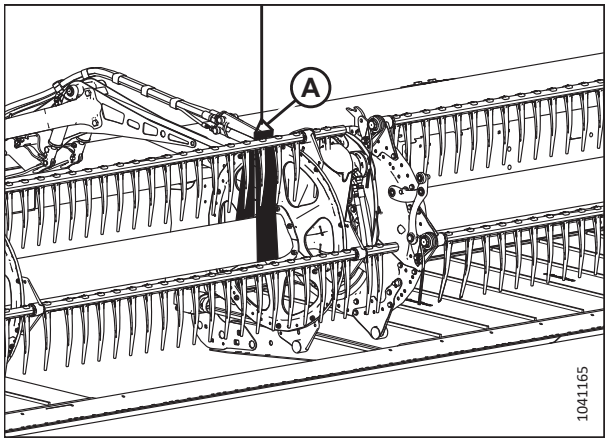


Figure 4.350: Supporting Reel

4. Remove four bolts (A) securing the reel tube to U-joint flange (B), and move the reel sideways.

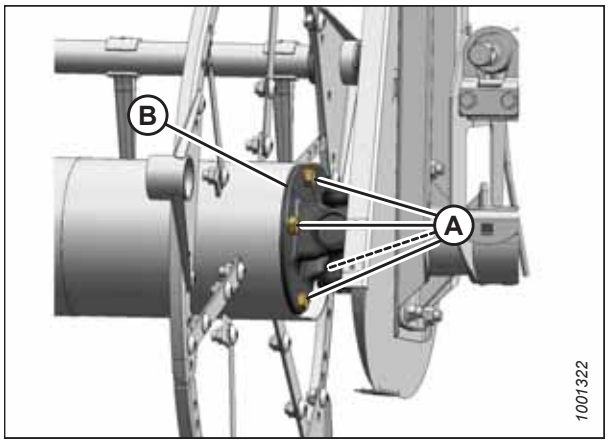


Figure 4.351: U-Joint

5. Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).

6. Remove the U-joint.

   NOTE:

   It may be necessary to move the right reel sideways so that the U-joint can clear the tube.

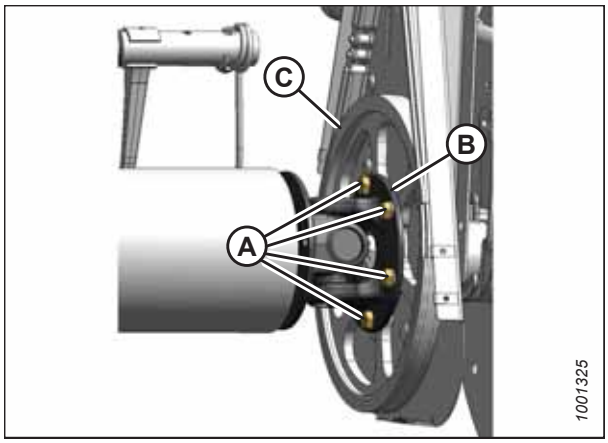


Figure 4.352: U-Joint

7. **Triple reel only:** There is a shim (A) between the reel tube and the U-joint. Retain this shim for reinstallation.

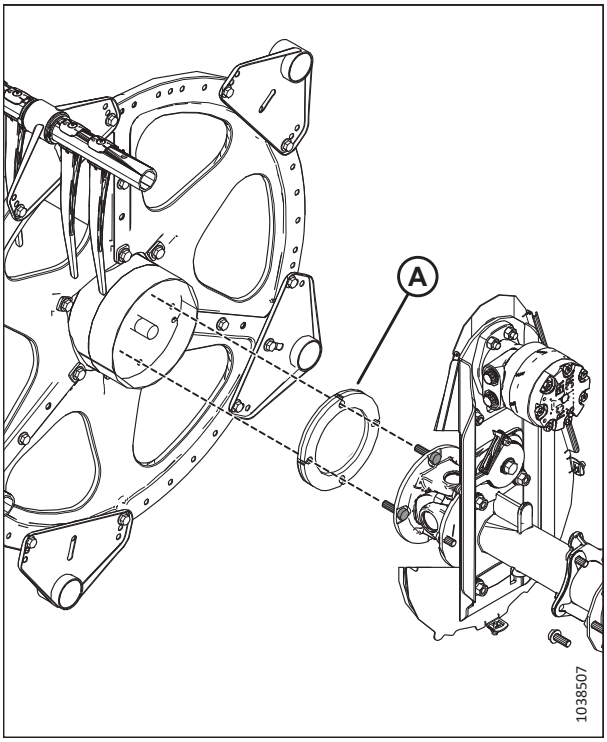


Figure 4.353: Shim – Triple Reel Only

Installing Double-Reel or Triple-Reel U-Joint

Once the old U-joint has been removed, the new one can be installed.

1. Position U-joint flange (B) onto driven sprocket (C) as shown.
2. Apply medium-strength threadlocker (Loctite® 243 or equivalent), and install six bolts (A). Hand-tighten the bolts; do **NOT** torque the bolts.

   NOTE:

   Only four bolts (A) are shown in the illustration at right.

   NOTE:

   It may be necessary to move the right reel sideways so that the U-joint can clear the reel tube.

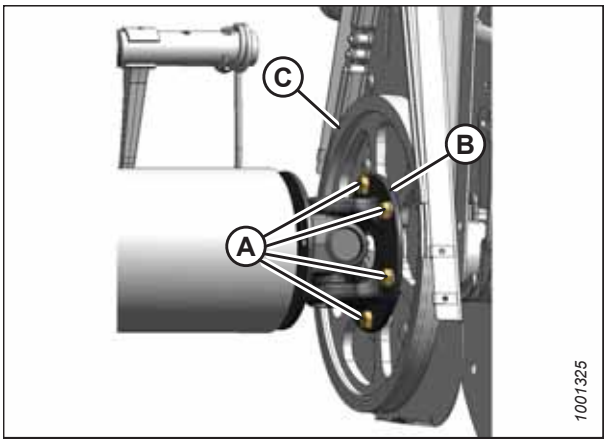


Figure 4.354: U-Joint

3. **Triple reel only:** Make sure shim (A) is placed between the reel tube and the U-joint. Align the holes in the shim with the holes in the reel tube.

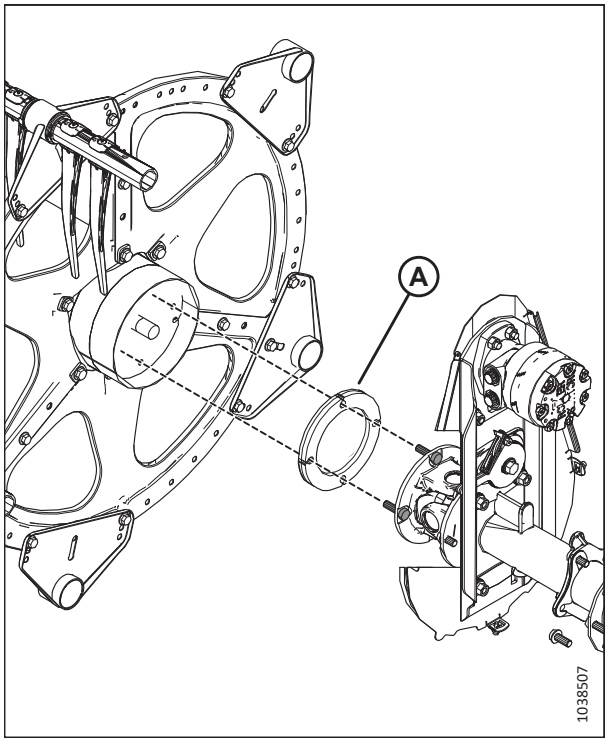


Figure 4.355: Shim – Triple Reel Only

4. Position the reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
5. Rotate the reel until the holes in the end of the reel tube and U-joint flange (B) line up.
6. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A). Install the bolts in the flange.
7. Torque the ten bolts to 110 Nm (81 lbf·ft).

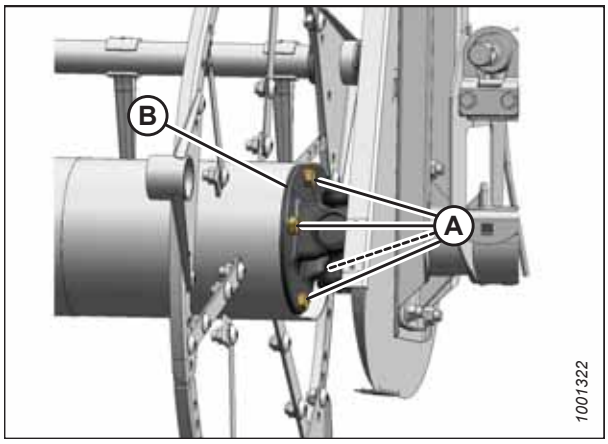


Figure 4.356: U-Joint

8. Remove sling (A) from the reel.
9. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.

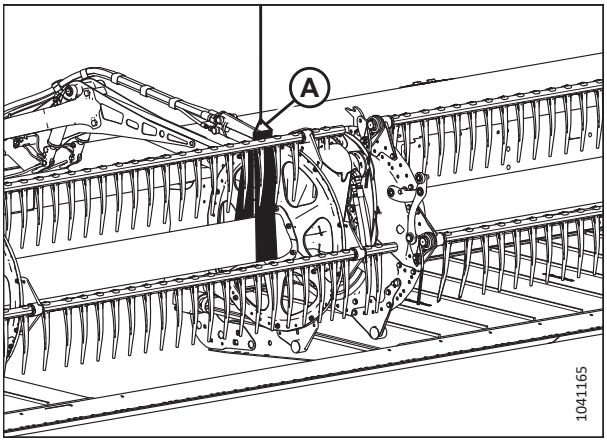


Figure 4.357: Supporting Reel

4.14.5 Reel Drive Motor

The reel drive motor is used on the reel drive system on double-reel, and triple reel draper headers. This motor does not require regular maintenance or servicing. If problems occur with the motor, remove it and have it serviced by your MacDon Dealer.

Removing Reel Drive Motor

Follow this procedure to remove the reel drive motor if it has an issue. If problems occur with the motor, remove it and have it serviced by your MacDon Dealer.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 688*.
3. Remove the drive sprocket. For instructions, refer to *Removing Reel Drive Single Sprocket, page 691*.
4. Mark hydraulic lines (A) and their locations in motor (B) to ensure correct reinstallation.

   NOTE:

   Before disconnecting the hydraulic lines, clean the motor's ports and exterior surfaces.
5. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.

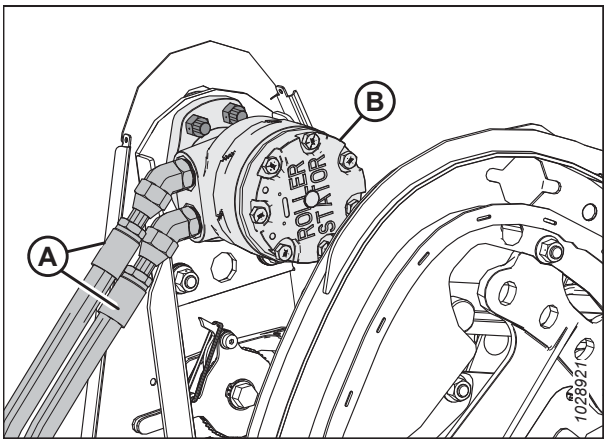


Figure 4.358: Reel Motor and Hoses

6. If countersunk screws (B) are not accessible through the openings in the chain case, loosen the mounting hardware on motor mount (A), and slide the motor mount up or down until the screws are accessible.

7. Remove four countersunk screws (B), then remove motor (C).

   NOTE:

   If the motor is being replaced, remove the hydraulic fittings from the old motor and install them in the new motor using the same orientations.

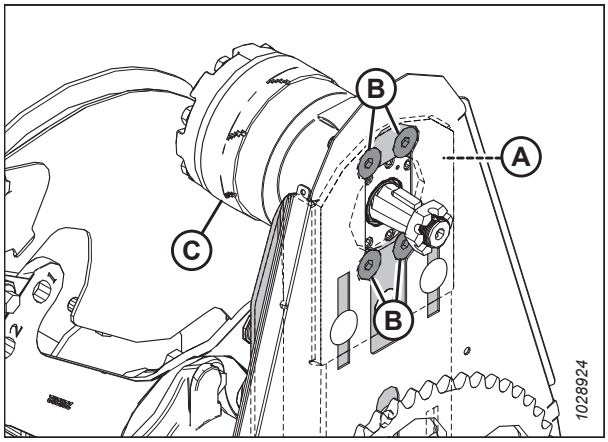


Figure 4.359: Reel Drive Motor Mounting Screws

Installing Reel Drive Motor

Follow this procedure to install the reel drive motor. If problems occoccur with the motor, remove it and have it serviced by your MacDon Dealer.

1. If mounting holes (B) are not accessible through the openings in the chain case, loosen the mounting hardware on motor mount (A), and slide the motor mount up or down as required.

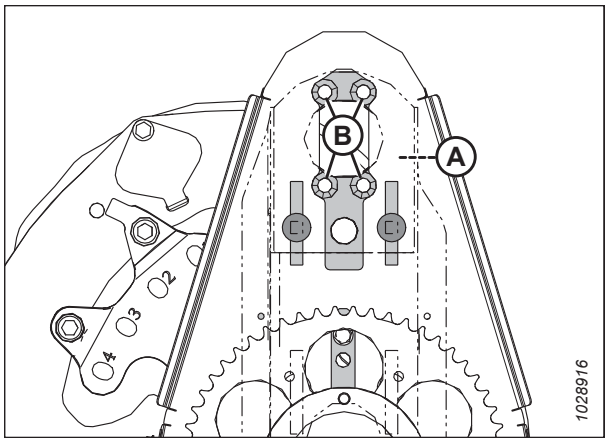


Figure 4.360: Reel Drive Motor Mounting Holes

2. Attach motor (A) to motor mount (B) with four M12 x 40 mm countersunk screws and nuts (C).

3. Torque the hardware to 95 Nm (70 lbf·ft).

4. If a new motor is being installed, install the hydraulic fittings (not shown) from the original motor on the new motor.

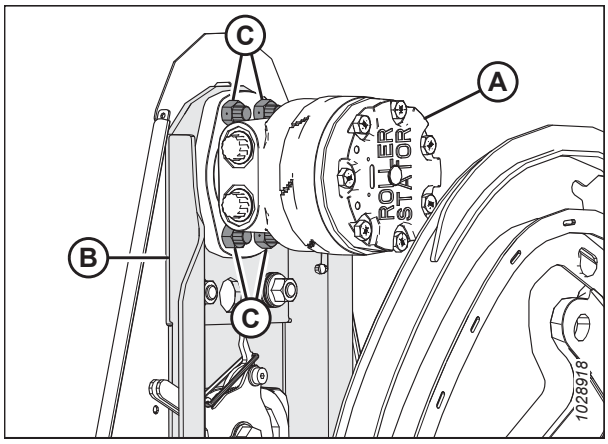


Figure 4.361: Reel Drive Motor

5. Align the keyway in sprocket (B) with the key on the motor shaft. Slide the sprocket onto the shaft. Secure it with slotted nut (A).
6. Torque slotted nut (A) to 12 Nm (106 lbf·in).
7. Install the cotter pin. If necessary, tighten castle nut (A) to the next slot to install the cotter pin.

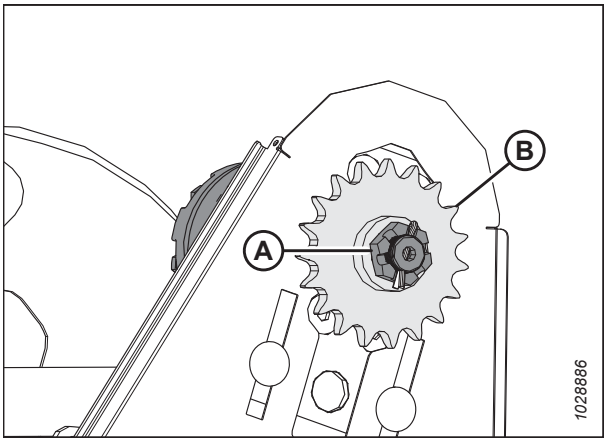


Figure 4.362: Reel Drive

8. Install drive chain (A) onto drive sprocket (B).

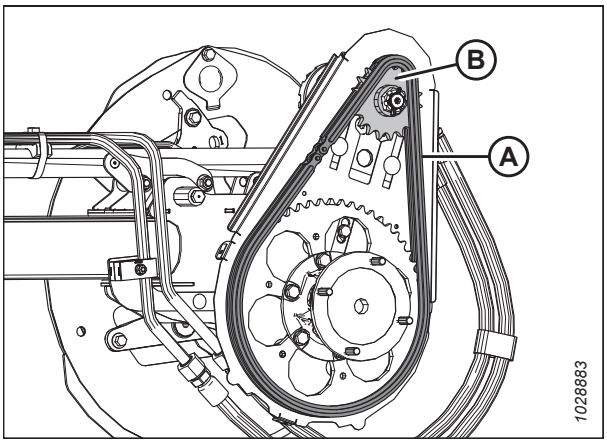


Figure 4.363: Reel Drive

9. If mounting hardware (A) was loosened for this procedure, ensure that there are three stacked Belleville washers installed as shown on each bolt (B).
10. Orient the Belleville washers so that the outer edge of first washer (C) is against the casting, and the outer edges of the next two washers (D) are facing each other.
11. Tighten nuts (A) until they bottom out (47–54 Nm [35–40 lbf·ft]).
12. Back each nut (A) off by 3/4 turn.
13. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 689*.

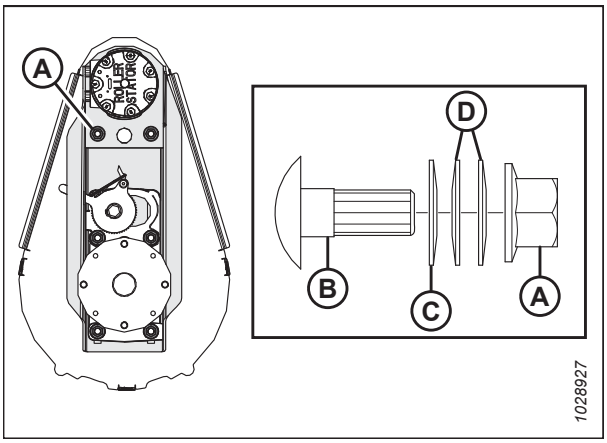


Figure 4.364: Reel Drive Motor Mount

14. Remove the caps or plugs from the ports and lines. Connect hydraulic lines (A) to hydraulic fittings (B) on motor (C).

    IMPORTANT:

    Ensure that hydraulic lines (A) are installed in their original locations.

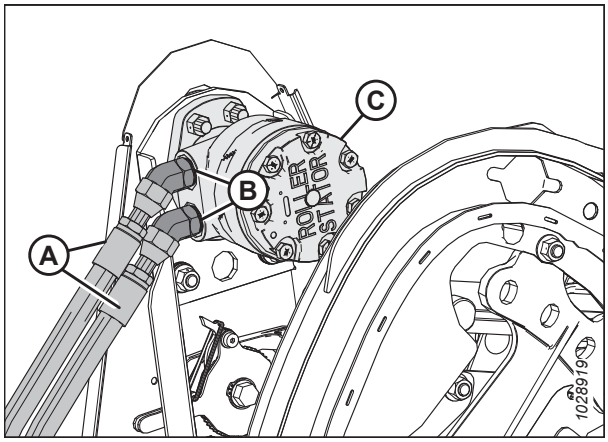


Figure 4.365: Reel Motor and Hoses

4.14.6 Replacing Drive Chain (Endless) – Double and Triple Reel

The drive chain allows the hydraulic reel drive motor to turn the reel. Replace the chain if it is damaged or worn.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.
3. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 688*.
4. **Double Reel:** At the center reel arm, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift (or equivalent).

   Triple Reel: At the left side of the center reel, wrap sling (A) around the reel tube as shown. Attach the sling to the fork of a forklift (or equivalent).

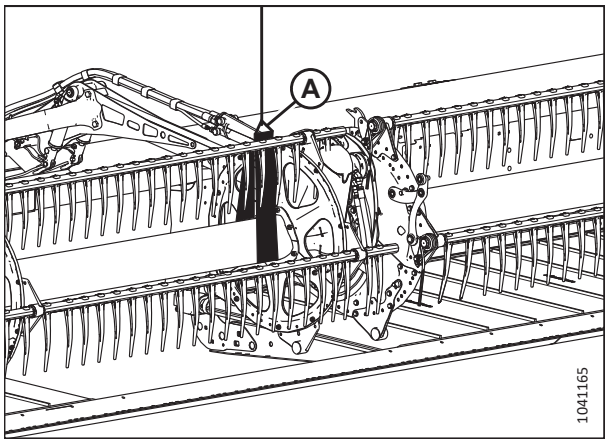


Figure 4.366: Supporting Reel

5. Draw a line across U-joint flange (B) and driven sprocket (C) to mark the installed location.
6. Remove six bolts and washers (A) attaching U-joint flange (B) to driven sprocket (C).

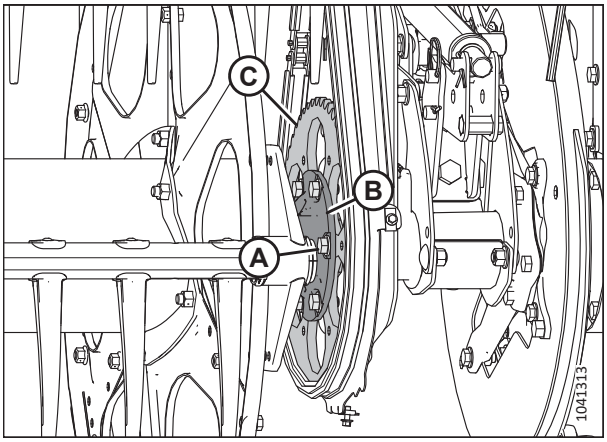


Figure 4.367: U-Joint

7. **Double Reel:** Move the right reel sideways to separate reel U-joint (A) from reel driven sprocket (B).

   Triple Reel: Move the center and right reels over to separate reel U-joint (A) from reel driven sprocket (B).
8. Remove drive chain (C).
9. Install chain (C) over U-joint (B) and onto the sprockets.

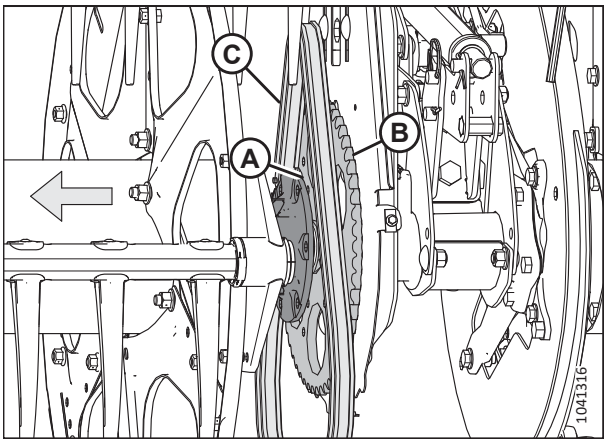


Figure 4.368: Replacing Chain

10. Align marks on U-joint flange (B) and driven sprocket (C).
11. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to six 1/2 in. bolts (A).
12. Install six bolts and washers (A) attaching U-joint flange (B) to driven sprocket (C).
13. Torque bolts (A) to 110 Nm (81 lbf·ft).

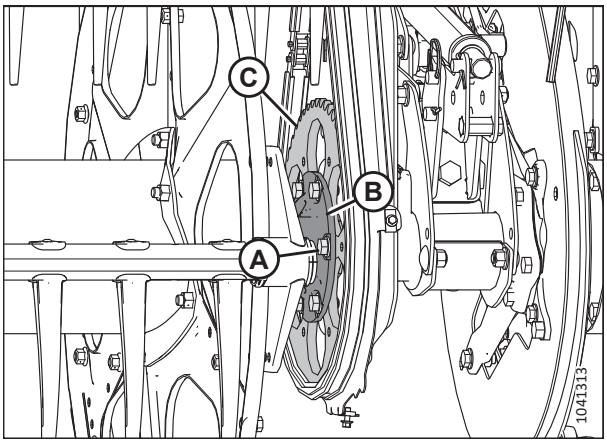


Figure 4.369: U-Joint

14. Remove temporary reel sling (A).
15. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 689*.
16. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.

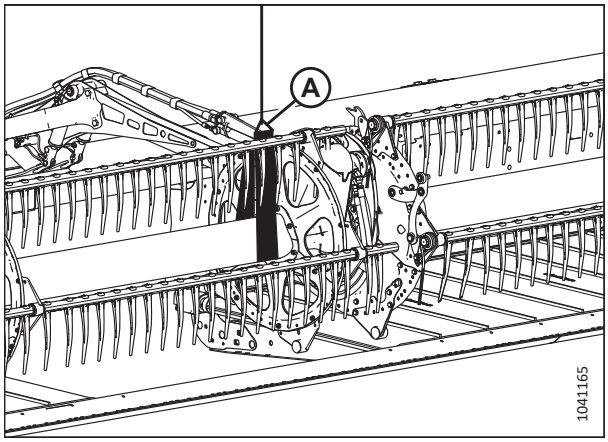


Figure 4.370: Reel and Sling

4.14.7 Reel Speed Sensor

The reel speed sensors (and the procedures for replacing them) vary with the combine model.

Refer to the following topics depending on your combine model:

Replacing Challenger®, Gleaner®, IDEAL™, or Massey Ferguson® Reel Speed Sensor

The reel speed sensor is located on the reel drive and senses how fast the reel drive sprocket is turning. If malfunctioning, it may need adjustment or replacement.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.
3. Disconnect electrical connector (A) from the header harness.

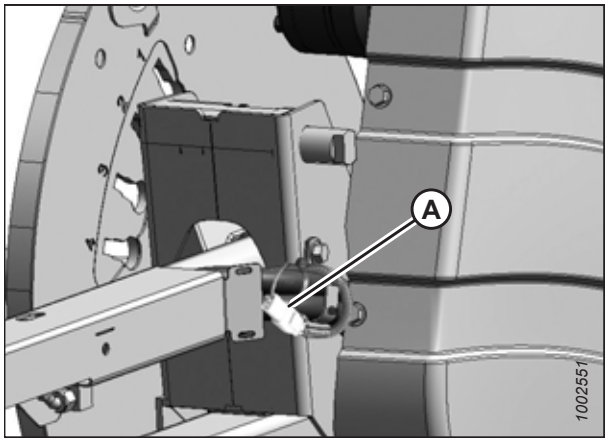


Figure 4.371: Reel Drive Assembly – Electrical Harness

4. Cut cable tie (A) securing the harness to the cover.
5. Remove two screws (B), sensor (C), and the harness. If necessary, bend cover (D) to remove the harness.
6. Feed the wire of the new sensor behind cover (D) and through the chain case.
7. Install the new sensor onto support (E) and attach it with two screws (B).
8. Adjust the gap between sensor disc (F) and sensor (C) to 3.5 mm (0.14 in.).

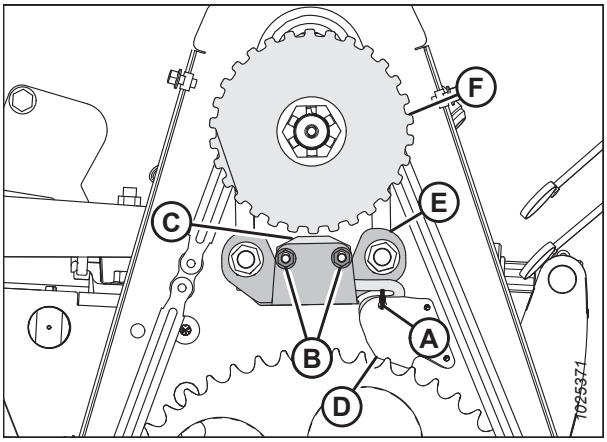


Figure 4.372: Reel Drive Assembly – Speed Sensor

9. Connect the sensor harness to header harness (A).

   IMPORTANT:

   Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.

10. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.
11. Ensure that the sensor is working correctly.

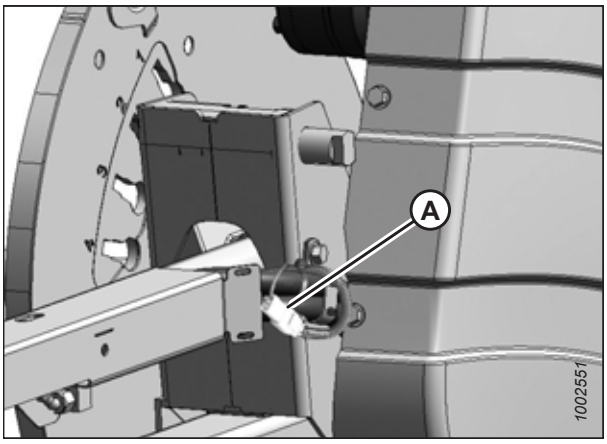


Figure 4.373: Reel Drive Assembly – Electrical Harness

Replacing CLAAS Reel Speed Sensor

The reel speed sensor is located on the reel drive and it senses how fast the reel drive sprocket is turning. If the sensor is malfunctioning, it may need to be adjusted or replaced.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.

3. Disconnect the header harness connector located behind the chain case from sensor (A).
4. Remove cable ties (B).
5. Remove shield (C) and rivets (D).
6. Remove nut (E) and remove sensor (A).
7. Position new sensor (A) into support (F). Secure it with nut (E).
8. Adjust the gap between sensor disc (G) and the sensor to 3.5 mm (0.14 in.) using nuts (E).
9. Route the harness through the knockout hole in the panel and connect it to sensor (A). Secure the harness in place with shield (C) and rivets (D).

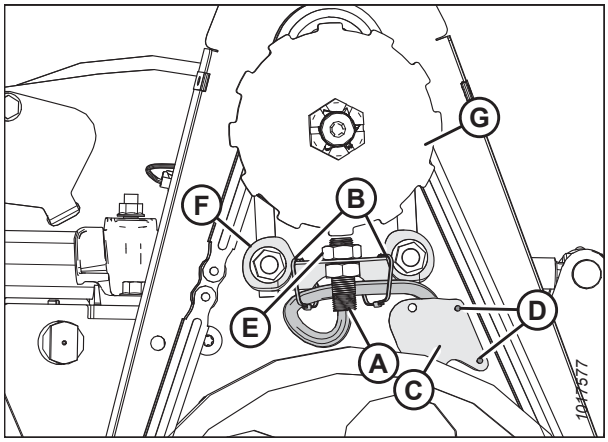


Figure 4.374: Speed Sensor

10. Secure the harness to the sensor support with cable ties (B) as shown.

    IMPORTANT:

    Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.

11. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.

Replacing John Deere Reel Speed Sensor

The reel speed sensor is located on the reel drive and it senses how fast the reel drive sprocket is turning. If the sensor is malfunctioning, it may need to be adjusted or replaced.

DANGER

To prevent injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 47*.
3. Disconnect electrical connector (D) from the header harness (E).
4. Remove top nut (C) and remove sensor (B).
5. Remove the top nut from the new sensor and position the sensor onto the support. Secure it with top nut (C).
6. Adjust the gap between sensor disc (A) and sensor (B) to 1 mm (0.04 in.) using nut (C).
7. Connect electrical connector (D) to header harness (E).

   IMPORTANT:

   Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.

8. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 49*.

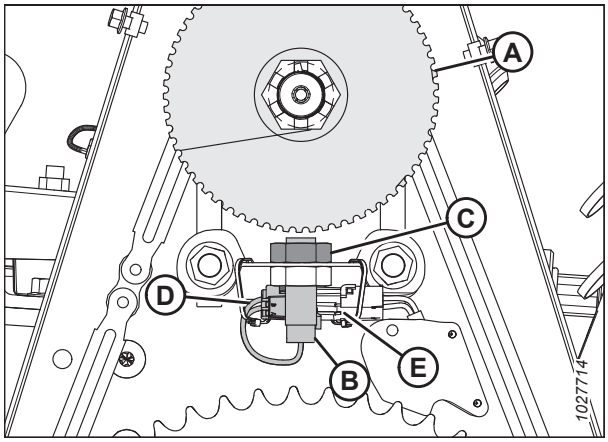


Figure 4.375: Speed Sensor

4.15 Contour Wheels – Option

The ContourMax™ Contour Wheels option allows the header to flex with the contours of the field leaving a consistent stubble height while cutting up to 46 cm (18 in.) above the ground.

4.15.1 ContourMax™ Option – Checking Wheel Bolt Torque

The wheel bolts securing the ContourMax™ wheels must be torqued twice.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Place the ContourMax™ wheel onto the hub.
3. Insert the five bolts that are used to secure the wheel.
4. Torque the bolts initially to 88 Nm (65 lbf·ft) based on the sequence shown. Brace the wheel to prepare it for the final torque.
5. Torque the bolts again to a final torque value of 122 Nm (90 lbf·ft).
6. Repeat Step *2, page 705* to Step *5, page 705* for the other wheel.

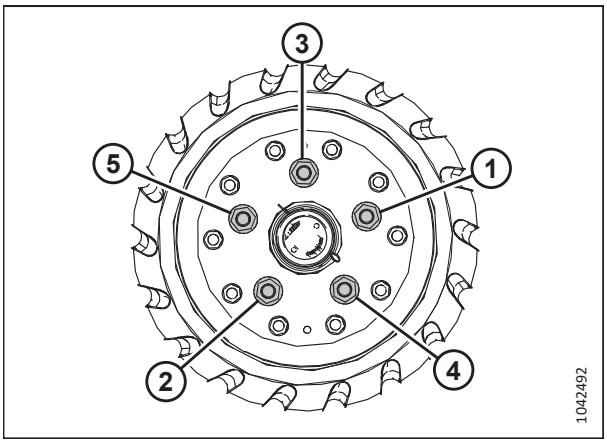


Figure 4.376: Sequence for Tightening Bolts on LH Wheel

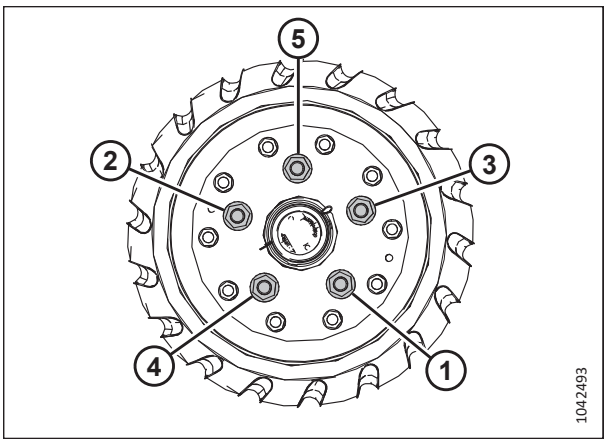


Figure 4.377: Sequence for Tightening Bolts on RH Wheel

4.15.2 Leveling Contour Wheel Height

The contour wheels allow the header to follow the contours of the ground, and can be adjusted between 25 mm (1 in.) and 457 mm (18 in.) from the ground surface.

DANGER

Ensure that all bystanders have cleared the area.

DANGER

To avoid bodily injury or death from the unexpected startup or fall of a raised machine, always stop the engine, remove the key, and engage the lift cylinder lock-out valves before going under the machine for any reason.

NOTE:

Set the header float before leveling the contour wheels. For instructions, refer to *Checking and Adjusting Header Float, page 190*.

NOTE:

Set the wing balance before leveling the contour wheels. For instructions, refer to *3.9.4 Checking and Adjusting Wing Balance, page 208*.

1. Unlock the header wings. For instructions, refer to *Operating in Flex Mode, page 202*.
2. Unlock the header float. For instructions refer to *Locking/Unlocking Header Float, page 202*.
3. Start the engine.
4. Park the combine on a level surface.
5. Lower the reel fully.
6. Adjust the contour wheels so that height indicator (A) is at number 2 (B).

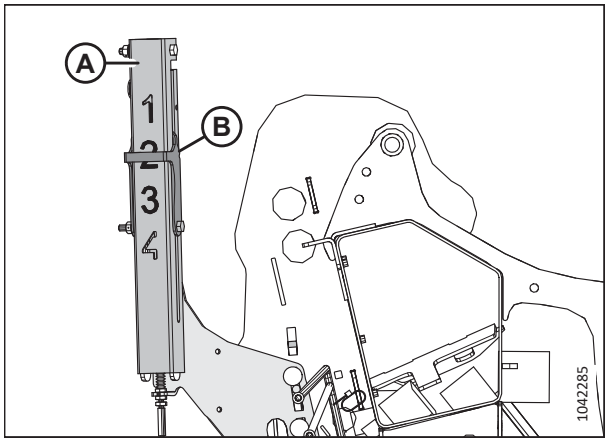


Figure 4.378: Height Indicator – Rear Left End

7. Lower the header until auto header height indicator (A) is at number 2 (B).
8. Shut down the engine, and remove the key from the ignition.

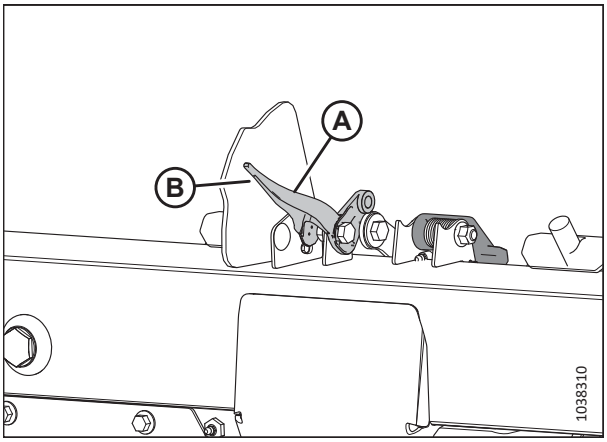


Figure 4.379: Float Setting Indicator

9. At the center of the header, measure distance (A) from the ground to the tip of the center guard. Record distance (A).
10. At each end of the header, measure distance (A) from the ground to the tip of the end guard. Record both of the measurements.
    - If the difference between the center measurement and the end measurements is less than 25 mm (1 in.), no adjustment is required.
    - If the difference between the center measurement and the end measurements is greater than 25 mm (1 in.), adjustment is required. Continue to the next step.
11. Start the engine.
12. Raise the header fully.
13. Shut down the engine, and remove the key from the ignition.
14. Engage the header safety props. For instructions, refer to the combine operator's manual.

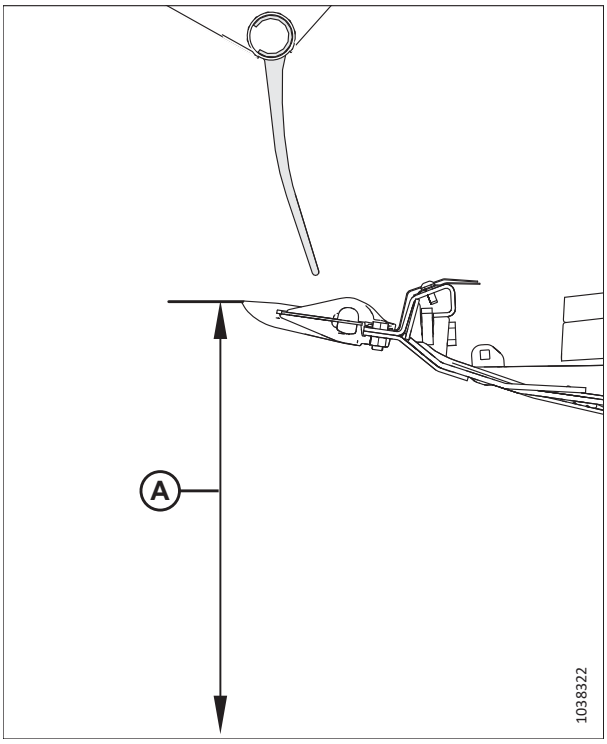


Figure 4.380: Float Setting Indicator

15. Remove pin (A).
16. Reposition adjuster plate (B) in the slot to align with a different hole. There is approximately a 24 mm (1/2 in.) difference between each of the holes.
    - If the measurement is less than the measurement at the center of the header, move the adjuster plate **TOWARD** the cutterbar.
    - If the measurement is more than the measurement at the center of the header, move the adjuster plate **AWAY** from the cutterbar.
17. On the opposite end of the header, repeat Step *15, page 708* and Step *16, page 708*.

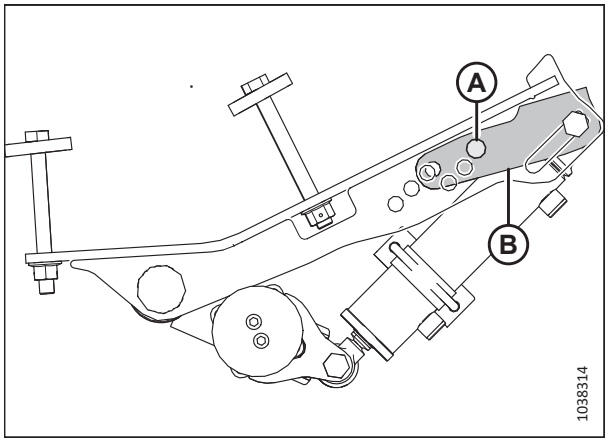


Figure 4.381: Pin Location – Left Outer Wheel

18. Disengage the header safety props. Refer to the combine operator's manual for instructions.
19. Start the engine.
20. Lower the header until the auto header height indicator is at number 2.
21. Shut down the engine, and remove the key from the ignition.
22. Measure the guard to ground distance again. Ensure that the three measurements are the same. If more adjustment is required, repeat Steps *15, page 708* to *17, page 708*.

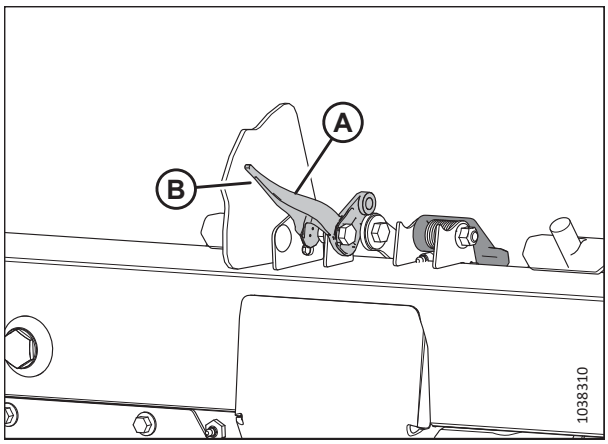


Figure 4.382: Auto Header Height Indicator

4.15.3 Lubricating Contour Wheel System

Lubricating the contour wheel system will help ensure reliable operation and maximize the service life of the components.

The components of the contour wheel system require lubrication at different intervals:

- Lubricate the inner wheel assemblies every 100 hours
- Lubricate the wheel axles annually

DANGER

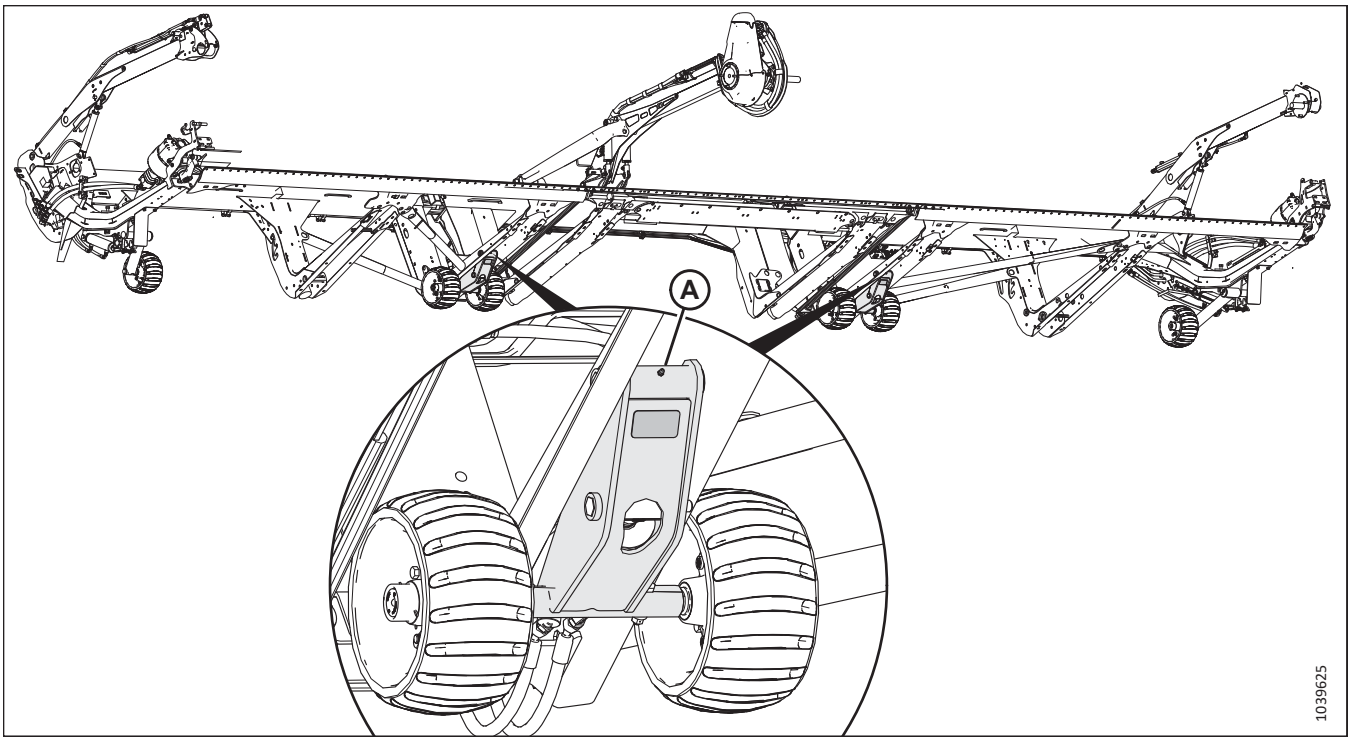
To avoid bodily injury or death from unexpected startup or fall of raised header, stop the engine, remove the key, and engage the safety props before going under the header. If you are using a lifting device to support the header, be sure that the header is secure before proceeding.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props or support the header on blocks on level ground. If using blocks to support the header, ensure the header is approximately 914 mm (36 in.) off the ground. For instruction on how to engage the header safety props, refer to the combine operator's manual.

Figure 4.383: Inner Contour Wheel Assemblies



A - Inner Wheel Assemblies (Two Places)

5. Lubricate points (A) at the two inner wheel assemblies.
6. Remove rubber plug (A) from contour wheel hub. Retain the plug for reinstallation.

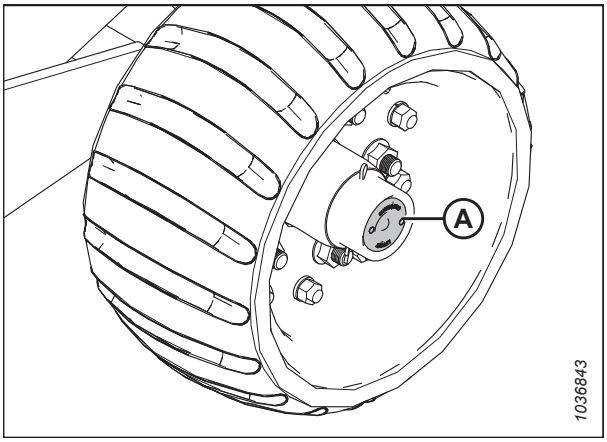


Figure 4.384: Rubber Plug on Contour Wheel Axle

7. Apply grease at lubrication point (A), and allow the excess grease to flow out the front of the axle hub.

   IMPORTANT:

   Grease the lubrication point **SLOWLY**. Rapid greasing may the force rear seal to move.

8. Reinstall rubber plug (B).

9. Repeat the procedure for the remaining contour wheels.

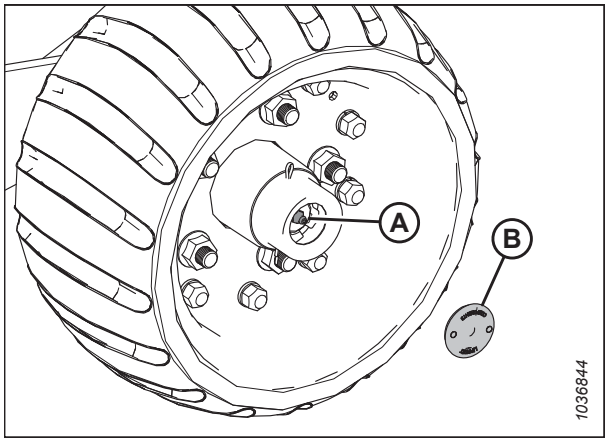


Figure 4.385: Lubrication Point on Contour Wheel Axle

4.15.4 Checking Contour Wheel End Play

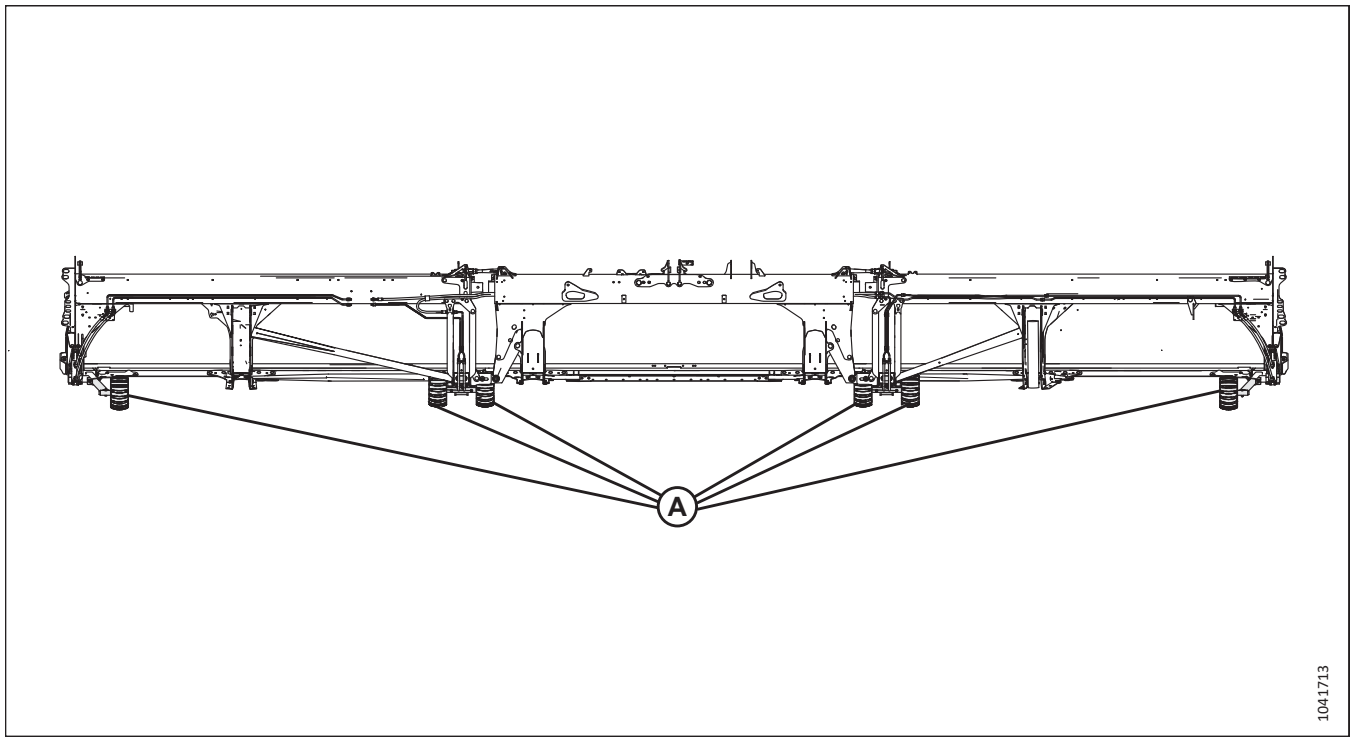
The end play of a wheel refers to its movement along the spindle axis. If there is too much play on the wheel assembly, you will need to tighten the castle nut under the dust cap.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Check the end play on wheel assemblies (A).

Figure 4.386: ContourMax™ Wheel Assemblies



3. If end play (A) is greater than 0.30 mm (0.012 in.), remove dust cap (B).

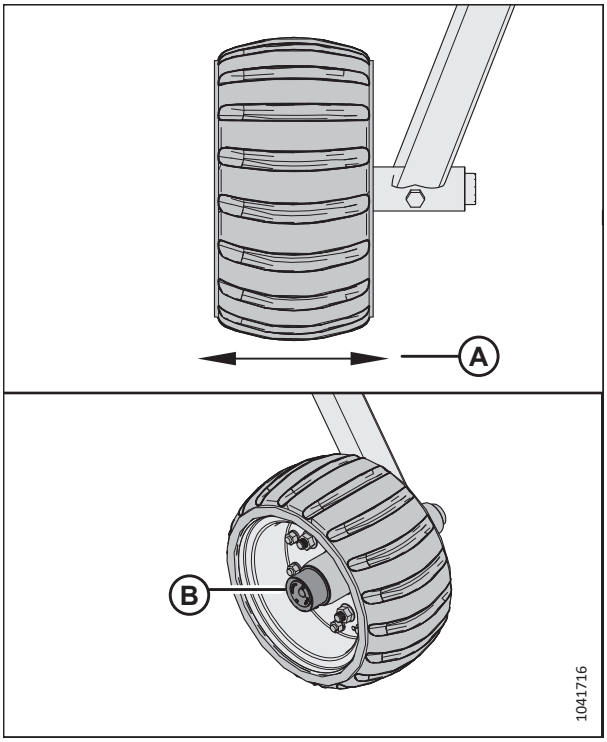


Figure 4.387: ContourMax™ Wheel End Play and Dust Cap

4. Remove cotter pin (A).
5. Tighten castle nut (B) until it is snug, then back off to the next slot in the castle nut.

   NOTE:

   There should be SOME play in the wheel assembly. Overtightening the castle nut can cause failure.

6. Reinstall cotter pin (A).
7. After tightening the assembly, lubricate spindle (C) until the grease comes out.
8. Reinstall the dust cap.

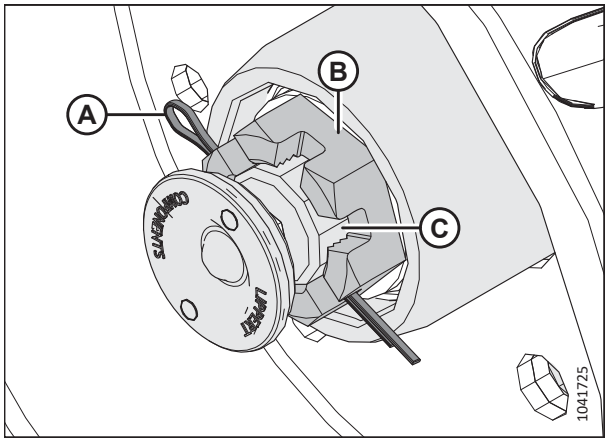


Figure 4.388: ContourMax™ Spindle

4.15.5 Zeroing Mechanical Indicator

The mechanical indicator will need to be zeroed to ensure that it operates accurately.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key from the ignition before making adjustments to the machine. NEVER climb onto or go underneath an unsupported header.

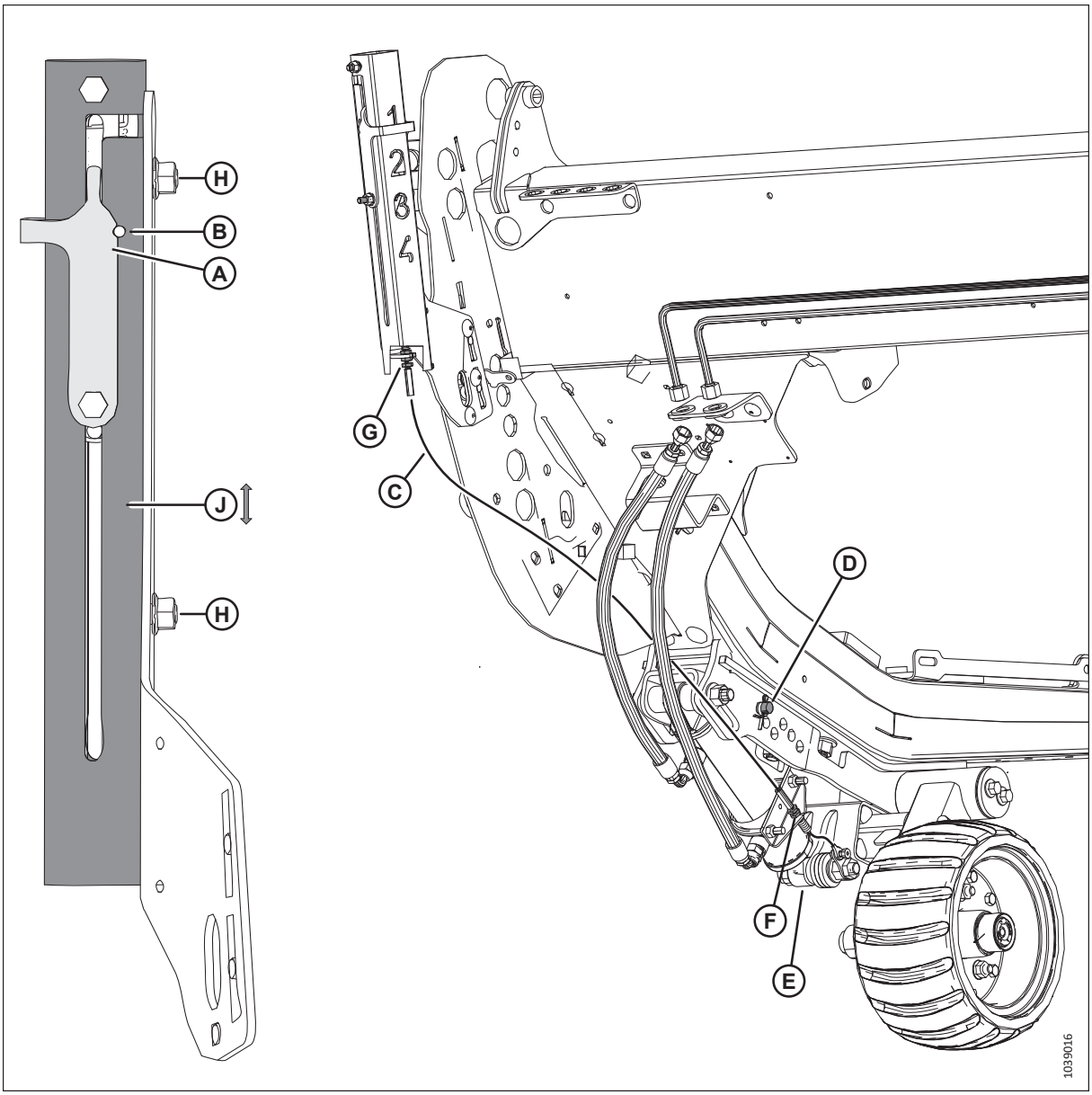


Figure 4.389: Mechanical Indicator

1. Shut down the engine, and remove the key from the ignition.
2. The mechanical indicator is zeroed when the notch in indicator (A) is aligned with hole (B) under the following conditions:
   - Cable (C) is tight
   - The pin is installed in hole (D)
   - Cylinder (E) is fully retracted
3. If the notch is not aligned with the hole, adjust any or all of the following parts:
   - Loosen two nuts (H) and slide tube (J) up or down. Tighten the nuts.
   - Adjust cable jam nuts at locations (G) or (F). Torque the cable jam nuts to 6 Nm (48 lbf·in).

4.16 Transport System (Option)

The header can be equipped with a set of transport wheels, so that the header can be towed by a combine or tractor.

Refer to *Adjusting EasyMove™ Transport Wheels, page 181* for more information.

4.16.1 Checking Wheel Bolt Torque

Check the transport wheel bolt torque one operating hour after installing the wheels, and every 100 operating hours thereafter.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. In the order shown, tighten the bolts to 115 Nm (85 lbf·ft).

   IMPORTANT:

   After reinstalling a wheel, check the bolt torque after 1 hour of operation and every 100 hours thereafter.

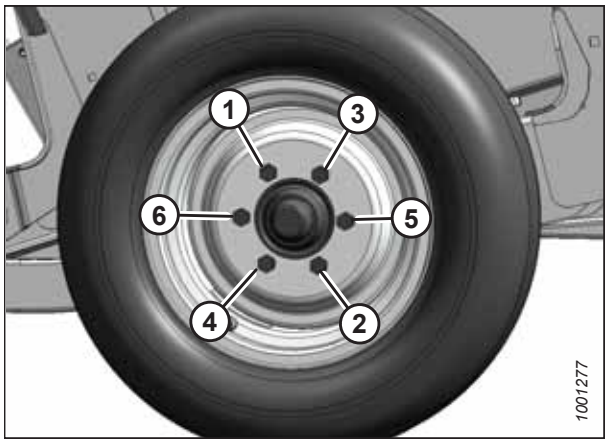


Figure 4.390: Bolt Tightening Sequence

4.16.2 Checking Transport Assembly Bolt Torque

To ensure safe operation, check the hardware that secures the optional transport system components to the header daily.

DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

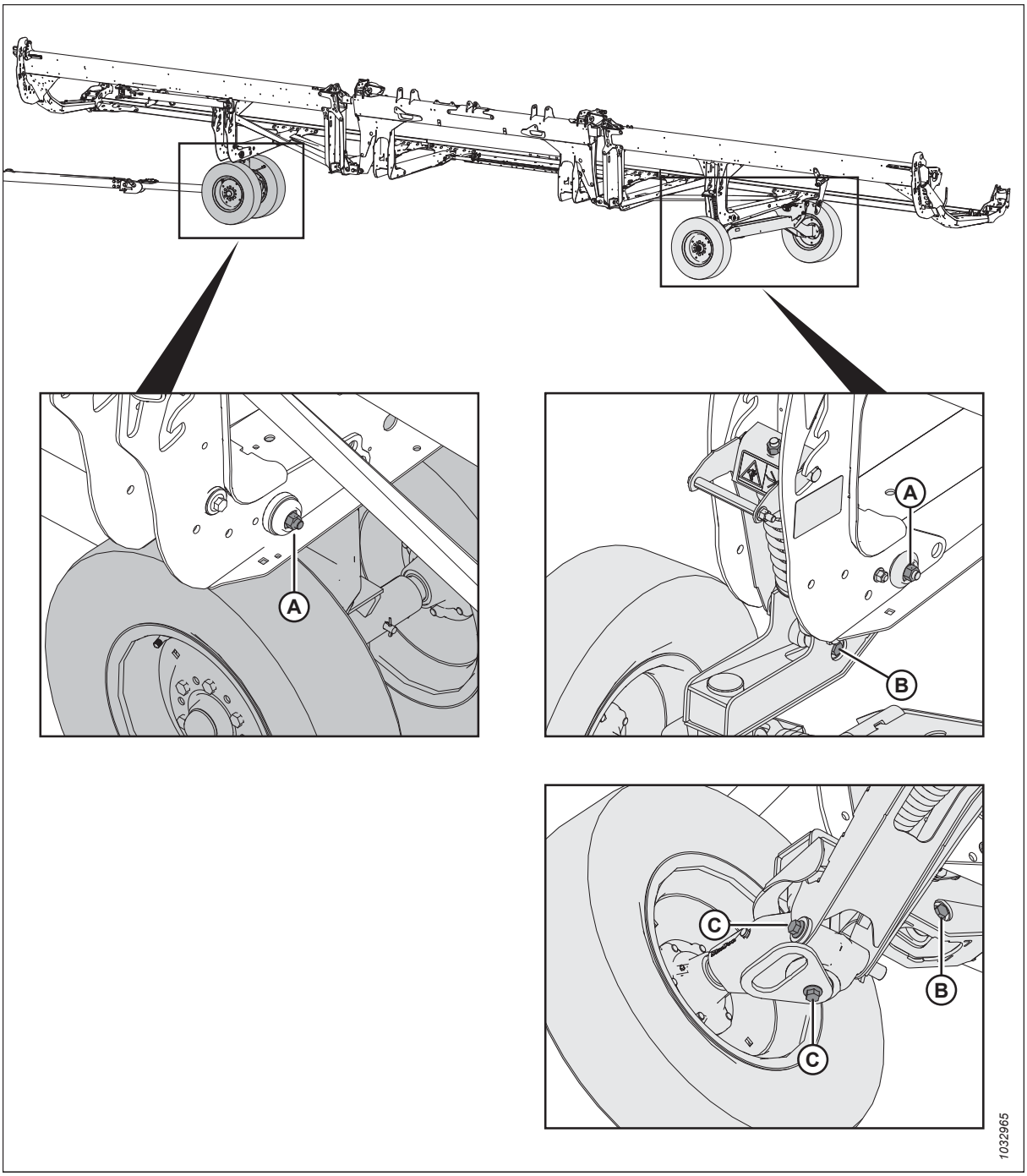


Figure 4.391: Transport System Assembly Bolts

1. Check the following bolts **DAILY** to ensure the bolts are torqued to the specified values:
    - Bolts (A) to 234 Nm (173 lbf·ft)
    - Bolts (B) to 343 Nm (253 lbf·ft)
    - Bolts (C) to 343 Nm (253 lbf·ft)

4.16.3 Checking Tire Pressure

Proper tire pressure ensures tires perform properly and wear evenly.

WARNING

- **During inflation, a tire can explode and cause serious injury or death.**
- **Do NOT stand over the tire. Use a clip-on chuck and an extension hose.**
- **Do NOT exceed the maximum inflation pressure indicated on the tire label.**
- **Replace defective tires.**
- **Replace wheel rims that are cracked, worn, or severely rusted.**
- **Never weld a wheel rim.**

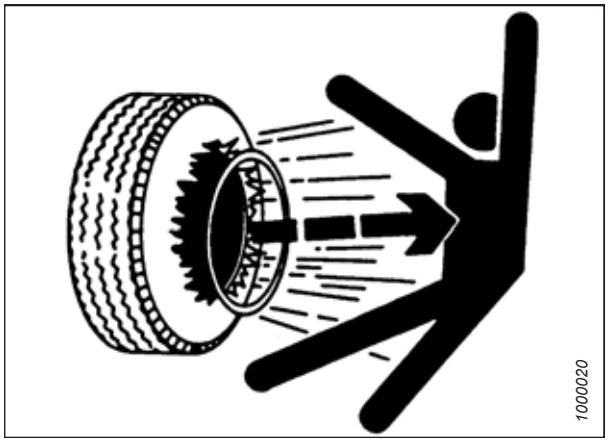


Figure 4.392: Inflation Warning

- **Never use force on an inflated or a partially inflated tire.**
- **Ensure that the tire is correctly seated before inflating it to operating pressure.**
- **If the tire is not correctly positioned on the rim or is overinflated, the tire bead can loosen on one side causing air to escape at high speed and with great force. An air leak of this nature can thrust the tire in any direction endangering anyone in the area.**
- **Remove all the air from a tire before removing it from the rim.**
- **Do NOT remove, install, or repair a tire on a rim unless you have the proper equipment and experience to perform the job. Take the tire and rim to a qualified tire repair shop.**

1. Check the tire pressure. For pressure specifications, refer to Table *4.6, page 716*.
2. Make sure the tire is correctly seated on the rim before inflating it.
   a. If the tire is not correctly positioned on the rim, take the tire to a qualified tire repair shop.
3. If inflation is required, use a clip-on chuck and an extension hose to inflate the tire to the desired pressure.

   IMPORTANT:

   Do **NOT** exceed the maximum inflation pressure indicated on the tire label.

Table 4.6 Tire Inflation Pressure

Size	Load Range	Pressure
225/75 R15	E	552 kPa (80 psi)

4.16.4 Changing Tow-Bar Hitch Connection from Pintle to Clevis

The transport tow-bar includes clevis and pintle ring towing mounts.

1. Remove the hairpin from clevis pin (A) and disconnect chain (B). Store clevis pin (A) with the pintle hitch adapter.
2. Remove four nuts, four bolts, and eight flat washers (C) from the end of the tow-bar. Retain the hardware for reinstallation.

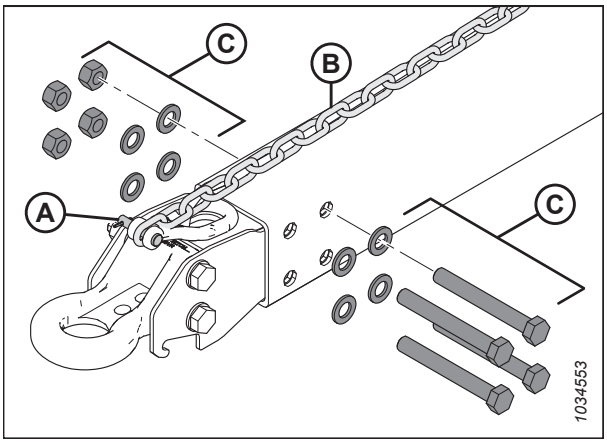


Figure 4.393: Removing Pintle Towing Adapter

3. Tape or tie 6 m (20 ft.) of pull-line to harness transport end (A).
4. Remove bolt (B) securing the harness in the P-clip. Retain the bolt.
5. From hitch end (C), gently pull the harness out through the opening in pintle (D) until you can see the pull-line, then disconnect the pull-line and set the pintle aside. Leave the pull-line inside the tow-bar.

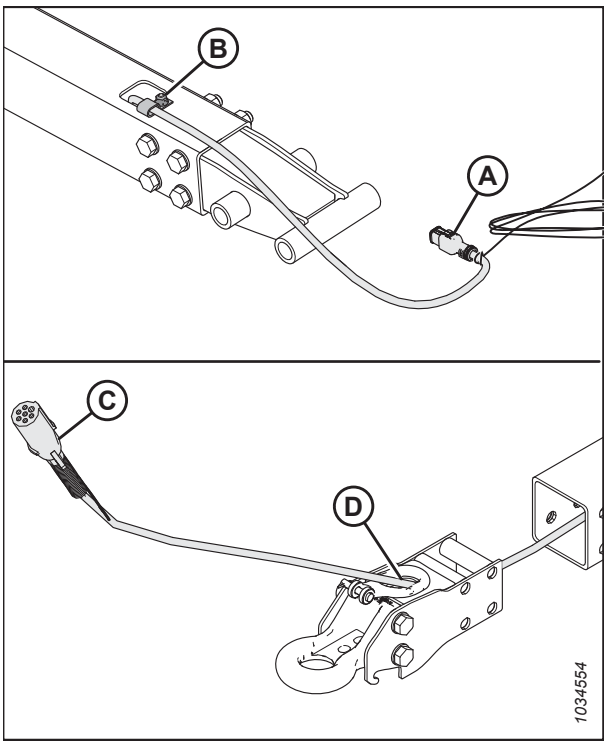


Figure 4.394: Removing Pintle Towing Adapter

6. Retrieve the clevis adapter. Insert transport connector (A) of the electrical harness through opening (B) in the ring on the clevis adapter.
7. Tie or tape pull-line (C) to the harness. Using the pull-line at the transport end, gently pull the harness through the tow-bar.
8. Ensure that transport end (A) of the harness extends 48 cm (18 7/8 in.) past P-clip (D).
9. Secure the harness in the P-clip with the bolt removed in Step *6, page 718*.

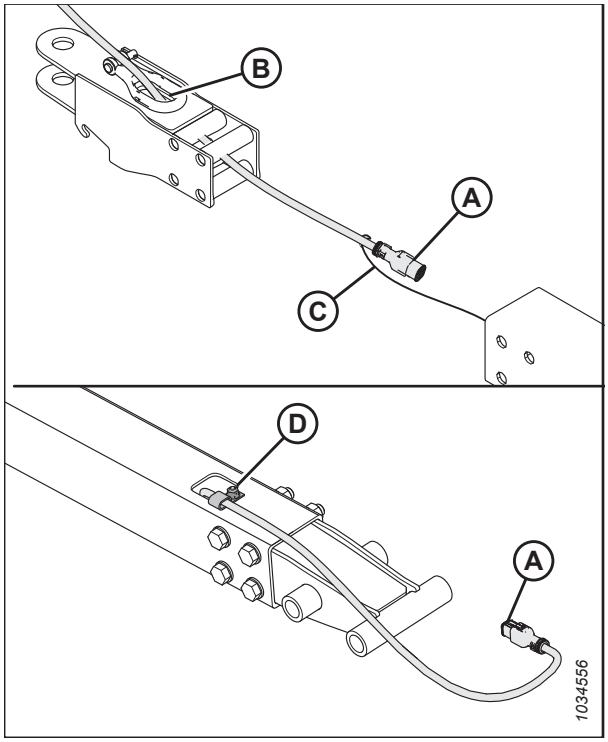


Figure 4.395: Installing Clevis Ring Adapter

10. Install four nuts, four bolts, and eight flat washers (A) to secure the clevis adapter to the tow-bar.

    NOTE:

    Ensure that hardware (A) is reinstalled in the same orientation it was in before it was removed.
11. Reconnect the chain with clevis pin (B) and secure it with the cotter pin.

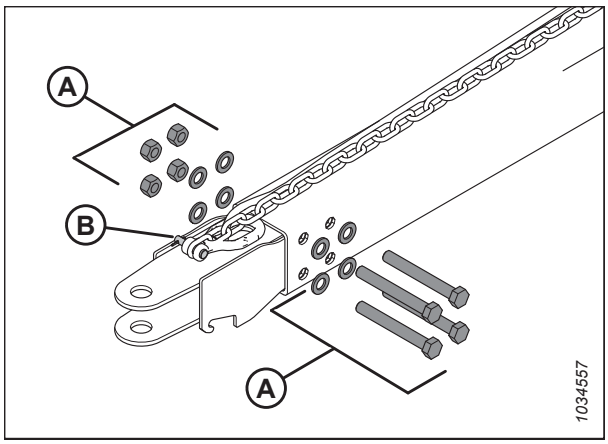


Figure 4.396: Installing Clevis Ring Adapter

12. Tighten nuts (A) in the cross pattern shown. Recheck each nut in sequence until they are torqued to 310 Nm (229 lbf·ft).

13. Insert the hitch pin into the clevis adapter. Secure the pin with the lynch pin.

    NOTE:

    The pins are not shown in the illustration.

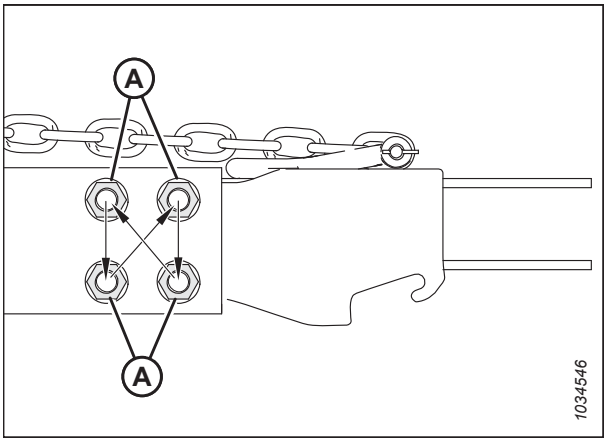


Figure 4.397: Torque Sequence

4.16.5 Changing Tow-Bar Hitch Connection from Clevis to Pintle

The transport tow-bar includes clevis and pintle ring towing mounts.

1. Remove the hairpin from clevis pin (A) and disconnect chain (B). Store clevis pin (A) with the clevis adapter.

2. Remove four nuts, four bolts, and eight flat washers (C) from the end of the tow-bar. Retain the hardware for reinstallation.

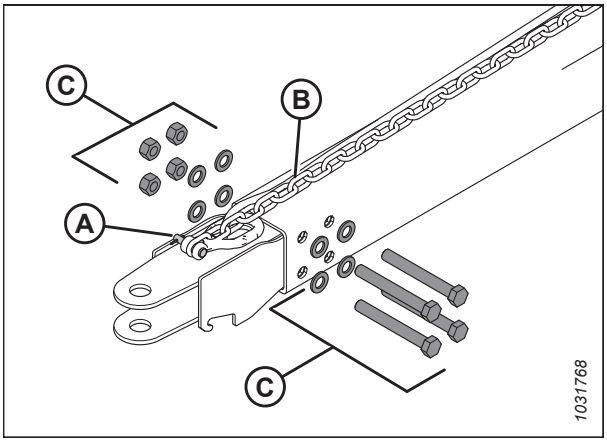


Figure 4.398: Removing Clevis Adapter

3. Tape or tie 6 m (20 ft.) of pull-line to harness transport end (A).
4. Remove bolt (B) securing the harness in the P-clip. Retain the bolt for reinstallation.
5. From hitch end (C), gently pull the harness out through the opening in clevis (D) until you can see the pull-line, then disconnect the pull-line and set the clevis adapter aside. Leave the pull-line inside the tow-bar.

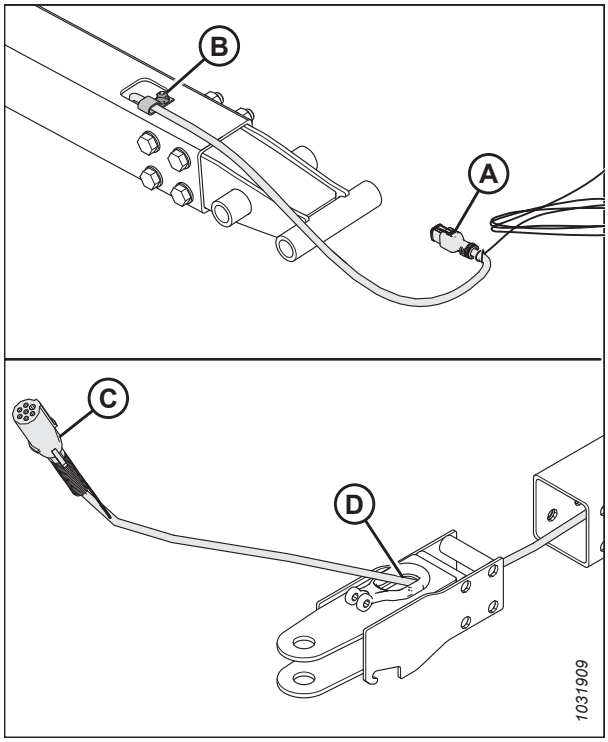


Figure 4.399: Removing Clevis Towing Adapter

6. Insert transport connector (A) of the electrical harness through opening (B) in the pintle ring adapter.
7. Tie or tape pull-line (C) to the harness. Gently pull the harness through the tow-bar with the pull line at the transport end.
8. Ensure that transport end (A) of the harness extends 48 cm (18 7/8 in.) past P-clip (D).
9. Secure the harness in the P-clip with the bolt removed in Step *4, page 720*.

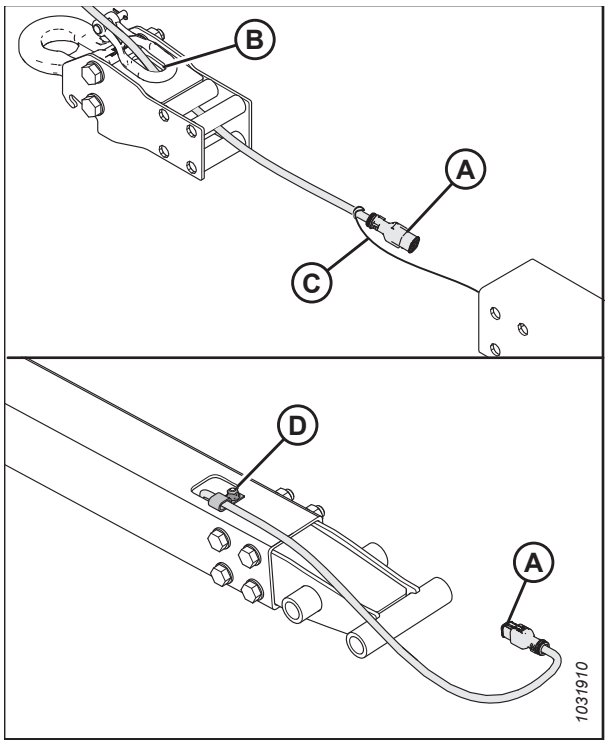


Figure 4.400: Installing Pintle Ring Adapter

10. Reinstall four nuts, four bolts, and eight flat washers (A) to secure the pintle ring adapter to the tow-bar.

    NOTE:

    Ensure that hardware (A) is reinstalled with the four bolt heads on the same side.

11. Reconnect the chain with clevis pin (B) and secure it with the cotter pin.

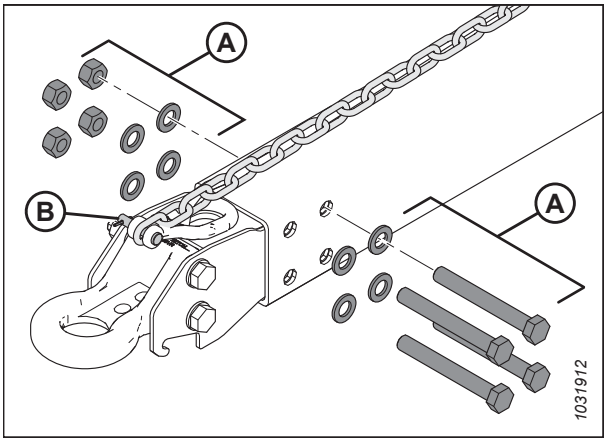


Figure 4.401: Installing Pintle Ring Adapter

12. Tighten nuts (A) in the cross pattern shown. Recheck each nut in sequence until they are torqued to 310 Nm (229 lbf·ft).

13. Insert the hitch pin into the pintle ring adapter. Secure the pin with the lynch pin.

    NOTE:

    The pins are not shown in the illustration.

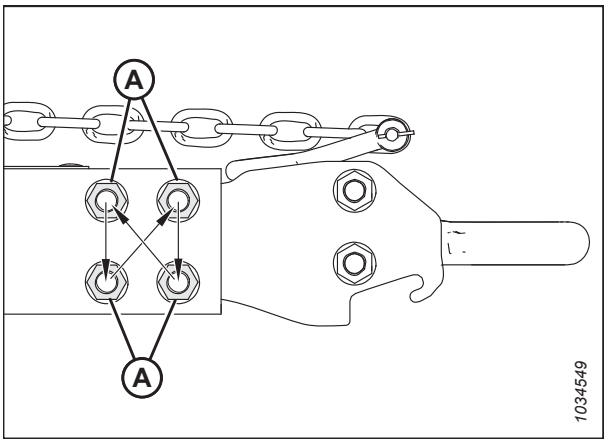


Figure 4.402: Torque Sequence

4.17 VertiBlade™ Vertical Knife (Option)

The optional vertical knife kit is a vertical crop cutter that is mounted to each end of the header. The vertical knife slices through tangled, shatter-prone crops such as canola to reduce seed loss.

4.17.1 Replacing Vertical Knife Sections

The VertiBlade™ Vertical Knife kit includes a service kit that supplies four replacement knife sections. Follow these instructions to replace a damaged knife section.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

CAUTION

Install vertical knife guards before attaching or removing vertical knives. Wear heavy gloves when working around or handling knives.

1. Start the engine.
2. Raise the header 153–254 mm (6–10 in.) off of the ground.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to the combine operator's manual.
5. Open the header endshields. for instructions, refer to *Opening Header Endshields, page 39*.
6. Detach the vertical knife from the header. Set the vertical knife aside.
7. Remove retaining pin (A) from the knife guard.
8. Remove the knife guard using handle (B).

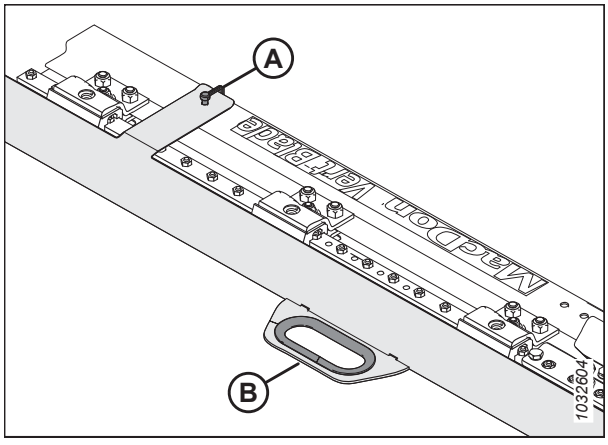


Figure 4.403: Vertical Knife Guard

9. Remove three bolts (A) securing milling bar (B) to the blade bracket and knife section assembly (C). Tilt milling bar (B) upward. Slide assembly (C) out.

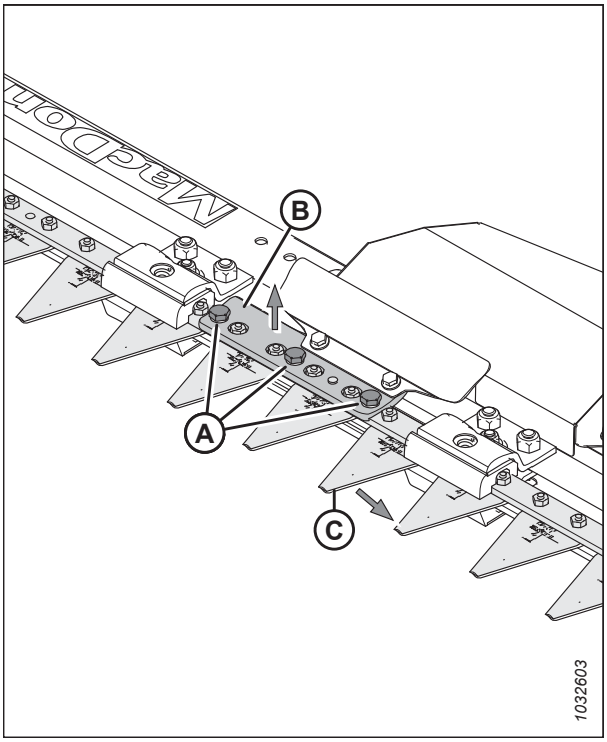


Figure 4.404: Vertical Knife – Guard Removed

NOTE:

If you cannot tilt milling bar (A) upwards enough to slide knife section assembly (B) out, remove two bolts (C) securing hood (D) to the vertical knife assembly. Loosen two nuts (E) to loosen slide rail (F). Milling bar (A) should now be loose enough to tilt upward.

IMPORTANT:

You should not need to loosen clip hardware (G) and clips (H) to slide the knife section assembly out. If you need to loosen this hardware, follow Step *14, page 724* to properly tighten the hardware when it is reinstalled. Overtightening this hardware can cause the motor to overheat, melt plastic components, or burn out. Undertightening the hardware can cause debris to plug the knives.

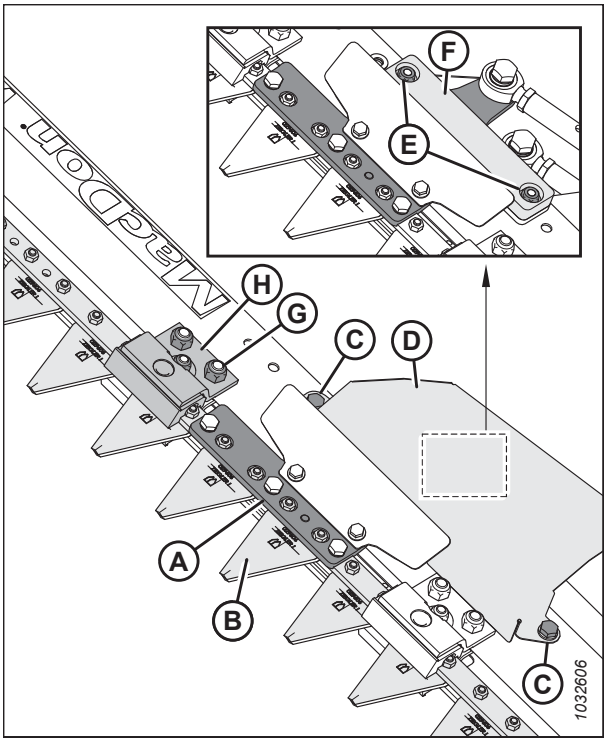


Figure 4.405: Vertical Knife – Guard Removed

10. Remove two screws (A) and nuts (B) securing knife section (C) to bracket (D).
11. Apply medium-strength threadlocker (Loctite® 243 or an equivalent) to two new screws (A) (MD #313790).
12. Secure new knife section (C) (MD #313788) to bracket (D) using two screws (A) and nuts (B) (MD #313789).
13. Tighten nuts (B) to 7 Nm (62 lbf·in).

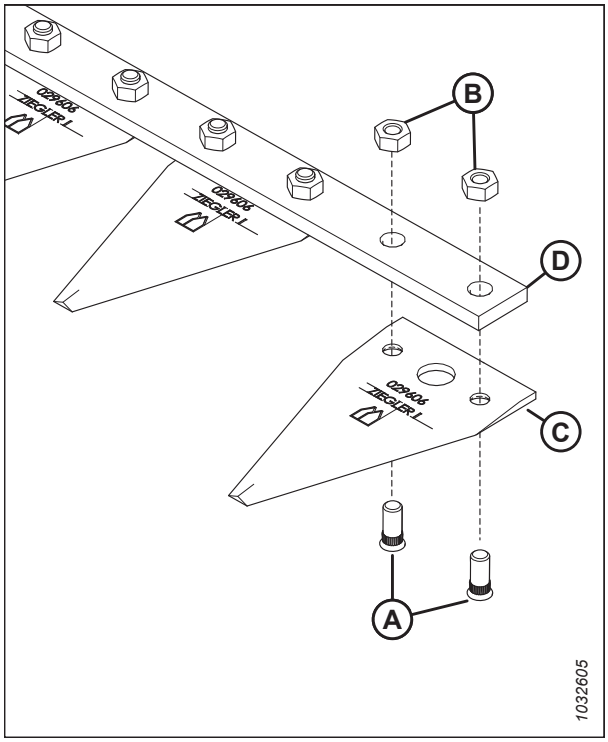


Figure 4.406: Knife Section Assembly

14. If you loosened clip hardware (A), (B), and clips (C), tighten the hardware as follows:
    a. Tighten M8 nut (A) so that gap (D) at the tip of knife sections (E) does **NOT** exceed 3 mm (1/8 in.).
    b. Ensure that clips (C) do **NOT** clamp the knife too tightly.

       NOTE:

       Excessively tight clips restrict the movement of the knife.

    c. Tighten two M10 nuts (B) to 50 Nm (37 lbf·ft).
15. Reinstall the remaining components and the knife guard. Installation is the reverse of removal.

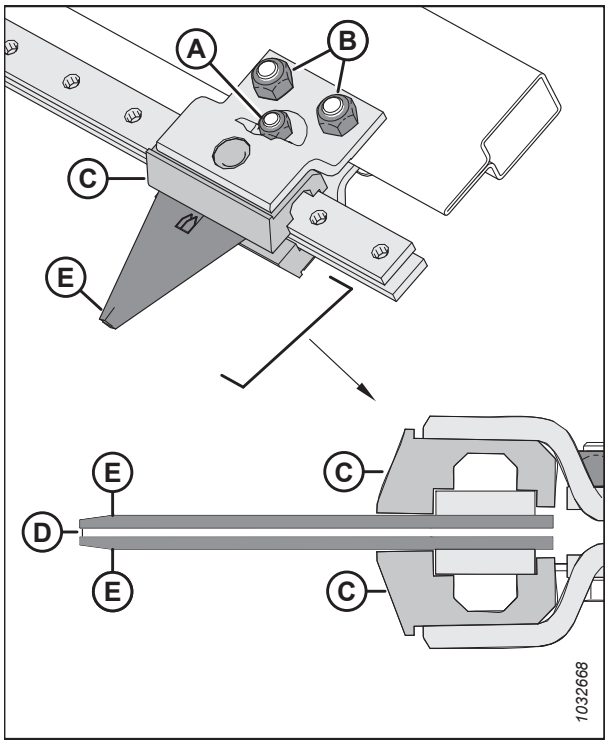


Figure 4.407: Gap Between Clip and Knife Section

4.17.2 Lubricating Vertical Knife

Each of the vertical knives has two lubrication points, which you can access by removing the knife's service panel.

Use high temperature extreme pressure (EP2) performance lubricant with 1% max molybdenum disulphide (NLGI Grade 2) lithium base to lubricate the vertical knives.

Lubricate vertical knife push rods (A) after they are first installed and every 50 operating hours thereafter.

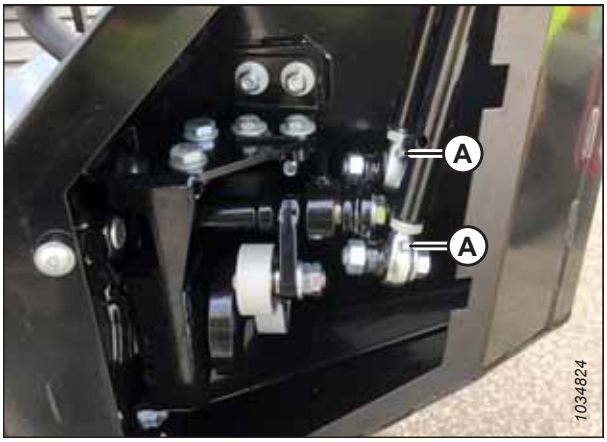


Figure 4.408: Grease Zerks on Vertical Knife Push Rods

To lubricate the vertical knife push rods, follow the steps below:

NOTE:

Some parts have been removed from the illustrations for clarity.

DANGER

To prevent bodily injury or death from the unexpected start-up or fall of a raised machine, always stop the engine and remove the key before leaving the operator's seat, and always engage the safety props before going under the machine for any reason.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Lower the header to the ground.
3. Shut down the engine, and remove the key from the ignition.

4. Remove screws (A) and access cover (B).

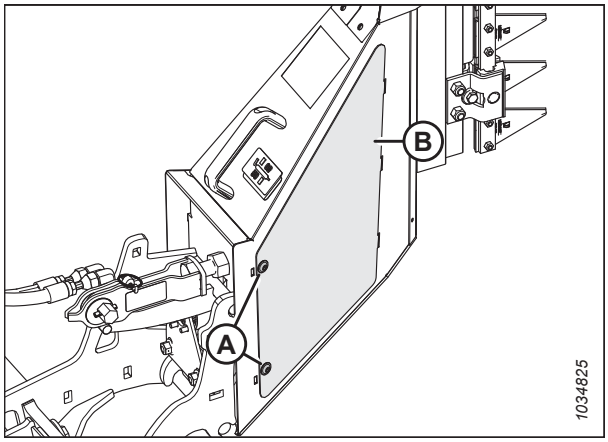


Figure 4.409: Vertical Knife Access Cover

5. Apply grease to two push rod grease zerks (A).

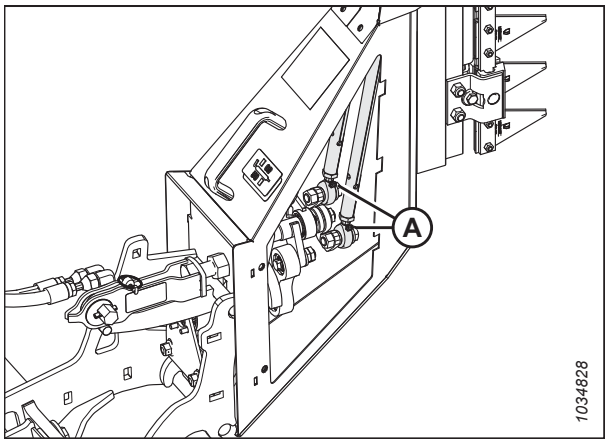


Figure 4.410: Grease Zerks on Vertical Knife Push Rods

6. Reinstall access cover (B). Secure the cover with screws (A).
7. Repeat this procedure to lubricate the other vertical knife.

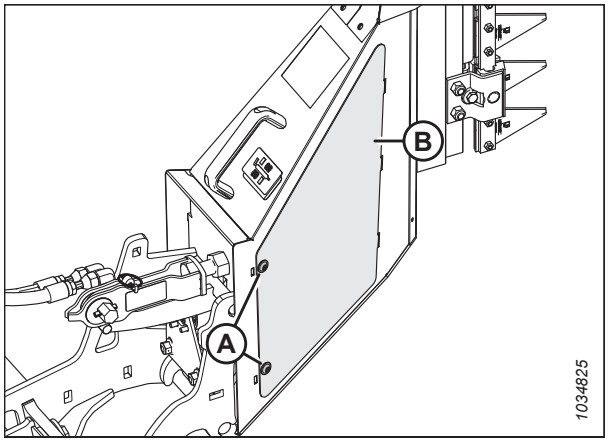


Figure 4.411: Vertical Knife Access Cover

Chapter 5: Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

5.1 Crop Delivery Kits

Crop delivery is the process of how the crop gets from the cutterbar to the feeder house. Optional crop delivery kits can optimize header performance for specific crops or conditions.

5.1.1 Crop Lifter Kit

Crop lifters are recommended for the maximum possible stubble height (e.g.: when harvesting severely lodged cereal crops).

Installation instructions are included in the kit.

Each kit (MD #B7022) contains 10 lifters. Order the following number of kits depending on your header's size:

- 7.6 m (25 ft.) – 3 kits
- 9.1 m (30 ft.) – 3 kits
- 10.6 m (35 ft.) – 4 kits
- 12.1 m (40 ft.) – 4 kits
- 12.5 m (41 ft.) – 4 kits
- 13.7 m (45 ft.) – 5 kits
- 15.2 m (50 ft.) – 5 kits

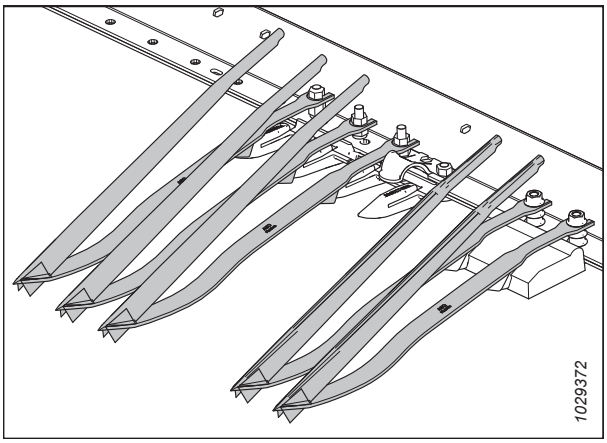


Figure 5.1: Grain Crop Lifter Kit

5.1.2 Crop Lifter Storage Rack Kit

Crop lifter racks store crop lifters at the rear of the header.

Installation instructions are included in the kit.

MD #B7023

NOTE:

This kit is for one side only. Order two kits for both sides of the header.

NOTE:

FD225 headers only need one kit.

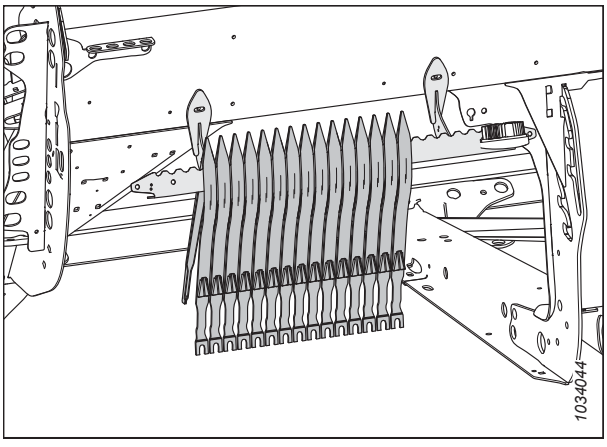


Figure 5.2: Crop Lifter Rack Kit – Left Side

5.1.3 Crop Divider Storage Bracket Kit

The divider storage bracket kit can store the standard divider cones or floating crop dividers on the header.

Installation instructions are included in the kit.

B7030

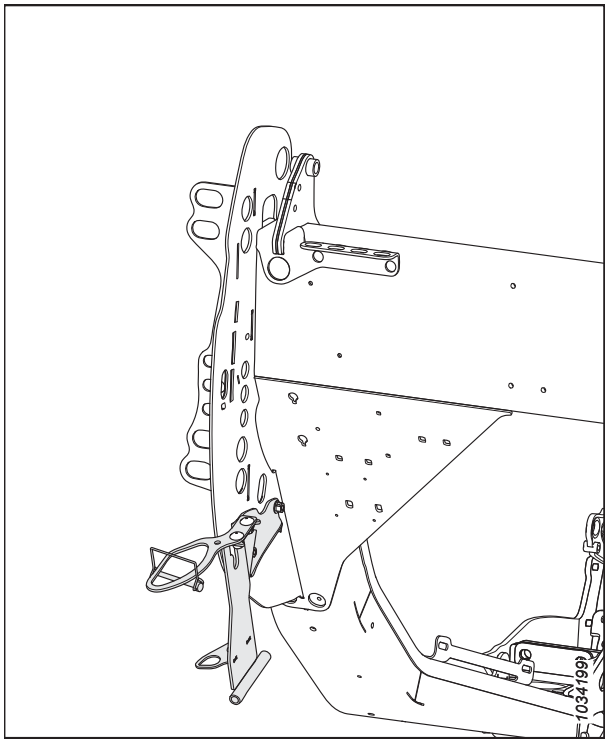


Figure 5.3: Divider Storage Bracket Kit

5.1.4 Floating Crop Dividers

Floating dividers follow the ground contour and allow for improved dividing in both lodged and standing crops and reduce trampling.

Installation instructions are included in the kit.

B7346

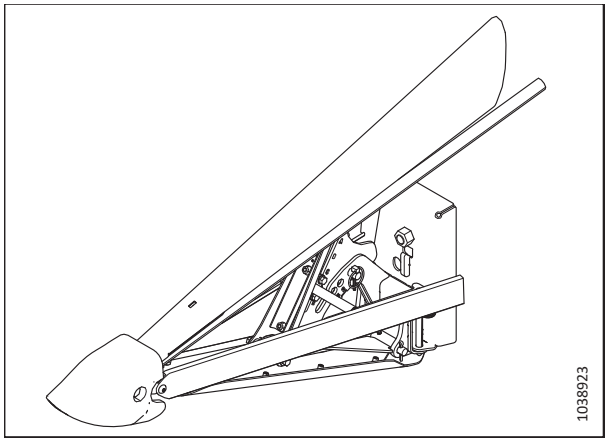


Figure 5.4: Floating Crop Divider

5.1.5 Full Length Upper Cross Auger

The upper cross auger attaches to the header in front of the backtube, and improves crop feeding into the center of the header in heavy crop conditions.

The upper cross auger (UCA) (A) is ideal for high-volume harvesting of forages, oats, canola, mustard, and other tall, bushy, hard-to-feed crops. Order the following bundles:

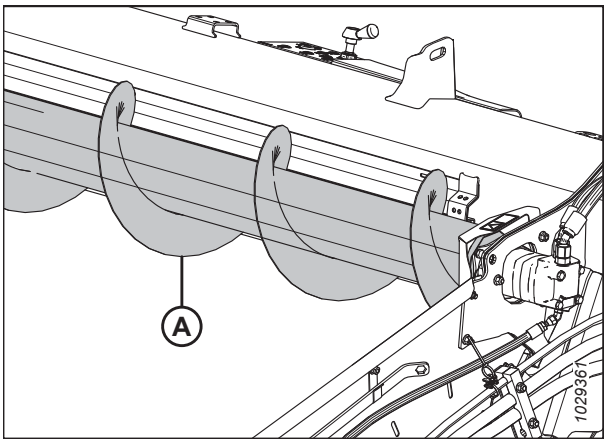


Figure 5.5: Upper Cross Auger

Base auger package

Includes the auger, mounts, drive, and hydraulic completion plumbing for headers that are upper cross auger ready.

Order from the following list of kits according to your header size:

- 7.6 m (25 ft.) – B6413 (two piece)
- 9.1 m (30 ft.) – B6414 (two piece)
- 10.6 m (35 ft.) – B6415 (two piece)
- 12.1 m (40 ft.) – B6417 (three piece)
- 12.5 m (41 ft.) – B6416 (two piece)
- 13.7 m (45 ft.) – B6418 (three piece)
- 15.2 m (50 ft.) – B6419 (three piece)

Hydraulic Plumbing Package

Required only for headers without factory installed UCA hydraulics. Includes hydraulic lines to make header UCA ready, if not factory configured.

Order from the following list of kits according to your header size:

- 7.6 m (25 ft.) – B7338 (two piece)
- 9.1 m (30 ft.) – B7117 (two piece)
- 10.6 m (35 ft.) – B7118 (two piece)
- 12.1 m (40 ft.) – B7119 (three piece)
- 12.5 m (41 ft.) – B7120 (two piece)
- 13.7 m (45 ft.) – B7121 (three piece)
- 15.2 m (50 ft.) – B7121 (three piece)

5.1.6 Lodged Crop Reel Finger Kit

The steel fingers attach to the ends of every other tine bar and help clear material in heavy, hard-to-cut crops such as lodged rice.

NOTE:

The Lodged Crop Reel Finger kit is not compatible with wide draper deflectors.

Each kit contains three fingers for the cam end and three fingers for the tail end of the reel. Hardware and installation and adjustment instructions are included with the kit.

B7230

Figure 5.6: Lodged Crop Finger

5.1.7 Rice Divider Rod Kit

Rice divider rods attach to the left and right crop dividers and divide tall and tangled rice crops in a similar manner to standard crop divider rods performing in standing crops.

The kit includes both left and right rods, and storage brackets.

B7238

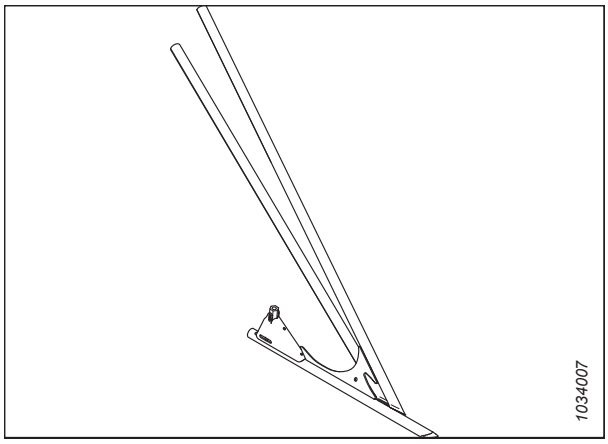


Figure 5.7: Left Rice Divider Rod Kit

5.1.8 Sunflower Attachment

This kit allows the FD2 Series FlexDraper® (with pointed guards only) to be converted to a sunflower header.

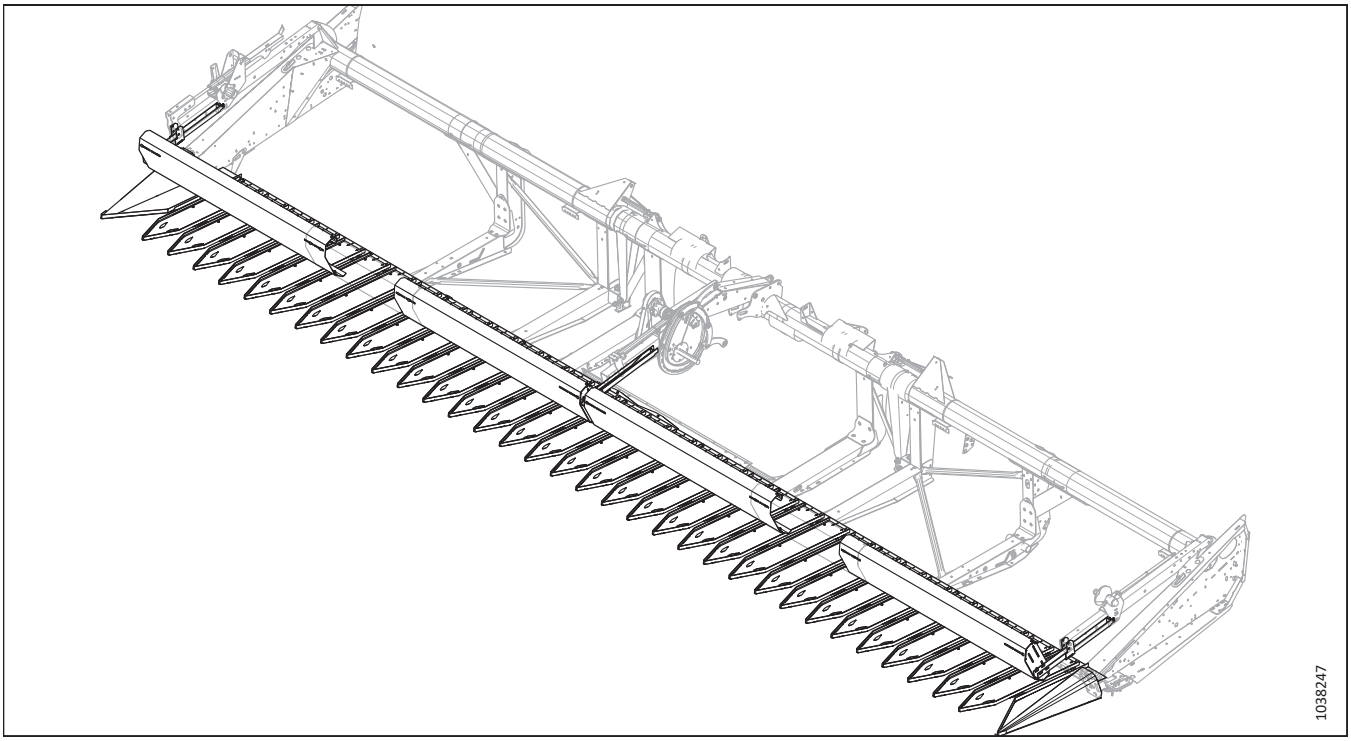


Figure 5.8: Sunflower Attachment

Order the Sunflower Attachment Kit according to header size:

- 9.1 m (30 ft.) – C2086
- 10.6 m (35 ft.) – C2087
- 12.1 m (40 ft.) triple reel – C2169
- 12.1 m (40 ft.) double reel – C2088
- 12.5 m (41 ft.) double reel – C2088
- 13.7 m (45 ft.) – C2089
- 15.2 m (50 ft.) – C2170

The collector contains: Base Kit, Pan, and Deflectors

Base Kit – contains common brackets, end dividers, cutterbar pan supports, lean bar components, and hardware (MD #B7302)

Pan Kit – contains five pans per kit (two spares). Order the number of kits depending on headers size (MD #B7303)

- 9.1 m (30 ft.) – The base kit contains enough pans for 9.1 m (30 ft.) headers. No additional pan kits are required.
- 10.6 m (35 ft.) – 1 kit
- 12.1 m (40 ft.) – 2 kits
- 12.5 m (41 ft.) – 2 kits
- 13.7 m (45 ft.) – 3 kits
- 15.2 m (50 ft.) – 4 kits

Deflectors – contains lean bar panels and additional cutterbar pan supports:

- 9.1 m (30 ft.) – B7304
- 10.6 m (35 ft.) – B7305
- 12.1 m (40 ft.) triple reel – B7395
- 12.1 m (40 ft.) double reel – B7306
- 12.5 m (41 ft.) double reel – B7306
- 13.7 m (45 ft.) – B7307
- 15.2 m (50 ft.) – B7396

5.1.9 VertiBlade™ Vertical Knife Kit

The VertiBlade™ is a vertical crop cutter that is mounted to each end of the header. It is used to cut though lodged or tangled crops.

Order the following bundles:

Base VertiBlade™

Includes the knives, mounts, drive, and hydraulic completion plumbing to complete installation on a power-divider ready header.

B7029

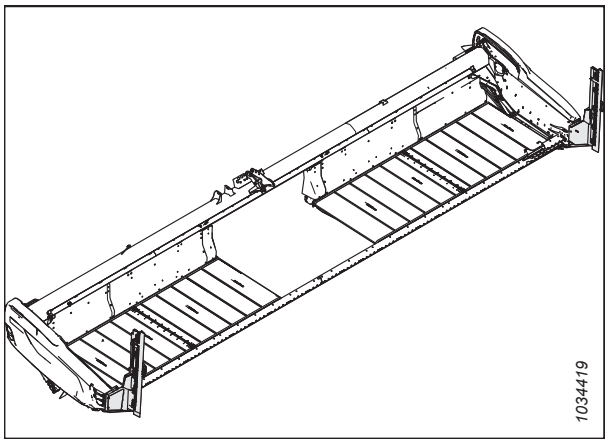


Figure 5.9: VertiBlade™ Vertical Knife Kit

Hydraulic Plumbing Package

The hydraulic plumbing packages are required only for headers without factory-installed power divider hydraulics. The package includes the hydraulic lines to make a header power-divider (VertiBlade™) ready.

Order one of the following kits based on your header size:

- 7.6 m (25 ft.) – B7339
- 9.1 m (30 ft.) – B7127
- 10.6 m (35 ft.) – B7128
- 12.1 m (40 ft.) – B7129
- 12.5 m (41 ft.) – B7130
- 13.7 m (45 ft.) – B7195
- 15.2 m (50 ft.) – B7131

Installation instructions are included in the kits.

5.1.10 In-Cab Side Draper Speed Control Integration Kit

The In-Cab Side Draper Speed Control Integration kit allows the combine operator to control the speed of the side drapers from the combine cab. The kit is designed to fit a Case IH AFS Pro 600 or Pro 700 display, or a New Holland IntelliView™ 6 or 7 display.

Installation instructions are included in kit MD #357945.

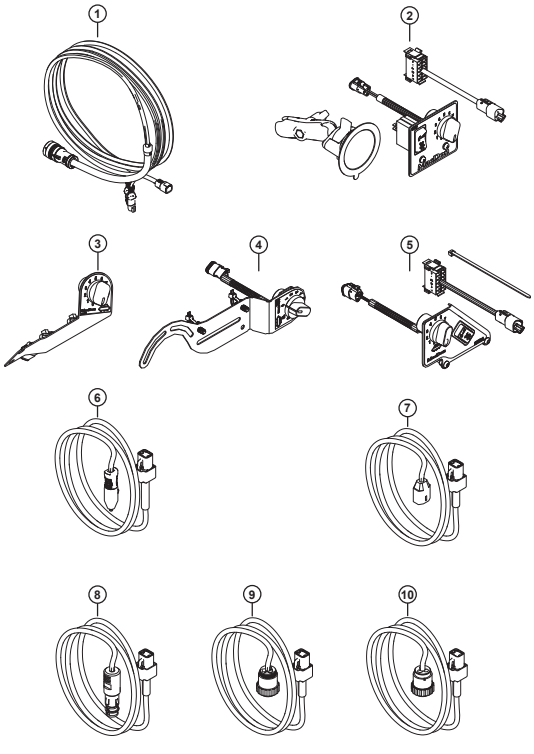


Figure 5.10: In-Cab Side Draper Speed Control Kit

5.2 Cutterbar Kits

The cutterbar is located on the front of the header. It supports the knife and the guards, which together, are used to cut the crop.

5.2.1 Rock Retarder Kit

A rock retarder extends the height of the cutterbar lip to help prevent rocks rolling onto the draper decks.

Order bundles by header size:

- FD225, FD230, FD235, and FD241 – B7122
- FD240, FD245, and FD250 – B7123

Installation instructions are included in the kits.

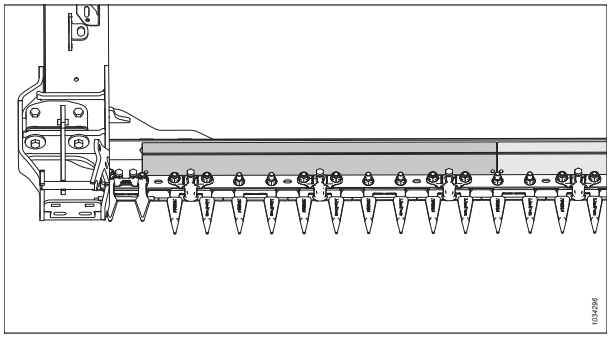


Figure 5.11: Rock Retarder Kit

5.2.2 Four-Point Knife Guard

Four-point guards provide increased knife protection in very rocky conditions, and can improve header performance with shatter-prone crops by reducing side-to-side crop motion.

Four-point knife guard kits are available for all 2 Series Header sizes. Refer to the Parts Catalog or contact your Dealer for part numbers.

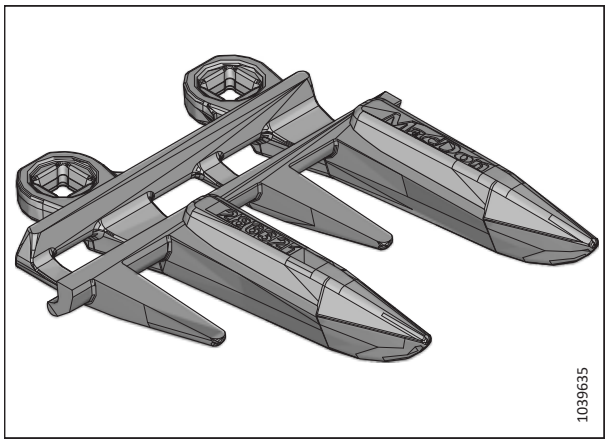


Figure 5.12: Four-Point Knife Guard

5.3 FM200 Float Module Kits

The float module is used to attach the header to the combine. It combines the crop flow from both side drapers and also pulls crop into the combine feeder house.

5.3.1 10 V Sensor Adapter Kit

This kit is for New Holland CR/CX combines that use 10 V sensors.

B7241

This kit is for the following New Holland CR/CX combines:

- All CX800/CX8000/CX900 combines
- CR9040/CR9060 combines before serial number HAJ111000
- CR9070 combines before serial number Y8G1412000

5.3.2 Crop Deflector Kits

This kit installs different sizes of crop deflectors on the float module depending on the size of the feeder house.

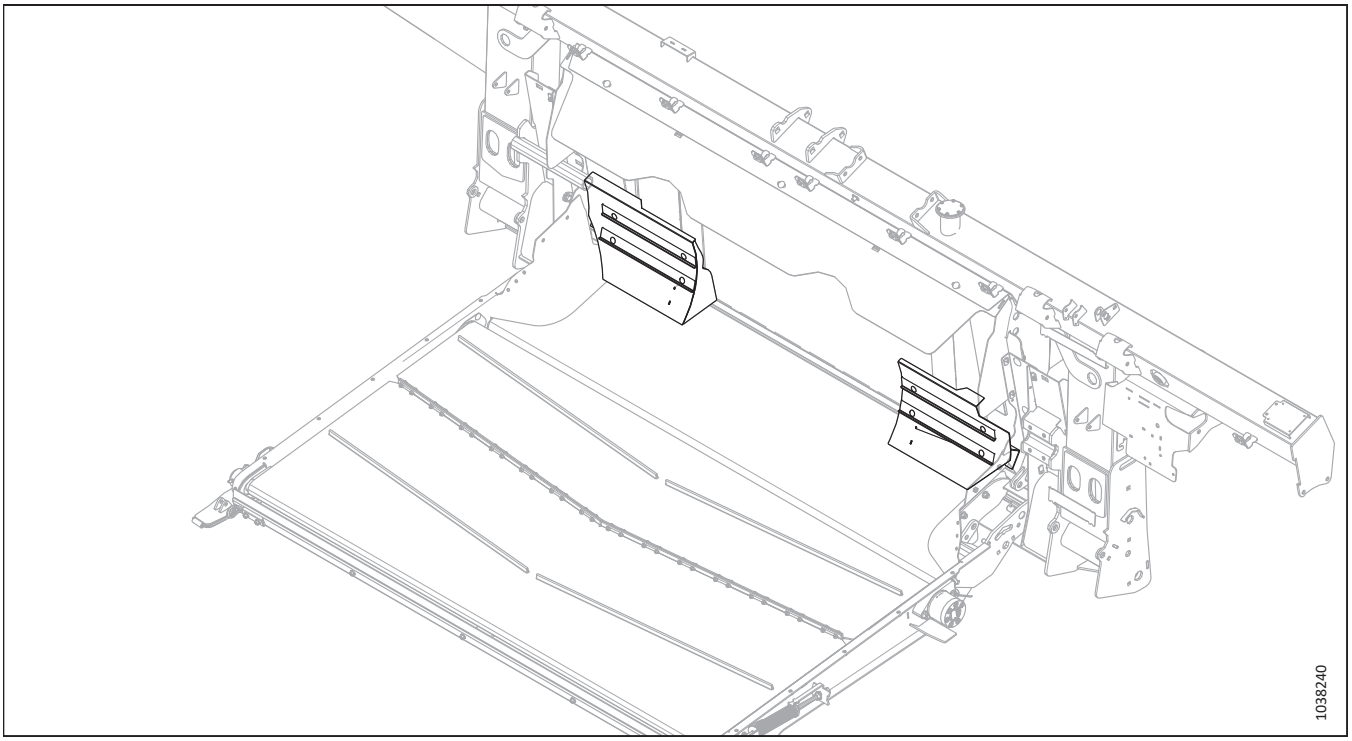


Figure 5.13: Crop Deflectors

Combine Feeder House Size	Bundle Number
Ultra Narrow	B7314
Narrow	B7347
Medium	B7348

5.3.3 Extended Center Filler

This kit is for the float module. It is a longer filler plate to seal the area behind the transition pan.

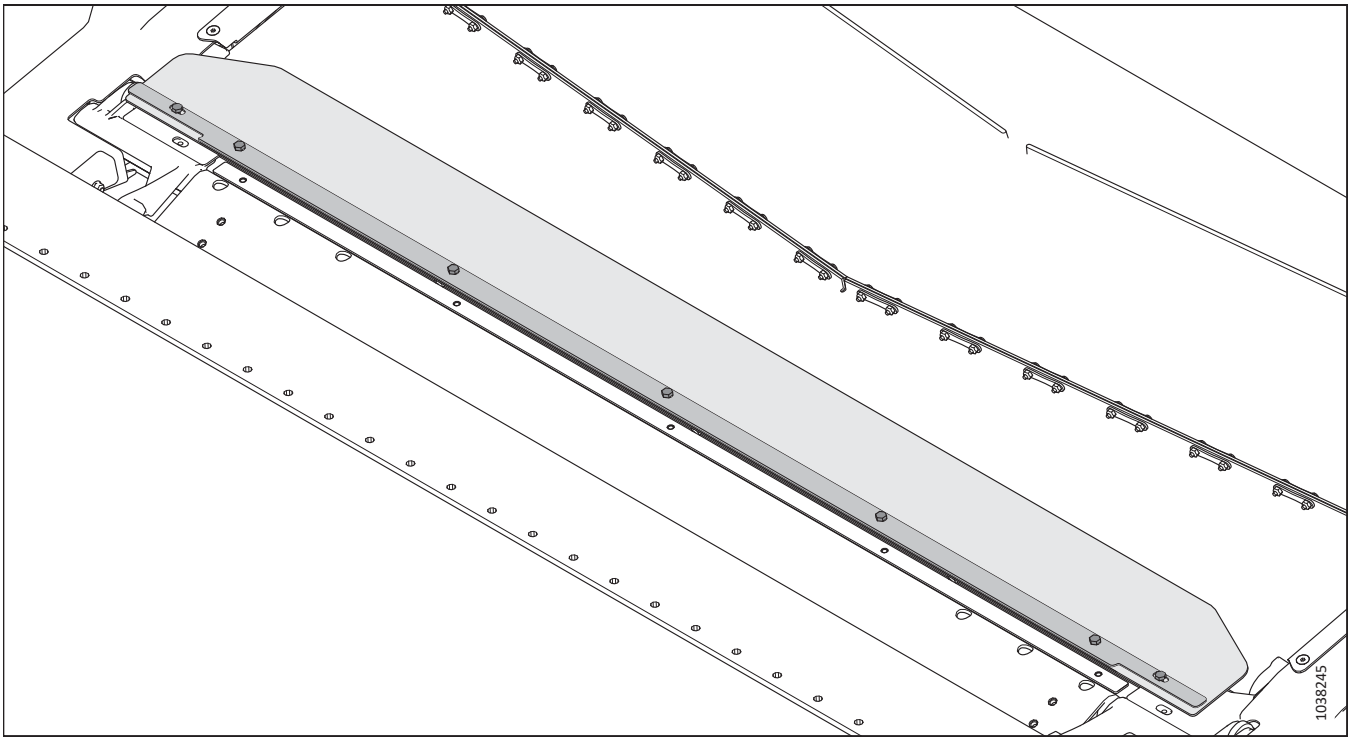


Figure 5.14: Extended Center Filler

B6450

NOTE:

Installation instructions are included in the kit.

5.3.4 Feed Auger High-Wear Flighting Extension Kit

The flighting extension kit improves the feed of crop in green/wet straw conditions (for example, rice and green cereals).

Refer to *3.8.1 FM200 Feed Auger Performance Configurations, page 148* for a list of possible flighting combinations.

B6400

Installation instructions are included in the kit.

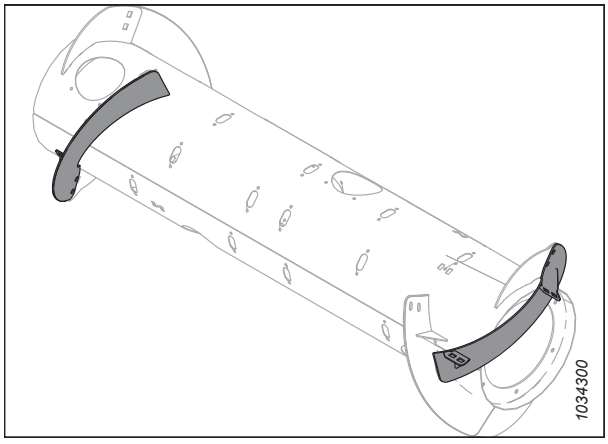


Figure 5.15: Feed Auger High-Wear Flighting Extension Kit

5.3.5 Full Interface Filler Kit

The Full Interface Filler Kit provides additional sealing between the float module and the header.

NOTE:

This kit is only available for European-configured headers.

Installation instructions are included in the kit.

B7217

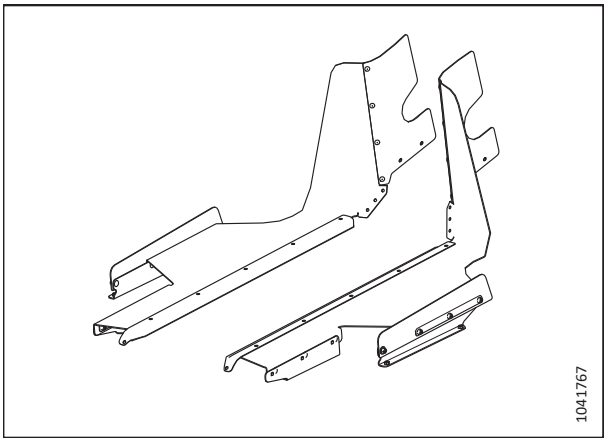


Figure 5.16: Full Interface Filler Kit

5.3.6 Hydraulic Reservoir Extension Kit

The hydraulic reservoir fill extension kit extends the breather cap position. This allows the float module to operate on steep hillsides while maintaining oil supply to the suction side of the pump.

This kit is recommended when operating on hills exceeding 5°.

B6057

Installation instructions are included in the kit.

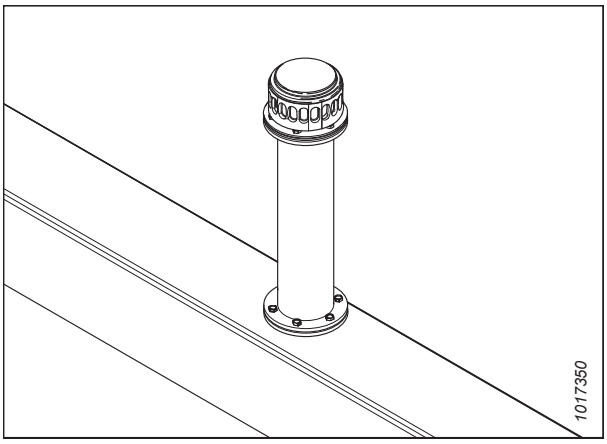


Figure 5.17: Hydraulic Reservoir Extension Kit

5.3.7 Lateral Tilt Plug Kit

This kit allows the combine lateral tilt to work with Auto Header Height Control (AHHC).

B7196

Not recommended for slopes over 10% grade.

Installation instructions are included in the kit.

Figure 5.18: Lateral Tilt Plug

5.3.8 Stripper Bars Kit

Stripper bars improve feeding for certain crops such as rice. They are **NOT** recommended for cereal crops.

Select the stripper bars kit based on the width of the combine feeder house. For more information, refer to Table *5.1, page 738*.

Installation instructions are included in the kits.

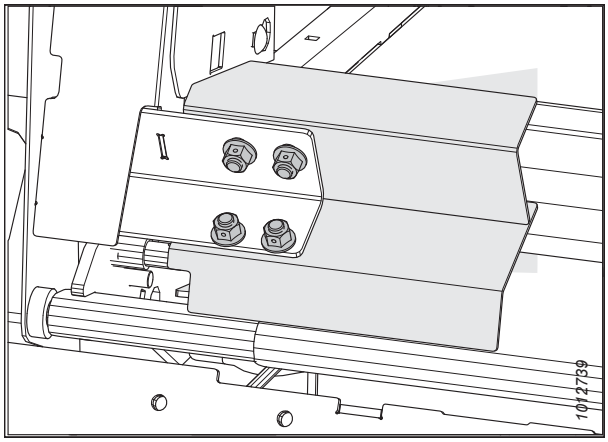


Figure 5.19: Stripper Bar

Table 5.1 Stripper Bar Configurations and Recommendations

Bundle (MD #)	Stripper Bar Length	Opening Width Float Module	Recommended Feeder House Width
B6042	265 mm (10 1/2 in.)	1317 mm (52 in.)	1250–1350 mm (49–65 in.)
B6044	325 mm (13 in.)	1197 mm (47 in.)	For specialty crops only
B6045	365 mm (14 1/2 in.)	1117 mm (44 in.)	1100 mm (43 1/2 in.) and below
B6046	403 mm (16 in.)	1041 mm (41 in.)	For specialty crops only
B6213	515 mm (20 in.)	817 mm (32 in.)	For specialty crops only

5.4 Header Kits

Header options add features or enhancements to the header frame rather than a specific system or function.

5.4.1 ContourMax™ Contour Wheels Kit

The ContourMax™ provides flex and auto header height control (AHHC) for stubble heights of 25–457 mm (1–18 in.) (standard header provides 0–152 mm [0–6 in.])

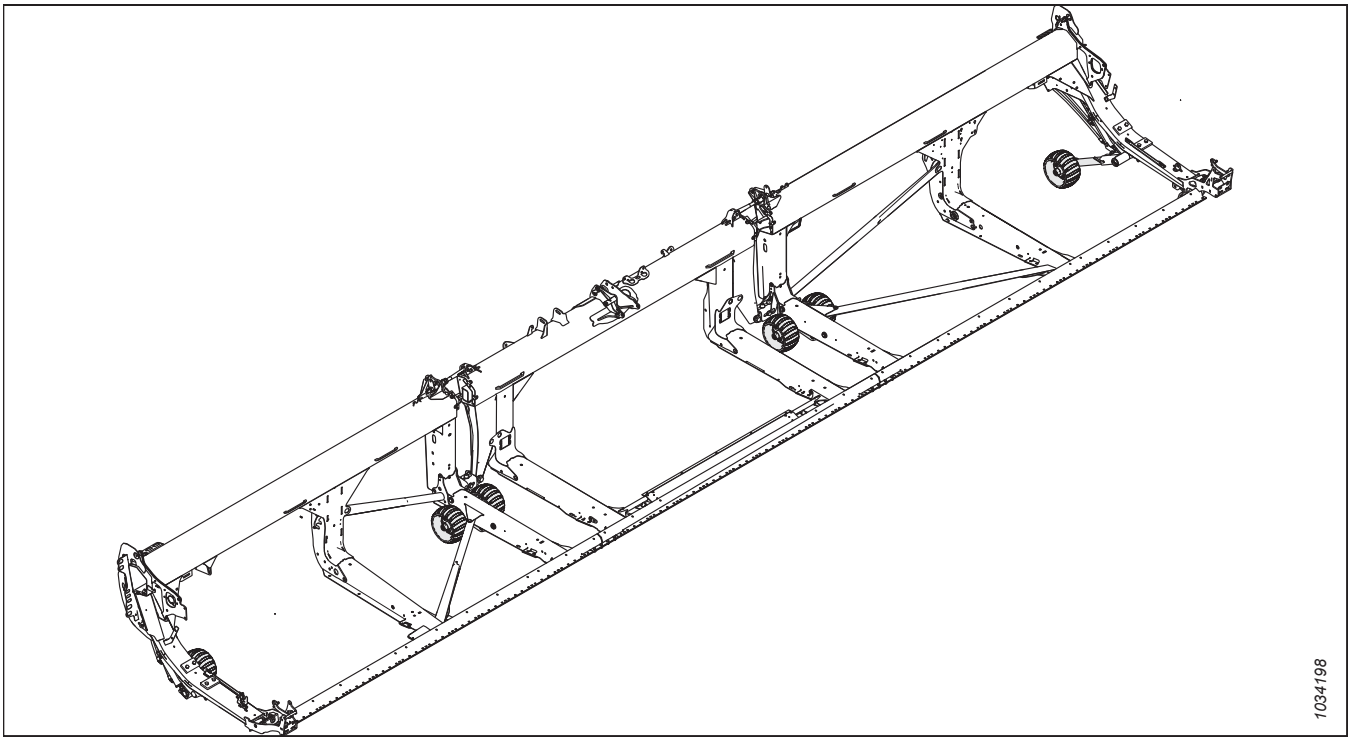


Figure 5.20: ContourMax™ Contour Wheels

The kit consists of four wheel sets and hydraulic height adjustment from inside the combine cab. Installation instructions are included in the kit. Order the following bundles:

Base ContourMax™ Package: Includes wheels, mounts, cylinders, a control valve, and hydraulic plumbing to complete installation on a ContourMax™ ready header.

B7335

Hydraulic Plumbing Package: Includes hydraulic lines to prepare the header for ContourMax™ if it is not factory configured. Order the hydraulic plumbing package from the following list according to your header model:

- FD225 – B7340
- FD230 – B7082
- FD235 – B7083
- FD240 – B7113
- FD241 – B7114
- FD245 – B7193
- FD250 – B7116

5.4.2 ContourMax™ Foot Switch Kit

The ContourMax™ foot switch allows you to change the position of the ContourMax™ without taking your hand off the multifunction handle.

This option is available for John Deere and AGCO (Challenger®, Fendt®, Gleaner, and Massey Ferguson®) combines.

B7040

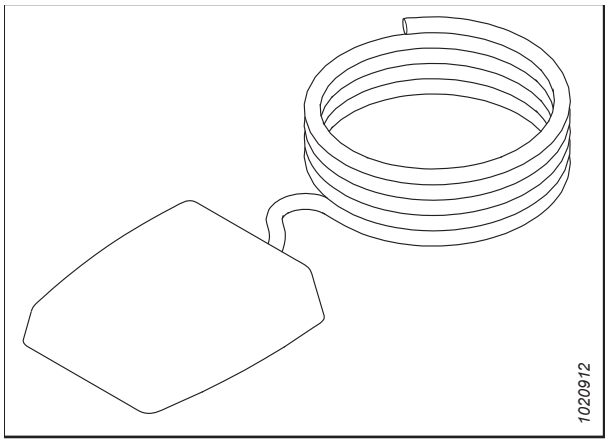


Figure 5.21: ContourMax™ Foot Switch

5.4.3 EasyMove™ Transport System

The EasyMove™ Transport System makes it faster than ever to move your header from field to field. When operating in the field, the wheels can also be used as stabilizer wheels.

Installation instructions are included in the kit.

In order to complete the installation of this kit, order one of the following according to header size:

- 9.1 m (30 ft.) – C2172
- 10.6 m (35 ft.) – C2172
- 12.1 m (40 ft.) – C2173
- 12.5 m (41 ft.) – C2173
- 13.7 m (45 ft.) – C2173
- 15.2 m (50 ft.) – C2173

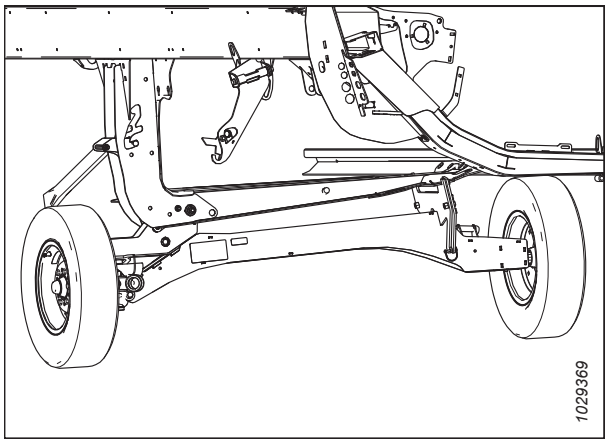


Figure 5.22: EasyMove™ Transport System

C2172 consists of

- Stabilizer Wheels / Slow Speed Transport Base Kit – B6288
- Wheels and Tires – B7398
- Short Tow Pole – B7391

C2173 consists of

- Stabilizer Wheels / Slow Speed Transport Base Kit – B6288
- Wheels and Tires – B7398
- Long Tow Pole – B7392

NOTE:

The EasyMove™ Transport System is not compatible with FD225 headers.

5.4.4 Inboard Steel End Finger Kit

Optional fingers to be used in difficult crops, lodged canola, and forage, where the angled plastic finger yields and distorts from heavy crop loads.

Installation instructions are included in the kit.

MD #311972

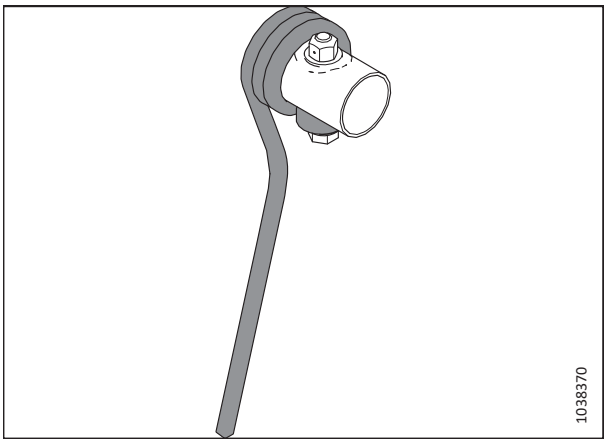


Figure 5.23: Inboard Steel End Finger

5.4.5 Outboard Steel End Finger Kit

Optional fingers to be used in difficult crops such as lodged canola, and forage, where the angled plastic finger yields and distorts from heavy crop loads.

Installation instructions are included in the kit.

MD #311959

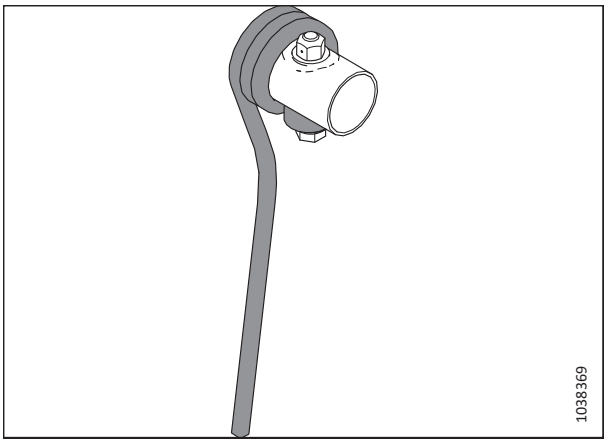


Figure 5.24: Outboard Steel End Finger

5.4.6 Steel Reel Finger Kit

Optional fingers to be used in difficult crops, lodged canola, and forage, where the angled plastic finger yields and distorts from heavy crop loads.

Order one of the following based on your header size:

- 7.6 m (25 ft.), Single Reel, 6 bat – MD #360679
- 7.6 m (25 ft.), Single Reel, 9 bat – MD #360680
- 9.1 m (30 ft.), Double Reel, 5 bat – MD #311054
- 9.1 m (30 ft.), Double Reel, 6 bat – MD #311055
- 10.6 m (35 ft.), Double Reel, 5 bat – MD #311068
- 10.6 m (35 ft.), Double Reel, 6 bat – MD #311069

Installation instructions are included in the kit.

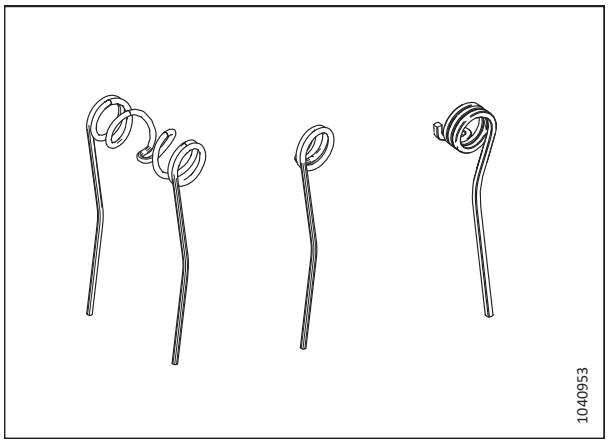


Figure 5.25: Steel Reel Finger

5.4.7 Side Hill Stabilizer Kit

The side hill stabilizer kit is recommended for cutting on side hills with a grade steeper than 5°.

Installation instructions are included in the kit.

B7028

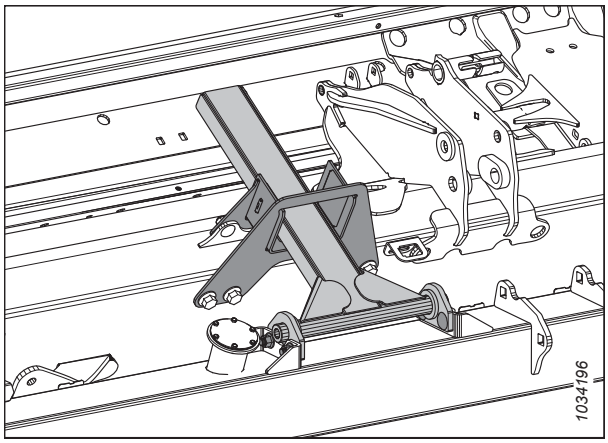


Figure 5.26: Side Hill Stabilizer Kit

5.4.8 Stabilizer Wheel Kit

The stabilizer wheel kit stabilizes the header's lateral movement when cutting at heights higher than possible with the standard skid shoes.

Installation and adjustment instructions are included in the kit.

C2171

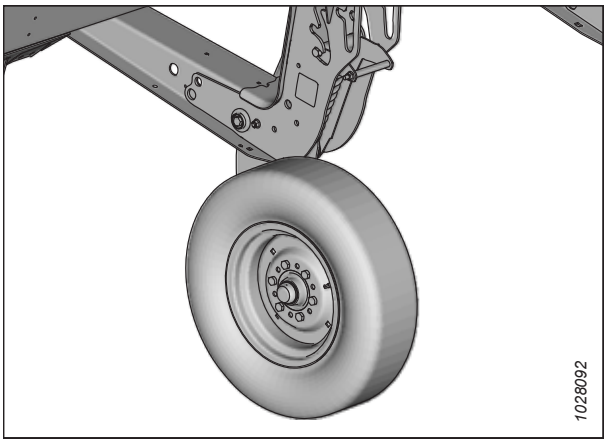


Figure 5.27: Stabilizer Wheel Kit

5.4.9 Steel Skid Shoes Kit

This kit provides extended-wear skid shoes for use in rocky, abrasive conditions.

IMPORTANT:

This kit is not recommended for use in wet mud or conditions that are prone to sparking.

The kit contains two skid shoes. To fully replace a set of standard skid shoes, order three bundles (for six shoes total).

B6801

Installation instructions are included in the kit.

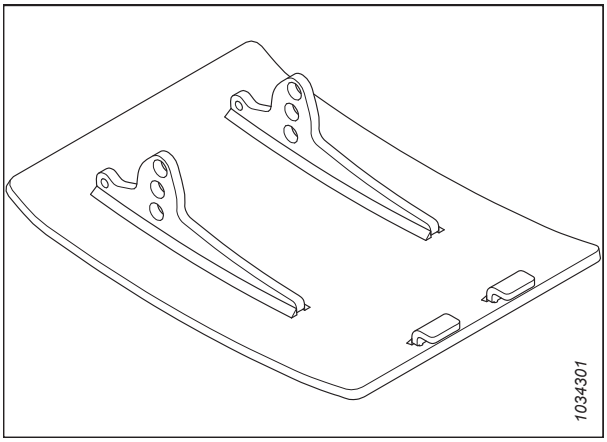


Figure 5.28: Steel Skid Shoes Kit

5.4.10 Stubble Light Kit

Stubble lights are used in low light conditions and allow you to see the stubble cut behind the header. The Stubble Light kit is available for MacDon FD225, FD230, FD235, FD240, FD241, and FD245 headers. This kit is currently compatible with Case New Holland and John Deere combines only.

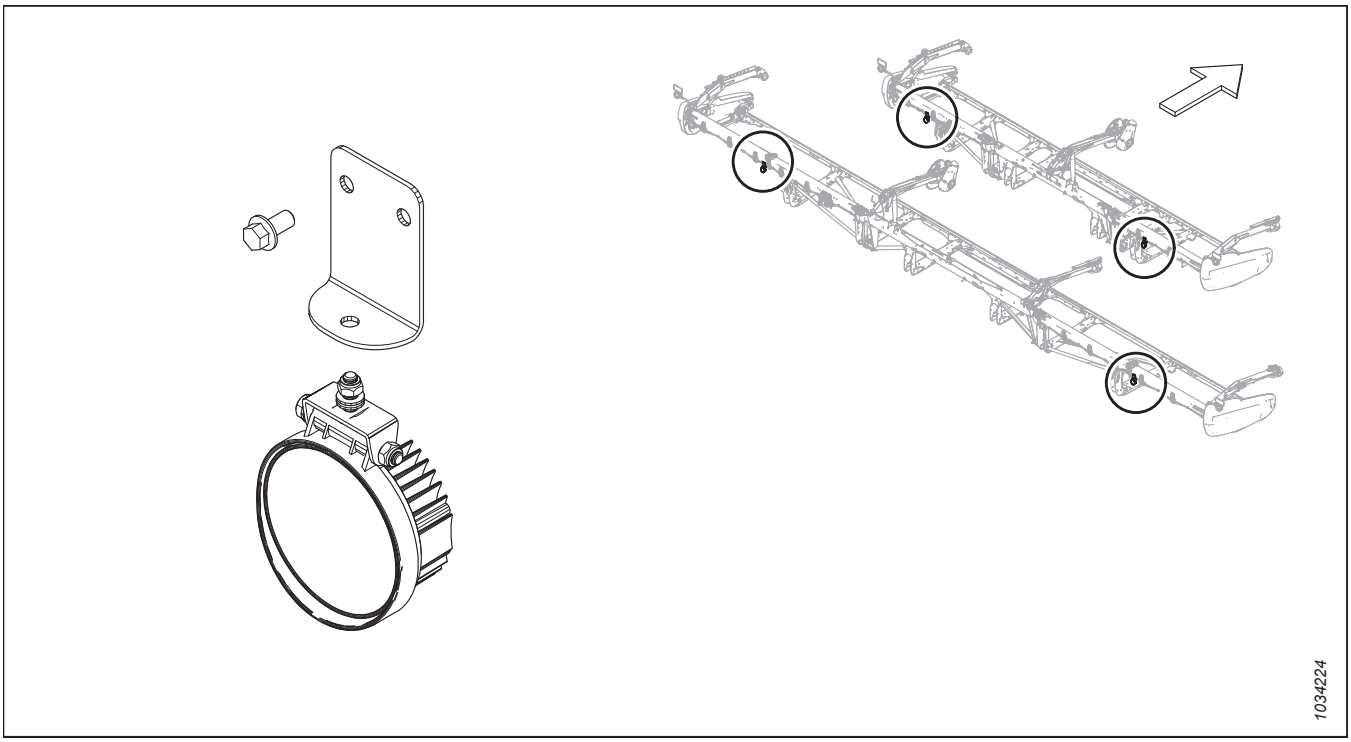


Figure 5.29: Stubble Light Kit

Installation instructions are included with the kit.

B7027

Chapter 6: Troubleshooting

Troubleshooting tables are provided to help you diagnose and solve any problems you may have with the header.

6.1 Crop Loss at Cutterbar

Use the following tables to determine the cause of crop loss at the cutterbar and the recommended solution.

Table 6.1 Troubleshooting – Crop Loss at Cutterbar

Problem	Solution	Refer to
Symptom: Does not pick up downed crop		
Cutterbar too high	Lower the cutterbar	• *3.9.1 Cutting off Ground, page 179* • *3.9.2 Cutting on Ground, page 187*
Header angle too low	Increase the header angle	*3.9.5 Header Angle, page 212*
Reel too high	Lower the reel	*3.9.11 Reel Height, page 220*
Reel too far back	Move the reel forward	*3.9.12 Reel Fore-Aft Position, page 225*
Ground speed too fast for reel speed	Increase the reel speed or reduce the ground speed	• *3.9.6 Reel Speed, page 214* • *3.9.7 Ground Speed, page 215*
Reel fingers not lifting crop sufficiently	Increase the finger pitch aggressiveness	*3.9.13 Reel Tine Pitch, page 233*
Reel fingers not lifting crop sufficiently	Install crop lifters	MacDon Dealer
Symptom: Heads shattering or breaking off		
Reel speed too fast	Reduce the reel speed	*3.9.6 Reel Speed, page 214*
Reel too low	Raise the reel	*3.9.11 Reel Height, page 220*
Ground speed too fast	Reduce the ground speed	*3.9.7 Ground Speed, page 215*
Crop too ripe	Work at night when humidity is higher	—
Symptom: Material accumulating in the gap between the cut-out in endsheet and the knifehead		
Crop heads leaning away from knifehead hole in endsheet	Add knifehead shields (except in damp or sticky soils)	*4.8.9 Knifehead Shield, page 604*
Symptom: Strips of uncut material		
Guards plugged with debris	Install short knife guards	*4.8.8 Short Knife Guards and Hold-Downs, page 592*
Broken knife sections	Replace the broken sections	*4.8.1 Replacing Knife Section, page 567*
Symptom: Excessive bouncing at normal field speed		
Float set too light	Adjust the header float	*3.9.3 Header Float, page 190*
Symptom: Divider rod running down standing crop		
Divider rods too long	Remove the divider rod	*3.9.15 Crop Dividers, page 240*
Symptom: Crop not being cut at ends		
Reel not frowning or not centered in header	Adjust the reel horizontal position or the reel frown	*3.9.12 Reel Fore-Aft Position, page 225*

Table 6.1 Troubleshooting – Crop Loss at Cutterbar (continued)

Problem	Solution	Refer to
Knife hold-down not adjusted properly	Adjust the hold-down so that the knife works freely but still keeps sections from lifting off of the guards	• *Adjusting Hold-Down – Pointed Knife Guards, page 586* or • *Adjusting Hold-Down – Short Knife Guards, page 599*
Knife sections or guards are worn or broken	Replace all of the worn and broken cutting parts	*4.8 Knife, page 567*
Header is not level	Level the header	*3.11 Leveling Header, page 471*
Reel fingers not lifting crop properly ahead of knife	Adjust the reel position and/or the finger pitch	• *3.9.12 Reel Fore-Aft Position, page 225* and/or • *3.9.13 Reel Tine Pitch, page 233*
Divider runs down thick crop at the ends, preventing proper feeding due to the material bridging the guards	Replace 3–4 end guards with short knife guard	• *4.8.8 Short Knife Guards and Hold-Downs, page 592* • Contact your MacDon Dealer
Symptom: Bushy or tangled crop flows over the divider rod, and builds up on the endsheets		
Divider rods providing insufficient separation	Install long divider rods	*3.9.15 Crop Dividers, page 240*
Symptom: Cut grain falling ahead of the cutterbar		
Ground speed too slow	Increase the ground speed	*3.9.7 Ground Speed, page 215*
Reel speed too slow	Increase the reel speed	*3.9.6 Reel Speed, page 214*
Reel too high	Lower the reel	*3.9.11 Reel Height, page 220*
Cutterbar too high	Lower the cutterbar	• *3.9.1 Cutting off Ground, page 179* • *3.9.2 Cutting on Ground, page 187*
Reel too far forward	Move the reel back on the arms	*3.9.12 Reel Fore-Aft Position, page 225*
Cutting at speeds over 10 km/h (6 mph) with 10-tooth reel drive sprocket	Replace the reel drive sprocket with a 19-tooth reel drive sprocket	• *Removing Reel Drive Single Sprocket, page 691* • • *4.14.2 Reel Drive Sprocket, page 691*
Worn or broken knife components	Replace the components	*4.8 Knife, page 567*

6.2 Cutting Action and Knife Components

Use the following tables to determine the cause of the cutting action and knife component problems and the recommended repair procedure.

Table 6.2 Troubleshooting – Cutting Action and Knife Components

Problem	Solution	Refer to
Symptom: Ragged or uneven cutting of crop		
Knife hold-down not adjusted properly	Adjust the hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 586* or • *Adjusting Hold-Down – Short Knife Guards, page 599*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	• *Replacing Pointed Knife Guards, page 583* • *Replacing Pointed Center Knife Guard – Double-Knife Header, page 587* • *Replacing Short Knife Guards or End Knife Guards, page 596* • *Replacing Center Knife Guard – Double-Knife Headers, page 600* • *4.8.1 Replacing Knife Section, page 567*
Ground speed too fast for reel speed	Reduce the ground speed or increase the reel speed	• *3.9.6 Reel Speed, page 214* or • *3.9.7 Ground Speed, page 215*
Reel fingers not lifting crop properly ahead of knife	Adjust the reel position/ finger pitch	• *3.9.12 Reel Fore-Aft Position, page 225* or • *3.9.13 Reel Tine Pitch, page 233*
Cutterbar too high	Lower the cutting height	*3.9.1 Cutting off Ground, page 179* or *3.9.2 Cutting on Ground, page 187*
Header angle too flat	Steepen the header angle	*3.9.5 Header Angle, page 212*
Cutting edge of guards not close enough or parallel to knife sections	Align the guards	*Adjusting Knife Guards and Guard Bar, page 581*
Tangled/tough-to-cut crop	Install short knife guards	Contact your MacDon Dealer *Adjusting Hold-Down – Pointed Knife Guards, page 586* or *Adjusting Hold-Down – Short Knife Guards, page 599*
Reel too far back	Move the reel forward	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom: Knife plugging		
Reel too high or too far forward	Lower the reel or move the reel rearward	• *3.9.11 Reel Height, page 220* or • *3.9.12 Reel Fore-Aft Position, page 225*
Ground speed too high	Decrease the ground speed	*3.9.7 Ground Speed, page 215*
Improper knife hold-down adjustment	Adjust the hold-down	*Adjusting Hold-Down – Pointed Knife Guards, page 586* or *Adjusting Hold-Down – Short Knife Guards, page 599*

Table 6.2 Troubleshooting – Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Dull or broken knife section	Replace the corresponding knife section	*4.8.1 Replacing Knife Section, page 567*
Bent or broken guards	Align or replace the guards	*Adjusting Knife Guards and Guard Bar, page 581*
Reel fingers not lifting crop properly ahead of knife	Adjust the reel position/ finger pitch	• *3.9.12 Reel Fore-Aft Position, page 225* or • *3.9.13 Reel Tine Pitch, page 233*
Steel pick-up fingers contacting knife	Increase the reel clearance from the cutterbar or adjust the frown	*4.13.1 Reel to Cutterbar Clearance, page 658*
Mud or dirt build-up on cutterbar	Raise the cutterbar by lowering skid shoes	*3.9.2 Cutting on Ground, page 187*
Mud or dirt build-up on cutterbar	Flatten the header angle	*3.9.5 Header Angle, page 212*
Knife is not operating at recommended speed	Check the engine speed of the combine or the header knife speed	Refer to the combine operator's manual and *Checking Knife Speed, page 219*
Symptom: Excessive header vibration		
Excessive knife wear	Replace the knife	• *4.8.2 Removing Knife, page 568* and • *4.8.5 Installing Knife, page 571*
Knife hold-down not adjusted properly	Adjust the hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 586* • *Adjusting Center Hold-Down on Double-Knife Header – Pointed Knife Guards, page 591* • *Adjusting Hold-Down – Short Knife Guards, page 599* • *Adjusting Center Hold-Down – Short Knife Guards, page 603*
Loose or worn knifehead pin or drive arm	Tighten or replace the parts	*4.8.1 Replacing Knife Section, page 567*
Symptom: Excessive vibration of float module and header		
Incorrect knife speed	Adjust the knife speed	Contact your MacDon Dealer
Bent cutterbar	Straighten the cutterbar	Contact your MacDon Dealer
Symptom: Excessive breakage of knife sections or guards		
Knife hold-down not adjusted properly	Adjust the hold-down	*Adjusting Hold-Down – Pointed Knife Guards, page 586* or *Adjusting Hold-Down – Short Knife Guards, page 599*
Cutterbar operating too low in stony conditions	Raise the cutterbar with skid shoes	*3.9.2 Cutting on Ground, page 187*
Float is set too heavy	Adjust the float springs for a lighter float	*Checking and Adjusting Header Float, page 190*

Table 6.2 Troubleshooting – Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Bent or broken guard	Straighten or replace the guard	• *4.8.7 Pointed Knife Guards and Hold-Downs, page 573* or • *4.8.8 Short Knife Guards and Hold-Downs, page 592*
Header angle too steep	Flatten the header angle	*3.9.5 Header Angle, page 212*
Symptom: Knife back breakage		
Bent or broken guard	Straighten or replace the guard	• *4.8.7 Pointed Knife Guards and Hold-Downs, page 573* or • *4.8.8 Short Knife Guards and Hold-Downs, page 592*
Worn knifehead pin	Replace the knifehead pin	• *4.8.3 Removing Knifehead Bearing, page 569* and • *4.8.4 Installing Knifehead Bearing, page 570*
Dull knife	Replace the knife	• *4.8.2 Removing Knife, page 568* and • *4.8.5 Installing Knife, page 571*
Knife speed too fast	Lower the knife speed	Contact your MacDon Dealer
Loose knife section hardware	Check and tighten all of the knife hardware	—

6.3 Reel Delivery

Use the following tables to determine the cause of reel delivery problems and the recommended repair procedure.

Table 6.3 Troubleshooting – Reel Delivery

Problem	Solution	Refer to
Symptom – Reel not releasing material in normal standing crop		
Reel speed too fast	Reduce the reel speed	*3.9.6 Reel Speed, page 214*
Reel too low	Raise the reel	*3.9.11 Reel Height, page 220*
Reel tines too aggressive	Reduce the cam setting	*3.9.13 Reel Tine Pitch, page 233*
Reel too far back	Move the reel forward	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom – Reel not releasing material in lodged and standing crop (reel fully lowered)		
Reel tines too aggressive for standing crop	Reduce the cam setting (one or two) or move reel forward	*3.9.13 Reel Tine Pitch, page 233*
Symptom – Wrapping on reel end		
Reel tines too aggressive	Reduce the cam setting	*3.9.13 Reel Tine Pitch, page 233*
Reel too low	Raise the reel	*3.9.11 Reel Height, page 220*
Reel speed too fast	Reduce the reel speed	*3.9.6 Reel Speed, page 214*
Reel not centered in header	Center the reel in the header	*4.13.3 Centering Reel, page 666*
Symptom – Reel releases crop too quickly		
Reel tines not aggressive enough	Increase the cam setting to match reel delivery to the reel fore-aft position	*3.9.13 Reel Tine Pitch, page 233*
Reel too far forward	Move the reel back to match the reel cam setting	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom – Reel will not lift		
Reel lift couplers are incompatible or defective	Change the quick coupler	Contact your MacDon Dealer
Symptom – Reel will not turn		
Quick couplers not properly connected	Connect the couplers	*3.6 Header Attachment/Detachment, page 75*
Reel drive chain disconnected or broken	Connect/replace the chain	*4.14.6 Replacing Drive Chain (Endless) – Double and Triple Reel, page 700*
Symptom – Reel motion uneven under no load		
Excessive slack in reel drive chain	Tighten the chain	*Tightening Reel Drive Chain, page 689*
Symptom – Reel motion is uneven or stalls in heavy crops		
Reel speed too fast	Reduce the reel speed	*3.9.6 Reel Speed, page 214*
Reel fingers not aggressive enough	Move the reel finger or the cam setting to a more aggressive finger pitch notch	*3.9.13 Reel Tine Pitch, page 233*
Reel too low	Raise the reel	*3.9.11 Reel Height, page 220*
Relief valve on combine (not on combine float module) has low relief pressure setting	Increase the relief pressure to the manufacturer's recommendations	Refer to the combine operator's manual
Low oil reservoir level on combine **NOTE:** Sometimes there is more than one reservoir	Fill to the proper level	Refer to the combine operator's manual

Table 6.3 Troubleshooting – Reel Delivery (continued)

Problem	Solution	Refer to
Relief valve malfunction	Replace the relief valve	Refer to the combine operator's manual
Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace the sprocket with an appropriate high torque sprocket to match the combine reel circuit pressure	• *4.14.2 Reel Drive Sprocket, page 691* • Install Two Speed Kit (MD #311882)
Symptom – Plastic fingers cut at tip		
Insufficient reel to cutterbar clearance	Increase the clearance	*4.13.1 Reel to Cutterbar Clearance, page 658*
Symptom – Plastic fingers bent rearward at tip		
Reel digging into ground with reel speed slower than ground speed	Raise the header	• *3.9.2 Cutting on Ground, page 187*
Reel digging into ground with reel speed slower than ground speed	Decrease the header tilt	*3.9.5 Header Angle, page 212*
Reel digging into ground with reel speed slower than ground speed	Move the reel aft	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom – Plastic fingers bent forward at tip		
Reel digging into the ground with reel speed faster than ground speed	Raise the header	*3.9.1 Cutting off Ground, page 1793.9.2 Cutting on Ground, page 187*
Reel digging into the ground with reel speed faster than ground speed	Decrease the header tilt	*3.9.5 Header Angle, page 212*
Reel digging into ground with reel speed faster than ground speed	Move the reel aft	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom – Plastic fingers bent close to tine tube		
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Correct the plugging/cutting issues	*3.12 Unplugging Cutterbar, page 474*
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Stop the reel before plugging becomes excessive	*3.12 Unplugging Cutterbar, page 474*

6.4 Troubleshooting Header and Drapers

Use the following tables to determine the header and draper problems and the recommended repair procedure.

Table 6.4 Troubleshooting – Header and Drapers

Problem	Solution	Refer to
Symptom: Insufficient header lift		
Low relief pressure	Increase the relief pressure	Combine Dealer
Symptom: Insufficient side draper speed		
Speed control set too low	Increase the speed control setting	*3.9.8 Side Draper Speed, page 216*
Combine header drive too slow	Adjust to the correct speed for the combine model	Combine operator's manual
Symptom: Insufficient feed draper speed		
Relief pressure too low	Test the feed draper hydraulic system	MacDon Dealer
Combine header drive too slow	Adjust to the correct speed for the combine model	Combine operator's manual
Symptom: Feed draper will not move		
Drapers are loose	Tighten the drapers	*4.10.2 Checking and Adjusting Feed Draper Tension, page 614*
Drive or idler roller wrapped with material	Loosen the draper and clean the rollers	*4.10.2 Checking and Adjusting Feed Draper Tension, page 614*
Slat or connector bar jammed by frame or material	Loosen the draper and clear the obstruction	*4.10.2 Checking and Adjusting Feed Draper Tension, page 614*
Roller bearing seized	Replace the roller bearing	*Replacing Feed Draper Idler Roller Bearing, page 627*
Low hydraulic oil	Fill the combine hydraulic oil reservoir to the full level	Combine operator's manual
Incorrect relief setting at flow control valve	Adjust the relief setting	MacDon Dealer
Symptom: Side Draper stalling		
Material not feeding evenly off knife	Lower the reel	*3.9.11 Reel Height, page 220*
Material not feeding evenly off knife	Install short knife guards	*4.8.8 Short Knife Guards and Hold-Downs, page 592*
Symptom: Hesitation in the flow of bulky crop		
Header angle too low	Increase the header angle	*3.9.5 Header Angle, page 212*
Material overload on drapers	Increase the side draper speed	*3.9.8 Side Draper Speed, page 216*
Material overload on drapers	Install an upper cross auger	*5.1.5 Full Length Upper Cross Auger, page 729*
Material overload on drapers	Add flighting extensions	MacDon Dealer
Symptom: Drapers back-feed		
Drapers running too slow in heavy crop	Increase the draper speed	*3.9.8 Side Draper Speed, page 216*
Symptom: Crop is thrown across the opening and under opposite side draper		
Drapers running too fast in light crop	Reduce the draper speed	*3.9.8 Side Draper Speed, page 216*

Table 6.4 Troubleshooting – Header and Drapers (continued)

Problem	Solution	Refer to
Symptom: Material accumulating on the end deflectors and releasing in bunches		
End deflectors too wide	For headers with manual deck shift only, trim the deflector or replace with a narrow deflector (MD #172381)	*3.12 Unplugging Cutterbar, page 474*

6.5 Cutting Edible Beans

Use the following tables to determine the cause of any cutting edible bean problems and the recommended solutions.

Table 6.5 Troubleshooting – Cutting Edible Beans

Problem	Solution	Refer to
Symptom: Plants being stripped and complete or partial plants left behind		
Header off ground	Lower the header to the ground and run it on the skid shoes and/or the cutterbar	*3.9.2 Cutting on Ground, page 187*
Float set too light—rides on high spots and does not lower soon enough	Set the float to 335–338 N (75–85 lbf). Increase or decrease the float as necessary to prevent the header from bouncing excessively or plowing into soft ground.	*3.9.3 Header Float, page 190*
Reel too high with cylinders fully retracted	Adjust the reel height	*3.9.11 Reel Height, page 220*
Finger pitch not aggressive enough	Adjust the finger pitch	*3.9.13 Reel Tine Pitch, page 233*
Reel too far aft	Move the reel forward until the fingertips skim the soil surface with the header on the ground and the header angle properly adjusted	*3.9.12 Reel Fore-Aft Position, page 225*
Header angle too shallow	Adjust the header angle	*Adjusting Header Angle from Combine, page 214*
Header angle too shallow	Increase the header angle by fully retracting the lift cylinders (if cutting on ground)	*Adjusting Header Angle from Combine, page 214*
Reel too slow	Adjust the reel speed to be slightly faster than ground speed	*3.9.6 Reel Speed, page 214*
Ground speed too fast	Lower the ground speed	*3.9.7 Ground Speed, page 215*
Skid shoes too low	Raise the skid shoes to the highest setting	*3.9.2 Cutting on Ground, page 187*
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar; raises the cutterbar off the ground	• The float is too heavy • The ground is too wet – allow the soil to dry • Manually clean the bottom of the cutterbar when excessive accumulation occurs	*Checking and Adjusting Header Float, page 190*
Header not level	Level the header	*3.11 Leveling Header, page 471*
Worn or damaged knife sections	Replace the sections or replace the knife	*4.8 Knife, page 567*
Parts of vines get caught in pointed guard tips **NOTE:** (This problem occurs more in row-cropped beans that are hilled from cultivating.)	Install the short knife guard conversion kit	*4.8.8 Short Knife Guards and Hold-Downs, page 592*
Pushing of crop debris on the ground	Install the short knife guards	*4.8.8 Short Knife Guards and Hold-Downs, page 592*

Table 6.5 Troubleshooting – Cutting Edible Beans (continued)

Problem	Solution	Refer to
Knife speed too low	Increase the feeder house speed or check that the knife speed is set within the recommended range	*3.9.10 Knife Speed Information, page 218* or *Checking Knife Speed, page 219*
Symptom: Excessive losses at dividers		
Divider rod running down crop and shattering the pods	Remove the divider rod	*3.9.15 Crop Dividers, page 240*
Vines and plants build up on the endsheet	Install the divider rod	*3.9.15 Crop Dividers, page 240*
Symptom: Plant vines pinched between top of draper and cutterbar		
Cutterbar fills with debris when the draper to cutterbar clearance is properly adjusted	Raise the header fully at each end of the field (or as required) and shift the decks back and forth to help clean out the cutterbar	—
Shifting the decks with the header raised does not clean out the cutterbar debris	Manually remove the debris from the cutterbar cavity to prevent damaging the drapers	—
Symptom: Crop accumulating at guards and not moving rearward onto the drapers		
Reel finger pitch not aggressive enough	Increase the finger aggressiveness (cam position)	*3.9.13 Reel Tine Pitch, page 233*
Reel too high	Lower the reel	*3.9.11 Reel Height, page 220*
Minimum reel to cutterbar clearance setting too high	Adjust the minimum reel height with cylinders fully retracted	*4.13.1 Reel to Cutterbar Clearance, page 658*
Reel too far forward	Reposition the reel	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom: Crop wrapping around reel		
Reel too low	Raise the reel	*3.9.11 Reel Height, page 220*
Symptom: Reel shattering pods		
Reel too far forward	Reposition the reel	*3.9.12 Reel Fore-Aft Position, page 225*
Reel speed too high	Reduce the reel speed	*3.9.6 Reel Speed, page 214*
Bean pods too dry	Cut the crop at night when dew is present and the pods have softened	—
Reel finger pitch not aggressive enough	Increase the finger aggressiveness (cam position)	*3.9.13 Reel Tine Pitch, page 233*
Symptom: Cutterbar guards breaking		
Float insufficient (float setting too heavy)	Increase the float (adjust to lighter float setting)	*3.9.3 Header Float, page 190*
Excessive number of rocks in field	Consider installing optional short knife guards **Note:** With the installation of short knife guards, you are trading guard damage for section damage (although changing sections with short knife guards is easier)	MacDon Dealer
Symptom: Cutterbar pushing too much debris and dirt		

Table 6.5 Troubleshooting – Cutting Edible Beans (continued)

Problem	Solution	Refer to
Header too heavy	Readjust the float to make the header lighter	*3.9.3 Header Float, page 190*
Header angle too steep	Decrease the header angle	*3.9.5 Header Angle, page 212*
Guards plug with debris and/or soil	Install the short knife guard	*4.8.8 Short Knife Guards and Hold-Downs, page 592*
Insufficient support for the header	Install the center skid shoes	*3.9.2 Cutting on Ground, page 187*
Symptom: Crop wrapping around reel ends		
Uncut crop interfering on reel ends	Add reel endshields	Refer to the header parts catalog
Symptom: Cutterbar fills up with dirt		
Excessive gap between the draper and the cutterbar	Raise the header fully at each end of field (or as required) and shift the decks back and forth to help clean out the cutterbar	—
Symptom: Reel occasionally carries over plants in the same location		
Steel fingers bent and hooking plants from drapers	Straighten the fingers (steel)	—
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Raise the reel	*3.9.11 Reel Height, page 220*
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Adjust the reel fore-aft position to move the fingers out of the ground	*3.9.12 Reel Fore-Aft Position, page 225*
Symptom: Cutterbar pushing soil		
Tire tracks or row crop ridges	Cut at an angle to crop rows or ridges	—
Rolling terrain along length of field	Cut at 90° to the rolling terrain (provided knife floats across without digging in)	—
Symptom: Reel carries over an excessive amount of plants or wads		
Excessive accumulation of crop on drapers (up to reel center tube)	Increase the draper speed	*3.9.8 Side Draper Speed, page 216*
Finger pitch too slow	Increase the finger pitch	*3.9.13 Reel Tine Pitch, page 233*

6.6 CLAAS Multicoupler Error Codes for Troubleshooting

The multicoupler in the CLAAS integration kit is equipped with a blink indicator, which displays error codes via a red LED. A list of error codes is provided. If no errors are detected, the blink indicator LED will be solid green.

An error code consists of a two-digit sequence, which can be determined by interpreting the sequence of blinks produced by the blink indicator on the CLAAS multicoupler. Each code consists of a specific combination of four types of outputs: digit delays, blink delays, long blinks, and short blinks. Refer to the legend below to learn how to interpret error codes:

- Long blinks are indicated by ___
- Short blinks are indicated by _
- The delay between the first and second digits is indicated by /
- The delay between blinks in a single digit code indicated by -

Refer to Table *6.6, page 758* for an explanation of what each blink code means.

The blink indicator will continue to display error codes until the underlying problem is resolved. If there are multiple error codes, they will be displayed in sequence, with a long delay occurring between codes.

Once the underlying problem has been corrected, the combine will need to be turned off and on to reset the blink indicator.

Table 6.6 Error Codes Indicated by Blink Sequence – CLAAS Integration Kit Multicoupler Blink Indicator

Code #	Indicated Fault	Blink Sequence
1	Side draper valve: open circuit	___ / _
2	Side draper valve: over current	___ / -_-_
3	Side draper speed: open circuit	___ / -_-_-_
4	Side draper speed: over current	___ / -_-_-_-_
5	Selector1 valve: open circuit	___ / -_-_-_-_-_
6	Selector1 valve: over current	___ / -_-_-_-_-_-_
7	Selector2 valve: open circuit	___ / -_-_-_-_-_-_-_
8	Selector2 valve: over current	___ / -_-_-_-_-_-_-_-_
9	Reel fore valve: open circuit	___ / -_-_-_-_-_-_-_-_-_
10	Reel fore valve: over current	_ / ___
11	Reel aft valve: open circuit	_ / _
12	Reel aft valve: over current	_ / _-_
13	Side draper speed input signal: out of range	_ / _-_-_
14	Side draper speed input signal: open	_ / _-_-_-_
19	Controller: over temperature	_ / _-_-_-_-_-_-_-_-_
20	Reel fore input: open or shorting to ground	_-_ / ___
21	Reel fore input: shorting to power	_-_ / _
22	Reel aft input: open or shorting to ground	_-_ / _-_
23	Reel aft input: shorting to power	_-_ / _-_-_
24	Tilt fore input: open or shorting to ground	_-_ / _-_-_-_
25	Tilt fore input: shorting to power	_-_ / _-_-_-_-_
26	Tilt aft input: open or shorting to ground	_-_ / _-_-_-_-_-_
27	Tilt aft input: shorting to power	_-_ / _-_-_-_-_-_-_
28	CAN error	_-_ / _-_-_-_-_-_-_-_
29	Left height sensor: voltage high	_-_ / _-_-_-_-_-_-_-_-_
30	Left height sensor: voltage low	_-_-_ / ___
31	Controller: below temperature	_-_-_ / _
35	Right height sensor: voltage high	_-_-_ / _-_-_-_-_
36	Right height sensor: voltage low	_-_-_ / _-_-_-_-_-_
37	Reel fore-aft sensor: voltage high	_-_-_ / _-_-_-_-_-_-_
38	Reel fore-aft sensor: voltage low	_-_-_ / _-_-_-_-_-_-_-_
39	Controller: electronic voltage low	_-_-_ / _-_-_-_-_-_-_-_-_
40	Controller: electronic voltage high	_-_-_-_ / ___
41	Controller: output supply over voltage	_-_-_-_ / _
42	Controller: output supply under voltage	_-_-_-_ / _-_
43	Reel fore-aft sensor: not calibrated	_-_-_-_ / _-_-_

Chapter 7: Reference

Refer to the procedures and information in this chapter as needed.

7.1 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

7.1.1 Metric Bolt Specifications

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 7.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

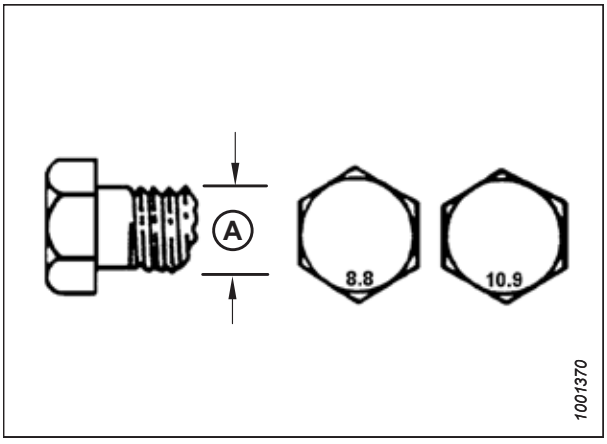


Figure 7.1: Bolt Grades

Table 7.2 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

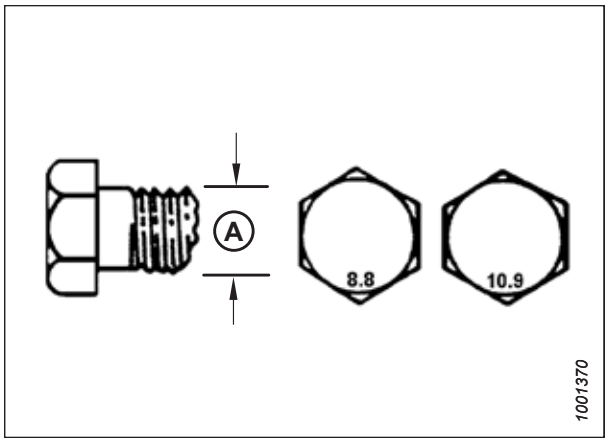


Figure 7.2: Bolt Grades

Table 7.3 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

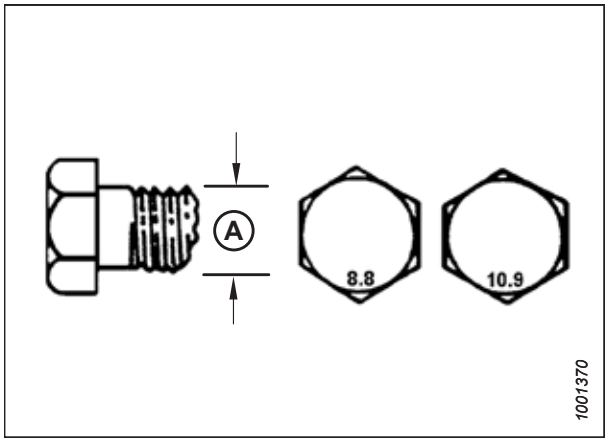


Figure 7.3: Bolt Grades

Table 7.4 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

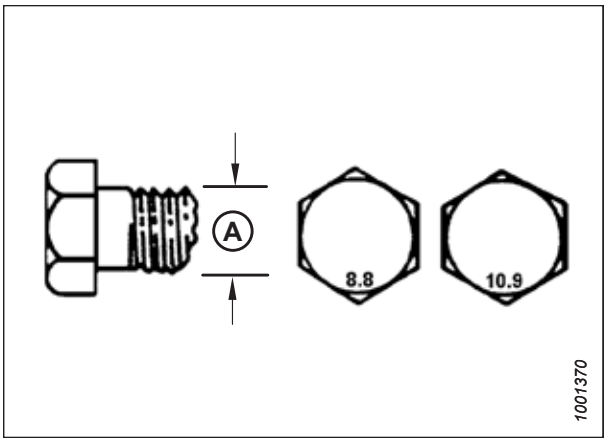


Figure 7.4: Bolt Grades

7.1.2 Metric Bolt Specifications – Cast Aluminum

Specifications are provided for the appropriate final torque values for various sizes of metric bolts in cast aluminum.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 7.5 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf·ft	Nm	lbf·ft
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

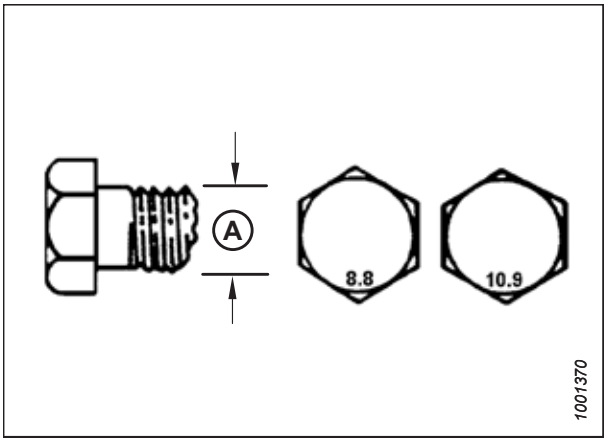


Figure 7.5: Bolt Grades

7.1.3 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
4. Apply hydraulic system oil to O-ring (A).

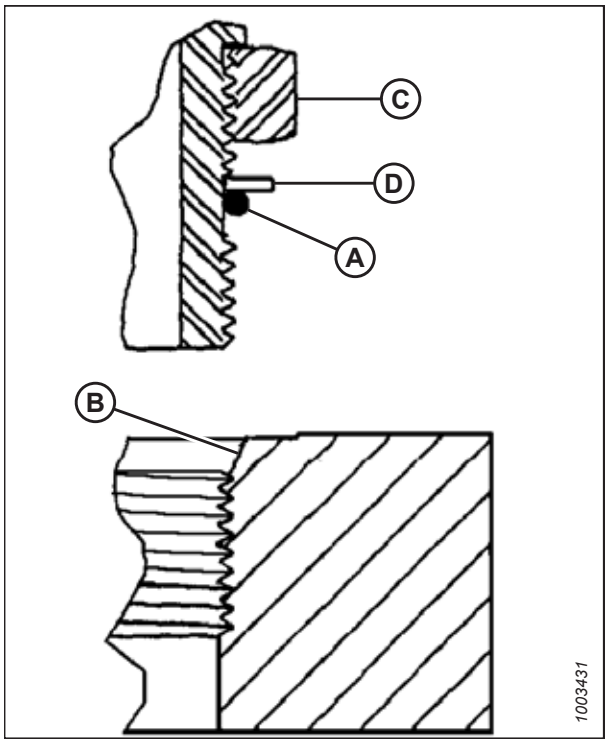


Figure 7.6: Hydraulic Fitting

5. Install fitting (B) into the port until backup washer (D) and O-ring (A) contact part face (E).
6. Position the angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten it to the torque value indicated in the table. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Verify the final condition of the fitting.

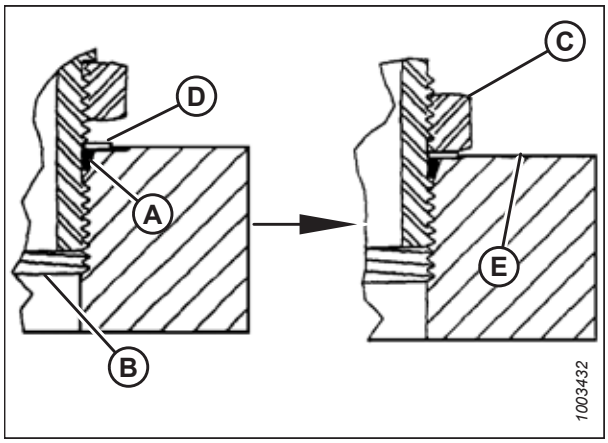


Figure 7.7: Hydraulic Fitting

Table 7.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[94]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26
-6	9/16–18	40–44	30–32
-8	3/4–16	70–77	52–57
-10	7/8–14	115–127	85–94
-12	1 1/16–12	183–201	135–148
-14	1 3/16–12	237–261	175–193
-16	1 5/16–12	271–298	200–220
-20	1 5/8–12	339–373	250–275
-24	1 7/8–12	414–455	305–336
-32	2 1/2–12	509–560	375–413

7.1.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values for non-adjustable hydraulic fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table *7.7, page 763*.
6. Verify the final condition of the fitting.

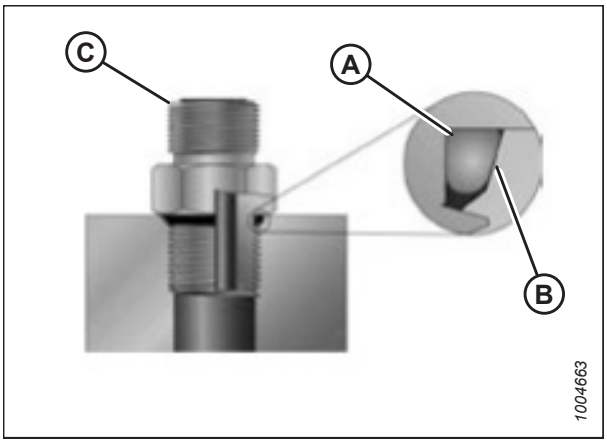


Figure 7.8: Hydraulic Fitting

Table 7.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[94]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	10–11	*89–97
-3	3/8–24	18–20	*159–177
-4	7/16–20	29–32	21–24
-5	1/2–20	32–35	24–26

94. Torque values shown are based on lubricated connections as in reassembly.

Table 7.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable and Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[95]	
		Nm	lbf·ft (*lbf·in)
-6	9/16–18	40–44	30–32
-8	3/4–16	70–77	52–57
-10	7/8–14	115–127	85–94
-12	1 1/16–12	183–201	135–148
-14	1 3/16–12	237–261	175–193
-16	1 5/16–12	271–298	200–220
-20	1 5/8–12	339–373	250–275
-24	1 7/8–12	414–455	305–336
-32	2 1/2–12	509–560	375–413

7.1.5 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Torque values are shown in the Table *7.8, page 765*.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 7.9: Hydraulic Fitting

95. Torque values shown are based on lubricated connections as in reassembly.

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table *7.8, page 765*.

   NOTE:

   If applicable, hold the hex flange on fitting body (E) to prevent the rotation of the fitting body and the hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

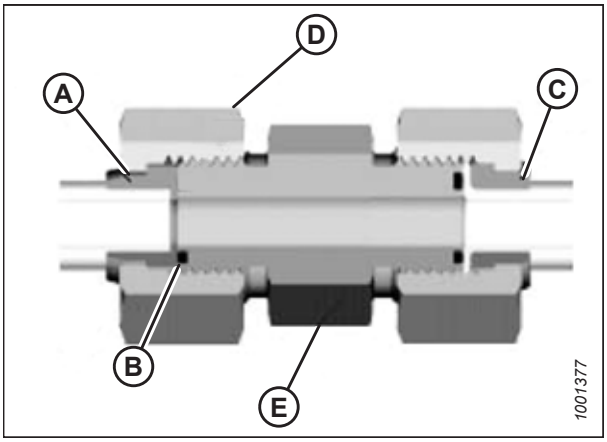


Figure 7.10: Hydraulic Fitting

Table 7.8 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[96]	
			Nm	lbf·ft
-3	Note[97]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[97]	5/16	–	–
-6	11/16	3/8	40–44	30–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note[97]	7/8	–	–
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

7.1.6 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.

96. Torque values and angles shown are based on lubricated connection as in reassembly.
97. O-ring face seal type end not defined for this tube size.

4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *7.9, page 766*. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.

5. Clean all residue and any excess thread conditioner with an appropriate cleaner.

6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.

7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

   NOTE:

   The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

Table 7.9 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
1 1/4–11 1/2	1.5–2.5	9–15
1 1/2–11 1/2	1.5–2.5	9–15
2–11 1/2	1.5–2.5	9–15

7.2 Conversion Chart

This manual uses both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 7.10 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
Length	meter	m	x 3.2808 =	foot	ft.
Power	kilowatt	kW	x 1.341 =	horsepower	hp
Pressure	kilopascal	kPa	x 0.145 =	pounds per square inch	psi
Pressure	megapascal	MPa	x 145.038 =	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	x 14.5038 =	pounds per square inch	psi
Torque	Newton meter	Nm	x 0.7376 =	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	x 8.8507 =	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	(°C x 1.8) + 32 =	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	x 3.2808 =	feet per minute	ft/min
Velocity	meters per second	m/s	x 3.2808 =	feet per second	ft/s
Velocity	kilometers per hour	km/h	x 0.6214 =	miles per hour	mph
Volume	liter	L	x 0.2642 =	US gallon	US gal
Volume	milliliter	mL	x 0.0338 =	ounce	oz.
Volume	cubic centimeter	cm^3 or cc	x 0.061 =	cubic inch	$in.^3$
Weight	kilogram	kg	x 2.2046 =	pound	lb.

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Recommended Fluids and Lubricants

Ensure your machine operates at top efficiency by using clean fluids and lubricants only.

- Use clean containers to handle all fluids and lubricants.
- Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. molybdenum disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max. molybdenum disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear lubricant	SAE 85W-140	API service class GL-5	Knife drive box	1.5 liters (1.3 quarts)
			Main gearbox	2.75 liters (2.9 quarts)
			Completion gearbox	2.25 liters (2.4 quarts)
Hydraulic oil	Single grade trans-hydraulic oil. Viscosity at 60.1 cSt @ 40°C (104°F)Viscosity at 9.5 cSt @ 100°C (212°F) Recommended brands: • Petro-Canada Duratran • John Deere Hy-Gard J20C • CNH Hy-Tran Ultratraction • CNH Hy-Tran Multitraction • AGCO Power Fluid 821 XL	Lubricant trans / hydraulic oil	Header drive systems reservoir	95 liters (25.1 US gallons)
Chain oil	Chain oil with a viscosity of 100–150 sCt at 40°C (104°F) or mineral oil SAE 20W-50 that has no detergents or solvents	Chain oil is formulated to provide good wear protection and resistance to foaming. It protects the chain and drive sprockets against wear.	Reel drive chain	—

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