FFT FLEX-FLOAT TECHNOLOGY®

MacDon®

FD1 Series and FM100 FlexDraper® Header and Float Module for Combines

Operator's Manual

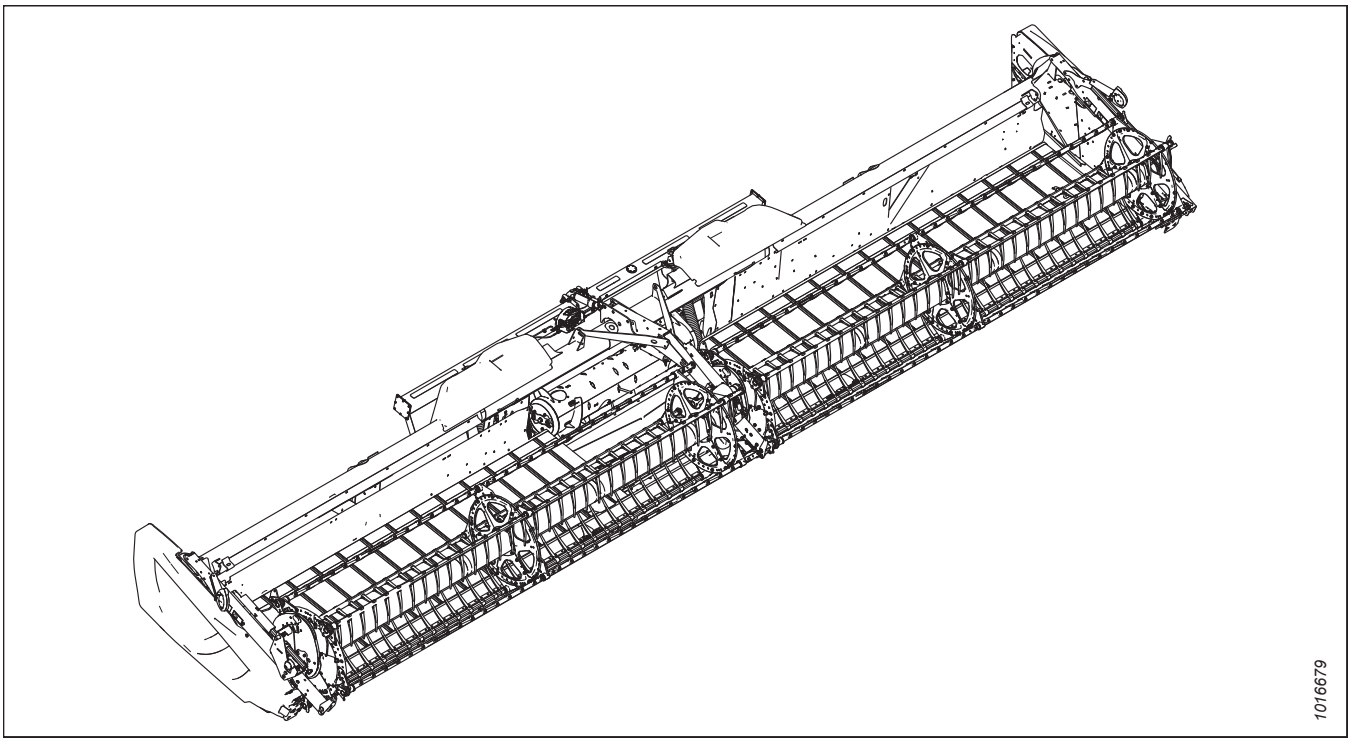
215820 Revision B

Original Instruction

Featuring MacDon FLEX-FLOAT Technology™

The Harvesting Specialists.

FD1 Series and FM100 FlexDraper® Header and Float Module for Combines



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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 FD1 Series

[4] As per Shipping Document

[5] November 23, 2021

[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 FM100

[4] As per Shipping Document

[5] November 23, 2021

[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

Introduction

This instructional manual contains information on the FD1 Series FlexDraper® Header and the FM100 Float Module. It must be used in conjunction with your combine operator's manual.

Your machine

The FD1 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 ground contours. The FM100 Float Module is used to attach an FD1 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 the material provided before attempting to use 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 Table of Contents and Index will guide you to specific areas of this manual. Study the Table of Contents to familiarize yourself with how the information is organized.

When setting up the machine or making 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 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 combine.
- Unless otherwise noted, use the standard torque values provided in Chapter *8.2 Torque Specifications, page 622*.

Keep this manual handy for frequent reference and to pass on to new Operators or Owners. A manual storage case (A) is located inside the header left endshield.

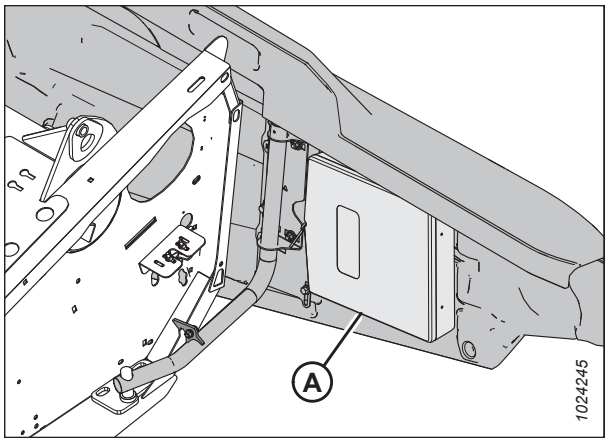
Call your MacDon Dealer if you need assistance, information, or additional copies of this manual.

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).

This manual is also available in:

- Czech
- French
- German
- Polish
- Portuguese
- Russian
- Spanish
- Ukrainian



Manual Storage Location

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

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 “Attaching Header to / Detaching Header from FM100 Float Module” topic.	Product Support
2.2 FD1 Series FlexDraper® Header Specifications, page 21	Revised table.	Technical Publications Engineering
2.3 FD1 Series FlexDraper® Header Dimensions, page 24	Updated header width information.	Product Support
Engaging Reel Safety Props, page 31	Added DANGER hazard statement and Step *1, page 31*. Revised Step *3, page 31* and the associated illustration. Revised Step *4, page 31* to clarify which step to repeat.	Technical Publications Product Integrity
Disengaging Reel Safety Props, page 32	Added DANGER hazard statement and Step *1, page 32*. Revised Step *3, page 32* and the associated illustration. Revised Step *4, page 32* to clarify which step to repeat.	Technical Publications Product Integrity
3.9.10 CLAAS 5000, 6000, 7000, and 8000 Series Combines, page 196	Added CLAAS 5000 and 6000 Series combines.	Product Support
4.1 Driveline Phasing, page 339	Added topic.	Product Support
4.2.1 Narrow Configuration – Auger Flighting, page 342	Updated bundles to MD #B7345.	ECN 62443
4.2.2 Medium Configuration – Auger Flighting, page 346	Updated bundles to MD #B7343 and MD #B7344, and removed ultra-wide configuration.	ECN 62443
4.2.3 Wide Configuration – Auger Flighting, page 349	Updated bundles to MD #B7343 and MD #B7344.	ECN 62443
4.2.4 Ultra-Narrow Configuration – Auger Flighting, page 351	Updated bundles to MD #B7345.	ECN 62443
4.2.4 Ultra-Narrow Configuration – Auger Flighting, page 351	Updated bundles to MD #B7345.	ECN 62443
Adjusting Knife Drive Box Squareness, page 486	Added topic.	Technical Publications
Installing Drive Arm, page 490	Added topic.	Technical Publications
6.3.7 Vertical Knife Mounts, page 595	Added topic.	Technical Publications
6.3.8 Vertical Knife Plumbing Kits, page 595	Added topic.	Technical Publications
6.5.3 Floating Crop Dividers, page 601	Added topic.	ECN 62649
6.5.9 Upper Cross Auger, page 604	Updated UCA bundles.	ECN 61273
6.5.10 European Combine Upper Cross Auger, page 605	Updated UCA bundles.	ECN 61273

Serial Numbers

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

FD1 Series FlexDraper® Header

Serial Number: _____

Model Number: _____

Model Year: _____

Header serial number plate (A) is located on the upper corner on the left endsheet.

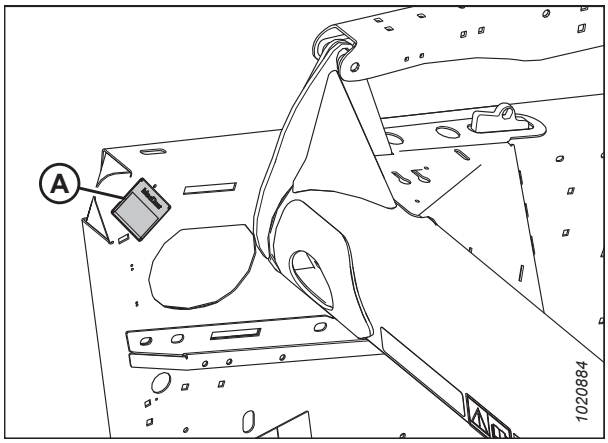


Figure 1: Header Serial Number Plate Location

FM100 Float Module for Combine

Serial Number: _____

Model Year: _____

Float module serial number plate (A) is located on the top left of the float module frame.

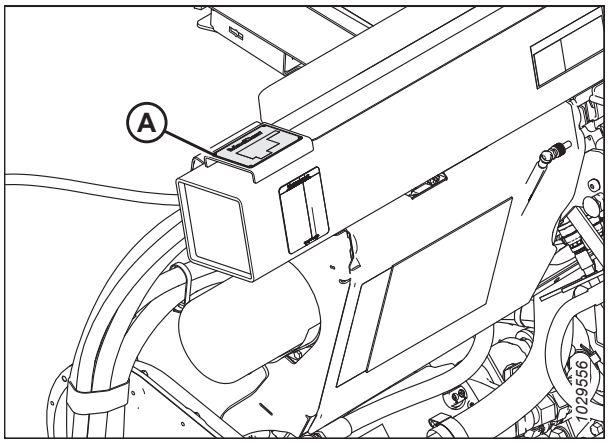


Figure 2: Float Module Serial Number Plate Location

Transport / Stabilizer Wheel Option

Serial Number: _____

Model Year: _____

Transport serial number plate (A) is located on the right axle assembly.

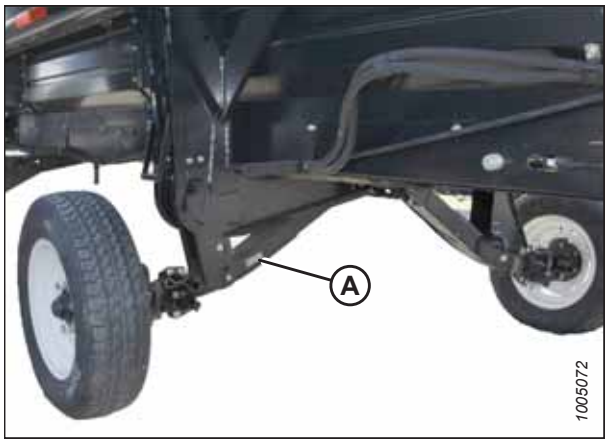


Figure 3: Transport / Stabilizer Wheel Location

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

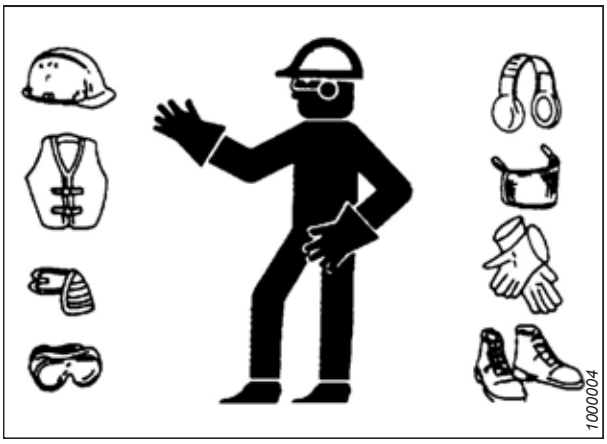


Figure 1.2: Safety Equipment

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.

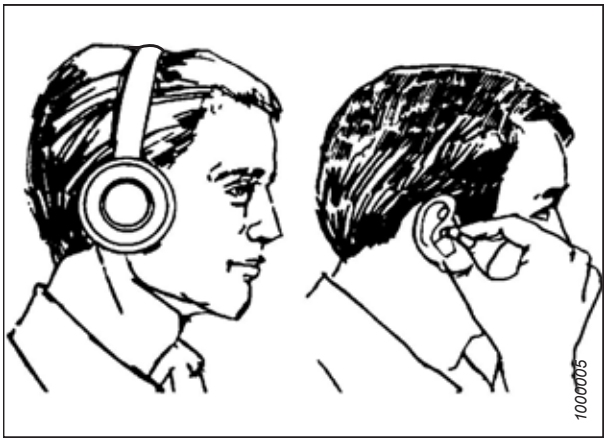


Figure 1.3: Safety Equipment

- 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.

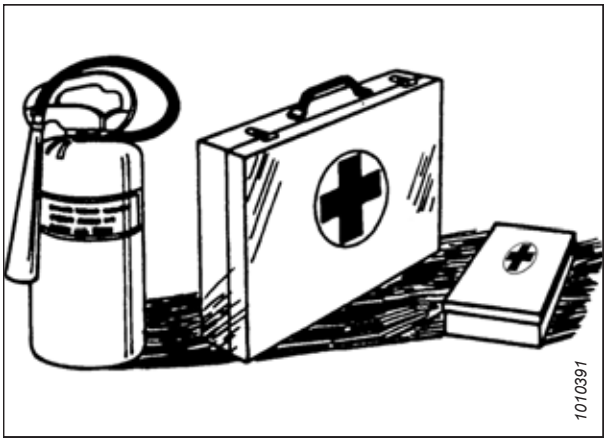


Figure 1.4: Safety Equipment

- 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.

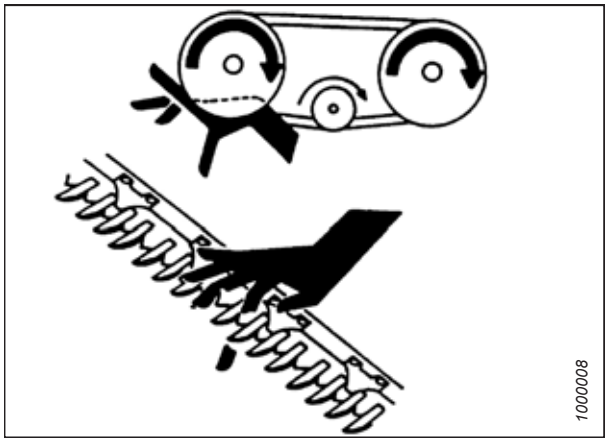


Figure 1.6: Safety around Equipment

- 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.

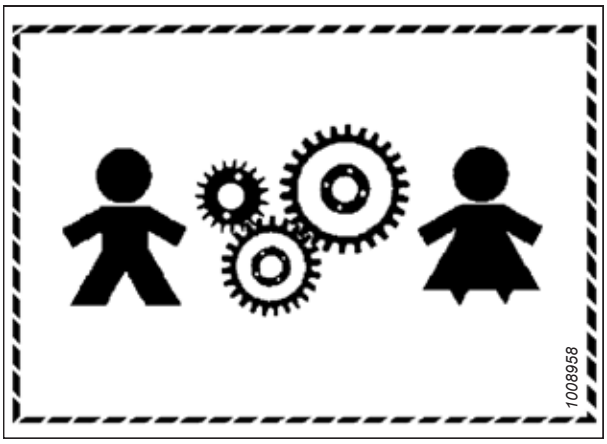


Figure 1.9: Equipment is NOT Safe for Children

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

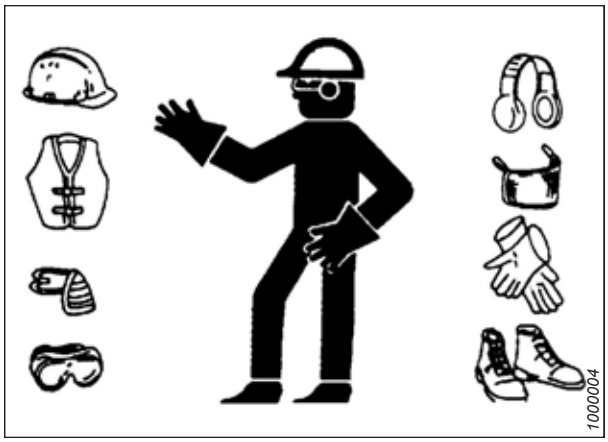


Figure 1.10: Personal Protective Equipment

1.5 Hydraulic Safety

Because hydraulic fluid is under extreme pressure, hydraulic fluid leaks can be very dangerous. The proper safety procedures must be followed when inspecting for hydraulic fluid leaks and servicing hydraulic equipment.

- Always place all hydraulic controls in Neutral before leaving the operator's seat.
- Ensure that all 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.

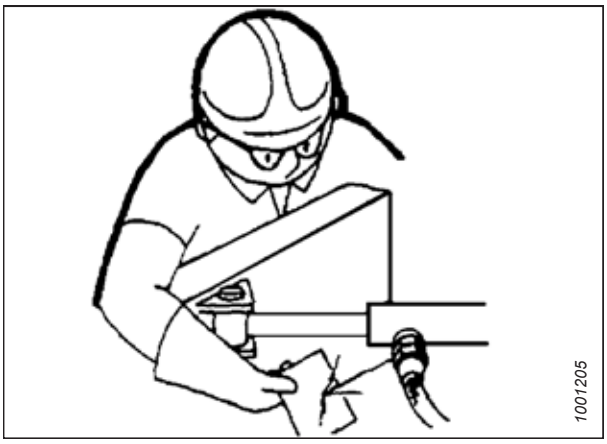


Figure 1.11: Testing for Hydraulic Leaks

- 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 injured by a concentrated, high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or 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.

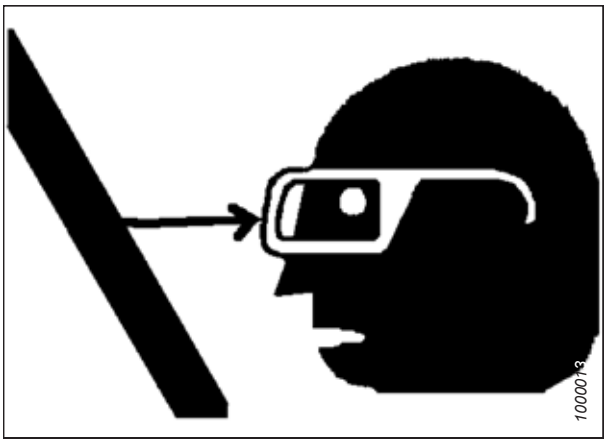


Figure 1.13: Safety around Equipment

1.6 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.

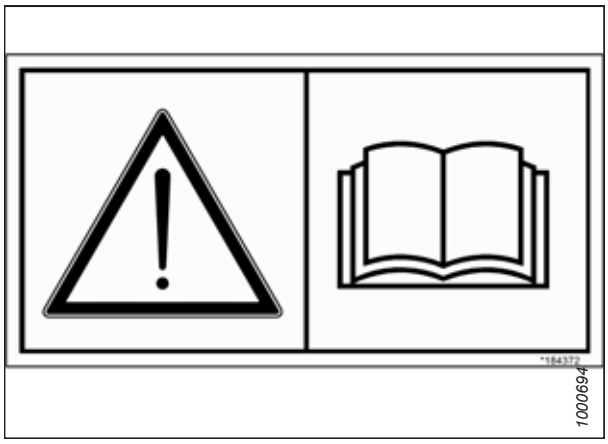


Figure 1.14: Operator's Manual Decal

1.6.1 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.

1.7 Safety Decal Locations

Safety decals are placed next to areas of potential danger. If a safety sign becomes illegible due to wear or damage, it should be replaced.

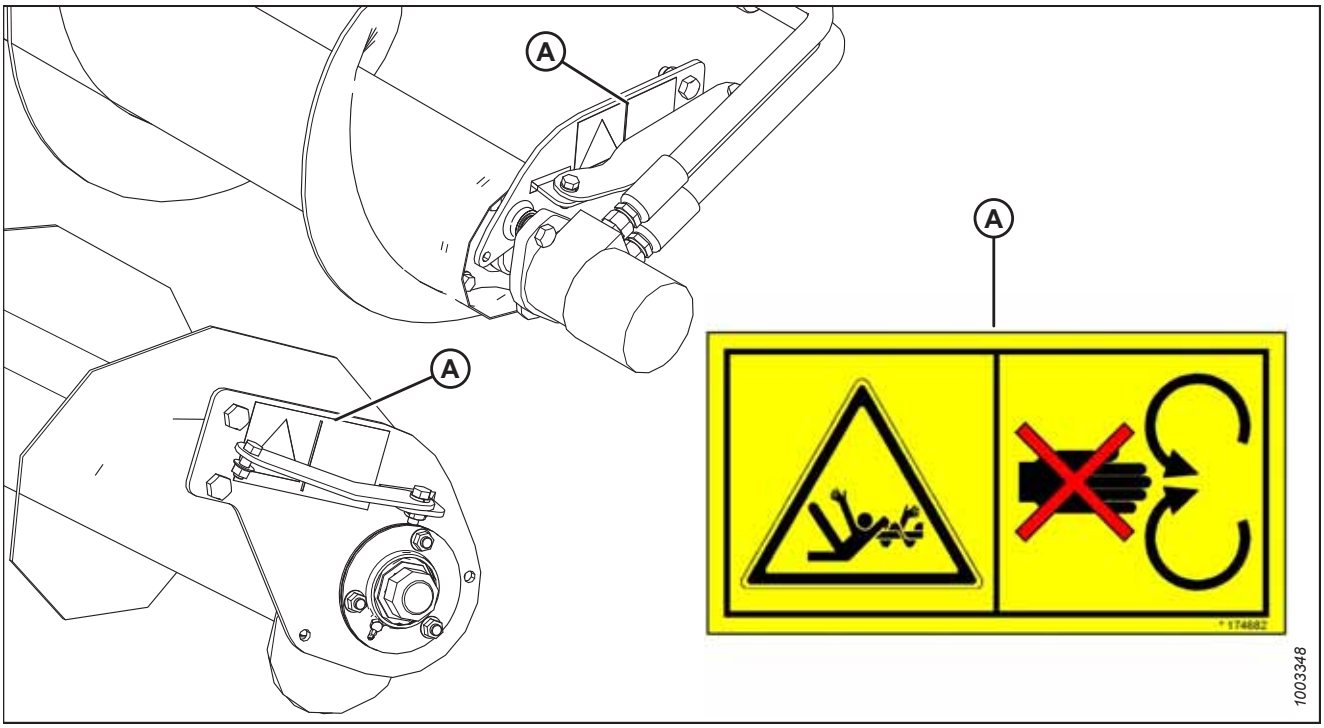


Figure 1.15: Upper Cross Auger

A - MD #174682

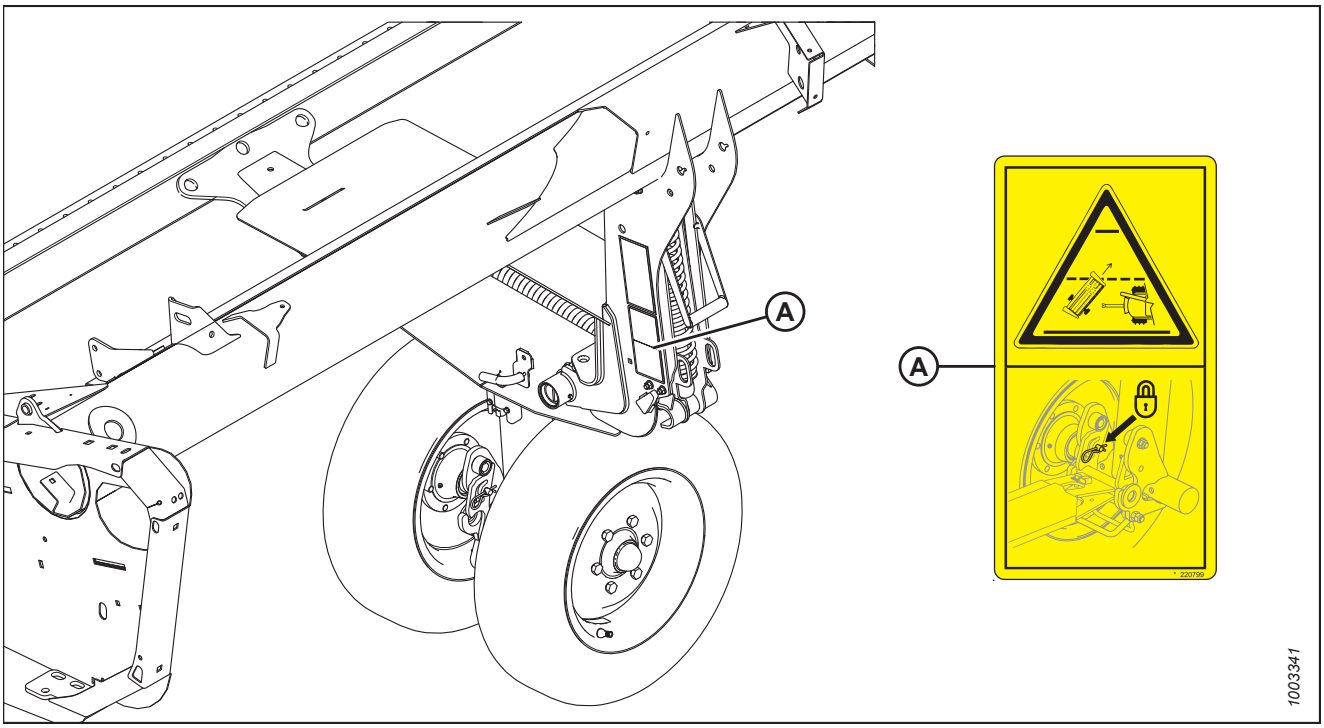


Figure 1.16: Transport

A - MD #220799

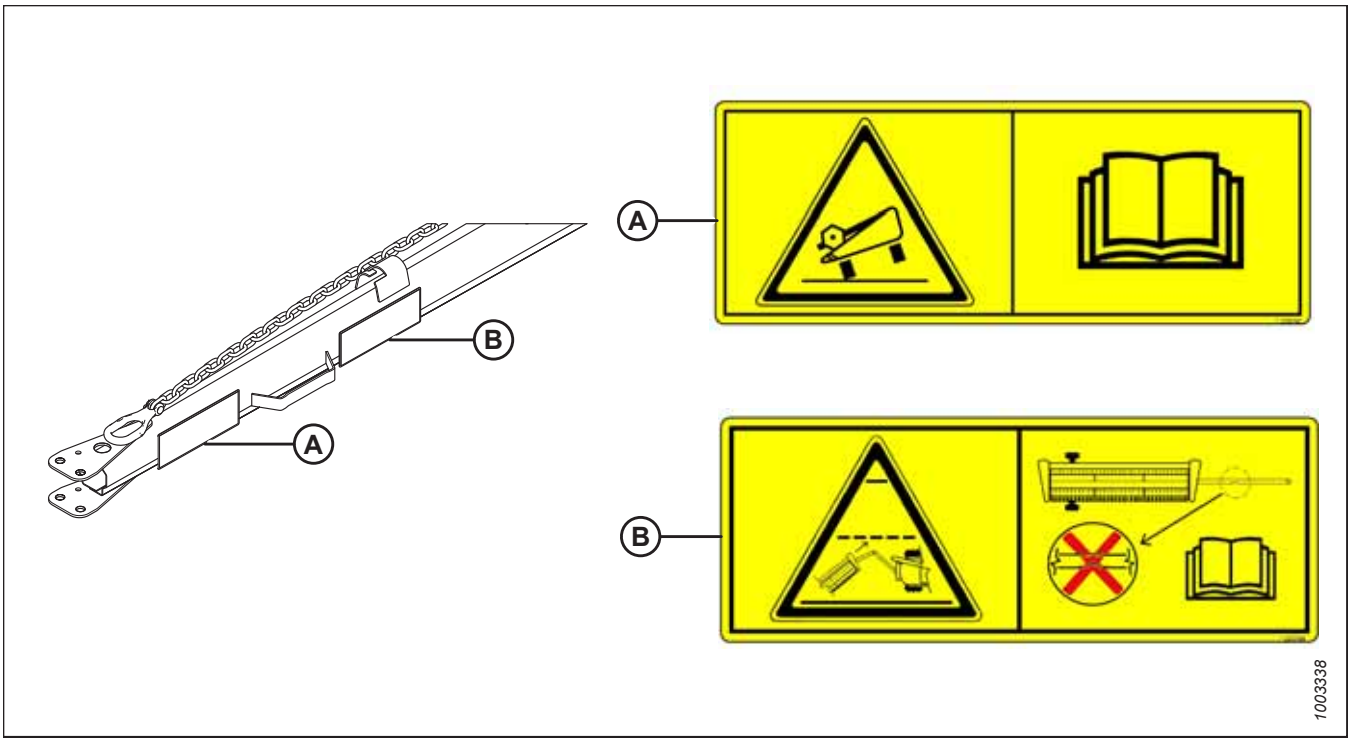


Figure 1.17: Transport Tow-Bar

A - MD #220797 **B - MD #220798**

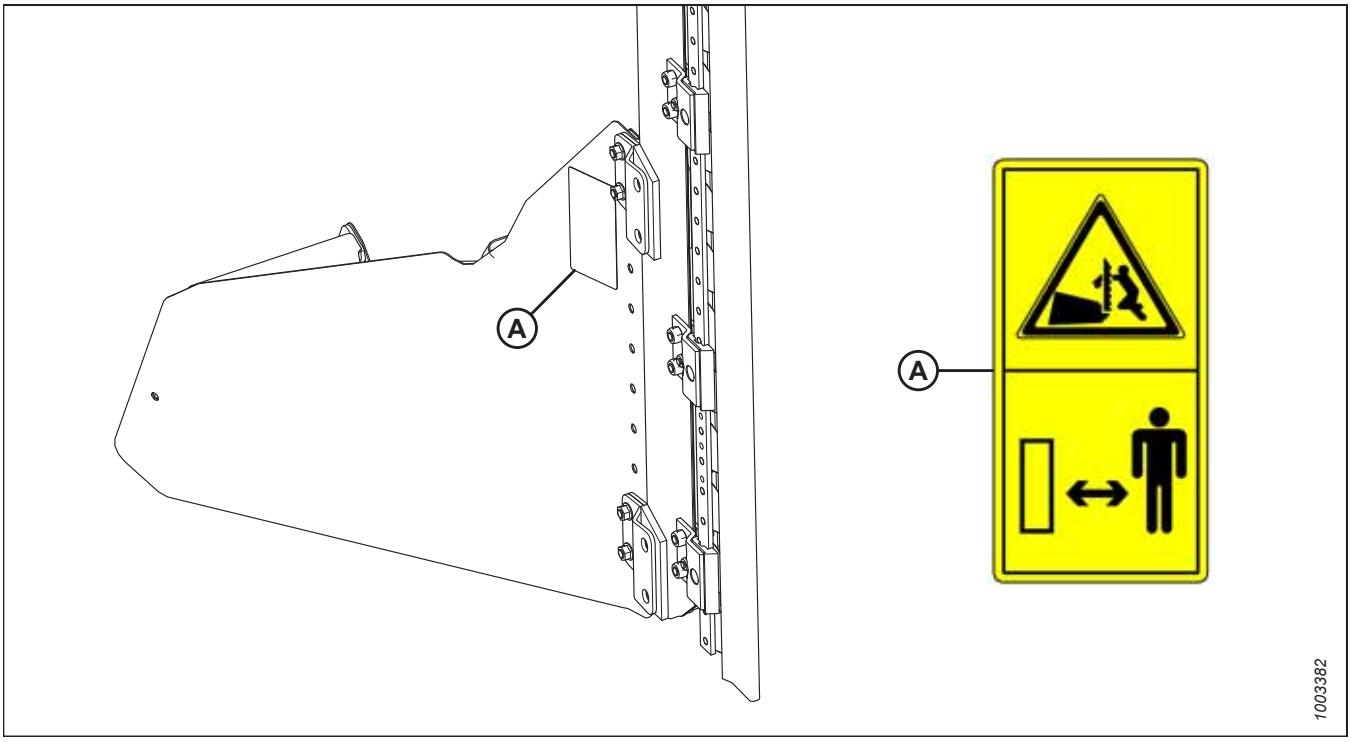


Figure 1.18: Vertical Knife

A - MD #174684

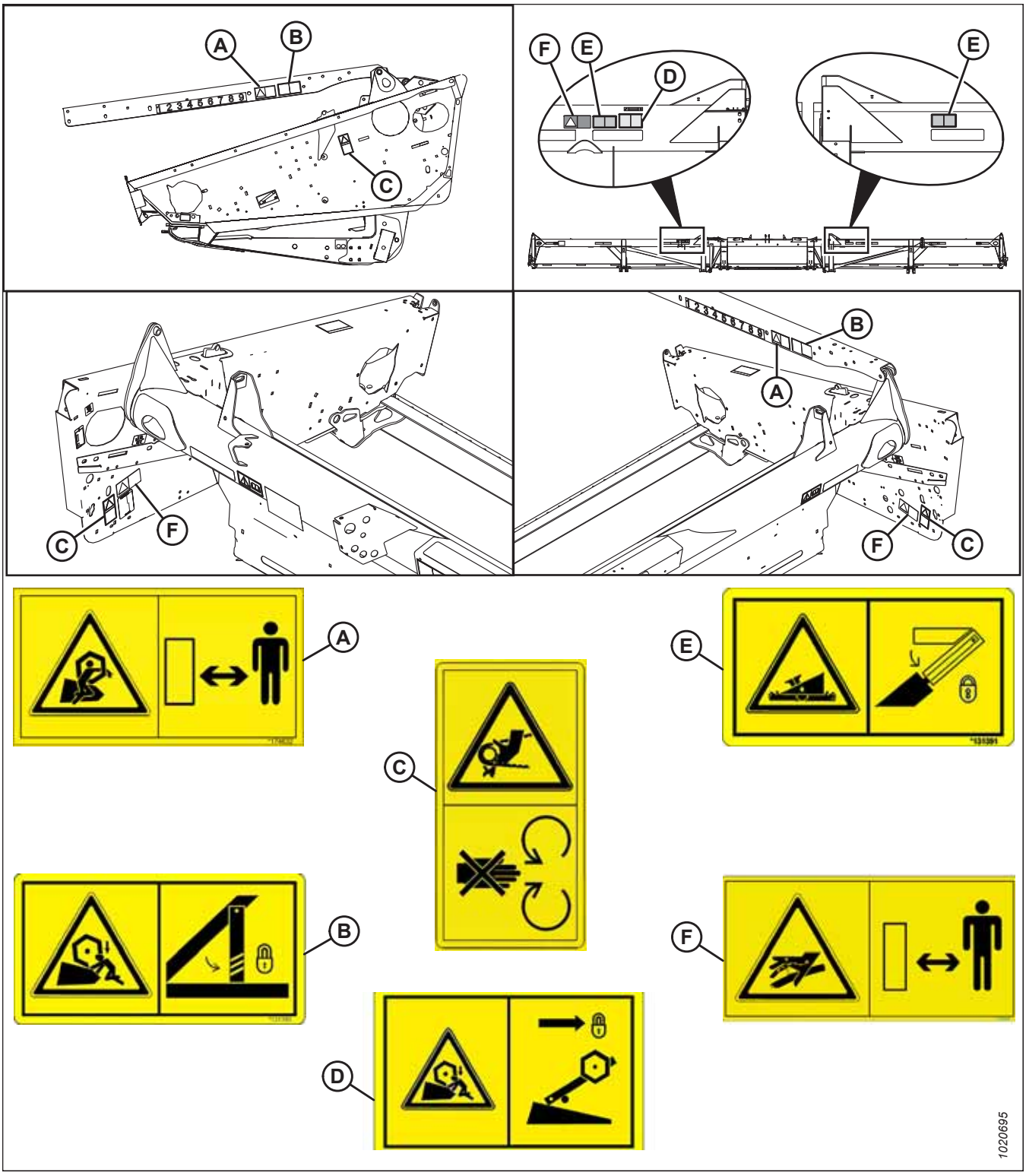


Figure 1.19: Endsheets, Reel Arms, and Backsheet

A - MD #174632 (Two Places)
B - MD #131393
C - MD #184422
D - MD #131392 (Double Reel Only)
E - MD #131391 (Two Places)
F - MD #166466 (Three Places)

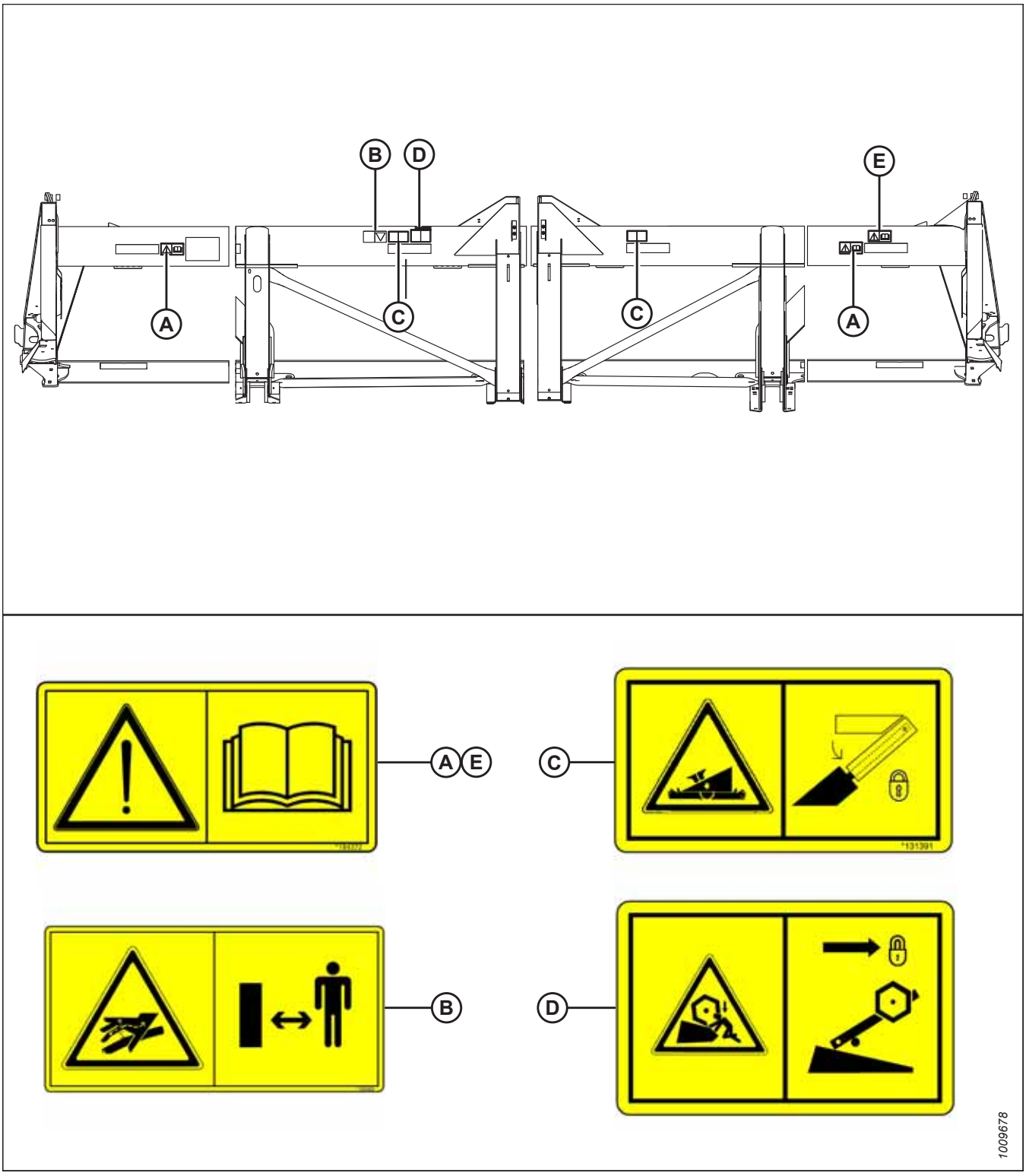


Figure 1.20: FD1® Series Backtube

A - MD #184372
B - MD #166466
C - MD #131391
D - MD #131392
E - MD #184372 (Split Frame)

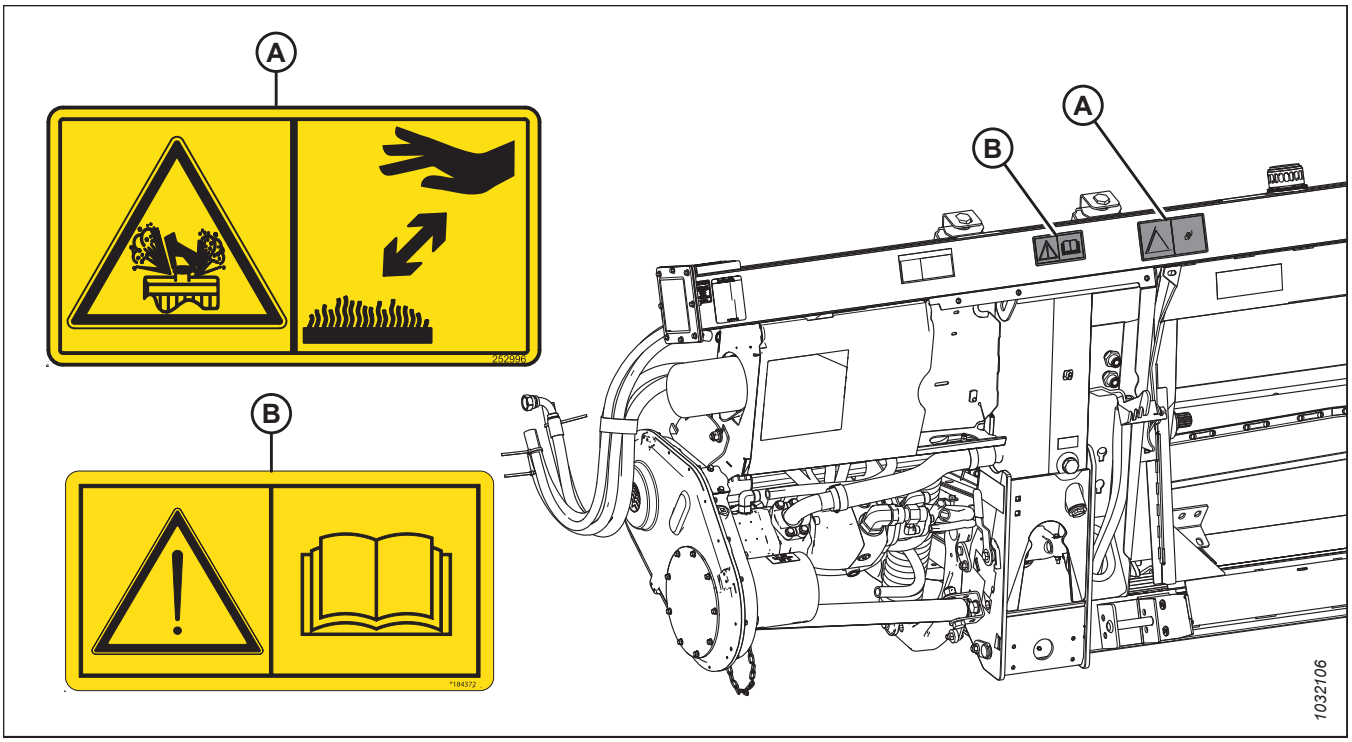


Figure 1.21: FM100 Float Module

A - MD #252996

B - MD #184372

1.8 Understanding Safety Signs

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

MD #131391

Header crushing hazard

DANGER

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

- Fully raise the header, stop the engine, remove the key, and engage the safety props on the combine before going under header.
- Alternately, rest the header on the ground, stop the engine, and remove the key from the ignition.

Figure 1.22: MD #131391

MD #131392

Reel crushing hazard

WARNING

To prevent injury from the fall of a raised reel: fully raise the reel, stop the engine, remove the key from the ignition, and engage the safety prop on each reel support arm before working on or under the reel.

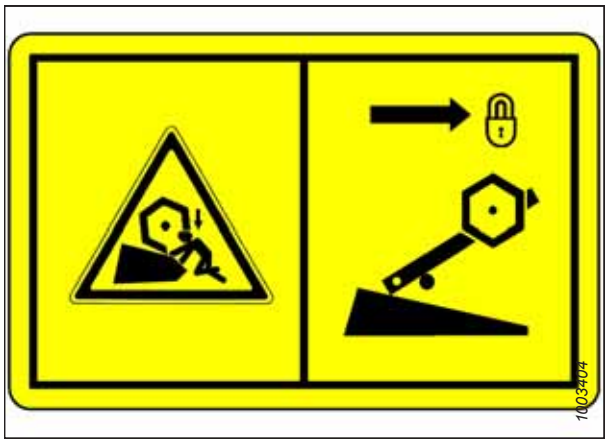


Figure 1.23: MD #131392

MD #131393

Reel crushing hazard

WARNING

To prevent injury from the fall of a raised reel: fully raise the reel, stop the engine, remove the key from the ignition, and engage the safety prop on each reel support arm before working on or under the reel.

Figure 1.24: MD #131393

MD #166466

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 #166466

MD #174632

Reel entanglement hazard

DANGER

To prevent injury from entanglement with the rotating reel:

- Stand clear of the header while the machine is running.

Figure 1.26: MD #174632

MD #174684

Knife cutting hazard

WARNING

To prevent injury from a sharp cutting knife:

- Wear heavy canvas or leather gloves when working with the knife.
- Be sure no one is near the vertical knife when removing or rotating the knife.

Figure 1.27: MD #174684

MD #184372

General hazard pertaining to machine operation and servicing

DANGER

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

- 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 these safety instructions with all machine Operators every year.
- Ensure that all safety signs are installed and are legible.
- Make certain that bystanders are clear of the header before starting the engine and during operation of the header.
- Keep riders off of the machine.
- Keep all shields in place. Stay clear of moving parts.
- Disengage the header drive, put the transmission into Neutral, and wait for all movement to stop before leaving the operator's position.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Before servicing a header in the raised position, engage the combine's cylinder safety props.
- Display a slow-moving vehicle emblem and activate the header's warning lights when operating the header on roadways (unless these actions are prohibited by law).

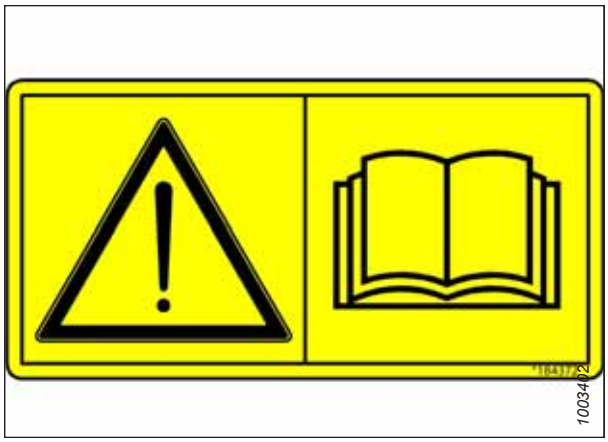


Figure 1.28: MD #184372

MD #184422

Hand and arm entanglement hazard

WARNING

To prevent injury:

- Stop the engine and remove the key before opening any shielding.
- Do **NOT** operate the header without the shields in place.

Figure 1.29: MD #184422

MD #220797

Header tipping hazard – transport mode

DANGER

To prevent serious injury or death from the header tipping over while in transport mode:

- Read the operator's manual for more information on potential tipping or rollover hazards that the header may be subject to while it is transport mode.

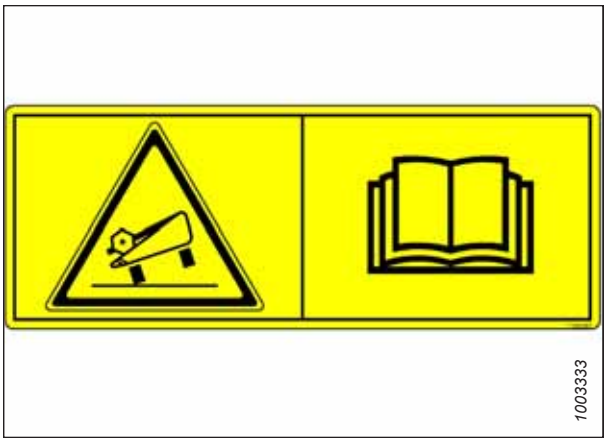


Figure 1.30: MD #220797

MD #220798

Loss of control hazard

DANGER

To prevent serious injury or death from loss of control:

- Do **NOT** tow the header with a damaged tow bar.
- Consult the operator's manual for more information.

Figure 1.31: MD #220798

MD #220799

Loss of control hazard

WARNING

To prevent serious injury or death from loss of control:

- Ensure that the tow-bar lock mechanism is locked.

Figure 1.32: MD #220799

252996

Hot fluid spray hazard

CAUTION

To prevent injury:

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

Figure 1.33: 252996

279085

Auger entanglement hazard

DANGER

To prevent injury from the 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 1.34: 279085

MD #335965

Reel crushing hazard

WARNING

To prevent injury from the fall of a raised reel:

- Fully raise the reel.
- Stop the engine and remove the key from the ignition.
- Engage the safety prop on each reel support arm on the top surface of raised lug before working on or under the reel.

Figure 1.35: MD #335965

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.

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
D1 Series Header	MacDon D120, D125, D130, D135, D140, and D145 rigid draper headers for combines
DR	Double reel
Export header	The header configuration typical outside North America
FD1 Series Header	MacDon FD125, FD130, FD135, FD140, and FD145 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
FM100	The float module used with a D1 or FD1 Series header for combining
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts crop and feeds it into an attached combine
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
Knife	A cutting device found on a header's cutterbar which uses a reciprocating cutter (also called a sickle) to cut crop so that it can be fed into the header
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
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)

Term	Definition
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
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
Truck	A four-wheel highway/road vehicle weighing no less than 3400 kg (7500 lb.)
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 FD1 Series FlexDraper® Header Specifications

This is a list of specifications for FD1 FlexDraper® headers.

The following symbol and letters are used in the tables below:

S: standard / O_F: optional (factory installed) / O_D: optional (Dealer installed) / — : not available

Table 2.1 Header Specifications

Cutterbar			
Effective cutting width (distance between crop divider points):			
FD125		7.6 m (300 in.)	S
FD130		9.1 m (360 in.)	—
FD135		10.7 m (420 in.)	—
FD140		12.2 m (480 in.)	—
FD145		13.7 m (540 in.)	—
Cutterbar lift range		Varies with combine model	S
Knife			
Single-knife drive (all sizes): hydraulic motor to V-belt to enclosed heavy-duty knife drive box.			O_F
Double-knife drive (FD140 and FD145]): two hydraulic motors to V-belts, untimed, to enclosed heavy-duty knife drive boxes.			O_F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute)[1]	FD125	1200–1450	S
Single-knife speed (strokes per minute)[1]	FD130	1200–1400	S
Single-knife speed (strokes per minute)[1]	FD135	1100–1300	S
Single-knife speed (strokes per minute)[1]	FD140	1050–1200	S
Double-knife speed (strokes per minute)[1]	FD140, FD145	1100–1400	S
Knife Sections			
Over-serrated, solid, bolted, 3.5 serrations per cm (9 serrations per inch)			S
Knife overlap at center (double-knife headers)		3 mm (1/8 in.)	S
Guards and Hold-Downs			
Guard: pointed, forged, double heat treated (DHT) Hold-down: sheet metal, adjustment bolt			S
Center-link retracted		2.0°	S
Center-link extended		7.4°	S
Draper (Conveyor) and Decks			
Draper width		1.057 m (41 19/32 in.)	S
Draper drive		Hydraulic	S
Draper speed: FM100 Float Module controlled		0–194 m/min. (635 fpm)	S

1. Under normal cutting conditions, the knife speed measured at the knife drive pulley should be 600 rpm (1200 spm). If set to low end of the speed range, the header could experience knife stalling.

Table 2.1 Header Specifications (continued)

PR15 Pick-Up Reel			S
Quantity of tine tubes		5-, 6-, or 9-tine tubes	S
Center tube diameter		203 mm (8 in.)	S
Center tube diameter	FD135 single span only	254 mm (10 in.)	—
Fingertip radius	Factory-set	800 mm (31 1/2 in.)	S
Fingertip radius	Adjustment range	766–800 mm (30 3/16–31 1/2 in.)	S
Effective reel diameter (via cam profile)		1.650 m (65 in.)	S
Finger length		290 mm (11 in.)	S
Finger spacing (staggered on alternate bats)		150 mm (6 in.)	S
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S
Weight[2]			
FD125		1901–2059 kg (4190–4540 lb.)	
FD130		2218–2317 kg (4890–5240 lb.)	
FD135		2409–2558 kg (5310–5640 lb.)	
FD140	North America Frame	2644–2708 kg (5830–5970 lb.)	
FD140	Export Frame	2685–2706 kg (5920–5965 lb.)	
FD145	North America Frame	2903 kg (6400 lb.)	
FD145	Export Frame	2892–2912 kg (6375–6420 lb.)	

Table 2.2 Header Attachments

		FD1
FM100 Float Module		S
Feed draper width	2.000 m (78 11/16 in.)	S
Feed draper speed	107–122 m/min (350–400 fpm)	S
Feed auger width	1.660 m (65 5/16 in.)	S
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)	190 rpm	S
Oil reservoir capacity	85 liters (22.5 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	—

2. Estimated weight range for base header without performance options or float module. Variances are due to different package configurations.

Table 2.2 Header Attachments (continued)

Upper Cross Auger		O_D
Outside diameter	305 mm (12 in.)	—
Tube diameter	152 mm (6 in.)	—
Stabilizer Wheel / Transport		O_D
Wheels	38 cm (15 in.)	—
Tires	P205/75 R-15	—

2.3 FD1 Series FlexDraper® Header Dimensions

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

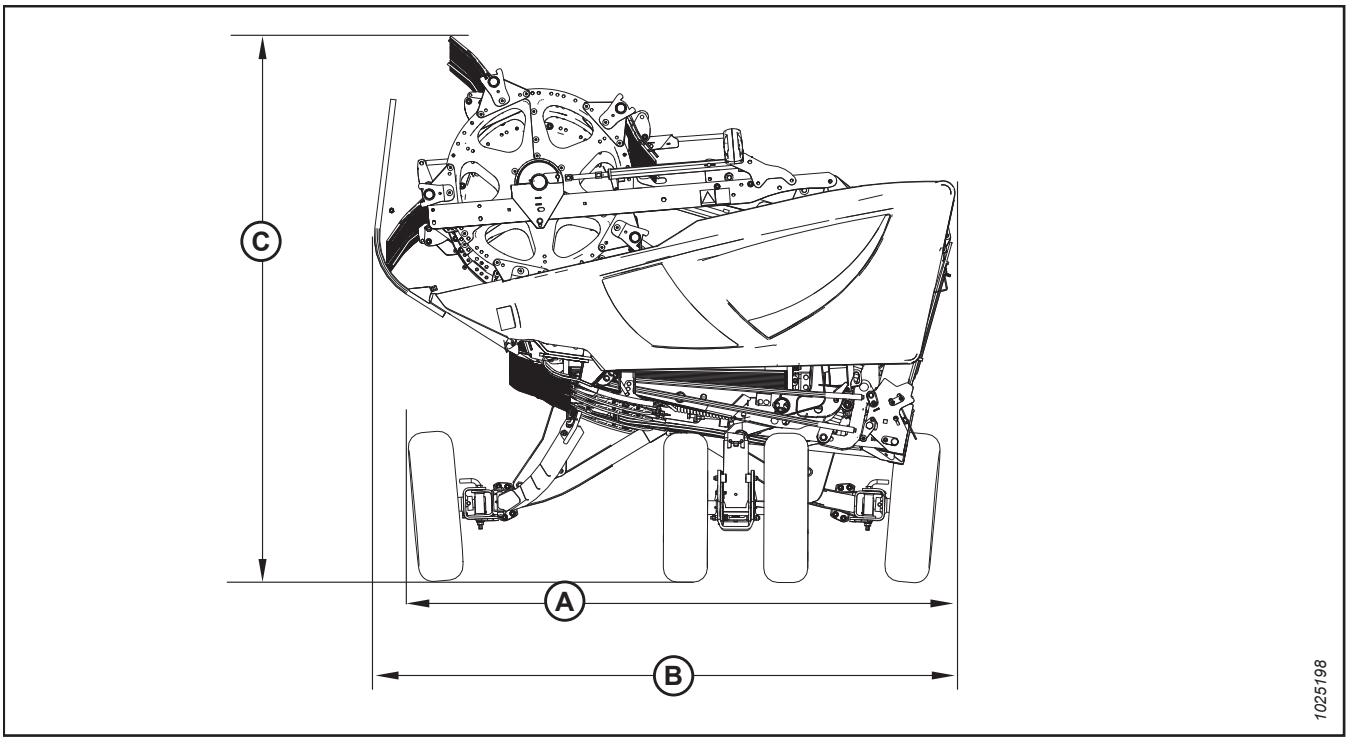


Figure 2.1: Header Dimensions

Table 2.3 Header Dimensions

Frame and Structure			
Header width (field mode)		Cut width + 384 mm (15 1/8 in.)	S
Header width (transport position) - reel fore-aft fully retracted (shortest center-link)			
With FM100 Float Module installed (shortest center-link)	(A) long dividers removed (refer to Figure *2.1, page 24*)	2500 mm (98 in.)	-
With FM100 Float Module installed (shortest center-link)	(B) long dividers installed (refer to Figure *2.1, page 24*)	2684 mm (106 in.)	-
With FM100 Float Module installed (shortest center-link)	(C) transport deployed (refer to Figure *2.1, page 24*)	2794 mm (110 in.)[3]	-

3. Maximum height for headers in transport position.

2.4 Component Identification

Knowing the location and identity of key components is critical to properly operating and maintaining a machine.

2.4.1 FD1 Series FlexDraper® Header

Familiarize yourself with the locations and names of the major components of a FD1 Series FlexDraper® Header.

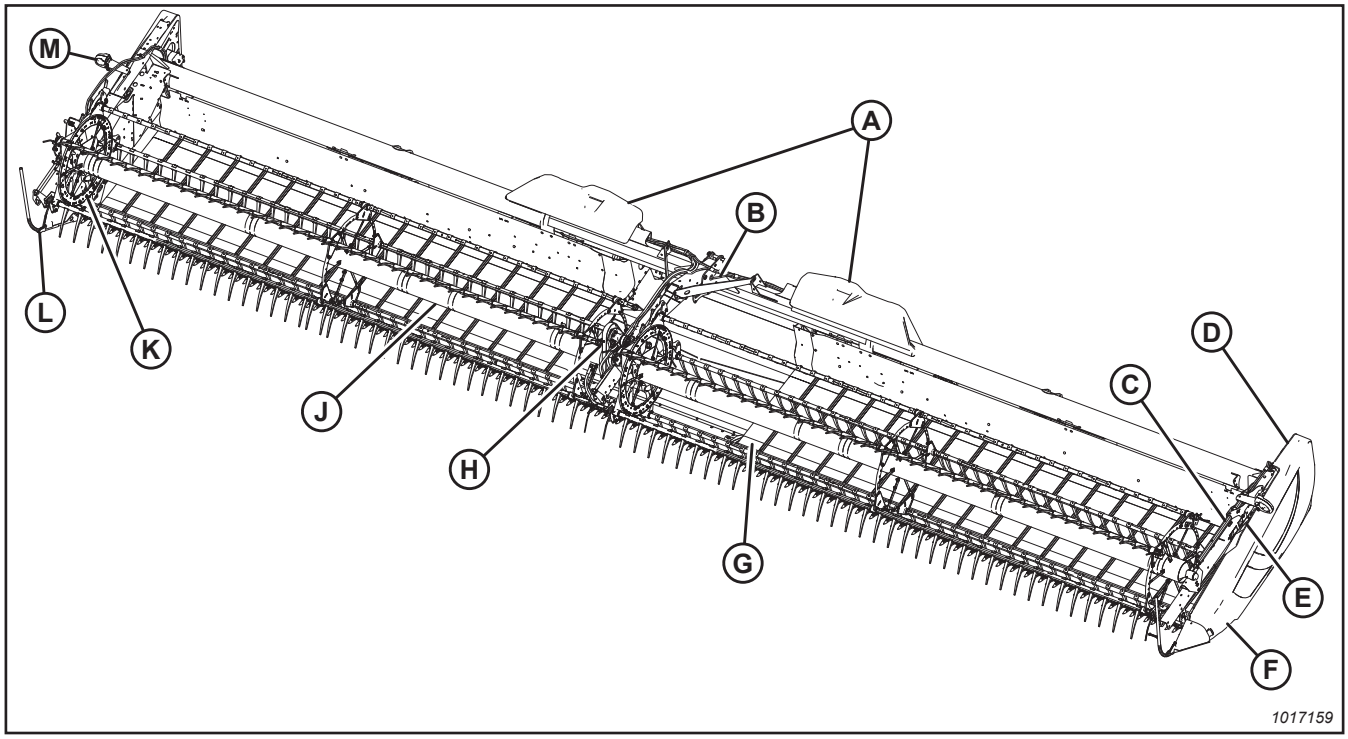


Figure 2.2: FD1 Series FlexDraper® Header Components

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)

2.4.2 FM100 Float Module

Familiarize yourself with the locations and names of the major components of an FM100 Float Module.

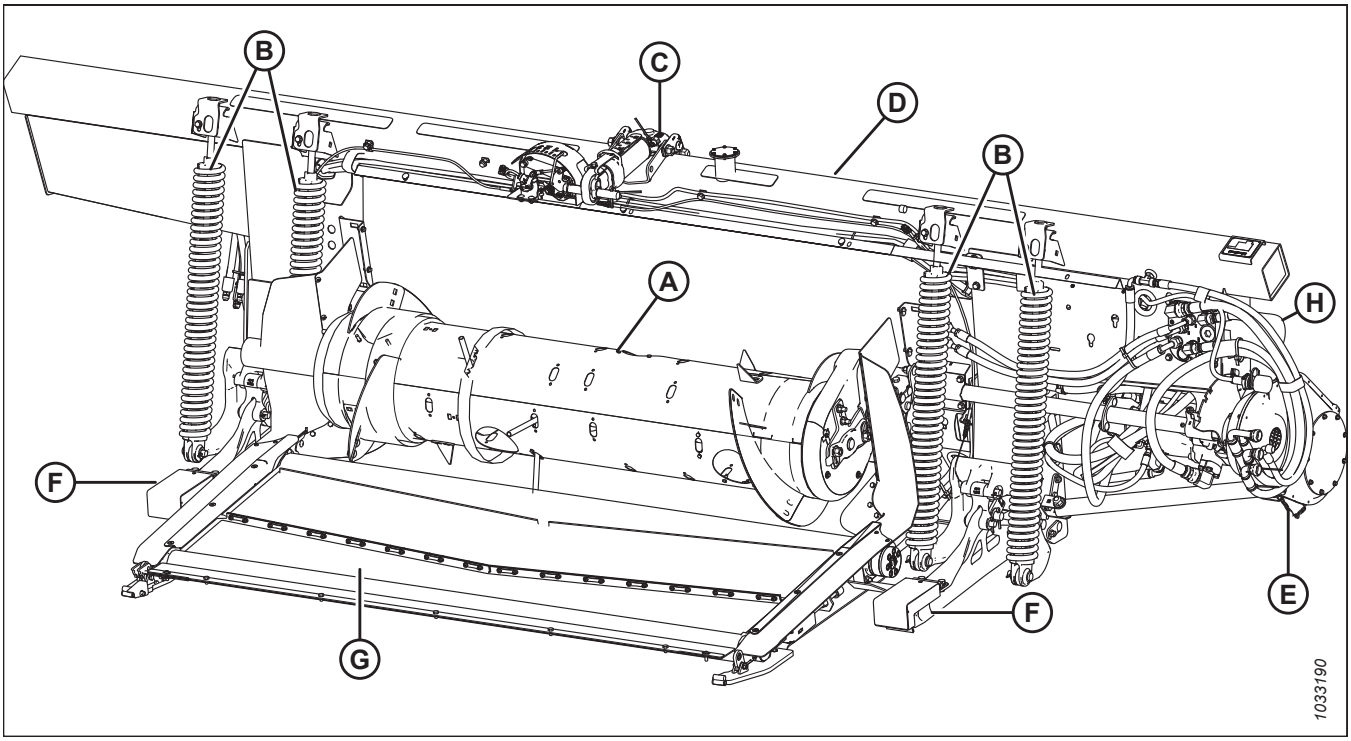


Figure 2.3: Header Side of FM100 Float Module

A - Feed Auger
B - Header Float Springs
C - Center-Link
D - Hydraulic Reservoir
E - Gearbox
F - Header Support Arms
G - Feed Draper
H - Hydraulic Filter

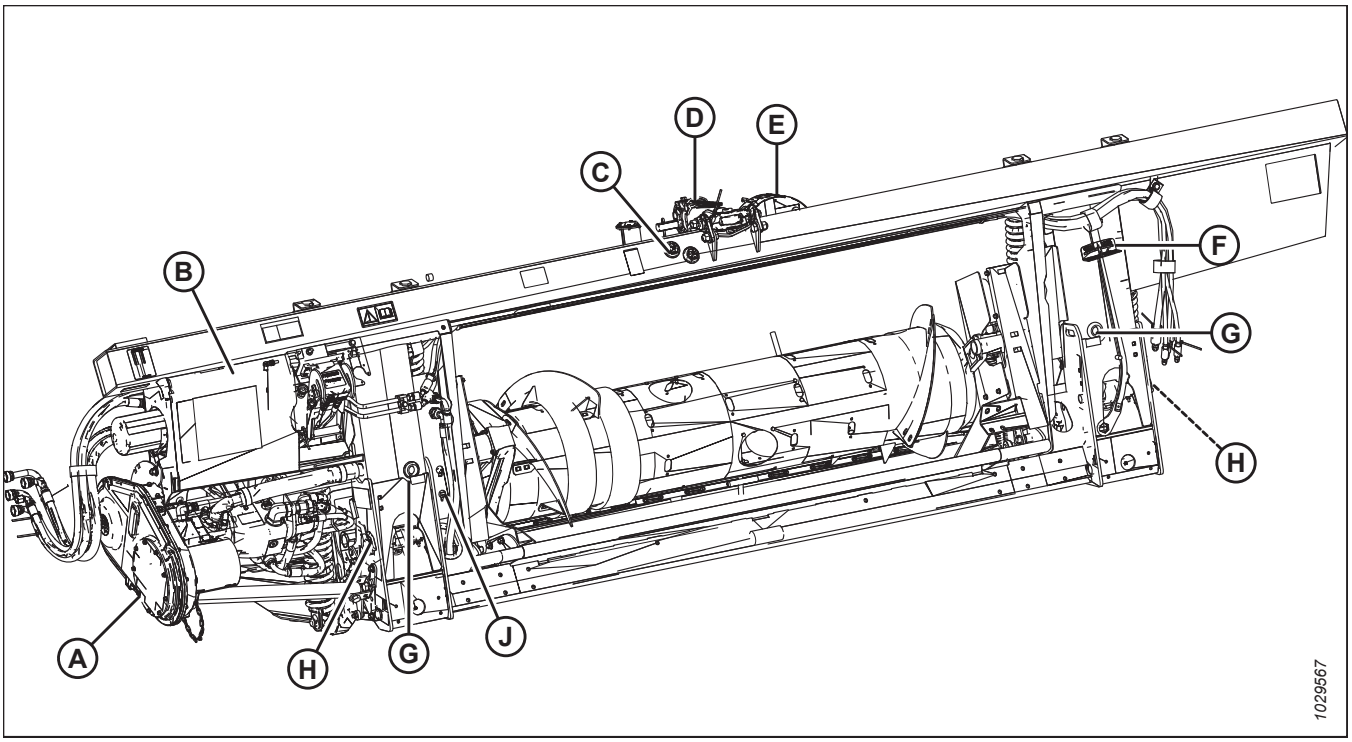


Figure 2.4: Combine Side of FM100 Float Module

A - Float Module Gearbox
B - Hydraulic Compartment Cover
C - Reservoir Oil Level Sight Glass
D - Center-Link
E - Header Height Control Indicator
F - Torque Wrench
G - Drain Hole (x2)
H - Float Lock Handle (x2)
J - Auto Header Height Control (AHHC) Sensor

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 someone 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.**

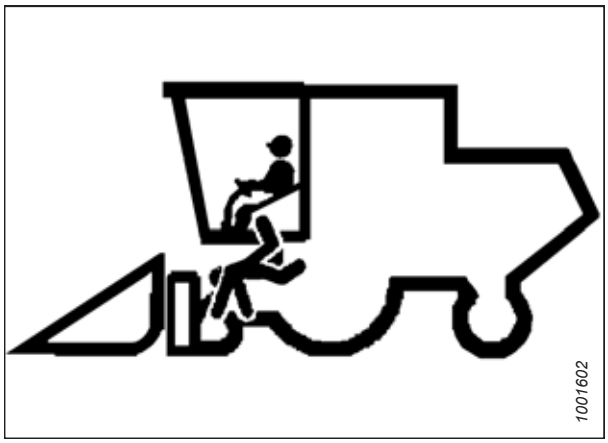


Figure 3.1: No Riders

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.**

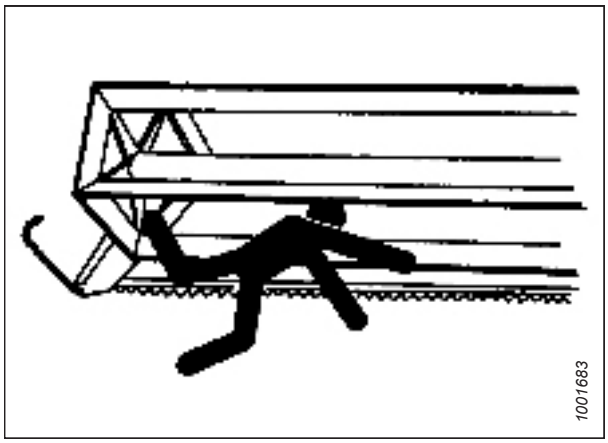


Figure 3.2: Bystander Safety

- **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 *3.5 Shutting down the Combine, page 42*.**
- **Operate only in daylight or good artificial light.**

3.2.1 Header Safety Props

When engaged, the header safety props located on the header lift cylinders prevent the header from falling unexpectedly. For instructions on operating the safety props, 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 whenever you intend to work on or around a raised reel. When engaged, the reel safety props prevent the reel from falling unexpectedly.

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.

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Move reel safety props (A) to the engaged position, as shown. **The prop MUST be placed on the top surface of raised lug (B), making contact with the cylinder mount, to ensure positive engagement.**

   NOTE:

   Keep pivot bolt (C) sufficiently tight so that the prop remains in the stored position when not in use, but can still be engaged using hand force.
4. Repeat Step *3, page 31* on the opposite side of the header.

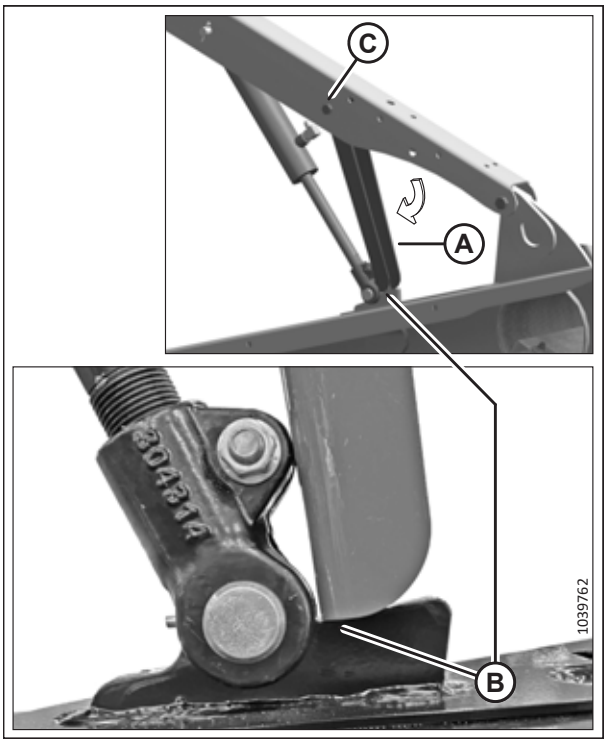


Figure 3.3: Reel Safety Prop – Left Arm Shown

5. **Double-reel header, center arm:** Use handle (A) to move the lock rod to inboard position (B), which engages pin (C) under the prop.

6. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pin.

   NOTE:

   The center arm only applies to double-reel headers.

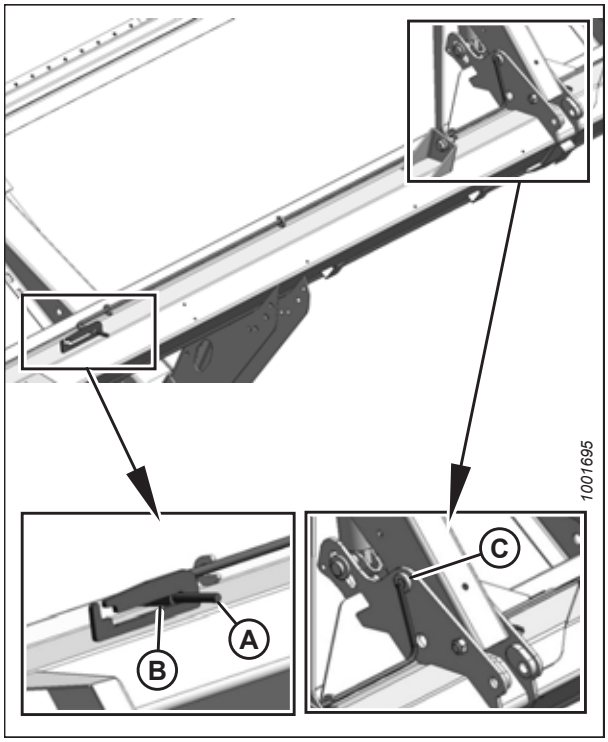


Figure 3.4: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

Disengage the reel safety props once you have completed working on or around a raised reel.

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. Raise the reel fully.

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

3. Move reel safety prop (A) inside the reel arm.

4. Repeat Step *3, page 32* on the opposite end of the reel.

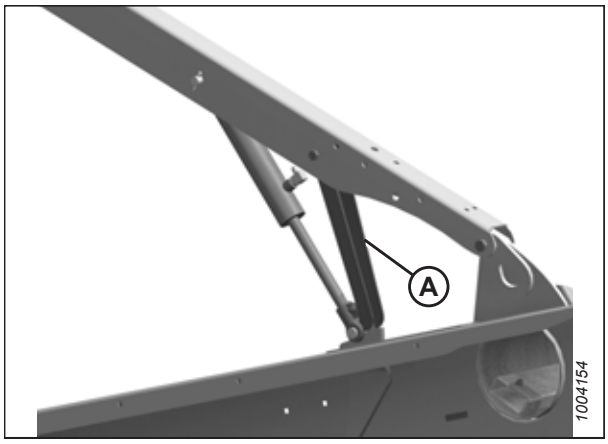


Figure 3.5: Reel Safety Prop – Left Arm Shown

5. **Double-reel headers, center reel arm:** Use handle (B) to move lock rod (A) to the outboard position.

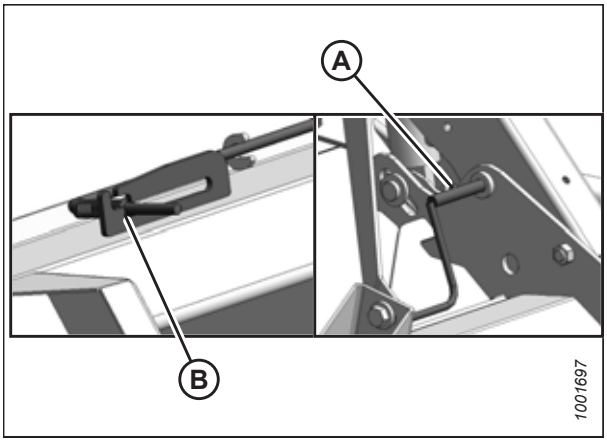


Figure 3.6: Reel Safety Prop – Center Arm

3.2.3 Header Endshields

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

Opening Endshields

The endshields can be opened to access serviceable components or stored items.

This procedure details the steps necessary to open the left endshield; the procedure for opening the right endshield is similar.

1. From the back of the header, push release lever (A) to unlock the endshield.
2. Pull the endshield open using handle depression (B).

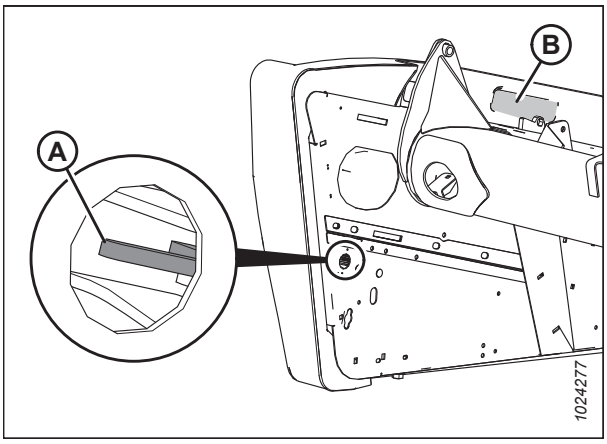


Figure 3.7: Left Endshield

3. Pull the endshield at handle depression (A).

   NOTE:

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

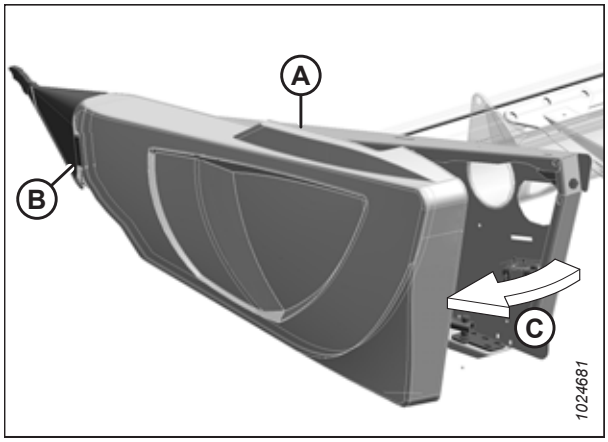


Figure 3.8: Left Endshield

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

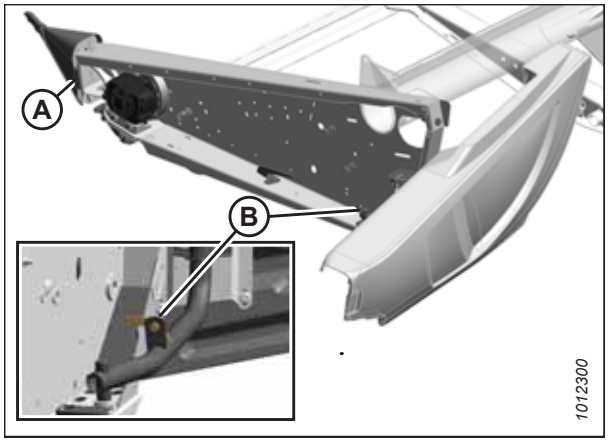


Figure 3.9: Left Endshield

Closing Endshields

Close and lock the endshields before moving the header.

1. Disengage latch (B) to allow the endshield to move.
2. Insert the front of the endshield behind hinge tab (A) and into the divider cone.

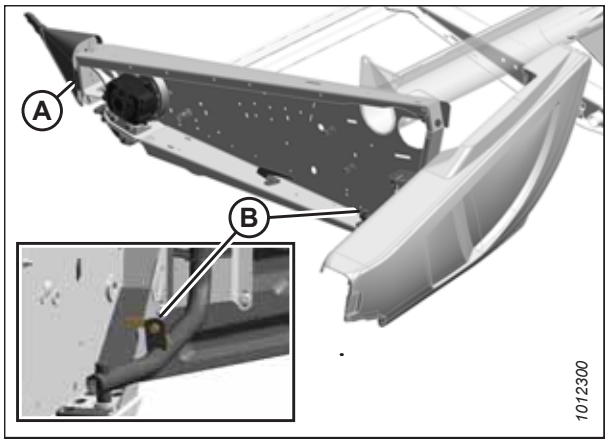


Figure 3.10: Left Endshield

3. Swing the endshield into the closed position (direction [A]). Engage the latch by pushing firmly on the endshield in the direction shown.
4. Ensure that the endshield is locked by pulling the endshield outboard; if it has successfully locked, it will not be possible to move the endshield.

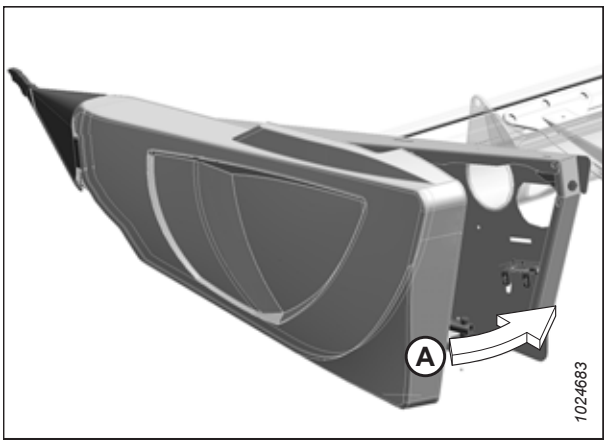


Figure 3.11: Left Endshield

Checking and Adjusting Endshields

The header's endshields are made from molded plastic and are therefore subject to expansion or contraction caused by variations in the ambient temperature. The position of the top pin and that of the lower latch can be adjusted to compensate for dimensional changes in the endshield.

Checking the endshield

1. Measure gap (X) between the front end of the endshield and the header frame. Compare the measurement to the values provided in Table *3.1, page 35*.

Table 3.1 Endshield Gaps at Various Ambient Temperatures

Ambient Temperature °C (°F)	Expected Gap (X) mm (in.)
7 (45)	13–18 (1/2–23/32)
18 (65)	10–15 (3/8–19/32)
29 (85)	7–12 (9/32–15/32)
41 (105)	4–9 (5/32–11/32)

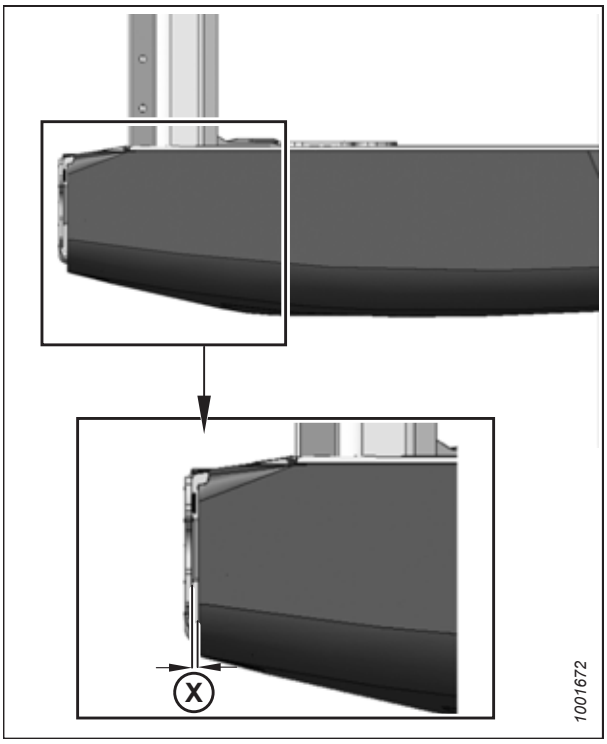


Figure 3.12: Gap between Endshield and Header Frame

Adjusting the endshield

2. Inside the endshield, loosen four bolts (A) on support tube bracket (B).

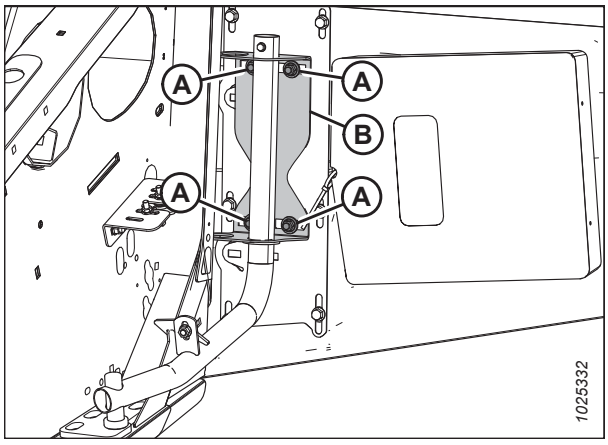


Figure 3.13: Left Endshield Support Tube

3. Loosen three bolts (A) on latch assembly (B).
4. Adjust latch assembly (B) to achieve the desired gap between the front end of the endshield and the header frame. Refer to Table *3.1, page 35* for the recommended endshield gap at various ambient temperatures.
5. Tighten three bolts (A) on the latch assembly to 27 Nm (20 lbf·ft).

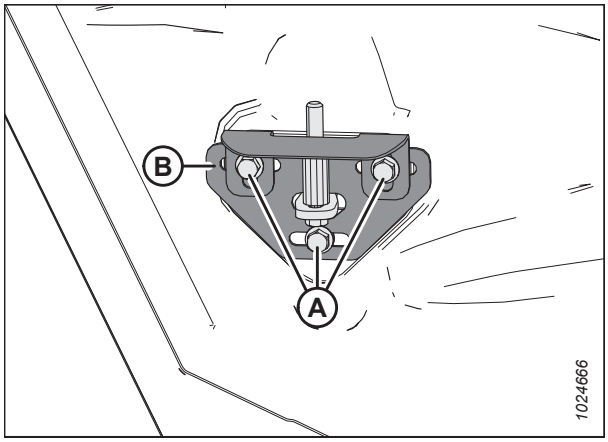


Figure 3.14: Left Endshield Latch Assembly

6. Tighten four bolts (A) on support tube bracket (B) to 31 Nm (23 lbf·ft).
7. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.
8. Repeat Step *2, page 36* to Step *7, page 36* to adjust the right endshield.

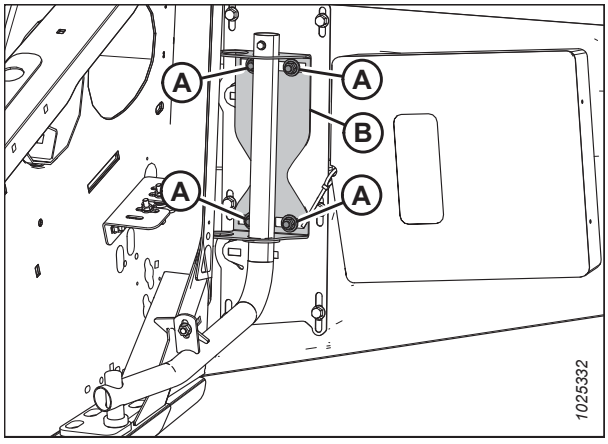


Figure 3.15: Left Endshield Support Tube

Removing Endshields

It may be necessary to remove the endshield to perform certain servicing tasks.

1. Fully open the endshield. For instructions, refer to *Opening Endshields, page 33*.
2. Engage lock (A) to prevent endshield movement.
3. Remove self-tapping screw (B).
4. Slide the endshield upwards and remove it from hinge arm (C).

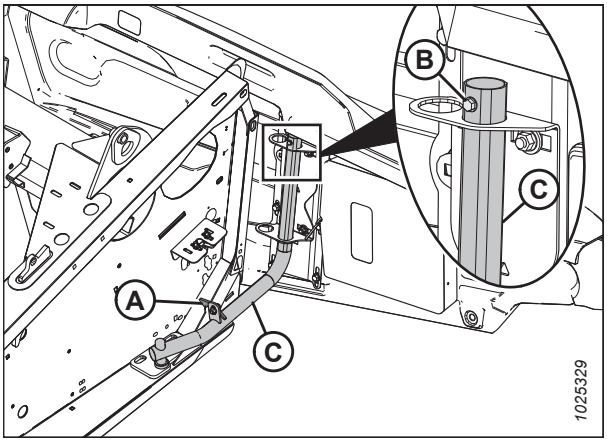


Figure 3.16: Left Endshield

Installing Endshields

If an endshield has been removed, it will need be reinstalled before the header can be safely operated.

1. Guide the endshield onto hinge arm (C) and slowly lower it.

   NOTE:

   Ensure hinge arm (C) is installed in the outboard hole on the hinge bracket as shown.
2. Install self-tapping screw (B).
3. Disengage lock (A).

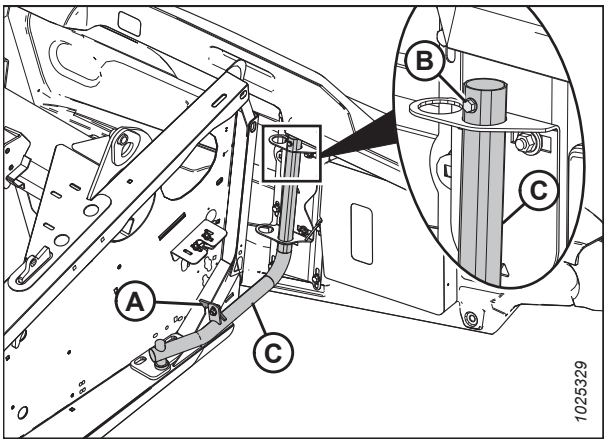


Figure 3.17: Left Endshield

4. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

   NOTE:

   The endshields may expand or contract depending on the ambient temperature. The top pin and the lower latch bracket positions can be adjusted to compensate for dimensional changes in the endshields. For instructions, refer to *Checking and Adjusting Endshields, page 35*.

3.2.4 Linkage Covers

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

Removing Linkage Covers

1. Remove screw (A) and lift the outboard end of cover (B).

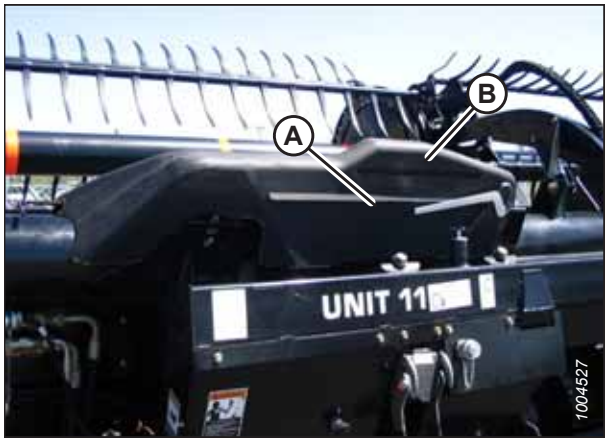


Figure 3.18: Linkage Cover

2. Rotate cover (A) upward until the inboard end can be lifted off.

Figure 3.19: Linkage Cover

Installing Linkage Covers

1. Position the inboard end of cover (A) over the linkage and behind indicator bar (B).
2. Lower the cover until it is seated on the header tube.

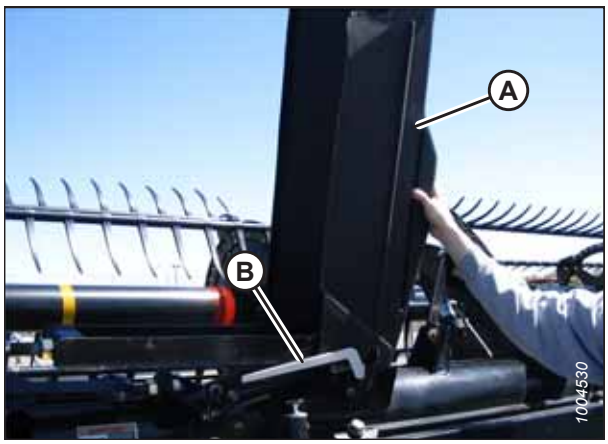


Figure 3.20: Linkage Cover

3. Install screw (A) to hold cover (B) in place.

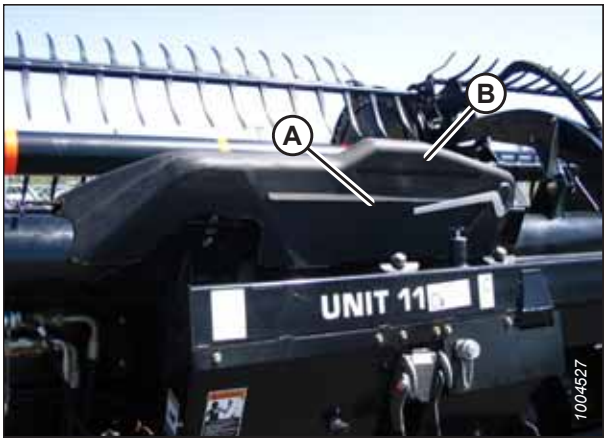


Figure 3.21: Linkage Cover

3.3 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.**

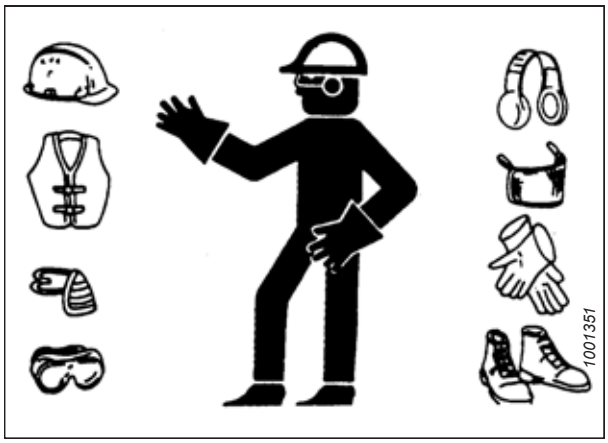


Figure 3.22: Safety Devices

- **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. Check 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 *5.6 Checking Hydraulic Hoses and Lines, page 420*.

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

3. Perform all daily maintenance. For instructions, refer to *5.2 Maintenance Schedule/Record, page 414*.

3.4 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 alert and 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. Operate the machine with the reels, drapers, and knives running slowly for five minutes. Watch and listen **FROM THE OPERATOR'S SEAT** for binding or interfering parts.

   NOTE:

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

2. Refer to *5.3 Break-in Inspection, page 417* and perform all specified tasks.

3.5 Shutting down the 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.

To shut down the combine, do the following:

1. Park on level ground whenever possible.
2. Lower the header fully.
3. Place all 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.

3.6 Cab Controls

The header is controlled from the combine cab.

WARNING

Be sure all bystanders are clear of the machine before starting the engine or engaging any header drives.

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

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

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 by your MacDon Dealer.

Refer to *6 Options and Attachments, page 587* for descriptions of available items.

3.7.2 Header Settings

The following tables provide a guideline 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 57*

For information on configuring the FM100 auger, refer to *4.2 FM100 Feed Auger Configurations, page 340*.

Table 3.2 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.2 Recommended FD1 Series / FM100 Draper Header 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 3.3 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.4 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.5 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.6 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.6 Recommended FD1 Series / FM100 Draper Header 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 3.7 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 3.8 Recommended FD1 Series / FM100 Draper Header 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	2	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 FM100 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 3.9 Recommended FD1 Series / FM100 Draper Header 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 FM100 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 FD1 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
- Installing short center reel braces

NOTE:

Each kit includes installation instructions and the necessary hardware. For more information, refer to *6 Options and Attachments, page 587*.

Recommended settings

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

- Move the reel fore-aft cylinders to the alternative aft location. For instructions, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers – Double Reel, page 107*.
- Adjust the reel fore-aft position. For instructions, refer to *Adjusting Reel Fore-Aft Position, page 104*.
- Adjust the reel height so that the fingers barely engage the crop. For instructions, refer to *3.8.10 Reel Height, page 97*.
- Set the reel cam to position 1. For instructions, refer to *Adjusting Reel Cam, page 118*.
- Set the reel speed so that it is equal to the combine's ground speed. Increase the speed as needed. For instructions, refer to *3.8.6 Reel Speed, page 92*.
- Adjust the side draper speed to position 9 on the FM100 control valve. For instructions, refer to *3.8.8 Side Draper Speed, page 94*.
- Move the auger from the rigid position to the floating position. For instructions, refer to *3.8.15 Setting Feed Auger Position, page 125*.
- Relieve the tension on the feed auger spring. For instructions, refer to *Checking and Adjusting Feed Auger Springs, page 55*.

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.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header lift cylinder safety props.

4. At the left back corner of the header, check the thread length protruding past nut (A). The length should be 22–26 mm (7/8–1 in.). If the protruding thread length is not correct, proceed to Step *5, page 56*.

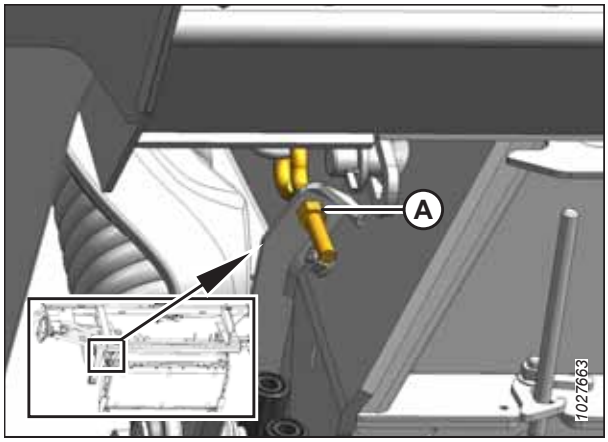


Figure 3.23: Spring Tensioner

5. Loosen upper jam nut (A) on the spring tensioner.
6. Turn lower nut (B) until thread (C) protrudes 22–26 mm (7/8–1 in.).
7. Tighten jam nut (A).
8. Repeat Step *4, page 56* to Step *7, page 56* on the opposite side.

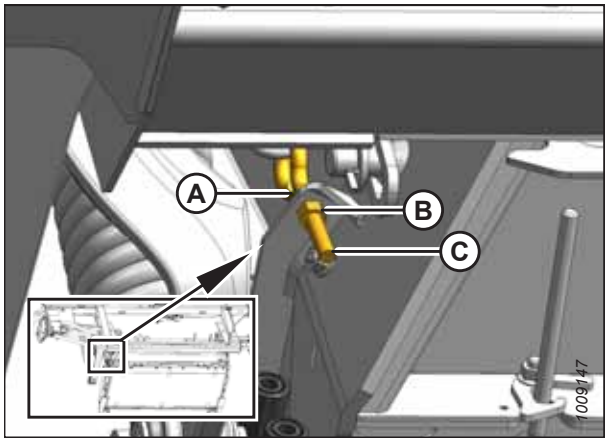


Figure 3.24: Spring Tensioner

3.7.4 Reel Settings

Refer to this procedure to learn how various combinations of reel position and cam setting affect the reel finger profile.

Table 3.10 FD1 Series Recommended Reel Settings

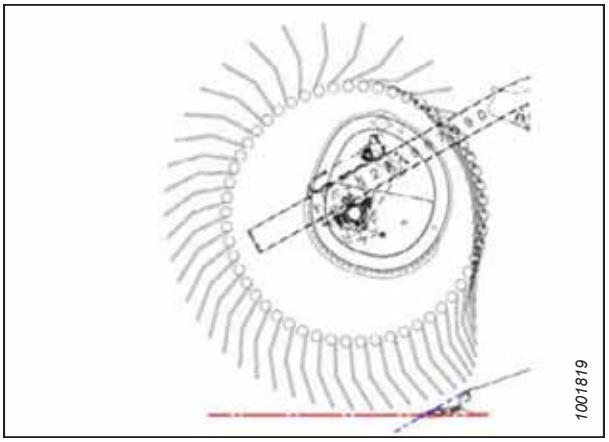
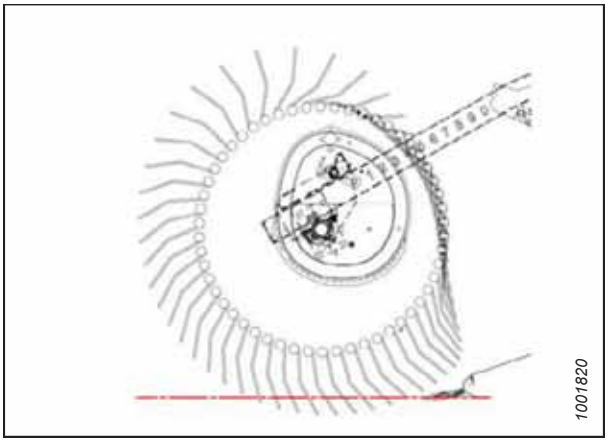
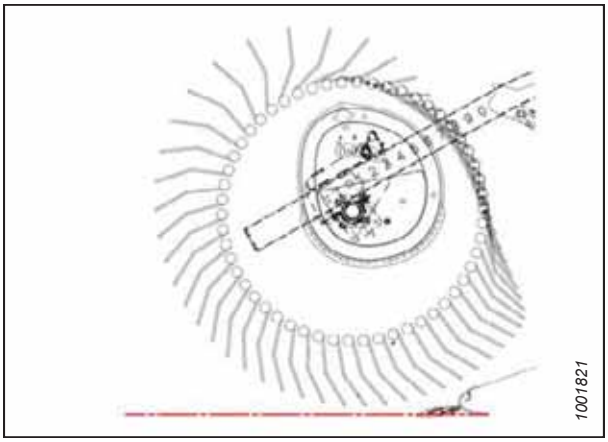
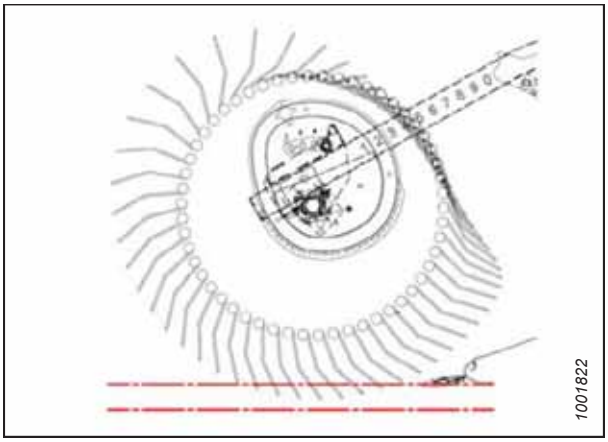
Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0%)	6 or 7	
2 (20%)	6 or 7	

Table 3.10 FD1 Series Recommended Reel Settings (continued)

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
3 (30%)	3 or 4	
4 (35%)	2 or 3	

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.
- 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 *3.10, page 57*.

3.8 Header Operating Variables

Satisfactory function of the header requires making adjustments to suit various 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 *3.11, page 59* 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 3.11 Header Operating Variables

Variable	Refer to
Cutting height	*3.8.1 Cutting off Ground, page 59* *3.8.2 Cutting on Ground, page 65*
Header float	*3.8.3 Header Float, page 67*
Header angle	*3.8.5 Header Angle, page 84*
Reel speed	*3.8.6 Reel Speed, page 92*
Ground speed	*3.8.7 Ground Speed, page 93*
Reel height	*3.8.10 Reel Height, page 97*
Reel fore-aft position	*3.8.11 Reel Fore-Aft Position, page 103*
Reel tine pitch	*3.8.12 Reel Tine Pitch, page 116*
Crop divider rods	*3.8.13 Crop Dividers, page 118*
Feed auger configurations	*4.2 FM100 Feed Auger Configurations, page 340*

3.8.1 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. Follow these recommendations when configuring the header to cut above ground level.

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 ground level in cereal grains.

  NOTE:

  The header wings must be locked when using the stabilizer wheel system.

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 61* to change the wheel position.

If the EasyMove™ Transport option is installed, refer to *Adjusting Stabilizer/Transport Wheels, page 60* to change the wheel position.

If the Contour Buddy wheels are installed, refer to *Adjusting Contour Buddy Outboard Wheel Height, page 65* and *Adjusting Contour Buddy Inboard Wheel Height, page 63* to change the wheel position.

Adjusting Stabilizer/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 stabilizer/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.

1. Raise the header so that the stabilizer wheels are no longer in contact with the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Remove hairpin (A) from the latch on the right wheel assembly.
4. Disengage latch (B), lift the wheel out of the hook, and place the wheels on the ground as shown.

   NOTE:

   This reduces the weight of the assembly and makes adjusting the wheel position easier.
5. Lift the left wheel slightly to support the weight, then pull handle (C) upwards to release the lock.
6. Lift the left wheel to the desired height and engage the support channel into the slot (D) in the upper support.
7. Push down on handle (C) to lock.
8. Lift the right wheel back into the field position and ensure latch (B) is engaged.
9. Secure the latch with hairpin (A).
10. On the left wheel assembly, support the wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.
11. Lift the wheels to the desired height, and engage the support channel into slot (B) in the upper support.
12. Push down on handle (A) to lock.

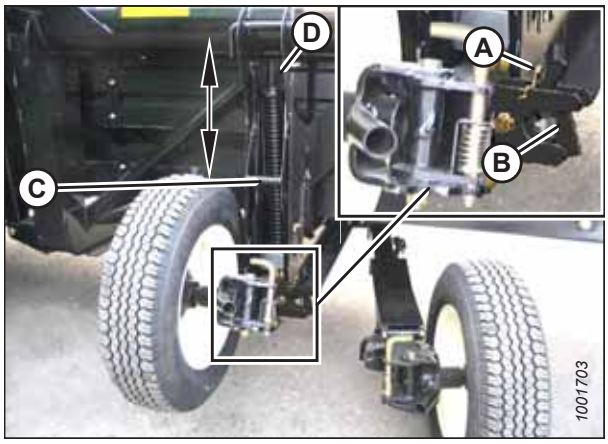


Figure 3.25: Right Wheel

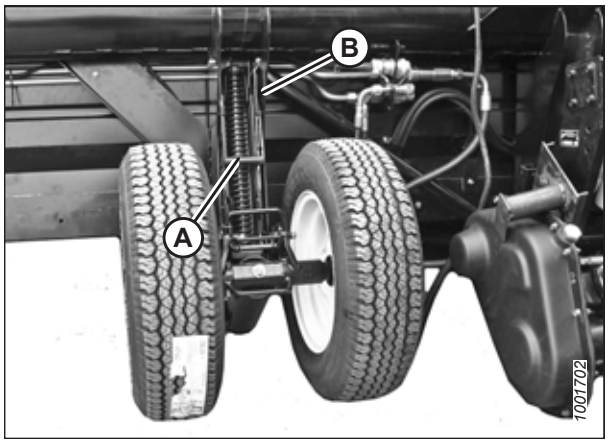


Figure 3.26: Left Wheel

13. Lower the header to the desired cutting height using the combine controls and check the load indicator (A).

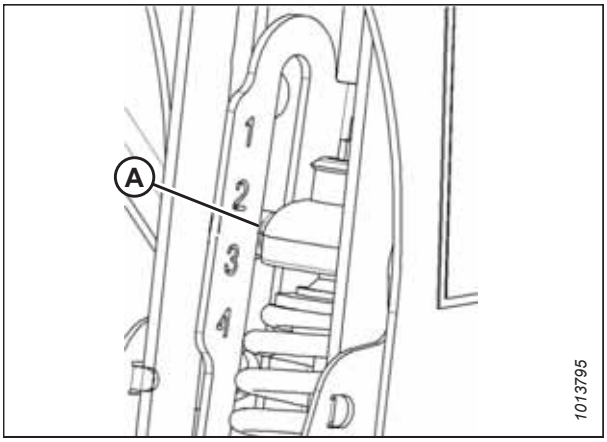


Figure 3.27: Load Indicator

14. Position the header at the desired working angle. If the header angle is not critical, set it to mid-position.

    IMPORTANT:

    Continuously operating the stabilizer wheel while the spring is highly compressed can result in permanent damage to the stabilizer wheel suspension system. The spring is considered to be highly compressed when the load indicator shows a reading greater than 4 or when compressed length (A) is less than 295 mm [11 5/8 in.]).

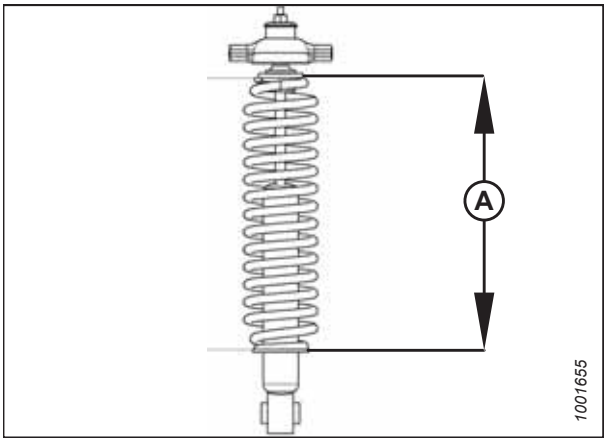


Figure 3.28: Spring Compression

15. Use the combine's auto header height control (AHHC) system to automatically maintain the appropriate cutting height. For instructions, refer to *3.9 Auto Header Height Control, page 127* and your combine operator's manual for details.

    NOTE:

    The height sensor on the FM100 Float Module is connected to the combine's header control module, which is located in the combine cab.

Adjusting Stabilizer Wheels

A properly adjusted header will achieve a balance between the amount of header weight carried by the float springs and the amount carried by the stabilizer wheels.

For header setting recommendations based on crop type and condition, refer to *3.7.2 Header Settings, page 44*.

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. Raise the header until the stabilizer wheels no longer in contact with the ground.
2. Shut down the engine, and remove the key from the ignition.

3. To release the lock, use one hand to lift support (B) while pulling up on handle (A).
4. Lift the wheel using support (B) and engage the support channel into center slot (C) in the upper support.
5. Push down on handle (A) to lock the stabilizer wheel assembly in place.

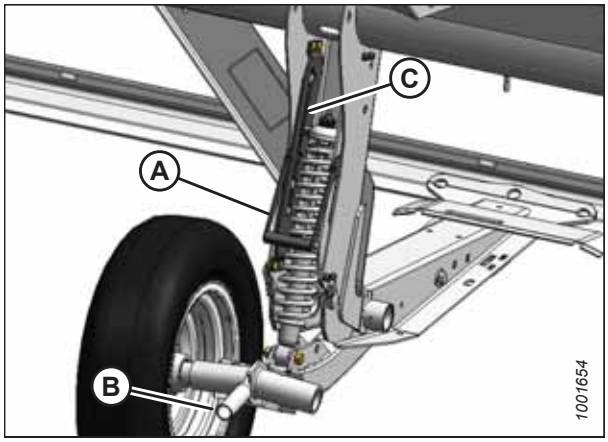


Figure 3.29: Stabilizer Wheel

6. Lower the header to the desired cutting height using the combine controls. Check load indicator (A).

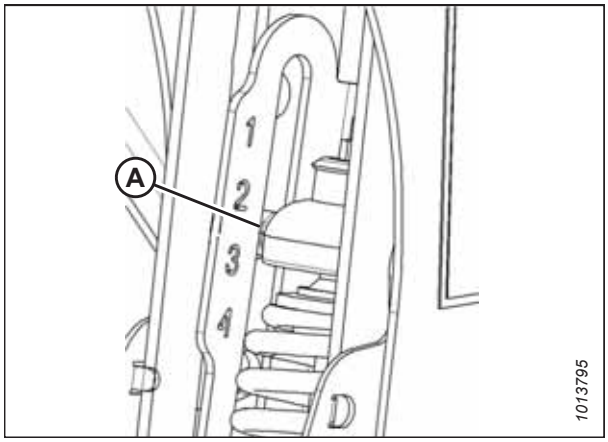


Figure 3.30: Load Indicator

7. Position the header at the desired working angle. If the header angle is not critical, set it to mid-position.

   IMPORTANT:

   Continuously operating the stabilizer wheel while the spring is highly compressed can result in permanent damage to the stabilizer wheel suspension system. The spring is considered to be highly compressed when the load indicator shows a reading greater than 4 or when compressed length (A) is less than 295 mm [11 5/8 in.]).

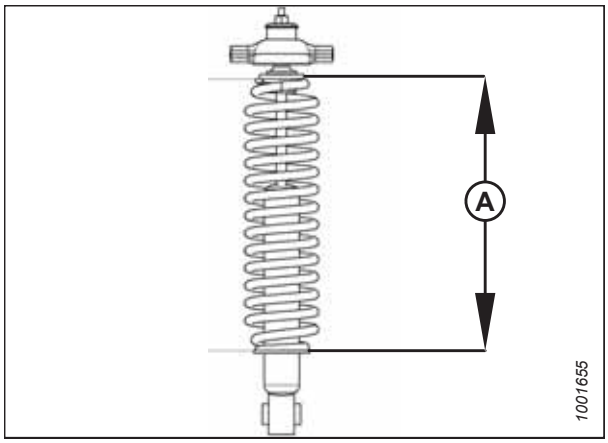


Figure 3.31: Spring Compression

8. Use the combine's auto header height control (AHHC) system to automatically maintain the appropriate cutting height. For instructions, refer to *3.9 Auto Header Height Control, page 127* and your combine operator's manual.

   NOTE:

   The height sensor on the FM100 Float Module is connected to the combine's header control module, which is located in the combine cab.

Adjusting Contour Buddy Inboard Wheel Height

Adjust wheel height according to soil conditions, weight of crop on header, and angle of feeder house faceplate relative to the ground.

1. Support inboard axle support (A), and remove ring (B) and pin (C) to release rear of axle support. Retain ring and pin for reinstallation.

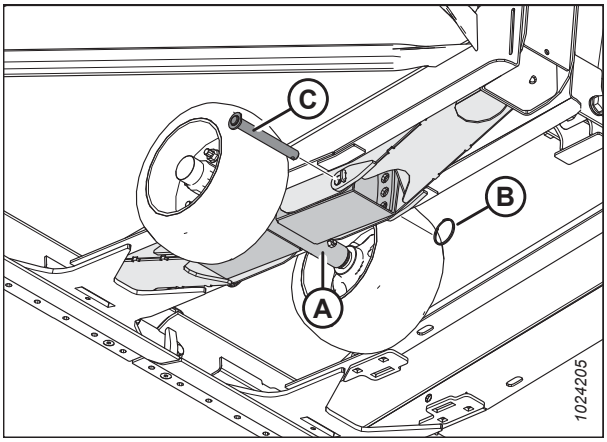


Figure 3.32: Inboard Wheel Assembly and Left Header Leg – View from Below, Right Opposite

NOTE:

Parts have been removed from the illustration at right for clarity.

2. Align the appropriate hole in inboard axle support (A) with axle frame support (B) to achieve desired inboard wheel height. Refer to Table *3.12, page 64*.
3. Reinstall pin and ring removed in Step *1, page 63*.
4. Repeat above procedure for opposite inboard wheel assembly.

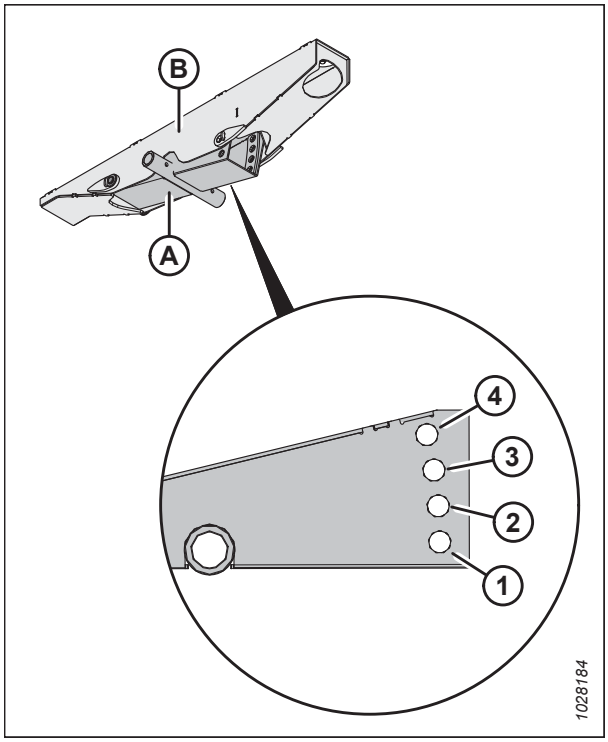


Figure 3.33: Inboard Axle Support – View from Below

Table 3.12 Inboard Wheel Height

	Header Tilt Setting			
Hole	**A**	**B**	**C**	**D**
1	229 mm (9.0 in.)	196 mm (7.7 in.)	160.0 mm (6.3 in.)	127.0 mm (5.0 in.)
2	236 mm (9.3 in.)	211 mm (8.3 in.)	178 mm (7.0 in.)	145 mm (5.7 in.)
3	262 mm (10.3 in.)	229 mm (9.0 in.)	196 mm (7.7 in.)	163 mm (6.4 in.)
4	279 mm (11.0 in.)	249 mm (9.8 in.)	211 mm (8.3 in.)	180 mm (7.1 in.)

NOTE:

Refer to Figure *3.33, page 64* for hole positions. Heights listed above may vary depending on soil conditions, weight of crop on header, and angle of feeder house faceplate relative to the ground.

Adjusting Contour Buddy Outboard Wheel Height

Adjust wheel height according to soil conditions, weight of crop on header, and angle of feeder house faceplate relative to the ground.

1. Turn handle (A) on jack (B) clockwise to lower outboard wheel assembly (C), and counterclockwise to raise outboard wheel assembly.
2. Level the cutterbar by adjusting the outboard wheel assemblies up or down until the distance from the outboard ends of the cutterbar to the ground matches the distance from the center of the cutterbar to the ground.

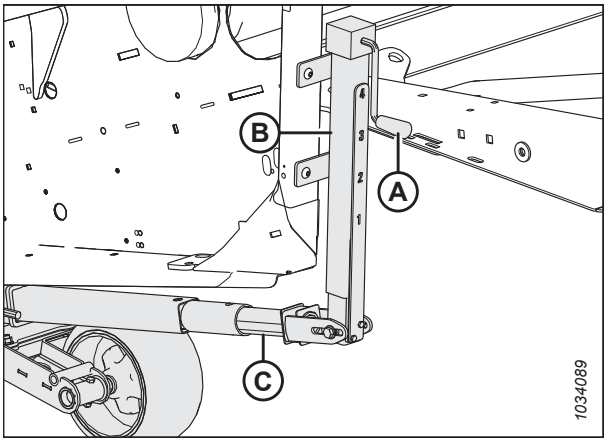


Figure 3.34: Jack and Outboard Wheel Assembly – View from Rear, Left Shown, Right Opposite

3.8.2 Cutting on Ground

Cutting on the ground is performed with the header fully lowered and the cutterbar on the ground. The orientation of the knife and knife guards relative to the ground (header angle) is controlled by the skid shoes and the center-link, **NOT** by the header lift cylinders. Choosing the correct header angle allows the Operator to maximize the amount of material harvesting while preventing damage to the knife caused by stones and debris.

The header float system allows the header to float on the ground, automatically moving up and down to compensate for variations in ground contour. This helps to prevent the cutterbar from pushing into the ground or leaving crop uncut.

The header's cutting will vary depending on the type of crop and the harvest conditions.

Refer to the following for more information:

- *Adjusting Inner Skid Shoes, page 65*
- *Adjusting Outer Skid Shoes, page 66*
- *3.8.5 Header Angle, page 84*
- *3.8.3 Header Float, page 67*
- Also refer to *3.7.2 Header Settings, page 44*

Adjusting Inner Skid Shoes

The inner skid shoes allow the header to slide along the ground. Their position can be adjusted to change the header angle.

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.

1. Raise the header to its full height.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.

4. Raise the stabilizer wheels or transport wheels fully (if these are installed). For instructions, refer to the following:
   - *Adjusting Stabilizer Wheels, page 61*
   - *Adjusting Stabilizer/Transport Wheels, page 60*
5. Remove lynch pin (A) from each inner skid shoe.
6. Hold shoe (B) and remove engaging rod (C) by disengaging it from the frame and pulling it away from the shoe.
7. Raise or lower skid shoe (B) to achieve the desired position using the holes in support (D) as a guide.
8. Reinstall engaging rod (C), through the frame and skid shoe. Secure the rod with lynch pin (A).
9. Check that all skid shoes are adjusted to the same position.

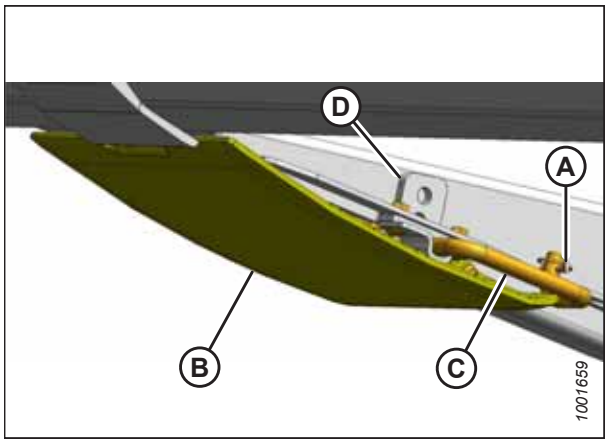


Figure 3.35: Inner Skid Shoe

10. Adjust the header angle to the desired working position. If the header angle is not critical, set it to the mid-position.
11. Check the header float. For instructions, refer to *3.8.3 Header Float, page 67*.

Adjusting Outer Skid Shoes

The outer skid shoes allow the header to slide along the ground. Their position can be adjusted to change the header angle.

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.

1. Raise the header to its full height.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.
4. Raise the stabilizer wheels or transport wheels fully (if these are installed). For instructions, refer to the following:
   - *Adjusting Stabilizer Wheels, page 61*
   - *Adjusting Stabilizer/Transport Wheels, page 60*

5. Remove lynch pin (A) from each skid shoe (B).
6. Hold skid shoe (B) and remove pin (C) by disengaging it from the frame and pulling it away from the shoe.
7. Raise or lower skid shoe (B) to achieve the desired position using the holes in support (D) as a guide.
8. Reinstall pin (C), engage the pin in the frame, and secure it with lynch pin (A).
9. Ensure that all skid shoes are adjusted to the same position.
10. Check the header float. For instructions, refer to *3.8.3 Header Float, page 67*.

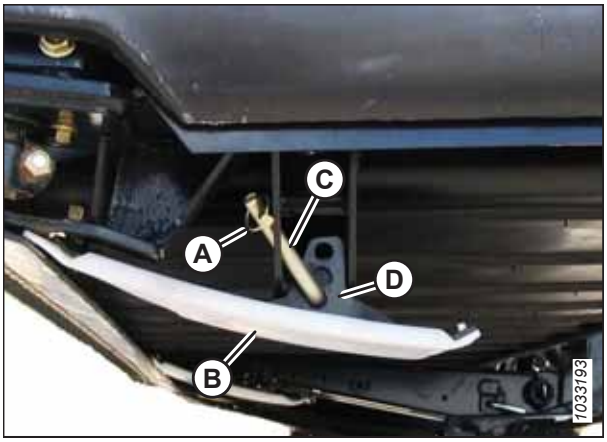


Figure 3.36: Outer Skid Shoe

3.8.3 Header Float

The header float system reduces the ground pressure at the cutterbar by displacing some of the header's weight onto the combine. This allows the header to more easily follow the ground and respond instantly to variations in the terrain.

The header float setting can be determined by looking at float indicator (A). Values 0 to 4 represent the force of the cutterbar on the ground, with 0 being the minimum and 4 being the maximum.

The maximum force is determined by the tension on the float module's adjustable float springs. The float setting can be changed to suit field and crop conditions and is dependent on what options have been installed on the header. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

The FD1 Series FlexDraper® Header performs best with minimum ground pressure under normal conditions. Readjust the float if attachments are added to the header which affect its weight.

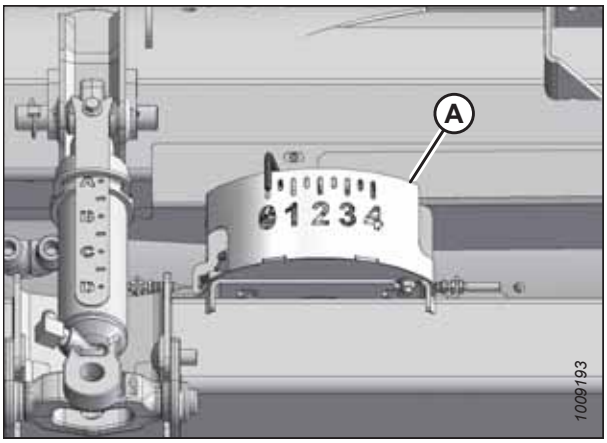


Figure 3.37: Float Indicator

1. Set the float for cutting at ground level as follows:
   a. Ensure that the header float locks are disengaged. For instructions, refer to *Locking/Unlocking Header Float, page 73*.
   b. Lower the feeder house using the combine header controls until float indicator (A) reaches the desired float value (cutterbar ground force). Set the float indicator initially to float value 2 and adjust as necessary.
2. Set the float for cutting above ground level as follows:
   a. Set up the stabilizer wheels. For instructions, refer to *3.8.1 Cutting off Ground, page 59*.
   b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

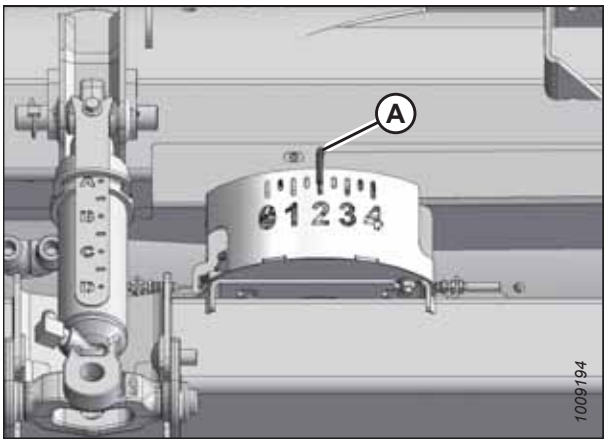


Figure 3.38: Cutting on the Ground

Checking and Adjusting Header Float

The header is equipped with a suspension system that floats the header over the ground to compensate for ridges, trenches, and other variations in ground contour. If the header float is not set properly, it may cause the cutterbar to push into the ground or leave uncut crop. This procedure describes how to check the header float and adjust it to the factory-recommended settings.

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.

Use the following guidelines when adjusting the float setting:

- Turn each adjustment bolt pair equally. Repeat the torque wrench reading procedure on both sides of the header.
- Set the header float as light as possible (without causing excessive bouncing) to prevent knife component breakage, soil scooping, and soil build-up at the cutterbar in wet conditions.
- To prevent the header from bouncing excessively while in operation with a light float setting, reduce the combine's ground speed.
- When cutting above the ground, use the stabilizer wheels in conjunction with the header float to minimize bouncing at the ends of the header. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.

NOTE:

If an adequate header float setting cannot be achieved using all of the available adjustments, an optional heavy-duty spring is available. See your MacDon Dealer or refer to the header parts catalog for ordering information.

To check and adjust the header float:

1. Park the combine on a level surface.
2. Level the header and the float module. If the header and the float module are not level, perform the following checks before adjusting the float:

   IMPORTANT:

   Do **NOT** use the float module springs to level the header.

   - Check that the combine feeder house is level. For instructions, refer to your combine operator's manual.
   - Check that the top of the float module is level with the combine axle.
   - Ensure that the combine tires are inflated to the same pressure.
3. Position the header so that the cutterbar is 150–254 mm (6–10 in.) above the ground.
4. Extend the header angle hydraulic cylinder to between **B** and **C** on indicator (A).

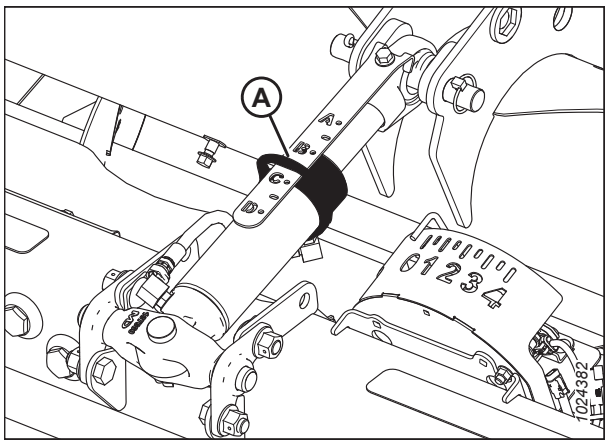


Figure 3.39: Center-Link

5. Adjust the reel fore-aft position until it is between 5 and 6 on position indicator decal (A) located on the reel right arm.

6. Lower the reel fully.

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

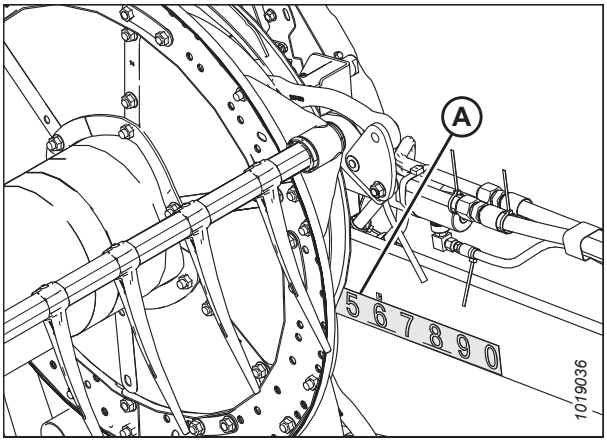


Figure 3.40: Fore-Aft Position

8. Place wing lock spring handles (A) in the **LOCKED** (upper) position to lock the wings.

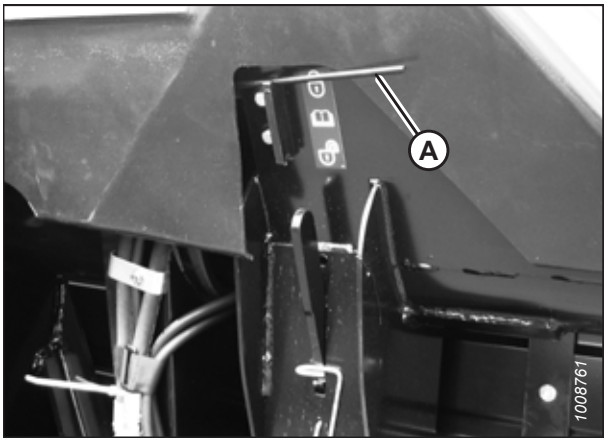


Figure 3.41: Wing Lock Spring Handle in Lock Position

9. Disengage both of the header float locks by pulling float lock handle (A) away from the float module and pushing the float lock handle down and into position (B) (**UNLOCK**).

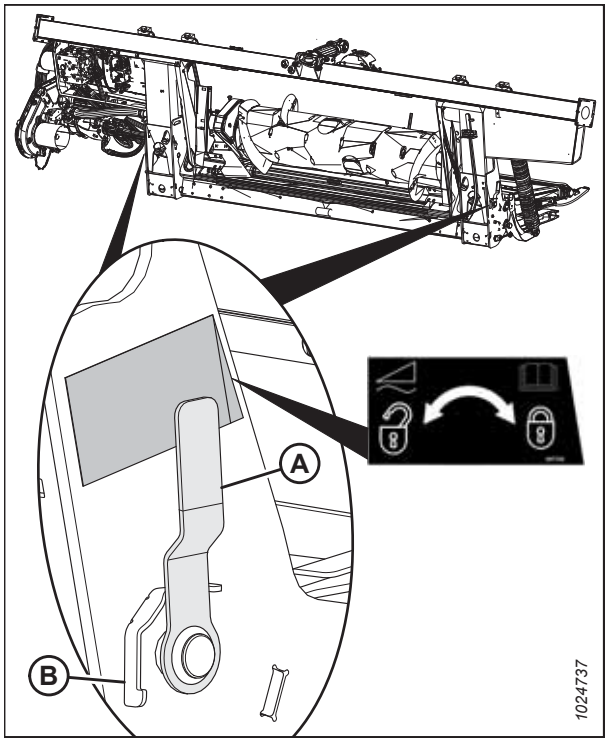


Figure 3.42: Header Float Lock in Locked Position

10. Place the stabilizer wheels and transport wheels (if equipped) in the storage position as follows:

    a. While supporting the wheel weight by lifting the wheel slightly with one hand, pull up on handle (A) to release the lock.

    b. Lift the wheels to the desired height, and engage the support channel into slot (B) in the upper support.

    c. Push down on handle (A) to engage the lock.

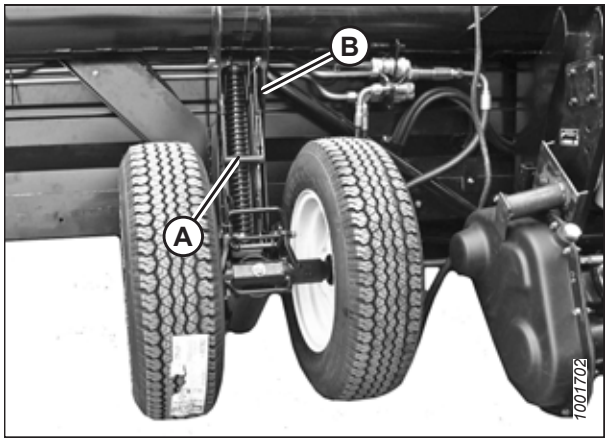


Figure 3.43: Left Wheel

11. Remove supplied torque wrench (A) from its storage position at the right side of the float module frame. Pull in the direction shown to disengage the wrench from the hook.

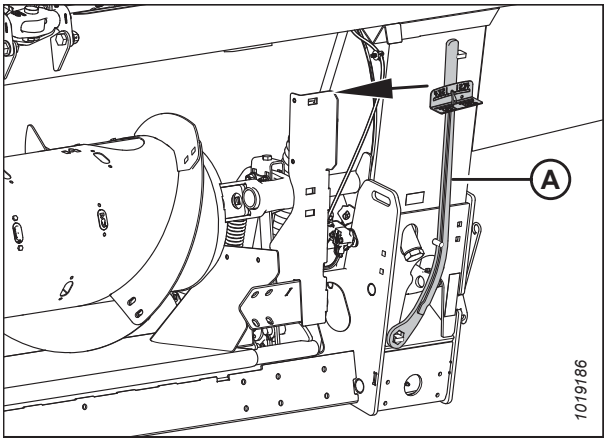


Figure 3.44: Torque Wrench Storage Location

12. Place torque wrench (A) onto float pivot (B). Note the position of the wrench for checking the left or right side.

13. Push down on the wrench to rotate bell crank (C) forward.

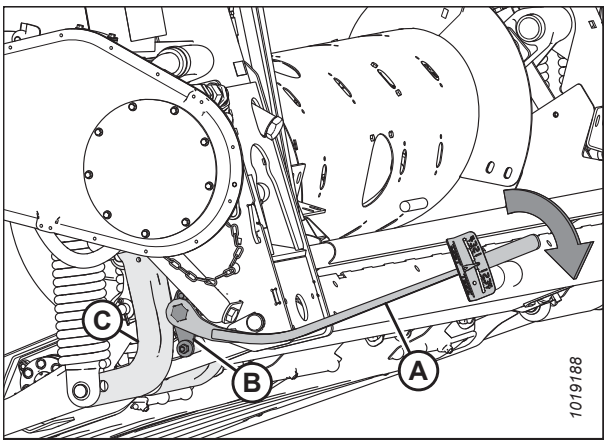


Figure 3.45: Float Module – Left Side

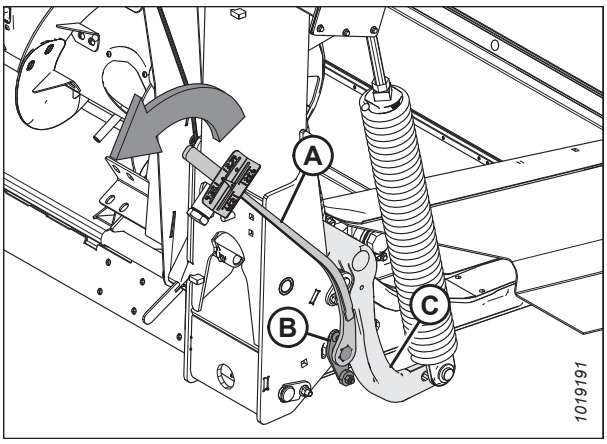


Figure 3.46: Float Module – Right Side

14. Push down on the wrench until indicator (A) reaches a maximum reading and then begins to decrease. Note the maximum reading. Repeat this step at the opposite side.

15. Use the following table as a guide for float settings:

    - If the reading on the wrench is high, the header is heavy
    - If the reading on the wrench is low, the header is light

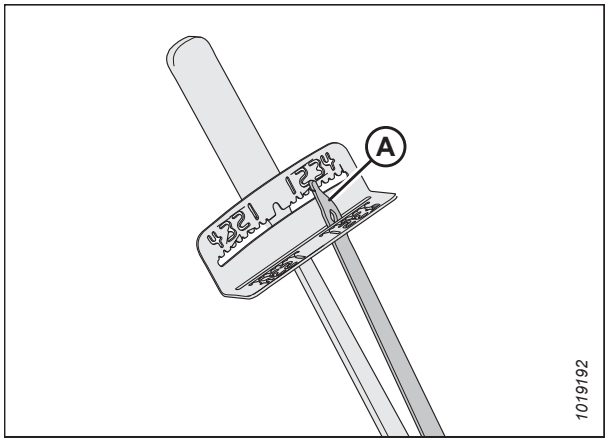


Figure 3.47: Torque Wrench

Table 3.13 Float Settings

Header Size	Indicator Reading	
	Cutting on the Ground	Cutting off the Ground
FD125, FD130, and FD135	1 1/2 to 2	2 to 2 1/2
FD140 and FD145	2 to 2 1/2	2 1/2 to 3

16. To access float spring adjustment bolts (A), loosen bolts (C) and rotate spring locks (B).

17. To increase the float (that is, to decrease the weight of the header), turn both adjustment bolts (A) on the left side clockwise. Repeat the adjustment at the opposite side.

    To decrease the float (that is, to increase the weight of the header), turn adjustment bolts (A) on the left side counterclockwise. Repeat the adjustment at the opposite side.

    NOTE:

    Turn each bolt pair equally.

18. Adjust the float so that the wrench readings are equal on both sides of the header.

    NOTE:

    For FD140 and FD145 double-knife headers: adjust the float so the wrench readings are equal at both sides, and then loosen both right side spring bolts two turns.

19. 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 in place.

20. Proceed to *Adjusting Wing Balance, page 82*.

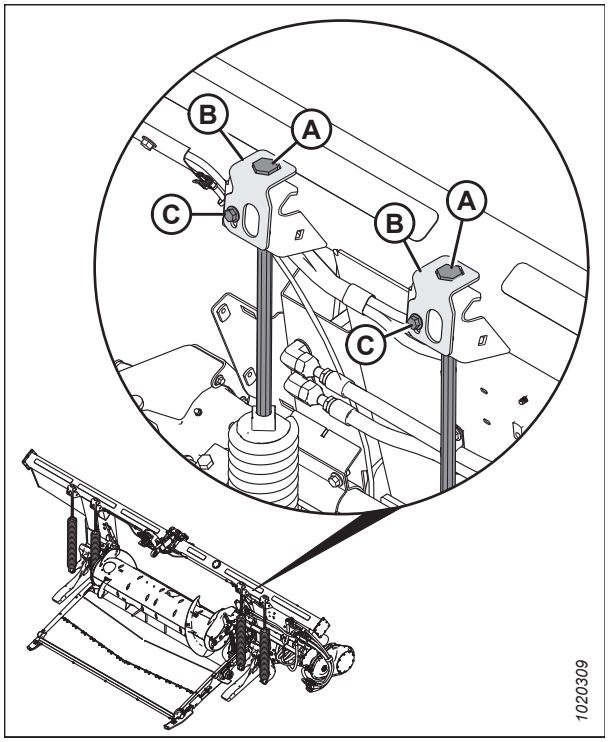


Figure 3.48: Float Adjustment – Left Side

Locking/Unlocking Header Float

Two header float locks, one on each side of the float module, lock and unlock the header float system.

IMPORTANT:

The float locks must be engaged when the header is being transported with the float module attached so that the relative position of the float module and the header does not change. The float locks must also be locked when detaching the float module from the combine in order to enable the feeder house to release the float module.

To disengage (unlock) the float locks: pull float lock handle (A) into position (B) (**UNLOCK**). In this position, the header is unlocked, and can float relative to the float module.

To engage (lock) the float locks: push float lock handle (A) into position (C) (**LOCK**). In this position, the header is unable to move relative to the float module.

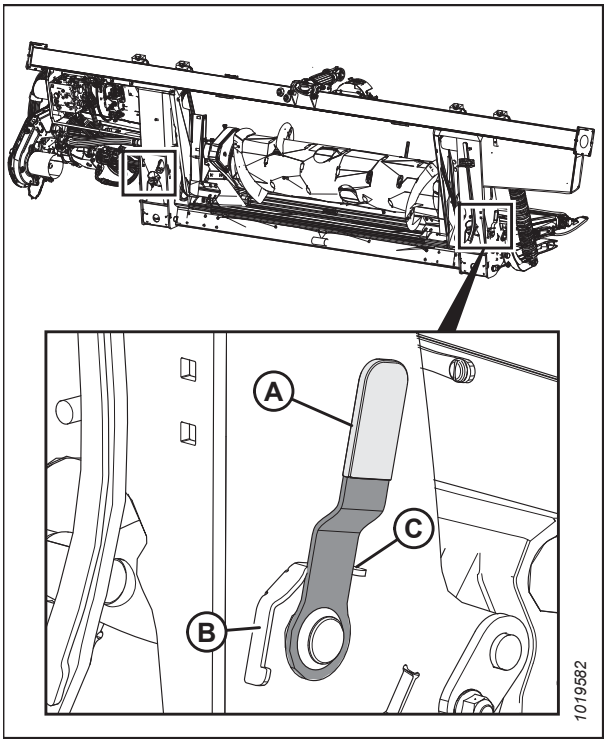


Figure 3.49: Float Lock in Locked Position

Locking/Unlocking Header Wings

The header is designed to operate with the wings unlocked allowing the three sections of the header to move independently. The wings can also be locked rigid, when required.

The header is designed to operate with the cutterbar on the ground. The three sections move independently to follow the ground contours. In this mode, each wing is **UNLOCKED** and is free to move up and down.

The header can also be operated as a rigid header with the cutterbar straight. A typical application is in cereals when cutting above the ground. In this mode, the wing is **LOCKED**.

Operating in Flex Mode

In flex mode, the three sections will be unlocked and will move independently to follow the ground contours.

Unlock the wings as follows:

1. Move spring handle (A) into the lower slot to unlock the wing. You should hear it lock.
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.

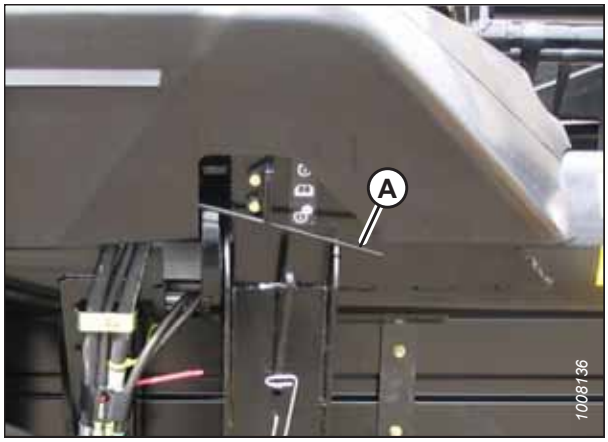


Figure 3.50: Wing Lock

NOTE:

The following steps are only required if the above has not worked.

3. Remove the linkage cover. For instructions, refer to *Removing Linkage Covers, page 38*.
4. Retrieve torque wrench (A) that is stored on the float module frame on the right side.

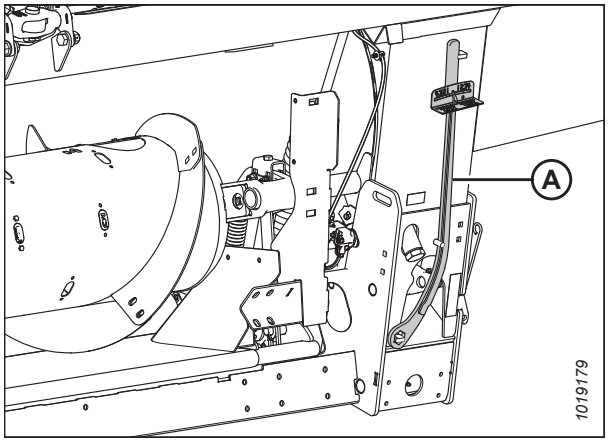


Figure 3.51: Torque Wrench

5. Place torque wrench (A) on bolt (B) and use it to move the wing until the lock disengages.
6. Replace torque wrench (A) and reinstall the linkage cover.
7. If necessary, balance the wing. For instructions, refer to *3.8.4 Checking and Adjusting Header Wing Balance, page 76*.

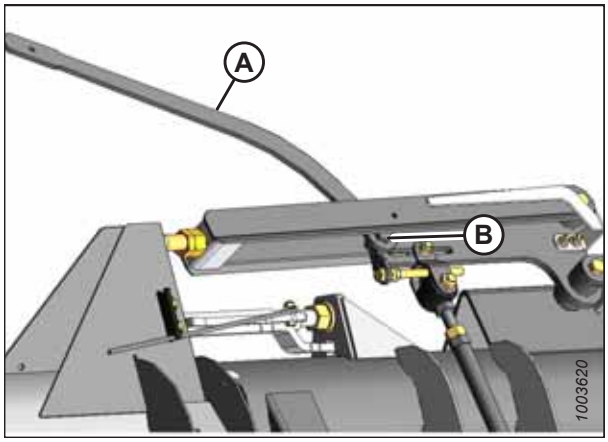


Figure 3.52: Torque Wrench on Wing Nut

Operating in Rigid Mode

The three sections will be locked and operate as a rigid cutterbar.

Lock the wings as follows:

1. If the lock link does not engage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it engages.
2. Move spring handle (A) in the upper slot to lock the wing. You should hear it lock.
3. If the lock link does not engage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it engages.

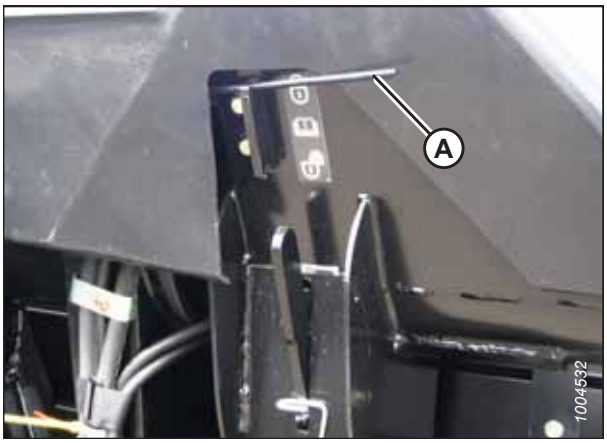


Figure 3.53: Wing Lock

NOTE:

The following steps are only required if the above has not worked.

4. Remove the linkage cover. For instructions, refer to *Removing Linkage Covers, page 38*.
5. Retrieve torque wrench (A) that is stored on the right side of the float module frame.

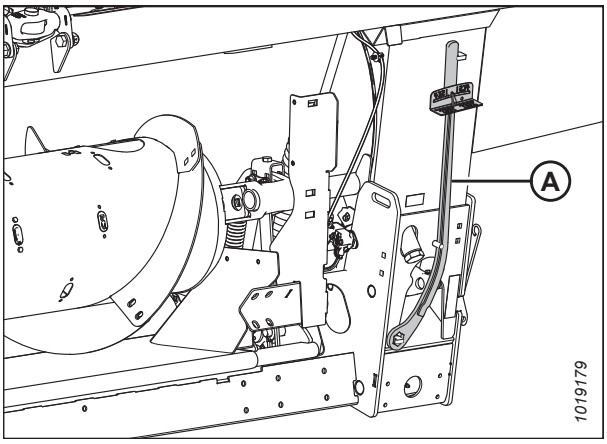


Figure 3.54: Torque Wrench

6. Place torque wrench (A) on bolt (B) and use it to move the wing until the lock engages.
7. Replace torque wrench (A) and reinstall the linkage cover. The wings will not move relative to the header.

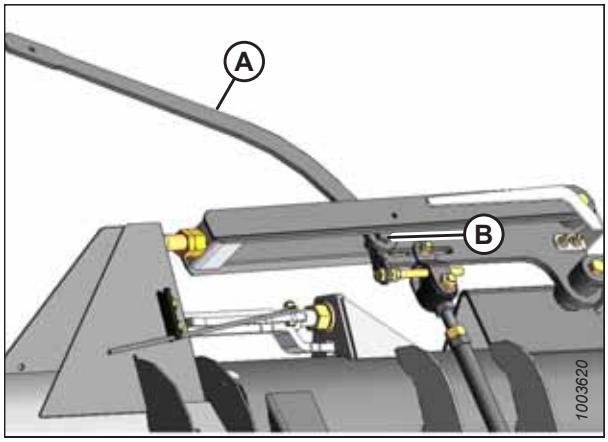


Figure 3.55: Header Wing

3.8.4 Checking and Adjusting Header Wing Balance

The header wing balance allows the wings to react to changing ground conditions. If set too light, the wings will bounce or not follow ground contours, leaving uncut crop. If set too heavy, the end of the header will dig into the ground. After the header float has been set, the wings must be balanced for the header to follow the ground contours properly.

IMPORTANT:

Before proceeding, the header float must be set properly. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

Checking Wing Balance

Wing balance ensures that the left and right wings require the same amount of pressure to follow the ground. The amount of ground force/pressure required to lift the wings, and the speed with which the wings return to the ground when the pressure is reduced should be equal/balanced.

IMPORTANT:

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

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.

If a header wing has a tendency to be in a smile (A) or a frown (B) position, wing balance may require adjusting. Perform the following steps to check if the wings are not balanced, and how much adjustment is required.

The header wings are balanced when it takes an equal amount of force to move a wing up or down.

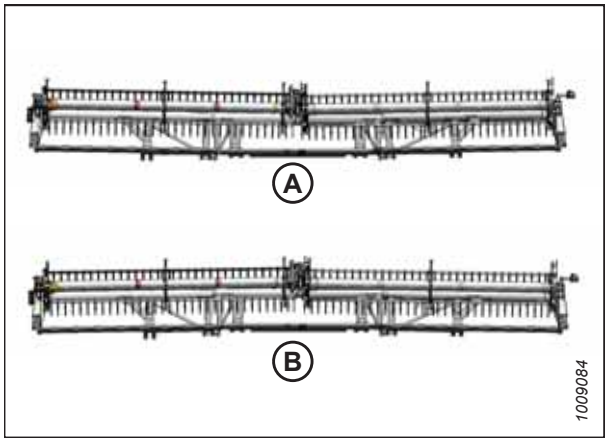


Figure 3.56: Wing Imbalance

1. Adjust the reel fore-aft position to between 5 and 6 on the position indicator decal (A) located on the reel right arm.
2. Lower the reel fully.

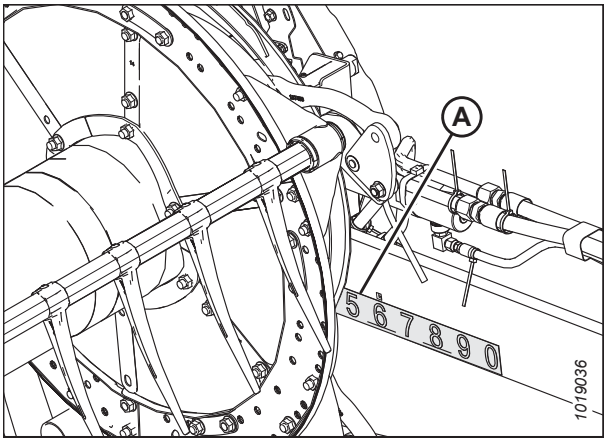


Figure 3.57: Fore-Aft Position

3. Adjust center-link (A) so that indicator (B) is between **B** and **C** on gauge (C).
4. Park the combine on level ground and raise the header until the cutterbar is 152–254 mm (6–10 in.) off the ground.

   NOTE:

   Ensure that the float module is level.
5. Shut down the engine, and remove the key from the ignition.
6. If installed, move stabilizer/transport wheels so that they are supported by header. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

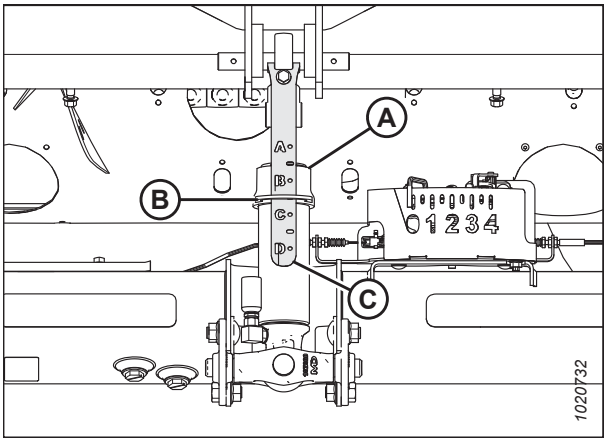


Figure 3.58: Center-Link

7. Remove linkage cover (A) by removing bolt (B) and rotating the cover upward until the inboard end can be lifted off.

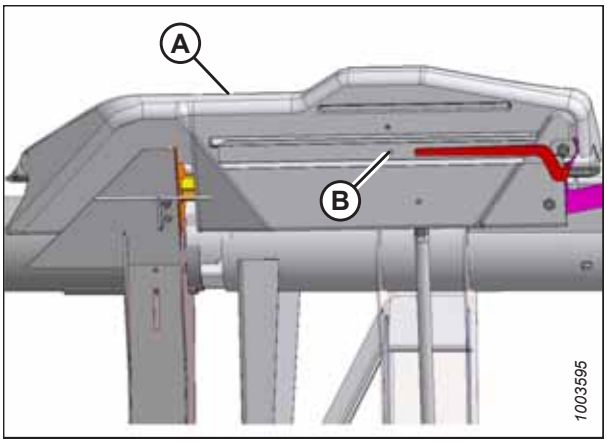


Figure 3.59: Linkage Cover

NOTE:

Refer to decal (A) inside each linkage cover.

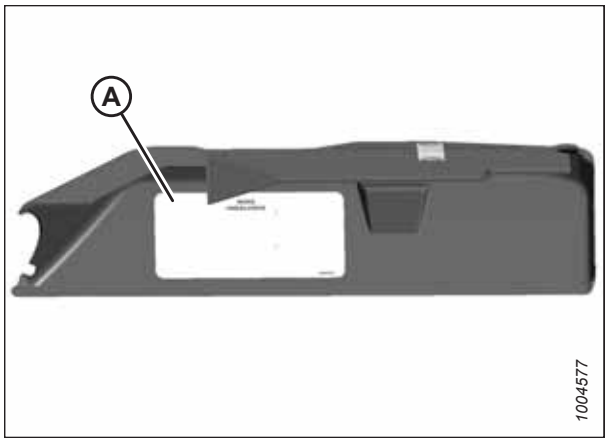


Figure 3.60: Linkage Cover

8. Unlock the wings by moving spring handles (A) to the lower (UNLOCK) position.

   NOTE:

   If the lock link does not engage in the lower slot, move the wing with the torque wrench until the lock link moves into the slot.

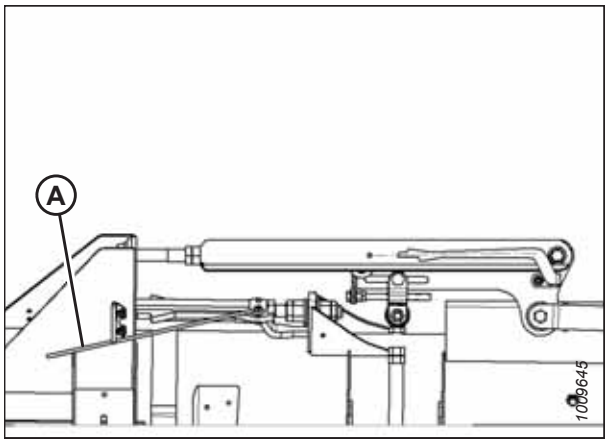


Figure 3.61: Wing Lock in UNLOCK Position

9. Retrieve wrench (A) from the float module right leg.

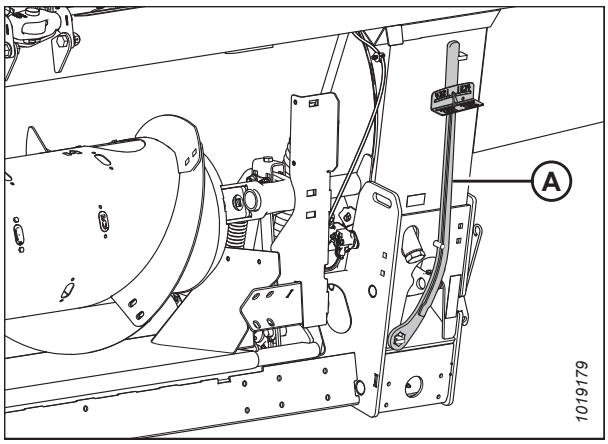


Figure 3.62: Torque Wrench

10. Place torque wrench (A) onto bolt (B).

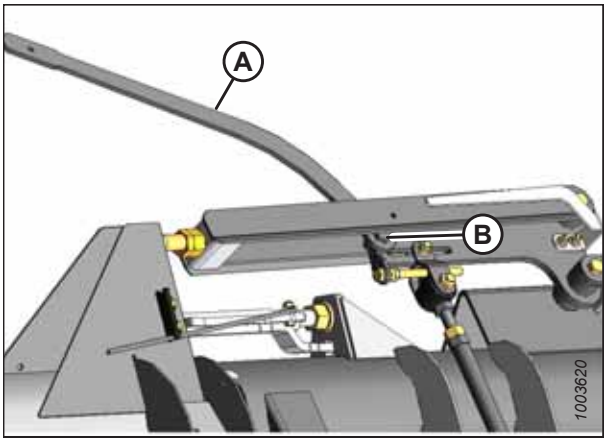


Figure 3.63: Balance Linkage

11. Check that pointer (D) is properly positioned as follows:

    a. Use wrench (A) to move bell crank (B) so that the lower edge of the bell crank is parallel to top-link (C).

    b. Check that pointer (D) is parallel with top-link (C).

    NOTE:

    If the above two conditions are met, adjust the pointer until it is aligned in the middle of top-link (C).

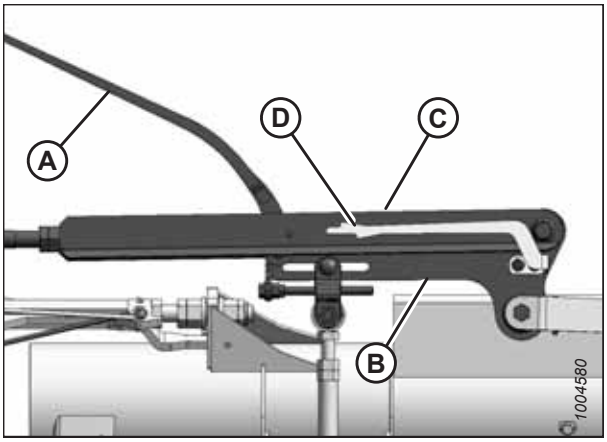


Figure 3.64: Balance Linkage

12. Move the wing upward with torque wrench (A) until the pointer's lower alignment tab (C) lines up with the upper edge of top-link (B). Observe indicator reading (D) on the wrench and record it.

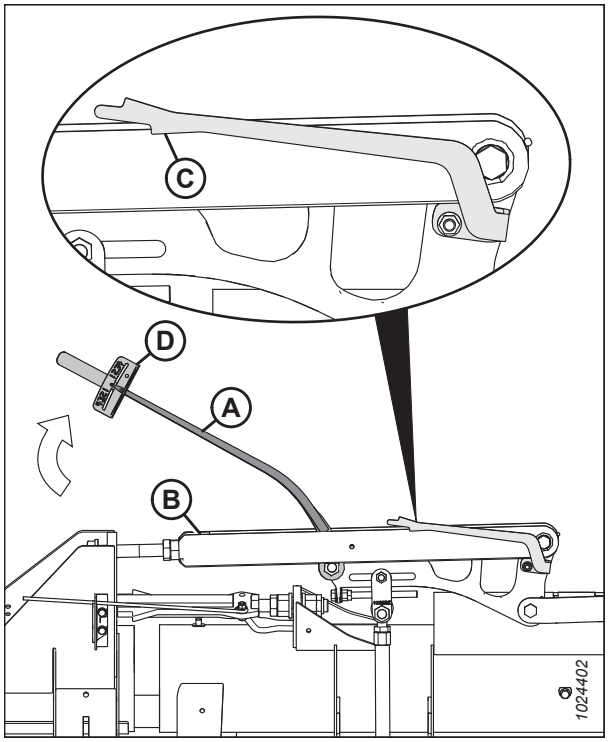


Figure 3.65: Balance Linkage

13. Move the wing downward with torque wrench (A) until the pointer's upper alignment tab (C) lines up with the lower edge of top-link (B). Observe indicator reading (A) on the wrench and record it.

14. Compare the readings taken in Step *12, page 80* and Step *13, page 80*.

    - If the difference between the readings is 0.5 or less, the wing is balanced and no further adjustment is required. To reinstall the linkage cover, refer to Step *15, page 81* and Step *16, page 82*.
    - If the difference between the readings is more than 0.5, the wing is not balanced. Proceed to *Adjusting Wing Balance, page 82*.

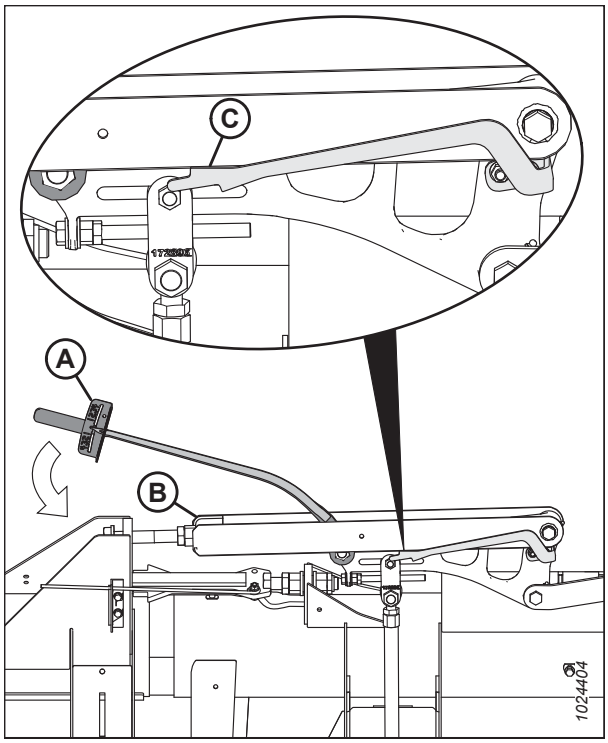


Figure 3.66: Balance Linkage

- If the indicator range is as shown, the wing is too light.

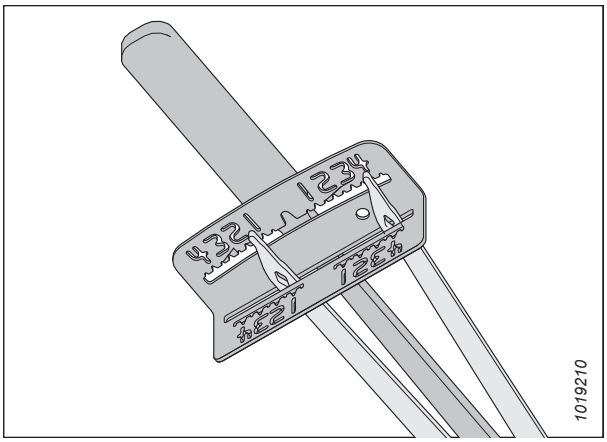


Figure 3.67: Wrench Indicator

- If the indicator range is as shown, the wing is too heavy.

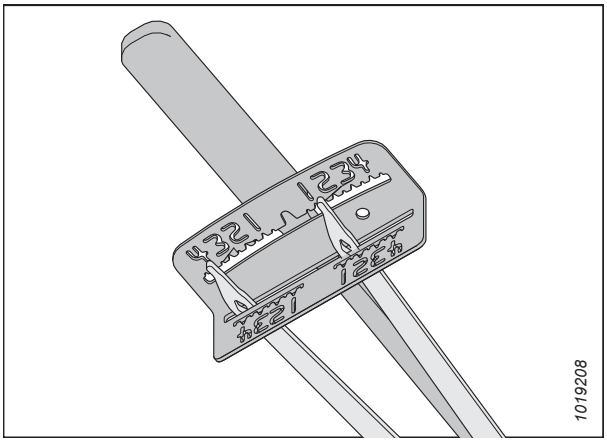


Figure 3.68: Wrench Indicator

15. If no adjustment is required, place wrench (A) back onto the float module right leg.

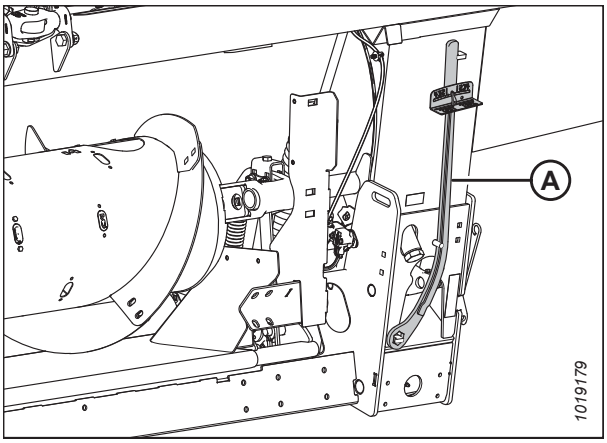


Figure 3.69: Torque Wrench

16. If no adjustment is required, reinstall linkage cover (A) and secure it with bolt (B). If adjustment is required, refer to *Adjusting Wing Balance, page 82*.

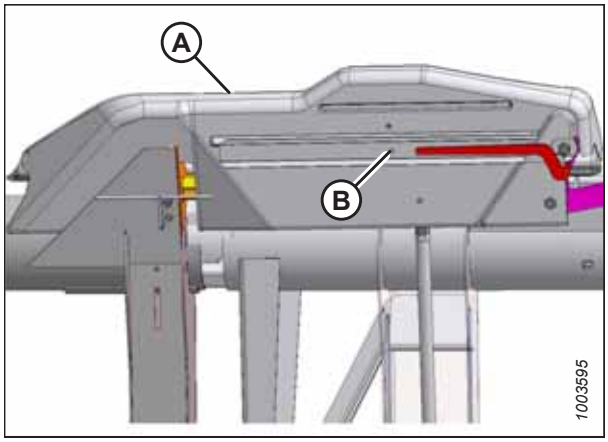


Figure 3.70: Linkage Cover

Adjusting Wing Balance

Wing balance ensures that the left and right wings require the same amount of pressure to follow the ground. The amount of ground force/pressure required to lift the wings, and the speed that wings return to the ground when the pressure is reduced should be equal/balanced.

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.

This procedure describes how to adjust the balance of each wing. Before proceeding, refer to *Checking Wing Balance, page 76* to determine if adjustments are necessary.

IMPORTANT:

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *Checking and Adjusting Header Float, page 68*. The float module must be sitting level before performing any adjustments.

1. Place torque wrench (A) on bolt (B). Check that wing lock (C) is in the lower position.

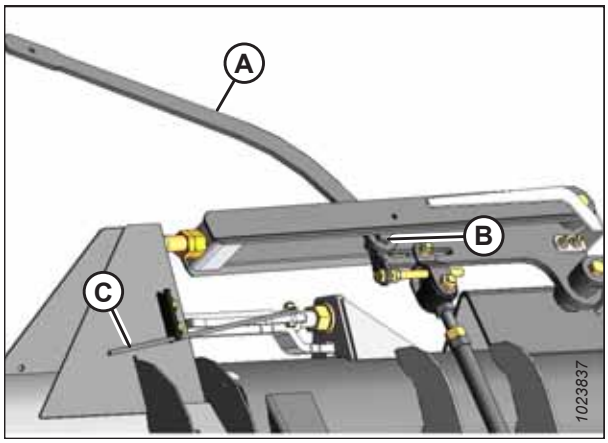


Figure 3.71: Balance Linkage – Left Side

2. Loosen nut (A) on the clevis bolt for the wing requiring adjustment as determined by the wing balance check.
3. Loosen jam nut (B).

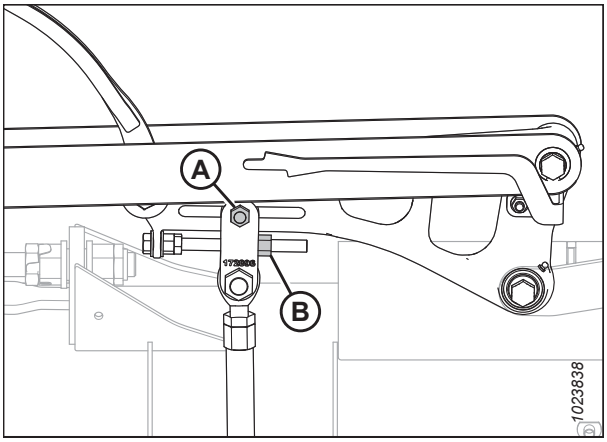


Figure 3.72: Balance Linkage – Left Side

4. If necessary, perform the following adjustments:
   - If the wing is too heavy, turn adjuster bolt (B) clockwise to move clevis (C) outboard (D).
   - If the wing is too light, turn adjuster bolt (B) counterclockwise to move clevis (C) inboard (E).
5. Adjust clevis (C) position if necessary until indicator readings on torque wrench are within 1/2 increment.
6. Tighten nut (A) on the clevis bolt.
7. Torque jam nut (F) to 81 Nm (60 lbf·ft).

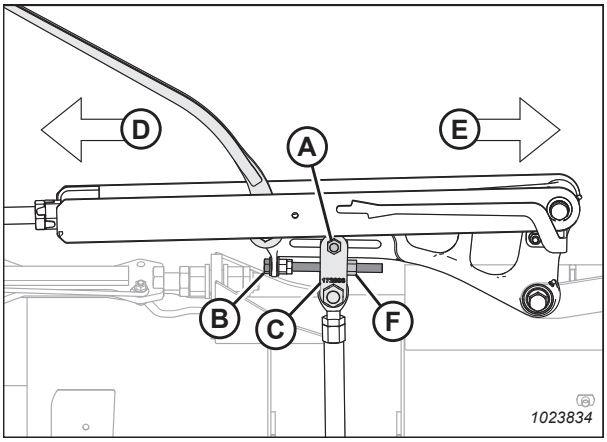


Figure 3.73: Balance Linkage – Left Side

8. Move handle (A) to the upper lock position.
9. If the lock does not engage, move the wing up and down with torque wrench (B) until it locks. When locked, there will be some movement in the linkage.
10. If the cutterbar is not straight when the wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.

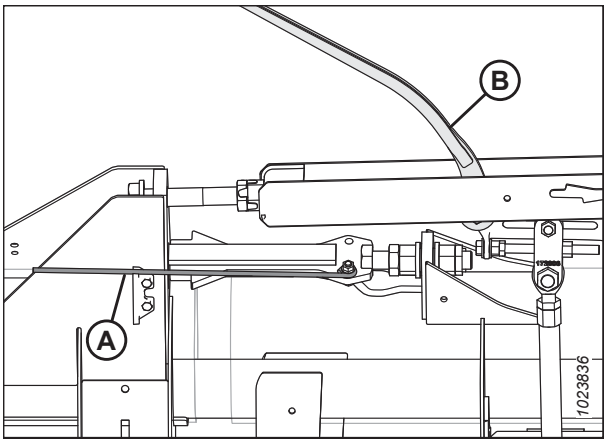


Figure 3.74: Wing Lock in Lock Position

11. Return torque wrench (A) to its storage location on the float module frame.

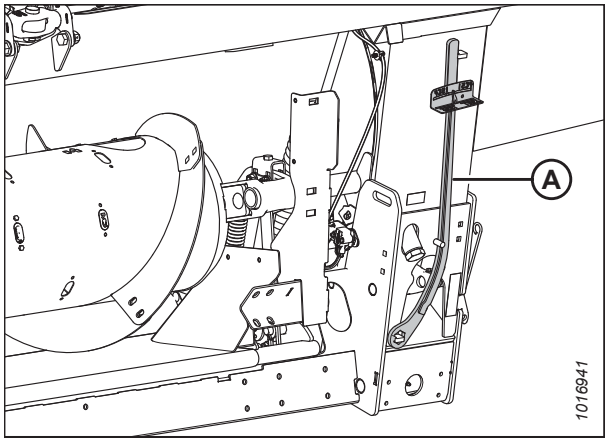


Figure 3.75: Torque Wrench in Storage Location

12. Reinstall linkage cover (A) and secure it with bolt (B).

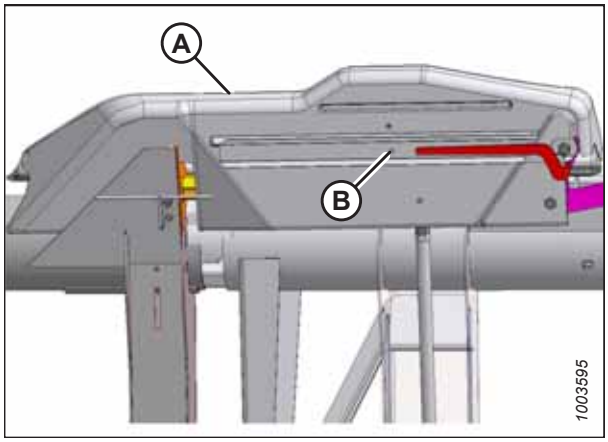


Figure 3.76: Linkage Cover

3.8.5 Header Angle

Header angle is the term used to describe the relative position of the header's cutterbar to the ground. The header angle is adjustable to accommodate different harvest conditions. Some combines have an adjustable feeder house, which provides the operator an alternative method for controlling header angle.

For combine-specific adjustment details, refer to *Adjusting Header Angle from Combine, page 86*.

Header angle (A) determines the distance (indicated by [B]) between the cutterbar knife and the ground.

Adjusting the header angle changes the point at which the skid shoe contacts the ground (indicated by [C]).

Guard angle (D) is the angle between the upper surface of the cutterbar guards and the ground.

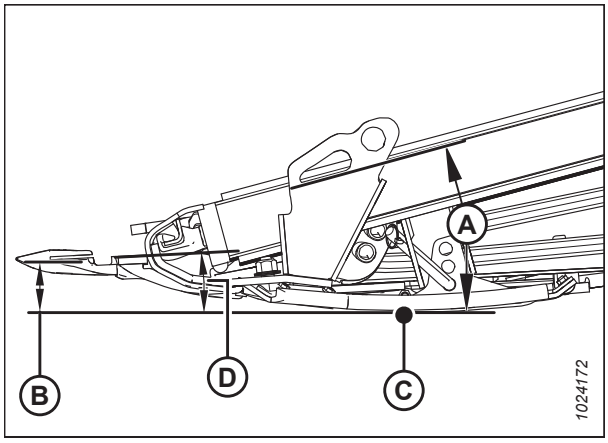


Figure 3.77: Header Angle

Harvesting conditions affect the suggested header angle setting:

- Use shallower setting (A) (position **A** on the indicator) for normal cutting conditions. This setting is also appropriate for harvesting in wet soil, and will reduce the rate of soil buildup at the cutterbar. Shallow angle settings also minimize damage to the knife in stony fields.
- Use steeper setting (D) (position **D** on the indicator) for lodged crops and for short crops such as soybean.

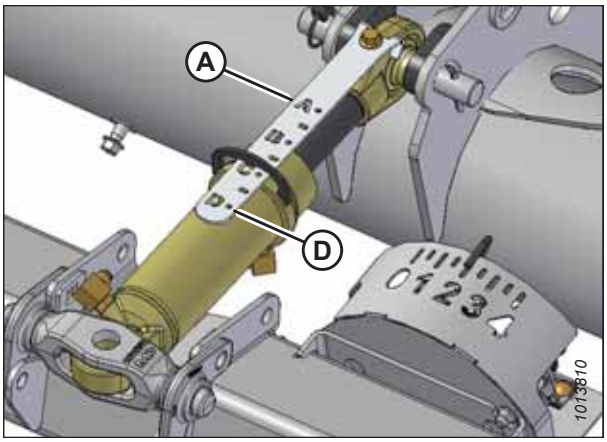


Figure 3.78: Center-Link

Shallowest angle (A) (center-link fully retracted) produces the highest stubble when cutting on the ground.

Steepest angle (D) (center-link fully extended) produces the lowest stubble when cutting on the ground.

Choose an angle that maximizes performance for your crop and field conditions. Refer to the table below for a summary of adjustment ranges.

Table 3.14 FD1 Header Angle

Header Model	Guard Angle
FD125, FD130, FD135, FD140, and FD145	2.0–7.4°

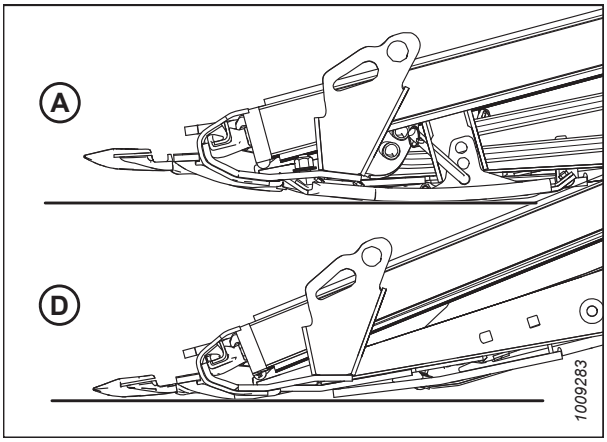


Figure 3.79: Guard Angles

For recommended header/guard angle settings for your particular crop conditions, refer to *3.7.2 Header Settings, page 44*.

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.

Case combines:

Case combines use control handle switches to adjust the center-link to change the header angle.

1. Press and hold SHIFT button (A) on the backside of the control handle and press switch (B) to tilt the header forward or press switch (C) to tilt the header back.

Figure 3.80: Case Combine Controls

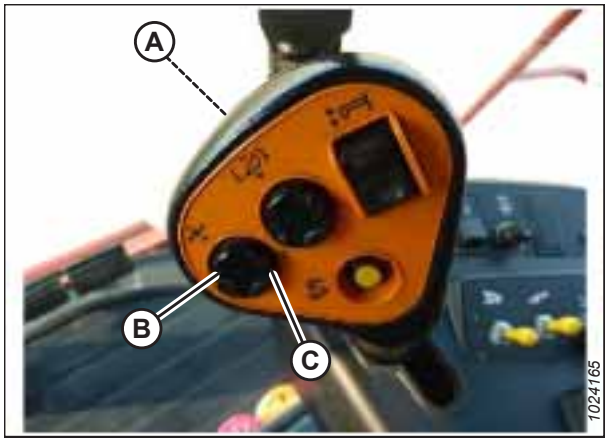


Figure 3.81: Case Combine Controls

Challenger, Gleaner, and Massey Ferguson combines:

Challenger, Gleaner, and Massey Ferguson combines use a combination of the reel fore-aft switches on the control handle and a Dealer-installed auxiliary rocker switch, which toggles between reel fore-aft and header tilt functionality. The location of the rocker switch varies with the combine model.

1. **Gleaner A only:** Open armrest cover (A) to expose a row of switches.
2. Press Dealer-installed rocker switch (B) to HEADER TILT position.

   NOTE:

   Gleaner A shown in the image, other Challenger® and Massey Ferguson® combine models have rocker switch on the console (not shown).

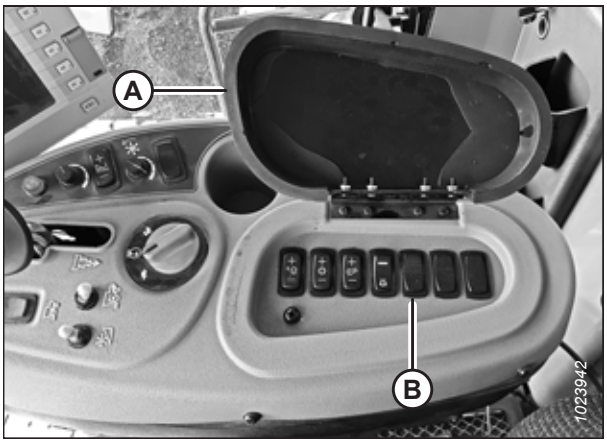


Figure 3.82: Gleaner A Console

3. To tilt the header forward (steeper angle), press button (A) on the control handle. To tilt the header back (shallower angle), press button (B) on the control handle.

Figure 3.83: Gleaner Controls

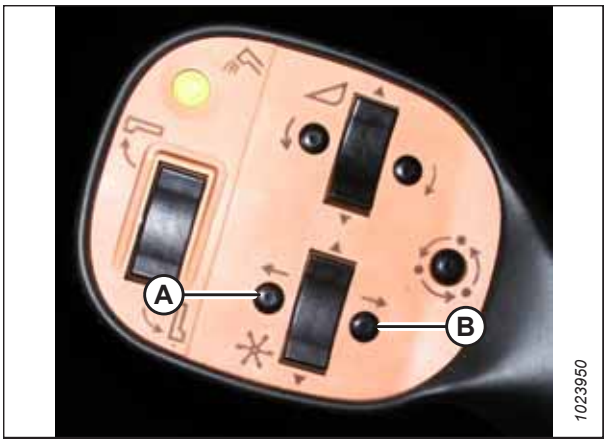


Figure 3.84: Gleaner Controls

Figure 3.85: Challenger®/Massey Ferguson® Controls

CLAAS combines:

CLAAS (with factory-installed fore-aft / header tilt switch): Newer CLAAS combines use a combination of the reel fore-aft switches on the control handle and a factory-installed auxiliary rocker switch which toggles between reel fore-aft and header tilt functionality.

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

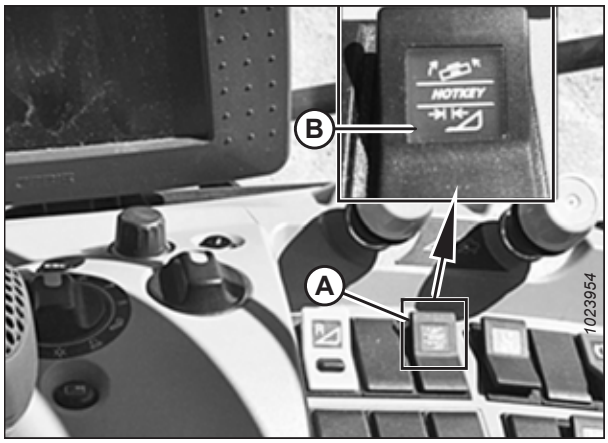


Figure 3.86: CLAAS 700 Console

2. Press and hold switch (A) on the rear of the control handle.
3. To tilt the header forward (steeper angle), press switch (C). To tilt the header back (shallower angle), press switch (B).

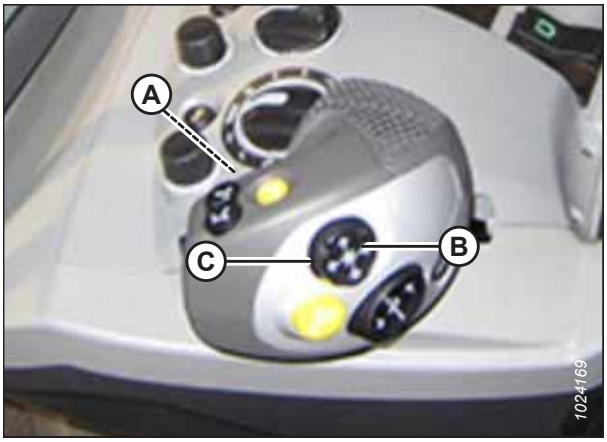


Figure 3.87: CLAAS 5000, 6000, 7000 or 8000 Control Handle

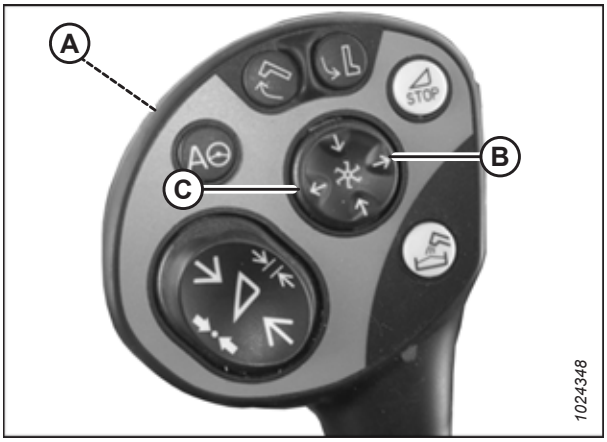


Figure 3.88: CLAAS 500, 600, or 700 Control Handle

John Deere combines:

John Deere S700: S700 Series combines can use a feeder house deckplate tilting system for feeder house fore-aft adjustment. Set the deckplate at a mid-point position, and use the MacDon fore-aft header tilt system.

IMPORTANT:

Damage to equipment may occur if both the deckplate and MacDon header tilt are adjusted to their maximum range.

1. To tilt the header forward (steeper angle), press switch (A). To tilt the header back (shallower angle), press switch (B).

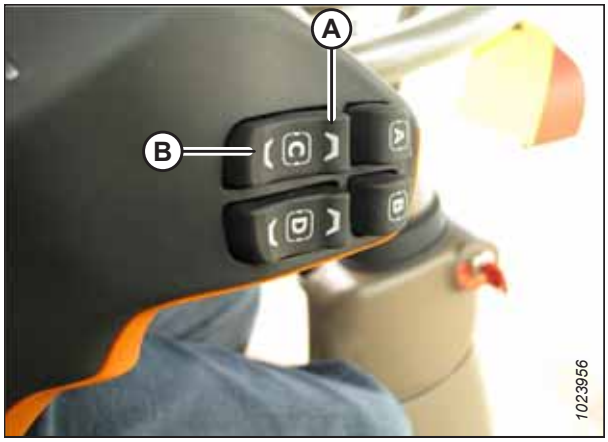


Figure 3.89: John Deere 700 Feeder House Fore-Aft Tilt Controls

John Deere (except S700 Series): Other John Deere combines use a combination of the reel fore-aft switches on the control handle and a Dealer-installed auxiliary rocker switch which toggles between reel fore-aft and header tilt functionality.

1. Press reel fore-aft / header tilt switch (A) on the console into HEADER TILT position.

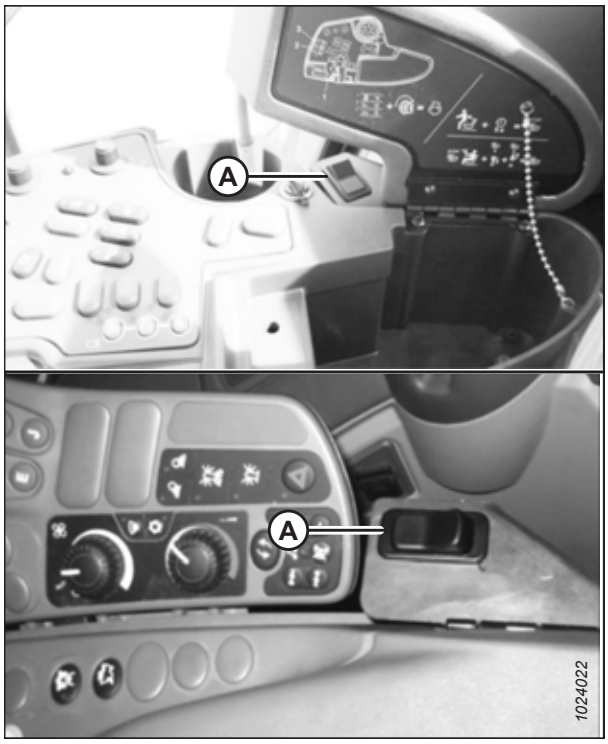


Figure 3.90: John Deere Consoles

2. To tilt the header forward (steeper angle), press switch (A). To tilt the header back (shallower angle), press switch (B).

Figure 3.91: John Deere Control Handle

New Holland combines:

New Holland combines use control handle switches to adjust the center-link to change the header angle.

1. Press and hold SHIFT button (A) on the backside of the control handle and press switch (B) to tilt the header forward (steeper angle) or switch (C) to tilt the header back (shallower angle).

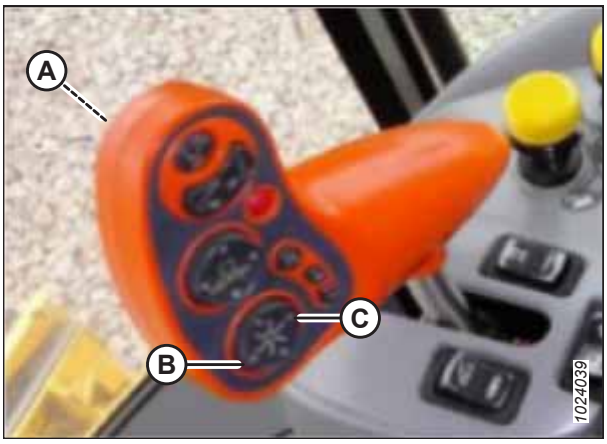


Figure 3.92: New Holland CR/CX Controls

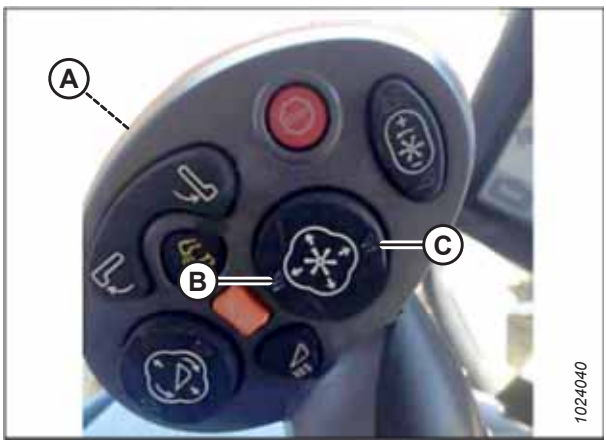


Figure 3.93: New Holland CR/CX Controls

Rostselmash combines:

Rostselmash combines use a combination of reel fore-aft switches on the control handle and a factory-installed auxiliary rocker switch on the combine control console that toggles between reel fore-aft and header tilt functionality.

1. Press ON switch (A) on console to place controls in HEADER TILT mode.
2. To tilt the header forward (steeper angle), press button (B) on control handle. To tilt the header back (shallower angle), press button (C) on control handle.

Figure 3.94: Rostselmash Control Handle and Console

3.8.6 Reel Speed

Reel speed is one of the factors that determines how crop is moved 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, reel speed should be slightly higher than, or equal to, ground speed.

In flattened crop or crop that is leaning away from the cutterbar, the reel speed needs to 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.

Slower reel speeds can be used with nine-bat reels, which is advantageous in shatter-prone crops.

NOTE:

For more information about converting a six-bat reel to a nine-bat reel for FD125 and FD130 headers, refer to *6.2.5 Reel Tine Tube Conversion Kit, page 589*.

For recommended reel speeds in specific crops and conditions, refer to *3.7.2 Header Settings, page 44*.

The reel speed is adjustable using the controls in the combine cab. Refer to the combine operator's manual for adjustment details.

Optional Reel Drive Sprockets

Optional reel drive sprockets for use in special crop conditions are available as an alternative to the factory-installed sprocket.

The header is factory-equipped with a 19-tooth reel drive sprocket, which is suitable for most crops. Other sprockets are available that provide more torque to the reel in heavy cutting conditions or allow for higher reel speeds in light crops when operating at increased ground speeds. Refer to Table *3.15, page 93*, and contact your MacDon Dealer for ordering information.

Table 3.15 Optional Reel Drive Sprockets

Machine Hydraulics	Combine	Application	Optional Drive Sprocket
13.79–14.48 MPa (2000–2100 psi)	Gleaner Transverse Rotary	Combining down rice	10 tooth
17.24 MPa (2500 psi)	CLAAS 500, 700 Series, Challenger Axial Rotary	Combining down rice	12 tooth
20.68 MPa (3000 psi)	New Holland CR, CX, Case IH 7010, 8010, 7120, 8120, 88 Series	Combining down rice	14 tooth
Low flow (under 42 L/min [11 gpm])	—	Combining light crops above 16 km/h (10 mph)	21 tooth

For installation details, refer to *5.18.3 Reel Drive Sprocket, page 572*.

3.8.7 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 ground speed is increased, draper and reel speeds should generally be increased to handle the extra material.

Figure *3.95, page 93* illustrates the relationship between ground speed and area cut for the various sized headers.

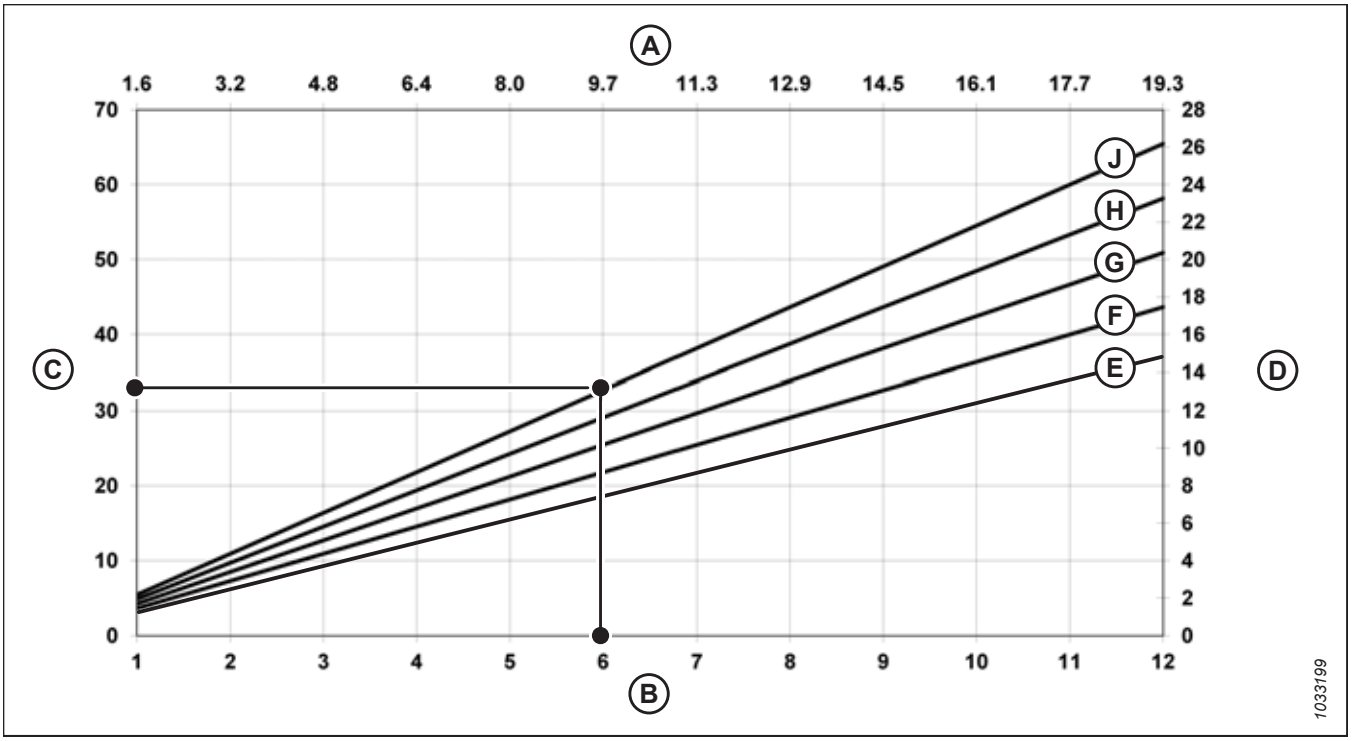


Figure 3.95: Ground Speed versus Acres

A - Kilometers/Hour
B - Miles/Hour
C - Acres/Hour
D - Hectares/Hour
E - FD125
F- FD130
G - FD135
H- FD140
J - FD145

Example: A FD140 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.

3.8.8 Side Draper Speed

Operating with the correct draper speed is an important factor for achieving good flow of cut crop away from the cutterbar.

The side drapers and feed draper operate independently of each other; therefore, the speeds are controlled differently. The side draper speed is adjusted with a manually adjustable control valve that is mounted on the float module. The float module feed draper speed is fixed to the combine feeder house speed and cannot be independently adjusted.

Adjust the side draper speed to achieve efficient crop feeding onto the float module feed draper. For instructions, refer to *Adjusting Side Draper Speed, page 94*.

Adjusting Side Draper Speed

The side drapers carry the cut crop to the float module feed draper, which then feeds it into the combine. The side draper speed is adjustable to suit a variety of crops and crop conditions.

Side drapers (A) are driven by hydraulic motors and a pump that is powered by the combine feeder house drive through a gearbox on the float module. Side draper speed is adjustable with the flow control valve on the float module, which regulates the flow to the draper hydraulic motors. Side draper speed is also adjustable with an optional control in the cab.

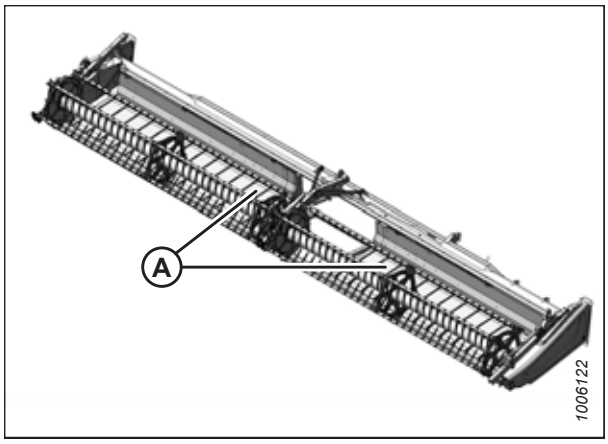


Figure 3.96: Side Drapers

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. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.

3. If the optional in-cab side draper speed control kit is installed, rotate knob (A) to the desired speed setting. Set the knob to 6 for normal crop delivery. Switch (B) activates the header tilt or reel fore-aft controls. For instructions, refer to *Adjusting Header Angle from Combine, page 86*.

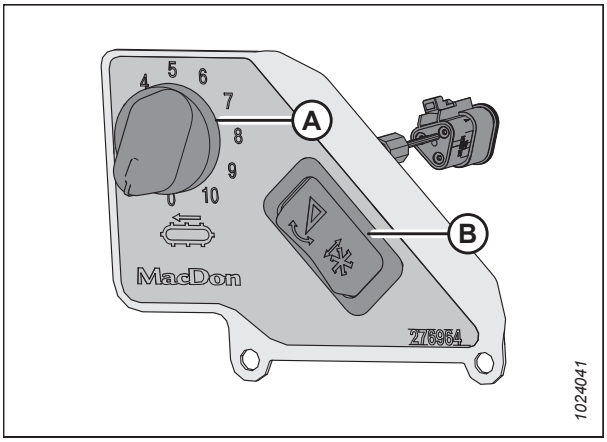


Figure 3.97: Optional In-Cab Side Draper Speed Control

4. On the rear side of the float module, lift cover (A) to open.

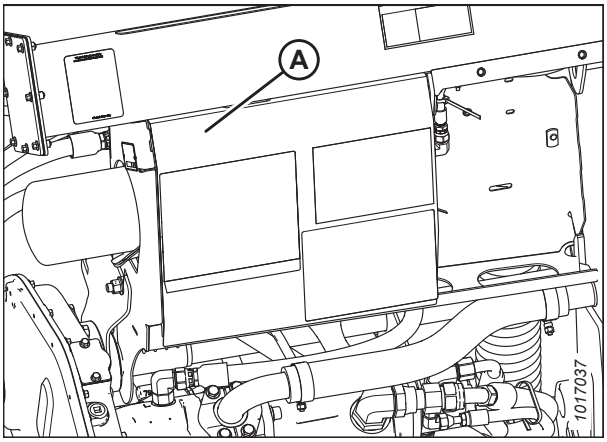


Figure 3.98: Hydraulic Compartment Cover

NOTE:

Parts have been removed from the illustration at right to show the speed control valve clearly.

5. Locate side draper speed control (A). The speed control has settings from 0–9 on the barrel to indicate the draper speed. The flow control valve is factory-set to 6, which should be sufficient for normal crop feeding.

6. Rotate the speed control valve dial to adjust the speed.

7. Refer to one of the following for recommended draper speed settings:

   - *3.7.2 Header Settings, page 44*
   - *3.7.3 Optimizing Header for Straight-Combining Canola, page 55*

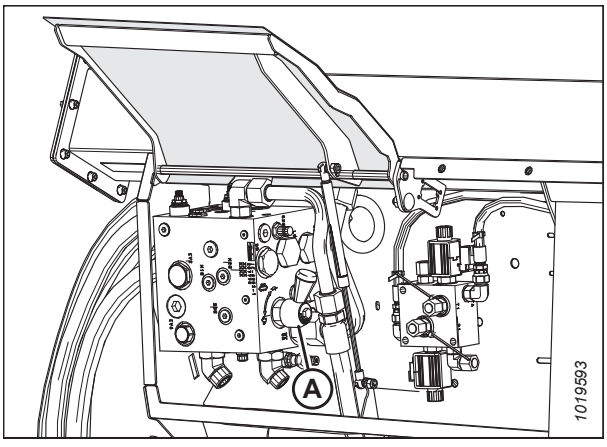


Figure 3.99: Flow Control Valve

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.

The feed draper speed is determined by the combine feeder house speed and cannot be independently adjusted.

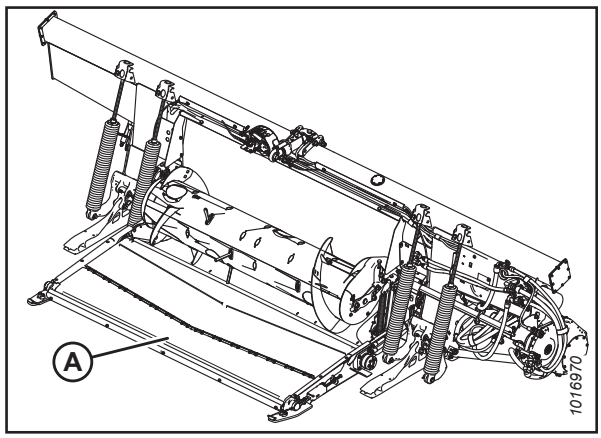


Figure 3.100: FM100 Float Module

3.8.9 Knife Speed Information

The header knife drive is powered by the FM100 hydraulic pump, which is driven by the combine feeder house. There is no separate adjustment to control the knife speed.

IMPORTANT:

To avoid causing the knife to over-speed, set the knife speed while the feeder house speed is to set maximum speed.

Table 3.16 Feeder House Speed

Combine	Feeder House Speed (rpm)
Case IH	580
Challenger®	625
CLAAS[45]	420
Gleaner®	625
IDEAL™	620
John Deere	490
Massey Ferguson®	625
New Holland	580

IMPORTANT:

Ensure the FD1 Series knife speed is within the range of rpm values in Table *3.17, page 96*. For instructions, refer to *Checking Knife Speed, page 97*.

IMPORTANT:

Under normal cutting conditions, knife speed taken at the knife drive pulley should be set between 600 and 640 rpm (1200 and 1280 spm). If set to the low side of the range, you could experience knife stalling.

Table 3.17 FD1 Series Header Knife Speed

Header Model	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
FD125	600–725	—
FD130	600–700	—
FD135	550–650	—
FD140	525–600	550–700
FD145	—	550–700

45. For CLAAS 600/700 combines, the value on the display reflects the top shaft speed, not the output shaft speed. When the display value is 420 rpm, the actual output shaft speed is 750 rpm.

Checking Knife Speed

Overspeeding the knife drive box can lead to damage and excessive wear on the knife sections and guards.

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 left endshield. For instructions, refer to *Opening Endshields, page 33*.

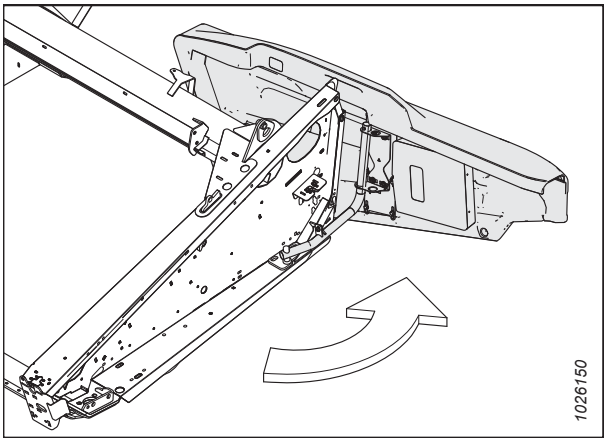


Figure 3.101: Left Endshield

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine. For instructions, refer to the combine operator's manual.
4. Engage the header drive, and run the combine at operating rpm.
5. Run the machine for 10 minutes to warm the oil to 38°C (100°F).

   IMPORTANT:

   To avoid causing the knife to over-speed, set the knife speed while the feeder house speed is set to the maximum speed. For more information, refer to *3.8.9 Knife Speed Information, page 96*.
6. Measure the rpm of knife drive box pulley (A) with a hand-held tachometer.
7. Shut down the engine, and remove the key from the ignition.
8. Compare the pulley rpm measurement with the rpm values in the knife speed chart. For more information, refer to *3.8.9 Knife Speed Information, page 96*.
9. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

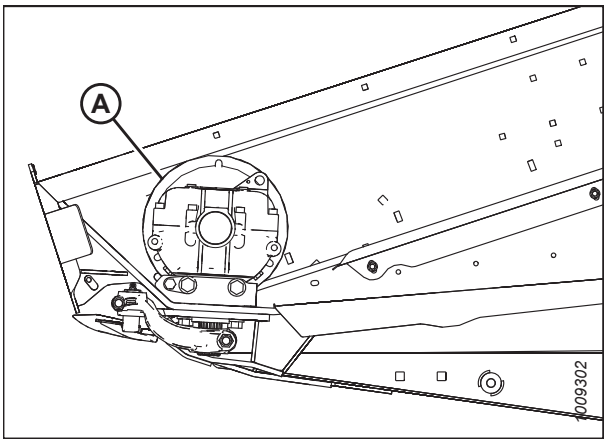


Figure 3.102: Knife Drive Pulley

3.8.10 Reel Height

The reel operating position depends on the type of crop and 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. Refer to your combine operator's manual for instructions on controlling reel height or setting up auto reel height presets.

NOTE:

One touch return presets for reel height and reel fore/aft are only available for XL headers. For more information on checking and adjusting reel height sensors refer to *Checking and Adjusting Reel Height Sensor, page 98*.

Where applicable, this manual contains instructions for presetting reel height on selected combines. Refer to *3.9 Auto Header Height Control, page 127* for more information.

For more information on fore-aft positioning, refer to *3.8.11 Reel Fore-Aft Position, page 103*.

Table 3.18 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

The following conditions might result if the reel is set too low:

- 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

The following conditions might result if the reel is set too high:

- Cutterbar plugging
- Crop lodging and being left uncut
- Grain stalks dropping ahead of the cutterbar

For recommended reel heights for specific crops and crop conditions, refer to *3.7.2 Header Settings, page 44*.

IMPORTANT:

Maintain adequate clearance to prevent fingers contacting the knife or the ground. For instructions, refer to *5.17.1 Reel-to-Cutterbar Clearance, page 542*.

Checking and Adjusting Reel Height Sensor

The output voltage range of the auto reel height sensor can be checked from inside the combine or manually at the sensor.

NOTE:

Reel height sensors are only available on XL headers

For in-cab instructions, refer to the combine operator's manual.

NOTE:

For CLAAS combines: to prevent the reel from colliding with the cab, the header is equipped with an automatic reel height limit. Some CLAAS combines have an automatic shutoff feature that engages when the automatic reel height limit is reached. When raising the header to a height greater than 80% of the header's maximum height, the reel is automatically lowered. The automatic lowering of the reel can be manually overridden, and a warning will appear on the CEBIS terminal.

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.

DANGER

Ensure that all bystanders have cleared the area.

IMPORTANT:

Ensure that the minimum reel height is set before adjusting the reel height sensor. For instructions, refer to *Measuring Reel Clearance, page 542*.

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

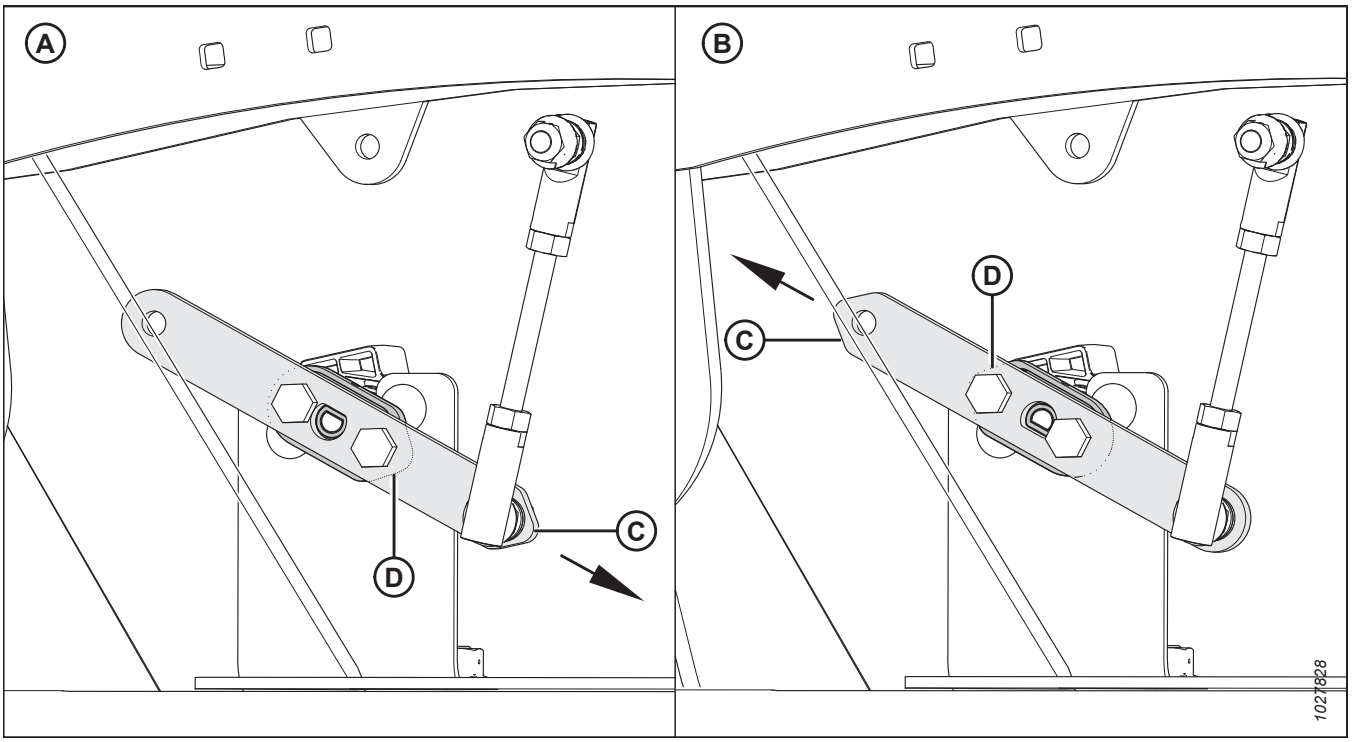


Figure 3.103: Sensor Arm/Pointer Configurations

A - Case/New Holland Configuration

B - John Deere/CLAAS/IDEAL™ Configuration

C - Sensor Arm (Shown Semitransparent)

D - Sensor Pointer (Shown Under Sensor Arm)

2. Check that sensor arm (C) and pointer (D) are configured properly for your machine. Refer to Figure *3.103, page 99*.

NOTE:

- For configuration (A), pointer (D) points to the **FRONT** of the header.
- For configuration (B), pointer (D) points to the **REAR** of the header.
- The sensor arm is semitransparent in the illustration above, so you can see the sensor pointer behind it.

IMPORTANT:

To measure the output voltage of the reel height sensor, the combine engine needs to be running and supplying power to the sensor. Engage the combine parking brake and remain at a safe distance from the reel when measuring the sensor's output voltage manually.

Table 3.19 Reel Height Sensor Voltage Limits

Combine Type	Voltage Range	
	X Voltage	Y Voltage
Case/New Holland	0.5–0.9 V	4.1–4.5 V
CLAAS	4.1–4.5 V	0.5–0.9 V
IDEAL™ Series	4.1–4.5 V	0.5–0.9 V
John Deere	4.1–4.5 V	0.5–0.9 V

To check the voltage range manually, follow these steps:

3. Engage the parking brake.

DANGER

Ensure that all bystanders have cleared the area.

4. Start the engine. For instructions, refer to the combine operator's manual.
5. Lower the reel fully.
6. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **Y**. Refer to Table *3.19, page 100* for the range requirements.
7. If using a voltmeter, measure the voltage between the ground wire (pin 2) and the signal wire (pin 3) at reel height sensor (B).
8. Shut down the engine, and remove the key from the ignition.
9. Adjust the length of threaded rod (A) to modify voltage range **Y**.

   NOTE:

   Dimension (C) is factory set to 41.7 mm (1.6 in).

10. Repeat Step *6, page 100* to Step *9, page 100* until voltage range **Y** is within the range specified.

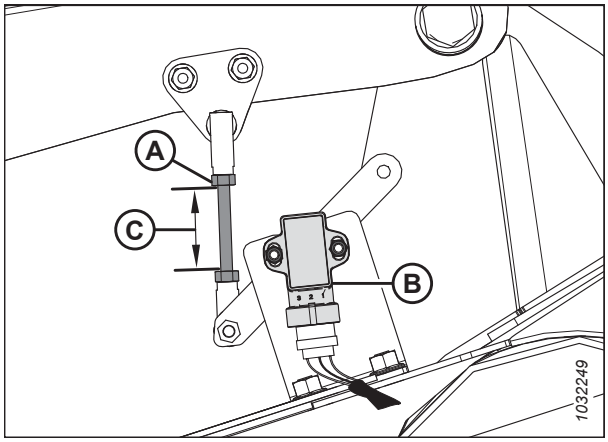


Figure 3.104: Reel Height Sensor – Right Reel Arm with Reel Down

DANGER

Ensure that all bystanders have cleared the area.

11. Start the engine.
12. Raise the reel fully.
13. Shut down the engine, and remove the key from the ignition.
14. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

DANGER

Ensure that all bystanders have cleared the area.

15. Start the engine.

16. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **X**. Refer to Table *3.19, page 100* for range requirements.
17. If using a voltmeter, measure the voltage between the ground (Pin 2 wire) and the signal (Pin 3 wire) at reel height sensor (A).
18. Shut down the engine, and remove the key from the ignition.
19. Loosen two M5 hex nuts (B) and rotate sensor (A) to modify voltage range **X**.
20. Repeat Step*16, page 101* to Step*19, page 101* until voltage range **X** is within the range specified.
21. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.

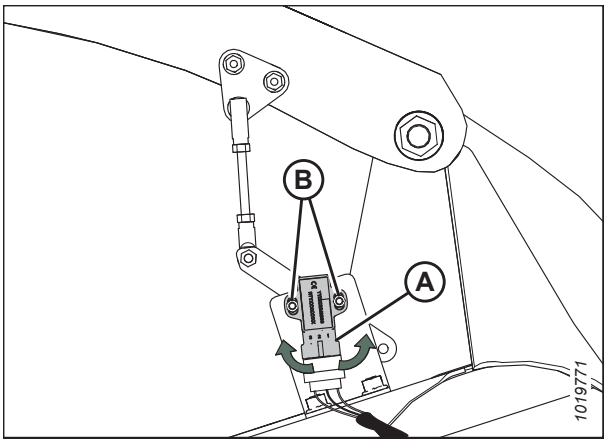


Figure 3.105: Reel Height Sensor – Right Reel Arm with Reel Up

DANGER

Ensure that all bystanders have cleared the area.

22. Start the engine.
23. Lower the reel fully.
24. Recheck voltage range **Y** and ensure it is still within the range specified. Adjust it if required.

Replacing Reel Height Sensor

The output voltage range of the auto reel height sensor can be checked from inside the cab or manually at the sensor. Replace the sensor if it fails.

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. For instructions, refer to the combine operator's manual.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.

4. Disconnect the sensor from the harness.
5. Remove two hex head bolts (A) from sensor arm (B). Retain the hardware for reinstallation.

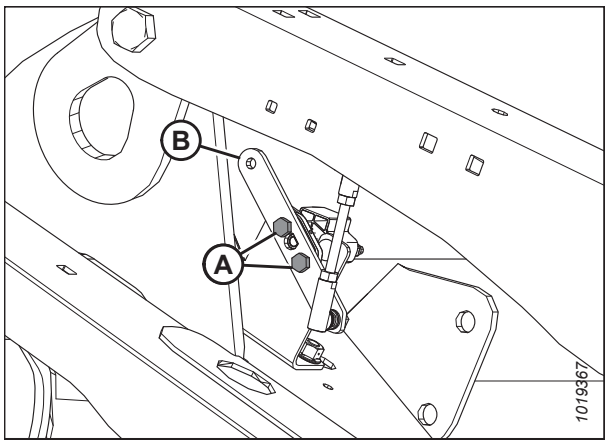


Figure 3.106: Reel Height Sensor – Right Reel Arm

6. Remove two nyloc nuts and bolts (A) from the reel height sensor. Remove sensor (B).
7. Position new sensor (B) in the sensor bracket. Secure the sensor using retained bolts and nyloc nuts (A). Torque bolts (A) to 2–3 Nm (17–27 lbf·in).

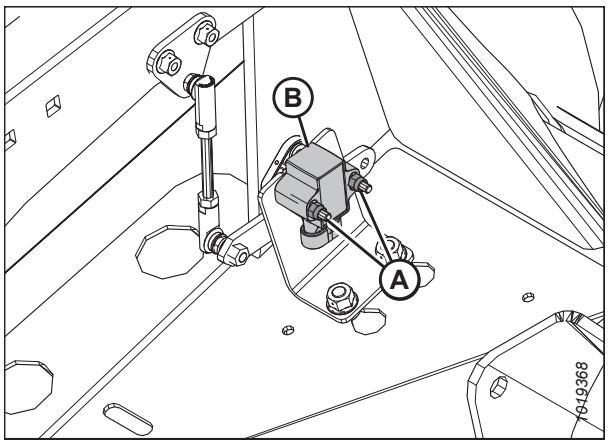


Figure 3.107: Reel Height Sensor – Right Reel Arm

8. Connect sensor arm (B) using retained hex head bolts (A). Torque hex head bolts (A) to 4 Nm (35 lbf·in).
9. Connect the sensor to the harness.

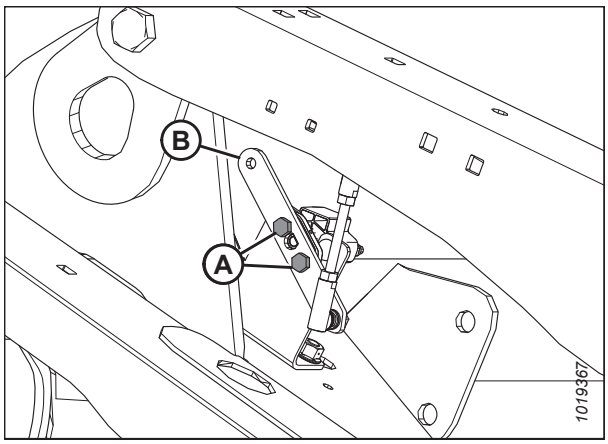


Figure 3.108: Reel Height Sensor – Right Reel Arm

10. Check that the sensor arm and the threaded rod are parallel. If not, loosen two center lock flange nuts (A), and adjust sensor mounting bracket (B) until threaded rod (C) is parallel with sensor arm (D). Tighten the center lock flange nuts.

11. Check the sensor voltage range. For instructions, refer to *Checking and Adjusting Reel Height Sensor, page 98*.

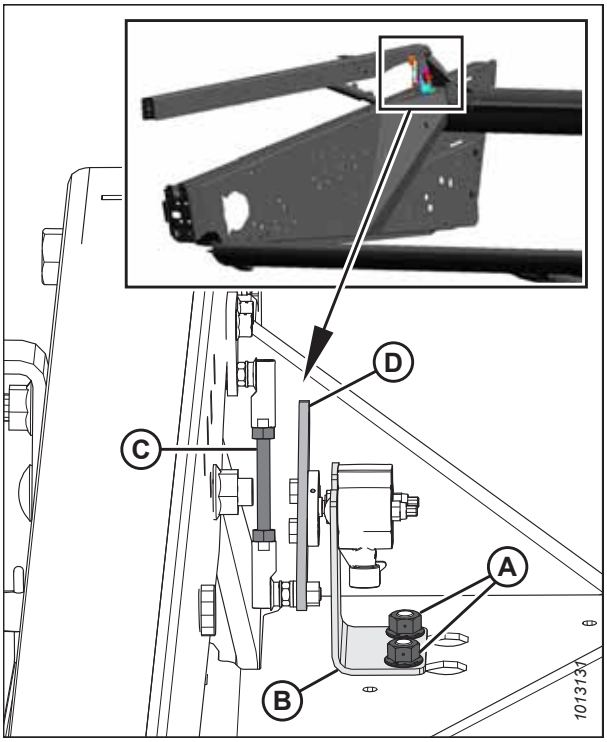


Figure 3.109: Reel Height Sensor – Front View of Right Reel Arm

3.8.11 Reel Fore-Aft Position

The factory-set reel fore-aft position suits most harvest conditions, but the fore-aft position can be adjusted as needed using the controls inside the cab.

The reel on **non-European-configured headers** can be moved approximately 227 mm (9 in.) farther aft by repositioning the fore-aft cylinders on the header's reel arms to accommodate certain crop conditions. For instructions, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers – Double Reel, page 107*.

- For single-reel headers, refer to *Repositioning Fore-Aft Cylinders – Single-Reel Headers, page 104*.
- For double-reel headers, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers – Double Reel, page 107*.

The reel on **European-configured headers** can be moved approximately 67 mm (2.6 in.) farther aft by repositioning the fore-aft cylinders on the header's reel arms to accommodate certain crop conditions. For instructions, refer to *Repositioning Fore-Aft Cylinders on European-Configured Headers – Double-Reel Headers, page 110*.

If the combine is equipped with the Multi-Crop Rapid Reel Conversion option, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers with Multi-Crop Rapid Reel Conversion Option – Double-Reel Headers, page 113*.

NOTE:

The Multi-Crop Rapid Reel Conversion option is not available for European-configured headers.

Use decal (A), on the right reel support arm, to identify the current reel fore-aft position. The aft edge of cam disc (B) is the reel fore-aft position marker.

For straight standing crop, center the reel over the cutterbar (4–5 on decal).

For crops that are down, tangled, or leaning, it may be necessary to move the reel ahead of the cutterbar (lower number on decal).

NOTE:

If experiencing difficulty picking up flattened crop, adjust to a steeper header angle. Refer to *3.8.5 Header Angle, page 84* for adjustment instructions. Adjust reel position only if header angle adjustments are not satisfactory.

For recommended reel positions in specific crops and crop conditions, refer to *3.7.2 Header Settings, page 44*.

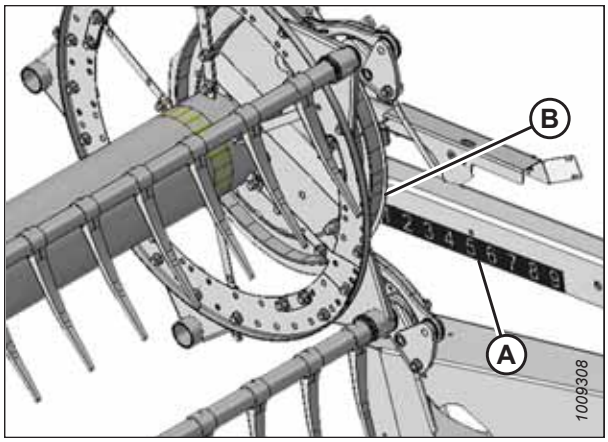


Figure 3.110: Fore-Aft Decal

NOTE:

In crops that are difficult to pick up such as rice or severely lodged crops that require full forward positioning of the reel, set the reel tine pitch to provide proper placement of the crop onto the drapers. Refer to *3.8.12 Reel Tine Pitch, page 116* for adjustment details.

Adjusting Reel Fore-Aft Position

The reel's fore-aft position may need to be adjusted for different harvesting conditions.

1. Select FORE-AFT mode on the selector switch in the cab.
2. Operate the hydraulics to move the reel to the desired position. Use decal (A) as a reference.
3. Check the reel-to-cutterbar clearance after making changes to the cam setting. Refer to the following for the measurement and adjustment procedures:
   - *5.17.1 Reel-to-Cutterbar Clearance, page 542*
   - *5.17.2 Reel Frown, page 546*

   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 avoid damaging the fingers.

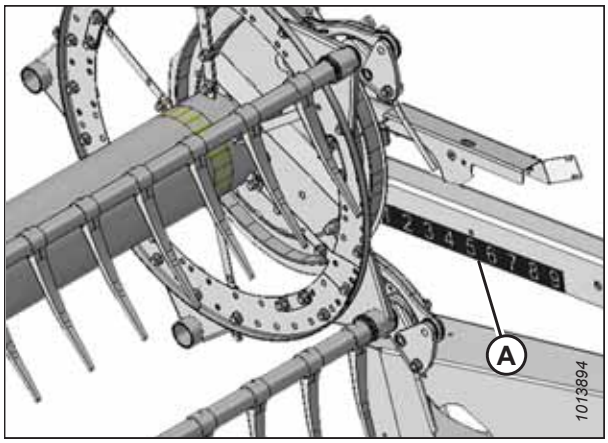


Figure 3.111: Fore-Aft Decal

Repositioning Fore-Aft Cylinders – Single-Reel Headers

The reel can be moved approximately 227 mm (9 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.

NOTE:

The reel is not shown in the illustrations in this procedure for the sake of clarity.

Repositioning the right reel arm fore-aft cylinder:

1. Position the reel fully aft so that the support arms are horizontal.
2. Shut down the engine, and remove the key from the ignition.
3. Remove four nuts and bolts (A) securing cylinder bracket (B) to reel arm (C). Retain the hardware.

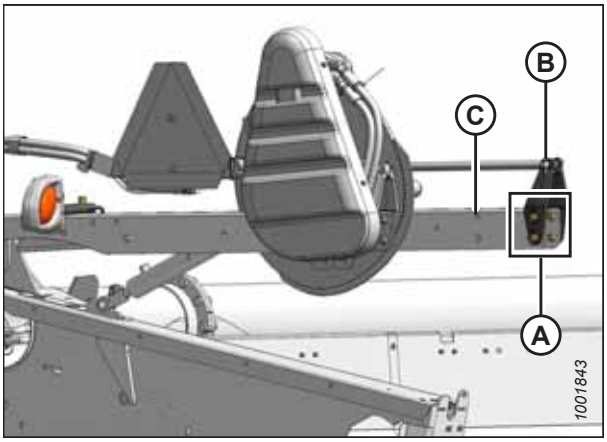


Figure 3.112: Right Reel Arm Cylinder in Forward Position

4. Push or pull the reel until bracket (B) lines up with the aft set of holes in the reel arm (C).
5. Reinstall four nuts and bolts (A) and secure cylinder bracket (B) to the reel arm at the new position.

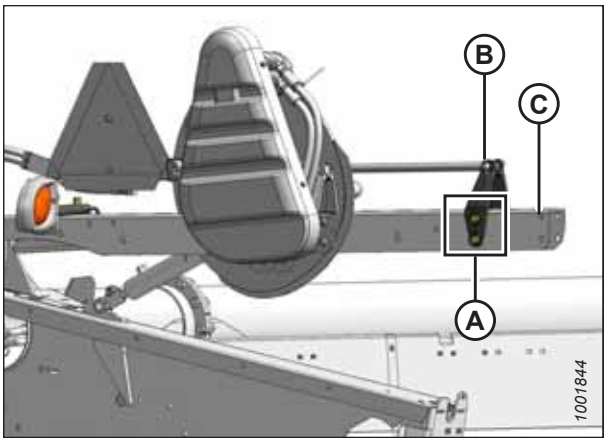


Figure 3.113: Right Reel Arm Cylinder in Aft Position

Repositioning the left reel arm fore-aft cylinder:

1. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
2. Remove nuts and bolts (D) securing bracket/light assembly (C) to the reel arm. Remove the bracket/light assembly.
3. If necessary, remove the cable tie securing the harness to bracket/light assembly (C) or to the reel arm.
4. Swivel the light to the working position as shown.

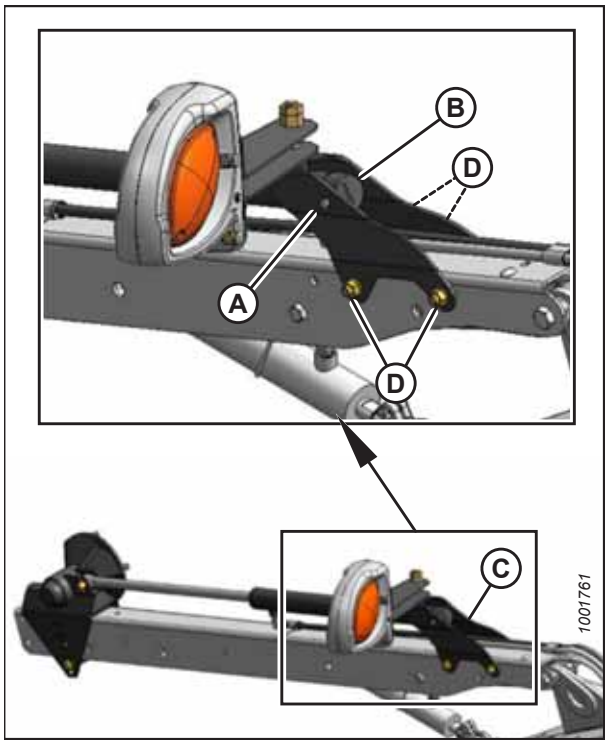


Figure 3.114: Left Reel Arm Cylinder in Forward Position

5. Reposition bracket/light assembly (C) on the reel arm as shown. Secure it with four nuts and bolts (D). Tighten the hardware.
6. Push the reel back and attach cylinder (B) to bracket/light assembly (C) with pin (A). Secure the pin with a cotter pin.
7. Secure the light harness to bracket/light assembly (C) using a cable tie.
8. Check the following clearances:
   - Reel to backsheet
   - Reel to upper cross auger (if installed)
   - Reel to reel braces
9. Adjust the reel tine pitch if necessary. For instructions, refer to *3.8.12 Reel Tine Pitch, page 116*.

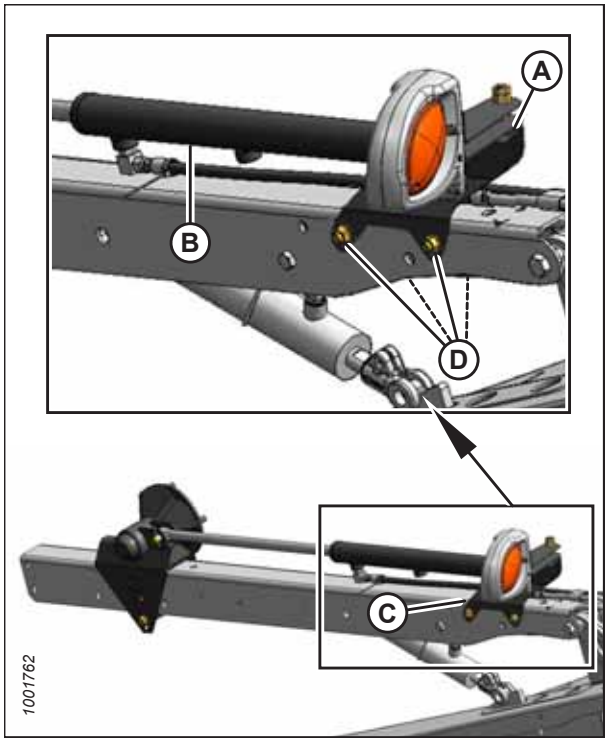


Figure 3.115: Left Reel Arm Cylinder in Aft Position

Repositioning Fore-Aft Cylinders on Non-European-Configured Headers – Double Reel

The reel can be moved approximately 227 mm (9 in.) farther aft by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola.

NOTE:

The Short Brace Kit for Center Reel Arm (MD #B5605) must be installed before the fore-aft cylinders can be repositioned.

If the Multi-Crop Rapid Reel Conversion option is installed, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers with Multi-Crop Rapid Reel Conversion Option – Double-Reel Headers, page 113*.

NOTE:

The Multi-Crop Rapid Reel Conversion option is **NOT** available for European-configured FD1 FlexDraper™ headers.

For instructions for repositioning the fore-aft cylinders on an European-configured header, refer to *Repositioning Fore-Aft Cylinders on European-Configured Headers – Double-Reel Headers, page 110*.

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 reel is not shown in the illustrations in this procedure for the sake of clarity.

Repositioning the center reel arm fore-aft cylinder:

1. Position the reel fully aft with support arms horizontal.
2. Shut down the engine, and remove the key from the ignition.
3. Remove four bolts (A) securing cylinder bracket (B) to reel arm (C). Retain hardware.

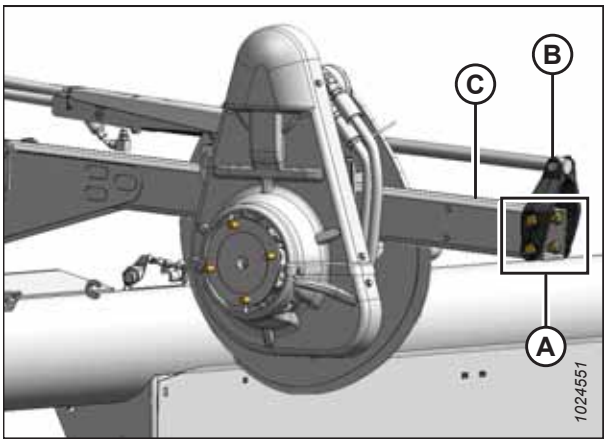


Figure 3.116: Center Arm – Forward Position

4. Push/pull reel until bracket (B) lines up with the aft set of holes in reel arm (C).
5. Reinstall four bolts (A) to secure bracket (B) to reel arm at new position.

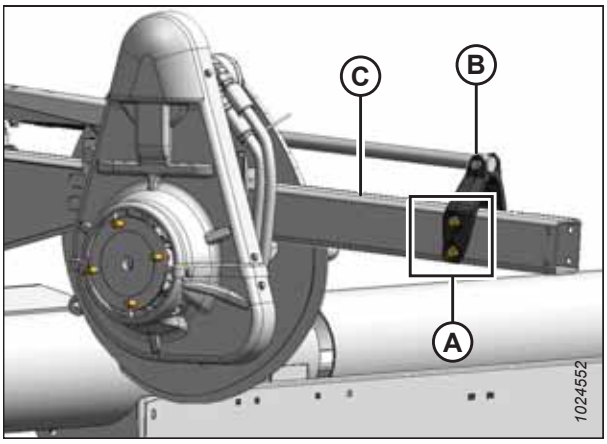


Figure 3.117: Center Arm – Aft Position

Repositioning the right reel arm fore-aft cylinder:

1. Remove four bolts (A) securing cylinder bracket (B) to reel arm (C).

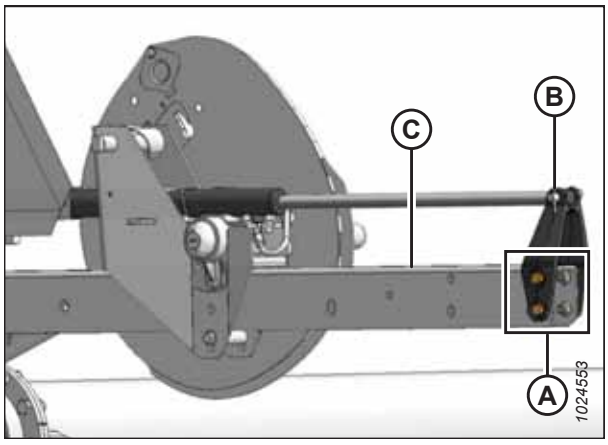


Figure 3.118: Right Reel Arm Cylinder in Forward Position

2. Push the reel back until bracket (B) lines up with the aft set of holes in reel arm (C).
3. Reinstall four bolts (A) to secure the bracket to the reel arm at the new position.

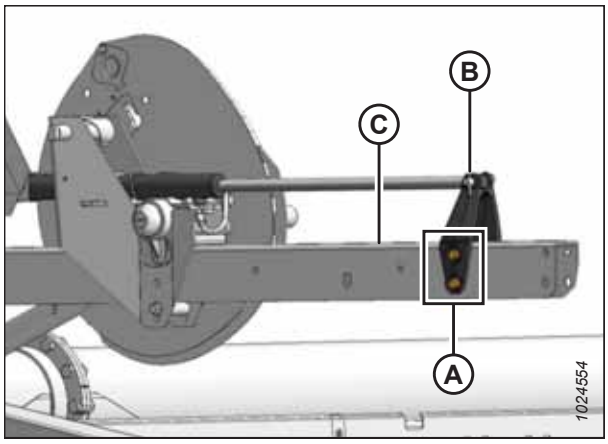


Figure 3.119: Right Reel Arm Cylinder in Aft Position

Repositioning the left reel arm fore-aft cylinder:

1. Remove pin (A) securing cylinder (B) to bracket/light assembly (C).
2. Remove four bolts (D) securing bracket/light assembly (C) to the reel arm and remove the bracket/light assembly. Retain the hardware.
3. Remove the cable tie (not shown) securing the harness to bracket/light assembly (C) or to the reel arm (if necessary).
4. Swivel the light to the working position as shown.

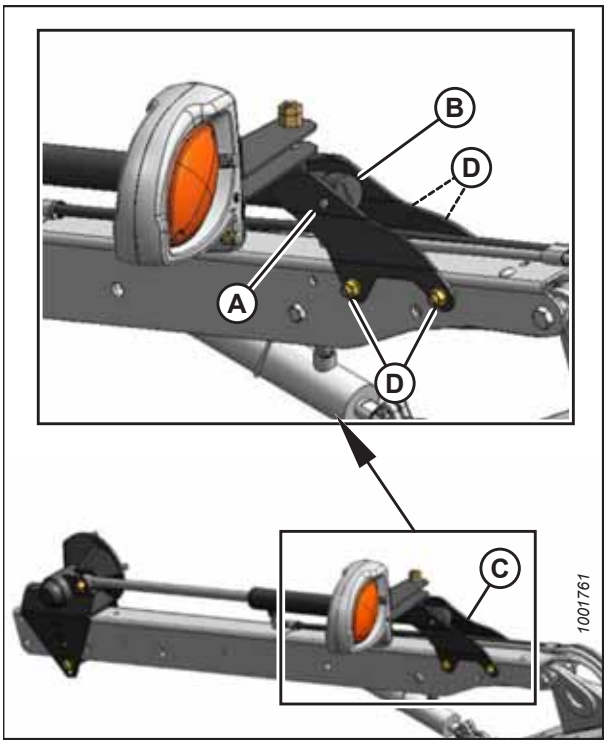


Figure 3.120: Left Arm – Forward Position

5. Reposition bracket/light assembly (C) onto the reel arm as shown, and secure using four bolts (D). Tighten the hardware.
6. Push the reel back and reinstall cylinder (B) onto bracket/light assembly (C) using pin (A). Secure the pin with a cotter pin.
7. Secure the light harness to bracket/light assembly (C) or to the reel arm using a cable tie (not shown).
8. Check reel clearance to the backsheet, the upper cross auger (if installed), and the reel braces.
9. Adjust the reel tine pitch, if necessary. For information on the adjustment procedures, refer to *3.8.12 Reel Tine Pitch, page 116*.

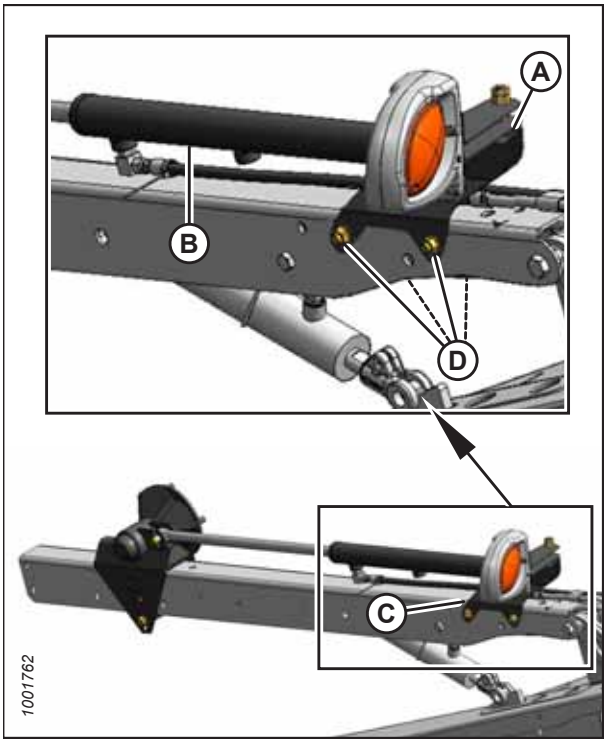


Figure 3.121: Left Arm – Aft Position

Repositioning Fore-Aft Cylinders on European-Configured Headers – Double-Reel Headers

The reel can be moved approximately 67 mm (2.6 in.) farther aft from the factory setting by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola.

For instructions for repositioning the fore-aft cylinders on a non-European-configured header, refer to *Repositioning Fore-Aft Cylinders on Non-European-Configured Headers – Double Reel, page 107*.

To reposition the center reel arm cylinder:

NOTE:

The reel components are not shown in the illustrations in this procedure for the sake of clarity.

NOTE:

Reels on European-configured headers are at their farthest-forward setting when the cylinders are set in position 2 on the fore-aft arm brackets. The reels on these headers are in their most aft position when the cylinders are set in position 1 on the fore-aft arm brackets.

1. Remove securing ring (A), pin (B), and the washers inside the center arm fore-aft support bracket (C). Retain the washers, the pin, and the ring.

   NOTE:

   The washers inside the center arm support bracket are not shown in illustration at right.

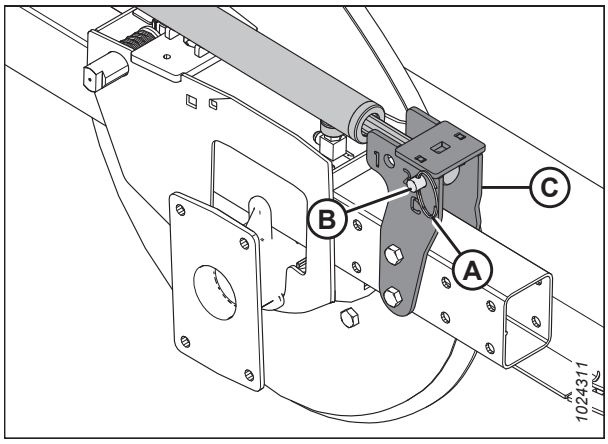


Figure 3.122: Center Reel Arm in Forward Position

2. Push the reel back until the end of cylinder (A) lines up with aft setting holes (B) (position 1) in fore-aft support bracket (C). Position washers (D) on both sides of cylinder end (A) inside support bracket (C).

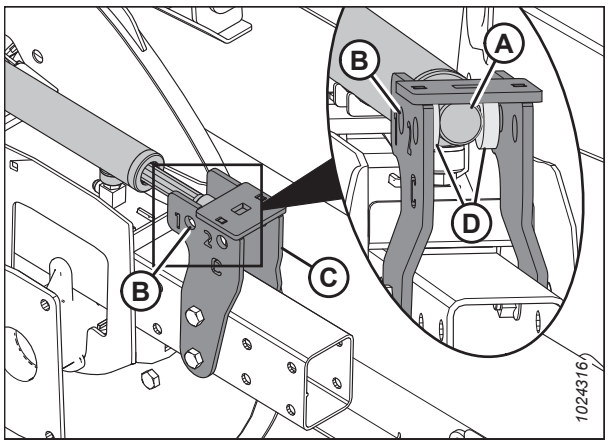


Figure 3.123: Center Reel Arm

3. Insert pin (A) and secure cylinder (B) and the washers in center arm support bracket (C). Secure pin (A) with ring (D).

   NOTE:

   The washers inside the center arm support bracket are not shown in the illustration.

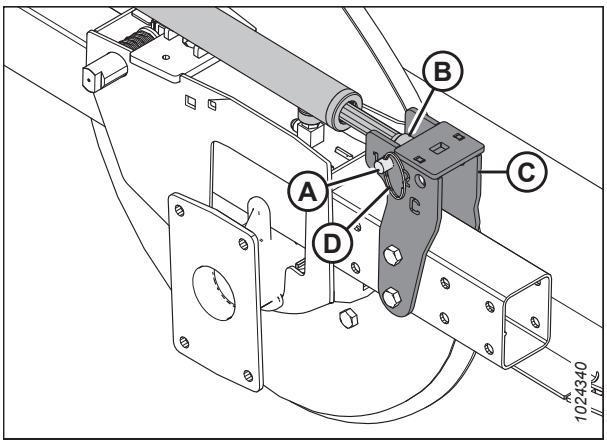


Figure 3.124: Center Reel Arm in Aft Position

To reposition the right reel arm cylinder:

4. Remove ring (A), pin (B), and washers (D) securing reel arm cylinder (C) to the interior of the right fore-aft arm bracket. Retain the washers, ring, and pin.

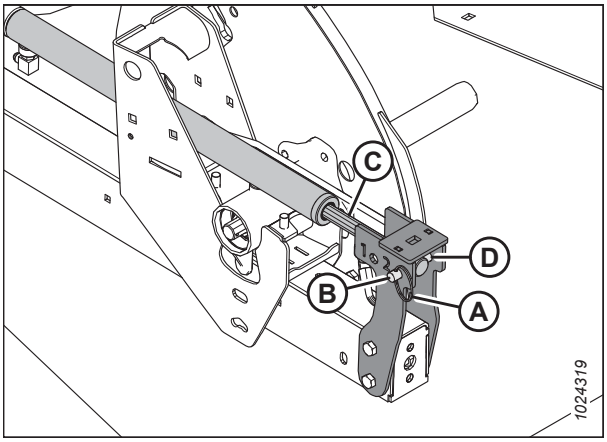


Figure 3.125: Right Reel Arm Cylinder in Forward Position

5. Push the reel back until the end of cylinder (A) lines up with aft setting holes (B) in support bracket (C). Position washers (D) on both sides of cylinder end (A) inside support bracket (C).

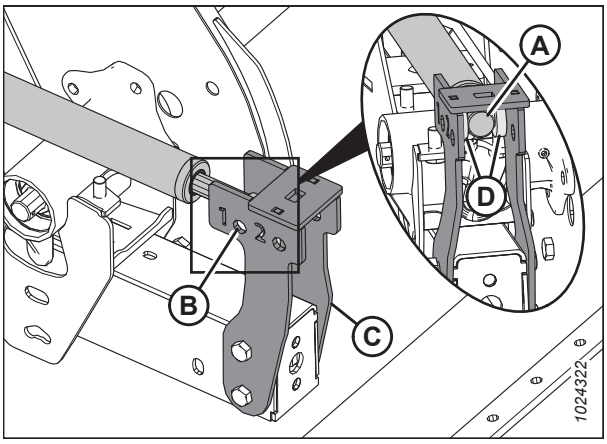


Figure 3.126: Right Reel Arm Cylinder

6. Insert pin (A) into the aft setting holes and through cylinder end (C) and washers (D). Secure the pin with ring (B).

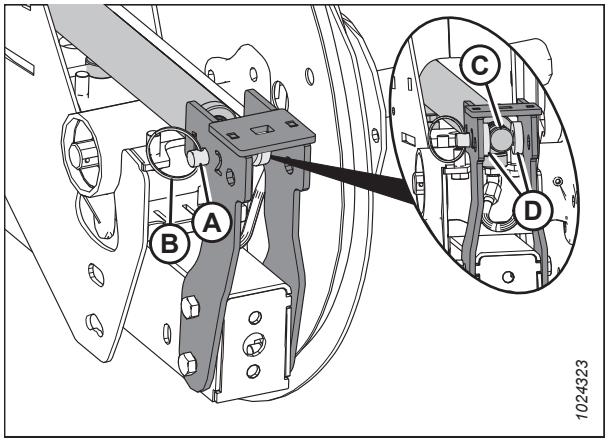


Figure 3.127: Right Reel Arm Cylinder in Aft Position

To reposition the left reel arm cylinder:

7. Remove ring (A) and pin (B) from inside left fore-aft support bracket (D) securing cylinder (C). Retain the pin and ring.

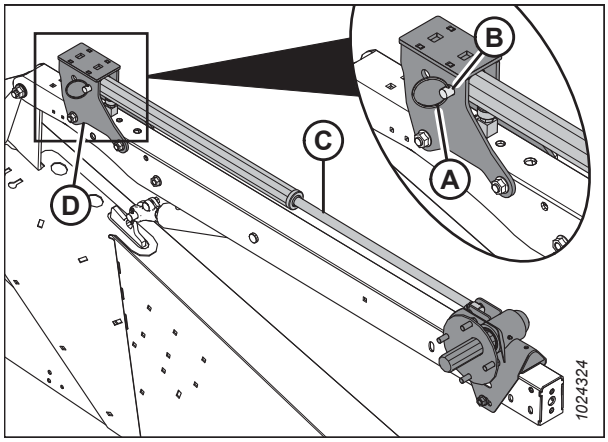


Figure 3.128: Left Reel Arm Cylinder in Forward Position

8. Push the reel back toward the header until the end of cylinder (A) lines up with aft setting holes (B) (position 1) in support bracket (C).

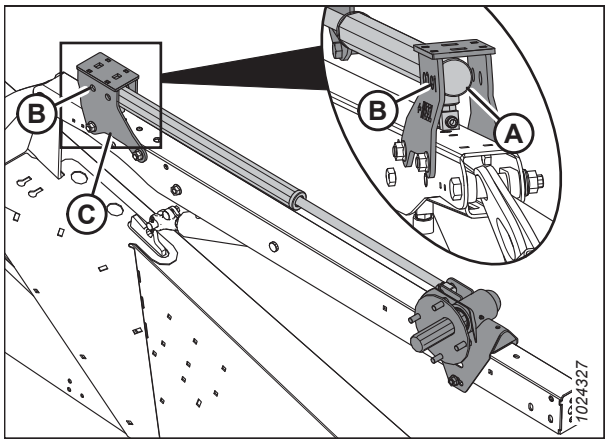


Figure 3.129: Left Reel Arm Cylinder

9. Insert clevis pin (A) into the aft setting holes in support bracket (B) and through the end of the cylinder (C). Secure the pin with ring (D).
10. Check the following clearances:
    - Reel to backsheet
    - Reel to upper cross auger (if installed)
    - Reel to reel braces
11. Adjust the reel tine pitch if necessary. For instructions, refer to *3.8.12 Reel Tine Pitch, page 116*.

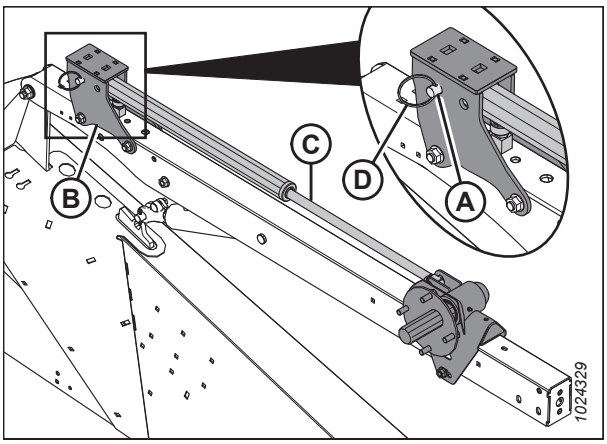


Figure 3.130: Left Reel Arm Cylinder in Aft Position

Repositioning Fore-Aft Cylinders on Non-European-Configured Headers with Multi-Crop Rapid Reel Conversion Option – Double-Reel Headers

The reel can be moved approximately 227 mm (9 in.) farther aft by repositioning the fore-aft cylinders on the reel arms. The Multi-Crop Rapid Reel Conversion option is applicable to double-reel headers only.

NOTE:

The Short Brace Kit for Center Reel Arm (MD #B5605) must be installed before the fore-aft cylinders can be repositioned.

NOTE:

Multi-Crop Rapid Reel Conversion option is **NOT** available for European-configured headers.

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 reel is not shown in the illustrations in this procedure for the sake of clarity.

Repositioning the left reel arm fore-aft cylinder:

1. Position the reel fully aft so that the support arms are horizontal.
2. Shut down the engine, and remove the key from the ignition.

3. Remove ring (A) and clevis pin (B) from the inboard side of bracket (C). Retain the ring and the clevis pin.

4. Push the reel back until cylinder barrel (D) lines up with reel position 2 hole on the bracket.

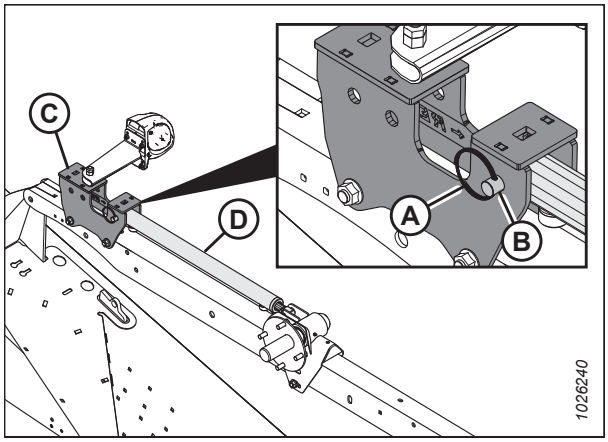


Figure 3.131: Left Reel Arm in Forward Position

5. Reinstall clevis pin (B) at the new position in bracket (C), and secure end of cylinder (D) with ring (A).

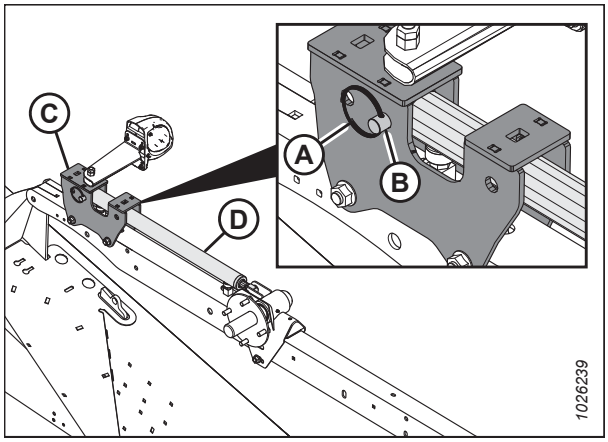


Figure 3.132: Left Reel Arm in Aft Position

Repositioning the center reel arm fore-aft cylinder:

6. Remove ring (A), clevis pin (B), and washers (C) from bracket (D). Retain the ring, clevis pin, and washers.

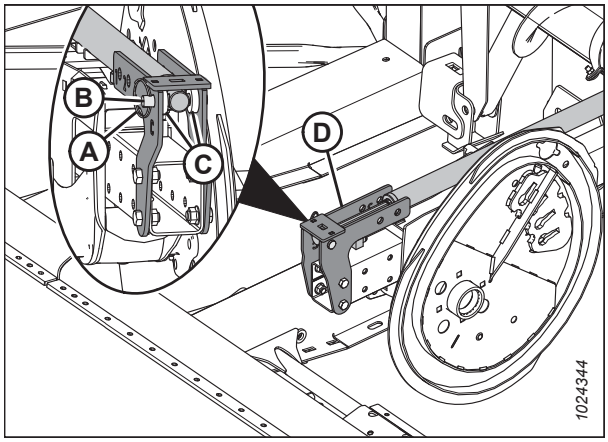


Figure 3.133: Center Reel Arm in Forward Position

7. Push the reel back until the end of cylinder (E) lines up with the reel position 2 hole on bracket (D). Position washers (C) on both sides of the cylinder end inside the bracket.

8. Reinstall clevis pin (B) at the new position. Secure it with ring (A).

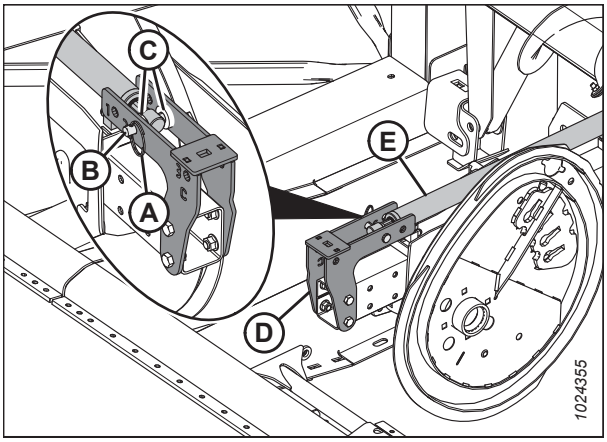


Figure 3.134: Center Reel Arm in Aft Position

Repositioning the right reel arm fore-aft cylinder:

9. Remove ring (A), clevis pin (B), and washers (C) from bracket (D). Retain the ring, clevis pin, and washers.

10. Push the reel back until the end of cylinder (E) lines up with reel position 2 hole on bracket (D).

    NOTE:

    The washers inside the center arm support bracket are not shown in the illustration.

11. Reinstall clevis pin (B) at the new position. Secure it with ring (A).

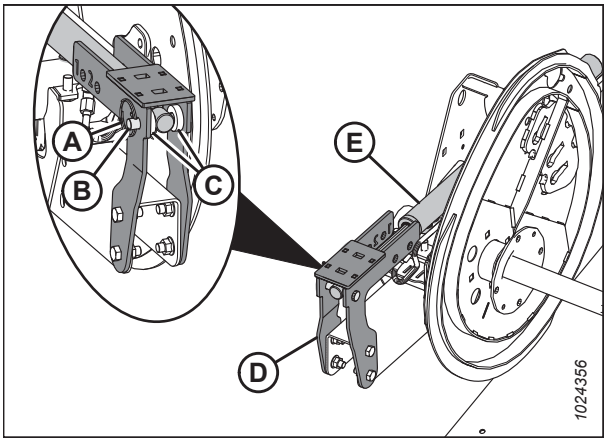


Figure 3.135: Right Reel Arm in Forward Position

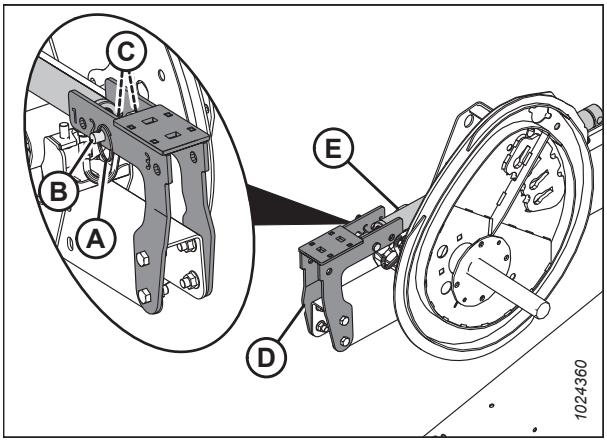


Figure 3.136: Right Reel Arm in Aft Position

3.8.12 Reel Tine Pitch

Reel tine pitch is a term used to describe the position of the reel fingers in relation to the cutterbar. The reel tine pitch can be changed by changing the reel fore-aft position and the reel cam setting. You may 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. Changing the cam setting, on the other hand, has a smaller impact on 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 44*.

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 118*.

NOTE:

For the recommended reel tine pitch setting to use in various harvesting conditions, refer to *3.7.2 Header Settings, page 44*.

Cam Position 1, Reel Position 6 or 7 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 close to the ground speed.

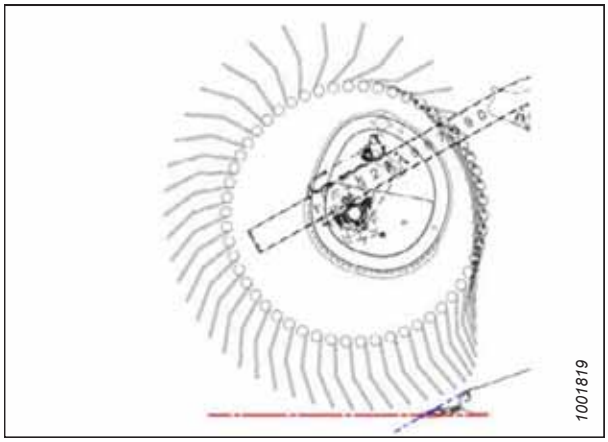


Figure 3.137: Finger Profile – Position 1

Cam Position 2, Reel Position 3 or 4 is the recommended starting position for most crops and conditions.

- If the crop is stalling on the cutterbar when the reel is in the forward position, increase the cam setting to push the crop past the rear edge of the cutterbar.
- If the crop is getting fluffed 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.

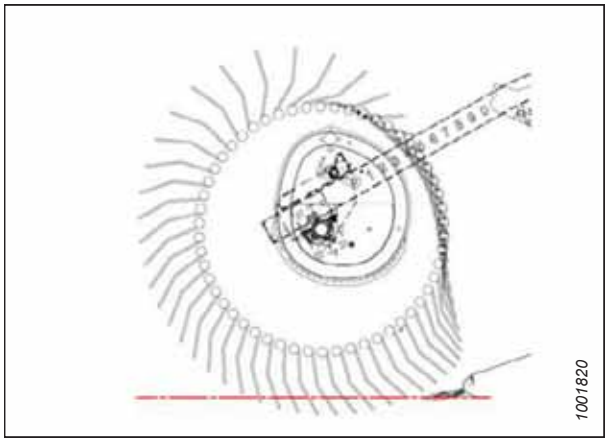


Figure 3.138: Finger Profile – Position 2

Cam Position 3, Reel Position 6 or 7 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.

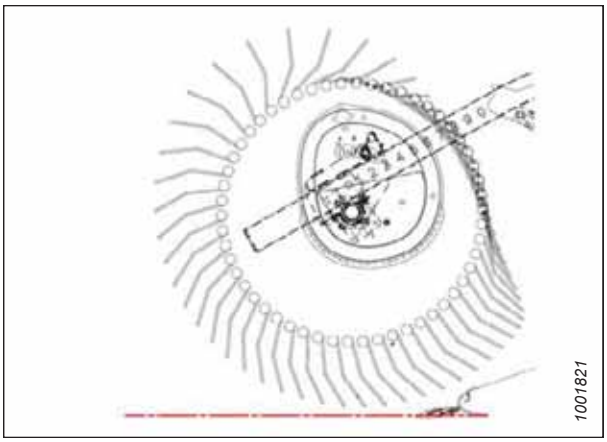


Figure 3.139: Finger Profile – Position 3

Cam Position 4, Reel Position 2 or 3 is used with the reel is fully forward. Using this setting results in the header leaving the maximum amount of stubble when harvesting in lodged crops.

- 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.

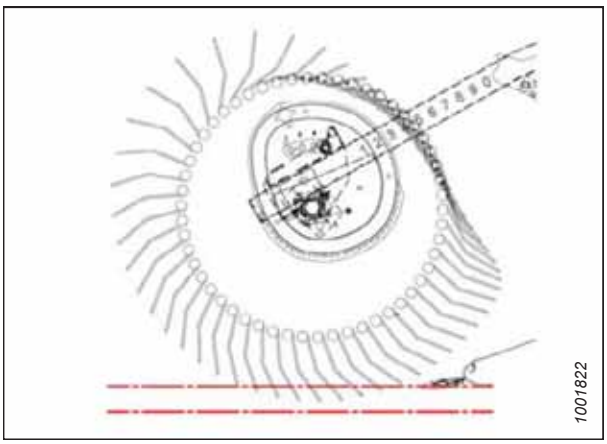


Figure 3.140: Finger Profile – Position 4

Cam Position 4, Header Angle at Maximum, and Reel Fully Forward 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 ground speed because of the reduction of cut material.
- This setting results in a the reel fingertip speed being approximately 35% faster than the reel speed.

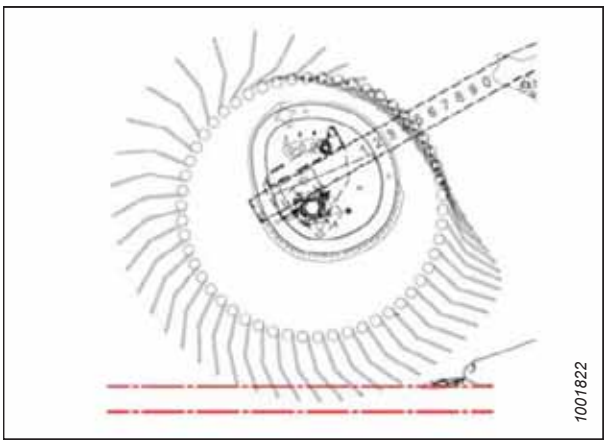


Figure 3.141: Finger Profile – Position 4

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, resulting in disrupted 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

The reel cam can be adjusted to change the reel tine pitch.

IMPORTANT:

Always check the reel-to-cutterbar clearance after adjusting the reel tine pitch and reel fore-aft positions. For information, refer to *5.17.1 Reel-to-Cutterbar Clearance, page 542*.

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, the adjustments need to be made on all of the reel cams.

1. Shut down the engine, and remove the key from the ignition.
2. Turn latch pin (A) counterclockwise using a 3/4 in. wrench to release the cam disc.
3. Use the wrench 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 positioned through the cam disc (transparent view shown in the illustration for improved clarity).
4. Turn latch pin (A) clockwise to engage and lock the cam disc.

   IMPORTANT:

   Ensure the cam is secured into position before operating the machine.
5. Repeat the above procedure for all reels.

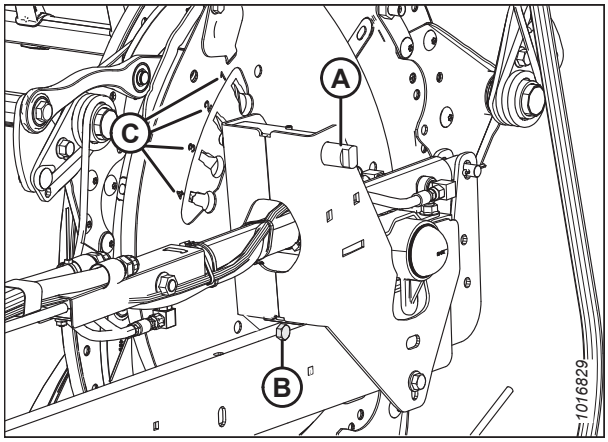


Figure 3.142: Cam Disc Positions

3.8.13 Crop Dividers

Crop dividers are used to separate the crop when harvesting. They are removable to allow the installation of vertical knives or the sunflower attachment, and to decrease transport width.

Removing Crop Dividers with Latch Option from Header

To correctly remove crop dividers with the latch option, follow the recommended removal procedure provided here.

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.

1. Lower the reel fully. For instructions, refer to your combine operator's manual.
2. Raise the header fully. For instructions, refer to your combine operator's manual.
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 endshield. For instructions, refer to *Opening Endshields, page 33*.
6. Lift safety lever (A).
7. Hold onto crop divider (B), push lever (C) to open the latch, and lower the crop divider.

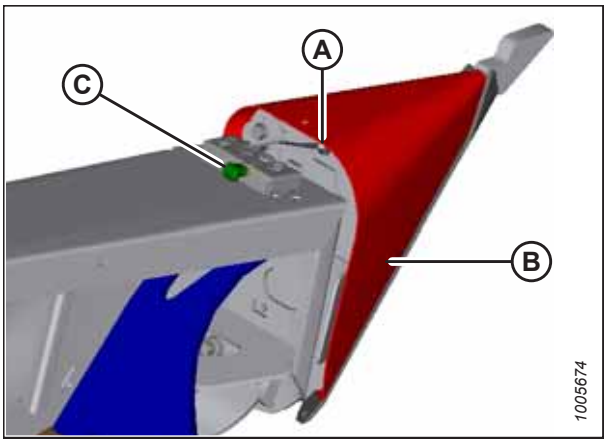


Figure 3.143: Crop Divider

8. Lift the crop divider off of the endsheet and store it as follows:
   a. Insert pin (A) on the crop divider into the hole in the endsheet at the location shown.
   b. Lift the crop divider and position lugs (B) on the crop divider into the bracket on endsheet. Ensure the lugs engage the bracket.
9. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

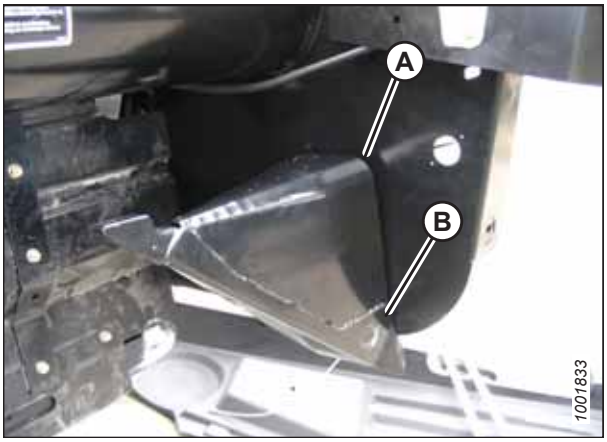


Figure 3.144: Stored Crop Divider

Removing Crop Dividers without Latch Option from Header

To correctly remove crop dividers without the latch option, follow the recommended removal procedure provided here.

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.

1. Lower the reel fully. For instructions, refer to your combine operator's manual.
2. Raise the header fully. For instructions, refer to your combine operator's manual.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props. For instructions, refer to your combine operator's manual.
5. Open the endshield. For instructions, refer to *Opening Endshields, page 33*.

6. Remove bolt (A), the lock washer, and the flat washer.
7. Lower crop divider (B), then lift it to remove it from the endsheet.
8. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

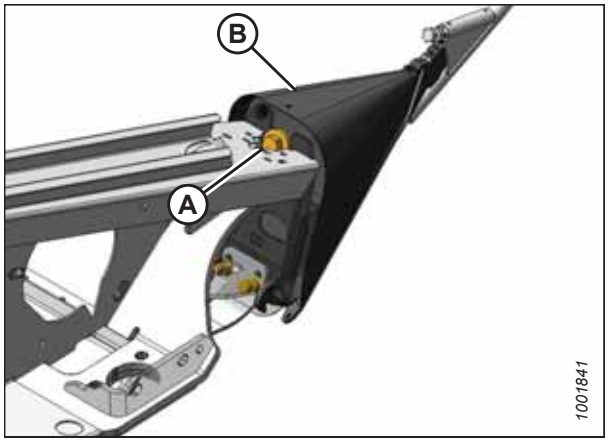


Figure 3.145: Crop Divider

Installing Crop Dividers with Latch Option onto Header

To correctly install crop dividers with the latch option, follow the recommended installation procedure provided here.

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.

1. Lower the reel fully. For instructions, refer to your combine operator's manual.
2. Raise the header fully. For instructions, refer to your combine operator's manual.
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 endshield. For instructions, refer to *Opening Endshields, page 33*.
6. If the crop divider is stored on the header, remove the crop divider from its storage location by lifting the crop divider to disengage lugs (A) at the lower end. Then lower it slightly to disengage pin (B) from the endsheet.

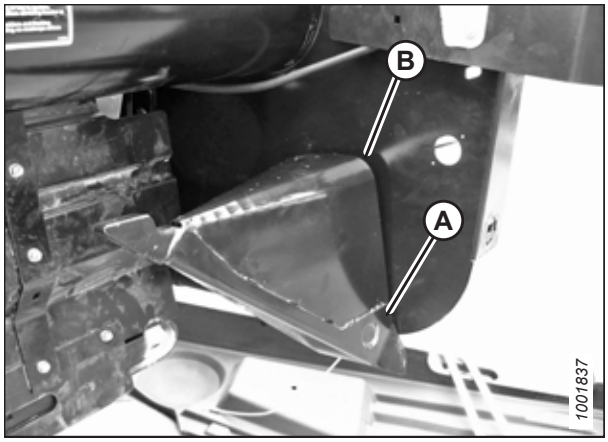


Figure 3.146: Stored Crop Divider

7. Position the crop divider as shown by inserting lugs (A) into the holes in the endsheet.
8. Lift the forward end of the crop divider until pin (B) at top of the crop divider engages and closes latch (C).
9. Push safety lever (D) downwards to lock the pin into latch (C).

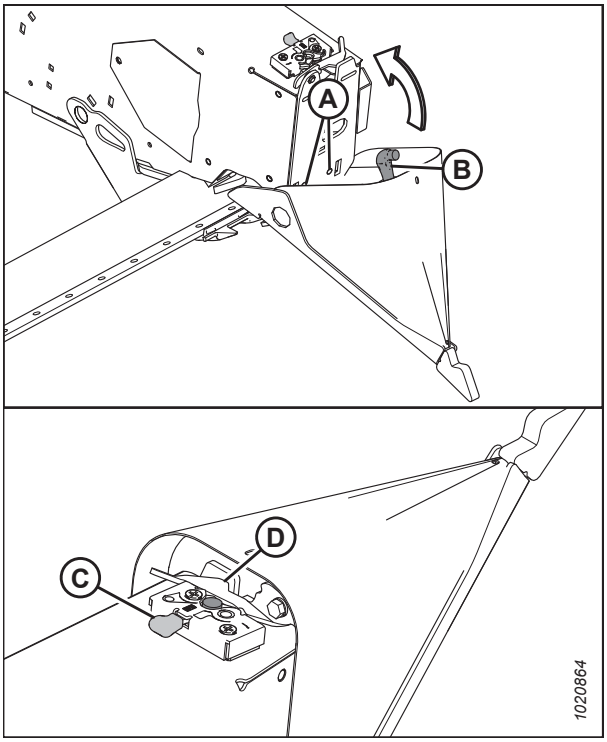


Figure 3.147: Crop Divider

10. Pull the tip of the crop divider to ensure there is no lateral movement. If necessary, adjust bolts (A) to tighten the crop divider and eliminate any lateral movement.
11. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

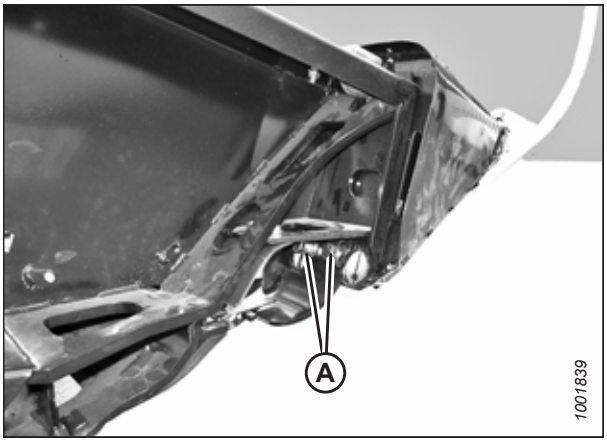


Figure 3.148: Crop Divider

Installing Crop Dividers without Latch Option onto Header

To correctly install crop dividers without the latch option, follow the recommended installation procedure provided here.

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.

1. Lower the reel fully. For instructions, refer to your combine operator's manual.
2. Raise the header fully. For instructions, refer to your combine operator's manual.
3. Shut down the engine, and remove the key from the ignition.

4. Engage the header safety props. For instructions, refer to your combine operator's manual.

5. Open the endshield. For instructions, refer to *Opening Endshields, page 33*.

6. If the crop divider is stored on the header, remove the crop divider from the storage location by lifting the crop divider to disengage lugs (A) at the lower end and then lowering it slightly to disengage pin (B) from the endsheet.

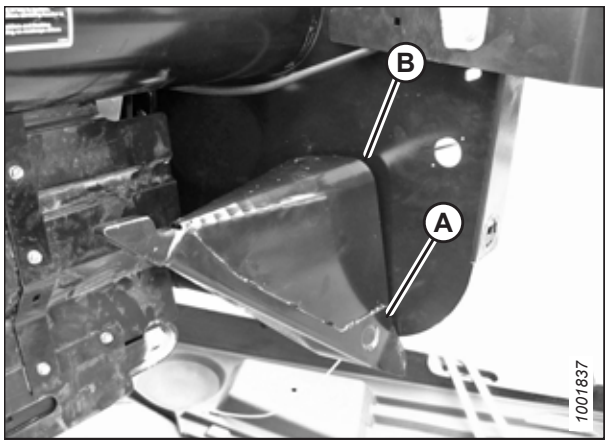


Figure 3.149: Stored Crop Divider

7. Position the crop divider as shown by inserting lugs (A) into the holes in the endsheet.

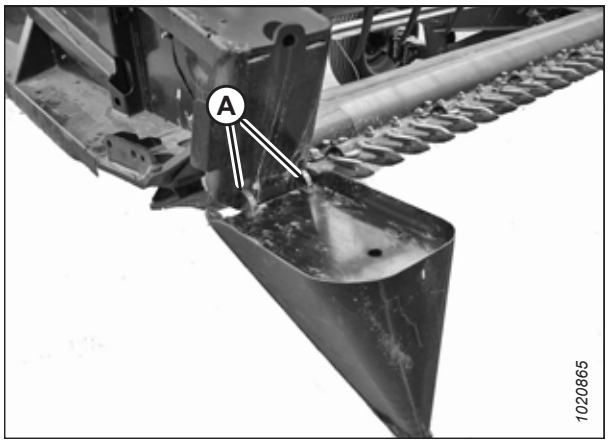


Figure 3.150: Crop Divider

8. Lift the forward end of the crop divider and install bolt (A), and special stepped washer (B) (step towards divider). Tighten the bolt.

9. Pull on the tip of the crop divider to ensure there is no lateral movement. If necessary, adjust bolts (C) to tighten the crop divider and eliminate any lateral movement.

10. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

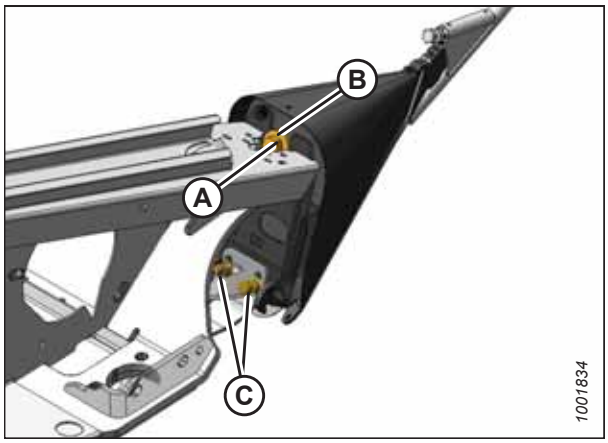


Figure 3.151: Crop Divider

3.8.14 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 rods are most useful when crop is bushy or down. In standing crops, using only crop dividers is recommended.

Table 3.20 Crop Divider Rods Recommended Use

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

To remove the crop divider rods and place them in their storage position, perform the removal procedure provided here.

1. Loosen bolt (A) and remove crop divider rod (B) from both sides of the header.

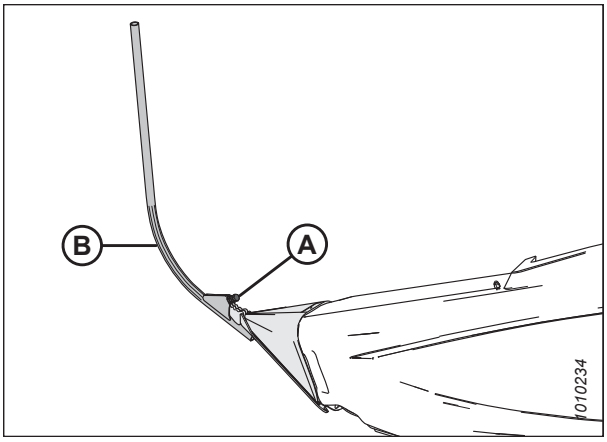


Figure 3.152: Crop Divider Rod

2. Store both crop divider rods (A) inboard on the right endsheet.

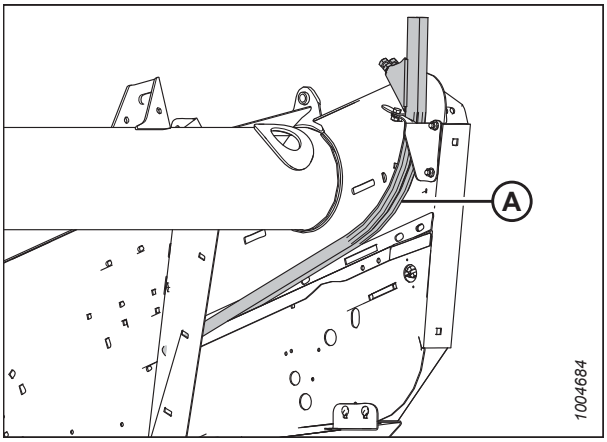


Figure 3.153: Right Endsheet

Installing Crop Divider Rods

To install the crop divider rods onto the crop dividers, perform the installation procedure provided here.

1. Remove crop divider rods (A) from their storage location on the inboard of the side endsheet.

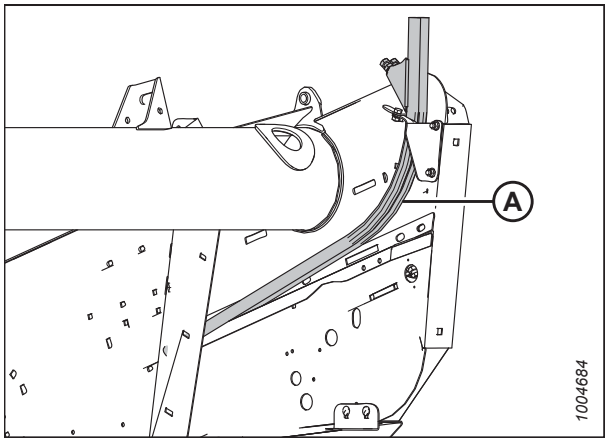


Figure 3.154: Right Endsheet

2. Position crop divider rod (B) on the tip of the crop divider as shown and tighten bolt (A).
3. Repeat this procedure at the opposite end of the header.

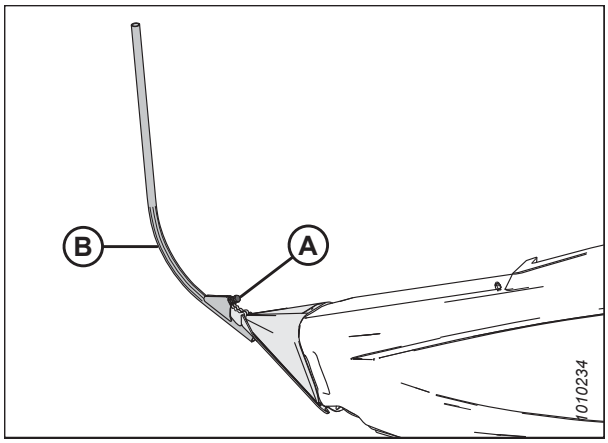


Figure 3.155: Divider Rod on Crop Divider

Rice Divider Rods

Optional rice divider rods provide improved performance in tall and tangled rice crops. The installation and removal procedures for these rods are the same as the installation and removal procedures for standard crop divider rods.

For more information on the rice divider rods, refer to *6.5.11 Rice Divider Rods, page 605*.

Figure 3.156: Divider Rod for Rice

3.8.15 Setting Feed Auger Position

The auger position has two settings—floating and fixed. The factory setting is the floating position, and is recommended 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.

Auger float adjustment arms (A) are located at the bottom left and bottom right of the float module.

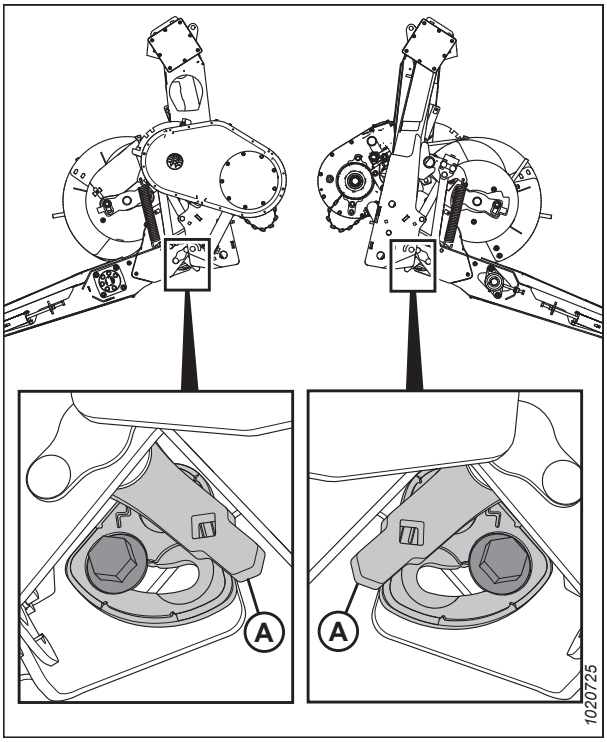


Figure 3.157: Auger Float Adjustment Arms

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.

CAUTION

Make sure the left and 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.

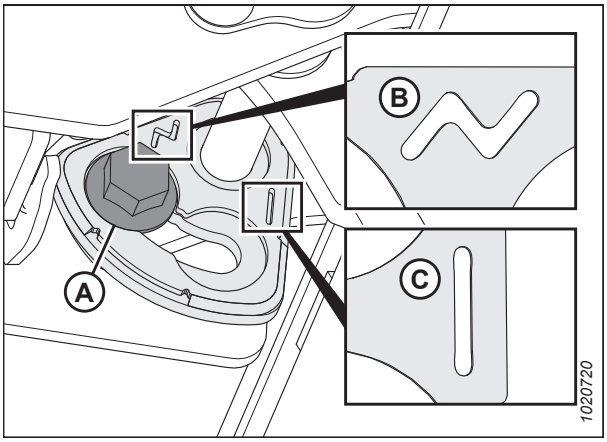


Figure 3.158: Auger Float Positions

To set the auger position, follow these steps:

1. Extend the center-link to the steepest header angle.
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. Using a 21 mm wrench, loosen bolt (A) until the bolt head is clear of bracket (B).

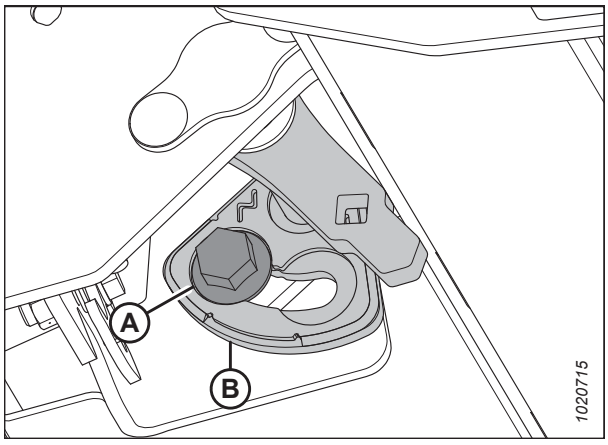


Figure 3.159: Left Auger Float Adjustment Arm

6. Using the same wrench, move arm (B) forward until bolt (A) is in the slot on the bracket next to fixed symbol (C). The arm can also be moved using a breaker bar in square hole (D).

   NOTE:

   If 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:

   Bolts (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 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.

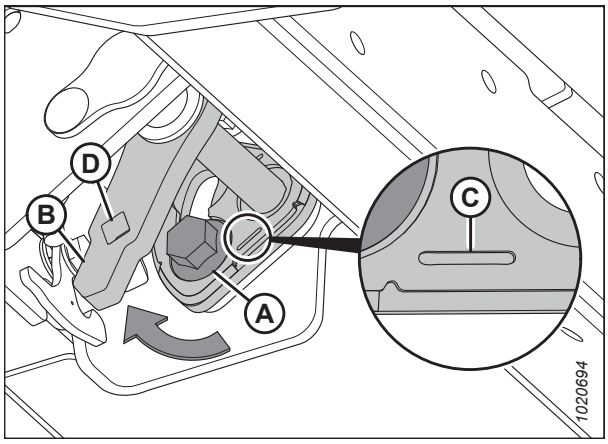


Figure 3.160: Left Auger Float Adjustment Arm

3.9 Auto Header Height Control

MacDon's auto header height control (AHHC) system works in conjunction with the AHHC option available on certain combine models.

A sensor is installed in float indicator box (A) on the FM100 Float Module. This sensor sends a signal to the combine allowing it to maintain a consistent cutting height and the optimum float as the header follows the changes in ground elevation.

For more information, refer to *6 Options and Attachments, page 587*.

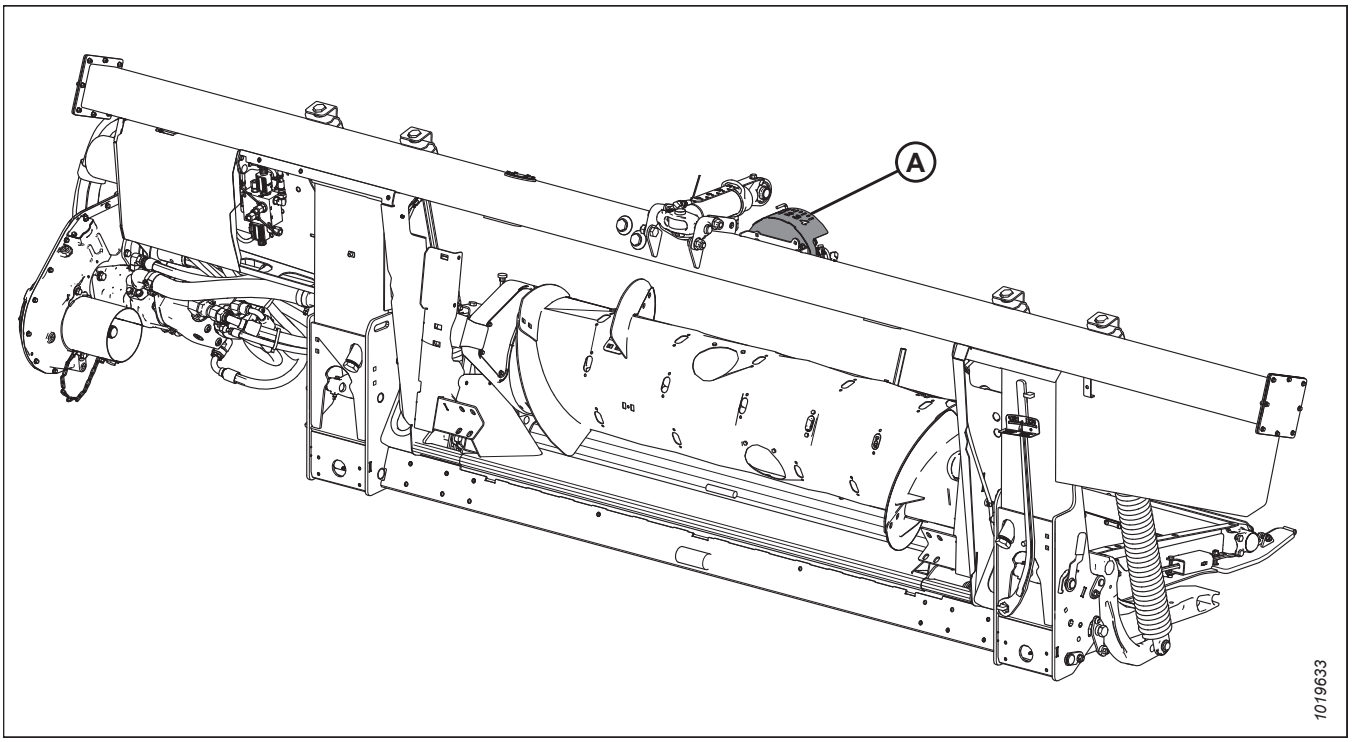


Figure 3.161: FM100 Float Module

The following tasks will need to be completed before the AHHC system can be used:

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:

- *3.9.4 Case IH 5088/6088/7088 Combines, page 139*
- *3.9.5 Case IH 130 and 140 Series Mid-Range Combines, page 142*
- *3.9.6 Case IH 7010/8010, 120, 230, 240, and 250 Series Combines, page 151*
- *3.9.7 Challenger® and Massey Ferguson® 6 and 7 Series Combines, page 169*
- *3.9.8 CLAAS 500 Series Combines, page 177*
- *3.9.9 CLAAS 600 and 700 Series Combines, page 186*
- *3.9.10 CLAAS 5000, 6000, 7000, and 8000 Series Combines, page 196*
- *3.9.11 Gleaner R65/R66/R75/R76 and S Series Combines, page 207*

3.9.1 Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system are hall-effect sensors. Normal operating signal voltages for the sensors fall between 10% (0.5 VDC) and 90% (4.5 VDC). An increase in sensor voltage correlates to a decrease in ground pressure, or if you are cutting off the ground on gauge wheels, an increase in the header cut height.

Sensor errors result in a 0 V signal, indicating a faulty sensor, incorrect supply voltage, or a damaged wiring harness.

3.9.2 Troubleshooting Auto Header Height / Float Indicator

Refer to this topic if the auto header height / float indicator unit is not operating correctly.

Use Table *3.21, page 128* and Figure *3.162, page 128* to determine the recommended repair procedure.

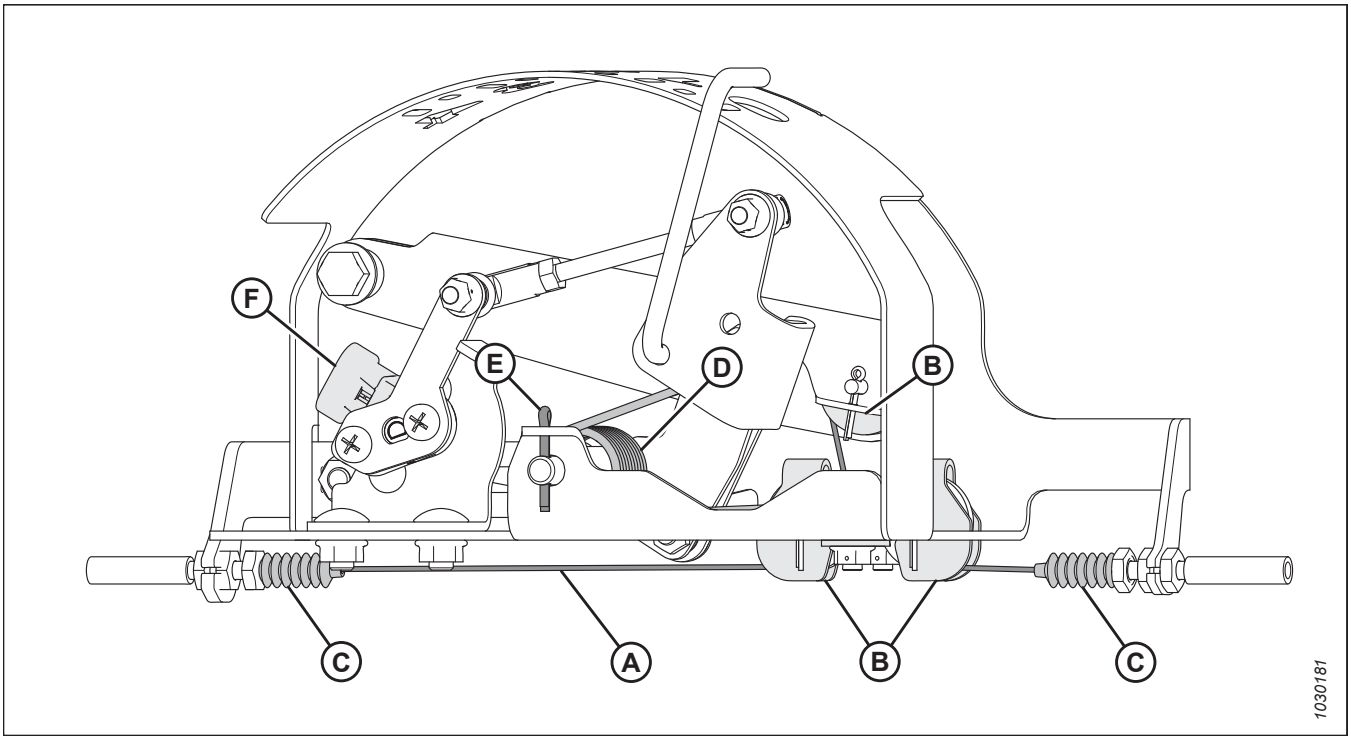


Figure 3.162: Float Indicator

Table 3.21 Auto Header Height / Float Indicator Troubleshooting

Problem	Solution	Refer to
Symptom: Float indicator not moving		
Cable (A) is frayed	Replace cable.	See your MacDon Dealer
Excessive material built up inside float indicator / auto header height frame	Clean out material.	—

Table 3.21 Auto Header Height / Float Indicator Troubleshooting (continued)

Problem	Solution	Refer to
Cable (A) fell off of pulleys (B)	Check pulleys and replace them if necessary.	—
Rubber sheath (C) came off of cable (A) and got caught on the pulley	Install cable ties around the rubber sheath and cable to secure it.	—
Spring (D) seized from corrosion	Replace spring.	—
Cotter pin (E) has broken and the pin spins	Check for seized pin in bore, clean if necessary, and then replace cotter pin.	—
Voltage range too low or high	Adjust voltage range.	*3.9.3 Sensor Output Voltage Range – Combine Requirements, page 129*
Faulty sensor (F)	Replace sensor.	See your MacDon Dealer

3.9.3 Sensor Output Voltage Range – Combine Requirements

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.

Table 3.22 Combine Voltage Limits

Combine	Lower Voltage Limit	Upper Voltage Limit	Range
Case IH 5088/6088/7088, 5130/6130/7130, 7010/8010, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240	0.5 V	4.5 V	2.5 V
Case IH 2588/2577	2.8 V	7.2 V	4.0 V
Challenger®, Gleaner A, and Massey Ferguson®	0.5 V	4.5 V	2.5 V
CLAAS 500/600/700 Series, 7000/8000 Series, and Tucano Series	0.5 V	4.5 V	2.5 V
IDEAL™ Series	0.5 V	4.5 V	2.5 V
Gleaner A6, R, and S Series	0.5 V	4.5 V	2.5 V
John Deere 60, 70, S, and T Series	0.5 V	4.5 V	2.5 V
New Holland CR/CX - 5 V system	0.7 V	4.3 V	2.5 V
New Holland CR/CX - 10 V system	2.8 V	7.2 V	4.1–4.4 V

NOTE:

Some combine models do not support checking sensor output voltage from the cab (early Case 23/2588 series, CLAAS 500/600/700 Series). For these models, check output voltage manually. For instructions, refer to *Checking Voltage Range Manually – One-Sensor System, page 130* or *Checking Voltage Range – Two-Sensor System, page 133*.

10 Volt Adapter (MD #B6421) – New Holland Combines Only

New Holland combines with a 10 V system require the 10 V adapter (MD #B6421) for proper calibration of the auto header height control (AHHC) feature.

If a 10 V New Holland combine does not have adapter (A) installed, the AHHC output will always read 0 V, regardless of sensor position.

NOTE:

A 10 V adapter is not available for the optional two-sensor system.

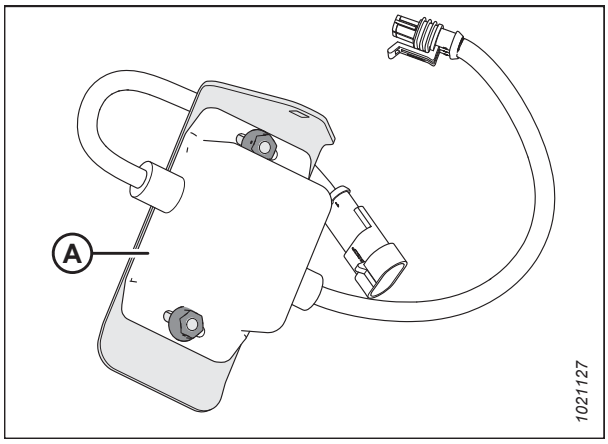


Figure 3.163: 10 V Adapter (MD #B6421)

Use a voltmeter to measure the voltage between Pin 1 (power) and Pin 2 (ground) wires at AHHC sensor (A). This will determine whether the combine has a 5 V system or a 10 V system.

NOTE:

The combine key must be in the ON position, but the engine does not need to be running.

The three possible voltage readings are as follows:

- 0 V – combine key is in OFF position, or there is a faulty harness/faulty connection
- 5 V – standard combine reading
- 10 V – 10 V combine reading; adapter (MD #B6421) is required

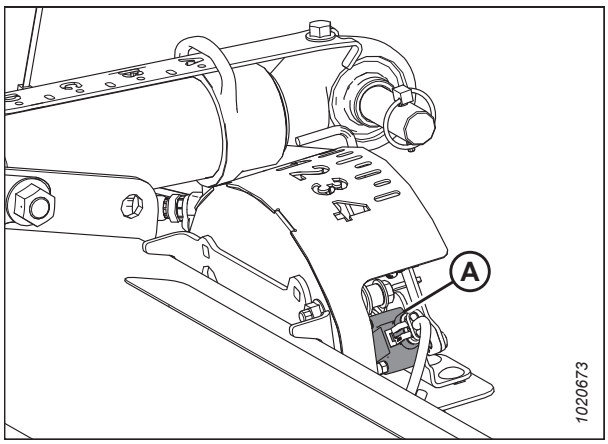


Figure 3.164: Float Indicator Box

Checking Voltage Range Manually – One-Sensor System

The one-sensor system is standard for the FM100 Float Module. The sensor is located inside the float indicator box.

If the float module is equipped with the optional two-sensor system, refer to *Checking Voltage Range – Two-Sensor System, page 133*.

The output voltage range of the auto header height control (AHHC) sensors in some combines can be checked from the cab. For instructions, refer to your combine operator's manual or the AHHC instructions later in this document.

To manually check the sensor's output voltage range, follow these steps:

1. Extend the guard angle fully; the header angle indicator should be at **D**.
2. Position the header 150 mm (6 in.) above the ground, and unlock the float.

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.

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

4. 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 AHHC system. If the header is not on down stops, refer to *3.10 Leveling Header, page 317* for instructions.

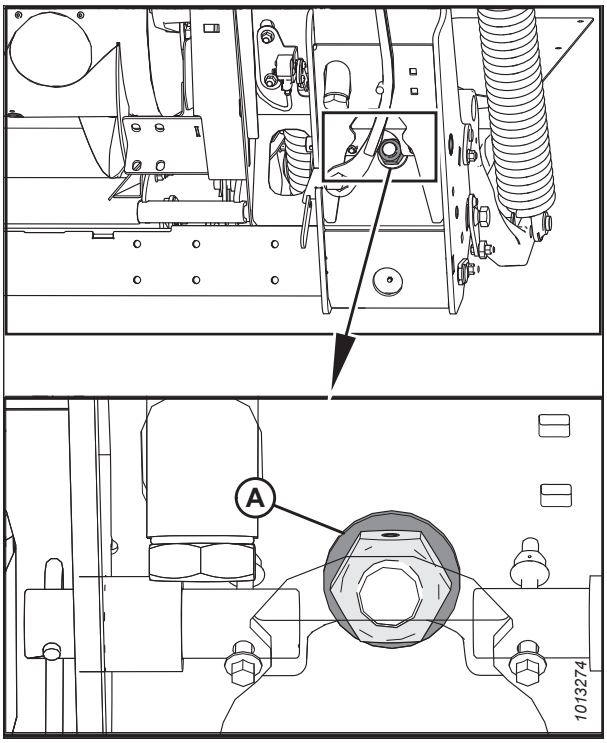


Figure 3.165: Down Stop Washer

5. Locate linkage assembly (A) in the float indicator box on top of the float module. Verify that dimension (B) is set to 55 mm (2 3/16 in.). If it is not, adjust linkage (A).

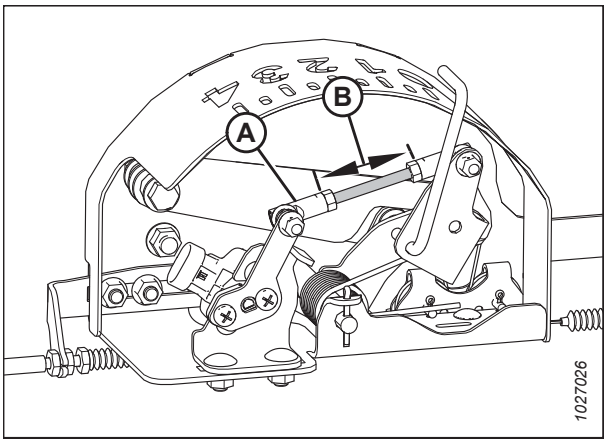


Figure 3.166: Float Indicator Box

6. If necessary, adjust cable take-up bracket (B) until float indicator pointer (A) is on **0**.

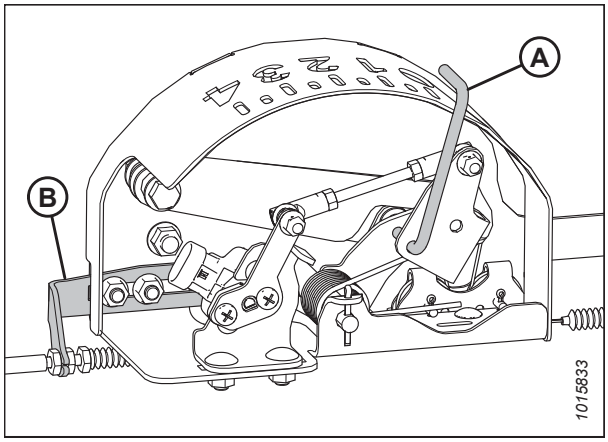


Figure 3.167: Float Indicator Box

7. Use voltmeter (A) to measure the voltage between the ground (Pin 2) and signal (Pin 3) wires at the AHHC sensor in the float indicator box. Ensure that the voltage reading is identical to the upper voltage limit for the combine. For the voltage limit chart, refer to Table *3.22, page 129*.

   NOTE:

   The wiring harness connector must be attached to the sensor. Do **NOT** disconnect it.

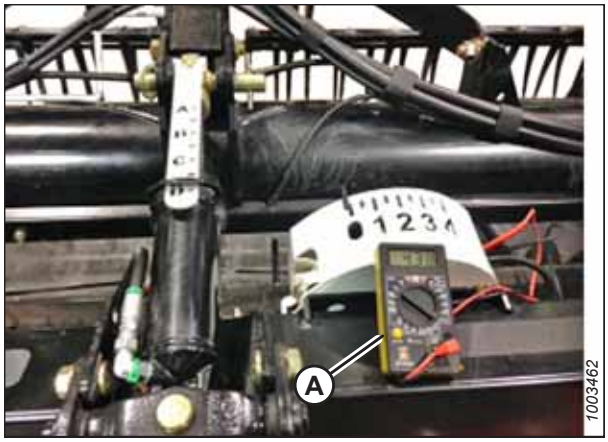


Figure 3.168: Measuring Voltage at Float Indicator Box

8. Fully lower the combine feeder house, and float the header up off the down stops (the float indicator should be at **4**, and 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 ensure the feeder house is fully lowered.

9. Use voltmeter (A) to measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator box. Ensure that the voltage reading is identical to the lower voltage limit for the combine. For the voltage limit chart, refer to Table *3.22, page 129*.

   NOTE:

   The wiring harness connector must be attached to the sensor. Do **NOT** disconnect it.

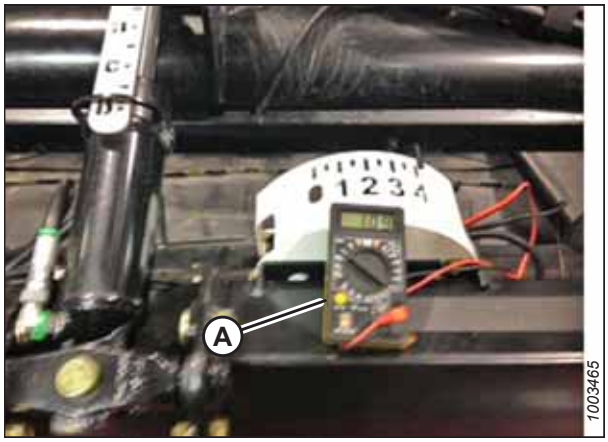


Figure 3.169: Measuring Voltage at Float Indicator Box

10. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

Checking Voltage Range – Two-Sensor System

FM100 float modules equipped with the optional two-sensor system have left and right sensors located on the back frame of the float module.

NOTE:

FM100 float modules configured for John Deere combines use both the single-sensor and the two-sensor system at the same time.

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.

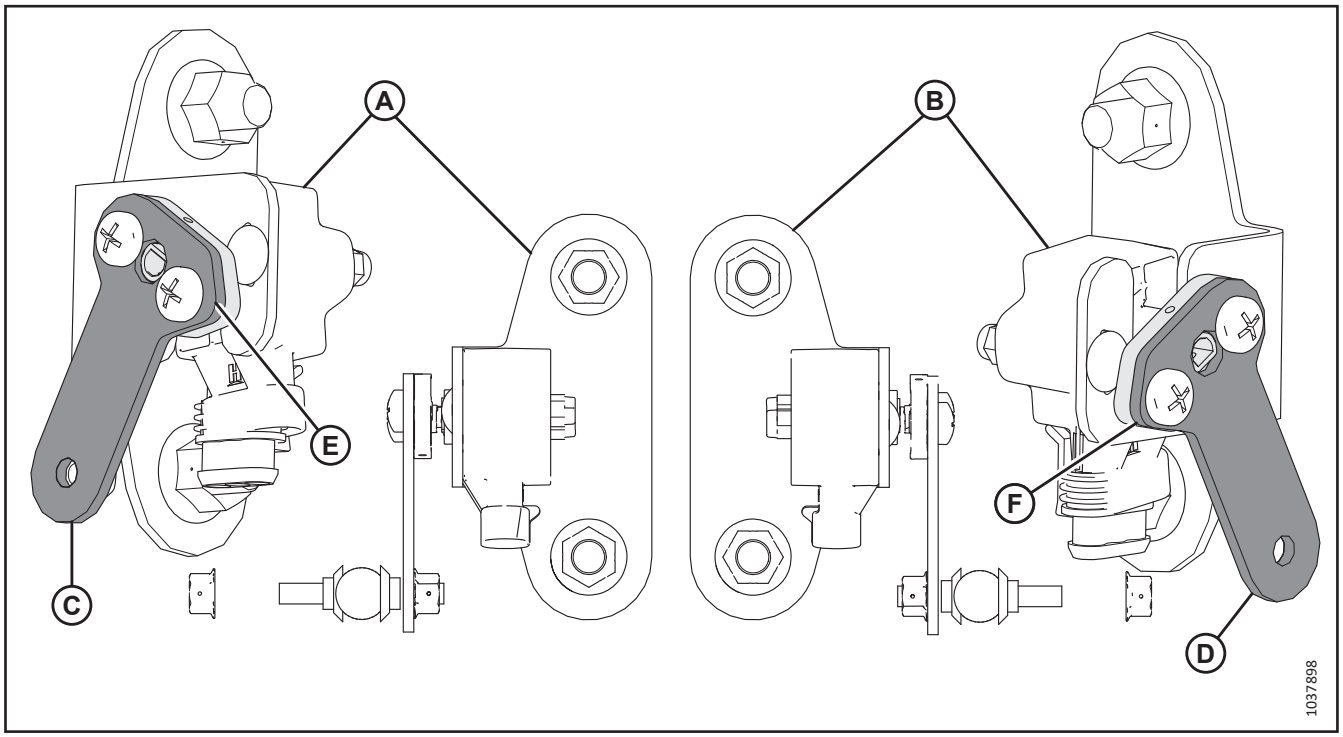


Figure 3.170: Sensor Orientation

1. Before adjusting the sensors, verify that the sensor arms are properly installed on the sensors.
   - Left Sensor (A): The **POINT** on the arm of the sensor should face **AWAY** from the header. Point (E) on float sensor arm (C) should be installed in the same direction, facing away from the header.
   - Right Sensor (B): The **POINT** on the arm of the sensor should face **AWAY** from the header. Point (F) on float sensor arm (D) should be installed in the same direction, facing away from the header.

To manually check the sensor's output voltage range, follow these steps:

2. Extend the guard angle fully; the header angle indicator should be at **D**.
3. Position the header 150 mm (6 in.) above the ground, and unlock the float.

4. Ensure that the float lock linkage is on the down stops at both locations. Verify that down stop washer (A) cannot be moved.

   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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions.

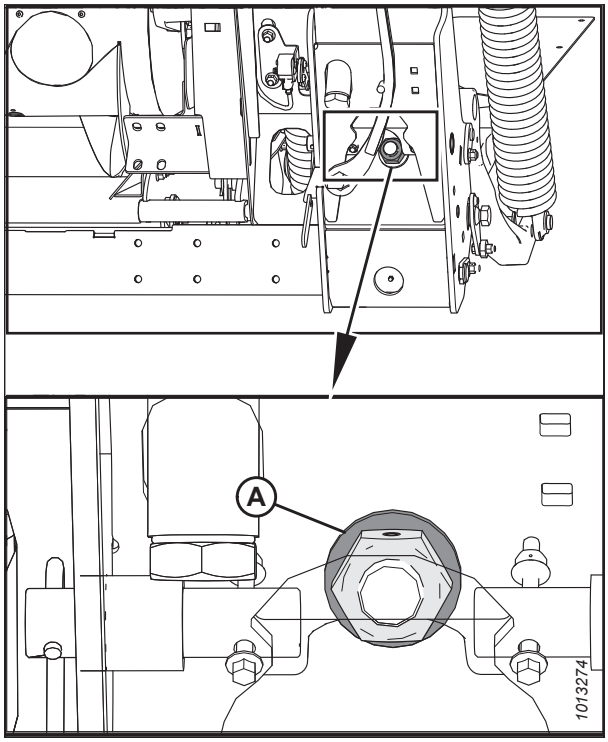


Figure 3.171: Down Stop Washer

5. Locate linkage assembly (A). Verify that dimension (B) is set to 55 mm (2 3/16 in.). If not, adjust linkage (A).

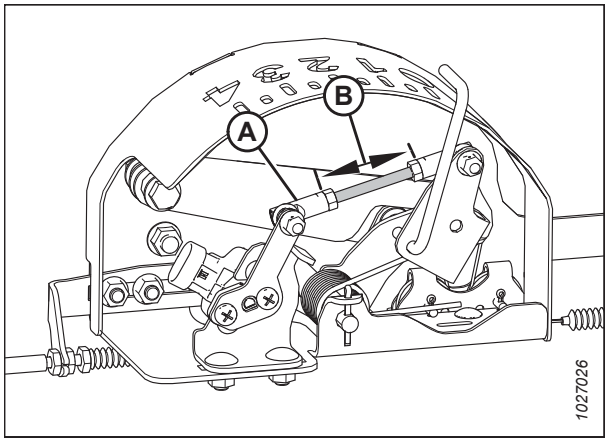


Figure 3.172: Float Indicator Box

6. Ensure that pointer (A) on the float indicator is on **0**. Adjust cable take-up bracket (B), if necessary.

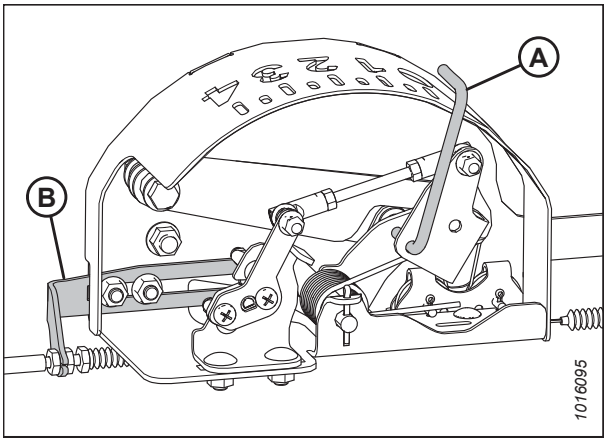


Figure 3.173: Float Indicator Box

7. Measure the voltage between the ground (Pin 2) and signal (Pin 3) wires of AHHC sensor (A),at the back of the float module side frame, with a voltmeter. Ensure it is at the upper voltage limit for the combine. For the voltage limit chart, refer to Table *3.22, page 129*.

   NOTE:

   The wiring harness connector must be attached to the sensor. Do **NOT** disconnect it.

8. Repeat the previous step on the opposite sensor.

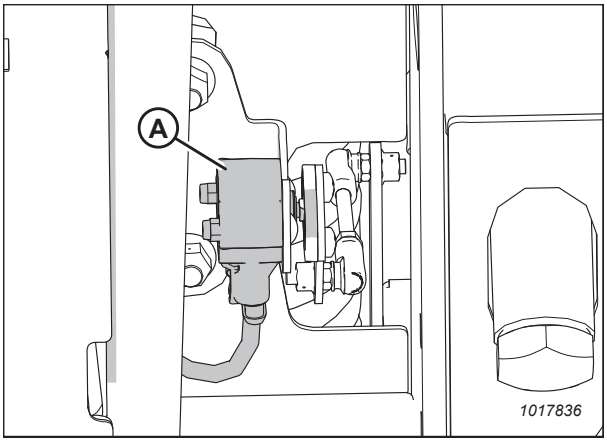


Figure 3.174: Optional Two-Sensor Kit – Right Sensor

9. Fully lower the combine feeder house, and float the header up off the down stops (float indicator (A) should be at **4**, and 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 ensure the feeder house is fully lowered.

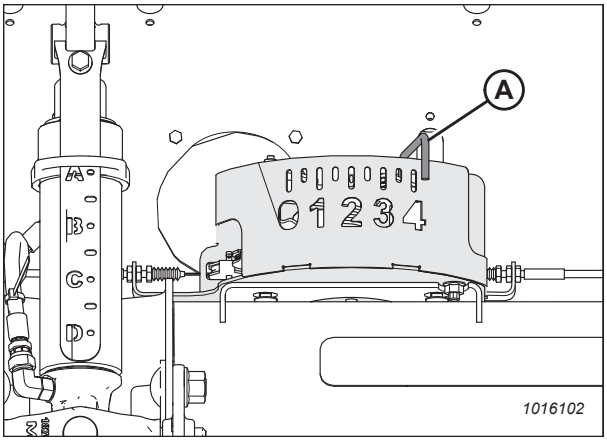


Figure 3.175: Float Indicator Box

10. Using a voltmeter, measure the voltage between the ground (Pin 2) and signal (Pin 3) wires of AHHC sensor (A) at the back of the side frame. Ensure it is at the lower voltage limit for the combine. For the voltage limit chart, refer to Table *3.22, page 129*.

    NOTE:

    The wiring harness connector must be attached to the sensor. Do **NOT** disconnect it.

11. 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 *Adjusting Voltage Limits – Two-Sensor System, page 137*.

12. Repeat steps *10, page 136* to *11, page 136* for the left sensor.

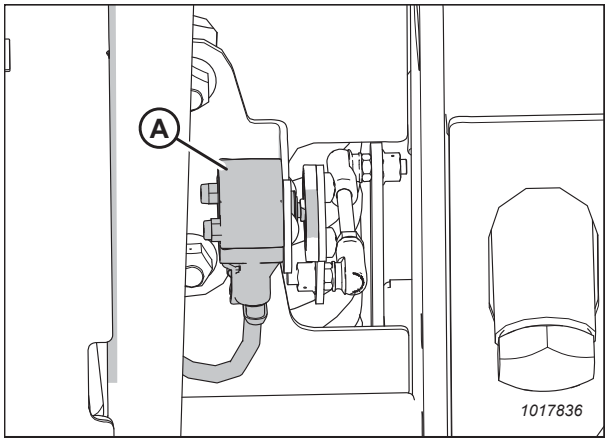


Figure 3.176: Optional Two-Sensor Kit – Right Sensor

Adjusting Voltage Limits – One-Sensor System

Follow this procedure if you have checked the voltage range (either manually or from the cab) and found that the sensor voltage is not within the lower and upper limits, or that the range between the upper and lower limits is insufficient.

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. Adjust the upper voltage limit:

    a. Extend the guard angle fully; the header angle indicator should be at **D**.

    b. Position the header 152–254 mm (6–10 in.) above the ground; the float indicator should be at **0**.

    c. Check the upper voltage limit using the combine display or a voltmeter. For the voltage limit chart, refer to Table *3.22, page 129*.

    d. Loosen sensor-mounting nuts (A).

    e. Slide sensor support (B) to the right to increase the upper voltage limit or to the left to decrease it.

    f. Tighten sensor-mounting nuts (A).

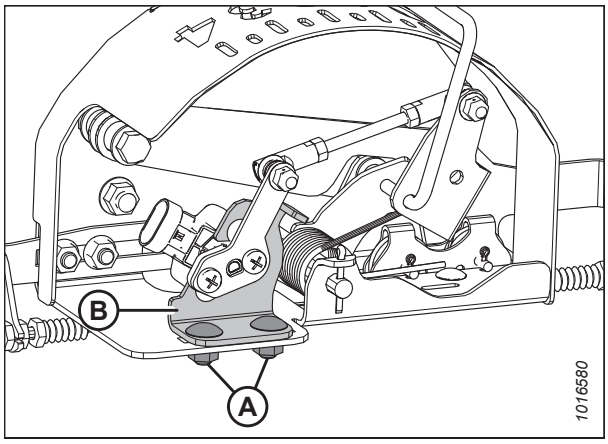


Figure 3.177: AHHC Sensor Assembly

2. Adjust the lower voltage limit:
   a. Check the lower voltage limit using the combine display or voltmeter. For the voltage limit chart, refer to Table *3.22, page 129*.
   b. Loosen sensor-mounting nuts (A).
   c. Rotate sensor (B) clockwise to increase the lower voltage limit or counterclockwise to decrease it.
   d. Tighten sensor-mounting nuts (A).
3. After making adjustments, recheck both the upper and lower voltage limits to make sure they are within the required range according to Table *3.22, page 129*.

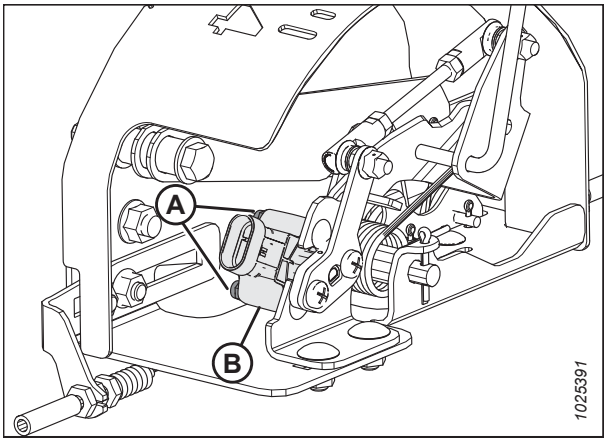


Figure 3.178: AHHC Sensor Assembly

Adjusting Voltage Limits – Two-Sensor System

Follow this procedure if you have checked the voltage range (either manually or from the cab) and found that the sensor voltage is not within the lower and upper limits, or that the range between the lower and upper limits is insufficient.

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.

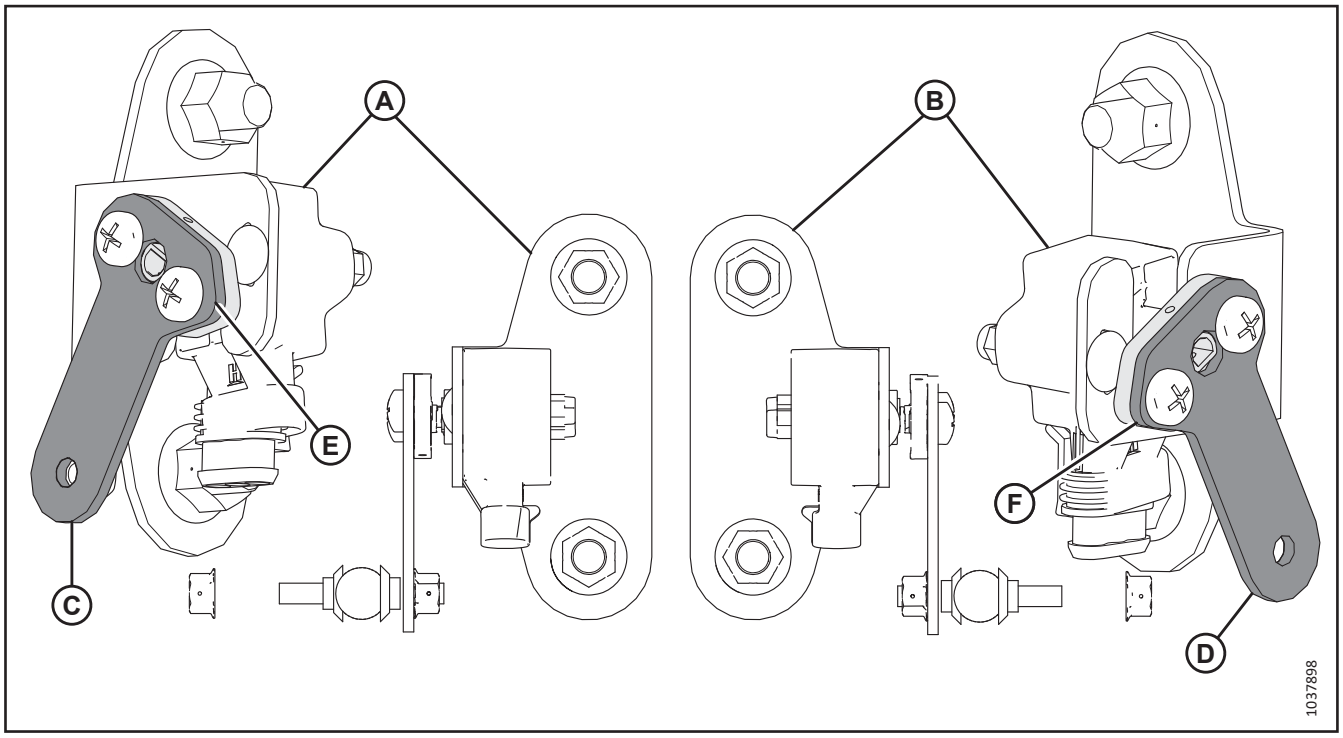


Figure 3.179: Sensor Orientation

1. Before adjusting the sensors, verify that the sensor arms are properly installed on the sensors.
   - Left Sensor (A): The **POINT** on the arm of the sensor should face **AWAY** from the header. Point (E) on float sensor arm (C) should be installed in the same direction, facing away from the header.
   - Right Sensor (B): The **POINT** on the arm of the sensor should face **AWAY** from the header. Point (F) on float sensor arm (D) should be installed in the same direction, facing away from the header.

Follow these steps to adjust the left sensor voltage:

2. Extend the guard angle fully; the header angle indicator should be at **D**.
3. Position the header 150–254 mm (6–10 in.) above the ground; the float indicator should be at **0**.
4. Loosen sensor-mounting nuts (A).
5. Verify that the left sensor is at the correct upper voltage limit.
6. Rotate sensor (B) counterclockwise to lower the voltage. Rotate the sensor clockwise to raise the voltage.
7. Verify that the left sensor is at the correct upper
8. Tighten sensor-mounting nuts (A).

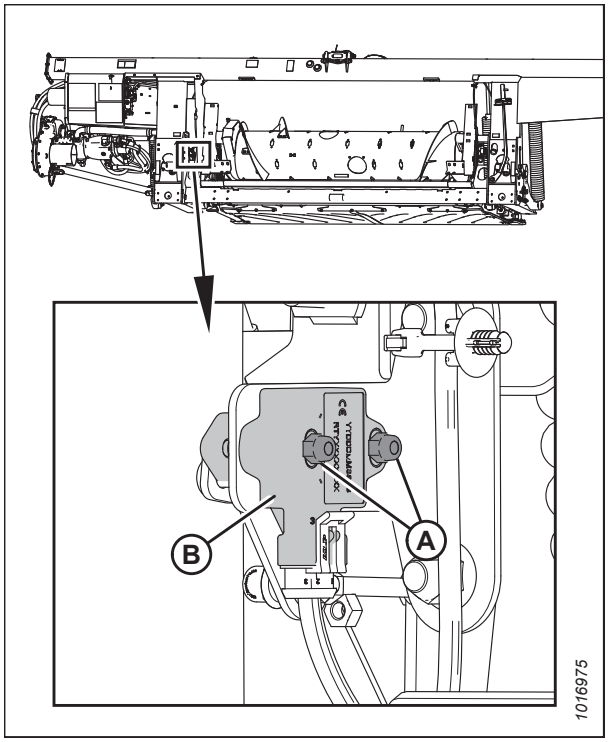


Figure 3.180: Optional Two-Sensor Kit – Left Sensor

Follow these steps to adjust the right sensor voltage:

9. Loosen sensor mounting nuts (A).
10. Rotate sensor (B) clockwise to lower the voltage. Rotate the sensor counterclockwise to raise the voltage.
11. Verify that the right sensor is at the correct upper voltage limit.
12. Tighten sensor mounting nuts (A).

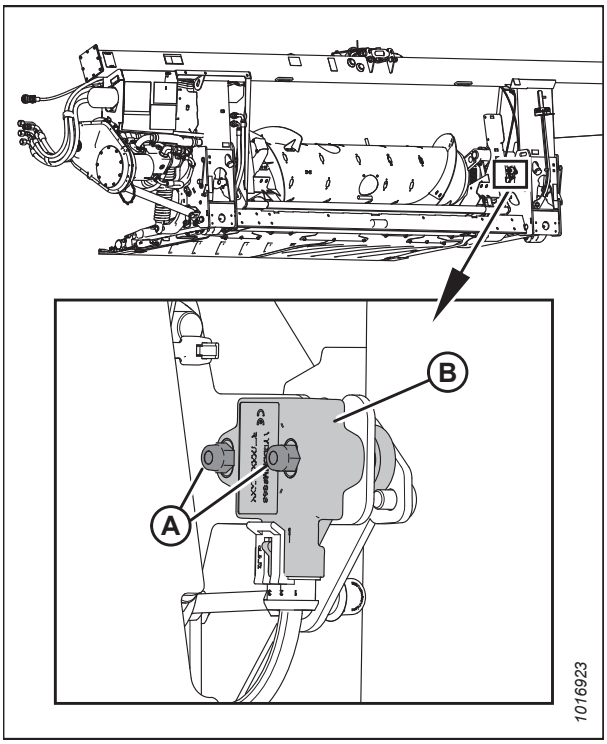


Figure 3.181: Optional Two-Sensor Kit – Right Sensor

13. Fully lower the header; float indicator (A) should be at **4**.
14. Verify that both sensors are at the correct lower voltage limit.

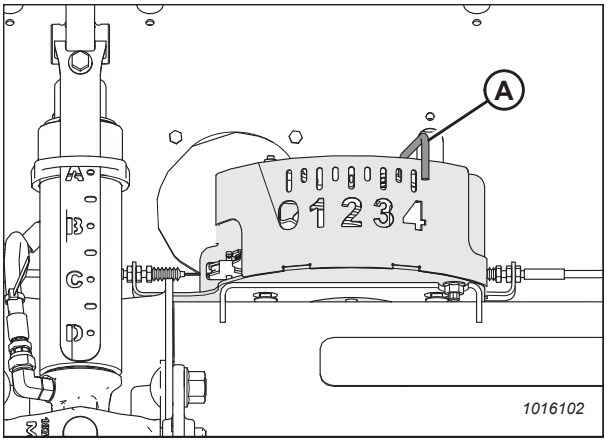


Figure 3.182: Float Indicator Box

3.9.4 Case IH 5088/6088/7088 Combines

Follow these steps to set up auto header height control (AHHC) on Case IH 5088/6088/7088 combines.

Calibrating Auto Header Height Control – Case IH 5088/6088/7088

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. Refer to the combine operator's manual for the most up-to-date information.

WARNING

Ensure that all bystanders have cleared the area.

NOTE:

If the header float setting is too light, it can prevent the calibration of the AHHC. You may need to make the float setting heavier for the calibration procedure. This will prevent the header from separating from the float module.

NOTE:

To ensure 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 *3.8.5 Header Angle, page 84*.

1. Ensure that the center-link is set to **D**.
2. Set the float. For instructions, refer to *3.8.3 Header Float, page 67*.
3. Position the reel midway in the fore-aft dimension.
4. Start the combine engine, but do **NOT** engage the separator or the feeder house.
5. Locate HEADER CONTROL switch (A) on the right console, and set it to HT (AHHC mode).

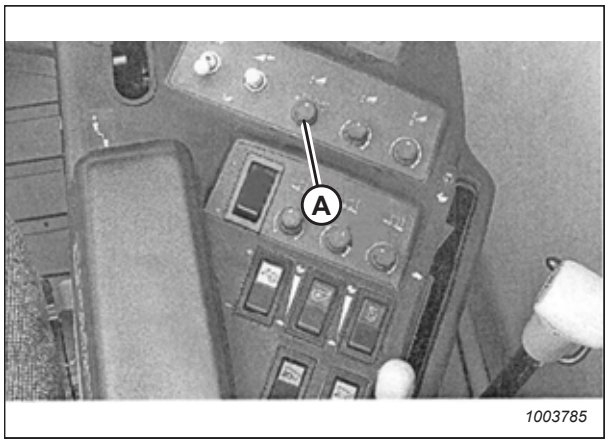


Figure 3.183: Right Console

6. Press HEADER LOWER switch (A) on the control handle until the float module and header are fully lowered. You may need to hold the switch for several seconds.
7. Press HEADER RAISE switch (A) on the control handle. The header should stop at about the halfway point. Continue holding the HEADER RAISE switch, and the header will rise until the feeder house reaches its upper limit. The AHHC system is now calibrated.

   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.

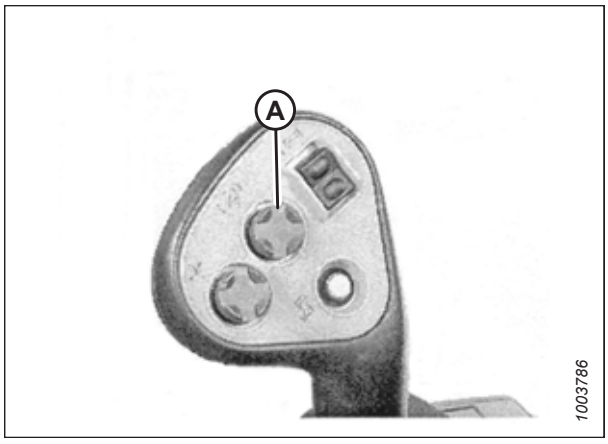


Figure 3.184: Control Handle – Case IH 2300/2500

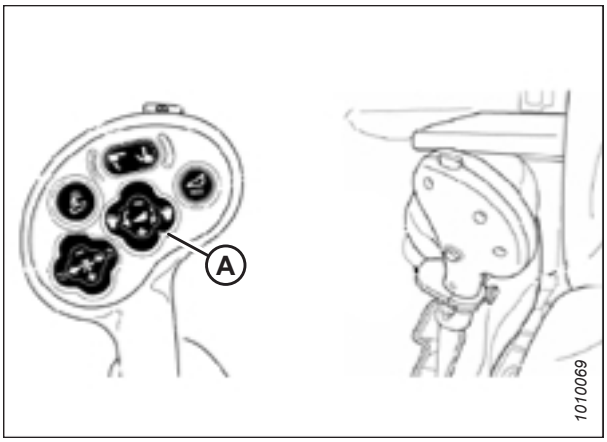


Figure 3.185: Control Handle – Case IH 5088/6088/7088

Setting Auto Header Height Control Sensitivity – Case IH 5088/6088/7088

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 system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system 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. Refer to the combine operator's manual for the most up-to-date information.

1. Use HEADER SETTINGS key (A) to display the HEADER SENSITIVITY CHANGE page as shown in Figure *3.187, page 142*.
2. Use UP key (B) or DOWN key (C) to adjust the highlighted item. The height sensitivity setting range is 0 (least sensitive) to 250 (most sensitive) in increments of 10.

   NOTE:

   Adjustments take effect immediately. Use the CANCEL key to return to the original settings.
3. Use HEADER SETTINGS key (A) to highlight the next changeable item.
4. Use ENTER key (D) to save changes and return to the monitor screen. If there are no changes, the screen will return to the monitor screen after 5 seconds.

Figure 3.186: Combine Controls

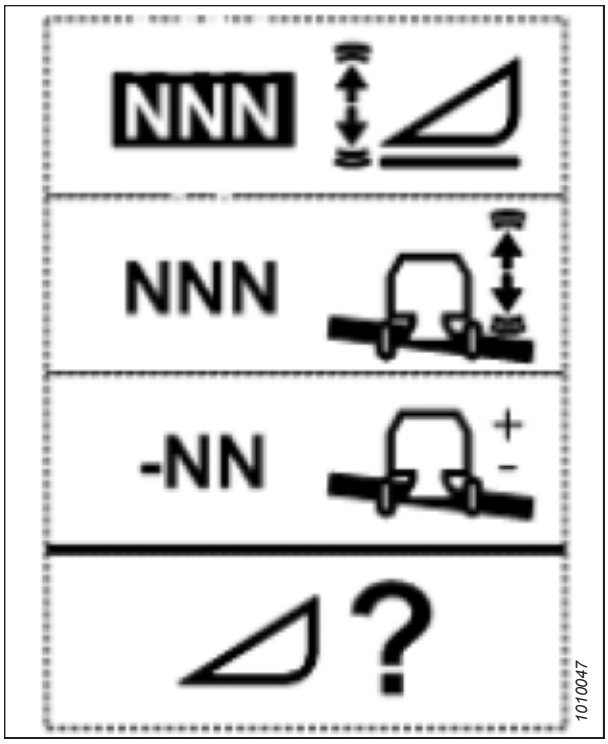


Figure 3.187: Height Sensitivity Change Page

3.9.5 Case IH 130 and 140 Series Mid-Range Combines

To make your header's auto header height control (AHHC) system compatible with Case IH 130 and 140 Series mid-range 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 on Combine Display – Case IH 5130/6130/7130; 5140/6140/7140

To set up the header to work with a Case IH 5130/6130/7130 or 5140/6140/7140 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. Refer to the combine operator's manual for the most up-to-date information.

1. On the main page of the combine display, select TOOLBOX (A).

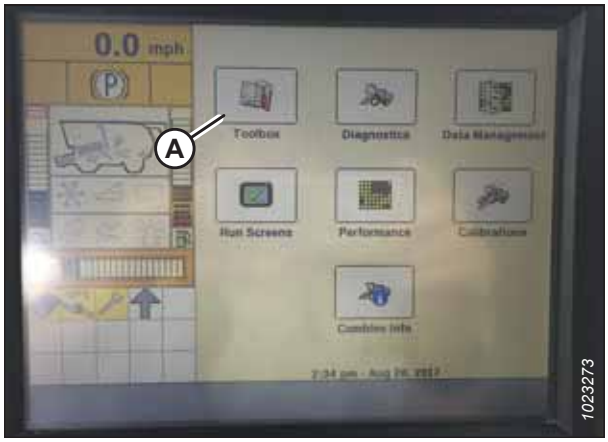


Figure 3.188: Case IH Combine Display

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 3.189: 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.

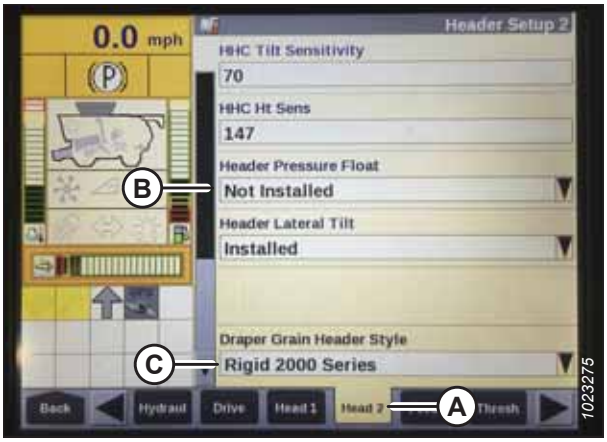


Figure 3.190: Case IH Combine Display

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 hunting occurs when the header is operating, decrease the HUNTING 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.

Figure 3.191: Case IH Combine Display

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.

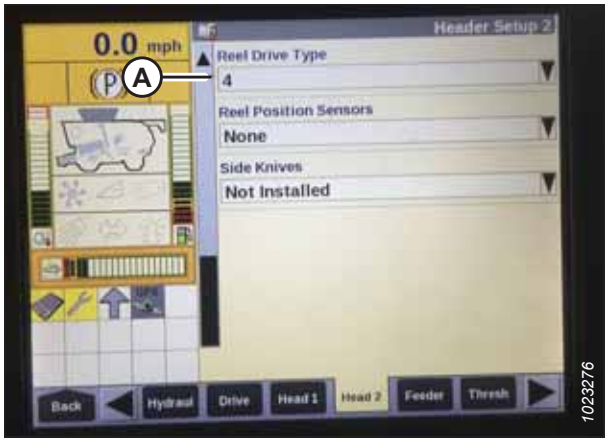


Figure 3.192: Case IH Combine Display

9. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 3.193: 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.

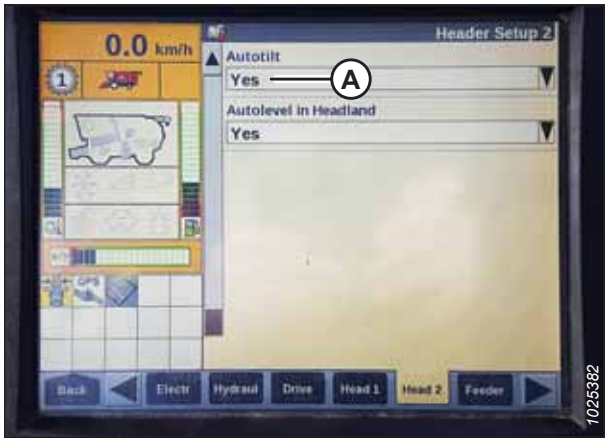


Figure 3.194: Case IH Combine Display

Calibrating Auto Header Height Control – Case IH 5130/6130/7130, 5140/6140/7140

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. Refer to the combine operator's manual for the most up-to-date information.

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 160*.

1. To view the software version, select the DIAGNOSTICS button from the Home Screen, then select VERSION tab (A).

Figure 3.195: Case IH Combine Display

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 the calibration procedure.

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 *3.8.5 Header Angle, page 84*.

2. Ensure that the center-link is set to **D**.
3. Confirm that all 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 until the combine feeder house has been lowered all the way down (the feeder house will 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 will resume traveling upward. This is an indication 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.

Checking Voltage Range from Combine Cab – Case IH 5130/6130/7130; 5140/6140/7140

The auto header height control 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. Refer to the combine operator's manual for the most up-to-date information.

WARNING

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

2. 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 *3.10 Leveling Header, page 317* for instructions.

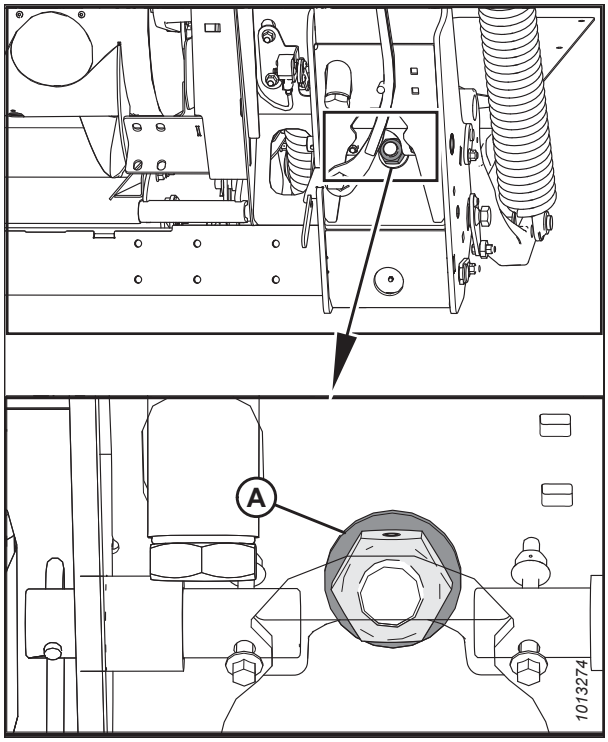


Figure 3.196: Float Lock

3. If necessary, adjust cable take-up bracket (B) until pointer (A) on float indicator is on **0**.
4. Ensure the header float is unlocked.

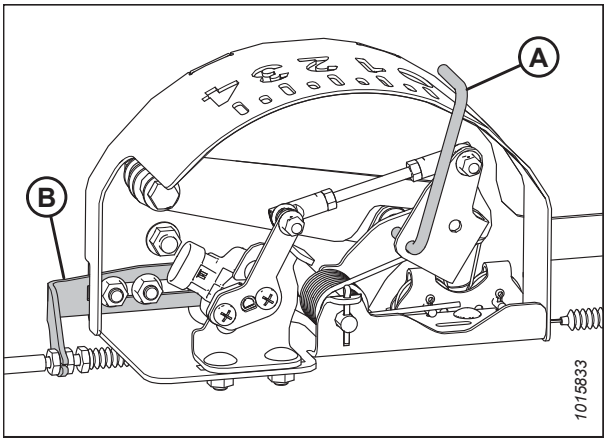


Figure 3.197: Float Indicator Box

5. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

Figure 3.198: Case IH Combine Display

6. Select SETTINGS (A). The SETTINGS page appears.
7. From the GROUP menu, select HEADER (B).

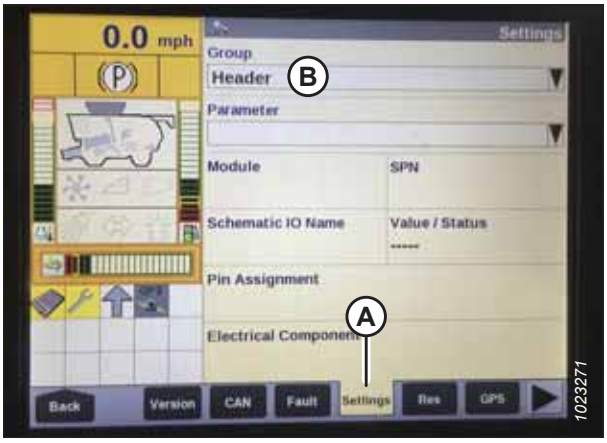


Figure 3.199: Case IH Combine Display

8. From the PARAMETER menu, select LEFT HEIGHT/TILT SENSOR (A).

Figure 3.200: Case IH Combine Display

9. 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.

10. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

Figure 3.201: Case IH Combine Display

Setting Preset Cutting Height – Case 5130/6130/7130, 5140/6140/7140

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. Refer to the combine operator's manual for the most up-to-date information.

WARNING

Ensure that all bystanders have cleared the area.

1. Ensure that indicator (A) is at position 0 (B) with the header 254–356 mm (10–14 in.) off the ground. If not, the float sensor output voltage should be checked. For instructions, refer to Step *6, page 132*.

   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.

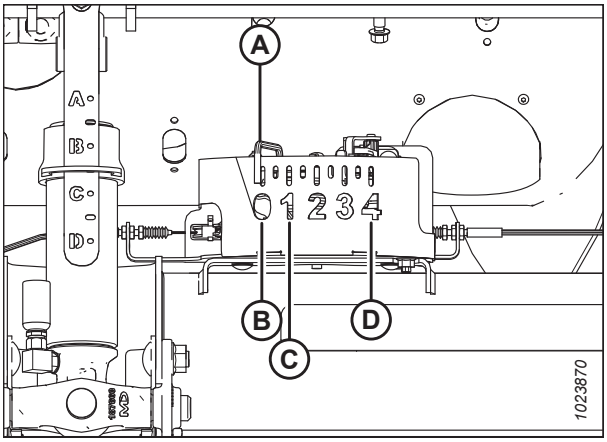


Figure 3.202: Float Indicator Box

2. Engage the separator and header.
3. Raise or lower the header to the desired cutting height.
4. Press 1 on button (A). A yellow light next to the button will illuminate.

   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.

5. Raise or lower the reel to the desired working position.
6. Press 1 on button (A). A yellow indicator next to the button will light up.

Figure 3.203: Case Combine Console

7. Raise or lower the header to a second desired cutting height.
8. Press 2 on button (A). A yellow indicator next to the button will light up.
9. Raise or lower the reel to the desired working position.
10. Press 2 on button (A). A yellow indicator next to the button will light up.

Figure 3.204: 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 3.205: Case Combine Display – Run 1 Page

11. 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 3.206: Case Combine Control Handle

12. 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 3.207: Case Combine Display – Header Setup Page

13. If it is necessary to change the position of one of the presets, fine-tune the setting using button (A) on the combine console.

Figure 3.208: Case Combine Console

3.9.6 Case IH 7010/8010, 120, 230, 240, and 250 Series Combines

To make your header's auto header height control (AHHC) system compatible with Case IH 7010/8010, 120, 230, 240, and 250 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.

Checking Voltage Range from Combine Cab – Case IH 8010

The auto header height control 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. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

2. 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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions.

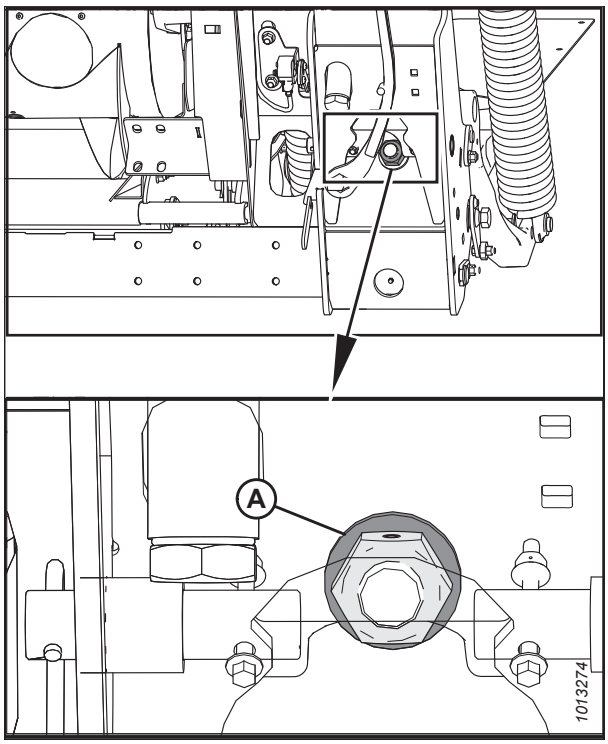


Figure 3.209: Float Lock

3. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

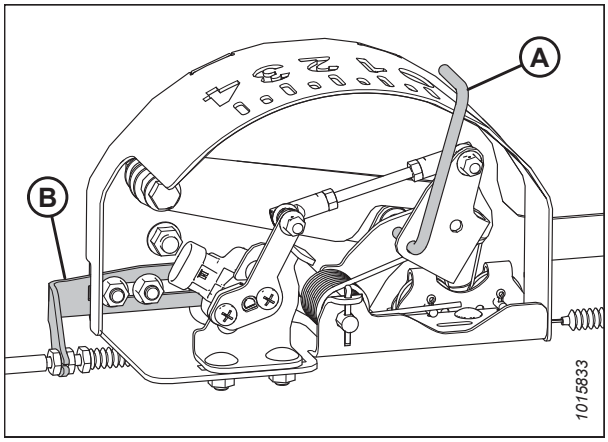


Figure 3.210: Float Indicator Box

4. Ensure the header float is unlocked.
5. Select DIAG (A) on the Universal display MAIN screen. The DIAG screen appears.

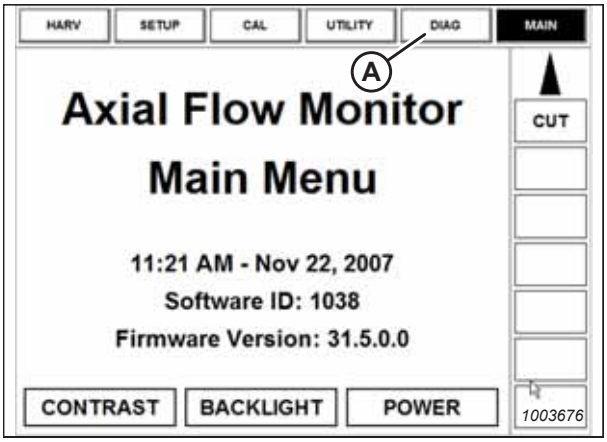


Figure 3.211: Case 8010 Combine Display

6. Select SUB SYSTEM (A). The SUB SYSTEM screen appears.

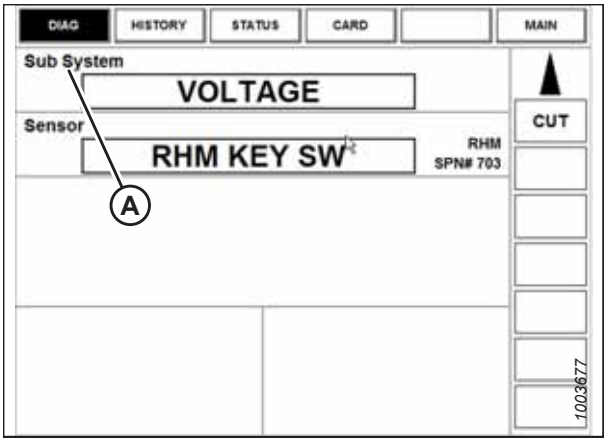


Figure 3.212: Case 8010 Combine Display

7. Select HDR HEIGHT/TILT (A). The SENSOR screen appears.

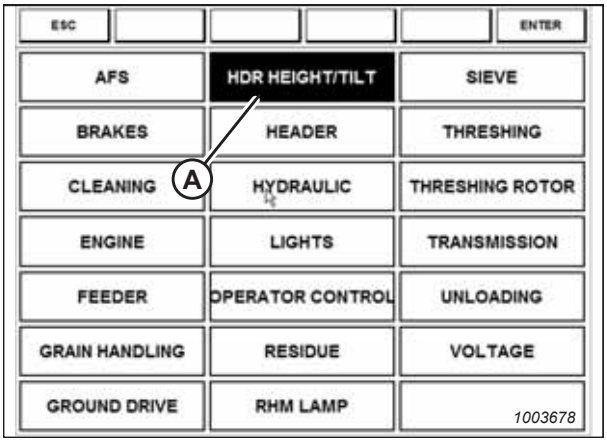


Figure 3.213: Case 8010 Combine Display

8. Select LEFT SEN (A). The exact voltage is displayed. Raise and lower the header to see the full range of voltage readings.

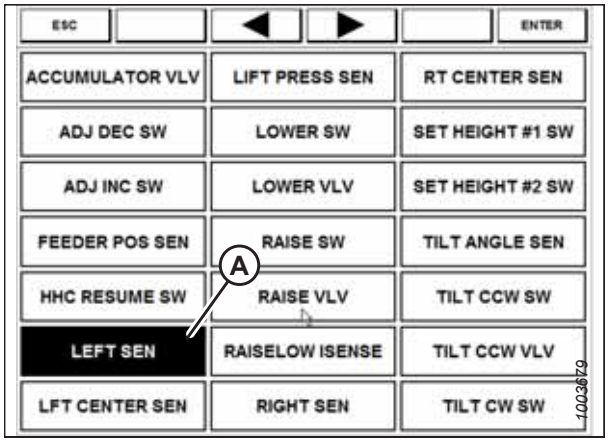


Figure 3.214: Case 8010 Combine Display

9. 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 *Adjusting Voltage Limits – One-Sensor System, page 136*.

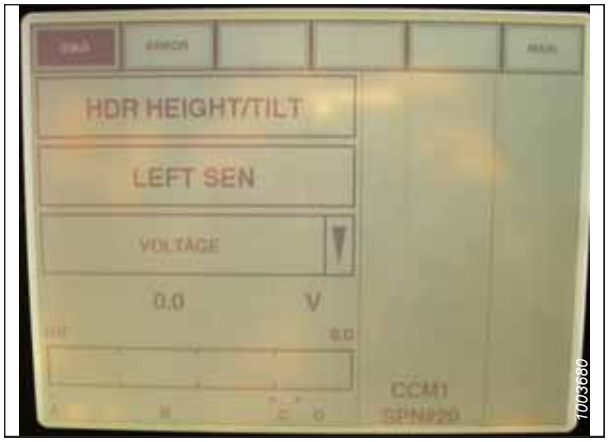


Figure 3.215: Case 8010 Combine Display

Setting Header Controls – Case IH 8010

The following procedure applies to Case IH 8010 combines without a shift button on the control handle.

REEL FORE-AFT switches (A) also control header fore-aft tilt if the header is equipped with the fore-aft tilt option. The switches can be configured to allow the Operator to swap between reel fore-aft and header fore-aft tilt.

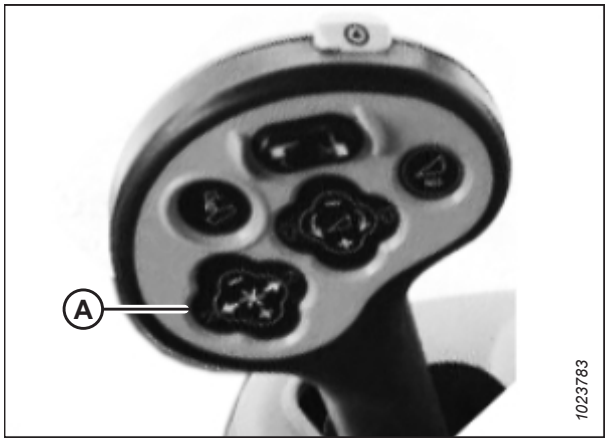


Figure 3.216: Case Combine Controls

1. To switch from reel fore-aft controls to header fore-aft tilt controls, go to the LAYOUT tab, select FORE/AFT CONTROL (A) from the legend, and place it on one of the operator-configurable screens (HARV1, HARV2, HARV3) or ADJUST under the RUN menu.

   NOTE:

   H F/A (B) is displayed on the status bar on the right of the screen when HEADER is selected with the FORE/AFT CONTROL.

2. If HEADER is selected with the FORE/AFT CONTROL, press the reel aft button on the control handle to tilt the header rearward, or press the reel fore button on the control handle to tilt the header forward.

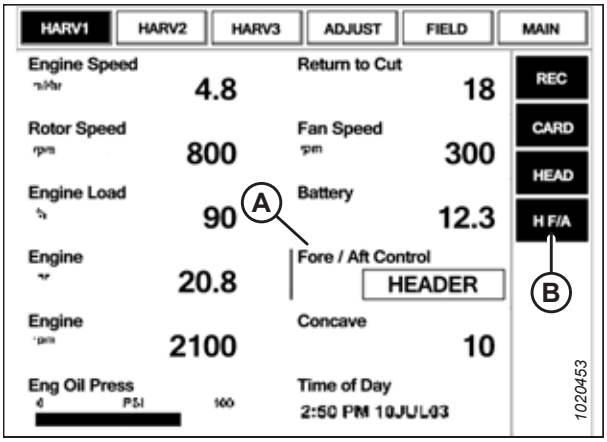


Figure 3.217: Case Combine Display

Calibrating Feeder House Engagement

Calibrating the feeder house engagement allows for smoother header operation by optimizing how hydraulic power is delivered.

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 the most up-to-date information.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

1. Start the engine, and raise the header 150 mm (6 in.) from the ground.

2. Select CALIBRATION (A) on the combine display and press the right arrow navigation key to enter the information box.

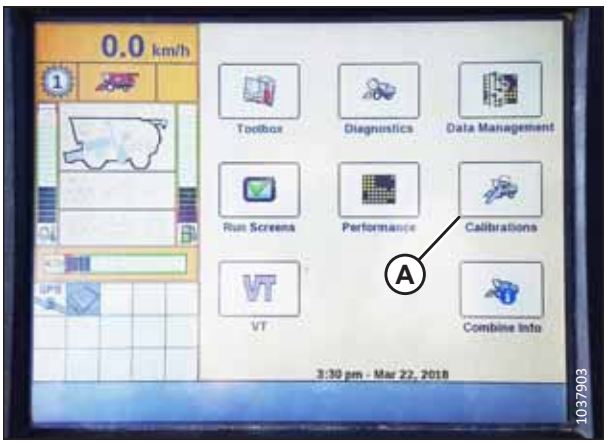


Figure 3.218: Case IH Combine Display

3. Select FEEDER ENGAGEMENT (A), and press ENTER. The CALIBRATION dialog box opens.

   NOTE:

   Use the UP and DOWN navigation keys to move between options.

Figure 3.219: Case IH Combine Display

4. 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.

Figure 3.220: Case IH Combine Display

Calibrating Auto Header Height Control – Case IH 7010/8010, 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

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 160*.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

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.

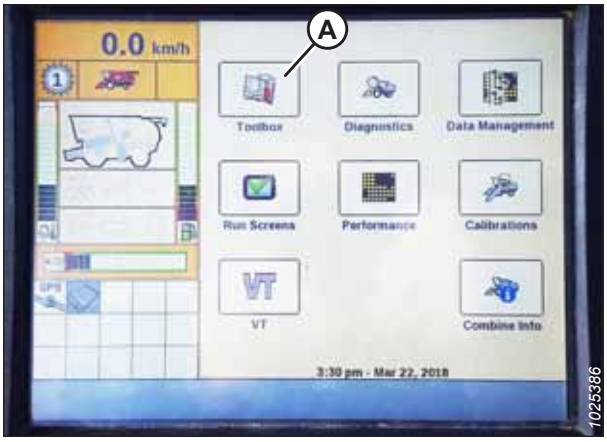


Figure 3.221: Case IH Combine Display

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).

Figure 3.222: Case IH Combine Display

6. Set AUTO REEL SPEED 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 3.223: Case IH Combine Display

8. Set REEL FORE-BACK to YES (if applicable).

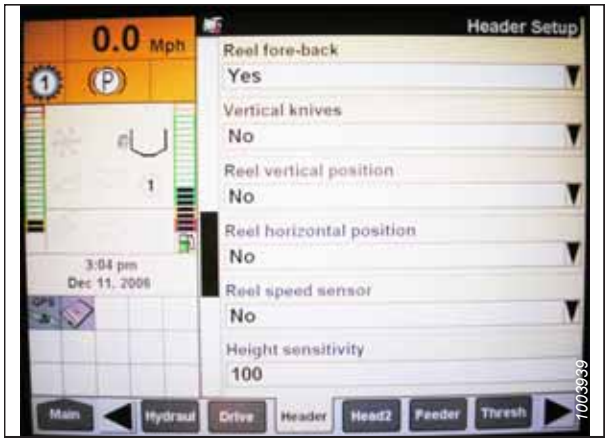


Figure 3.224: Case IH Combine Display

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 hunting occurs during operation, decrease this 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 3.225: Case IH Combine Display

11. Set FORE/AFT CONTROL and HDR FORE/AFT TILT to YES (if applicable).

Figure 3.226: 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.

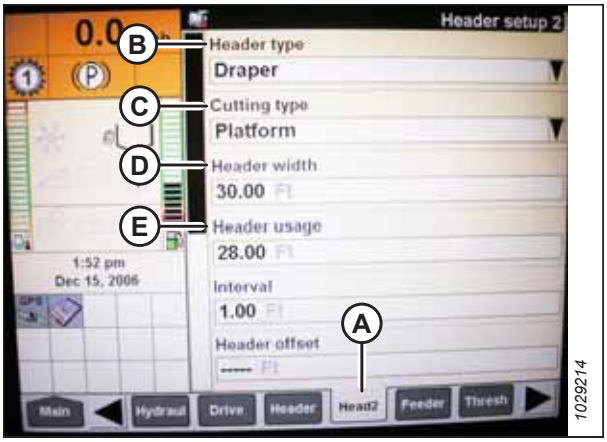


Figure 3.227: Case IH Combine Display

16. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 3.228: Case IH Combine Display

17. Locate AUTOTILT field (A) and set it as follows:

    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a 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.

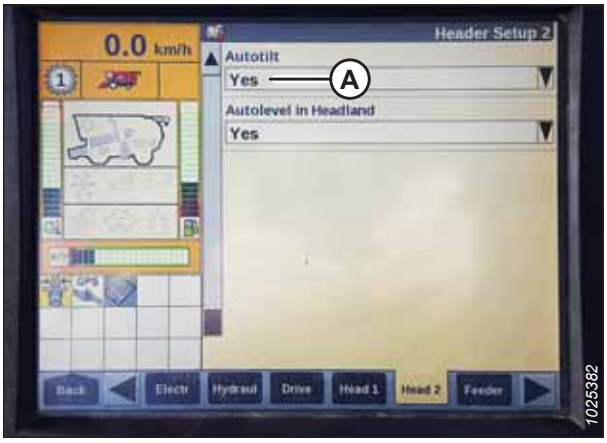


Figure 3.229: Case IH Combine Display

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, or the AHHC feature will not work properly.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

Figure 3.230: 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 settings in the combine display

5. Select TOOLBOX (A) on the MAIN page.

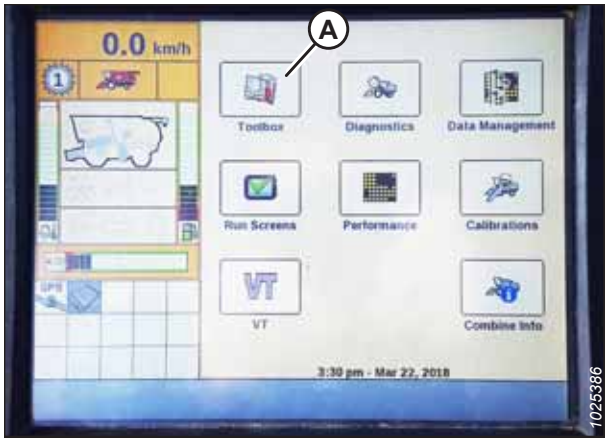


Figure 3.231: Case IH Combine Display

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).

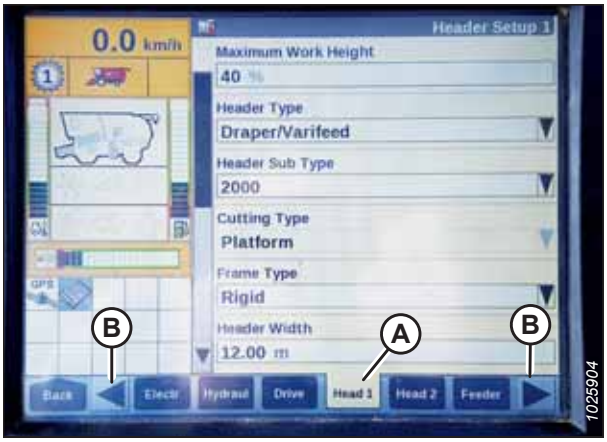


Figure 3.232: Case IH Combine Display

7. Locate the HEADER SUB TYPE field.
8. Select 2000 (A).

Figure 3.233: Case IH Combine Display

9. Return to the HEAD 1 page and choose FLEX from FRAME TYPE drop-down menu (A).

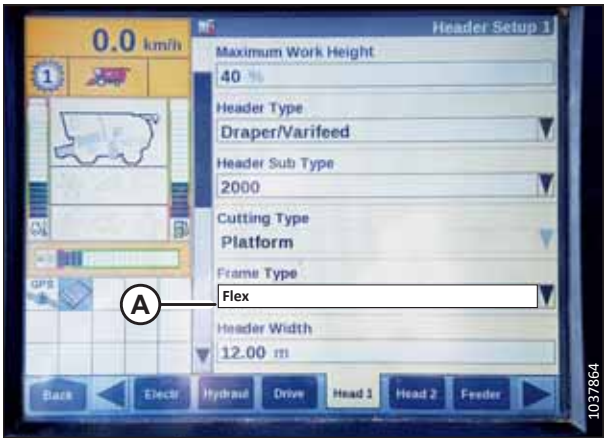


Figure 3.234: Case IH Combine Display

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.

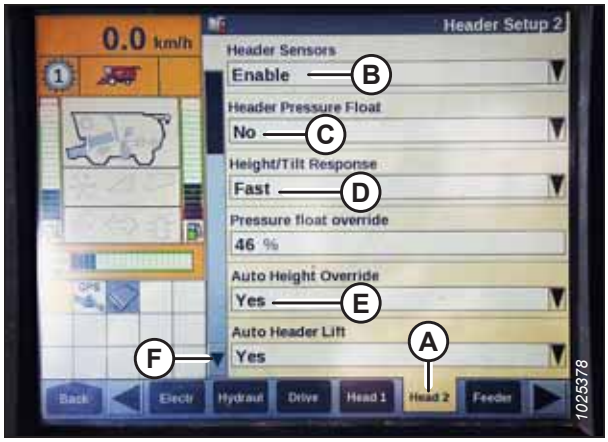


Figure 3.235: Case IH Combine Display

16. Locate HHC HEIGHT SENSITIVITY field (A), and set it as follows:
    - **If using a single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.
    - **If using a two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.

    NOTE:

    If hunting occurs during operation, decrease this 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 3.236: Case IH Combine Display

18. From the REEL HEIGHT SENSOR menu, select YES (A).

Figure 3.237: Case IH Combine Display

19. Scroll to the AUTOTILT field (A), and set it as follows:
    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

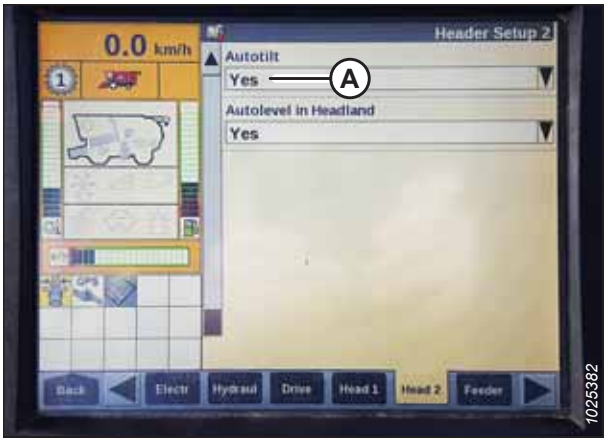


Figure 3.238: Case IH Combine Display

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 3.239: 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 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 3.240: 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 sense 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.

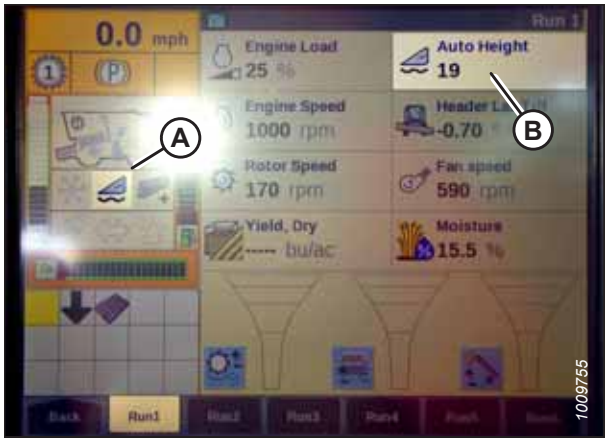


Figure 3.241: Case IH Combine Display

Checking Voltage Range from Combine Cab – Case IH 7010/8010, 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 be sending 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. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

2. 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 *3.10 Leveling Header, page 317* for instructions.

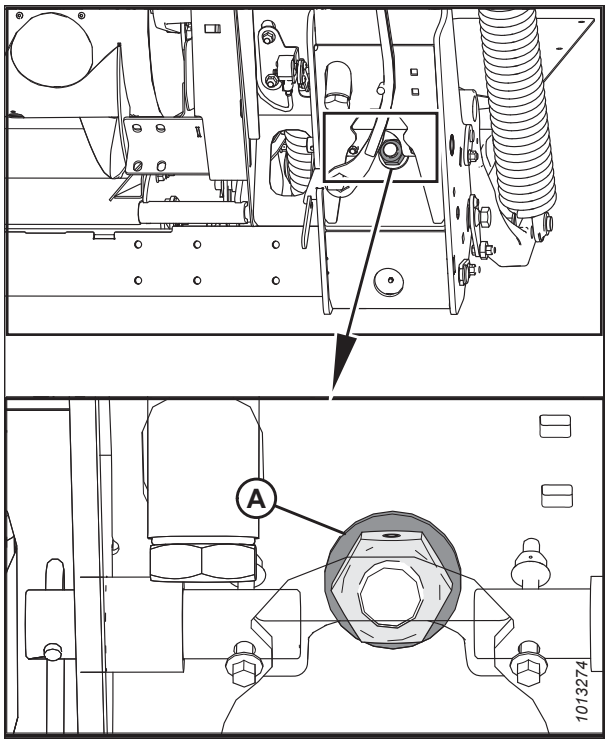


Figure 3.242: Float Lock

3. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

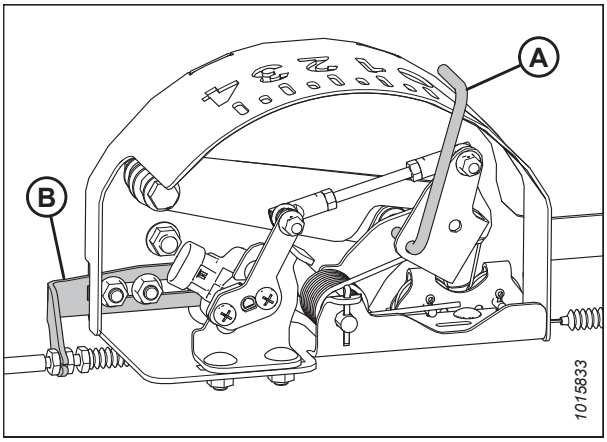


Figure 3.243: Float Indicator Box

4. Ensure the header float is unlocked.
5. Select DIAGNOSTICS (A) on the MAIN page. The DIAGNOSTICS page opens.
6. Select SETTINGS. The SETTINGS page opens.

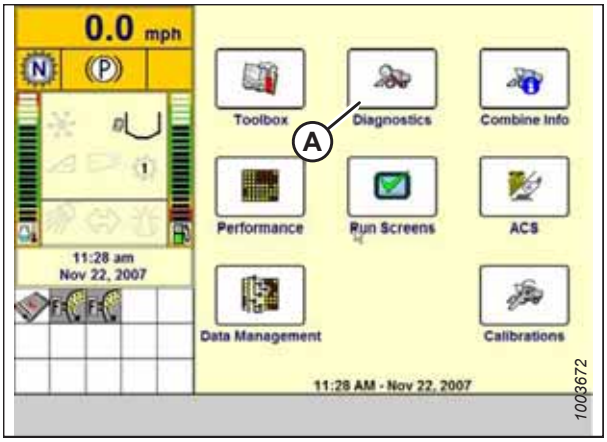


Figure 3.244: Case IH Combine Display

7. Select GROUP drop-down menu (A). The GROUP dialog box opens.

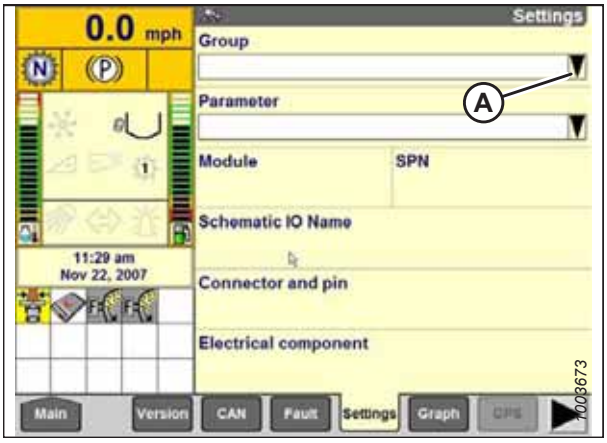


Figure 3.245: Case IH Combine Display

8. Select HEADER HEIGHT/TILT (A). The PARAMETER page opens.

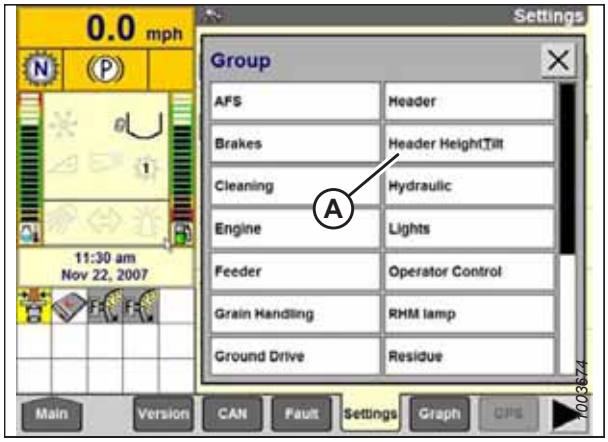


Figure 3.246: Case IH Combine Display

9. 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.

10. 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 *Adjusting Voltage Limits – One-Sensor System, page 136*.

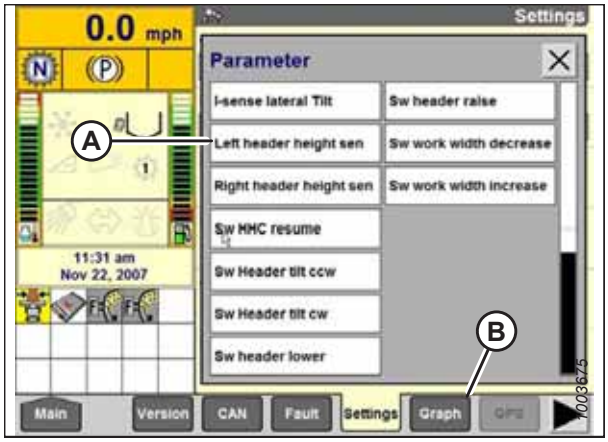


Figure 3.247: Case IH Combine Display

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

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page appears.

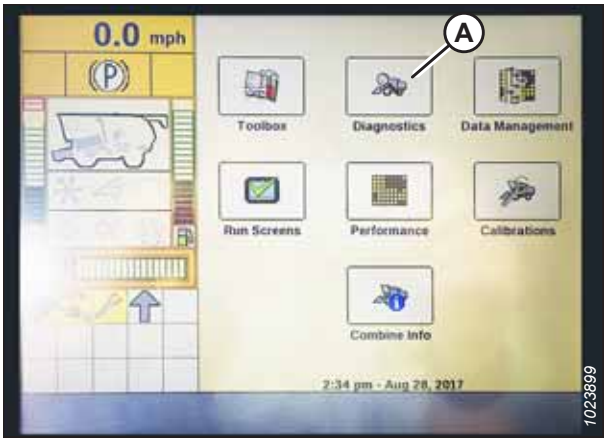


Figure 3.248: Case IH Combine Display

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 3.249: 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 4.1–4.5 V.
7. Raise the reel to view lower voltage (C). The voltage should be 0.5–0.9 V.
8. If either voltage is out of range, refer to *Checking and Adjusting Reel Height Sensor, page 98*.

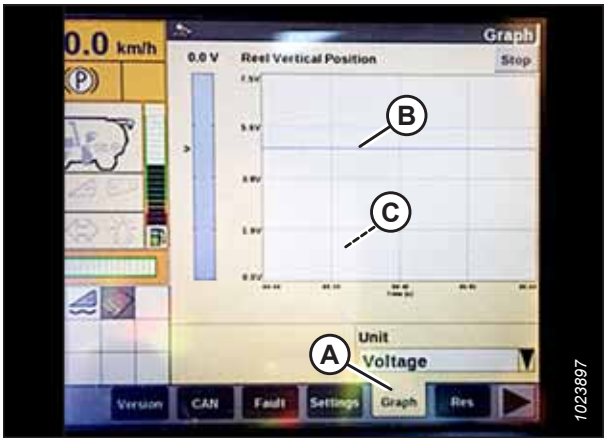


Figure 3.250: Case IH Combine Display

Setting Preset Cutting Height – Case IH 7010/8010, 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 set.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. Ensure that indicator (A) is at position 0 (B) with the header 254–356 mm (10–14 in.) off the ground. If not, the float sensor output voltage should be checked. For instructions, refer to Step *6, page 132*.

   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.

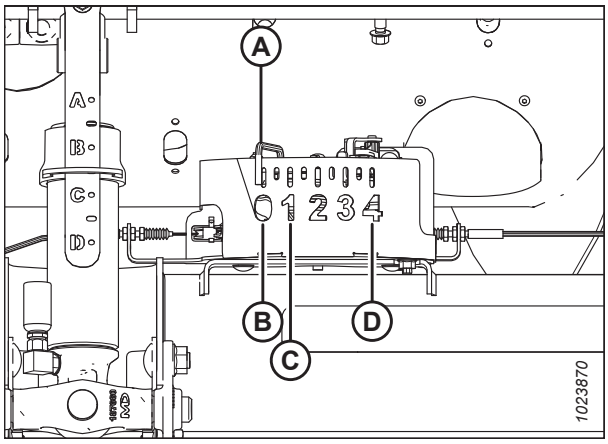


Figure 3.251: Float Indicator Box

2. Engage the separator and the header.
3. Manually raise or lower the header to a desired cutting height.
4. Press SET #1 switch (A). The light beside switch (A) will illuminate.

   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.

5. Manually raise or lower the reel to the desired position.
6. Press SET #1 switch (A). The light beside switch (A) will light up.
7. Manually raise or lower the header to a second desired cutting height.
8. Press SET #2 switch (B). The light beside switch (B) will light up.

Figure 3.252: Case Combine Controls

9. Manually raise or lower the reel to a second desired working position.
10. Press SET #2 switch (B). The light beside switch (B) will light up.
11. To swap between the set points, press HEADER RESUME (A).
12. 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 3.253: Case Combine Controls

3.9.7 Challenger® and Massey Ferguson® 6 and 7 Series Combines

To make your header's auto header height control (AHHC) system compatible with Challenger® and Massey Ferguson® 6 and 7 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.

Checking Voltage Range from Combine Cab – Challenger® and Massey Ferguson®

The auto header height control sensor needs to operate in a specific voltage range in order to work properly.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. Position the header 150 mm (6 in.) above the ground, and unlock the float.

2. 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 *3.10 Leveling Header, page 317* for instructions.

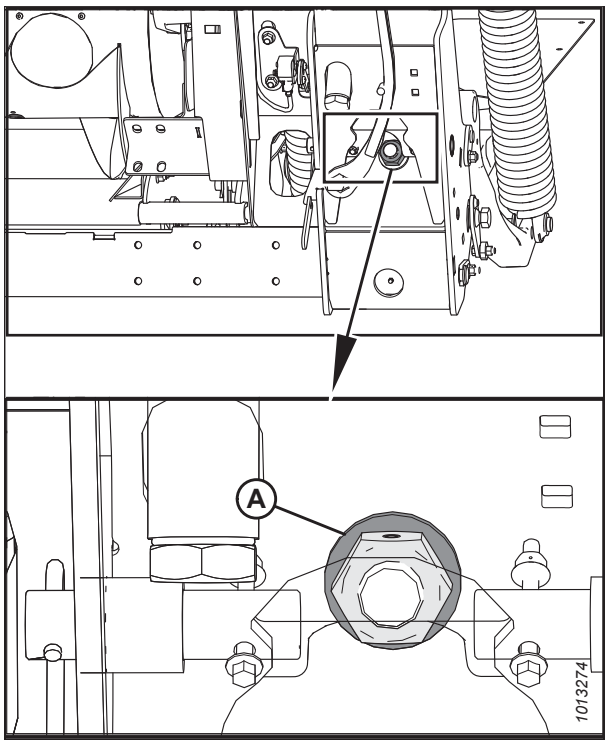


Figure 3.254: Float Lock

3. If necessary, adjust cable take-up bracket (B) until float indicator pointer (A) is on **0**.

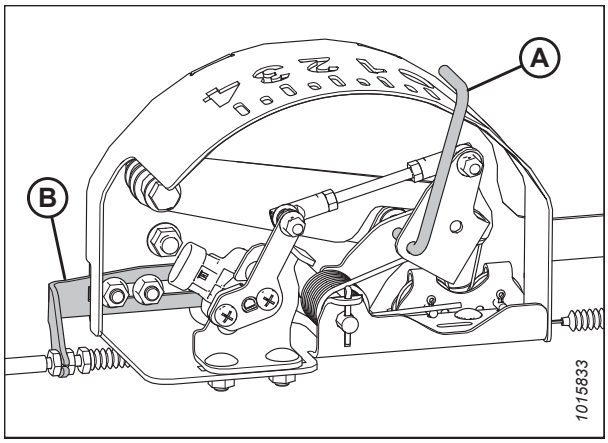


Figure 3.255: Float Indicator Box

4. Go to the FIELD page on the combine monitor, and then press the diagnostics icon. The MISCELLANEOUS page displays.

5. Press VMM DIAGNOSTIC button (A). The VMM DIAGNOSTIC page displays.

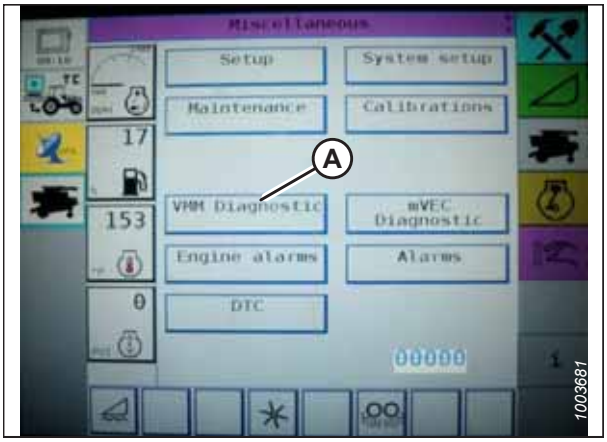


Figure 3.256: Challenger® Combine Display

6. Go to ANALOG IN tab (A), and then select VMM MODULE 3 by pressing the text box below the four tabs. The voltage from the AHHC sensor is now displayed on page as HEADER HEIGHT RIGHT POT and HEADER HEIGHT LEFT POT. The readings may be slightly different.

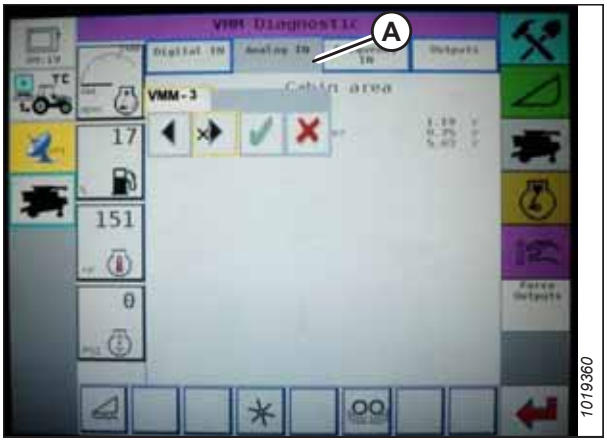


Figure 3.257: Challenger® Combine Display

7. 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 ensure the feeder house is fully lowered.

8. Read the voltage.

9. Raise the header 150 mm (6 in.) above the ground.

10. Read the voltage.

11. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions, refer to *Adjusting Voltage Limits – One-Sensor System, page 136* or *Adjusting Voltage Limits – Two-Sensor System, page 137*.

Figure 3.258: 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. Refer to the combine operator's manual for the most up-to-date information.

The following system components are required in order for the auto header height control (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 auto header height control, 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.

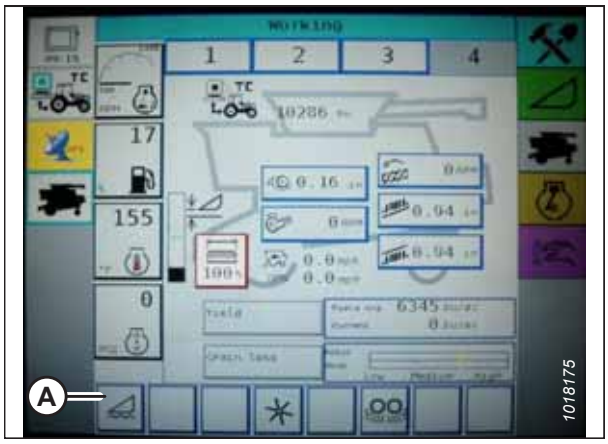


Figure 3.259: Challenger® Combine Display

Calibrating Auto Header Height Control – Challenger® and Massey Ferguson®

The auto header height control (AHHC) sensor output must be calibrated for each combine, or the AHHC feature will not work properly.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. On the FIELD page, press DIAGNOSTICS icon (A). The MISCELLANEOUS page appears.

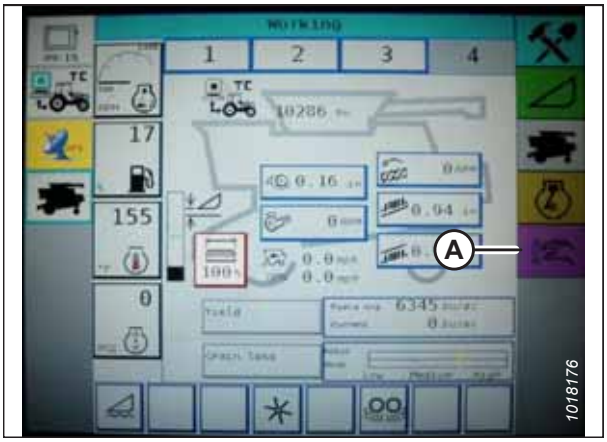


Figure 3.260: Challenger® Combine Display

3. Press CALIBRATIONS button (A). The CALIBRATIONS page appears.

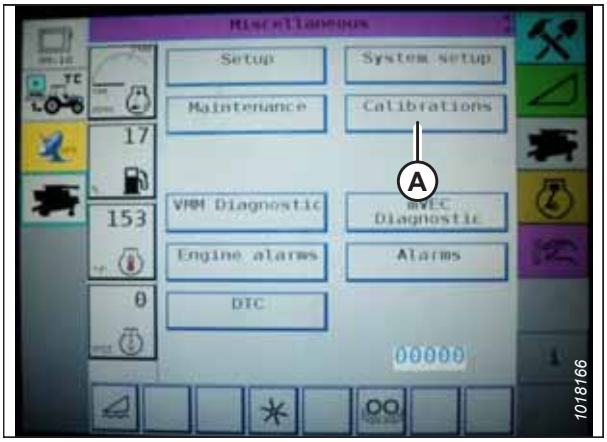


Figure 3.261: Challenger® Combine Display

4. Press HEADER button (A). The HEADER CALIBRATION page displays a warning.

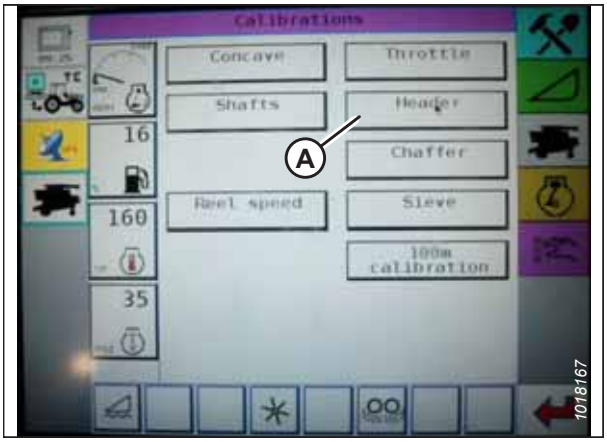


Figure 3.262: Challenger® Combine Display

5. Read the warning message, and then press the green check mark button.

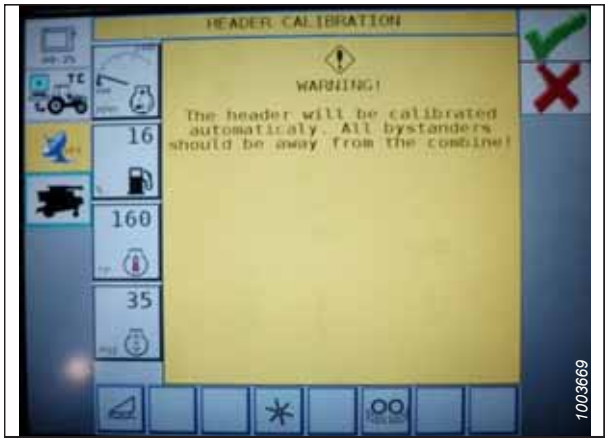


Figure 3.263: Challenger® Combine Display

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.

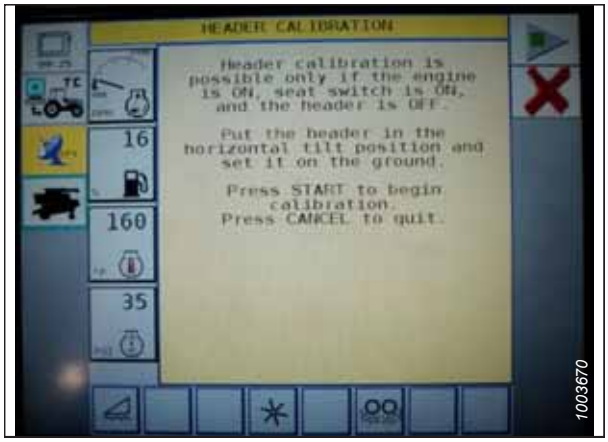


Figure 3.264: Challenger® Combine Display

Adjusting Header Height – Challenger® and Massey Ferguson®

The auto header height control (AHHC) feature allows the operator to set specific header heights.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

Once the auto header height control (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 3.265: 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. Refer to the combine operator's manual for the most up-to-date information.

1. Press HEADER icon (A) on the FIELD page. The HEADER page displays.

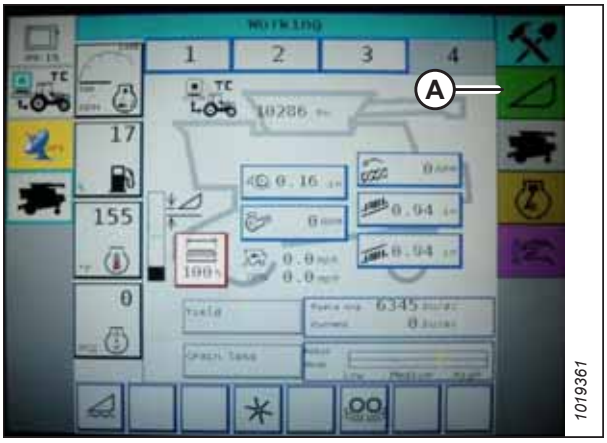


Figure 3.266: Challenger® Combine Display

2. Press HEADER CONTROL (A). The HEADER CONTROL page displays.

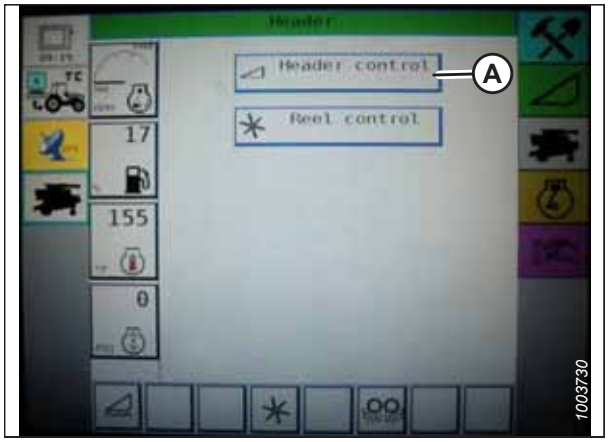


Figure 3.267: Challenger® Combine Display

3. Go to the TABLE SETTINGS tab.
4. Press the up arrow on MAX UP PWM to increase the percentage number and increase the raise speed. Press the down arrow on MAX UP PWM to decrease the percentage number and decrease the raise speed.
5. Press the up arrow on MAX DOWN PWM to increase the percentage number and increase the lower speed. Press the down arrow on MAX DOWN PWM to decrease the percentage number and decrease the lower speed.

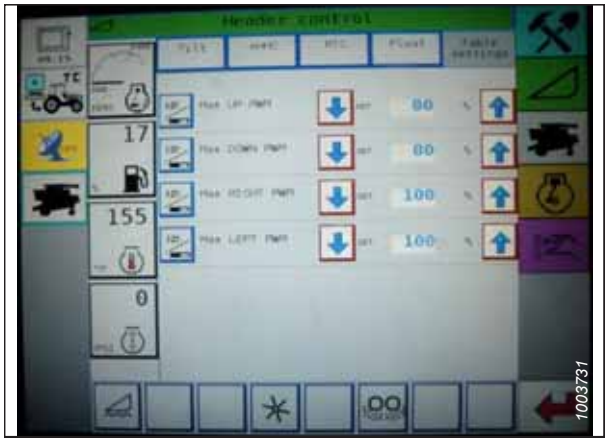


Figure 3.268: Challenger® Combine Display

Setting Auto Header Height Control Sensitivity – Challenger® and Massey Ferguson®

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 system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. Press the HEADER icon on the FIELD page. The HEADER page appears.

2. Press HEADER CONTROL button (A). The HEADER CONTROL page appears. You can adjust sensitivity on this page using the up and down arrows.

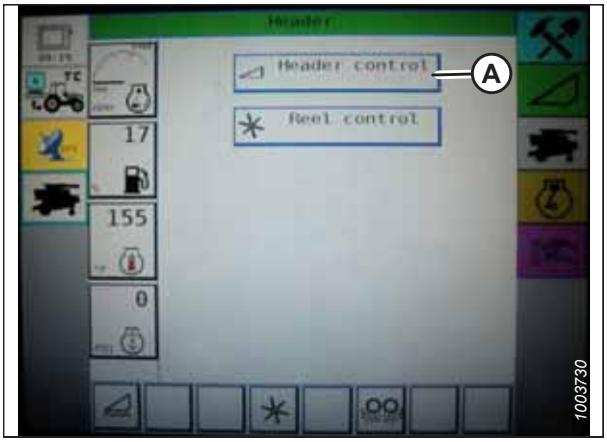


Figure 3.269: Challenger® Combine Display

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 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 3.270: Challenger® Combine Display

3.9.8 CLAAS 500 Series Combines

To make your header's auto header height control (AHHC) system compatible with CLAAS 500 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.

Calibrating Auto Header Height Control – CLAAS 500 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. Refer to the combine operator's manual for the most up-to-date information.

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), 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 *3.8.5 Header Angle, page 84*.

1. Ensure that the center-link is set to **D**.
2. Use < 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.

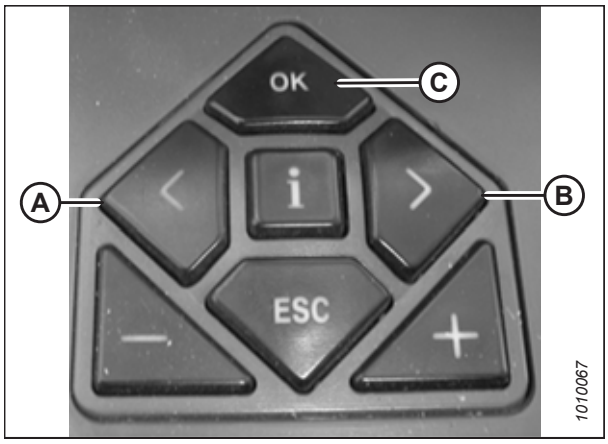


Figure 3.271: CLAAS Combine Controls

3. Use **–** key (A) or **+** key (B) to turn the AHHC on, and press OK key (C).
4. Engage the threshing mechanism and the header.

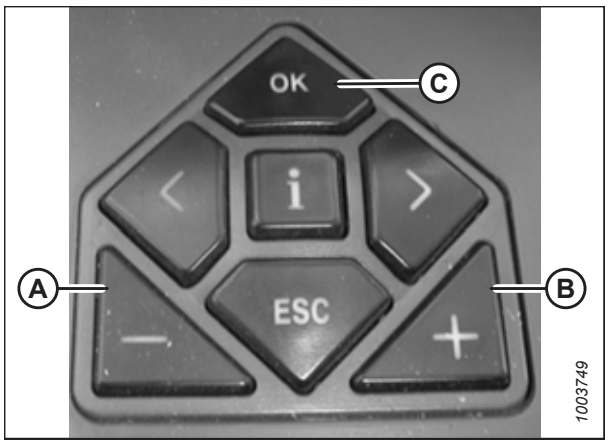


Figure 3.272: CLAAS Combine Controls

5. Use the < or > key to select CUTT. HEIGHT LIMITS, and press the combine control's OK key.
6. Follow the procedure displayed on the screen to program the upper and lower limits of the header into the CEBIS.

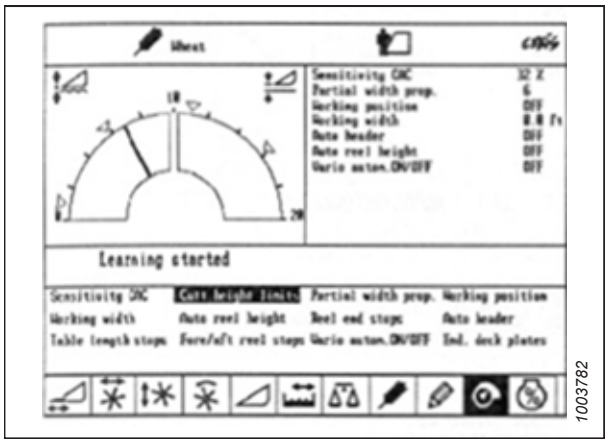


Figure 3.273: CLAAS Combine Display

7. Use 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.

8. Use the **–** key or the **+** key to change the reaction speed setting, and press the combine control's OK key.

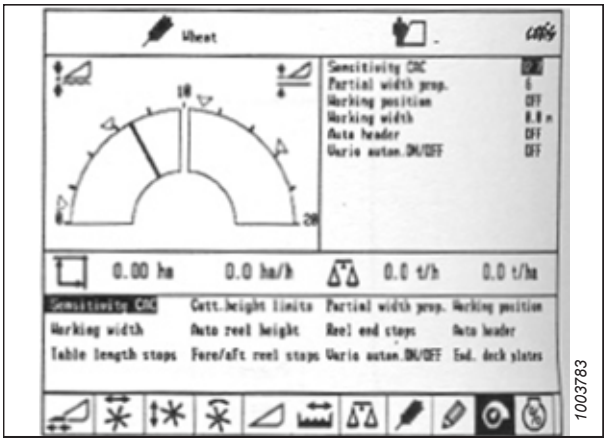


Figure 3.274: CLAAS Combine Display

9. Use line (A) or value (B) to determine the sensitivity setting.

   NOTE:

   The setting can be adjusted from 0–100%. When sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

   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.

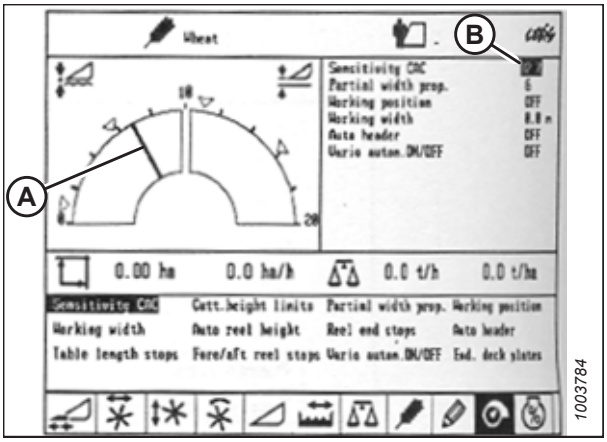


Figure 3.275: CLAAS Combine Display

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 set.

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 the most up-to-date information.

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 auto header height control (AHHC) function. Button (B) is used only with the return to cut function.

Figure 3.276: Control Handle Buttons

6. Use < key (C) or > key (D) to select the CUTTING HEIGHT page, and press OK key (E).
7. Use – key (A) or + key (B) to set the desired cutting height. An arrow indicates the selected cutting height on the scale.

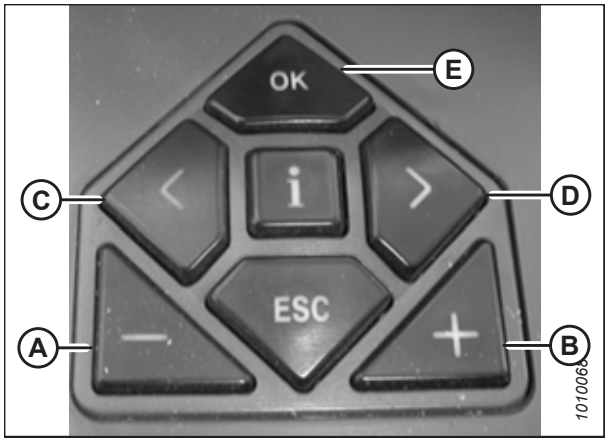


Figure 3.277: CLAAS Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7, page 180* for the set point.

Figure 3.278: 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 manually 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. Refer to the combine operator's manual for the most up-to-date information.

1. Use 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 store the cutting height (an alarm will sound when 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 store the second set point (an alarm will sound when the new setting has been stored).

   NOTE:

   For above-the-ground cutting, repeat Step *1, page 181*, and use button (D) instead of button (C) while repeating Step *2, page 181*.

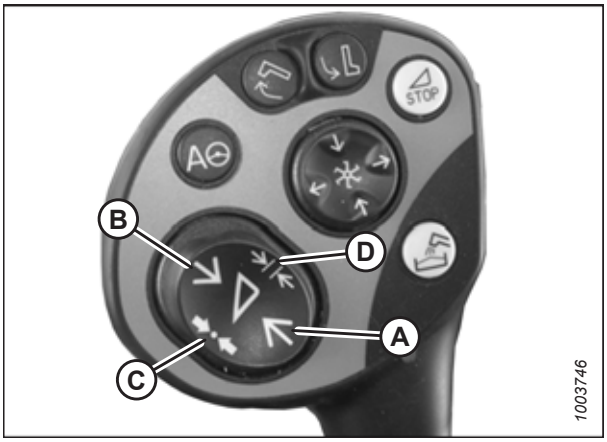


Figure 3.279: Control Handle Buttons

Setting Auto Header Height Control Sensitivity – CLAAS 500 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 system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

NOTE:

The upper and lower limits of the header must be set before adjusting the sensitivity of the AHHC system. The setting can be adjusted from 0–100%. When the sensitivity is adjusted to 0%, the signals from the sensing bands have no effect on the automatic cutting height adjustment. When the sensitivity is adjusted to 100%, the signals from the sensing bands have maximum effect on the automatic cutting height adjustment. The recommended starting point is 50%.

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 the most up-to-date information.

1. Use **<** key (C) or **>** key (D) to select SENSITIVITY CAC, and press OK key (E).
2. Use **–** key (A) or **+** (B) key to change the reaction speed setting, and press OK key (E).

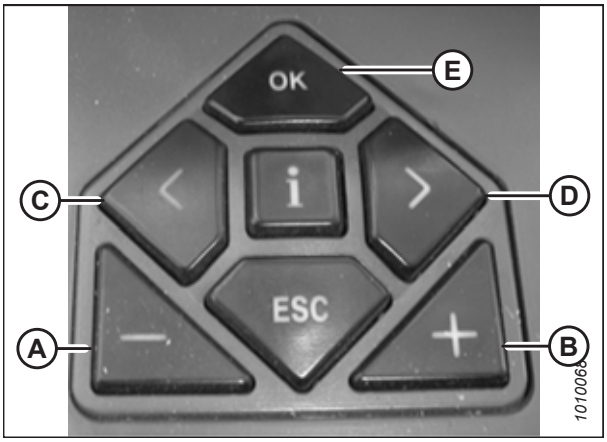


Figure 3.280: CLAAS Combine Controls

3. Use line (A) or value (B) to determine the sensitivity setting.

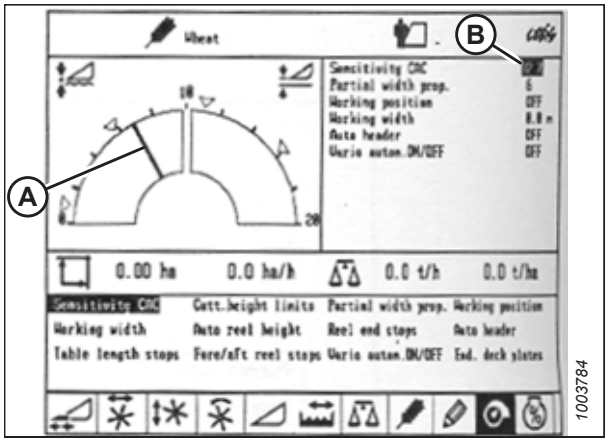


Figure 3.281: CLAAS Combine Display

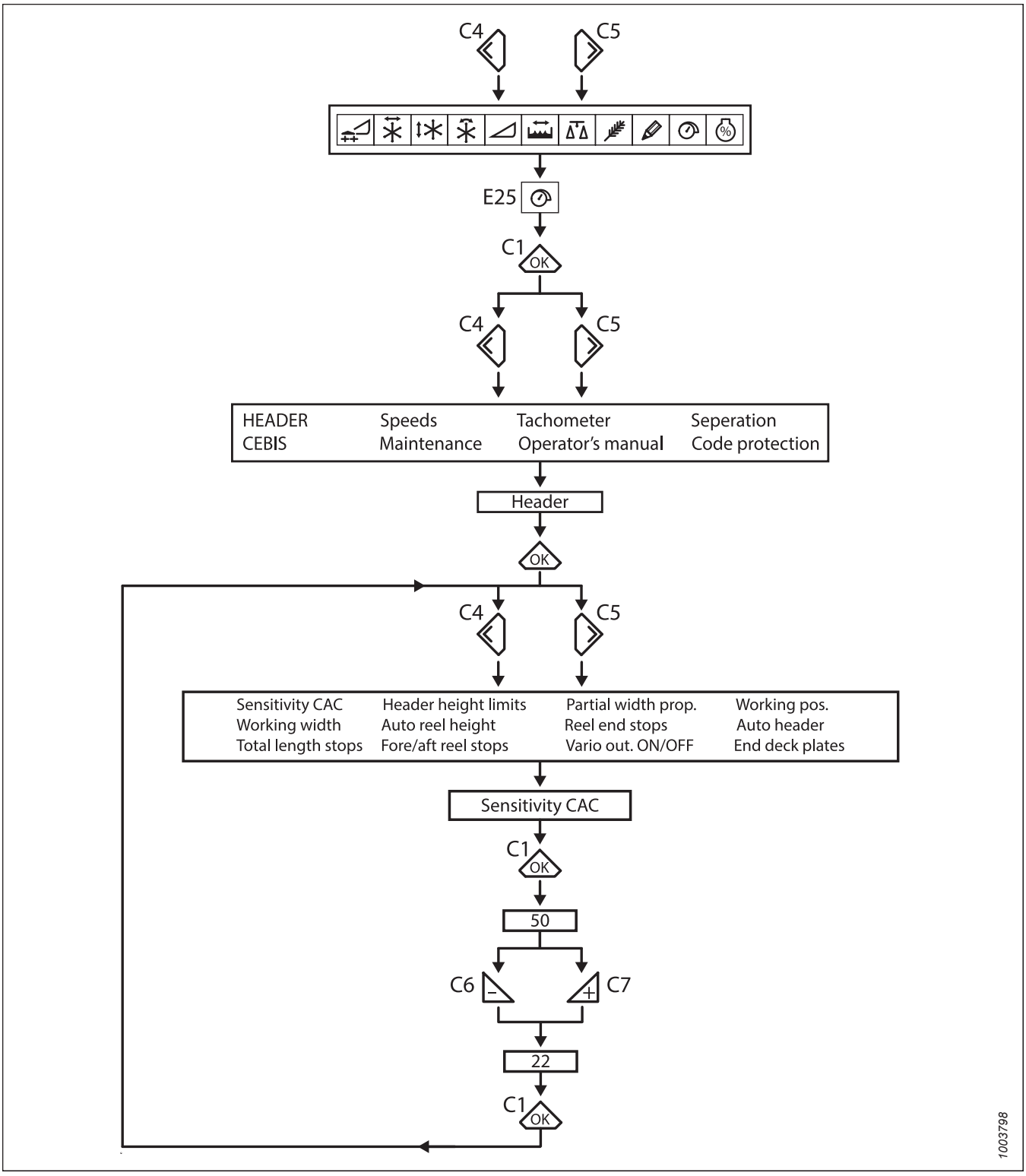


Figure 3.282: Flow Chart for Setting the Sensitivity of the Float Optimizer

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. Refer to the combine operator's manual for the most up-to-date information.

1. Use 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.

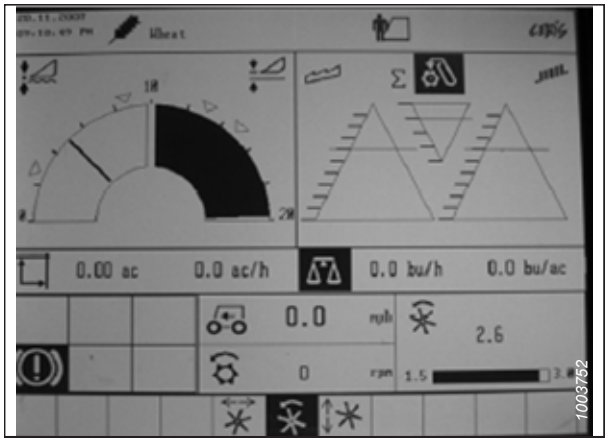


Figure 3.283: CLAAS Combine Display

2. Press OK key (C) to open the REEL SPEED window.
3. Use **–** key (A) or **+** key (B) to set the reel speed in relation to the current ground speed. Window E15 displays the selected reel speed.

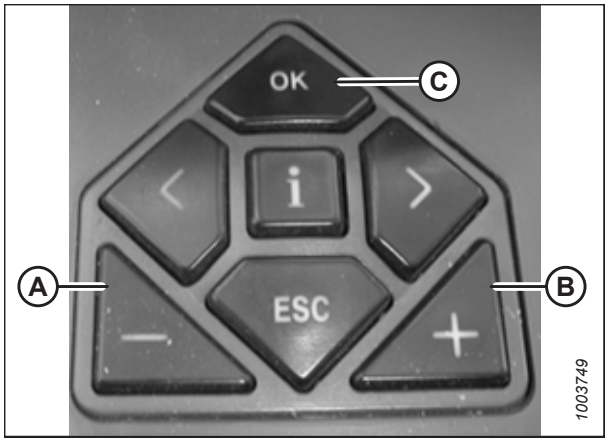


Figure 3.284: CLAAS Combine Controls

4. Manually adjust the reel speed by rotating the rotary switch to reel position (A), and then use the **–** or **+** key to set the reel speed.

Figure 3.285: CLAAS Combine Rotary Switch

5. 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 3.286: CLAAS Control Handle Buttons

6. Use 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.

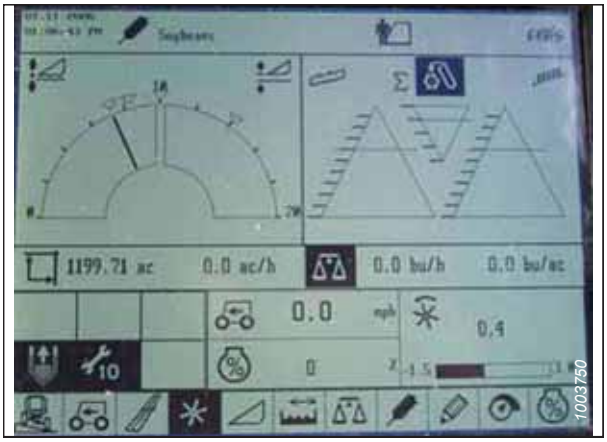


Figure 3.287: CLAAS Combine Display

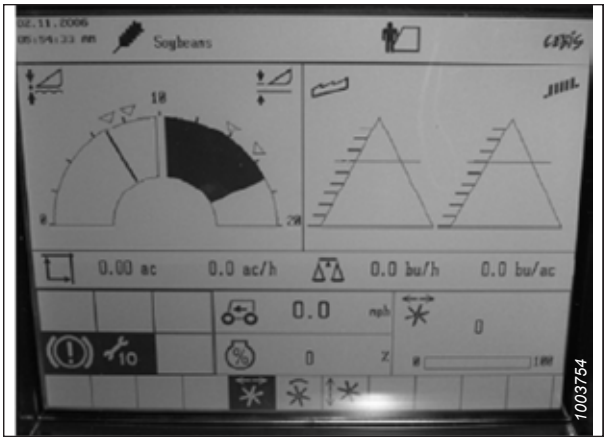


Figure 3.288: CLAAS Combine Display

7. Press OK key (E), and use < key (C) or > key (D) to select the REEL FORE AND AFT window.
8. 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 *3.290, page 186*) can also be used to set the reel fore-aft position.

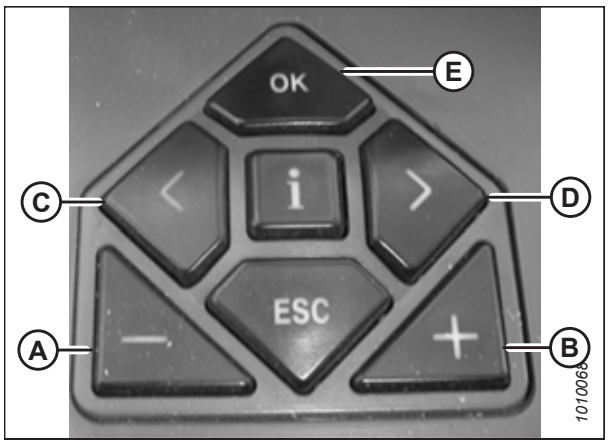


Figure 3.289: CLAAS Combine Controls

9. 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 3.290: CLAAS Control Handle Buttons

3.9.9 CLAAS 600 and 700 Series Combines

To make your header's auto header height control (AHHC) system compatible with CLAAS 600 and 700 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.

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. Refer to the combine operator's manual for the most up-to-date information.

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 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 the desired header angle. For instructions, refer to *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. Ensure that the header float is unlocked.
3. Place the wings in the locked position.
4. Use control knob (A) to highlight AUTO CONTOUR icon (B) and press control knob (A) to select it.

Figure 3.291: CLAAS Combine Display, Console, and Control Handle

5. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (not shown). Press control knob (A) to select it. Highlighted header icon (B) displays on the screen.

Figure 3.292: CLAAS Combine Display, Console, and Control Handle

6. Use control knob (A) to highlight header icon (B) with the up and down arrows. Press control knob (A) to select it.

Figure 3.293: CLAAS Combine Display, Console, and Control Handle

7. Use control knob (A) to highlight screwdriver icon (B).
8. Engage the combine separator and feeder house.
9. Press control knob (A). A progress bar appears.

Figure 3.294: CLAAS Combine Display, Console, and Control Handle

10. Fully raise the feeder house. Progress bar (A) advances to 25%.
11. Fully lower the feeder house. Progress bar (A) advances to 50%.
12. Fully raise the feeder house. Progress bar (A) advances to 75%.
13. Fully lower the feeder house. Progress bar (A) advances to 100%.

Figure 3.295: CLAAS Combine Display, Console, and Control Handle

14. Ensure progress bar (A) displays 100%. The calibration procedure is now complete.

    NOTE:

    If the voltage is not within the range of 0.5–4.5 V at any time throughout the calibration process, the monitor will indicate learning procedure not concluded.

    NOTE:

    If the float was set heavier to complete the ground calibration procedure, adjust it to the recommended operating float after the calibration is complete.

Figure 3.296: CLAAS Combine Display, Console, and Control Handle

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. Refer to the combine operator's manual for the most up-to-date information.

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 3.297: 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 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. Refer to the combine operator's manual for the most up-to-date information.

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.

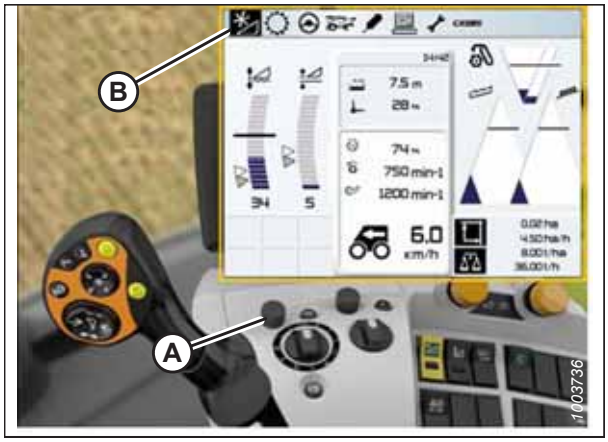


Figure 3.298: CLAAS Combine Display, Console, and Control Handle

3. Select FRONT ATTACHMENT PARAMETER SETTINGS icon (A). A list of settings appears.
4. Select SENSITIVITY CAC (B) from the list.

Figure 3.299: 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 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.

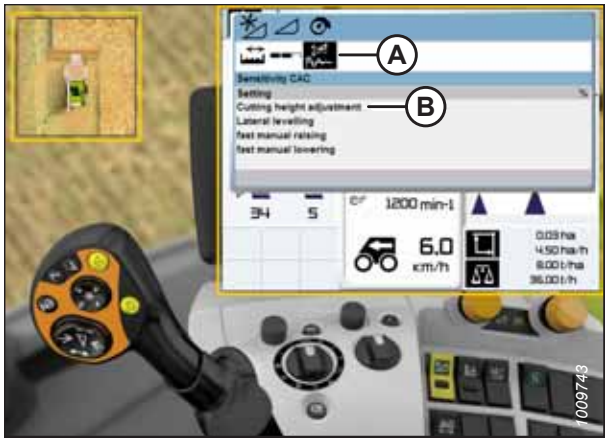


Figure 3.300: CLAAS Combine Display

Adjusting Auto Reel Speed – CLAAS 600 and 700 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. Refer to the combine operator's manual for the most up-to-date information.

1. Use control knob (A) to highlight HEADER/REEL icon (B). Press control knob (A) to select it. The HEADER/REEL dialog box opens.

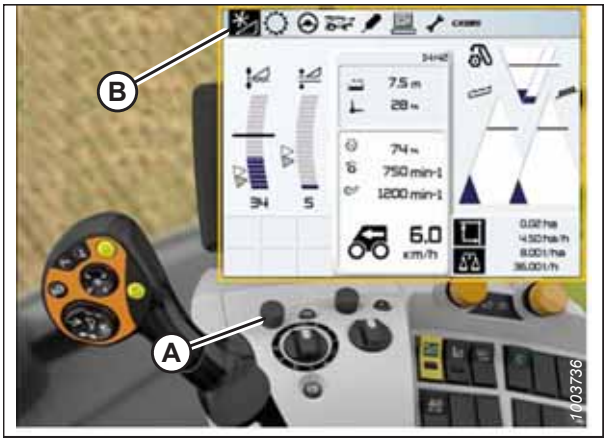


Figure 3.301: CLAAS Combine Display, Console, and Control Handle

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 3.302: 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 3.303: 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 3.304: CLAAS Combine Display, Console, and Control Handle

Calibrating Reel Height 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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine.
2. Position the header 15–25 cm (6–10 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 3.305: 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 3.306: 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 3.307: CLAAS Combine Display and Console

7. Use control knob (A) to highlight screwdriver icon (B).
8. Press the control knob.

Figure 3.308: CLAAS Combine Display, Console, and Control Handle

WARNING

Ensure that all bystanders have cleared the area.

9. Progress bar chart (A) appears on the screen.
10. Follow the prompts on the screen to raise and lower the reel.

Figure 3.309: CLAAS Combine Display, Console, and Control Handle

11. Ensure progress bar chart (A) displays 100%. When the progress bar chart displays 100%, the calibration procedure is complete.

Figure 3.310: CLAAS Combine Display, Console, and Control Handle

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. Refer to the combine operator's manual for the most up-to-date information.

1. Use HOTKEY rotary dial (A) to select REEL icon (B).

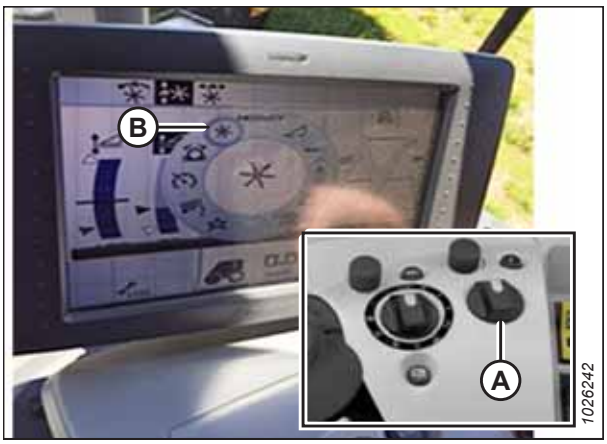


Figure 3.311: CLAAS Combine Display and Console

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 – CLAAS 600 and 700 Series, page 192*.

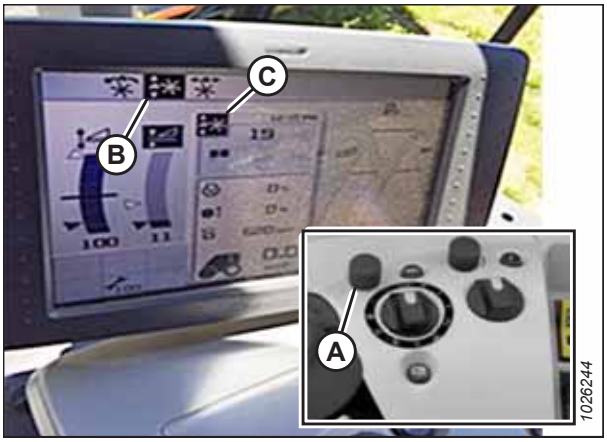


Figure 3.312: CLAAS Combine Display and Console

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.

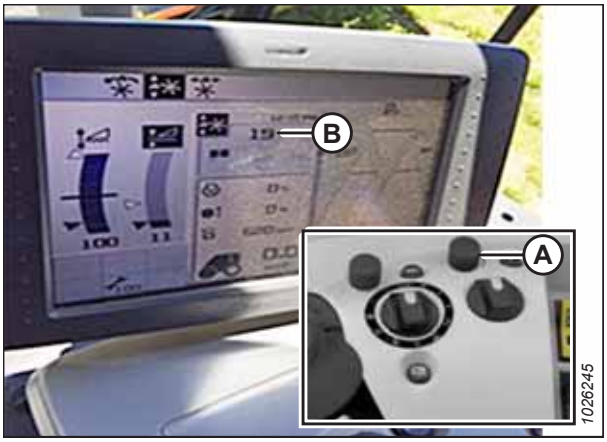


Figure 3.313: CLAAS Combine Display and Console

3.9.10 CLAAS 5000, 6000, 7000, and 8000 Series Combines

To make your header's auto header height control (AHHC) system compatible with CLAAS 5000, 6000, 7000, and 8000 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 – 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. Refer to the combine operator's manual for the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.314: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 3.315: 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).

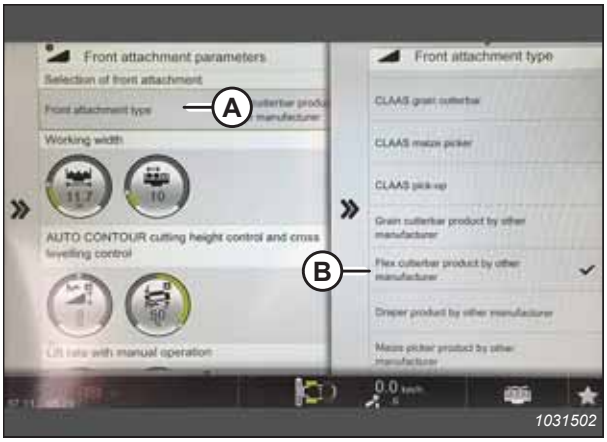


Figure 3.316: Attachment Parameters Page

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 3.317: Attachment Parameters Page

Setting up Header Fore-Aft Tilt Function – CLAAS 7000 and 8000 Series

To set up the header's fore-aft tilt function, you will need to access the FRONT ATTACHMENT menu in the CEBIS terminal. The fore-aft tilt function can be controlled from the cab using the trigger on the back of the combine's control handle.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.318: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 3.319: 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 3.320: Attachment Parameters Page

5. From the MAIN page, select SETTINGS (A).

6. From the SETTINGS page, select FAVOURITE MANAGEMENT (B).

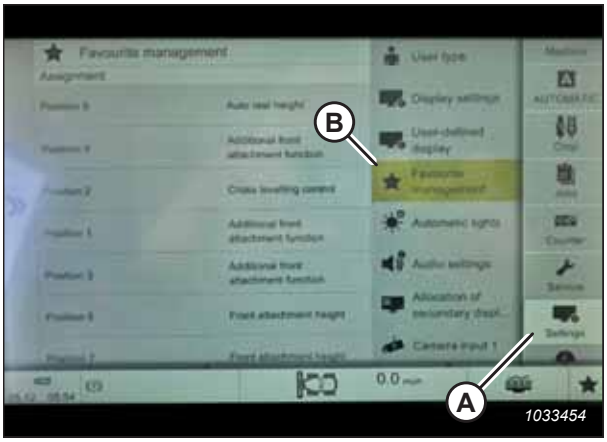


Figure 3.321: CEBIS Settings Page

7. Add OTHER HEADER FUNCTIONS icon (A) as a favorite.

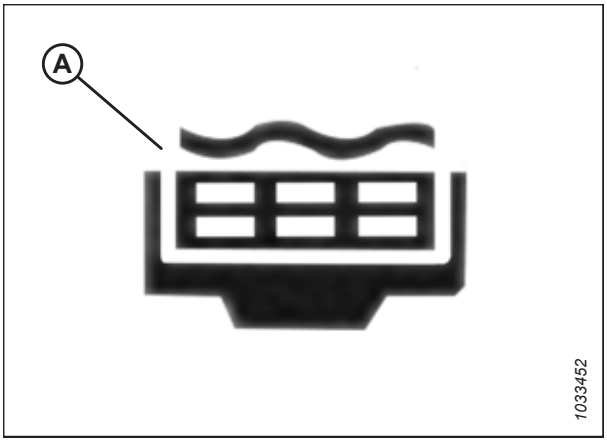


Figure 3.322: Other Header Functions Icon

8. Select the OTHER HEADER FUNCTIONS icon so that it appears on the operator screen at location (A).

9. You can now use the trigger (not shown) on the back of the handle to control the fore-aft position and tilt of the header.

   NOTE:

   The FAVOURITE MANAGEMENT menu controls the trigger on the back of handle. The icon shown at location (A) is the function controlled by the trigger.

Figure 3.323: CEBIS Main Page

Calibrating Auto Header Height Control – CLAAS 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.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. From the MAIN page, select FRONT ATTACHMENT (A).

Figure 3.324: CEBIS Main Page

2. Select LEARNING PROCEDURES (A) from the menu.
3. SELECT FRONT ATTACHMENT HEIGHT (B).

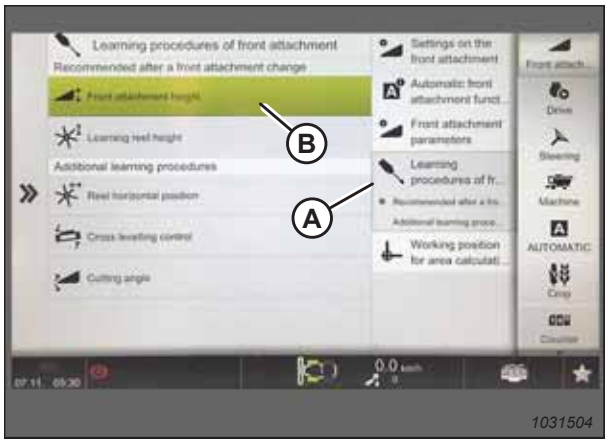


Figure 3.325: Learning Procedures Page

4. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

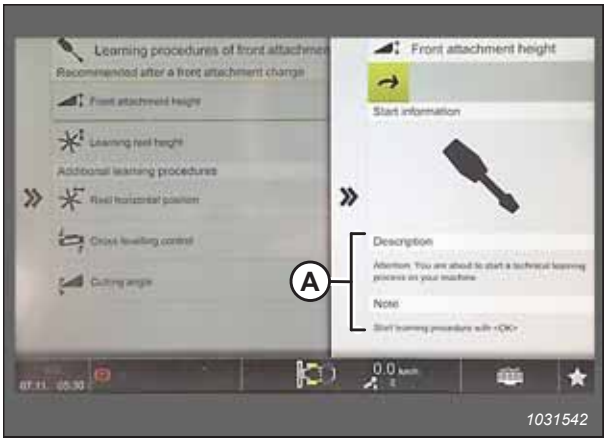


Figure 3.326: Front Attachment Height Page

5. When prompted, select OK button (A) to start the learning procedure.

Figure 3.327: Operator Controls

6. When prompted, raise the front attachment with button (A) on the multifunction lever.
7. When prompted, lower the front attachment with button (B) on the multifunction lever.
8. Repeat the previous steps as prompted until calibration is complete.

Figure 3.328: Multifunction Lever

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, the setting can be selected from the control handle.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

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.

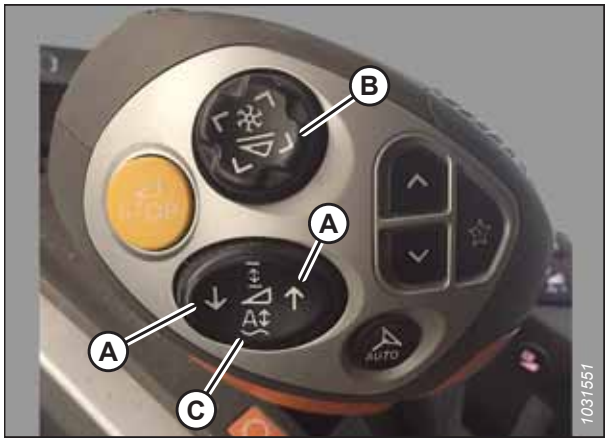


Figure 3.329: Multifunction Lever

Triangle (A) appears on the header height gauge indicating the preset level.

Figure 3.330: CEBIS Main Page

Setting Auto Header Height Control Sensitivity – CLAAS 7000 and 8000 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 system to raise or lower the feeder house. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the system to raise or lower the feeder house.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.331: CEBIS Main Page

2. From the drop down list, select FRONT ATTACHMENT PARAMETERS (A).

Figure 3.332: 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.

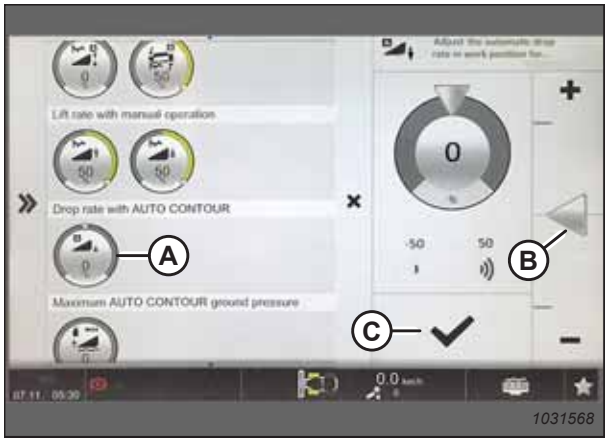


Figure 3.333: Drop Rate with Auto Contour Page

Adjusting Auto Reel Speed – CLAAS 5000, 6000, 7000, and 8000 Series

The preset reel speed can be set when the automatic header functions are activated.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. From the main page, select FRONT ATTACHMENT (A).

Figure 3.334: 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 3.335: 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 3.336: Reel Speed Target Value Page

Calibrating Reel Height Sensor – CLAAS 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

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

NOTE:

If the reel raise and lower functions do not work as expected on model year 2022 and newer CLAAS combines, contact your MacDon or CLAAS Dealer.

1. Position the header 15–25 cm (6–10 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.

2. From the main page, select FRONT ATTACHMENT (A).

Figure 3.337: CEBIS Main Page

3. Select LEARNING PROCEDURES FOR FRONT ATTACHMENT (A).
4. Select LEARNING REEL HEIGHT (B).

Figure 3.338: Front Attachment Page

5. Follow the prompts that appear in DESCRIPTION and NOTES fields (A).

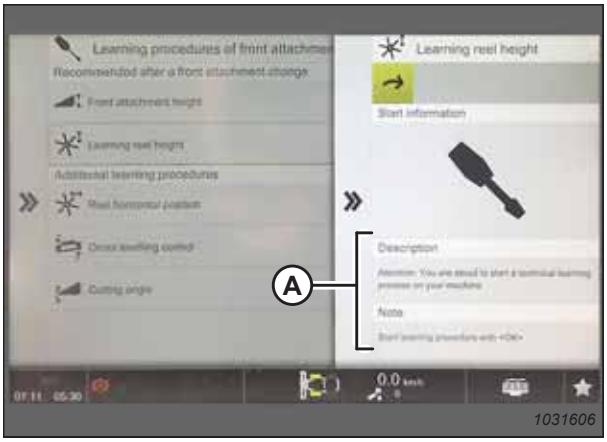


Figure 3.339: Learning Reel Height Page

6. When prompted, select OK button (A) to start the learning procedure.

Figure 3.340: Operator Controls

3.9.11 Gleaner R65/R66/R75/R76 and S Series Combines

To make your header's auto header height control (AHHC) system compatible with Gleaner R65/R66/R75/R76 and S 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.

Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 S Series

The auto header height control 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. Refer to the combine operator's manual for the most up-to-date information.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.
3. 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 *3.10 Leveling Header, page 317* for instructions.

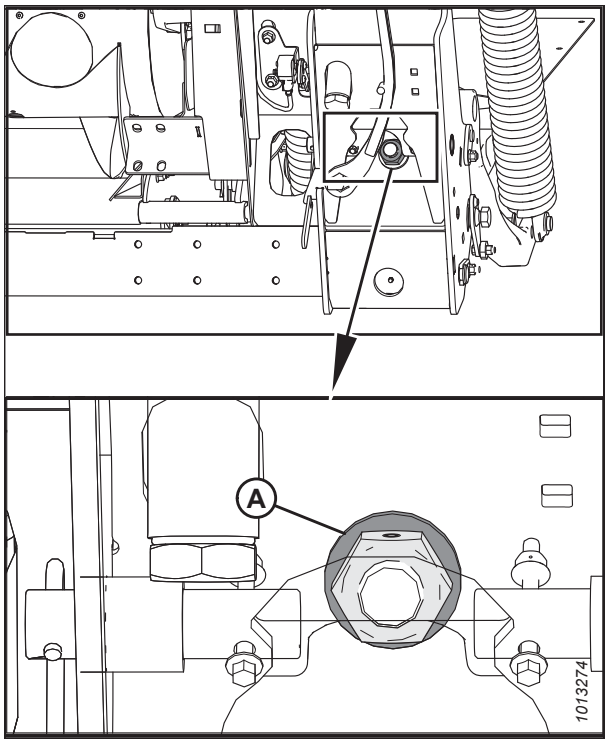


Figure 3.341: Float Lock

4. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

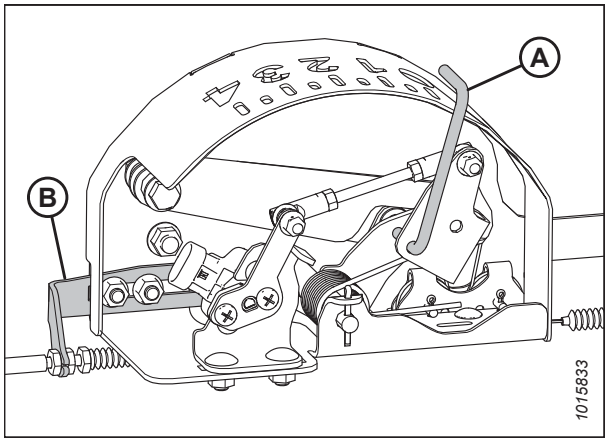


Figure 3.342: Float Indicator Box

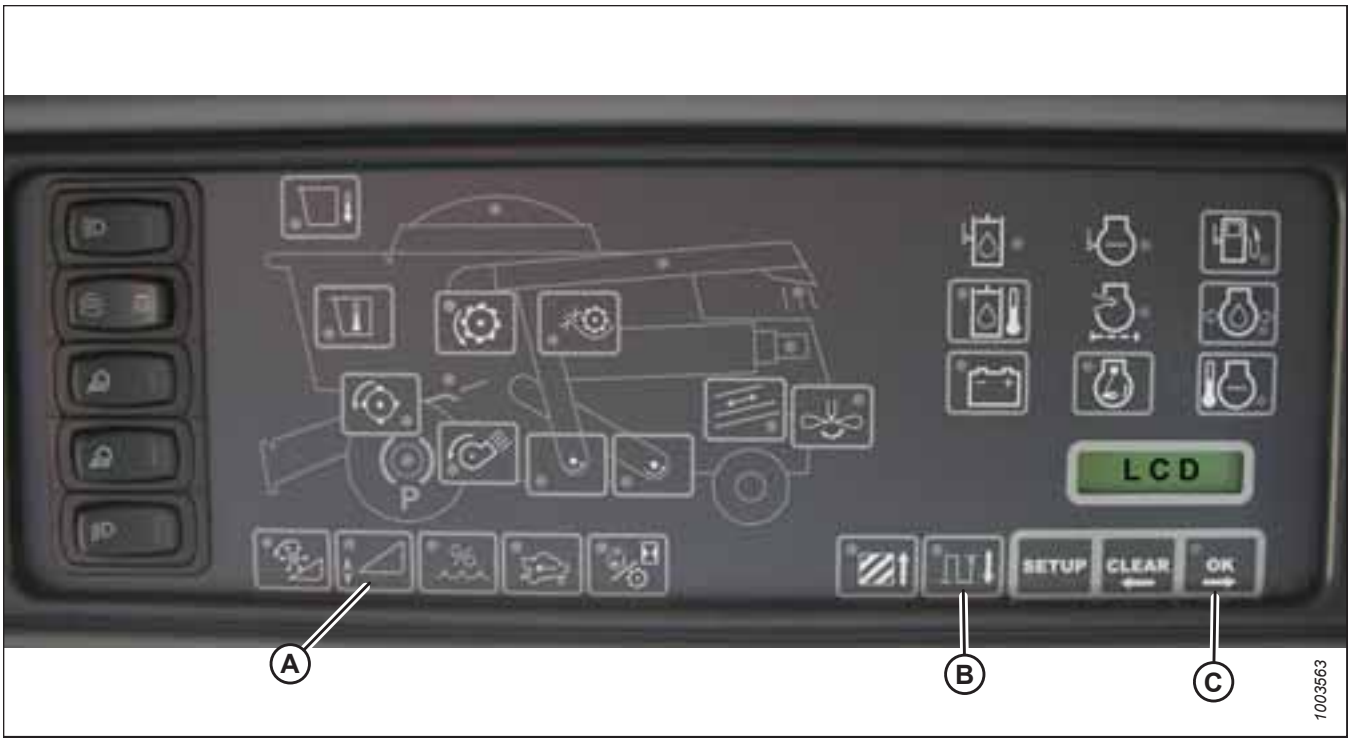


Figure 3.343: Combine Heads-Up Display

5. Ensure the header float is unlocked.
6. Press and hold button (A) on the heads-up display for 3 seconds to enter diagnostic mode.
7. Scroll down using button (B) until LEFT is displayed on the LCD screen.
8. Press OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the auto header height control (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

Engage the auto header height control (AHHC) before adjusting it for height and sensitivity.

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 the most up-to-date information.

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 3.344: 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.

WARNING

Ensure that all bystanders have cleared the area.

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.

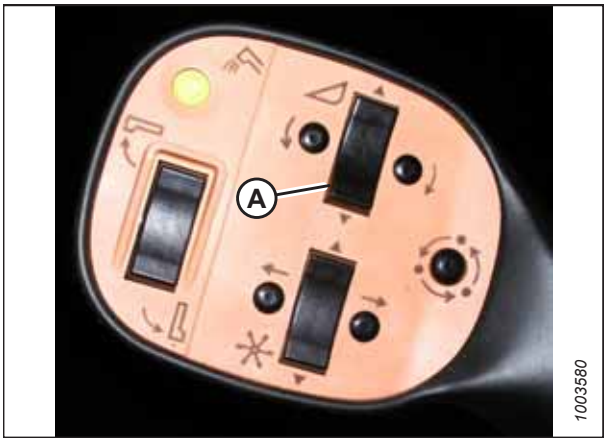


Figure 3.345: Control Handle

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, 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. Refer to the combine operator's manual for the most up-to-date information.

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 3.346: 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 *3.8.5 Header Angle, page 84*.

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 being on will affect the combine's height adjustment reaction time, which can affect the auto header height control (AHHC) system's performance.

Refer to the combine operator's manual for the procedure for turning the accumulator off and on. For best performance, turn the feeder house accumulator off.

NOTE:

The accumulator is located in front of the front left axle beam.

Figure 3.347: 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.

Ensure that header raise restrictor (A) and header lower restrictor (B) in the hydraulic manifold are adjusted so that it takes approximately 6 seconds to raise the header from ground level 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 3.348: 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. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure indicator (A) is at position 0 (B) with the header is 254–356 mm (10–14 in.) off the ground. If not, the float sensor output voltage should be checked. For instructions, refer to *Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 S Series, page 207*.

   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.

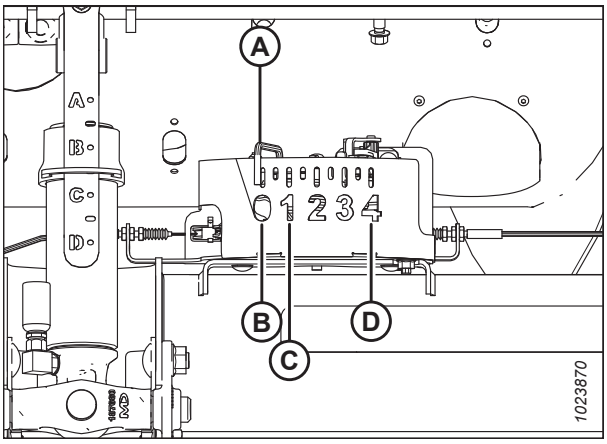


Figure 3.349: Float Indicator Box

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 3.350: 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. Refer to the combine operator's manual for the most up-to-date information.

Figure 3.351: Auto Header Height Control Console

SENSITIVITY ADJUSTMENT dial (A) 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 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. Refer to the combine operator's manual for the most up-to-date information.

Display type:

Displayed on tachometer (A) as XX or XXX.

Figure 3.352: Tachometer

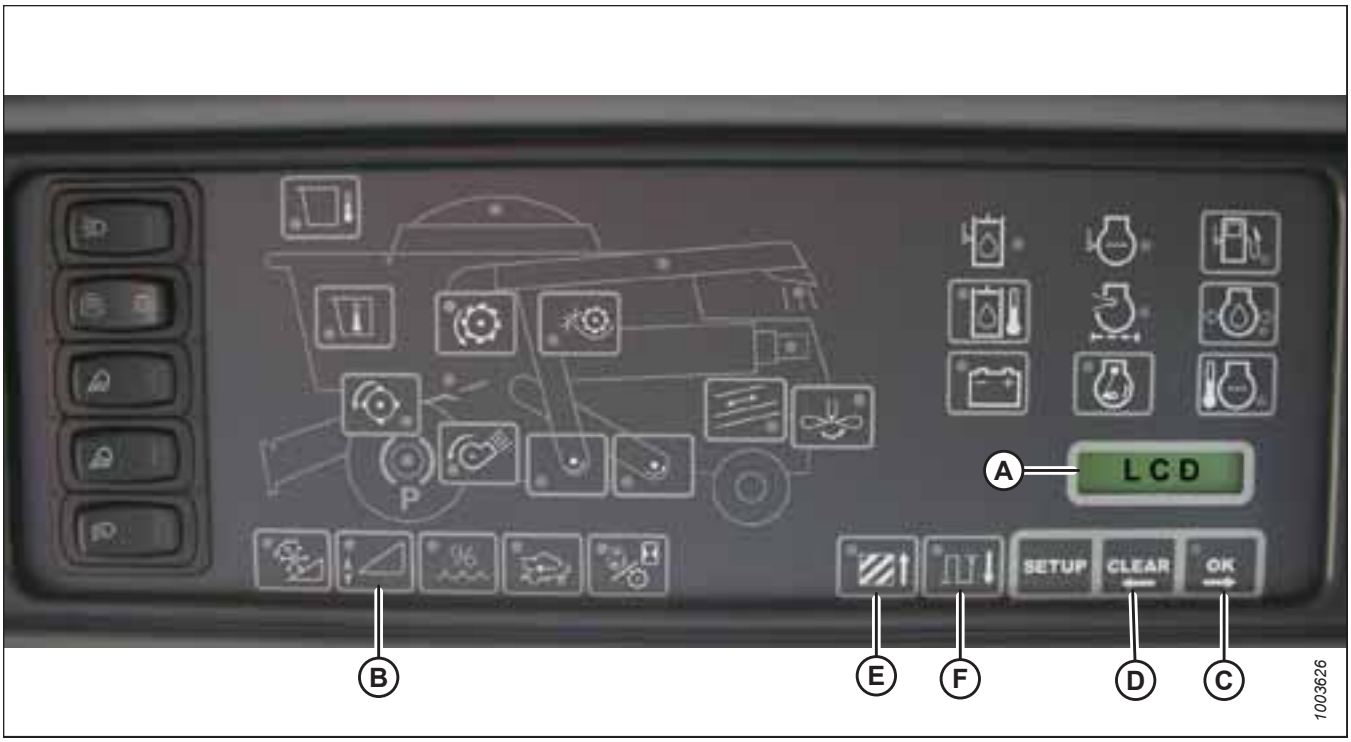


Figure 3.353: Combine Electronic Instrument Panel (EIP)

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 *3.353, page 216*.

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.

3.9.12 Gleaner S9 Series Combines

To make your header's auto header height control (AHHC) system compatible with Gleaner S9 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 – 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. Refer to the combine operator's manual for the most up-to-date information.

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 3.354: 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, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

Figure 3.355: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

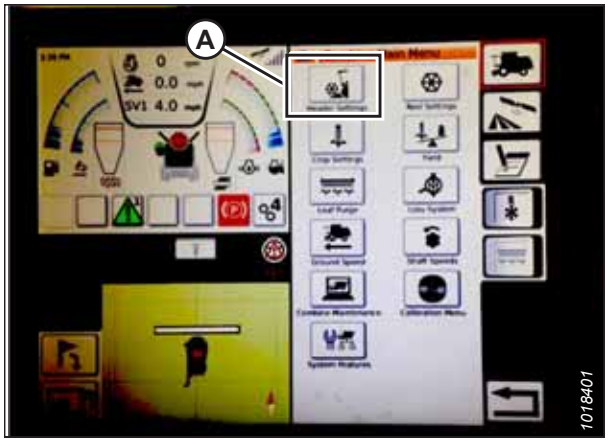


Figure 3.356: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A dialog box showing predefined headers opens.
   - If your MacDon header is already set up, it appears on the header list. Touch MacDon header title (B) to highlight the selection in blue, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ABC button (C), and use the on-screen keyboard to enter the MacDon header information. When 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)

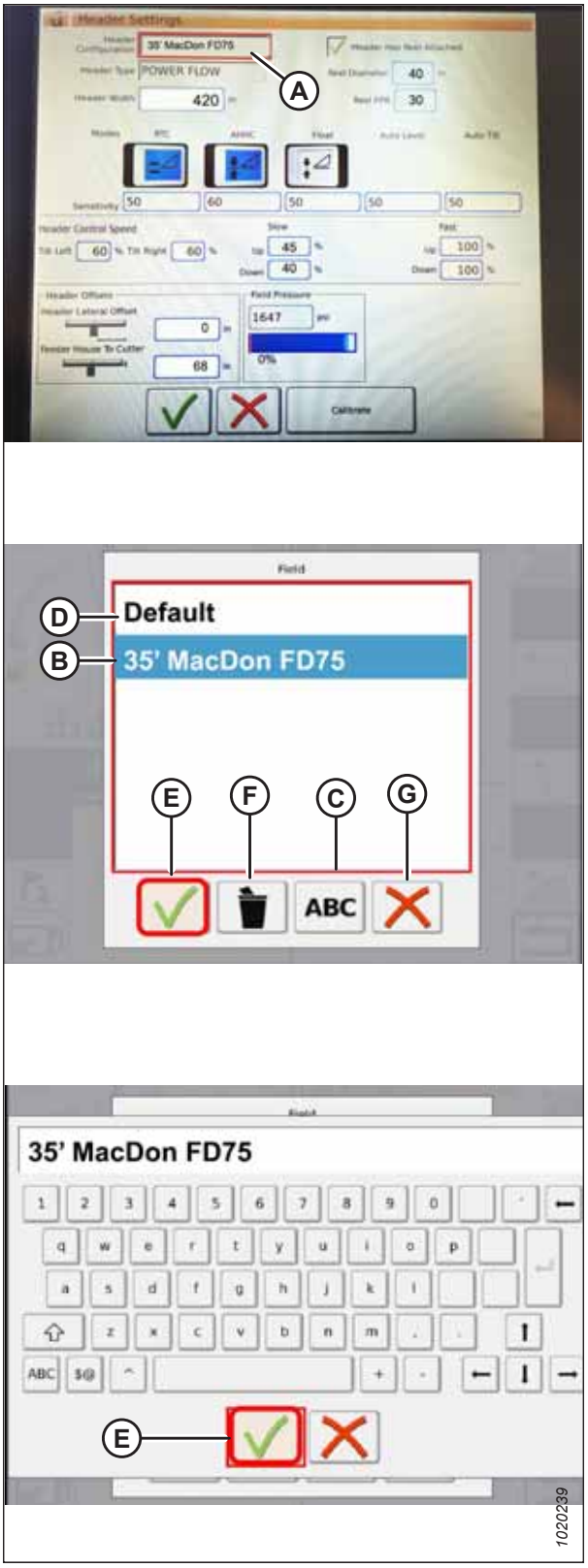


Figure 3.357: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A). A list of predefined header types appears.

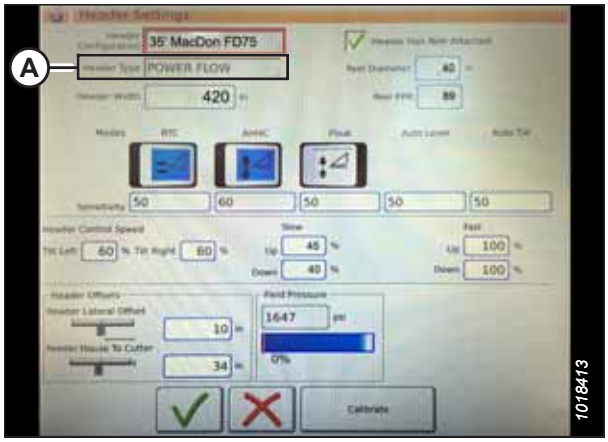


Figure 3.358: Header Settings

5. Touch POWER FLOW (A). Touch green check mark (B) to save the selection.

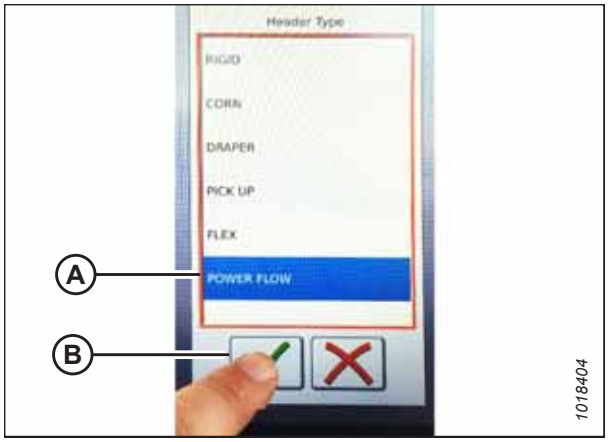


Figure 3.359: Header Type

6. Ensure that HEADER HAS REEL ATTACHED check box (A) is checked.

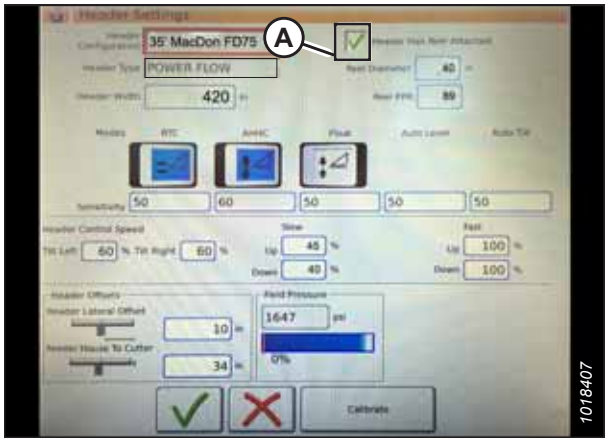


Figure 3.360: Header Settings

7. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** for a MacDon reel.

8. Touch REEL PPR (pulses per revolution) field (B) and enter **30** as the value for your MacDon header.

   NOTE:

   PPR is determined by the number of teeth on the reel speed sprocket.

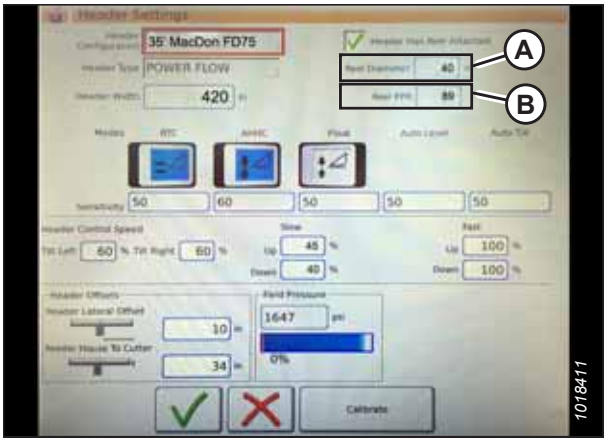


Figure 3.361: Header Settings

9. Touch green check mark (B) at the bottom of numeric keypad (A).

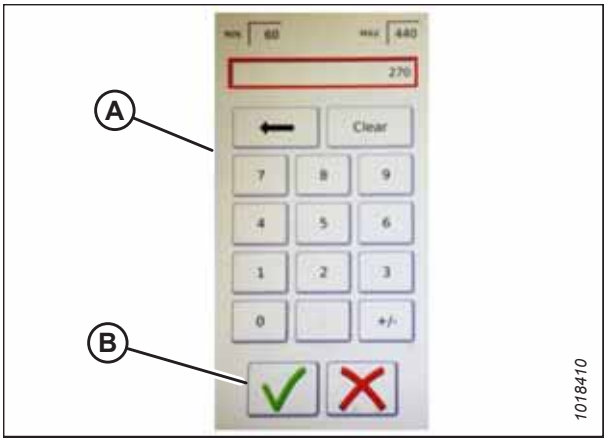


Figure 3.362: Numeric Keypad

10. Touch green check mark (A) at the bottom of the HEADER SETTINGS page.

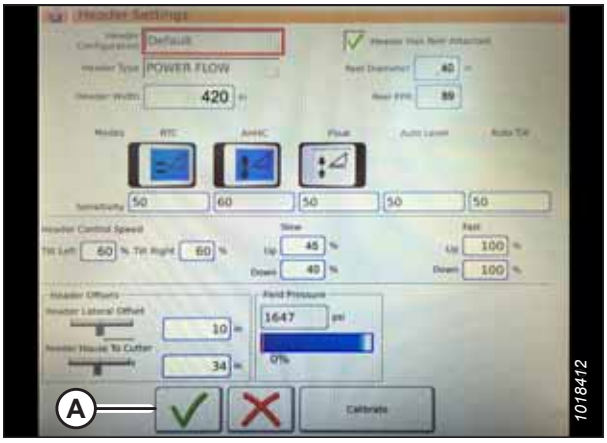


Figure 3.363: Header Settings Page

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, the REEL SETTINGS menu will need to be accessed.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. From the COMBINE MAIN MENU, touch REEL SETTINGS (A) to open the REEL SETTINGS page.

Figure 3.364: 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. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in mph and rpm.

   NOTE:

   At the bottom of the REEL SETTINGS page, the reel diameter and reel pulses per revolution (PPR) are displayed. These values have already been set in the HEADER SETTINGS page.

3. The reel speed is calibrated on the REEL SETTINGS page by touching CALIBRATE button (A) in the top right of the page.

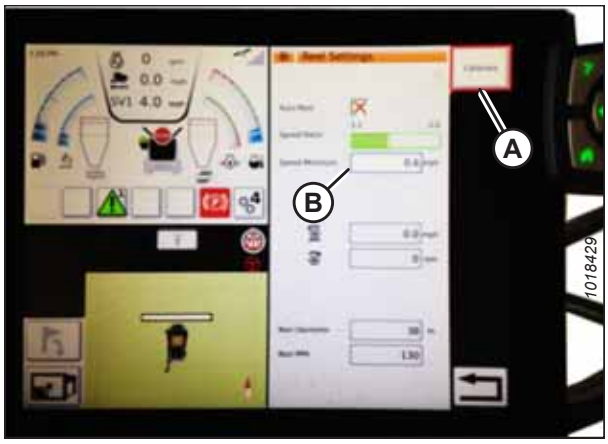


Figure 3.365: Reel Settings Calibration

4. The CALIBRATION WIZARD opens and displays a hazard warning.

5. Make sure to meet all the conditions listed in the CALIBRATION WIZARD warning. Press green check mark (A) to accept and start the reel calibration. Pressing red X (B) will cancel the calibration procedure.

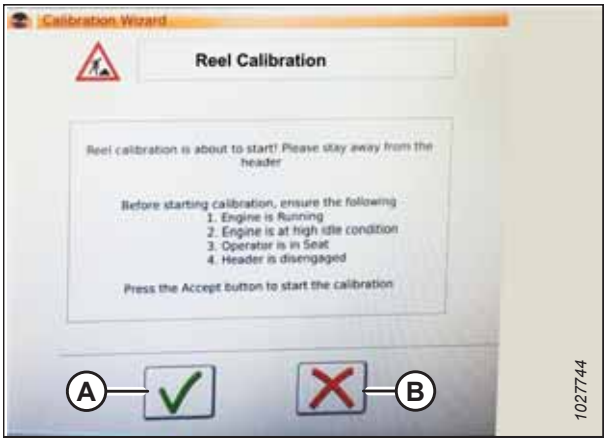


Figure 3.366: Calibration Wizard

6. A message appears in the CALIBRATION WIZARD stating that the reel calibration has started. The reel will begin turning slowly and the reel speed will increase to high speed. A progress bar is provided. If necessary, touch the red X to cancel. Otherwise, wait for the message that reel calibration has completed successfully. Touch the green check mark to save the calibrated settings.

Figure 3.367: Calibration Progress

Setting up Automatic Header Controls – Gleaner S9 Series

Automatic header functions are configured on the HEADER SETTINGS page.

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 the most up-to-date information.

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)

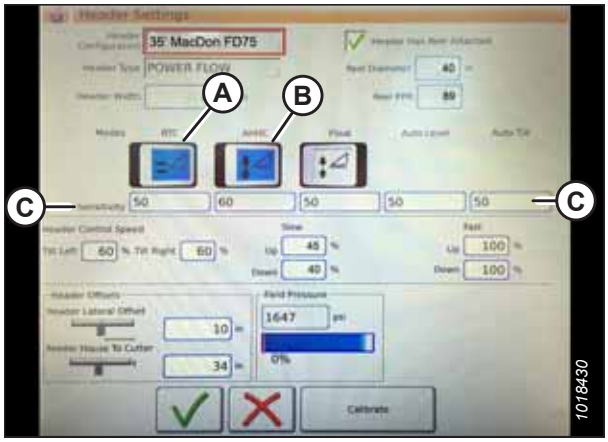


Figure 3.368: Automatic Controls and Sensitivity Settings

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

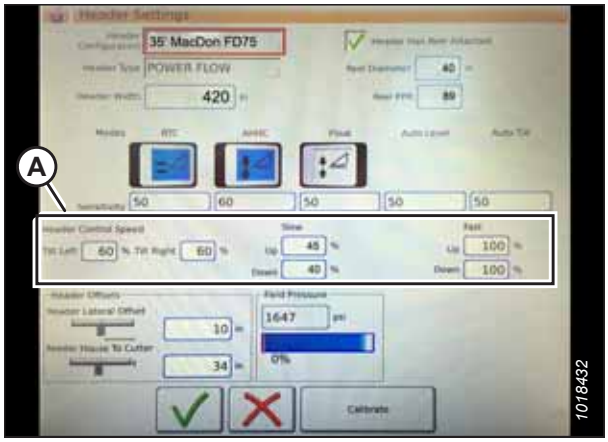


Figure 3.369: Header Speed Control Settings

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.

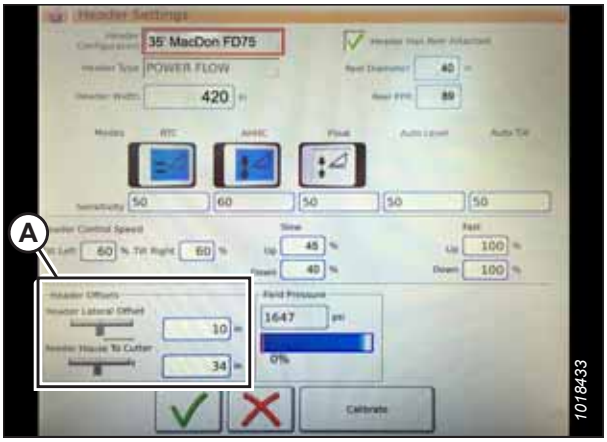


Figure 3.370: Header Offset Settings

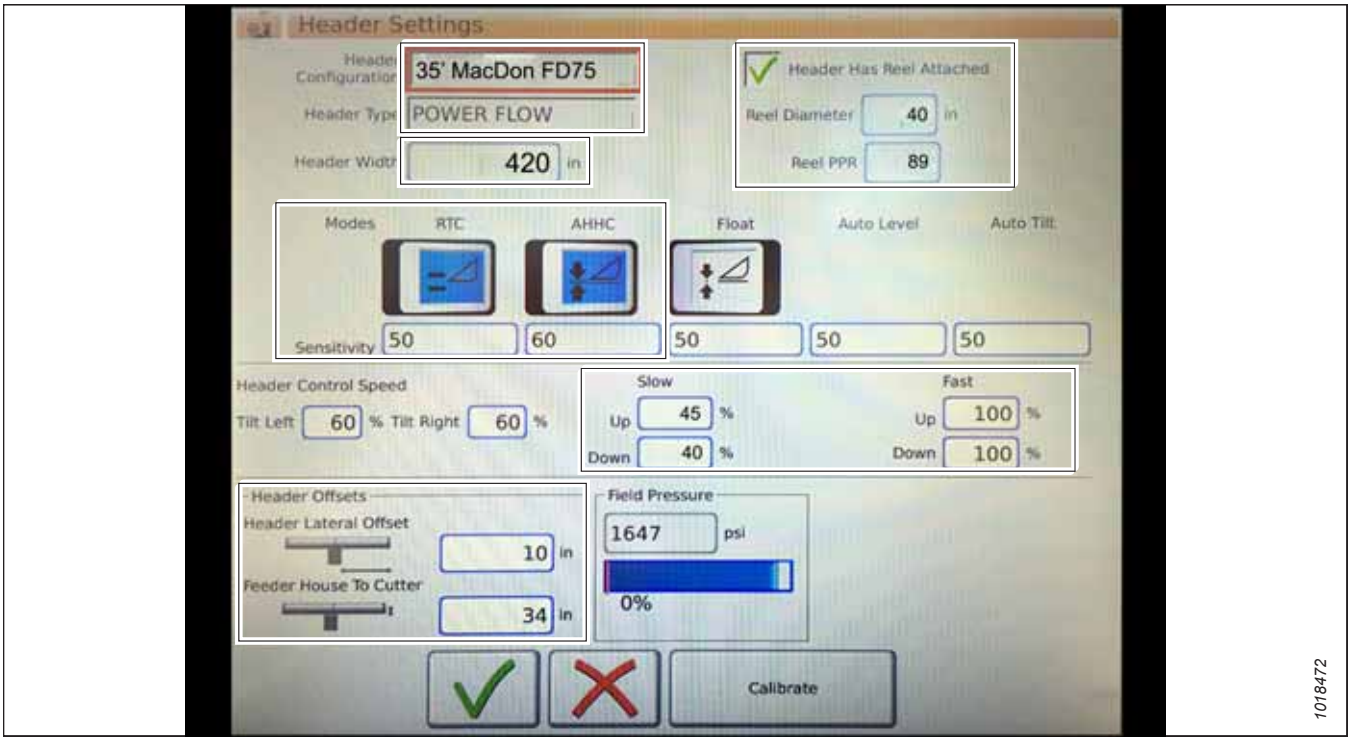


Figure 3.371: MacDon Header Settings Inputs

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

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A).

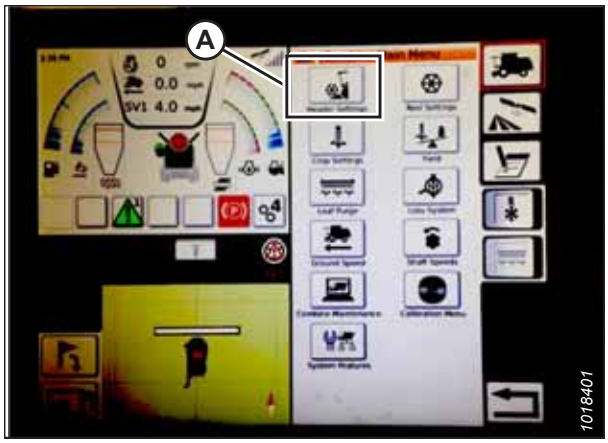


Figure 3.372: Combine Main Menu

2. Touch CALIBRATE (A) at the bottom right of the page. The HEADER CALIBRATION page appears.

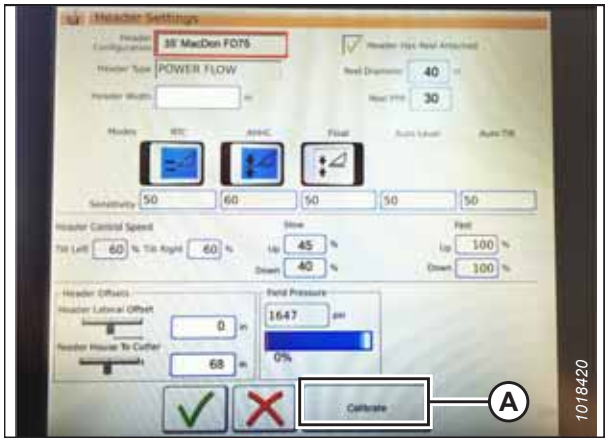


Figure 3.373: Header Settings Page

The right side of the page shows header calibration information (A). The results are shown for a variety 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

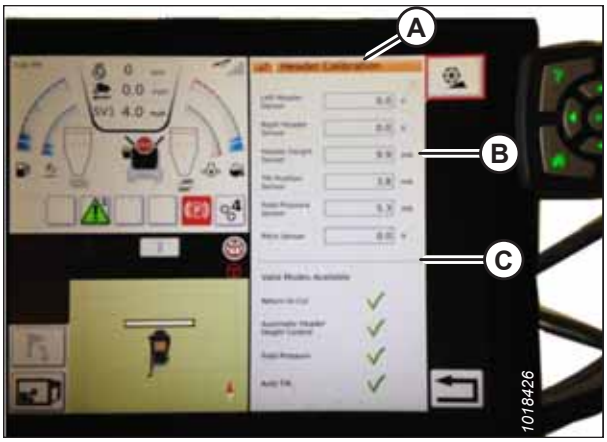


Figure 3.374: Header Calibration Page

3. On the control handle, press HEADER DOWN button (A). The sensor values on the HEADER CALIBRATION page will change as the header falls.

   NOTE:

   The header needs to be lowered all the way, and then raised off of the ground. The reported voltage range should be between **0.5 and 4.5 V**. If the reported voltage is not in that range, the sensor needs to be adjusted. For instructions on adjusting the sensor, refer to *Adjusting Voltage Limits – One-Sensor System, page 136* or *Adjusting Voltage Limits – Two-Sensor System, page 137*.

Figure 3.375: Header Down Switch

4. Touch CALIBRATE icon (A).

Figure 3.376: Header Calibration

5. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.

6. Touch the green check mark at the bottom of the page to start the CALIBRATION WIZARD.

Figure 3.377: Header Calibration Warning

A calibration progress bar displays at the bottom of the screen. The process can be stopped at any time by touching the red X. The header moves automatically and erratically during this process.

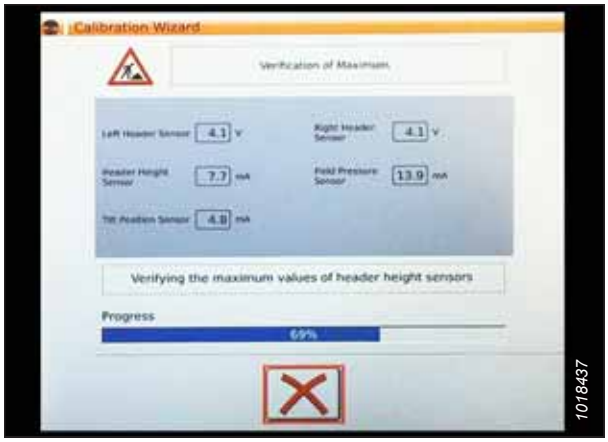


Figure 3.378: Calibration in Progress

7. When the calibration is complete, a message will appear, showing summary information (A). Green check marks means that the functions (B) have been calibrated. Touch bottom green check mark (C).

Figure 3.379: Completed Calibration Page

NOTE:

Touch CALIBRATION icon (A) on the COMBINE MAIN MENU page. The CALIBRATION MENU appears. On the CALIBRATION MENU, several features can be calibrated, such as the header and the reel.

Figure 3.380: Direct Calibration Menu

Operating Auto Header Height Control – Gleaner S9 Series

Once the auto header height control (AHHC) system has been set up, follow these instructions to take advantage of its functions.

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 the most up-to-date information.

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 3.381: Gleaner S9 Operator Controls

1. With the header running, set lateral tilt switch (A) to MANUAL.
2. Engage the AHHC by pressing switch (B) upward to the **I** position.

Figure 3.382: 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 3.383: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the position.

Figure 3.384: Header Control Cluster

Reviewing Header In-Field Settings – Gleaner S9 Series

The auto header height control (AHHC) settings can be reviewed at a glance 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. Refer to the combine operator's manual for the most up-to-date information.

1. To view the following header group settings, touch 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) – touch 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)

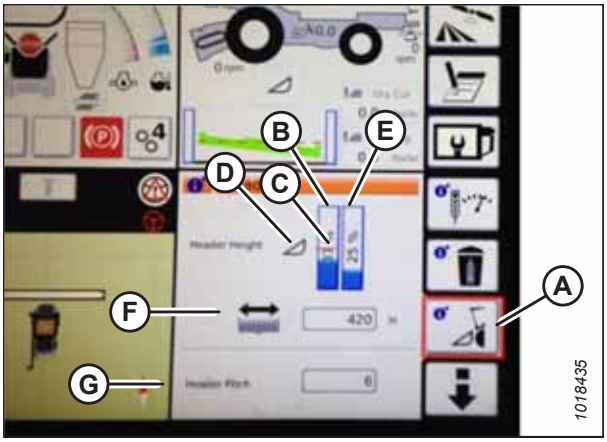


Figure 3.385: Header Groups

2. Touching a field opens the on-screen keyboard, so that the values can be adjusted. Enter the new value and touch the green check mark when complete.

   NOTE:

   Scroll wheel (A) is located on the right side of the Tyton terminal.

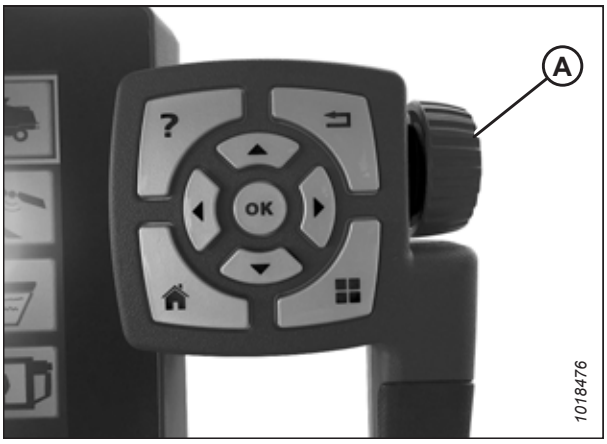


Figure 3.386: Adjustment Wheel on Right Side of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 3.387: Header Control Cluster

3.9.13 IDEAL™ Series Combines

To make your header's auto header height control (AHHC) system compatible with IDEAL™ 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 – 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. Refer to the combine operator's manual for the most up-to-date information.

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 3.388: 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, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

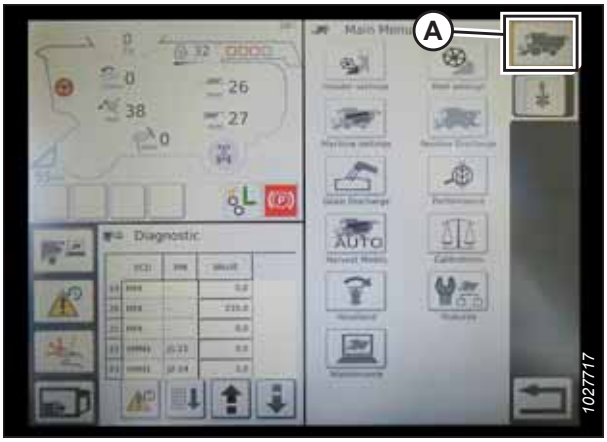


Figure 3.389: Combine Icon on Home Page

2. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A). The HEADER SETTINGS page opens.

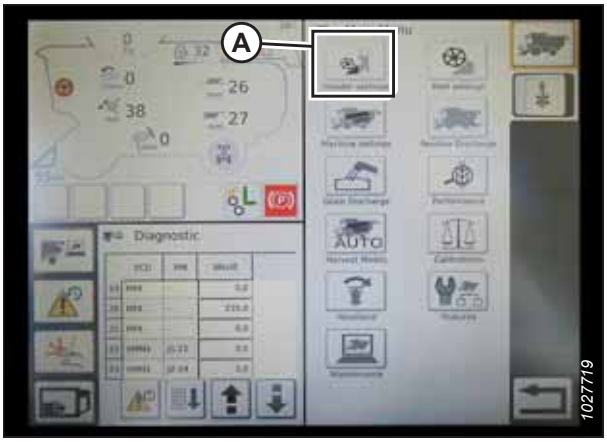


Figure 3.390: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A dialog box showing a list of predefined header configuration profiles opens.
   - 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, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ABC button (C) and use the on-screen keyboard to enter the MacDon header information. When 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)

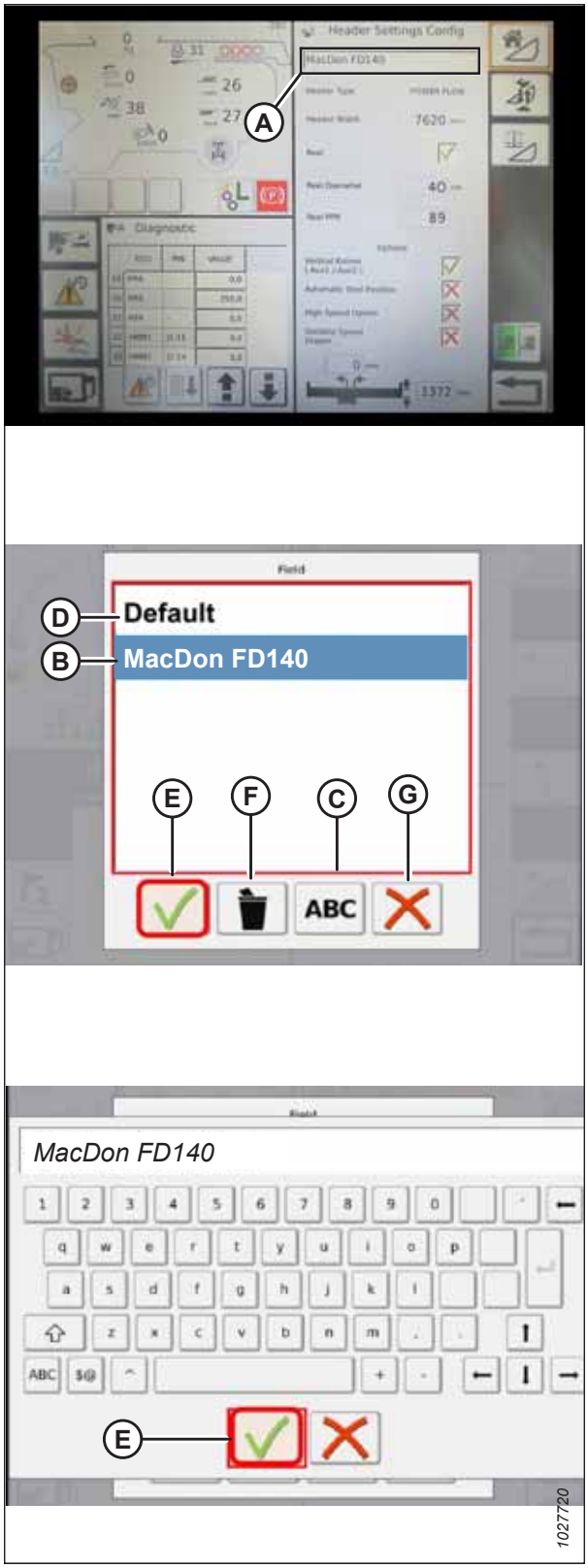


Figure 3.391: Header Configuration Menu on Header Settings Page

4. To specify the type of header installed on the machine, touch HEADER TYPE field (A).

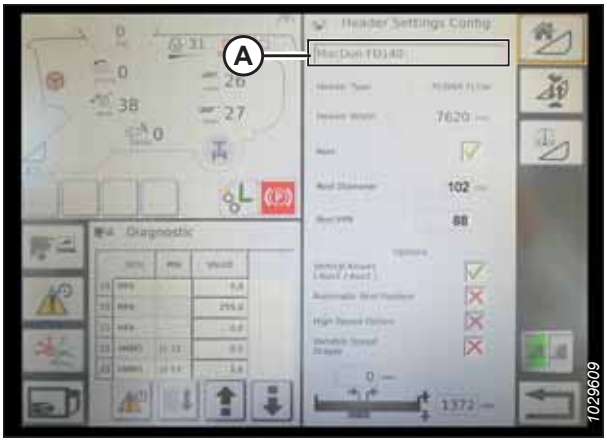


Figure 3.392: Header Settings

5. From the list of predefined header types, touch POWER FLOW (A).
6. Touch green check mark (B) to save the selection and continue.

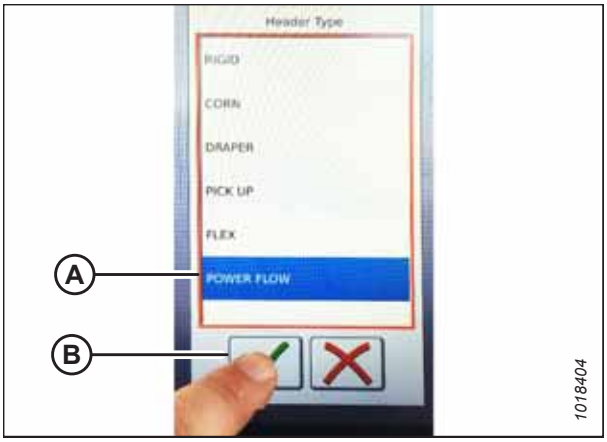


Figure 3.393: Header Type

7. Ensure that REEL check box (A) is checked.

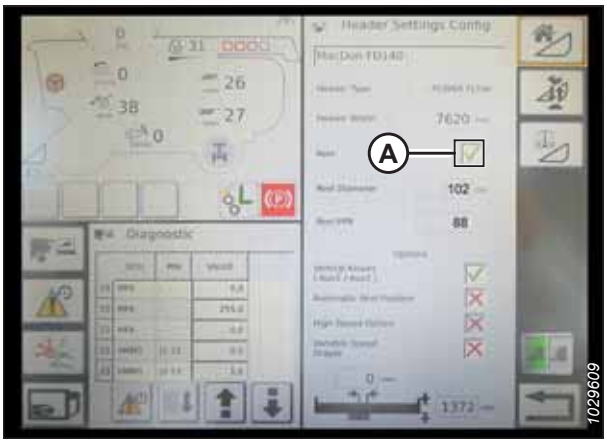


Figure 3.394: Header Settings

8. Touch 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.).

9. Touch REEL PPR (pulses per revolution) field (B) and enter the relevant value:

   - **Standard:** 88
   - **High torque, 12-tooth sprocket:** 61
   - **High torque, Australia:** 52
   - **High speed, 21-tooth sprocket:** 35
   - **High speed, Australia:** 30

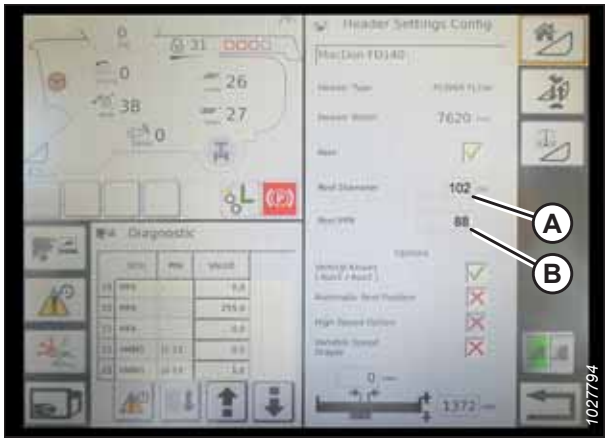


Figure 3.395: Header Settings

10. Touch green check mark (B) at the bottom of numeric keypad (A).

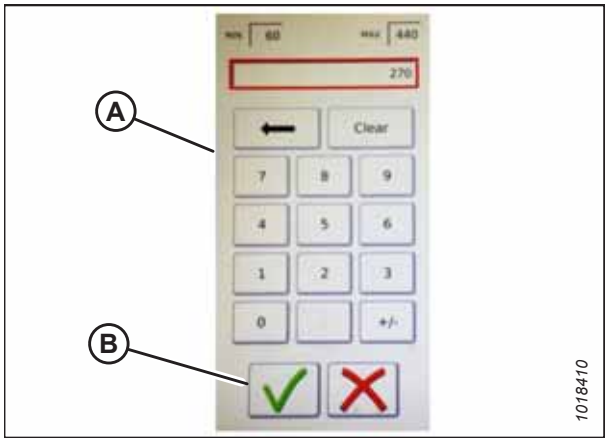


Figure 3.396: Numeric Keypad

11. Touch green check mark (A) at the bottom of the HEADER SETTINGS page.

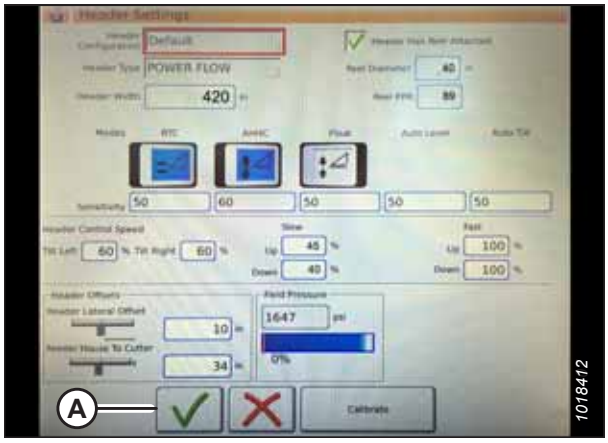


Figure 3.397: Header Settings Page

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

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

NOTE:

Changes may have been made to the combine controls or the display since this document was published. For instructions, 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.

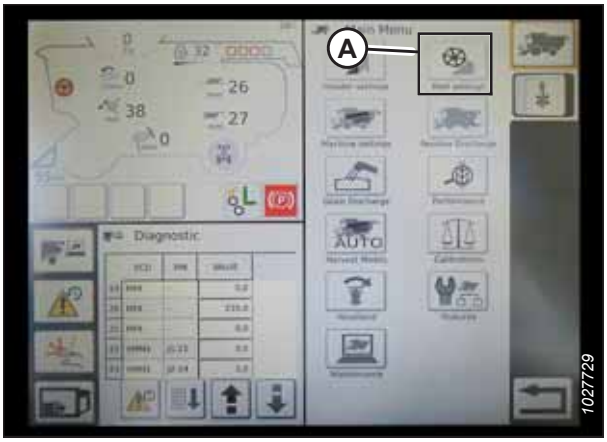


Figure 3.398: Reel Settings on Combine Main Menu

2. To set the minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard appears. Enter the desired value. Touch 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. Touch CALIBRATE button (A) at the top right corner of the REEL SETTINGS page. The CALIBRATION WIZARD appears.

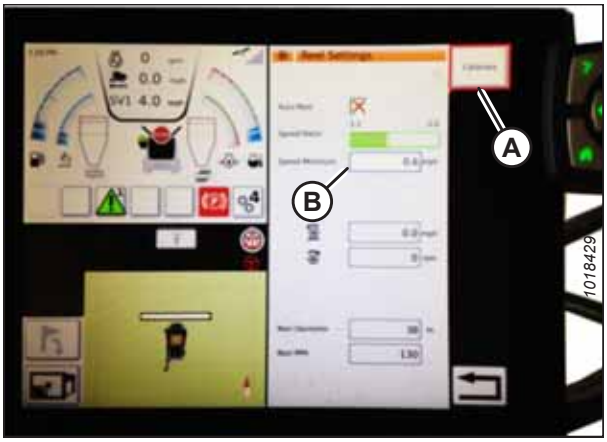


Figure 3.399: Reel Settings Calibration

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 3.400: 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, touch the red X (not shown) to cancel the calibration procedure. Otherwise, wait for the message that the reel calibration procedure has completed successfully. Touch the green check mark to save the calibrated settings.

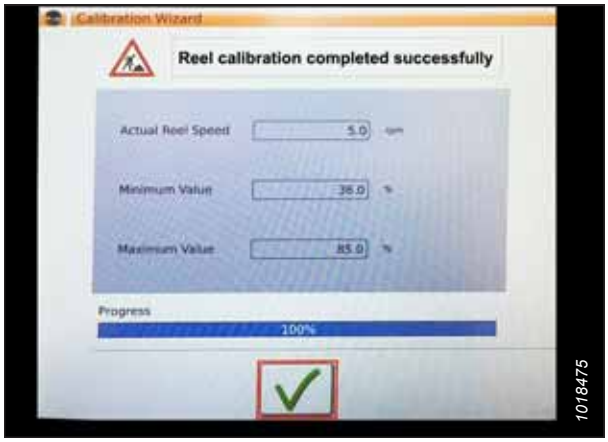


Figure 3.401: Calibration Progress

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. Refer to the combine operator's manual for the most up-to-date information.

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)

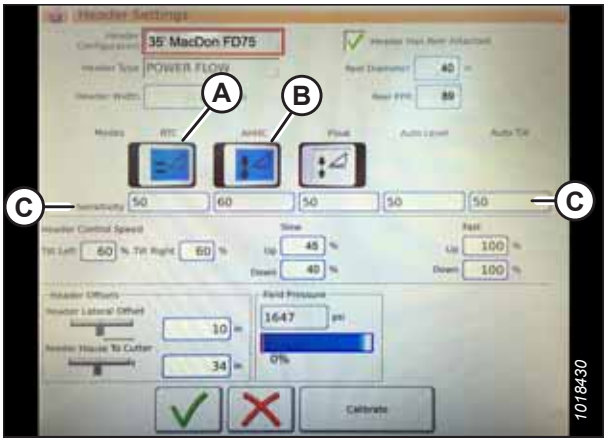


Figure 3.402: Automatic Controls and Sensitivity Settings

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

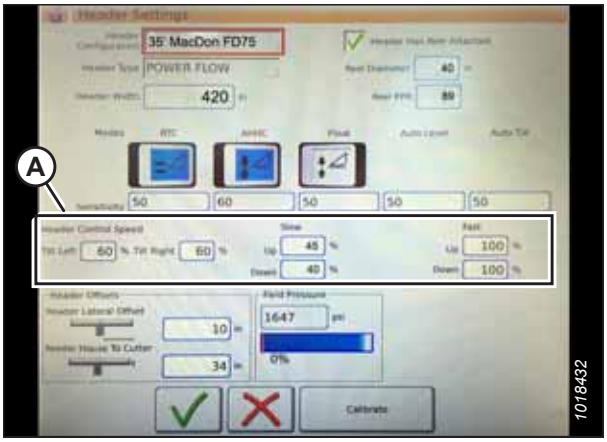


Figure 3.403: Header Speed Control Settings

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.

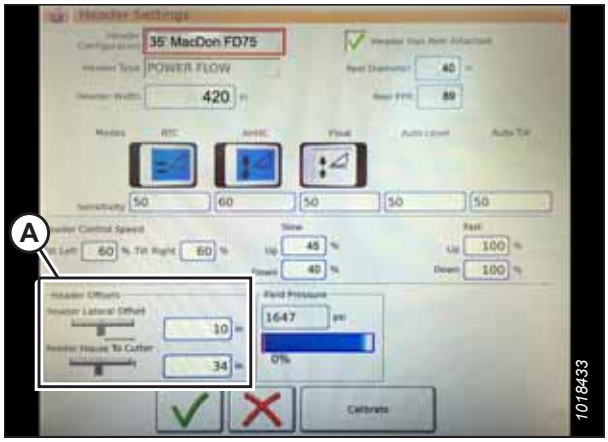


Figure 3.404: Header Offset Settings

Calibrating Header – IDEAL™ Series

The auto header height control (AHHC) sensor output must be calibrated for IDEAL™ Series combines, or the AHHC feature will not work properly.

DANGER

Clear the area of bystanders. Keep children away from the machinery. Walk around the machine to be sure that no one is under, on, or close to it.

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 the most up-to-date information.

1. On the COMBINE MAIN MENU, touch HEADER SETTINGS (A).

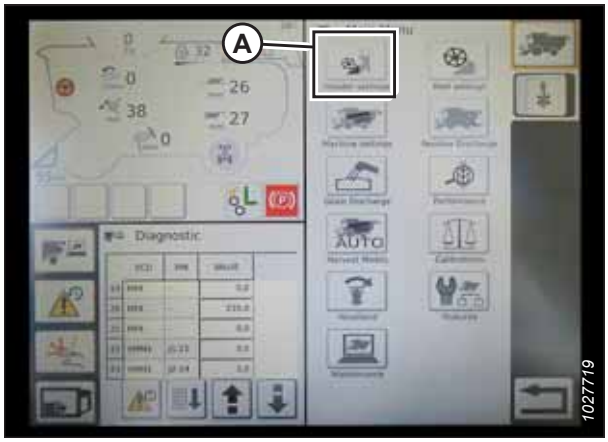


Figure 3.405: Combine Main Menu

2. Touch HEADER CALIBRATE (A) at the right side of the HEADER SETTINGS CONFIG page.

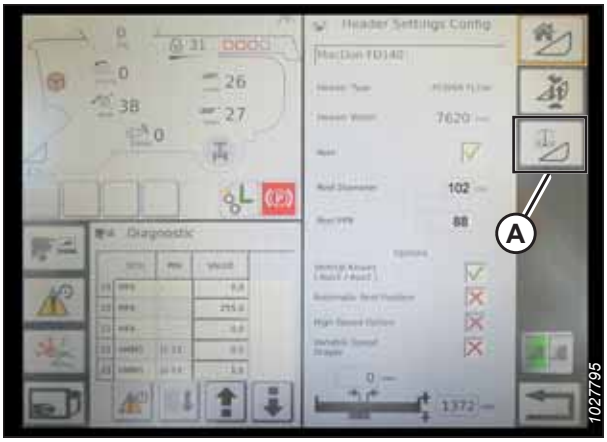


Figure 3.406: Header Settings Page

3. The hazard warning for HEADER CALIBRATION appears. Ensure that all conditions are met.

4. Touch the green check mark at the bottom of the page to start the calibration procedure and follow the on-screen commands.

Figure 3.407: Header Calibration Warning

A progress bar is provided and the calibration can be stopped by touching the red X. The header moves automatically and erratically during this process.

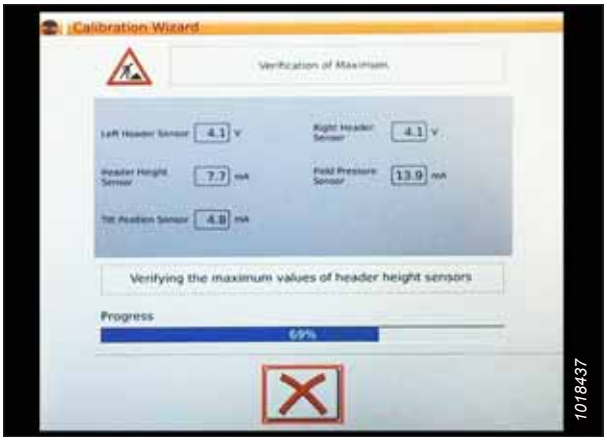


Figure 3.408: Calibration in Progress

5. When the calibration procedure is complete:
   - Review summary information (A)
   - Review green check marks confirming calibrated functions (B)
   - Touch check mark (C) to save

Figure 3.409: Completed Calibration Page

NOTE:

Touch 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.

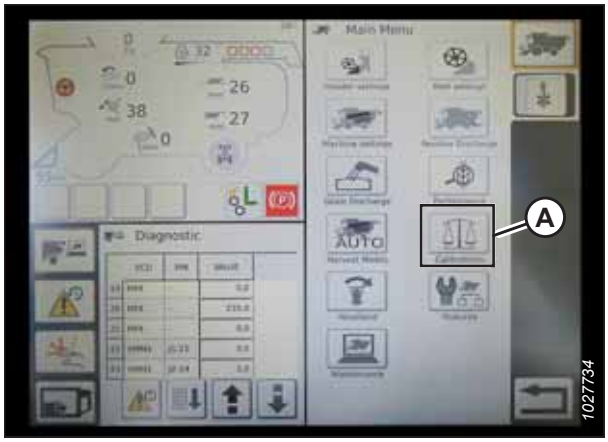


Figure 3.410: Direct Calibration Menu

Operating Header – IDEAL™ Series

Once the auto header height control (AHHC) system has been configured on your IDEAL™ Series combine, the AHHC system can be controlled from the combine cab.

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 the most up-to-date information.

The following are used to operate the auto header height control (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 3.411: Operator's Station

1. With the header running, set the lateral tilt to MANUAL by pressing switch (A). The light above the switch should be off.
2. Engage the AHHC by pressing switch (B). The light above the switch should be on.

Figure 3.412: 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 3.413: AHHC on Control Handle

4. Use HEADER HEIGHT SETPOINT control dial (A) as necessary to fine-tune the header position.

Figure 3.414: 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. Refer to the combine operator's manual for the most up-to-date information.

1. Touch 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) – touch 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)

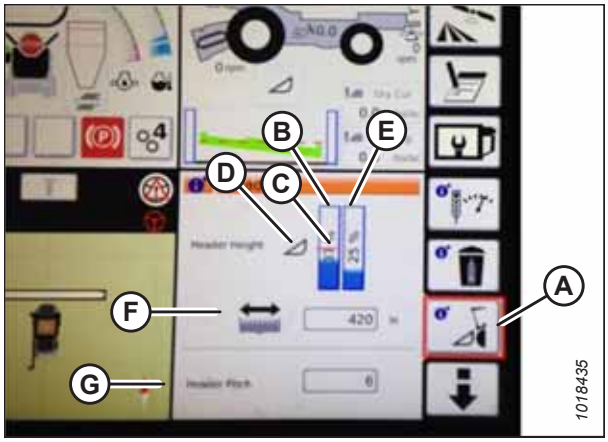


Figure 3.415: Header Groups

2. Touching 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.

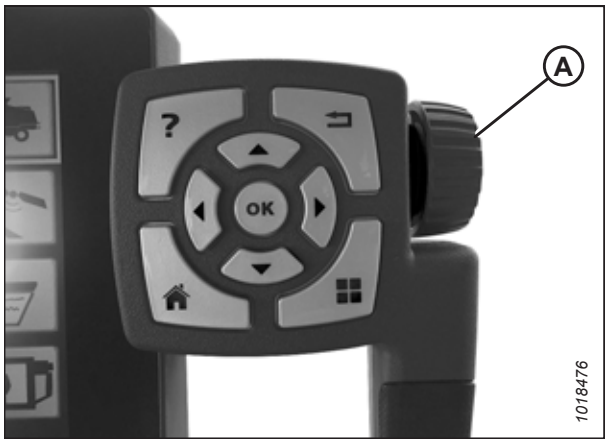


Figure 3.416: Adjustment Wheel on Right of Tyton Terminal

NOTE:

HEADER HEIGHT SETPOINT control dial (A) is on the header control cluster.

Figure 3.417: Header Control Cluster

3.9.14 John Deere 60 Series Combines

Follow these steps to set up auto header height control (AHHC) on John Deere 60 series combines.

Checking Voltage Range from Combine Cab – John Deere 60 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. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.

3. 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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions.

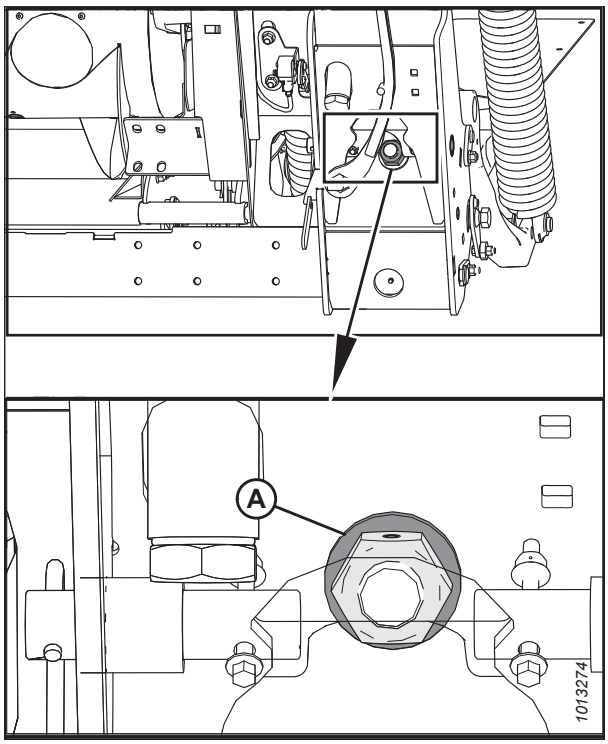


Figure 3.418: Float Lock

4. If necessary, adjust cable take-up bracket (B) until float indicator pointer (A) is on **0**.

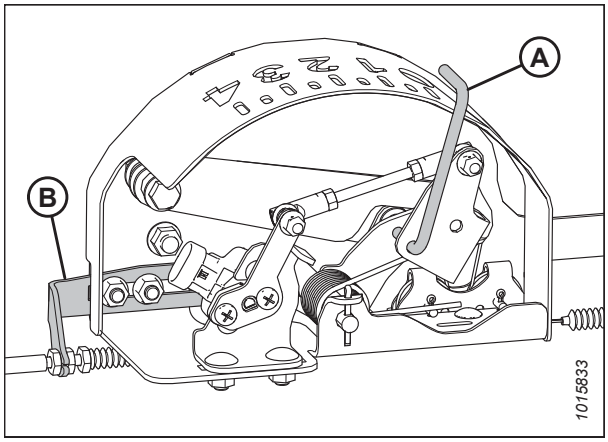


Figure 3.419: Float Indicator Box

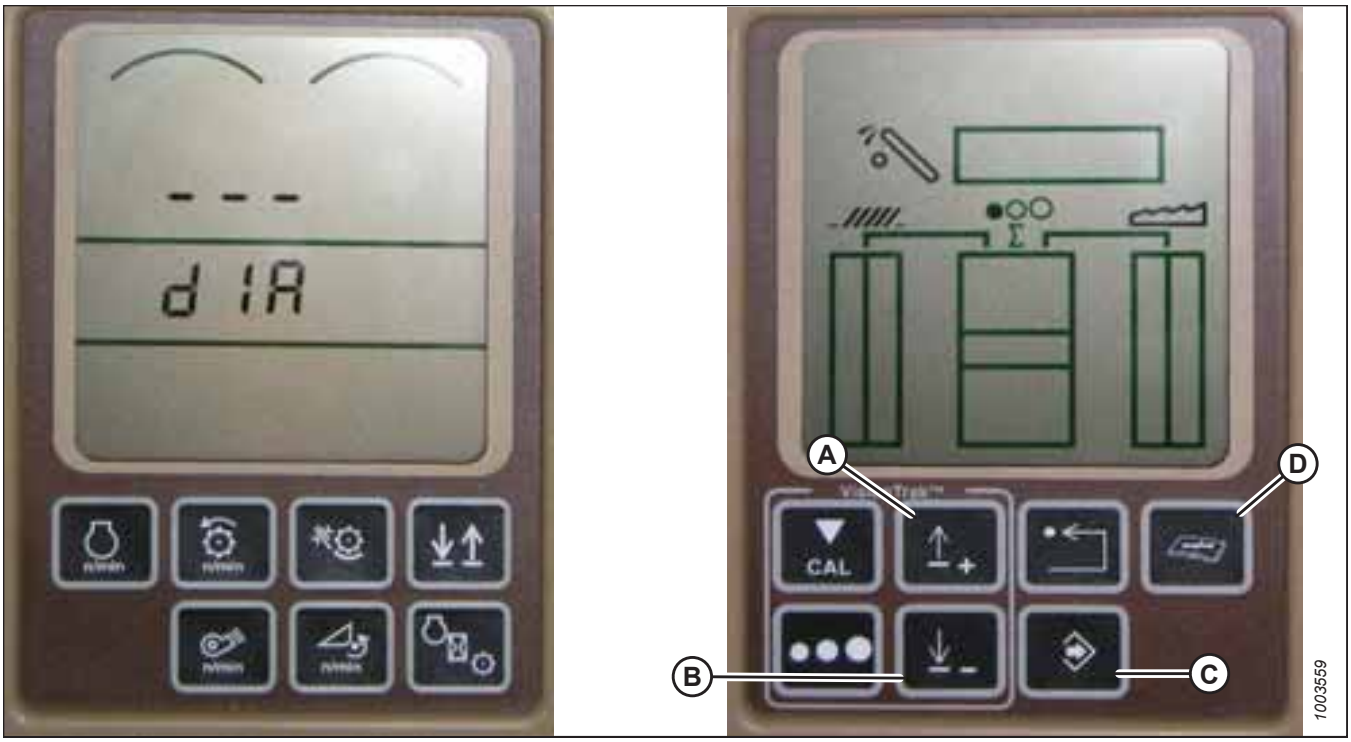


Figure 3.420: John Deere Combine Display

5. Press DIAGNOSTIC button (D) on the display—DIA appears on the display.
6. Press UP button (A) until EO1 appears on the display—this is the header adjustments.
7. Press ENTER button (C).
8. Press the UP (A) or DOWN button (B) until 24 is shown on the top portion of the display—this is the voltage reading for the sensor.
9. Ensure the header float is unlocked.
10. Start the combine, and fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

11. Check the sensor reading on the display. The reading should be above 0.5 V.
12. Raise the header so it is just off the ground. The reading on the display should read below 4.5 V.
13. If the sensor voltage is not within the lower and upper limits, or if the range between the lower and upper limits is insufficient, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

Calibrating Auto Header Height Control – John Deere 60 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. Refer to the combine operator's manual for the most up-to-date information.

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 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 *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Unlock the float.
4. Put the wings in the locked position.
5. Start the combine.
6. Press DIAGNOSTIC button (A) on the display. DIA appears on the display.
7. Press CAL button (B). DIA-CAL appears on the display.

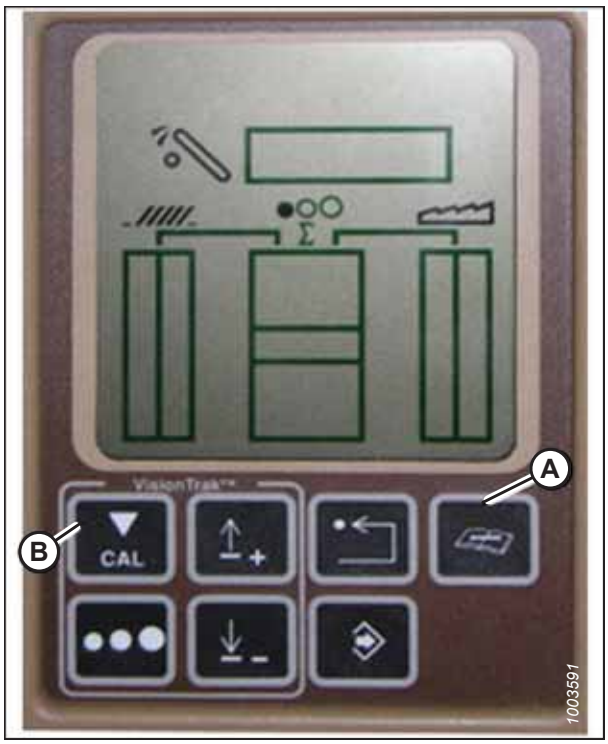


Figure 3.421: John Deere Combine Display

8. Press the UP or DOWN buttons until HDR appears on the display.
9. Press the ENTER button. HDR H-DN appears on the display.
10. Fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

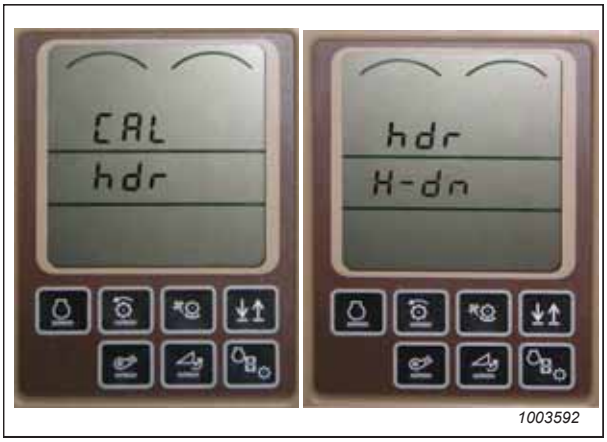


Figure 3.422: John Deere Combine Display

11. Press CAL button (A) to save the calibration of the header. HDR H-UP appears on the display.
12. Raise the header 1 m (3 ft.) off the ground and press CAL button (A). EOC appears on the display.
13. Press ENTER button (B) to save the calibration of the header. The AHHC is now calibrated.

    NOTE:

    If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere 60 Series, page 245*.

    NOTE:

    After the calibration is complete, adjust the combine operation settings to ensure proper field operation.

    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.

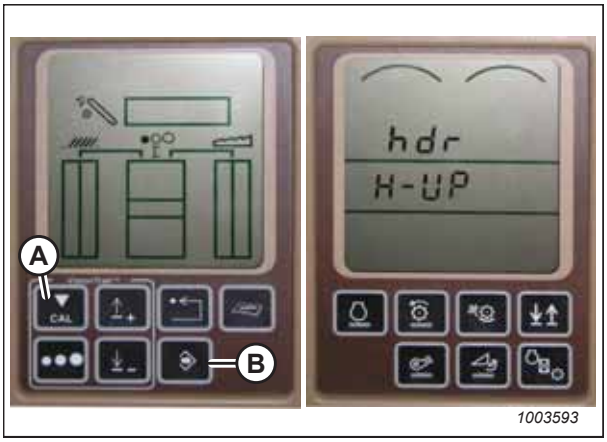


Figure 3.423: John Deere Combine Display

Turning Accumulator Off – John Deere 60 Series

The accumulator prevents shocks to the hydraulic system when the combine is operating with a heavy header attached. The accumulator should not be used when operating the combine with an FD1 Series FlexDraper® Header with an FM100 Float Module attached.

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 the most up-to-date information.

1. Press DIAGNOSTIC button (A) on the display. DIA appears on the display.
2. Press UP button (B) until EO1 appears on the display, and press ENTER (D). This is the header adjustment.
3. Press UP (B) or DOWN (C) button until 132 is displayed on the top portion of the display. This is the reading for the accumulator.
4. Press ENTER (D) to select 132 as the accumulator reading (this will allow you to change the display to a three-digit number so it has a 0 in it, for example, x0x).
5. Press UP (B) or DOWN (C) button until the desired number is displayed, and press CAL button (E).
6. Press ENTER (D) to save the changes. The accumulator is now deactivated.

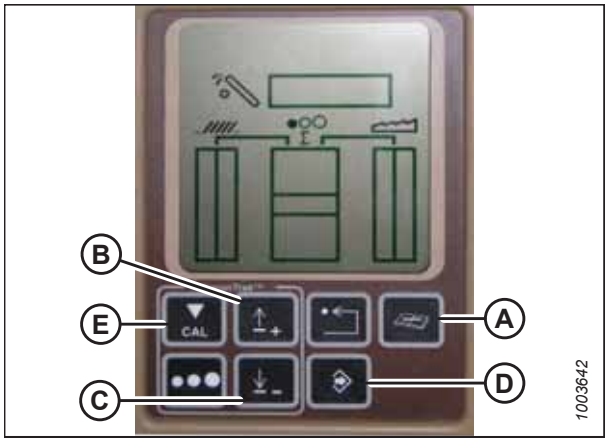


Figure 3.424: John Deere Combine Display

Setting Header Height Sensitivity – John Deere 60 Series

In order for a John Deere 60 Series combine to accurately read the output from the height sensors on a MacDon header, the combine's sensitivity setting needs to be set to 50.

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 the most up-to-date information.

1. Press DIAGNOSTIC button (A) on the display. DIA appears on the display.
2. Press UP button (B) until EO1 appears on the display, and press ENTER (D). This is the header adjustment.
3. Press UP (B) or DOWN (C) button until 128 is shown on the top portion of the display. This is the reading for the sensor.
4. Press ENTER (D) to select 128 as the sensor reading (this will allow you to change the display to a three-digit number so it has a 50 in it).
5. Press UP (B) or DOWN (C) button until the desired number is displayed, and press CAL button (E).
6. Press ENTER (D) to save the changes. The height is now set.

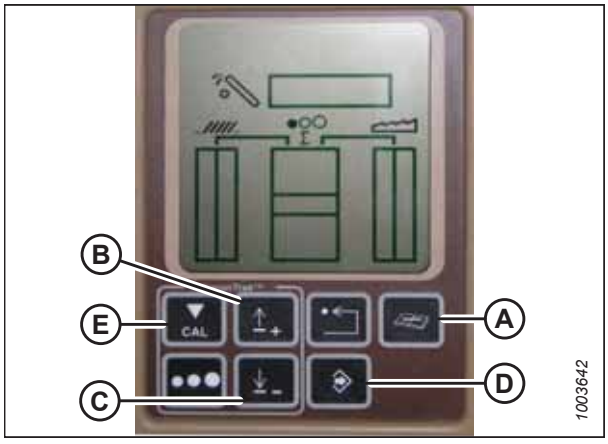


Figure 3.425: John Deere Combine Display

NOTE:

Do **NOT** use active header float function (A) in combination with the MacDon auto header height control (AHHC)—the two systems will counteract one another. Header symbol (B) on the display should **NOT** have a wavy line under it and should appear exactly as shown on the Active Header Control Display in Figure *3.426, page 251*.

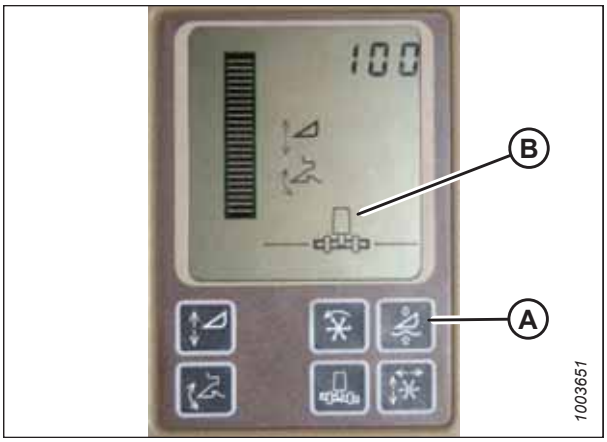


Figure 3.426: John Deere Combine Display

Setting Auto Header Height Control Sensitivity – John Deere 60 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. Refer to the combine operator's manual for the most up-to-date information.

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.

1. Press DIAGNOSTIC button (A) on the display. DIA appears on the display.
2. Press UP button (B) until EO1 appears on the display, and press ENTER (D). This is the header adjustment.
3. Press UP (B) or DOWN (C) button until 112 is shown on the display. This is your sensitivity setting.

   NOTE:

   The lower the reading, the higher the sensitivity. Ideal operating range is typically between 50 and 80.
4. Press ENTER (D) to select 112 as the sensitivity setting (this will allow you to change the first digit of the number sequence).
5. Press UP (B) or DOWN (C) until the desired number is displayed, then press CAL button (E). This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save changes.

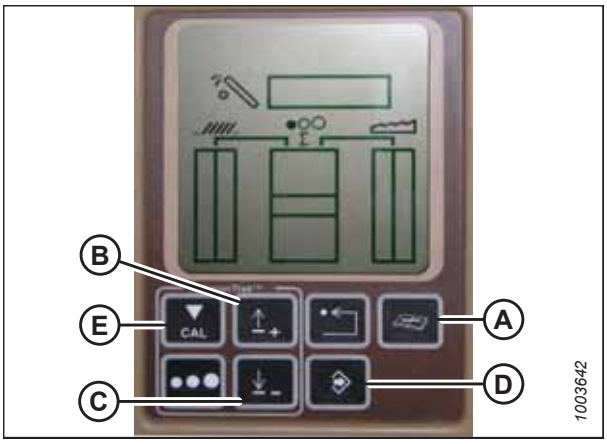


Figure 3.427: John Deere Combine Display

Adjusting Drop Rate Valve Threshold – John Deere 60 Series

This procedure details how to adjust the point at which the restrictor valve opens to allow full flow to the lift cylinders.

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 the most up-to-date information.

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.

1. Press DIAGNOSTIC button (A) on the display. DIA appears on the display.
2. Press UP button (B) until EO1 appears on the display and press ENTER (C). This is the header adjustment.
3. Press UP (B) or DOWN button until 114 is shown on the top portion of the display. This is the setting that adjusts when the fast drop rate starts with respect to the dead band.

   NOTE:

   The default setting is 100. The ideal operating range is typically between 60 and 85.
4. Press ENTER (C) to select 114 as the fast drop rate (this will allow you to change the first digit of the number sequence).
5. Press UP (A) or DOWN (B) until the desired number is displayed, then press CAL button (C). This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save changes.

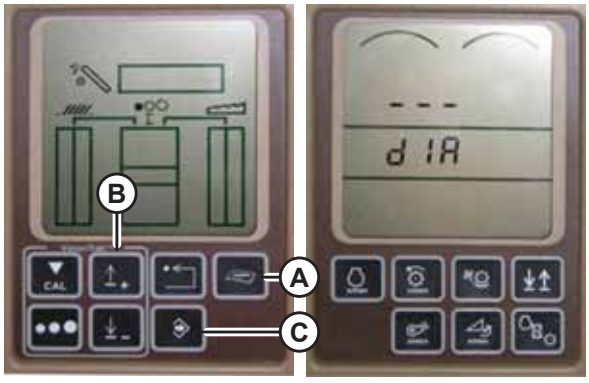


Figure 3.428: John Deere Combine Display

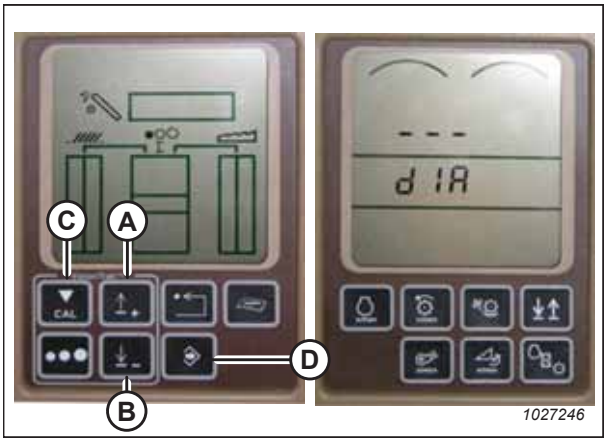


Figure 3.429: John Deere Combine Display

3.9.15 John Deere 70 Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere 70 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.

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. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.
3. 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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions on leveling the header.

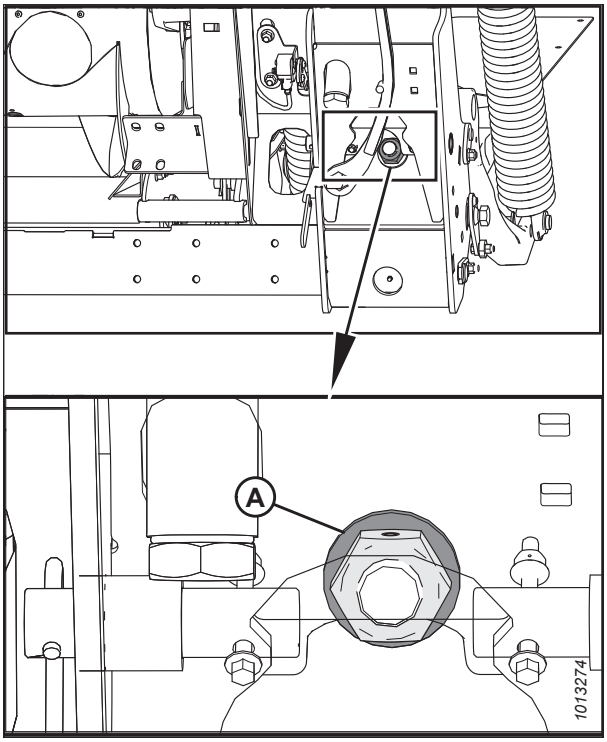


Figure 3.430: Float Lock

4. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

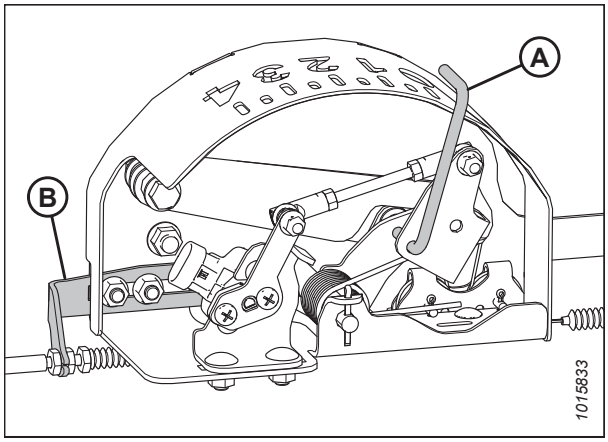


Figure 3.431: Float Indicator Box

5. Press HOME PAGE button (A) on the main page of the display.

Figure 3.432: John Deere Combine Display

6. Ensure three icons (A) shown in the illustration at right appear on the display.

Figure 3.433: John Deere Combine Display

7. 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.

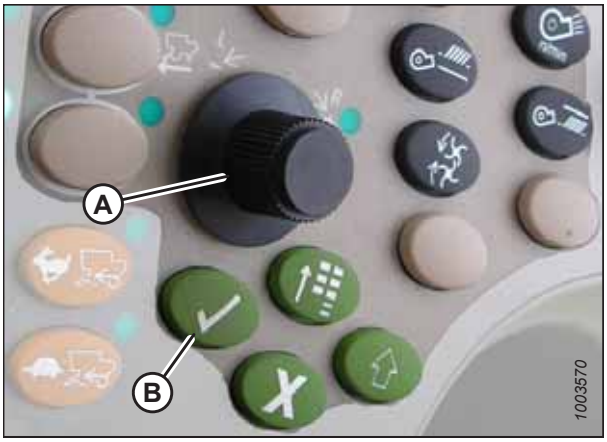


Figure 3.434: John Deere Combine Control Console

8. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column. Select it by pressing the check mark button.
9. Use the scroll knob to highlight drop-down box (B). Press the check mark button to select it.

Figure 3.435: John Deere Combine Display

10. Use the scroll knob to highlight LC 1.001 VEHICLE (A). Press the check mark button to select it.

Figure 3.436: John Deere Combine Display

11. 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.

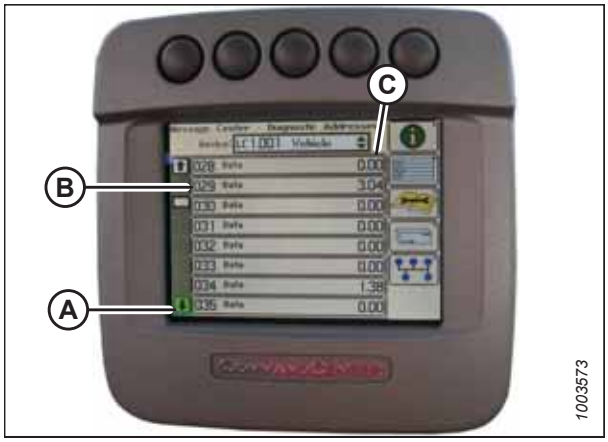


Figure 3.437: John Deere Combine Display

12. Ensure that the header float is unlocked.
13. Start the combine.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

14. Fully lower the feeder house to the ground.
15. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *3.9.3 Sensor Output Voltage Range – Combine Requirements, page 129*.
16. Raise the header so it is just off the ground and recheck the sensor reading.
17. If the sensor voltage is not within the low and high limits or if the range between the low and high limits is insufficient, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

Calibrating Feeder House Speed – John Deere 70 Series

The feeder house speed must be calibrated before you calibrate the auto header height control (AHHC) system.

For instructions, refer to the combine operator's manual.

Calibrating Auto Header Height Control – John Deere 70 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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Put the wings in the locked position.
4. Unlock the float.
5. Start the combine.
6. 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).
7. Press top button (A) a second time to enter diagnostics and calibration mode.

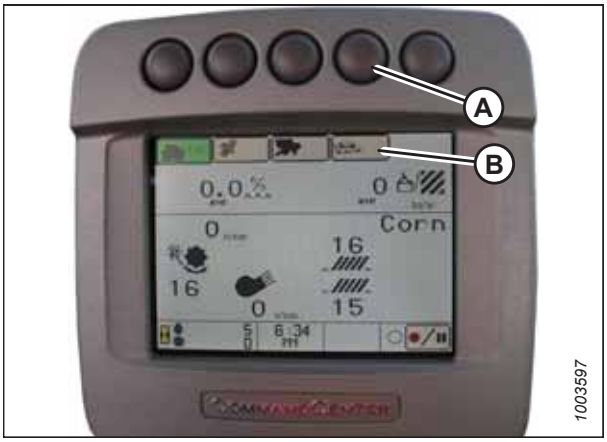


Figure 3.438: John Deere Combine Display

8. 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 *3.440, page 258*.

9. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.
10. Follow the steps listed on the page to perform the calibration.

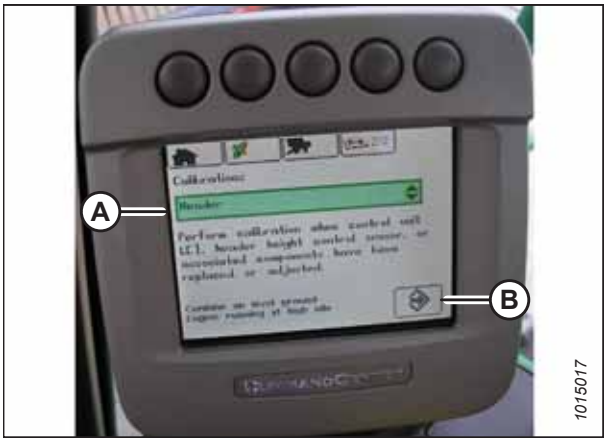


Figure 3.439: John Deere Combine Display

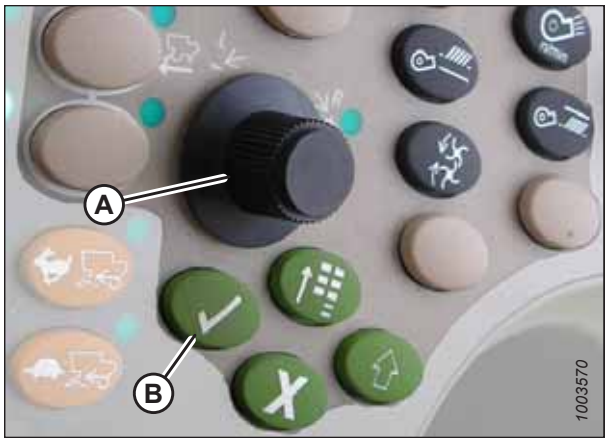


Figure 3.440: John Deere Combine Control Console

A - Scroll Knob **B - Check Mark Button**

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 260*.

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.

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. Refer to the combine operator's manual for the most up-to-date information.

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.

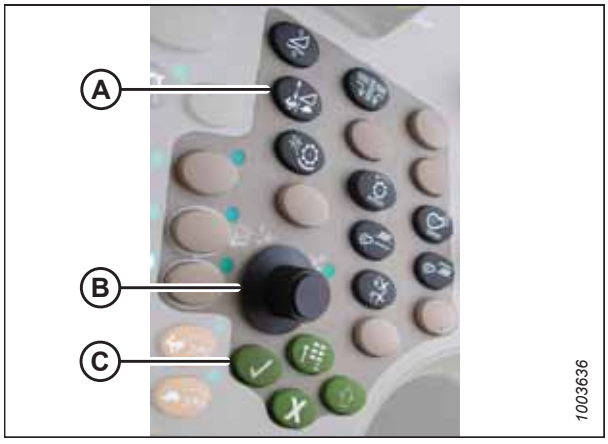


Figure 3.441: John Deere Combine Control Console

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 3.442: John Deere Combine Display

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. Refer to the combine operator's manual for the most up-to-date information.

1. Put the wings in the locked position.
2. 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).
3. 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.

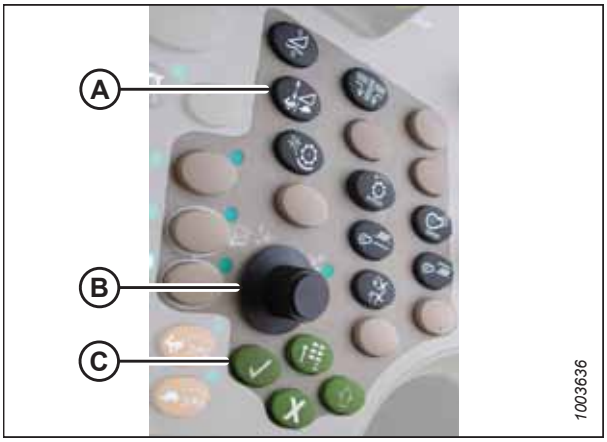


Figure 3.443: John Deere Combine Control Console

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 3.444: John Deere Combine Display

3.9.16 John Deere S and T Series Combines

To make your header's auto header height control (AHHC) system compatible with John Deere S and T 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.

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. Refer to the combine operator's manual for the most up-to-date information.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.

3. 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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions.

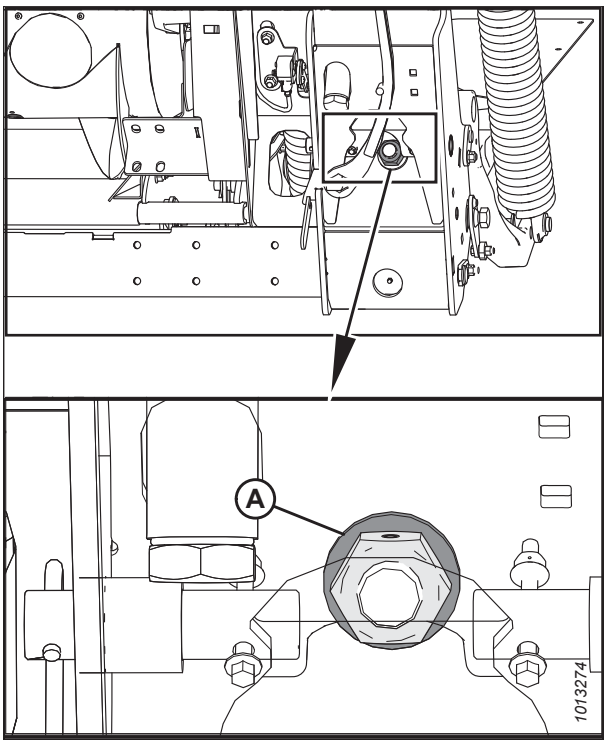


Figure 3.445: Float Lock

4. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

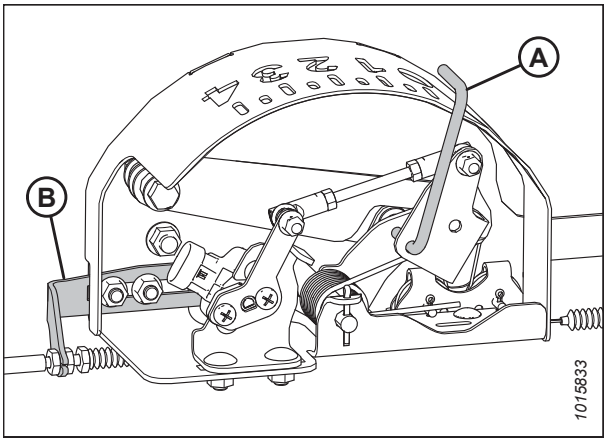


Figure 3.446: Float Indicator Box

5. Press CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.447: John Deere Combine Display

6. Press DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

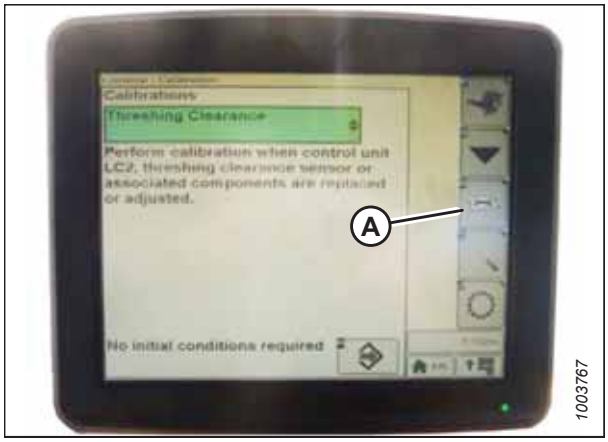


Figure 3.448: John Deere Combine Display

7. Select AHHC RESUME (A) and a list of calibration options appears.

Figure 3.449: John Deere Combine Display

8. Select the AHHC SENSING option.
9. Press icon (A). The AHHC SENSING menu appears and five pages of information appear.

Figure 3.450: John Deere Combine Display

10. 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 3.451: John Deere Combine Display

11. Ensure the header float is unlocked.
12. Start the combine and fully lower the feeder house to the ground.

    NOTE:

    You may need to hold the HEADER DOWN switch for a few seconds to ensure the feeder house is fully lowered.

13. Check the voltage reading on the display. For information on the appropriate voltage range, refer to *3.9.3 Sensor Output Voltage Range – Combine Requirements, page 129*.
14. If the sensor voltage is not within the lower and upper limits or if the range between the lower and upper limits is insufficient, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops.
3. Unlock the float.
4. Put the wings in the locked position.
5. Press DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page appears.

Figure 3.452: John Deere Combine Display

6. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

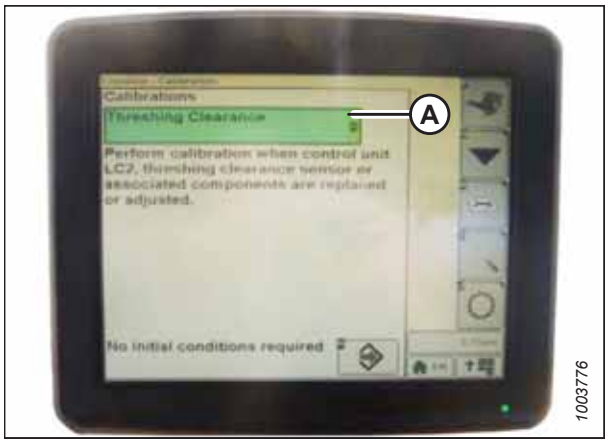


Figure 3.453: John Deere Combine Display

7. Select FEEDER HOUSE SPEED (A) from the list of calibration options.

   NOTE:

   Feeder house speed calibration must be done before header calibration.

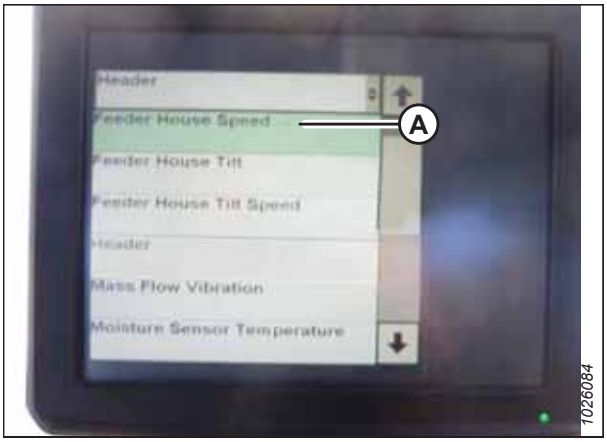


Figure 3.454: John Deere Combine Display

8. With FEEDER HOUSE SPEED selected, press icon (A). The icon turns green.

Figure 3.455: John Deere Combine Display

9. Press icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

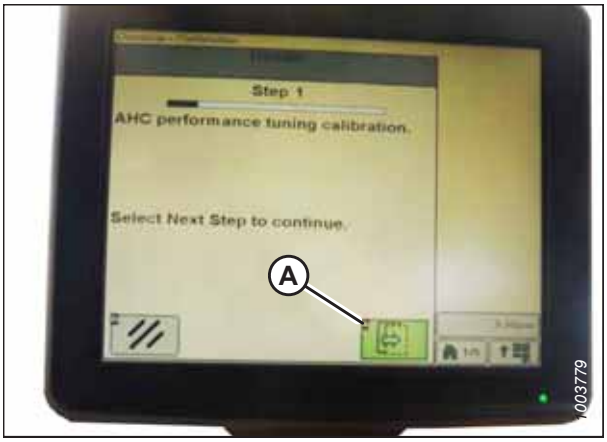


Figure 3.456: John Deere Combine Display

10. Select HEADER (A) from the list of calibration options.

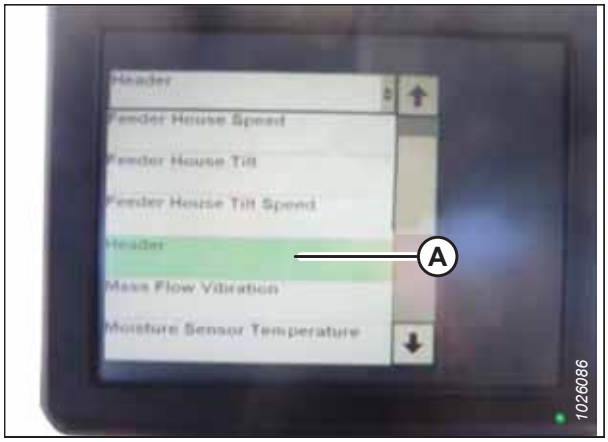


Figure 3.457: John Deere Combine Display

11. With HEADER selected, press icon (A). The icon turns green.

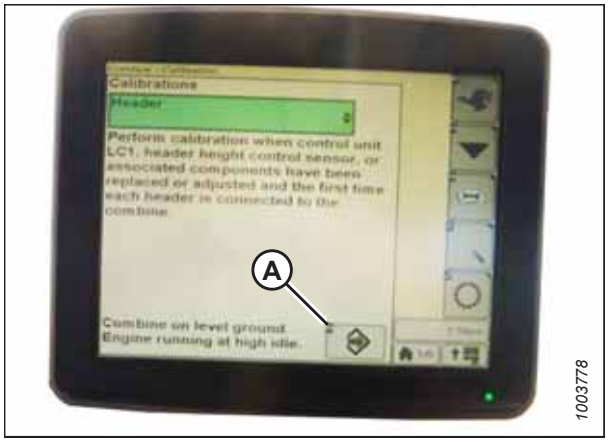


Figure 3.458: John Deere Combine Display

12. Press icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

    NOTE:

    If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere S and T Series, page 260*.

    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.

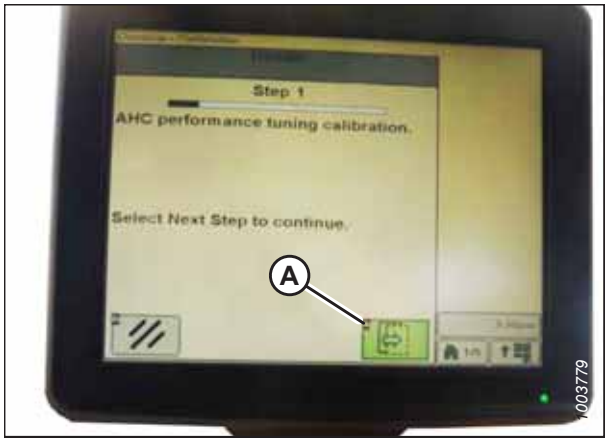


Figure 3.459: John Deere Combine Display

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 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. Refer to the combine operator's manual for the most up-to-date information.

1. Press button (A) twice and the current sensitivity setting will appear on the display.

Figure 3.460: 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 3.461: John Deere Combine Display

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. Refer to the combine operator's manual for the most up-to-date information.

1. Put the wings in the locked position.

2. Ensure indicator (A) is at position 0 (B) with the header 152 mm (6 in.) off the ground. If not, check the float sensor output voltage. For instructions, refer to Step *6, page 132*.

   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.

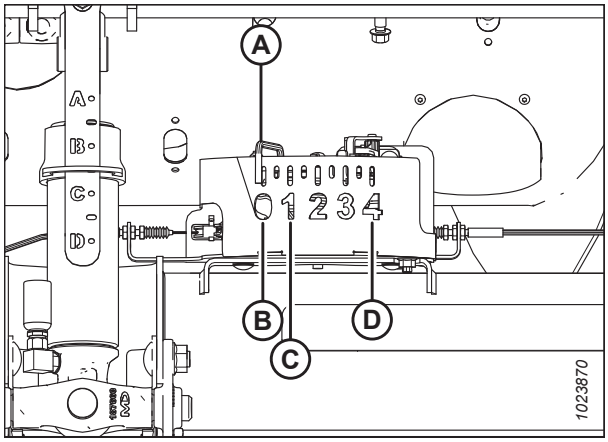


Figure 3.462: Float Indicator Box

3. Press button (A). The current sensitivity setting will appear on the display.

Figure 3.463: John Deere Combine Command Center

4. 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 3.464: 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. Refer to the combine operator's manual for the most up-to-date information.

1. Ensure indicator (A) is at position 0 (B) with the header (152 mm [6 in.]) off the ground. If not, check the float sensor output voltage. For instructions, refer to Step *6, page 132*.

   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. 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.

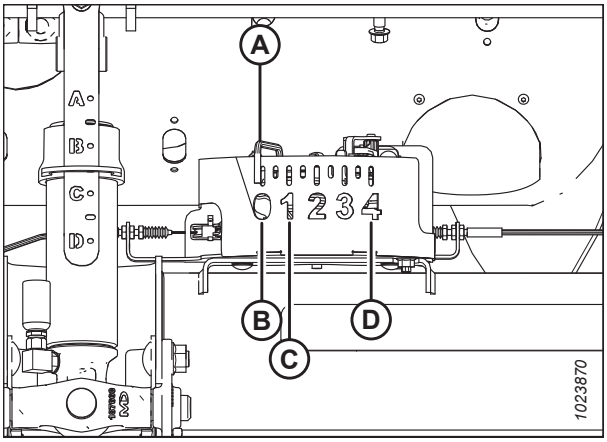


Figure 3.465: Float Indicator Box

2. Press 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 3.466: Combine Display

3. Select COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC page appears.

Figure 3.467: 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 – John Deere S and T Series, page 276*.

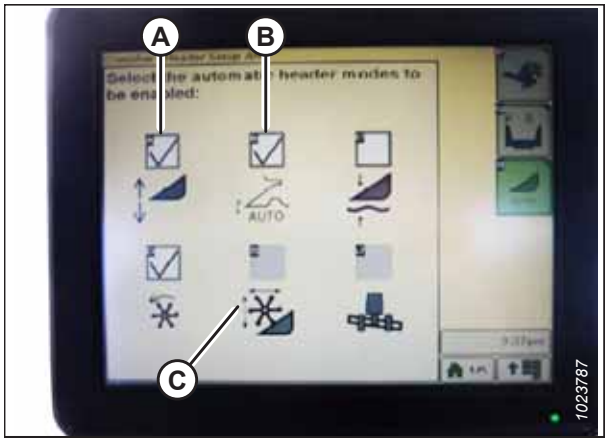


Figure 3.468: Combine Display

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 3.469: 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 3.470: 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.

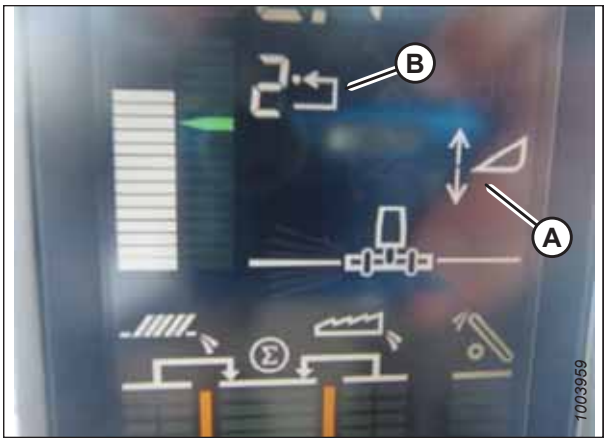


Figure 3.471: Combine Display

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 *3.8.5 Header Angle, page 84*.

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 the most up-to-date information.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the control handle.

Figure 3.472: John Deere Control Handle

NOTE:

The feeder house fore/aft tilt controls can be changed to work with buttons E and F by pressing control handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from drop-down menu (B).

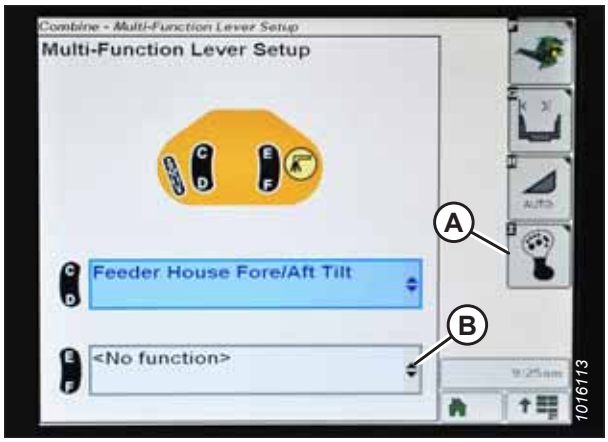


Figure 3.473: John Deere Combine Display

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 and unlock the float.
3. Place the wings in the locked position.
4. Press DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page displays.

Figure 3.474: John Deere Combine Display

5. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.

Figure 3.475: John Deere Combine Display

6. Press arrow (A) to cycle up through the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

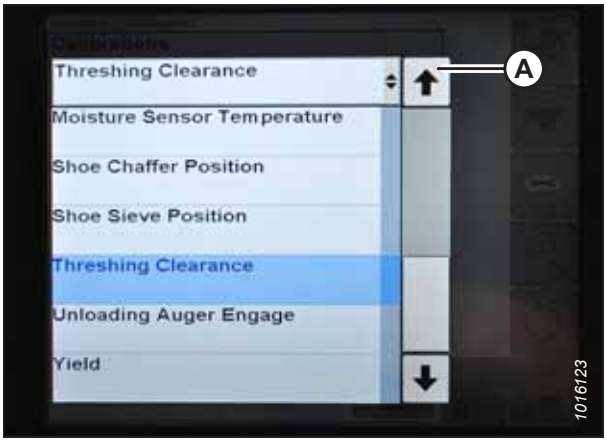


Figure 3.476: John Deere Combine Display

7. Press ENTER icon (A).

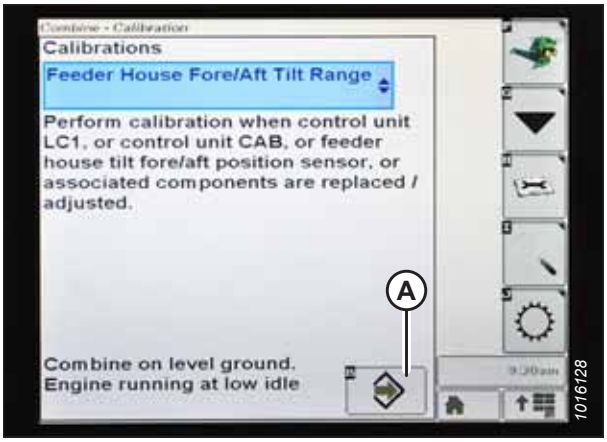


Figure 3.477: John Deere Combine Display

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 is out of voltage range and will require adjustment. For instructions, refer to *Checking Voltage Range from Combine Cab – John Deere S and T Series, page 260*.

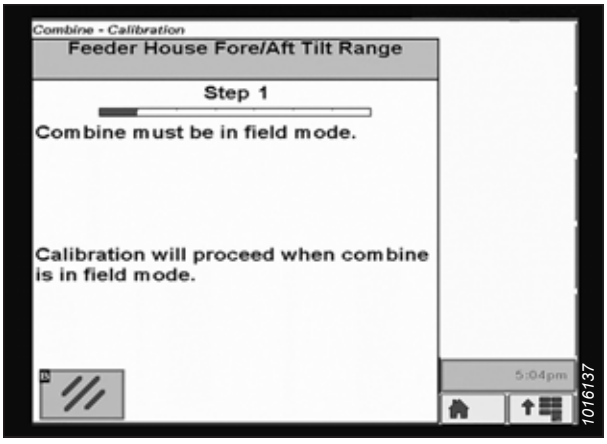


Figure 3.478: John Deere Combine Display

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. Refer to the combine operator's manual for the most up-to-date information.

1. Press CALIBRATION icon (A) on the main page of the display. The CALIBRATION page appears.

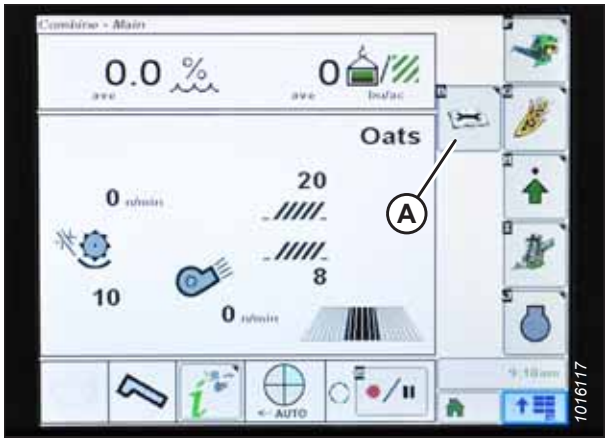


Figure 3.479: John Deere Combine Display

2. Press 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 3.480: John Deere Combine Display

3. Select drop-down menu (A) to view the list of calibration options.

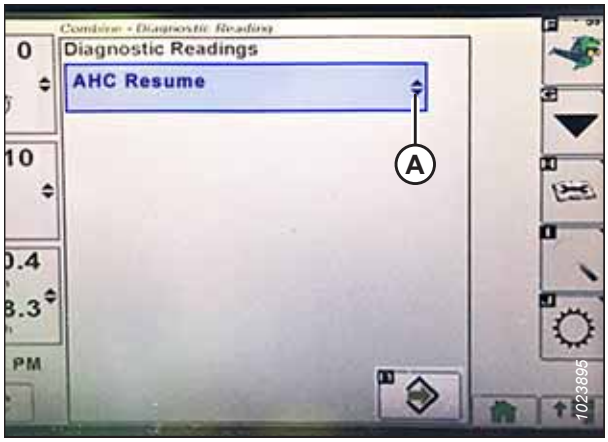


Figure 3.481: John Deere Combine Display

4. Scroll down and select REEL RESUME (A).

Figure 3.482: John Deere Combine Display

5. Press ENTER icon (A). The REEL RESUME page appears.

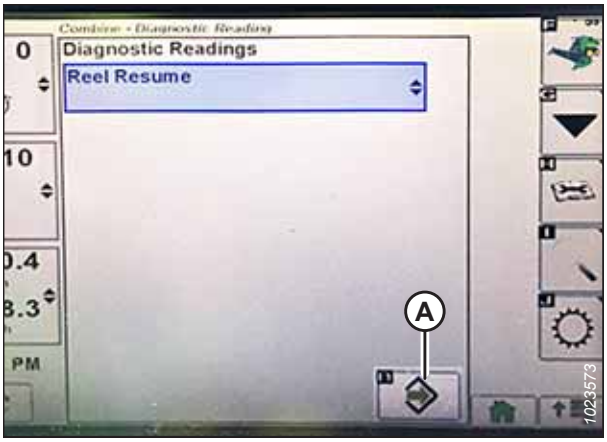


Figure 3.483: John Deere Combine Display

6. Press NEXT PAGE icon (A) to cycle to page 3.
7. Lower the reel to view lower voltage limit (B). The voltage should be 0.5–0.9 V.

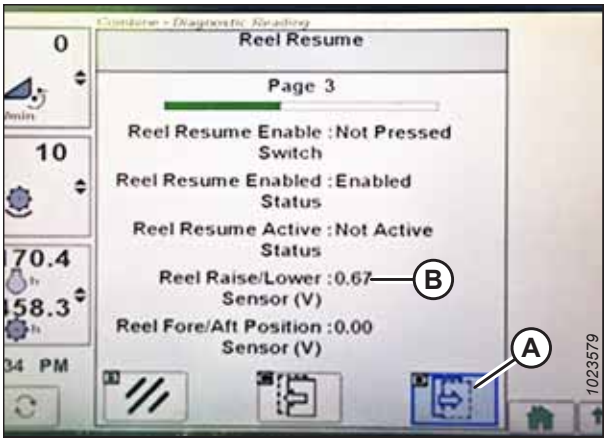


Figure 3.484: John Deere Combine Display

8. Raise the reel to view upper voltage limit (A). The voltage should be 4.1–4.5 V.
9. If either voltage is not within the correct range, refer to *Checking and Adjusting Reel Height Sensor, page 98*.

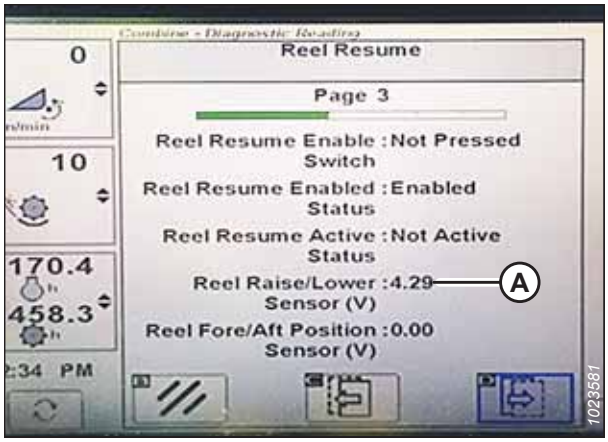


Figure 3.485: John Deere Combine Display

Calibrating Reel Height 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. Refer to the combine operator's manual for the most up-to-date information.

1. Position the header 15–25 cm (6–10 in.) off the ground.

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. Press DIAGNOSTIC icon (A) on the main page of the display. The CALIBRATION page is shown.

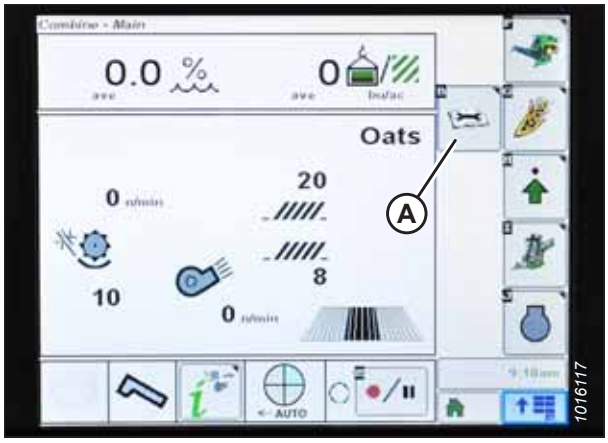


Figure 3.486: John Deere Combine Display

3. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.
4. Scroll through the list of options and select REEL POSITION.
5. Press ENTER icon (B).

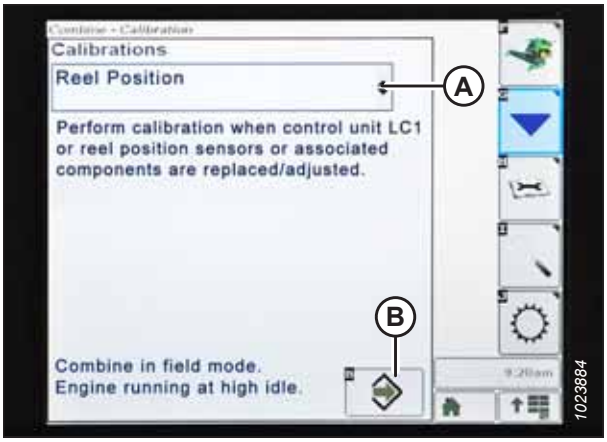


Figure 3.487: John Deere Combine Display

6. 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 3.488: John Deere Control Handle

7. Press and hold REEL LOWER switch until the reel is fully lowered. Continue holding REEL LOWER switch until prompted by the display.

Figure 3.489: John Deere Combine Display

8. 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 3.490: John Deere Combine Display

9. 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 is out of voltage range and will require adjustment. For instructions, refer to *Checking Reel Height Sensor Voltages – John Deere S and T Series, page 273*.

Figure 3.491: John Deere Combine Display

3.9.17 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. Refer to the combine operator's manual for the most up-to-date information.

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

Figure 3.492: John Deere S7 Display

2. Select HEADER TYPE field (A). The HEADER DETAILS dialog box opens.

Figure 3.493: John Deere S7 Display – Header Page

3. Verify correct header width is displayed under WIDTH.
4. To change header width, select field (A). The WIDTH dialog box opens.

Figure 3.494: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then press OK.

Figure 3.495: John Deere S7 Display – Setting Header Width

6. Press close button (A) in the top right corner to return to the HEADER page.

Figure 3.496: John Deere S7 Display – Header Details Dialog Box

7. Raise/lower speed (A), tilt speed (B), height sensitivity (C), and tilt sensitivity (D) can all be adjusted from this page. Select the option you would like to adjust. The following example shows the raise/lower speed adjustment.

Figure 3.497: John Deere S7 Display – Header Page

8. Use **+** and **–** buttons (A) to adjust the setting.

9. Press the close button in top right corner of the window to return to the HEADER page.

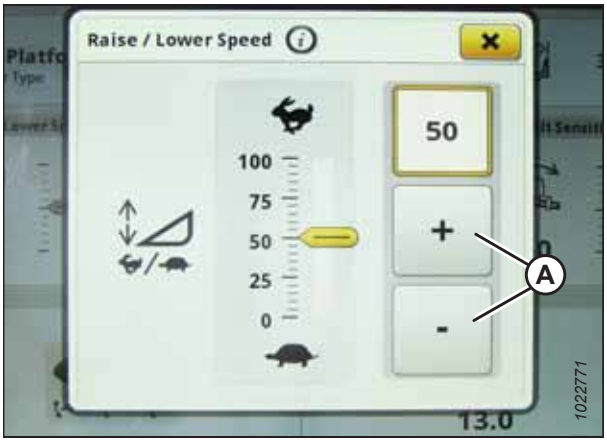


Figure 3.498: John Deere S7 Display – Raise/Lower Speed Adjustment

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

Figure 3.499: 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.

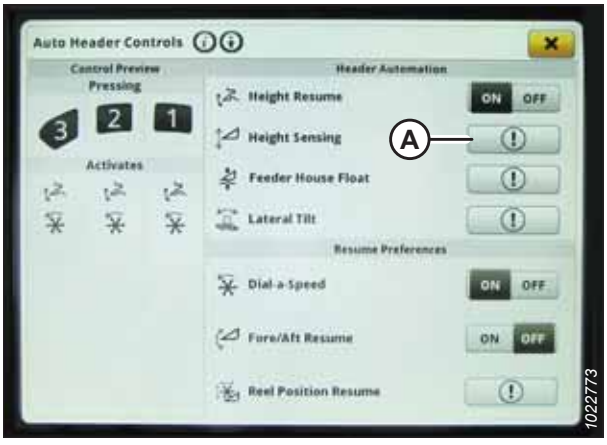


Figure 3.500: John Deere S7 Display – Auto Header Controls

12. Read the error message and then press OK.
13. Proceed to *Checking Voltage Range from Combine Cab – John Deere S7 Series, page 282*.

Figure 3.501: 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. Refer to the combine operator's manual for the most up-to-date information.

WARNING

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.

3. 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 auto header height control (AHHC) system.

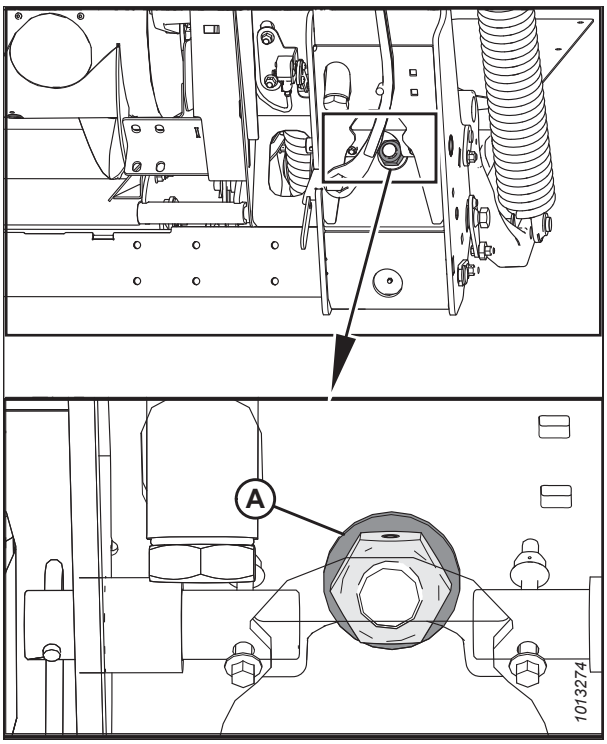


Figure 3.502: Float Lock

4. If necessary, adjust cable take-up bracket (B) until pointer (A) on the float indicator is on **0**.

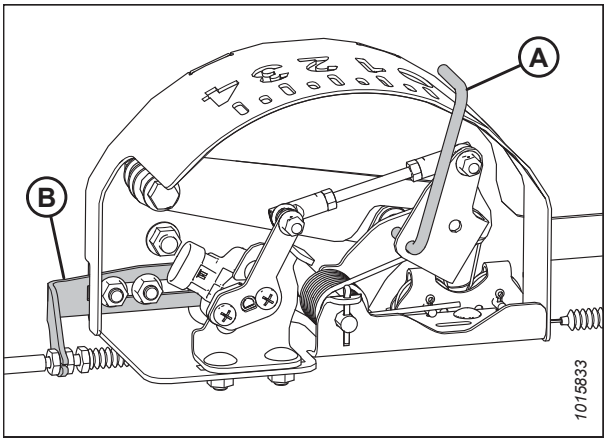


Figure 3.503: Float Indicator Box

5. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the page.

Figure 3.504: John Deere S7 Display – Harvesting Page

6. On the MENU page, select SYSTEM tab (A). The MENU opens.
7. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

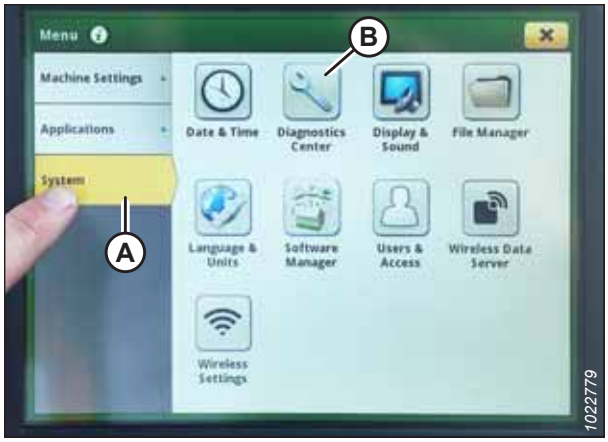


Figure 3.505: John Deere S7 Display – Menu

8. Select AHC - SENSING (A). The AHC - SENSING\DIAGNOSTICS page appears.

Figure 3.506: John Deere S7 Display – Diagnostics Center

9. Select SENSOR tab (A) to view the sensor voltages. Center header height sensor voltage (B) must be between 0.5 and 4.5 V, with at least 3 V of variation between 0 and 4 on the float indicator box.

   NOTE:

   If the optional Auto Lateral Tilt AHHC kit is installed, the left and right header height sensors must also be in the same 0.5–4.5 V range.

10. If sensor voltage adjustment is required, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

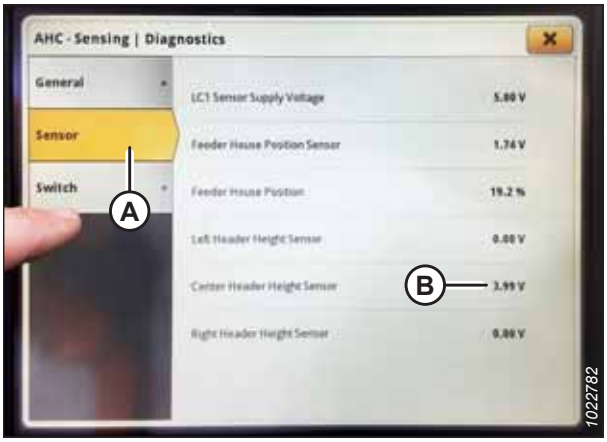


Figure 3.507: John Deere S7 Display – Checking Sensor Voltage

Calibrating Feeder House – John Deere S7 Series

Feeder house calibration must be done before header calibration.

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 the most up-to-date information.

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 *3.8.5 Header Angle, page 84*.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the float module float.
3. Put the wings in the locked position.
4. On the HARVESTING page, select MENU icon (A) in the bottom right corner of page. The MENU opens.

Figure 3.508: John Deere S7 Display – Harvesting Page

5. Select MACHINE SETTINGS tab (A).
6. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

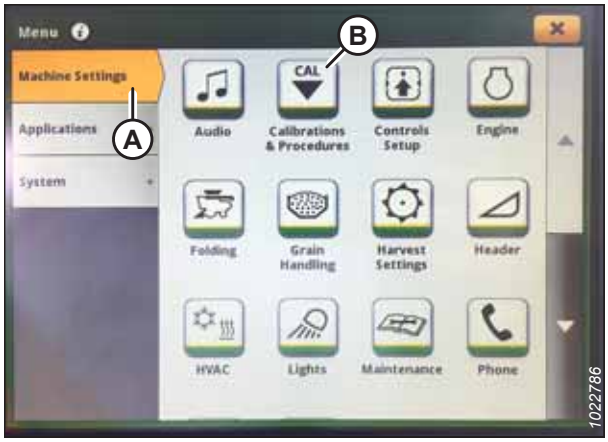


Figure 3.509: John Deere S7 Display – Machine Settings

7. Select HEADER tab (A).
8. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page appears.

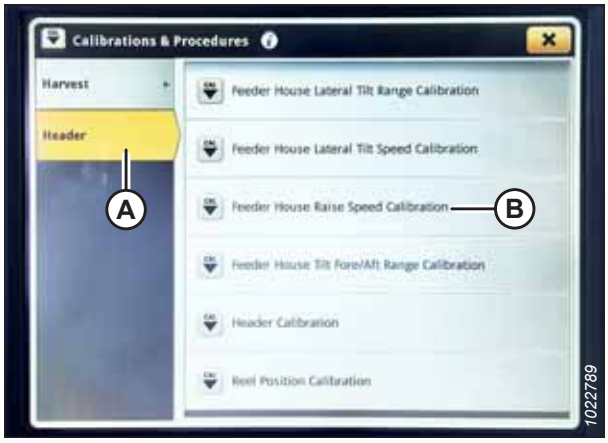


Figure 3.510: John Deere S7 Display – Calibrations and Procedures

9. Select CALIBRATE (A) at the bottom of the page. A calibration overview appears.

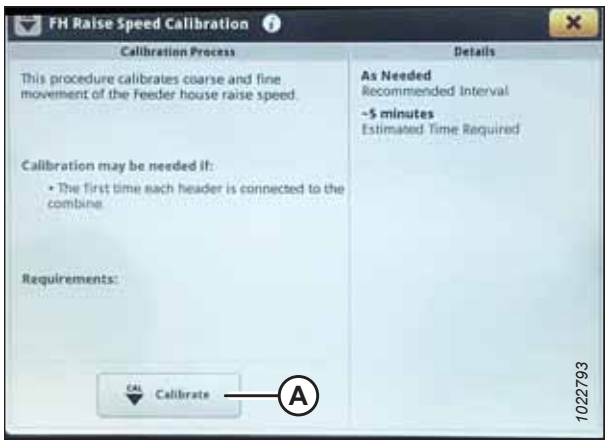


Figure 3.511: John Deere S7 Display – Feeder House Calibration

10. Read the calibration overview, and then press START.

Figure 3.512: John Deere S7 Display – Feeder House Calibration

11. Follow the instructions on the page. As you proceed through the calibration process, the display will automatically update to show the next step.

Figure 3.513: John Deere S7 Display – Feeder House Calibration

12. When calibration is complete, select SAVE to confirm the calibration.

Figure 3.514: 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.

Feeder house calibration must be done before header calibration. If feeder house has not yet been calibrated, refer to *Calibrating Feeder House – John Deere S7 Series, page 285*.

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 *3.8.5 Header Angle, page 84*.

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 the most up-to-date information.

1. Ensure the center-link is set to **D**.
2. Rest the header on the down stops and unlock the float module float.
3. Place the wings in the locked position.
4. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 3.515: John Deere S7 Display – Harvesting Page

5. Select MACHINE SETTINGS tab (A).
6. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page appears.

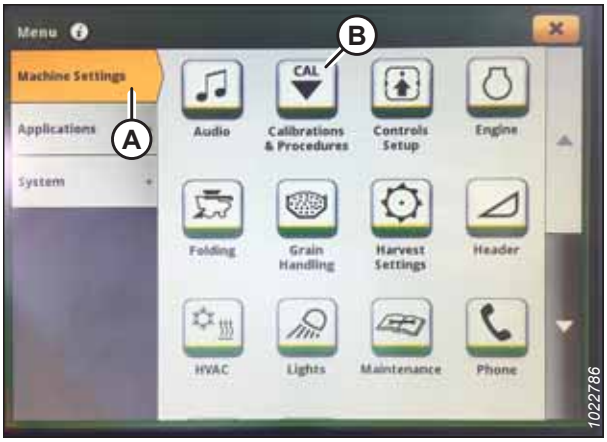


Figure 3.516: John Deere S7 Display – Machine Settings

7. Select HEADER tab (A).
8. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page appears.

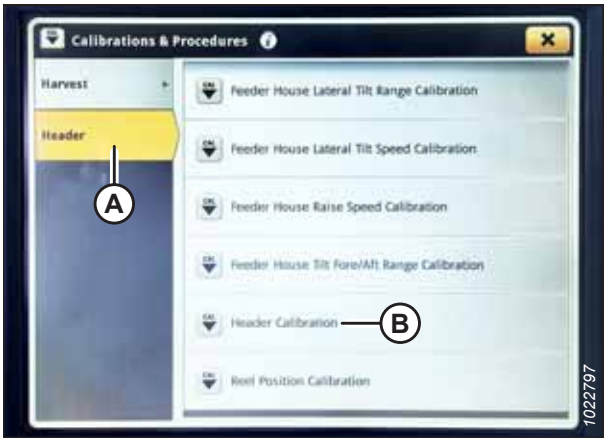


Figure 3.517: John Deere S7 Display – Calibrations and Procedures

9. Select CALIBRATE (A) at the bottom of the page. The calibration overview window opens.

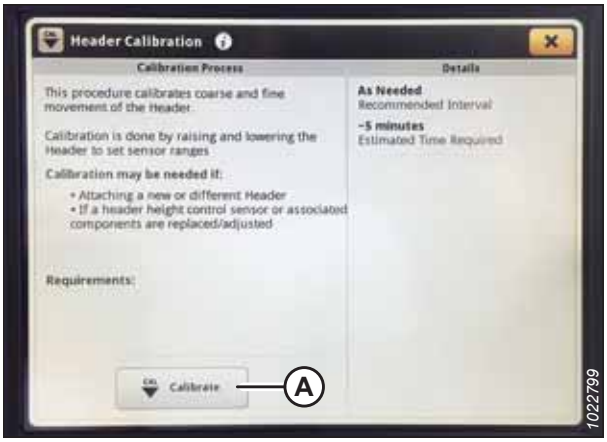


Figure 3.518: John Deere S7 Display – Header Calibration

10. Press button (A) on the console to set the engine to high idle.

Figure 3.519: John Deere S7 Console

11. Select START on the CALIBRATION OVERVIEW page.

12. 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.

    NOTE:

    If an error code appears during the calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

Figure 3.520: John Deere S7 Display – Header Calibration

13. When the calibration is complete, select SAVE to confirm the calibration.

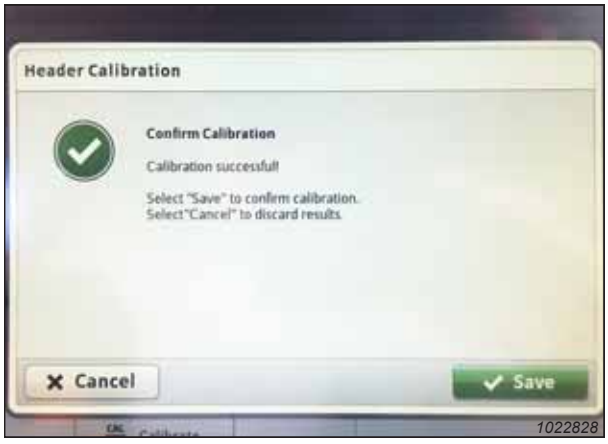


Figure 3.521: John Deere S7 Display – Header Calibration

3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior

To make your header's auto header height control (AHHC) system compatible with New Holland CR/CX 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 pre-model year 2015 New Holland CR/CX models.

Checking Voltage Range from Combine Cab – New Holland CR/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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.
3. 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 AHHC system. If the header is not on the down stops, refer to *3.10 Leveling Header, page 317* for instructions.

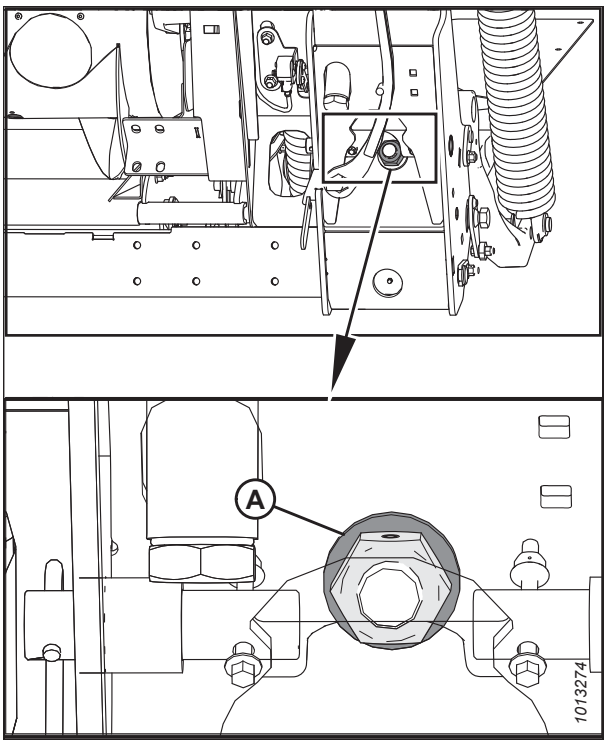


Figure 3.522: Float Lock

4. If necessary, adjust cable take-up bracket (B) until float indicator pointer (A) is on **0**.

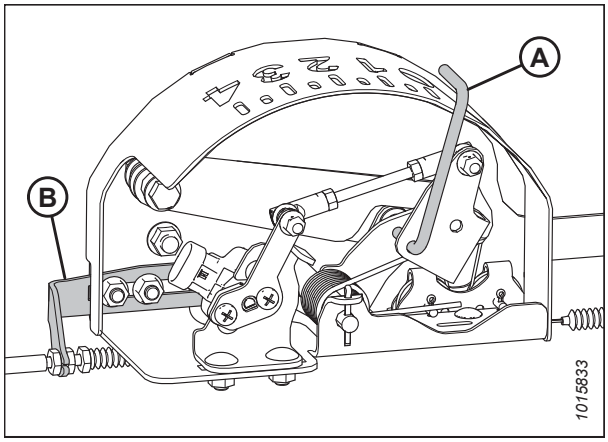


Figure 3.523: Float Indicator Box

5. Ensure the header float is unlocked.
6. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.
7. Select SETTINGS. The SETTINGS page appears.

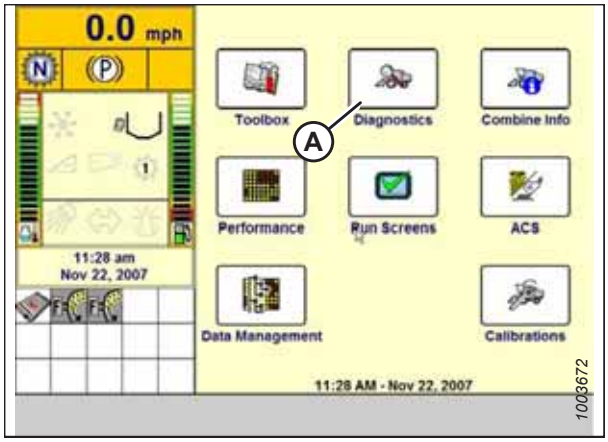


Figure 3.524: New Holland Combine Display

8. Select GROUP drop-down menu (A). The GROUP dialog box appears.

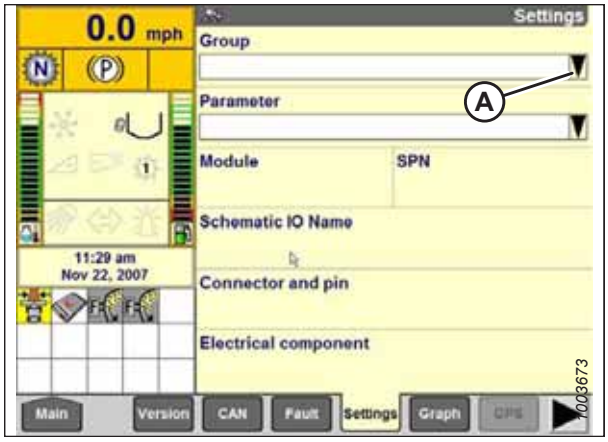


Figure 3.525: New Holland Combine Display

9. Select HEADER HEIGHT/TILT (A). The PARAMETER page appears.

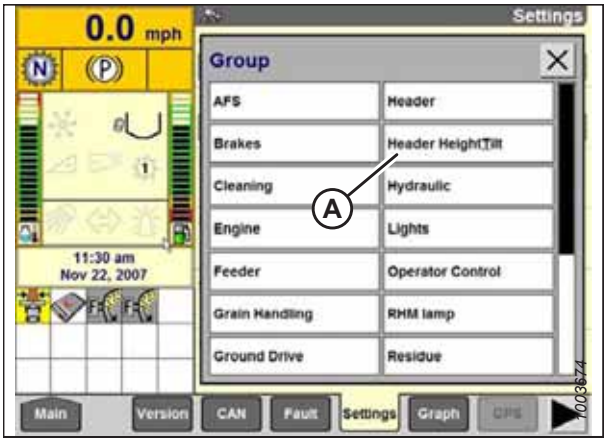


Figure 3.526: New Holland Combine Display

10. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The voltage reading appears at the top of the page.
11. Raise and lower the header to see the full range of voltage readings.
12. Compare the voltage readings on the display to voltage ranges specified in *3.9.3 Sensor Output Voltage Range – Combine Requirements, page 129*.
13. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

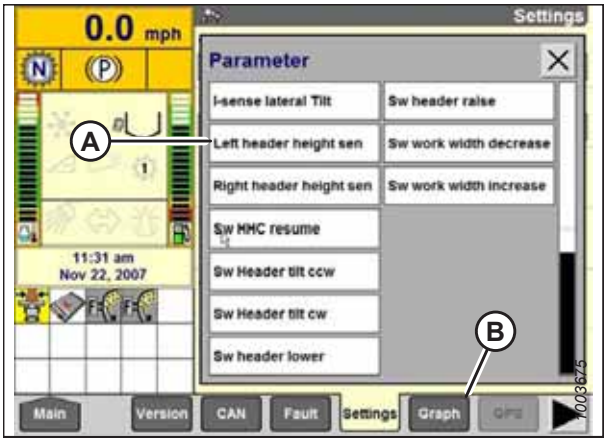


Figure 3.527: New Holland Combine Display

Setting up Auto Header Height Control – New Holland CR/CX Series

Auto header height control (AHHC) is set up using the combine display.

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 the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

1. Select HEADER LATERAL FLOAT on the combine display, and press ENTER.
2. Use the up and down navigation keys to move between options, and select INSTALLED.

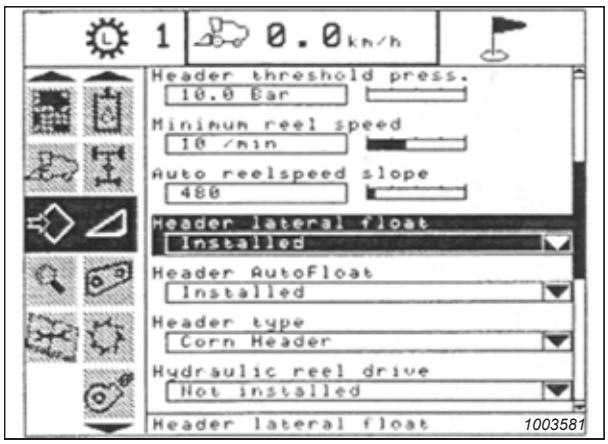


Figure 3.528: New Holland Combine Display

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

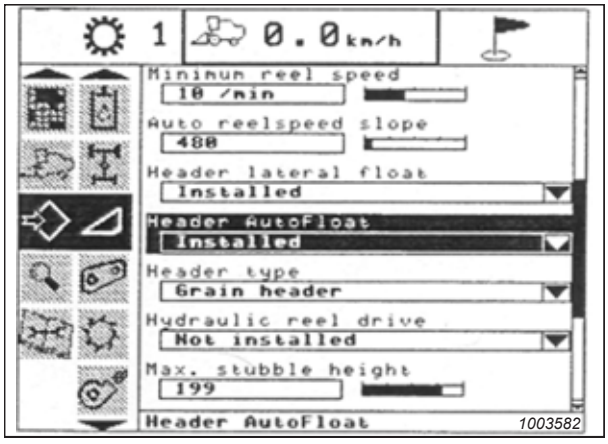


Figure 3.529: New Holland Combine Display

Calibrating Auto Header Height Control – New Holland CR/CX 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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

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 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 *3.8.5 Header Angle, page 84*.

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 dialog box opens.

   NOTE:

   You can use the up and down navigation keys to move between the options.

Figure 3.530: New Holland Combine Display

3. 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 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 3.531: New Holland Combine Display

4. When all 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/CX Series, page 296*.

Calibrating Maximum Stubble Height – New Holland CR/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. Refer to the combine operator's manual for the most up-to-date information.

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.

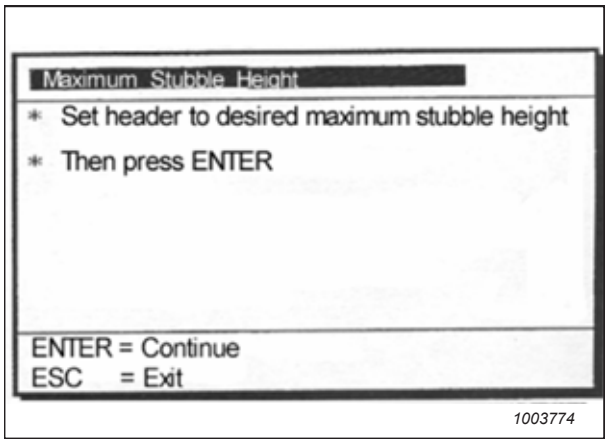


Figure 3.532: New Holland Calibration Dialog Box

2. Move the header to the desired maximum stubble height using the header up or down 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.

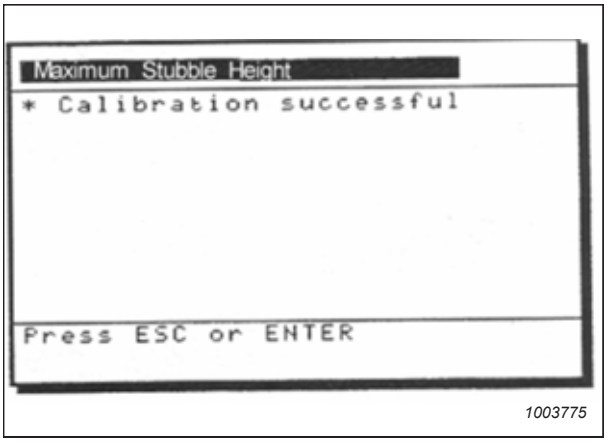


Figure 3.533: New Holland Calibration Dialog Box

Adjusting Header Raise Rate – New Holland CR/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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

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.

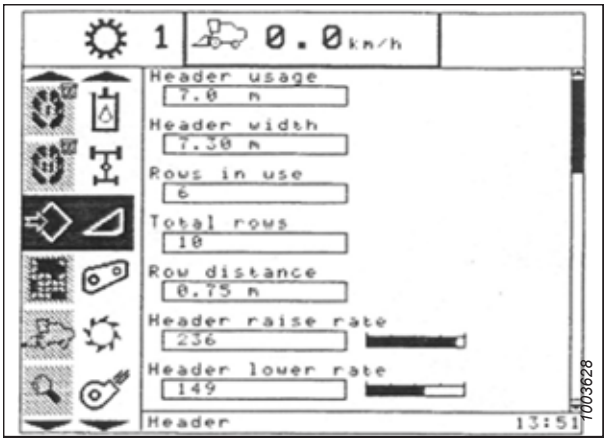


Figure 3.534: New Holland Combine Display

Setting Header Lower Rate – New Holland CR/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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

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.

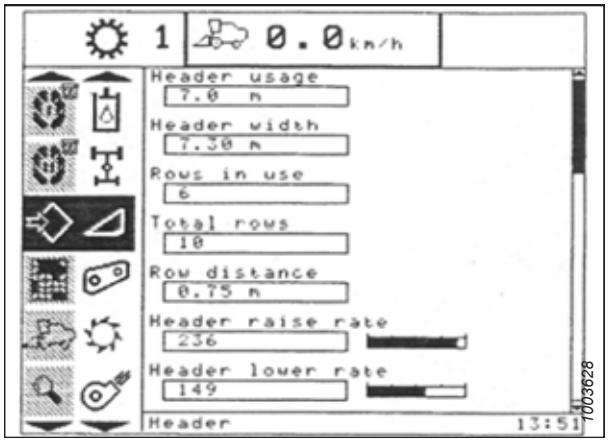


Figure 3.535: New Holland Combine Display

Setting Auto Header Height Control Sensitivity – New Holland CR/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 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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

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 3.536: New Holland Combine Display

Setting Preset Cutting Height – New Holland CR/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. Refer to the combine operator's manual for the most up-to-date information.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.9.19 New Holland Combines – CR Series – 2015 and Later, page 300*.

NOTE:

Indicator (A) should be at position 0 (B) with the header (152 mm [6 in.]) off the ground. If not, the float sensor output voltage should be checked. For instructions, refer to Step *6, page 132*. 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.

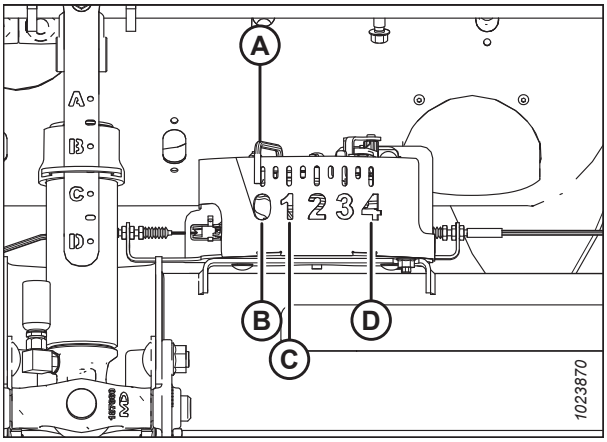


Figure 3.537: Float Indicator Box

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.
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.

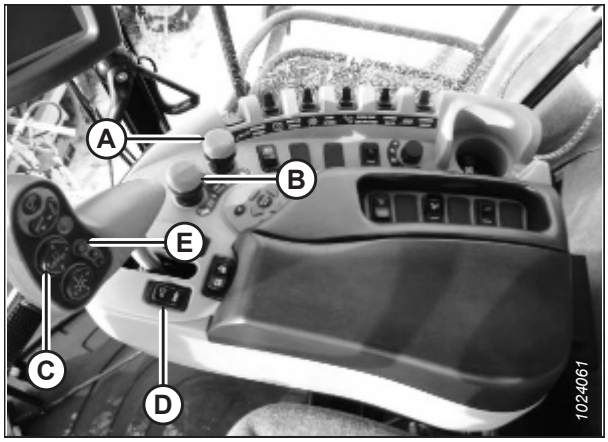


Figure 3.538: New Holland Combine Controls

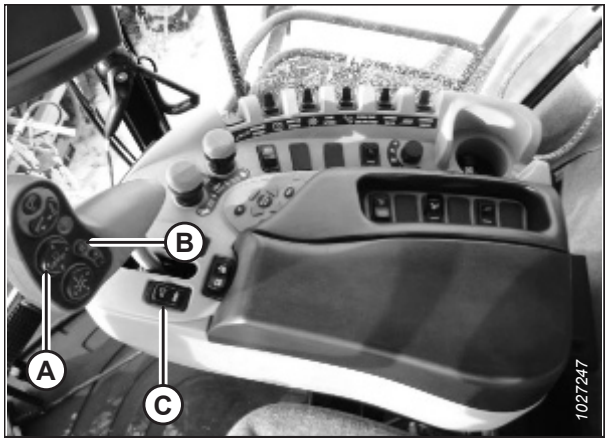


Figure 3.539: New Holland Combine Controls

3.9.19 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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 291*.

DANGER

Ensure that all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground.
2. Unlock the float.
3. 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 *3.10 Leveling Header, page 317* for instructions.

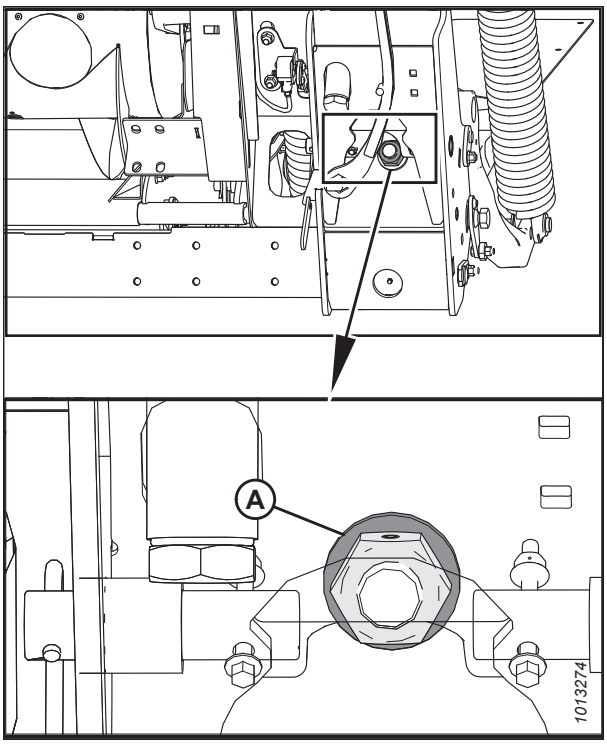


Figure 3.540: Float Lock

4. If necessary, adjust cable take-up bracket (B) until float indicator pointer (A) is on **0**.

5. Ensure the header float is unlocked.

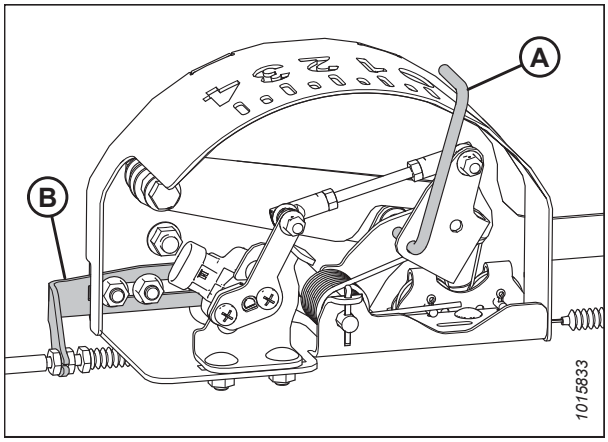


Figure 3.541: Float Indicator Box

6. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page appears.

Figure 3.542: New Holland Combine Display

7. Select SETTINGS (A). The SETTINGS page appears.

Figure 3.543: New Holland Combine Display

8. Select HEADER HEIGHT/TILT (A) from the GROUP drop-down menu.
9. Select HEADER HEIGHT SENS. L (B) from the PARAMETER drop-down menu.

Figure 3.544: New Holland Combine Display

10. Select GRAPH (A). The exact voltage (B) is displayed at the top of the page.
11. Raise and lower the header to see the full range of voltage readings.
12. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions, refer to *Adjusting Voltage Limits – One-Sensor System, page 136*.

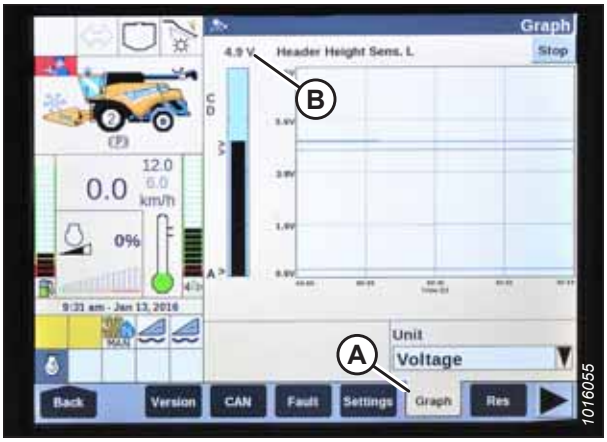


Figure 3.545: New Holland Combine Display

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 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.

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 the most up-to-date information.

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 *3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 291*.

1. Ensure the center-link is set to **D**.
2. Shut down the engine.
3. Turn the key to the run position.

4. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 3.546: New Holland Combine Display

5. 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 3.547: New Holland Combine Controls

6. Select HEAD 1 (A). The HEADER SETUP 1 page displays.
7. Select CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

Figure 3.548: New Holland Combine Display

8. Select HEADER SUB TYPE drop-down arrow, and set HEADER SUB TYPE to 80/90 (A).

Figure 3.549: New Holland Combine Display

9. Select HEAD 2 (A). The HEADER SETUP 2 page displays.

Figure 3.550: New Holland Combine Display

10. Select the AUTOFLOAT drop-down menu and set AUTOFLOAT to INSTALLED (A).
11. 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.

12. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.

Figure 3.551: New Holland Combine Display

13. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

Figure 3.552: New Holland Combine Display

14. From REEL HEIGHT SENSOR menu (A), select YES.

Figure 3.553: 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. Refer to the combine operator's manual for the most up-to-date information.

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. Make sure the combine display software is updated to these versions or later:
   - Model year 2015–2018: UCM v38.10.0.0
   - Model year 2019: 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 3.554: 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 3.555: 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 reel drive configuration according to the following table.

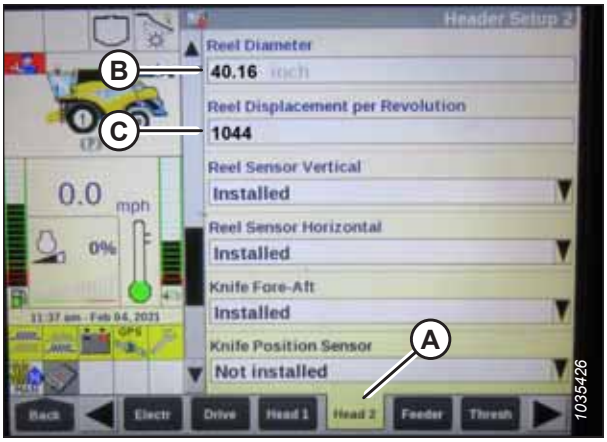


Figure 3.556: New Holland Combine Display

Table 3.23 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)[46]	56	1044

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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 291*.

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 *3.8.5 Header Angle, page 84*.

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.

46. Two speed kit with chain on inner sprockets.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main page. The CALIBRATION page appears.

Figure 3.557: New Holland Combine Display

2. Select CALIBRATION drop-down menu (A).

Figure 3.558: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

Figure 3.559: 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 3.560: 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 3.561: 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. Refer to the combine operator's manual for the most up-to-date information.

1. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page opens.

Figure 3.562: New Holland Combine Display

2. Select SETTINGS tab (A). The SETTINGS page opens.
3. From GROUP menu (B), select HEADER.
4. From PARAMETER menu (C), select REEL VERTICAL POSITION.

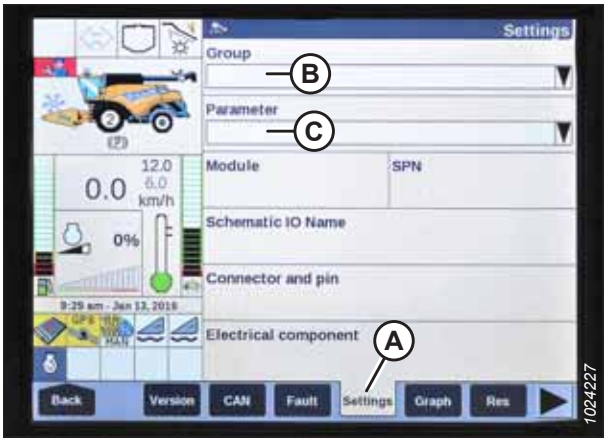


Figure 3.563: New Holland Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Raise the reel to view high voltage (B). The voltage should be 4.1–4.5 V.
7. Lower the reel to view low voltage (C). The voltage should be 0.5–0.9 V.
8. If either voltage is out of range, refer to *Checking and Adjusting Reel Height Sensor, page 98*.

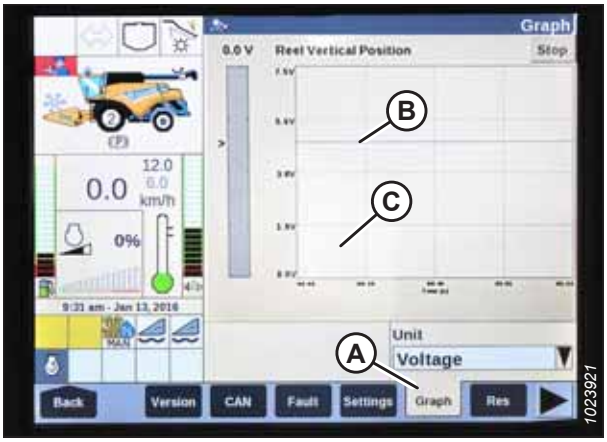


Figure 3.564: New Holland Combine Display

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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 291*.

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.

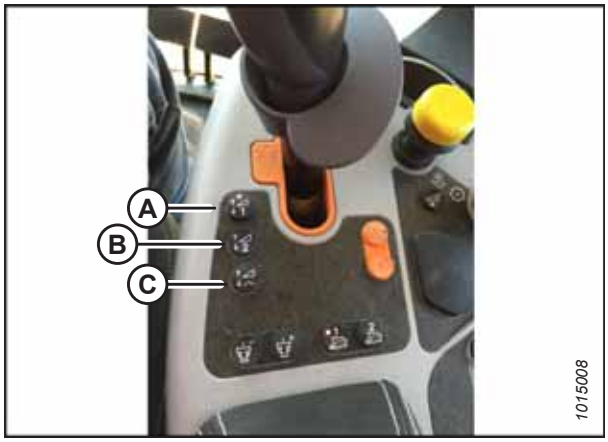


Figure 3.565: New Holland Combine Controls

DANGER

Ensure that all bystanders have cleared the area.

To set preset cutting height, follow these steps:

1. Engage the separator and the header.
2. Select preset button 1 (A). A yellow light on the button lights up.
3. Raise or lower the header to the desired cutting height.

Figure 3.566: New Holland Combine Controls

4. Hold RESUME button (C) on the multifunction handle to set the preset, until the monitor beeps.

   NOTE:

   When setting presets, always set the header position before setting the reel position. If the header and reel are set at the same time, the reel setting will not save.

5. Raise or lower 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 312* to Step *6, page 312*, using preset button 2.

Figure 3.567: New Holland Combine Multifunction Handle

8. Lower the header to the ground.
9. Select RUN SCREENS (A) on the main page.

Figure 3.568: 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 3.569: 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. Refer to the combine operator's manual for the most up-to-date information.

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 *3.9.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 291*.

1. Select TOOLBOX (A) on the main page. The TOOLBOX page appears.

Figure 3.570: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP page appears.
3. Select MAXIMUM WORK HEIGHT field (B).

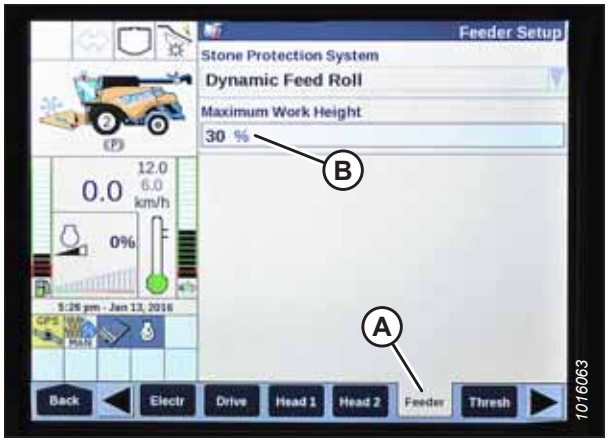


Figure 3.571: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to the desired value.
5. Press SET and then press ENTER.

Figure 3.572: 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. Refer to the combine operator's manual for the most up-to-date information.

1. Shut down the engine.
2. Turn the key to the run position.
3. Simultaneously press UNLOAD (A) and RESUME (B) buttons on the control handle.

Figure 3.573: New Holland Combine Controls

4. On the HEAD 1 page, change the CUTTING TYPE from FLEX to PLATFORM as shown at location (A).

Figure 3.574: New Holland Combine Display

5. On the HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at location (A).

Figure 3.575: 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.

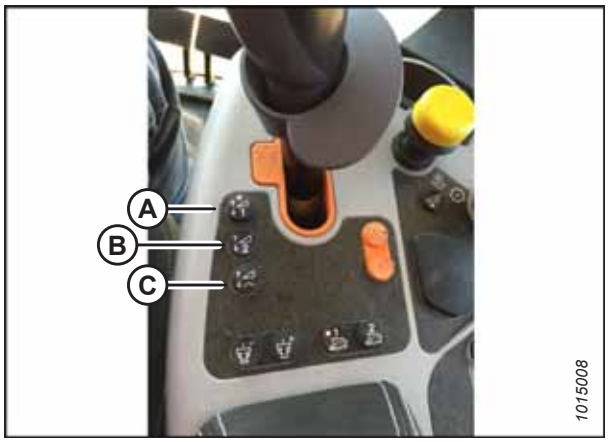


Figure 3.576: New Holland Combine Controls

3.10 Leveling Header

The float module is factory-set to provide the proper level for the header and should not normally require adjustment.

If the header is **NOT** level, perform the following checks prior to adjusting the leveling linkages:

- Check the combine tire pressures.
- Check that the combine feeder house is level. For instructions, refer to your combine operator's manual.
- Check that the top of the float module is level and parallel with the feeder house.

NOTE:

The float springs are **NOT** used to level 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.

1. Park the combine on level ground.
2. Set the header approximately 150 mm (6 in.) off the ground, and check that the float linkage is against the down stops. Note the high and low end of the header.
3. Shut down the engine, and remove the key from the ignition.
4. Place wing lock spring handles (A) in the locked (upper) position. For instructions, refer to *Operating in Rigid Mode, page 75*.
5. Check, and if necessary adjust, the float. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

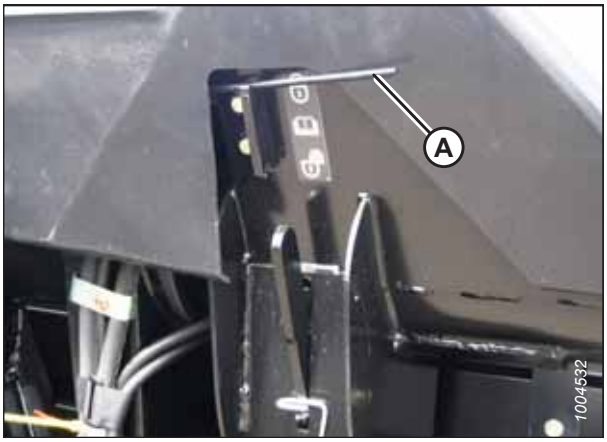


Figure 3.577: Wing Lock

6. Adjust the header level by making small adjustments (1/4–1/2 turn) to nut (A) on each float lock. Adjust each side equally but in opposite directions as follows:

   NOTE:

   Set screw (B) does not require loosening for adjustments up to one-half turn of nut (A).

   a. On the low side of the header, turn nut (A) **CLOCKWISE** to raise the header.

   b. On the high side of the header, turn nut (A) **COUNTERCLOCKWISE** to lower the header.

   NOTE:

   Adjustment of more than two turns in either direction may adversely affect the header float.

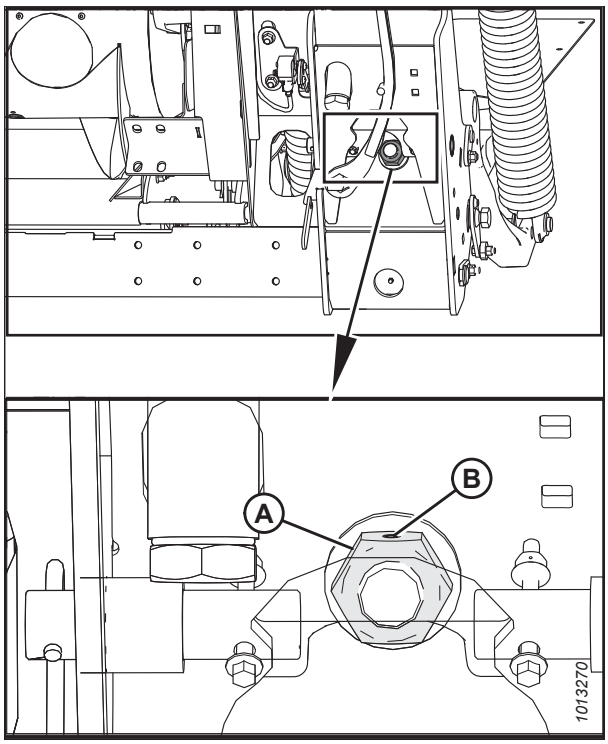


Figure 3.578: Float Lock

NOTE:

Ensure a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.

NOTE:

Check the float after leveling the header. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

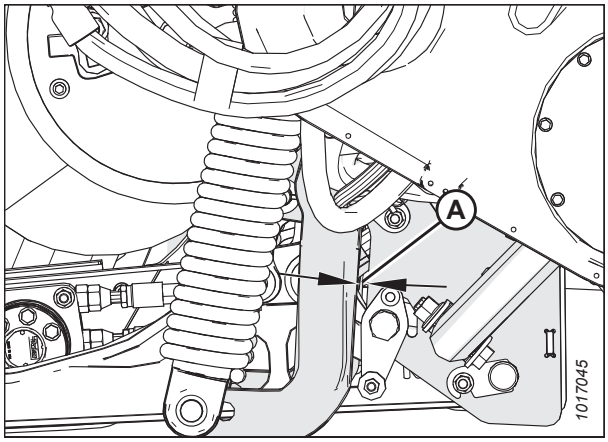


Figure 3.579: Bell Crank

3.11 Unplugging Cutterbar

Follow this procedure if an obstruction prevents the cutterbar from working correctly.

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

Wear heavy gloves when working around or handling knives.

IMPORTANT:

Lowering a rotating reel on a plugged cutterbar will damage the reel components.

To unplug the cutterbar, reverse the combine feeder house. If the cutterbar is still plugged, do the following:

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header to prevent it from filling with dirt, and engage the header drive clutch.
3. If the plug does **NOT** clear, disengage the header drive clutch and fully raise the header.
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. Clean off the cutterbar by hand.

NOTE:

If cutterbar plugging persists, refer to *7 Troubleshooting, page 607*.

3.12 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.

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header slightly off the ground, and raise the reel.
3. Reverse the combine feed according to the manufacturer specifications (reverse feed varies among different combine models).
4. Turn the side draper speed down to 0.
5. Engage the header drive.
6. Slowly increase the side draper speed to the previous settings once the plug has been cleared.

3.13 Transporting Header

There are two ways to transport the header: attached to the front of the combine, and towed behind a combine, windrower, or agricultural tractor.

The towing option is only available for headers with the Slow Speed Transport option installed. For more information, refer to *6.4.4 Stabilizer Wheels and Transport Package, page 597*.

3.13.1 Transporting Header on Combine – Safety Recommendations

Follow these safety recommendations when attempting to transport the header while it is attached to a combine.

CAUTION

- **Ensure that the combine and header comply with your local width regulations and lighting or marking requirements.**
- **Follow all recommended procedures in your combine operator's manual for transporting and towing a header.**
- **Disengage the header drive clutch when travelling to and from the field.**
- **Before driving the combine on a roadway, ensure that the flashing amber lamps, red tail lamps, and head lamps are clean and working properly. Position the amber lamps so that they can be seen by approaching traffic. Always use the lamps when travelling on roads.**
- **Do NOT use the field lamps when operating the combine on a roadway.**
- **Before driving on a roadway, clean the slow moving vehicle signs and reflectors, adjust the rear view mirrors, and clean the windows.**
- **Lower the reel fully and raise the header (unless the combine will be traveling on sloped terrain).**
- **Maintain adequate visibility and be alert for roadside obstructions, oncoming traffic, and bridges.**
- **When travelling downhill, reduce the combine's speed and keep the header as low as possible. Raise the header completely at the bottom of a slope to prevent the header from contacting the ground.**
- **Always travel at speeds at which the combine is fully under your control.**

3.13.2 Towing

Headers with the Transport/Stabilizer Wheel option can be towed behind a combine or an agricultural tractor. For instructions, refer to the combine operator's manual.

Attaching Header to Towing Vehicle – Safety Recommendations

Follow these safety recommendations when attempting to attach the header to a combine, windrower, or agricultural tractor.

CAUTION

- **The weight of the towing vehicle must exceed the header's weight to ensure adequate control and braking performance. Refer to *2.2 FD1 Series FlexDraper® Header Specifications, page 21* for further information.**
- **Do NOT tow the header with a highway-capable vehicle. Use only an agricultural tractor, a combine, or a properly configured MacDon windrower.**
- **Ensure that the reel is fully lowered and positioned fully back on the support arms to increase header stability during transport. For headers equipped with hydraulic reel fore-aft control, 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 the pins are properly secured in the transport position at the wheel supports, cutterbar support, and hitch.**
- **Inspect the condition of the wheels and tires and perform a tire pressure check before attempting to transport the header.**
- **Connect the hitch to the towing vehicle using a proper hitch pin. A proper hitch pin has spring locking pin or other suitable fastener.**
- **Attach the hitch safety chain to the towing vehicle. Adjust the length of the safety chain to provide only enough slack to permit the towing vehicle to turn.**
- **Connect the header wiring harness to the mating receptacle on the towing vehicle. The necessary seven-pole receptacle is available from your MacDon Dealer parts department.**
- **Ensure that all lights are functioning properly, and clean the slow moving vehicle sign and other reflectors. Activate the flashing warning lights, unless this action is prohibited by law.**

Towing the Header – Safety Recommendations

Follow these safety recommendations when attempting tow the header with a combine, windrower, or agricultural tractor.

CAUTION

- **Do NOT exceed 32 km/h (20 mph).**
- **Do NOT exceed 8 km/h (5 mph) in slippery or rough conditions.**
- **Take corners at very low speeds (8 km/h [5 mph] or less); header stability is reduced while cornering. Do NOT accelerate at any point when turning.**
- **Obey all highway traffic regulations in your area when towing a header on public roads. Activate the flashing amber lights, unless this action is prohibited by law.**

3.13.3 Converting from Transport to Field Position

Once the header has reached its destination, it will need to be converted to field mode in order to perform its work.

Removing Tow-Bar

Once the header has arrived at its destination, the tow-bar must be disconnected and stored.

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. Block the tires to prevent the header from rolling, and unhook the header from the towing vehicle.
3. Disconnect electrical connector (A) on the tow-bar.
4. Remove pin (B) from the tow-bar, and disassemble outer section (C) from inner section (D).

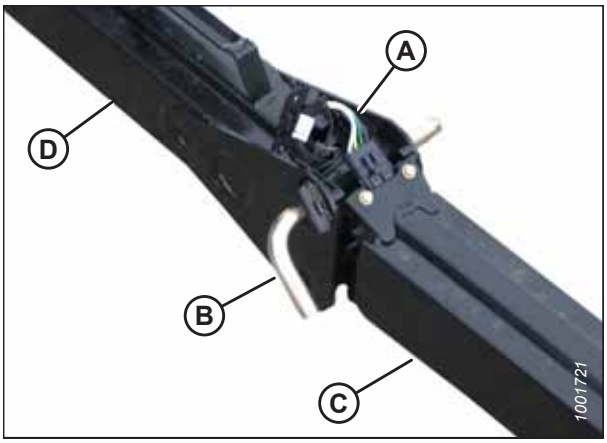


Figure 3.580: Tow-Bar Assembly

5. Disconnect electrical connector (A) at the front wheel.

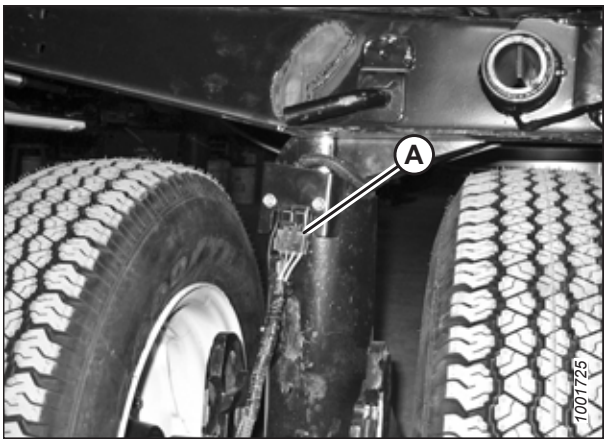


Figure 3.581: Wiring Connector

6. Remove and retain clevis pin (A).
7. Push latch (B) and lift tow-bar (C) from the hook. Release the latch.
8. Install clevis pin (A).

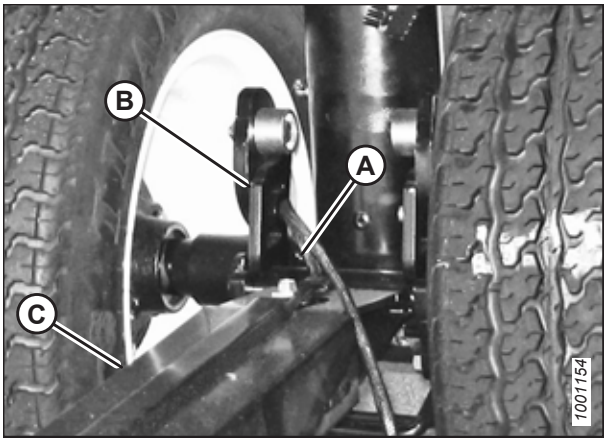


Figure 3.582: Tow-Bar Latch

Storing Tow-Bar

The tow bar is stored in a cradle inside the header's backtube.

The tow-bar consists of two sections: inner half (A) and outer half (B).

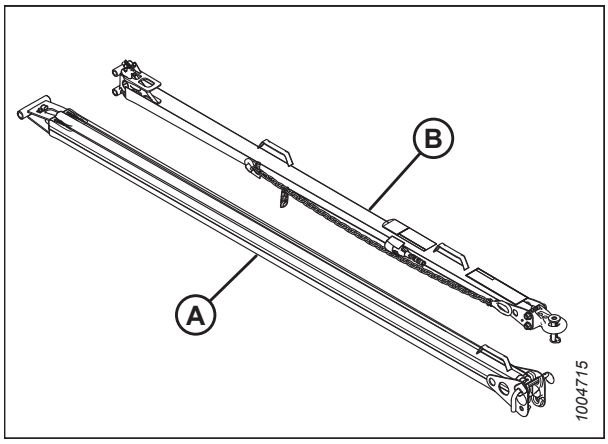


Figure 3.583: Tow-Bar Assembly

1. On the left side of the header's backtube, place the inner end of the outer half of the tow-bar into cradle (A).
2. Secure the clevis/pintle end of the tow-bar in support (B) on the endsheet using hitch pin (C). Secure the pin with a lynch pin.
3. Install rubber strap (D) on cradle (A).

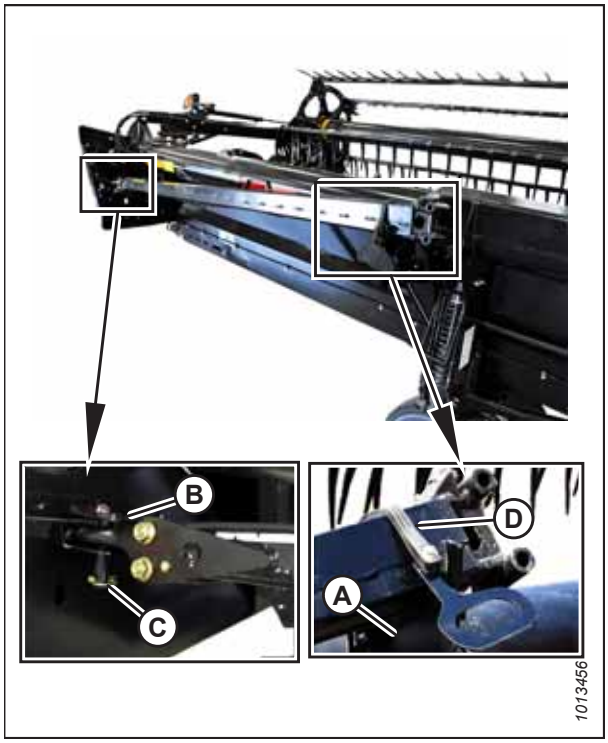


Figure 3.584: Tow-Bar Storage – Left Side

4. On the right side of the header's backtube, place the inner end of the inner half of the tow-bar into cradle (A).
5. Secure the tube end of the tow-bar in support (B) on the endsheet using clevis pin (C). Secure the pin with a hairpin.
6. Install rubber strap (D) on cradle (A).

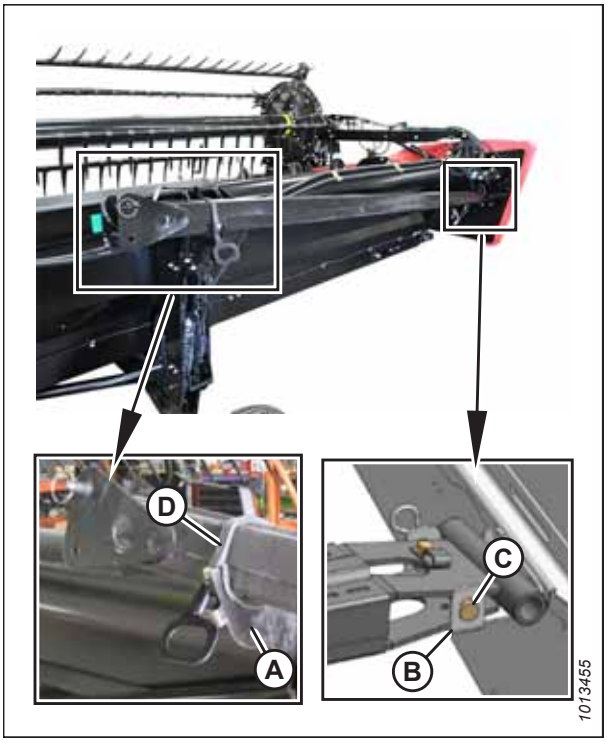


Figure 3.585: Tow-Bar Storage – Right Side

7. Attach the header to the combine. For instructions, refer to *4 Header Attachment/Detachment, page 339*.

IMPORTANT:

Carrying the tow-bar on the header will affect the header's float weight. For instructions, refer to *Checking and Adjusting Header Float, page 68*.

8. Place the transport wheels into the field position. For instructions, refer to the following:
   - *Moving Front/Left Wheels into Field Position, page 325*
   - *Moving Rear/Right Wheels into Field Position, page 327*

Moving Front/Left Wheels into Field Position

In order for the header to be used for field work, the front transport wheels will need to be raised.

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.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.

4. Position front wheel assembly (A) so that the wheels are aligned with the lower frame.
5. Remove pin (B) and pull the wheel assembly towards the rear of the header. Store the pin in hole (C) at the top of the leg.
6. Pull handle (D) upwards to release it. Lower the linkage into the vertical support.

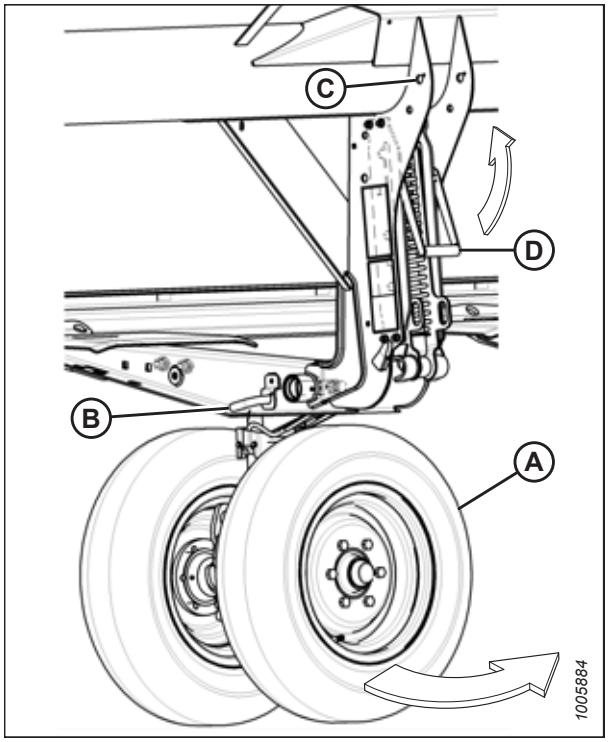


Figure 3.586: Front Wheels

7. Align lift hook (A) with lug (B) and lift the wheel assembly to engage the pin in the lift hook. Ensure that latch (C) is engaged.
8. Install clevis pin (D) and secure it to the center of the axle with a hairpin.

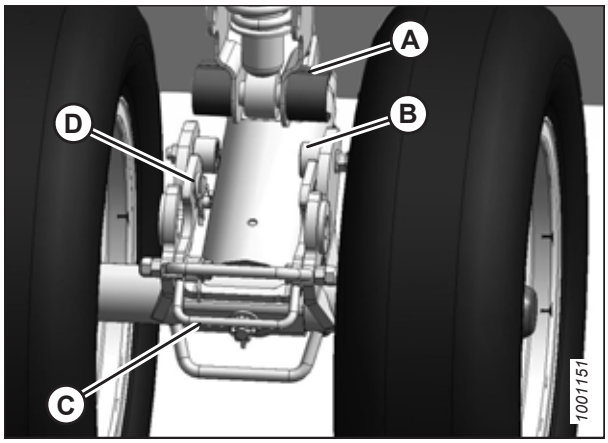


Figure 3.587: Front Wheels

9. Lift the wheel assembly to the desired height and slide linkage (A) into the appropriate slot in the vertical support.
10. Push down on handle (B) to lock the wheels in place.

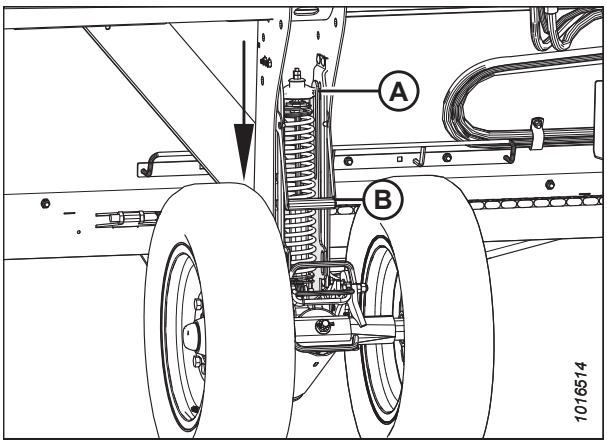


Figure 3.588: Front Wheels

Moving Rear/Right Wheels into Field Position

In order for the header to be used for field work, the rear transport wheels will need to be raised.

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.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.
4. Pull pin (A) on the left rear wheel. Swivel the wheel clockwise and lock it with the pin.

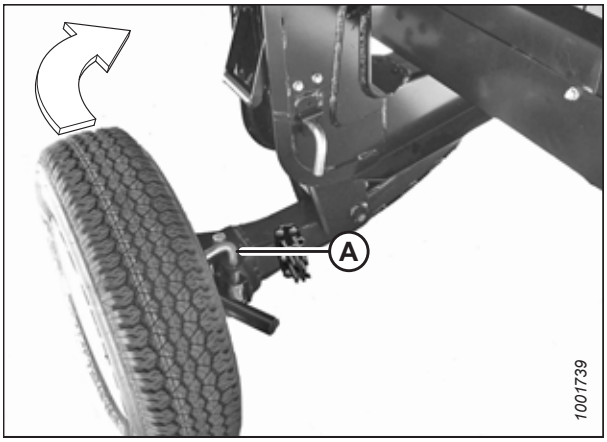


Figure 3.589: Rear Wheel – Right Side

5. Remove pin (A) and store it at location (B).
6. Pull handle (C) upwards to release the wheel.
7. Lift the wheel to the desired height, and engage the support channel into slot (D) in the vertical support.
8. Push down on handle (C) to lock the wheel.

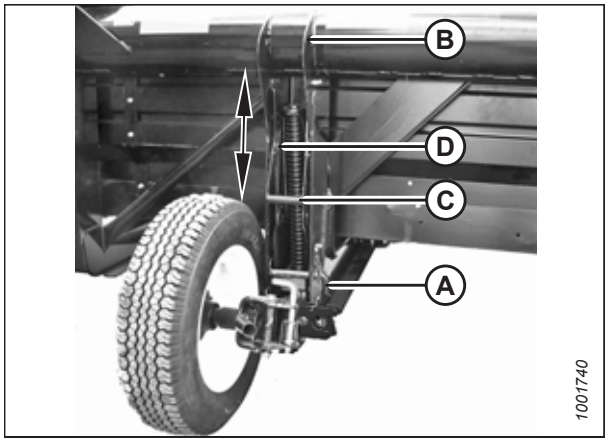


Figure 3.590: Rear Wheel – Right Side

9. Pull pin (A) on brace (B) on the right wheel in front of the cutterbar. Disengage the brace from the cutterbar, and lower the brace against axle (C).
10. Remove pin (D), lower support (E) onto the axle, and reinsert the pin into the support.
11. Swing axle (C) clockwise towards the rear of the header.

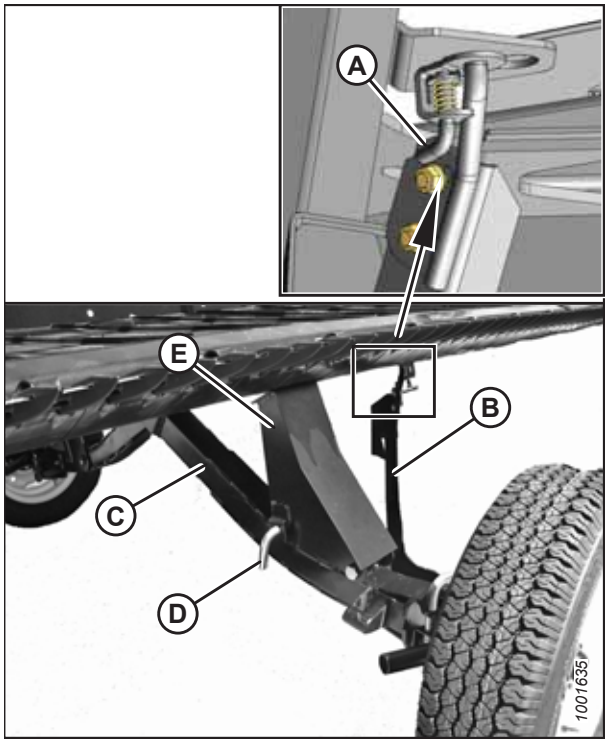


Figure 3.591: Rear Wheel – Right Side

12. Pull pin (A) on the right axle, swivel the wheel counterclockwise to the position shown, and lock it with pin (A).
13. Remove hairpin (B) from latch (C).
14. Lift the wheel, lift latch (C), and engage lug (D) onto the left axle. Ensure that the latch closes.
15. Secure the latch with hairpin (B), ensuring that the open end of the pin faces the rear of the combine.

    IMPORTANT:

    Ensure that the wheels are locked and that the handle is in the locked position.

    NOTE:

    The hairpin can become dislodged by crop if it is installed with the open end facing the cutterbar.
16. Ensure that left wheels (A) and right wheels (B) are in the position shown.

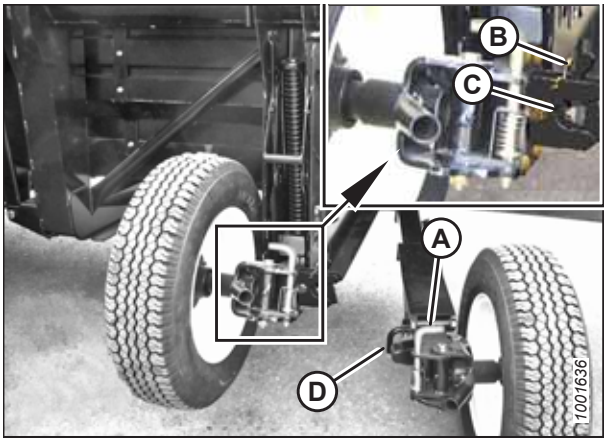


Figure 3.592: Rear Wheels

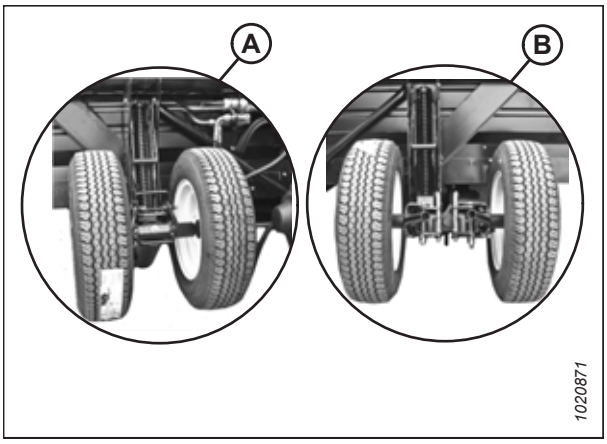


Figure 3.593: Transport Wheels – Final Position

3.13.4 Converting from Field to Transport Position

To prepare the header for transport, the transport wheels must be engaged and the tow bar must be installed and connected to the tow vehicle.

Moving Front/Left Wheels into Transport Position

To prepare the header for transport, the front wheels must be lowered.

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. Pull handle (B) upwards to release and raise linkage (A) fully upwards into the vertical support.
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.

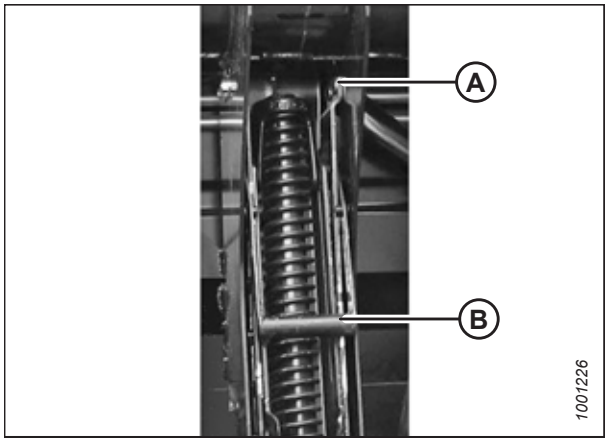


Figure 3.594: Suspension Linkage

5. Remove the hairpin and clevis pin (A).
6. Pull latch handle (B) to release suspension linkage (C), and pull the suspension linkage away from spindle (D).
7. Lower the wheels slowly.

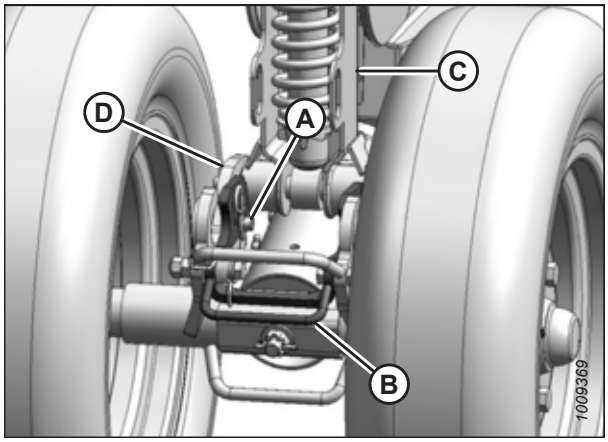


Figure 3.595: Left Front Wheels

8. Lower handle (A) to lock the wheels.

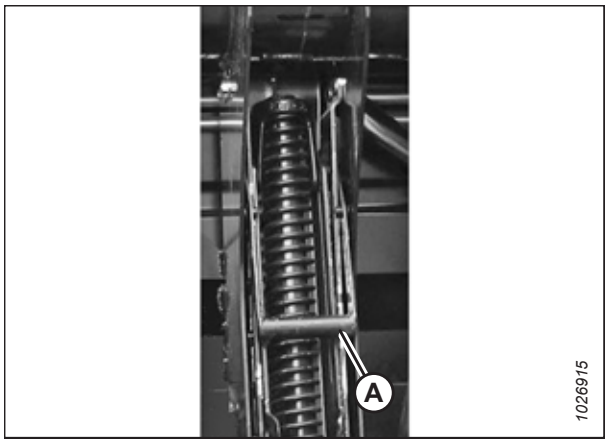


Figure 3.596: Suspension Linkage

9. Remove pin (A) from its storage position at the top of leg (B).
10. Swivel the wheels clockwise until connector (C) is turned towards the front end of the header.
11. Insert pin (A) and turn it to lock the wheels.
12. Lower the header until the left wheels are just touching the ground.

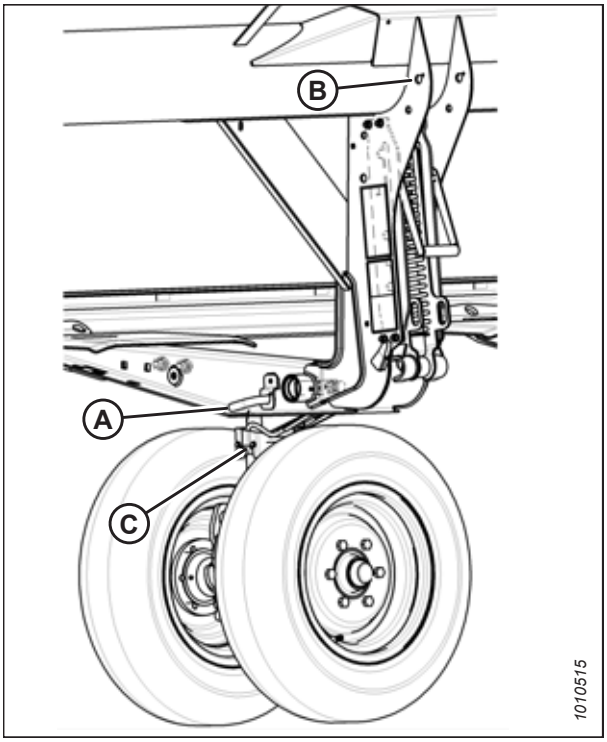


Figure 3.597: Left Front Wheels

Moving Rear/Right Wheels into Transport Position

To prepare the header for transport, the rear transport wheels must be lowered.

1. Remove hairpin (A) from latch (B).
2. Lift latch (B), disengage right axle (C), and lower the axle to the ground.

CAUTION

Stand clear of the wheels and release the linkage carefully; the wheels will drop suddenly once the mechanism is released.

3. Pull handle (D) to release the spring and lower the wheel to the ground.
4. Lift the wheel and linkage with handle (E) and position the linkage in the bottom slot.
5. Lower handle (C) to lock.

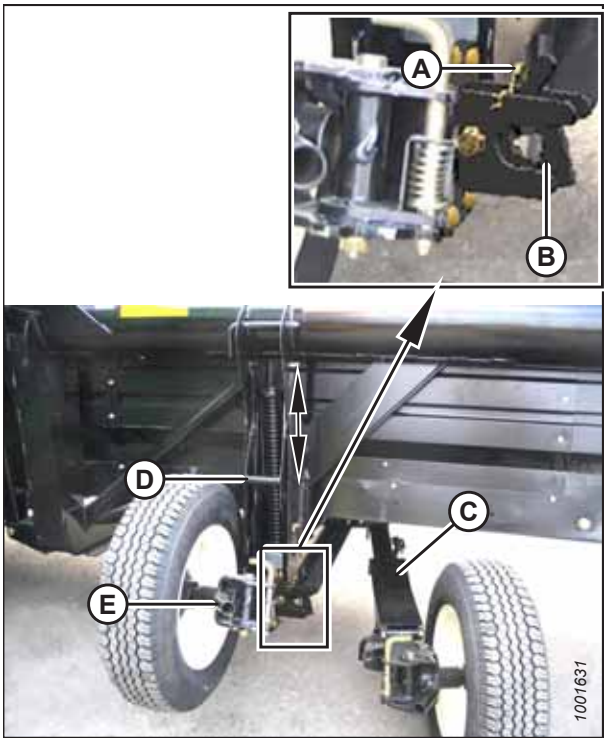


Figure 3.598: Rear Wheels

6. Remove pin (A) and install it at location (B) to secure the linkage. Turn the pin to lock.

7. Pull pin (D), swivel wheel (C) counterclockwise 90°, and release the pin to lock.

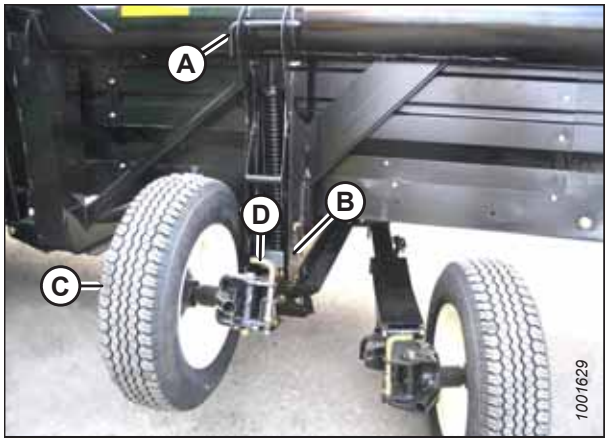


Figure 3.599: Rear Wheels

8. Ensure that the left wheel is in the transport position as shown.

Figure 3.600: Left Wheel in Transport Position

9. Pull pin (A) and swivel right rear wheel (B) clockwise 90°.

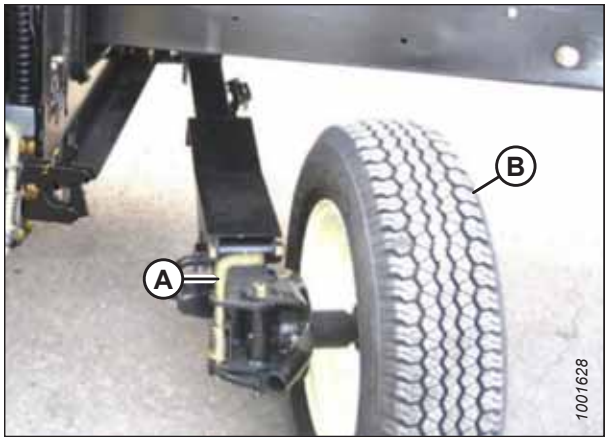


Figure 3.601: Right Rear Wheel

10. Lock wheel (A) with pin (B). Move right axle (C) to the front of the header.

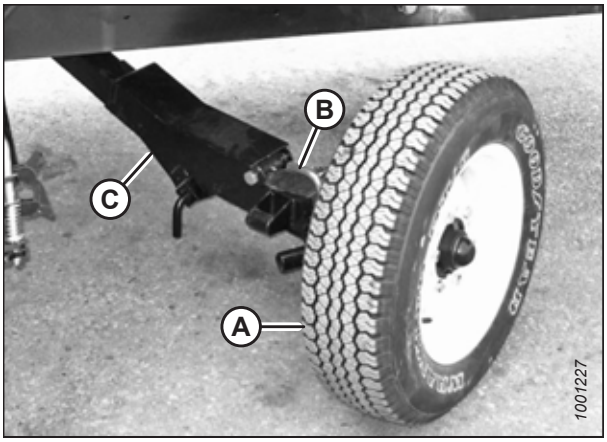


Figure 3.602: Right Rear Wheel

11. Remove pin (A), raise support (B) to the position shown, and reinsert the pin.

    IMPORTANT:

    Ensure pin (A) engages the tube on the axle.

12. Swing brace (C) into the position shown and insert the brace into slot (D) behind the cutterbar. Position the brace so that pin (E) engages the hole in bracket (F). The right wheel is now in transport position.

13. Disengage the combine safety props.

14. Detach the header's hydraulic and electrical connections from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 339*.

15. Start the combine and lower the header to the ground.

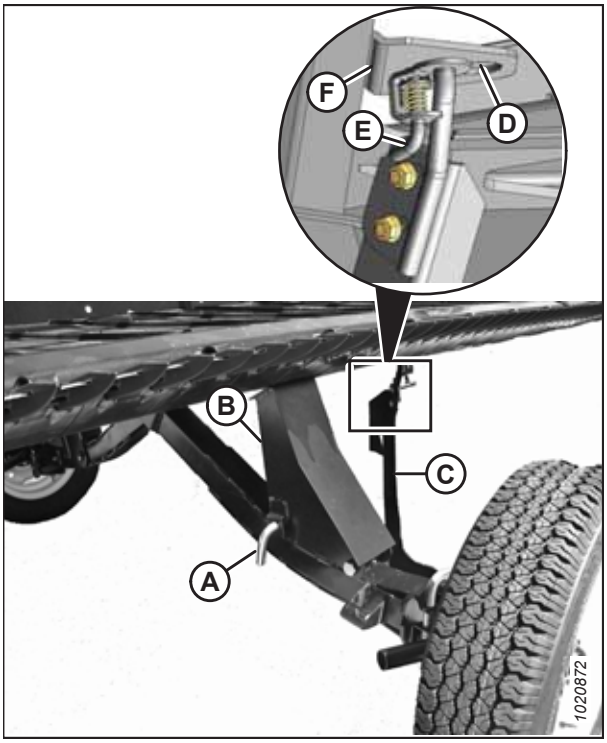


Figure 3.603: Right Rear Wheel Position

Attaching Tow-Bar

The tow-bar is stored in two sections on the header's backtube. It will need to be assembled before it can connect the header and the tow vehicle.

1. Unhook rubber strap (D) from cradle (A) on the right side of the header.
2. Remove clevis pin (C) and detach the tube end from support (B).
3. Replace clevis pin (C).
4. Lift the inner half of the tow-bar off the header and place it near the left side of the header.

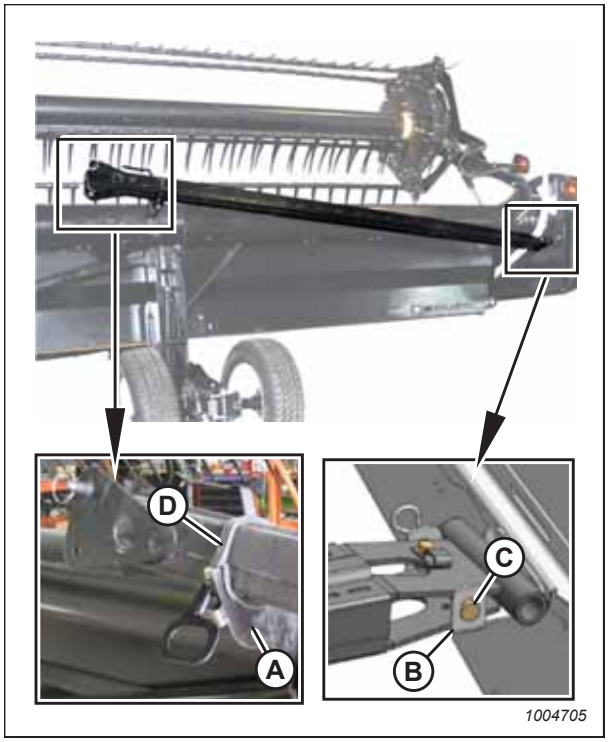


Figure 3.604: Tow-Bar Removal – Right Side

5. Unhook rubber strap (D) from cradle (A) on the left side of the header.
6. Remove hitch pin (C) from support (B), and remove the tow-bar.
7. Install rubber strap (D) on cradle (A).

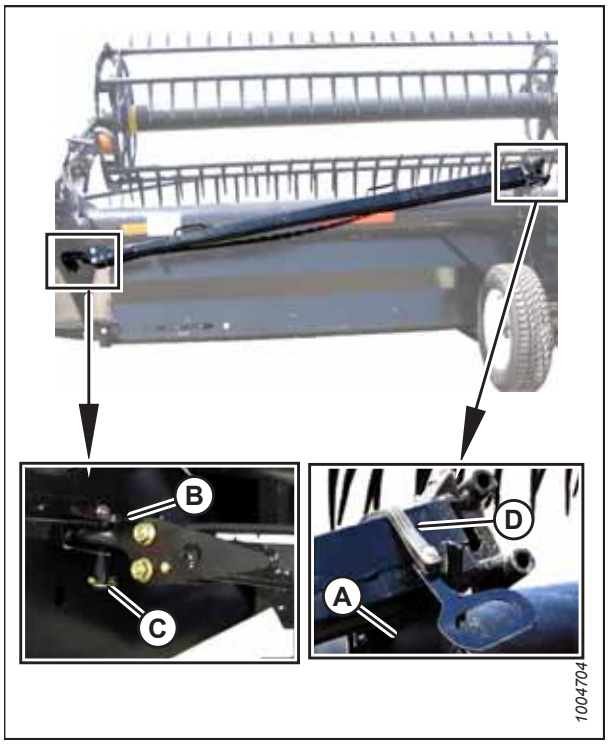


Figure 3.605: Tow-Bar Removal – Left Side

8. Connect outer half (B) of the tow-bar to inner half (A).

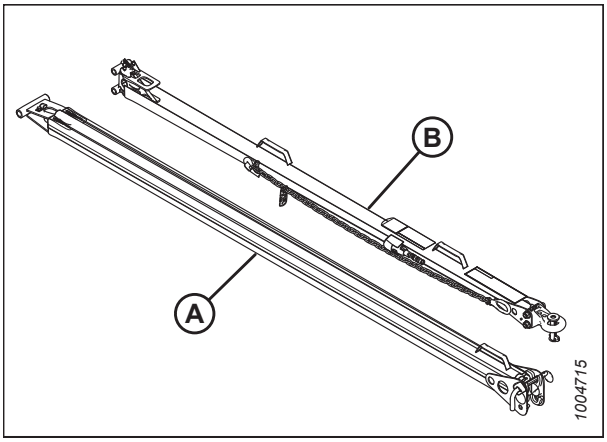


Figure 3.606: Tow-Bar Assembly

9. Lift outer half (B) and insert it into inner half (A).

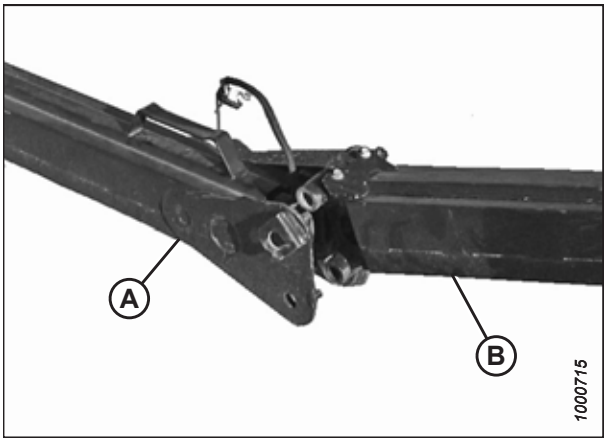


Figure 3.607: Tow-Bar Assembly

10. Secure the tow-bar halves with L-pin (A). Turn the pin to lock the halves together. Secure the L-pin with ring (B).
11. Connect the electrical harness to connector (C).

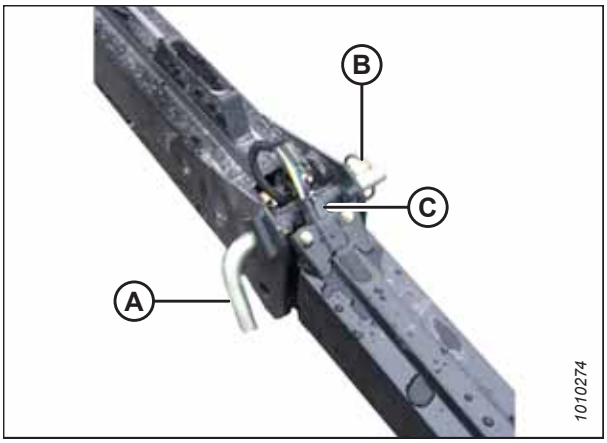


Figure 3.608: Tow-Bar Assembly

12. Position tow-bar (A) on the axle. Push the tow-bar against latch (B) until the tow-bar pins drop into hooks (C).
13. Check that latch (B) has engaged the tow-bar.
14. Install clevis pin (D) and secure it with a hairpin.

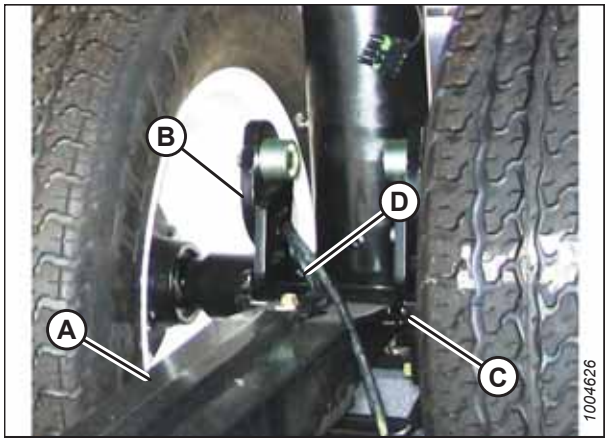


Figure 3.609: Attaching Tow-Bar

15. Connect electrical harness (A) at the front wheel.

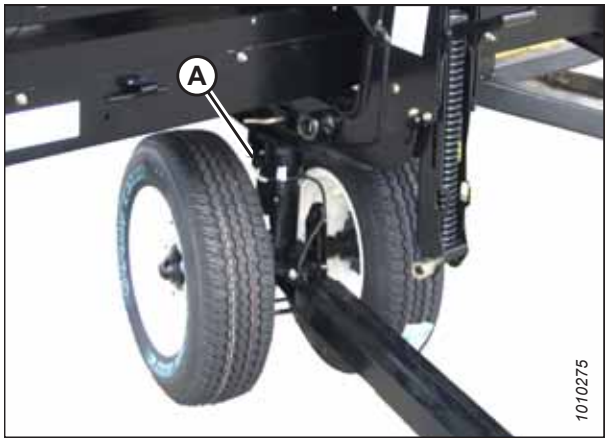


Figure 3.610: Harness Connection

3.14 Storing the Header

When putting the header into storage at the end of the season, perform this procedure. Storing the header properly helps to ensure 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, always cover it with a waterproof canvas or other protective material.

NOTE:

If storing the header outdoors, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so that water and snow will not accumulate on the drapers. The weight of water and snow accumulation 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 the header will be stored 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, leaving 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 the replacements from your Dealer. Immediate repair of these items will save time and effort at the beginning of next season.
11. Replace or tighten any missing or loose hardware. Ensure that loose hardware is tightened to the recommended torque value. For more information, refer to *8.2 Torque Specifications, page 622*.

Chapter 4: Header Attachment/Detachment

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

Combine	Refer to
Case IH 7010/8010, 120, 130, 230, 240, 250 Series	*4.6 Case IH Combines, page 380*
Challenger® 660, 670, 680B, 540C, 560C, Gleaner R and S Series, Massey Ferguson® 9690, 9790, 9895, 9520, 9540, 9560	*4.4 Challenger®, Gleaner®, and Massey Ferguson® Combines, page 366*
CLAAS 500 (including R Series), 600, and 700 Series, 7000/ 8000 Series, and Tucano	*4.7 CLAAS Combines, page 388*
IDEAL™ Series	*4.5 IDEAL™ Series Combines, page 374*
John Deere 60, 70, S, and T Series	*4.8 John Deere Combines, page 396*
New Holland CR, CX	*4.9 New Holland Combines, page 404*

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.

4.1 Driveline Phasing

To reduce driveline vibration, the driveshaft should be installed in a specific orientation. If repairing or replacing, ensure the driveshaft are in the proper orientation .

Ensure driveshaft u-joints are oriented to correct phasing (A) to avoid damage.

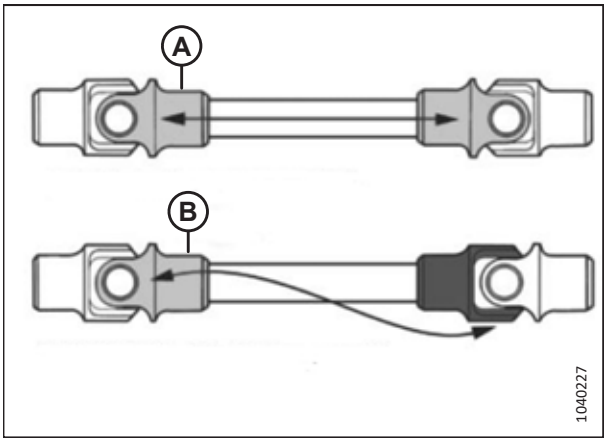


Figure 4.1: Driveshaft Phasing

A - Correct Phasing **B - Incorrect Phasing**

4.2 FM100 Feed Auger Configurations

The FM100 feed auger can be configured to suit various crop conditions. Reconfiguring the auger involves changing the spacing and the number of the flightings and fingers on the auger drum.

Narrow configuration is the standard configuration for the following combines:

- Gleaner® R6/75, R6/76, S6/77, S6/7/88, S96/7/8
- IDEAL™ 7/8/9/10
- New Holland CR 920/940/960, 9020/40/60/65, 6090/7090, 8060/8070/8080

Narrow configuration uses four long bolt-on flightings (two on the left and two on the right). 18 feed auger fingers are recommended for this configuration.

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.

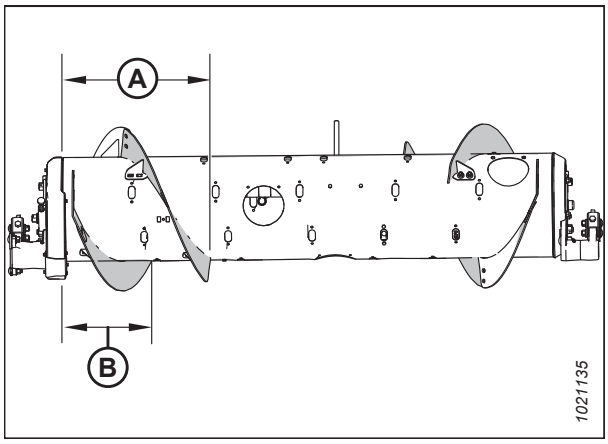


Figure 4.2: Narrow Configuration – Rear View

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

For more information on converting the feed auger to Narrow configuration, refer to *4.2.1 Narrow Configuration – Auger Flighting, page 342*.

Medium configuration is the standard configuration for the following combines:

- Case IH 2166; 2300/2500 Series
- Case IH 5/6/7088, 7/8010, 7/8/9120, 5/6/7130, 7/8/9230, 5/6/7140, 7/8/9240, 5/6/7150, 7/8/9250
- Challenger® 66/67/680B, 54/560C, 54/560E
- CLAAS 56/57/58/590R, 57/58/595R, 62/63/64/65/66/670, 73/74/75/76/77/780, 6000/7000/8000, Tucano
- Gleaner® A66/A76/A86
- IDEAL™ 9490X/6335C
- John Deere 95/96/97/9860, 95/96/97/9870, S65/66/67/68/690, T670, S76/77/78/790
- Massey Ferguson® 96/97/9895, 9520/40/60, 9545/65, 92/9380
- New Holland CR 970/980, 9070/9080, 8090/9090, X.90, X.80, 10.80/10.90
- New Holland CX 8X0, 80X0, 8.X0, 8080/8090
- Rostselmash 161; T500; Torum 760/780/785
- Versatile RT490

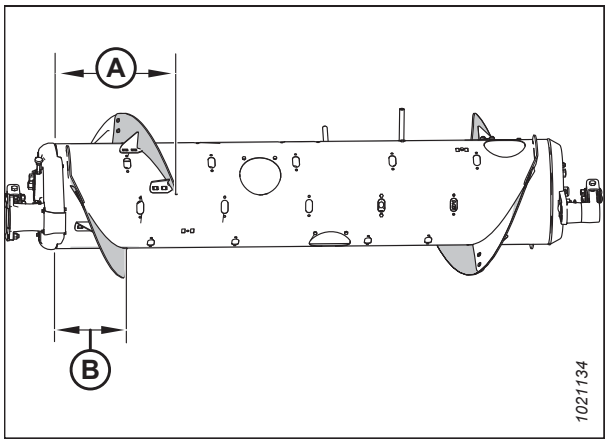


Figure 4.3: Medium Configuration – Rear View

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

Medium configuration is an optional configuration for IDEAL™ Series combines.

Medium configuration uses four short bolt-on flightings (two on the left and two on the right). 22 feed auger fingers are recommended for this configuration.

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.

For more information on converting the feed auger to Medium configuration, refer to *4.2.2 Medium Configuration – Auger Flighting, page 346*.

Wide configuration is an optional configuration for the following combines:

- Challenger® 670B/680B, 540C/560C, 540E/560E
- CLAAS 590R/595R, 660/670, 760/770/780, 6000/7000/8000
- John Deere T670
- Massey Ferguson® 9895, 9540, 9560, 9545, 9565, 9380
- New Holland CX 8X0, 80X0, 8.X0
- Rostselmash 161; T500; Torum 785

Wide configuration uses two short bolt-on flightings (one on the left and one on the right). 30 feed auger fingers are recommended for this configuration.

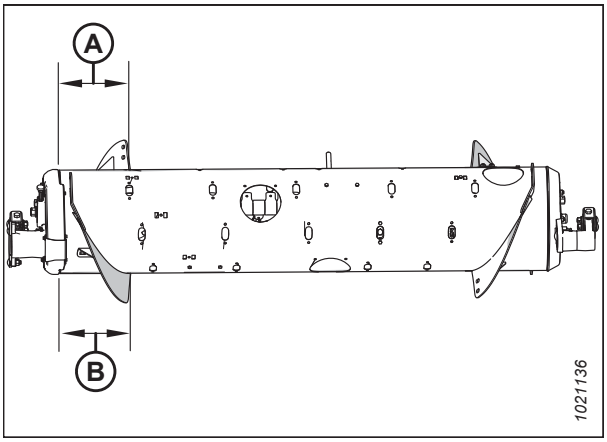


Figure 4.4: Wide Configuration – Rear View

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

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 the capacity of the combine on wide feeder house combines in certain crop conditions.

For more information on converting the feed auger to Wide configuration, refer to *4.2.3 Wide Configuration – Auger Flighting, page 349*.

Ultra Narrow configuration is an optional configuration that may improve feeding performance on combines with narrow feeder houses. It may also be helpful when harvesting rice.

Ultra Narrow configuration uses eight long bolt-on flightings (four on the left and four on the right). 18 auger fingers are recommended for this configuration.

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.

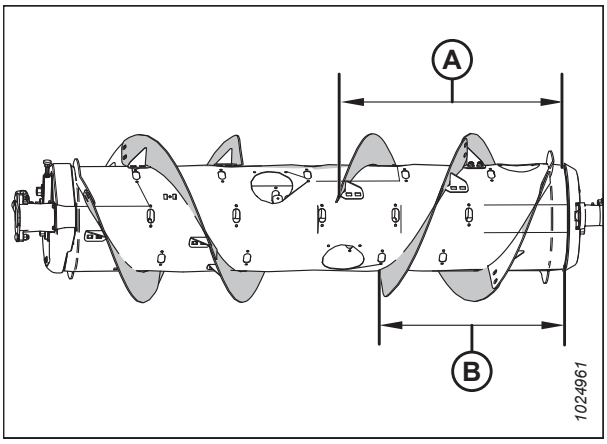


Figure 4.5: Ultra Narrow Configuration – Rear View

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

For more information on converting the feed auger to Ultra Narrow configuration, refer to *4.2.4 Ultra-Narrow Configuration – Auger Flighting, page 351*.

Ultra Wide configuration is an optional configuration for combines with wide feeder houses.

Ultra Wide configuration requires no bolt-on flighting; factory-welded flighting (A) is responsible for conveying the crop.

NOTE:

Converting the feed auger to this configuration may improve feeding for headers paired with combines which have wide feeder houses.

A total of 30 auger fingers is recommended for this configuration.

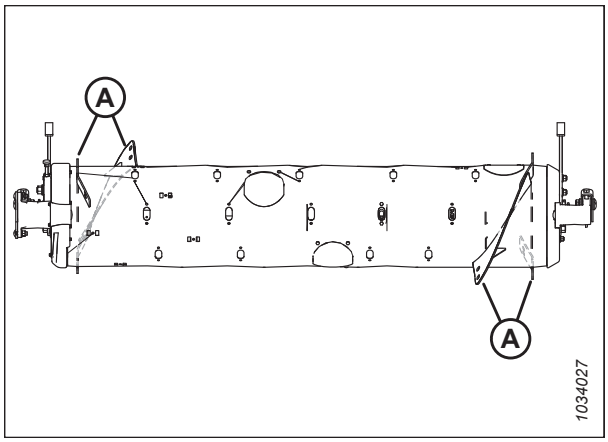


Figure 4.6: Ultra Wide Configuration – Rear View

For more information on converting the feed auger to Ultra Wide configuration, refer to *4.2.5 Ultra-Wide Configuration – Auger Flighting, page 355*.

4.2.1 Narrow Configuration – Auger Flighting

The narrow configuration uses four long bolt-on flightings (two on the left and two on the right). 18 auger fingers are recommended for this configuration.

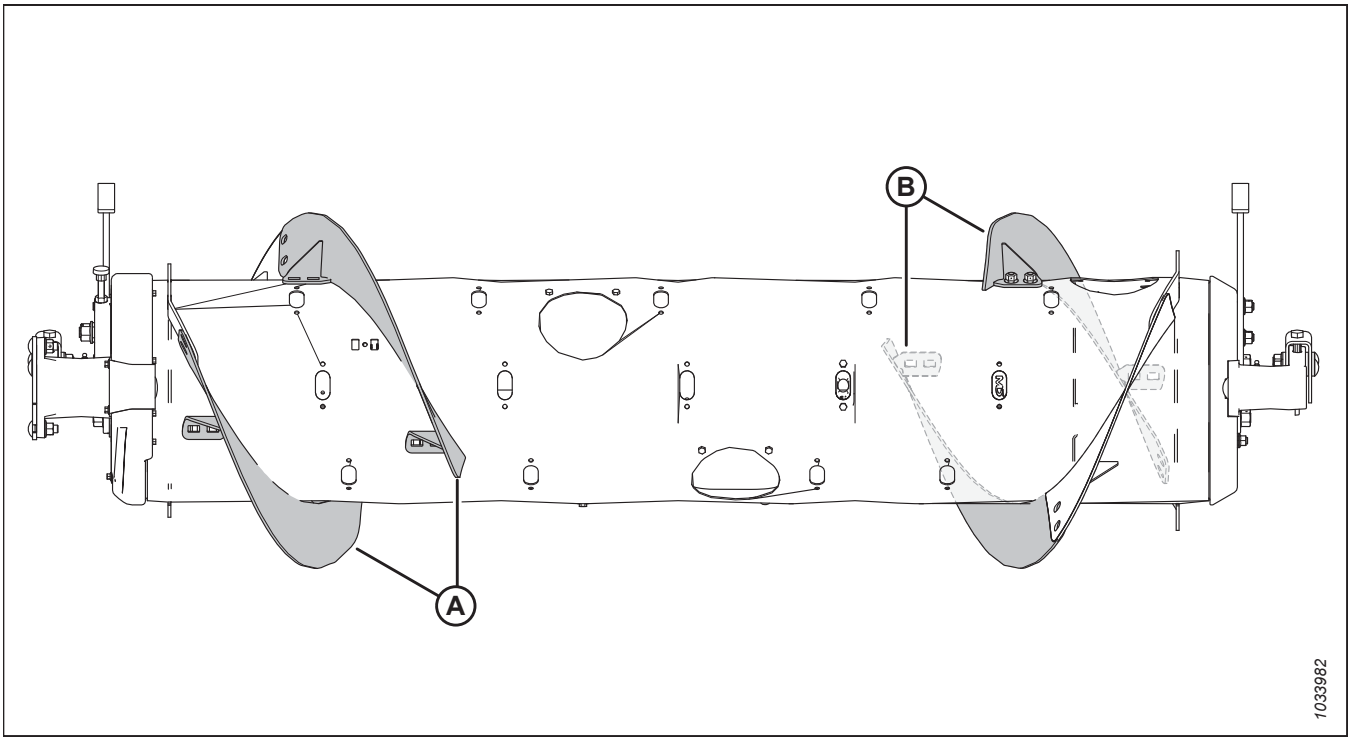


Figure 4.7: Narrow Configuration

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 *4.2.6 Removing Bolt-On Flighting, page 356*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

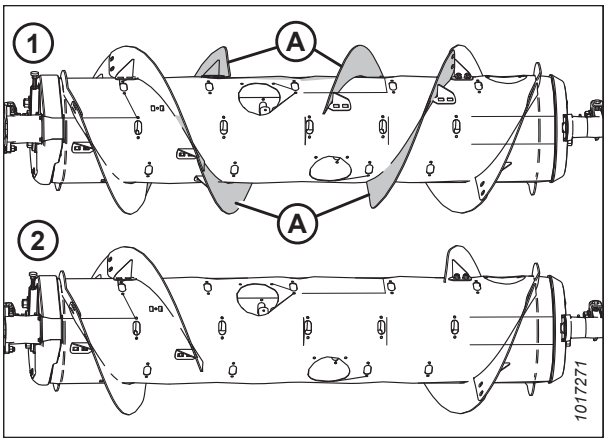


Figure 4.8: Auger Configurations – Rear View

1 - Ultra-Narrow Configuration **2 - Narrow Configuration**

To convert to Narrow Configuration from Medium, Wide, or Ultra-Wide Configuration:

One flighting kit (MD #B7345) is required. Replace any of short flightings (A) 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 equipment damage and to maximize the performance of the auger.

- For flighting replacement instructions, refer to *4.2.6 Removing Bolt-On Flighting, page 356* and *4.2.7 Installing Bolt-On Flighting, page 358*.
- For finger removal instructions, refer to *Removing Feed Auger Fingers, page 459*.

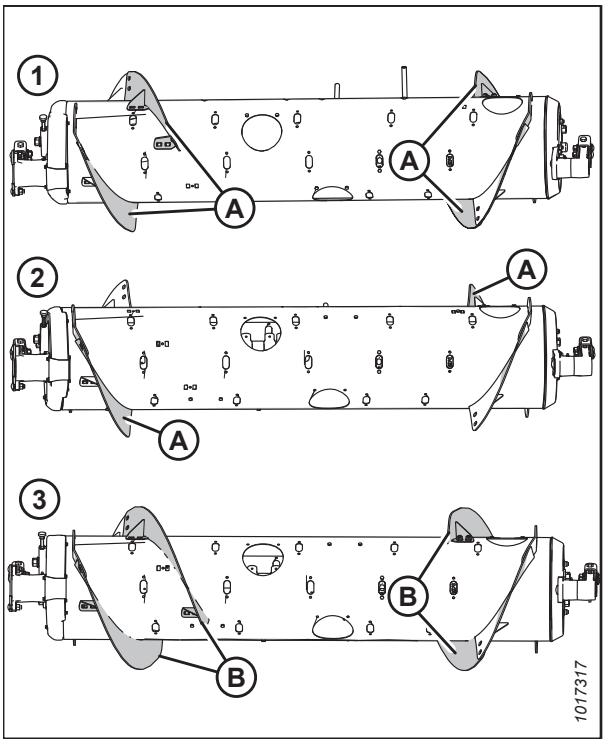


Figure 4.9: Auger Configurations – Rear View

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 factory-welded flighting (A).

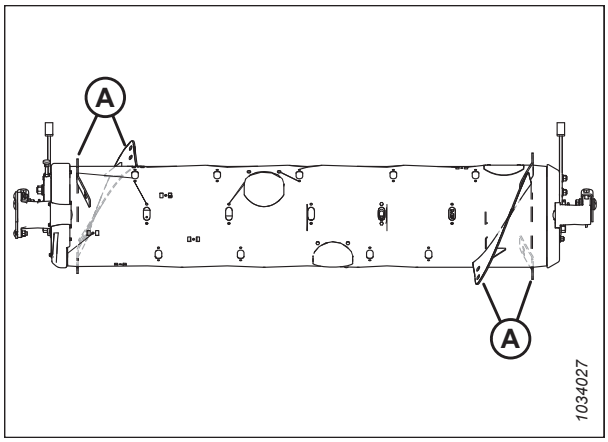


Figure 4.10: Ultra-Wide Configuration

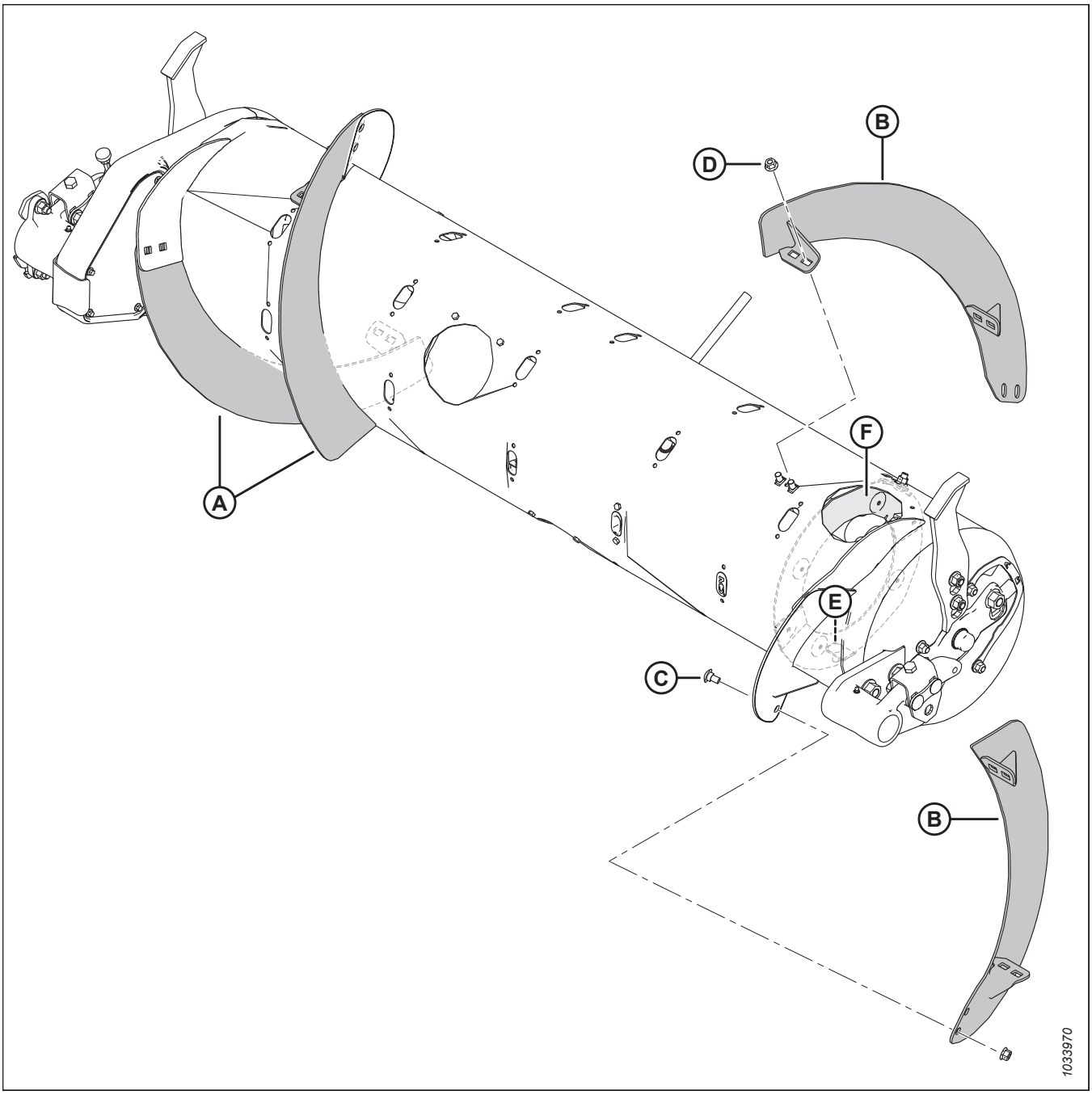


Figure 4.11: Narrow Configuration

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 - Existing M10 x 25 mm Carriage Bolt

F - Magnetic Reverser Shield

NOTE:

In the narrow configuration, one of two 25 mm bolts (E) is used to secure both the flighting and the reverser shield together. The second 25 mm bolt is used only on the reverser shield.

4.2.2 Medium Configuration – Auger Flighting

The medium configuration uses four short bolt-on flightings (two on the left and two on the right). 22 auger fingers are recommended for this configuration.

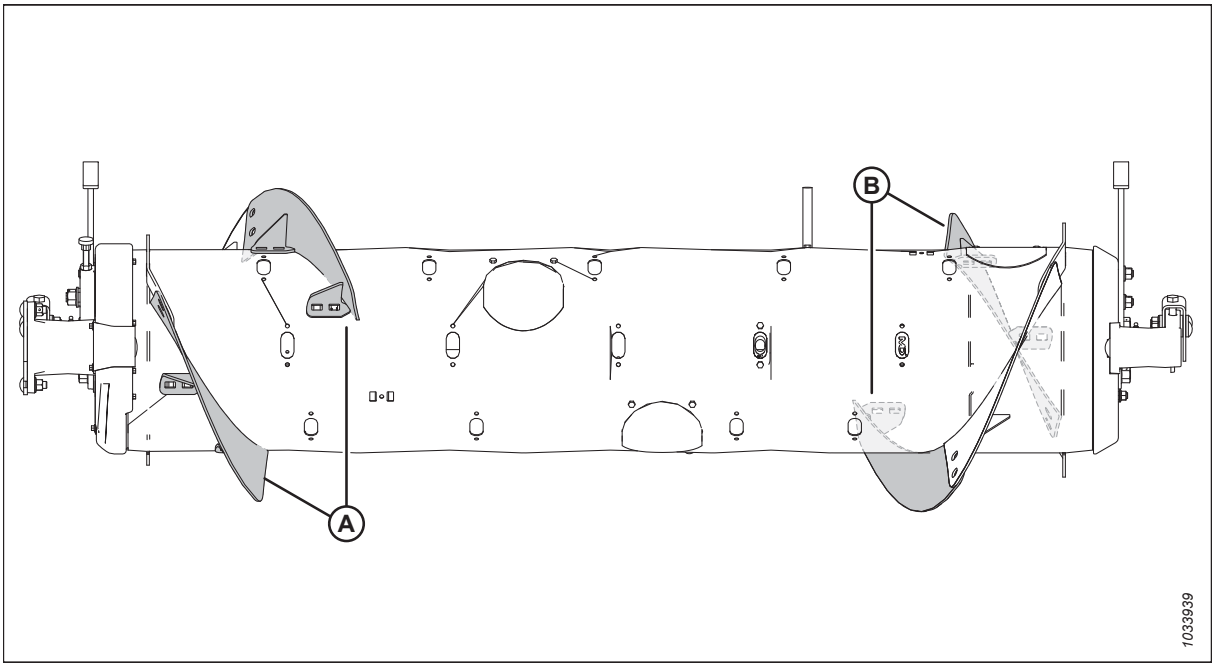


Figure 4.12: Medium Configuration

A - Left Short Flighting (MD #287888) **B - Right Short Flighting (MD #287887)**

To convert to Medium Configuration from Wide Configuration:

One flighting kit (MD #B7344) is required. 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 *4.2.7 Installing Bolt-On Flighting, page 358*.
- For finger removal instructions, refer to *Removing Feed Auger Fingers, page 459*.

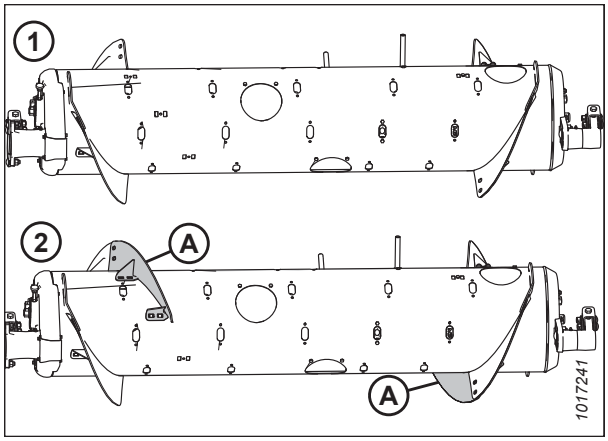


Figure 4.13: Auger Configurations – Rear View

1 - Wide Configuration **2 - Medium Configuration**

To convert to Medium Configuration from Narrow or Ultra-Narrow Configuration:

Three flighting kits (two MD #B7344 and one MD #B7343) are required. Replace long flightings (A)[47] 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 *4.2.6 Removing Bolt-On Flighting, page 356* and *4.2.7 Installing Bolt-On Flighting, page 358*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

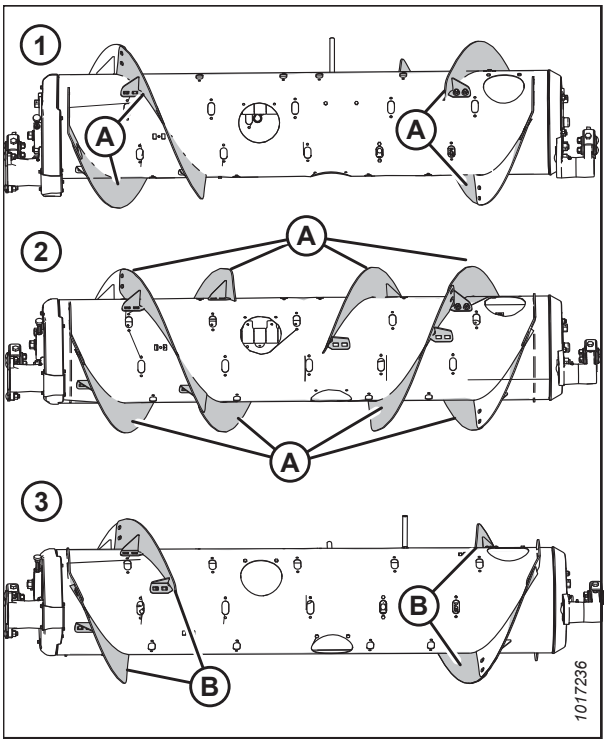


Figure 4.14: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Medium Configuration

47. The quantity of existing long flightings is either four or eight, depending on the current configuration.

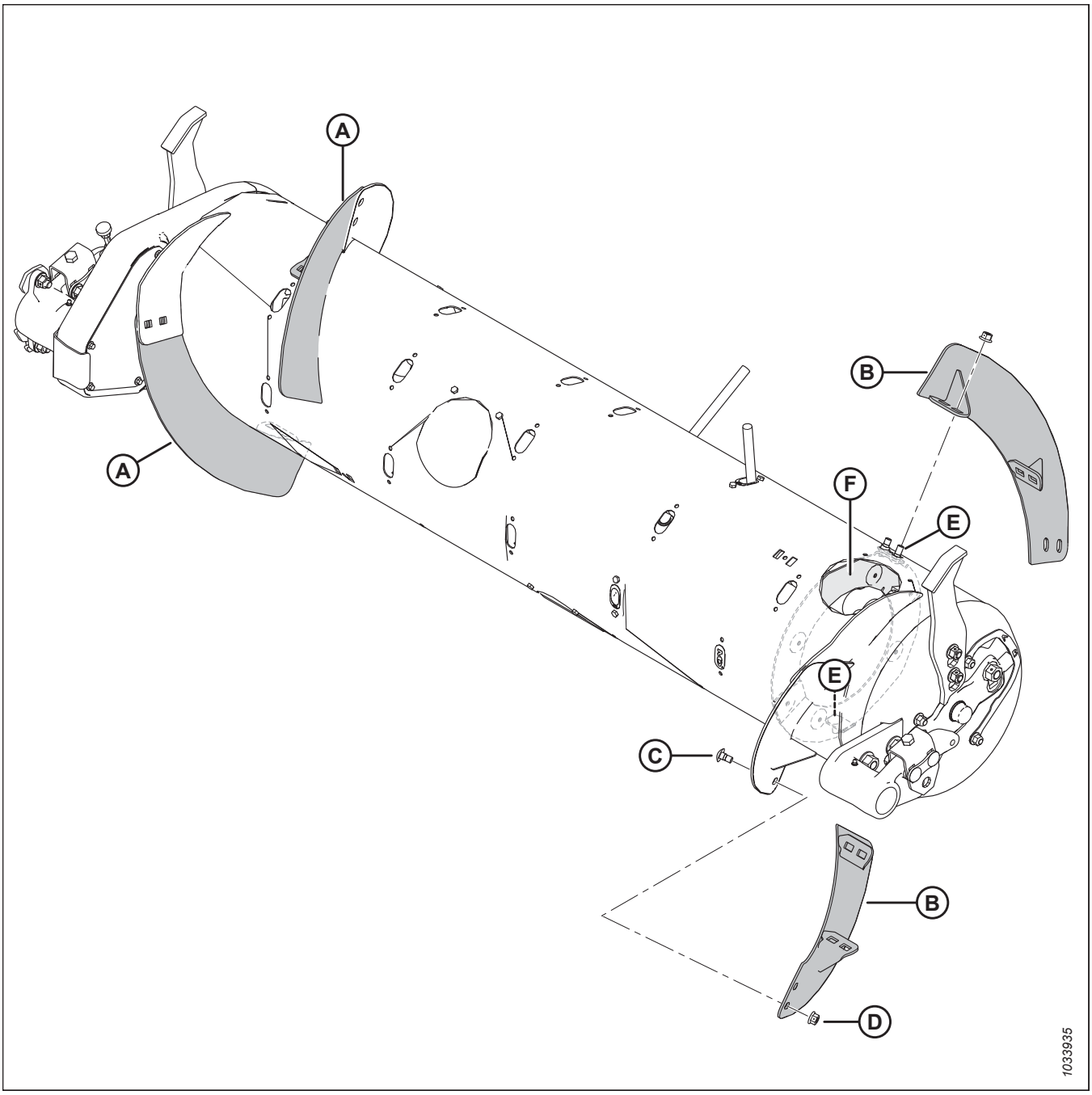


Figure 4.15: Medium Configuration

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)

E - Existing M10 x 25 mm Carriage Bolts

F - Magnetic Reverser Shield

NOTE:

In the medium configuration, use the existing 25 mm bolts to secure the flighting to the reverser shield at locations (E).

4.2.3 Wide Configuration – Auger Flighting

The wide configuration uses two short bolt-on flightings (one on the left and one on the right). 30 auger fingers are recommended for this configuration.

NOTE:

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

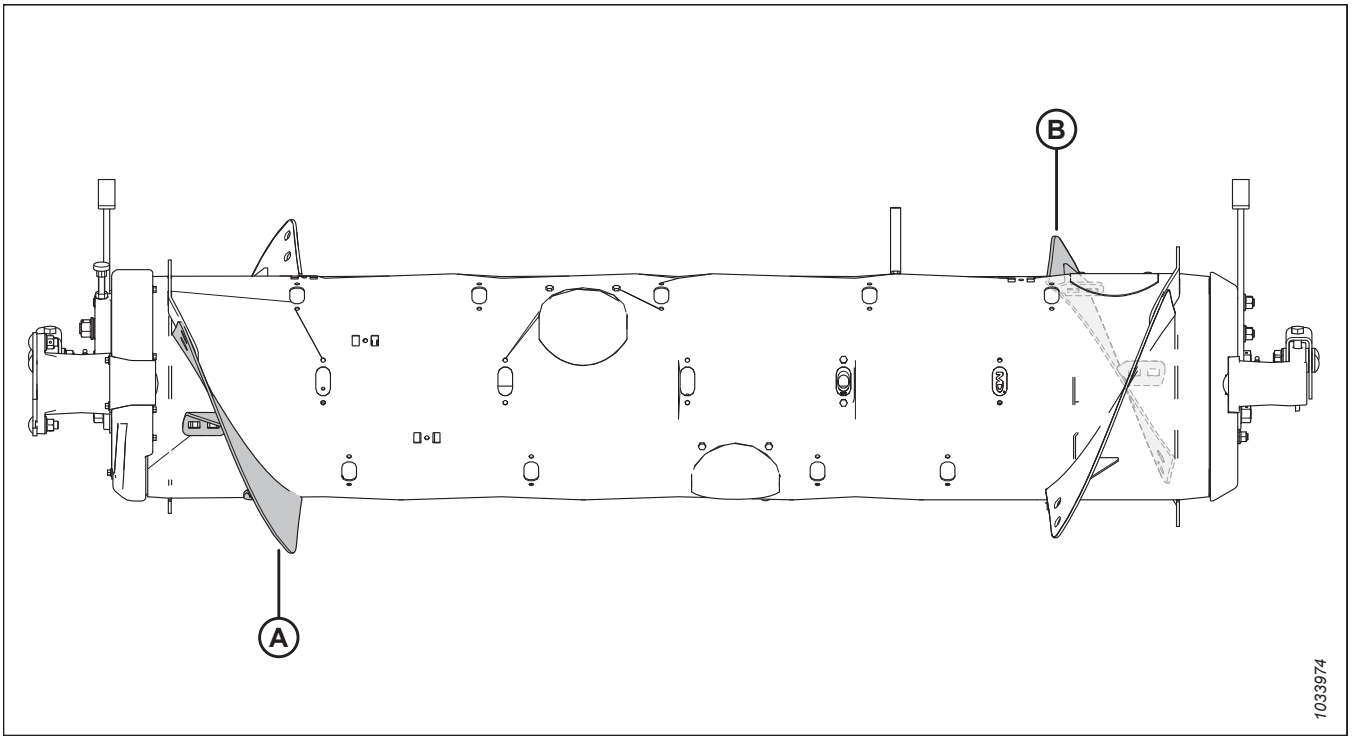


Figure 4.16: Wide Configuration

A - Left Short Flighting (MD #287888) **B - Right Short Flighting (MD #287887)**

To convert to Wide Configuration from Medium Configuration:

Two flighting kits (MD #B7343) are required. 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 *4.2.6 Removing Bolt-On Flighting, page 356*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

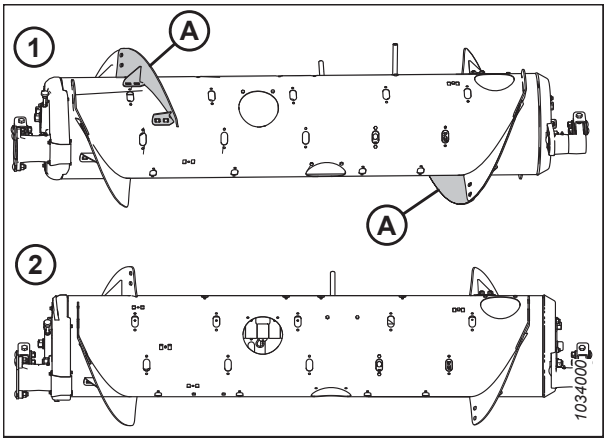


Figure 4.17: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**

To convert to Wide Configuration from Ultra Wide Configuration:

One flighting kit (MD B7344) is required. Install two short flightings onto existing welded flightings (A). A total of 30 auger fingers is recommended for this configuration.

- For flighting installation instructions, refer to *4.2.7 Installing Bolt-On Flighting, page 358*.
- If required to remove auger fingers, refer to *Removing Feed Auger Fingers, page 459*.

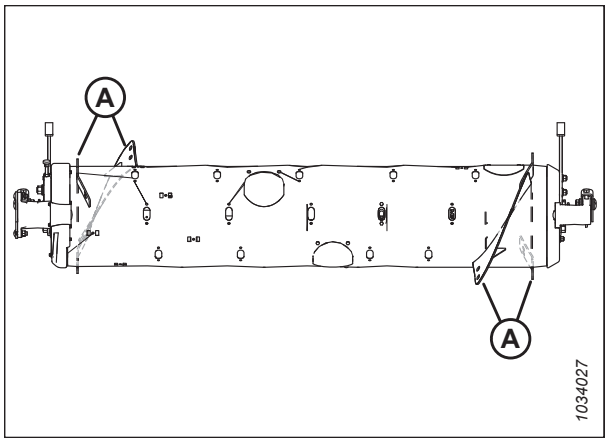


Figure 4.18: Ultra Wide Configuration

To convert to Wide Configuration from Narrow or Ultra-Narrow Configuration:

Four flighting kits (three MD #B7343 and one MD #B7344) are required. Replace existing long flightings (A)[48] 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 *4.2.6 Removing Bolt-On Flighting, page 356* and *4.2.7 Installing Bolt-On Flighting, page 358*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

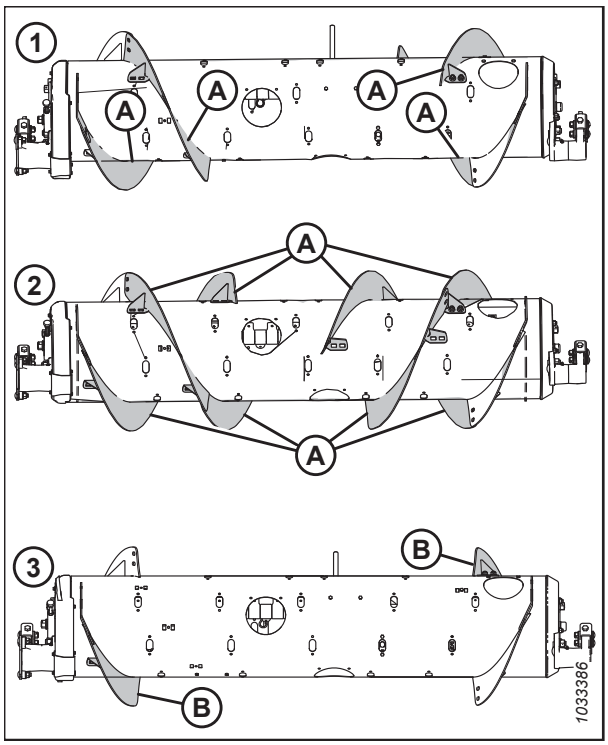


Figure 4.19: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Wide Configuration

48. The quantity of existing long flightings is either 4 or 8, depending on the current configuration.

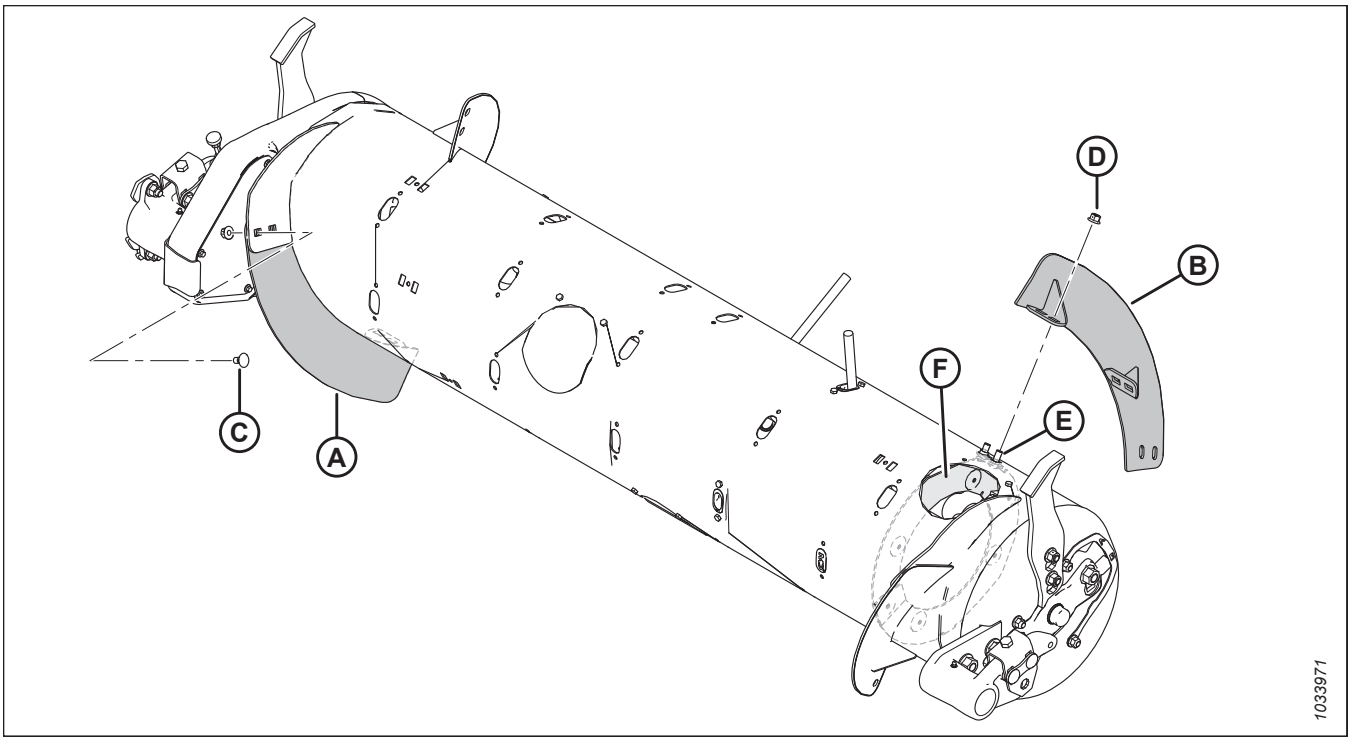


Figure 4.20: Wide Configuration

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)

E - Existing M10 x 25 mm Carriage Bolt

F - Magnetic Reverser Shield

NOTE:

In the wide configuration, one of the two existing 25 mm bolts (E) is used to secure both the flighting and reverser shield together. The second 25 mm bolt is used only on the reverser shield.

4.2.4 Ultra-Narrow Configuration – Auger Flighting

The ultra-narrow configuration uses eight long bolt-on flightings (four on the left and four on the right). 18 auger fingers are recommended for this configuration.

NOTE:

You will need to drill holes in the flighting and in the drum to install the four additional flightings.

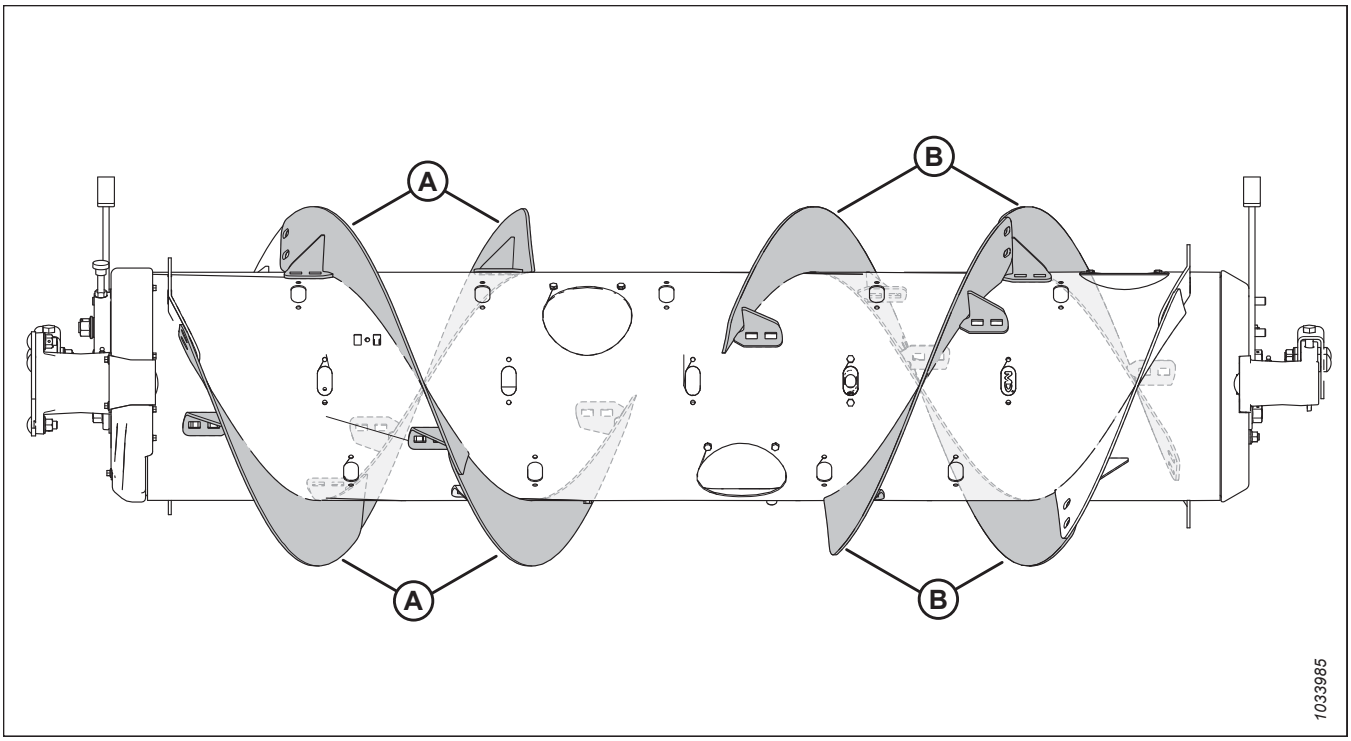


Figure 4.21: Ultra-Narrow Configuration

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 #B7345) 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 equipment damage and to maximize the performance of the auger.

- For flighting installation instructions, refer to *4.2.7 Installing Bolt-On Flighting, page 358*.
- To install the additional flightings that require hole drilling, refer to *4.2.8 Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 361*.

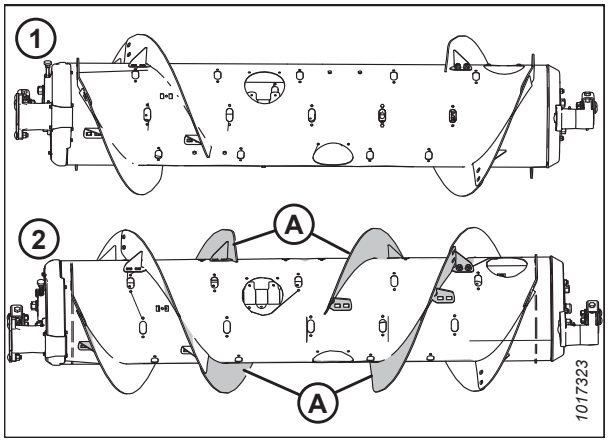


Figure 4.22: Auger Configurations – Rear View

1 - Narrow Configuration

2 - Ultra-Narrow Configuration

- For finger installation/removal instructions, refer to *Installing Feed Auger Fingers, page 462* and *Removing Feed Auger Fingers, page 459*.

To convert to Ultra-Narrow Configuration from Medium, Wide, or Ultra-Wide Configuration:

Two flighting kits (MD #B7345) and some hole-drilling are required to convert to this configuration.

Replace existing short flightings (A)[49] 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 equipment damage and to maximize the performance of the auger.

- For flighting replacement instructions, refer to *4.2.6 Removing Bolt-On Flighting, page 356* and *4.2.7 Installing Bolt-On Flighting, page 358*.
- To install the additional flightings that require hole drilling, refer to *4.2.8 Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 361*.
- For finger installation/removal instructions, refer to *Installing Feed Auger Fingers, page 462* and *Removing Feed Auger Fingers, page 459*.

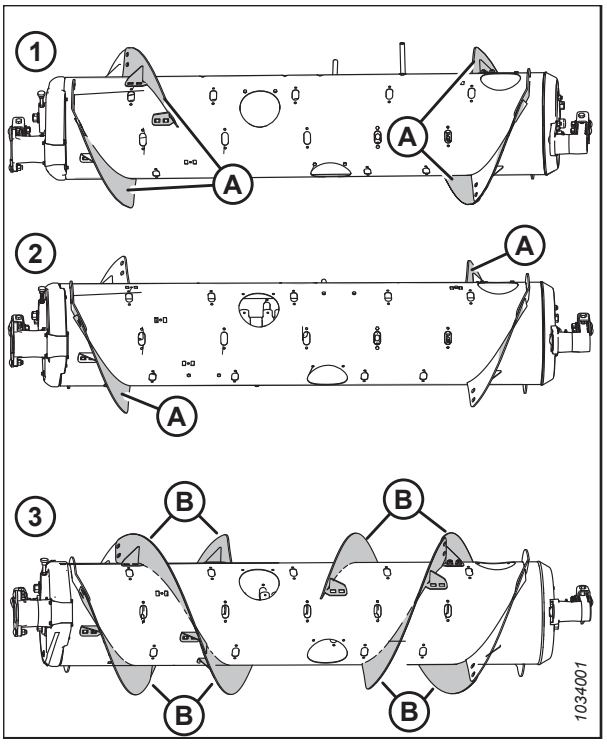


Figure 4.23: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Ultra-Narrow Configuration

NOTE:

If converting from the ultra-wide configuration, there is no existing bolt-on flighting to remove because that configuration uses only factory-welded flighting (A).

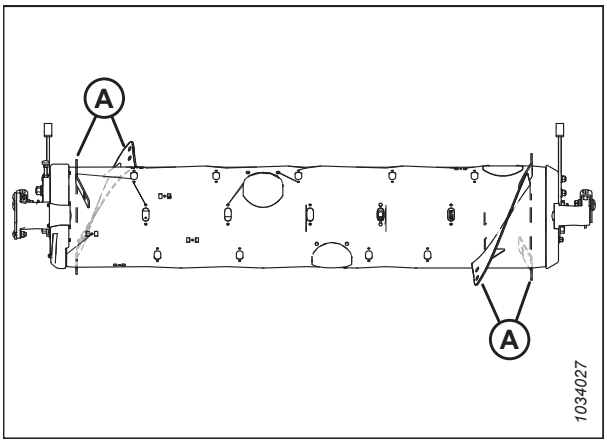


Figure 4.24: Ultra-Wide Configuration

49. The quantity of existing short flightings is either 0, 2, or 4, depending on the current configuration.

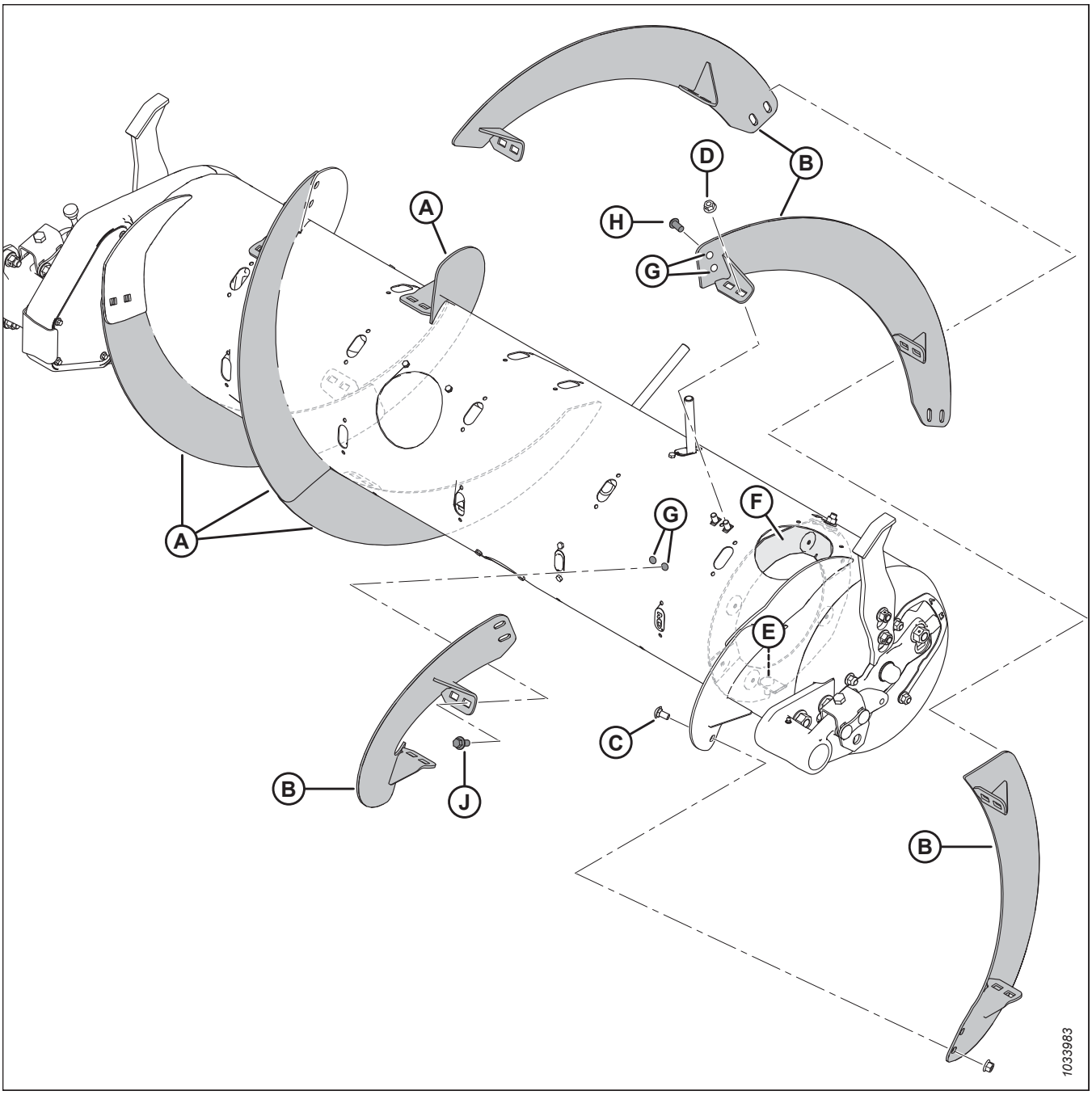


Figure 4.25: Ultra-Narrow Configuration

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 - Existing M10 x 25 mm Carriage Bolt
F - Magnetic Reverser Shield
G - Drilled Holes – 11 mm (7/16 in.) [50]
H - M10 x 20 mm Button Head Bolt (MD #135723)[51]
J - M10 x 20 mm Flange Head Bolt (MD #152655)[52]

50. Each of the four additional flightings require six drilled holes to install (four in the auger and two in the adjacent flighting).
51. Used on the holes drilled in the existing flighting.
52. Used on the holes drilled in the auger.

NOTE:

In the ultra-narrow configuration, one of two existing 25 mm bolts (E) is used to secure both the flighting and reverser shield together. The second 25 mm bolt is used only on the reverser shield.

4.2.5 Ultra-Wide Configuration – Auger Flighting

The 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.

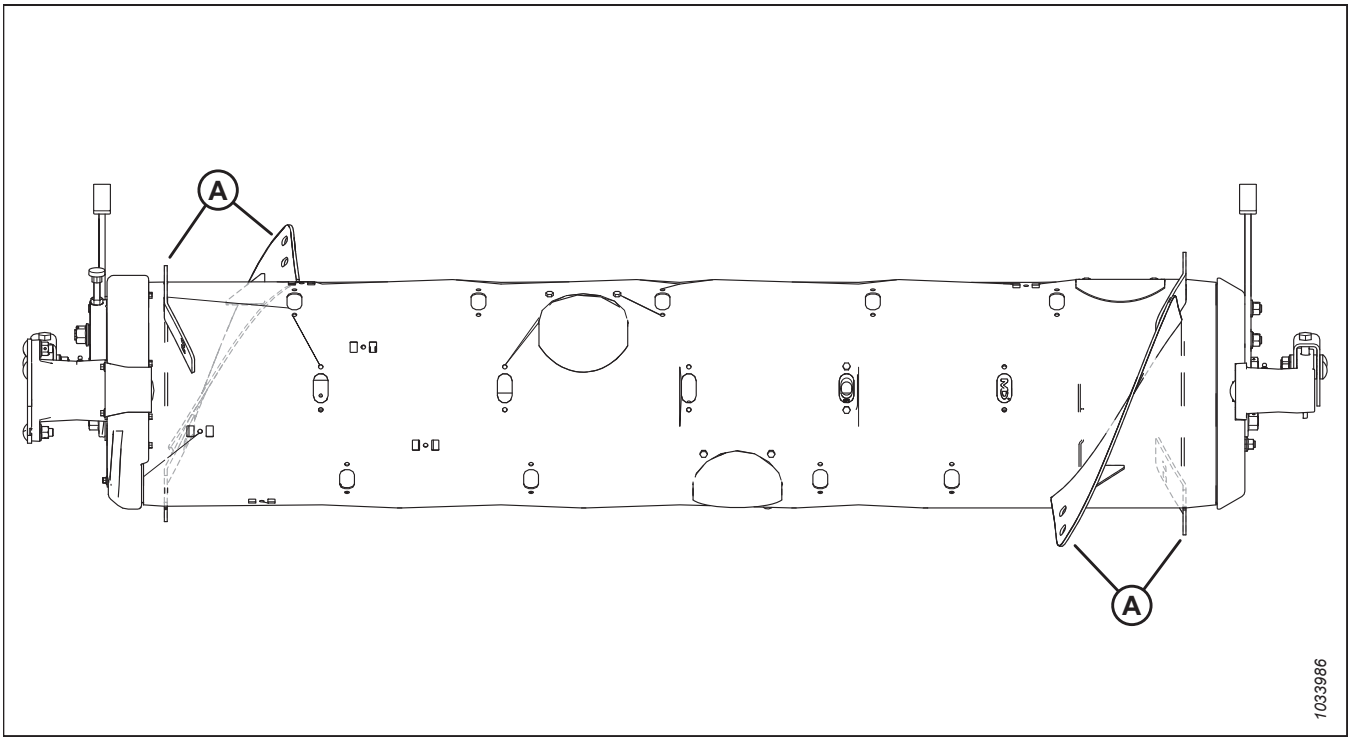


Figure 4.26: Ultra-Wide Configuration

A - Factory-Welded Flighting

To convert from Narrow or Ultra-Narrow configuration:

Three flighting kits (MD #B7343) are required. 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 *4.2.6 Removing Bolt-On Flighting, page 356*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

To convert from Medium configuration:

Two flighting kits (MD #B7343) are required. 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 *4.2.6 Removing Bolt-On Flighting, page 356*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

To convert from Wide configuration:

One flighting kit (MD #B7343) are required. 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 *4.2.6 Removing Bolt-On Flighting, page 356*.
- For finger installation instructions, refer to *Installing Feed Auger Fingers, page 462*.

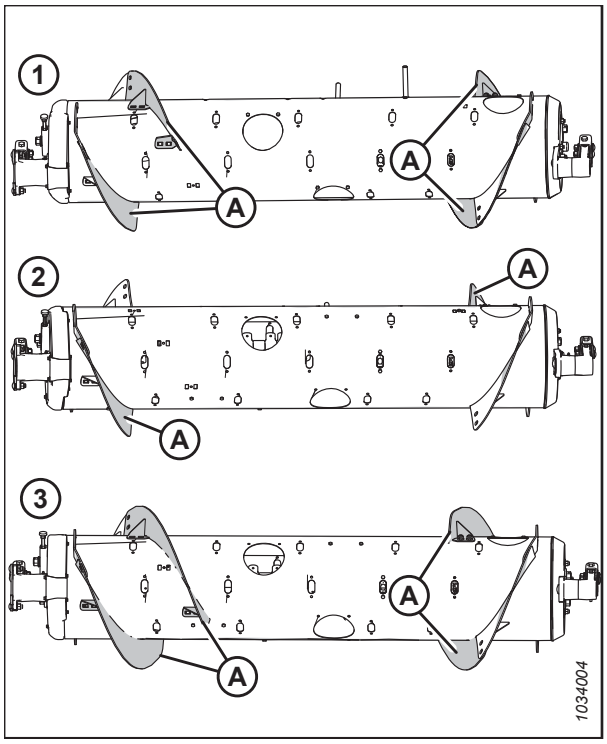


Figure 4.27: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Narrow Configuration

4.2.6 Removing Bolt-On Flighting

It may be necessary to remove bolt-on flighting from the float module's feed auger drum for replacement or to change the feed auger's configuration.

For information on the different flighting configurations, refer to *4.2 FM100 Feed Auger Configurations, page 340*.

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.

NOTE:

The illustrations in this procedure show the feed auger separated from the float module. However, this procedure can be performed with the feed auger installed in the float module.

1. Remove the float module from the combine.

2. Rotate the auger to gain access to bolts (A) on the right side of the auger.

3. Remove and retain bolts (A) and access cover (B). If necessary, remove multiple access covers.

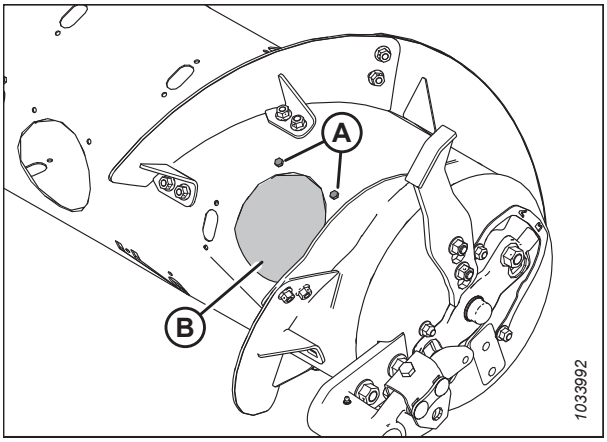


Figure 4.28: Auger Access Cover – Right Side

4. Remove bolts and nuts (B), and flighting (A). If flighting (A) is attached to magnetic reverser shield (D), retain the bolt and nut at location (C) to reattach reverser shield (D) to the auger after the flighting is removed.

   NOTE:

   Bolt (C) is longer than bolts (B).

   NOTE:

   Keep at least one side of the reverser shield attached to the drum if possible. A completely detached reverser shield is more difficult to reinstall, because the shield is magnetically attracted to the auger.

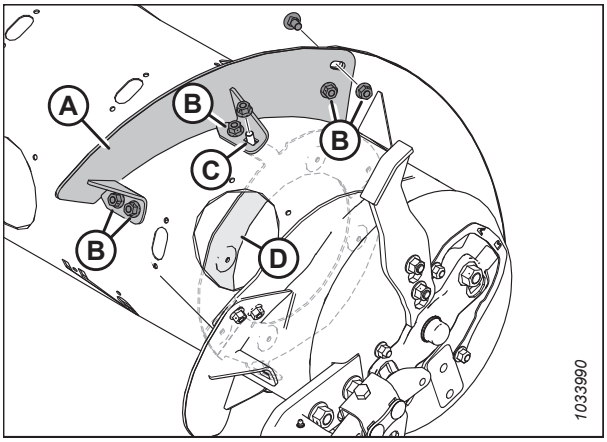


Figure 4.29: Short Flighting – Right Side

   NOTE:

   Long flighting (A) shown in this illustration **DOES NOT** attach to the reverser shield. The opposite long flighting **DOES** attach to the reverser shield at location (B).

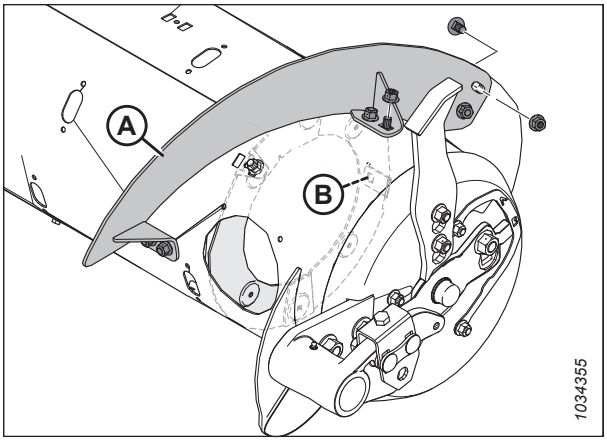


Figure 4.30: Long Flighting – Right Side

5. Install slot plug (A) with M6 bolt (B) and tee nut (C) at each location where the flighting was removed from the auger. Torque the hardware to 9 Nm (80 lbf·in).

   NOTE:

   If the plug bolts are **NOT** new, apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of the bolts before you install them.

   NOTE:

   Slot plugs are not required at locations where the reverser shield attaches to the auger.

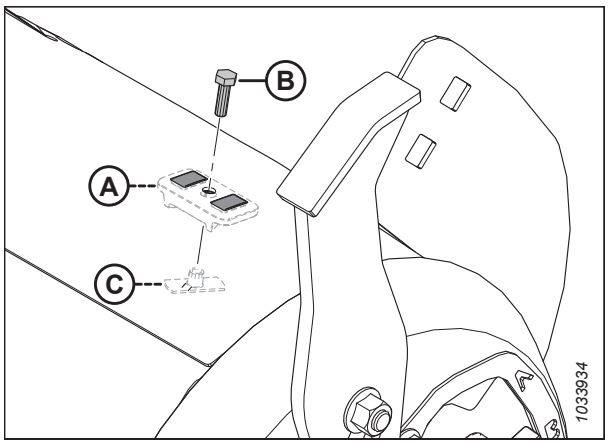


Figure 4.31: Installing Slot Plugs

6. Repeat Step *2, page 357* to Step *5, page 358* to remove flighting (A) from the left side of the auger.

   NOTE:

   References to the magnetic reverser shield do not apply to the left side.

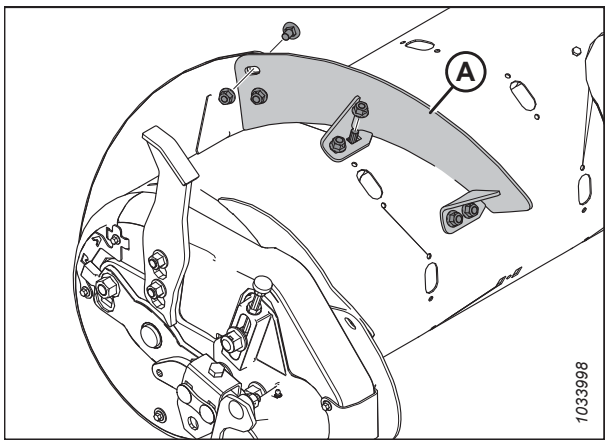


Figure 4.32: Short Flighting – Left Side

7. Reinstall access cover(s) (A). Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the threads of bolts (B). Secure the covers by installing retained bolts (B) into the welded nuts inside the auger. Torque the bolts to 9 Nm (80 lbf·in).

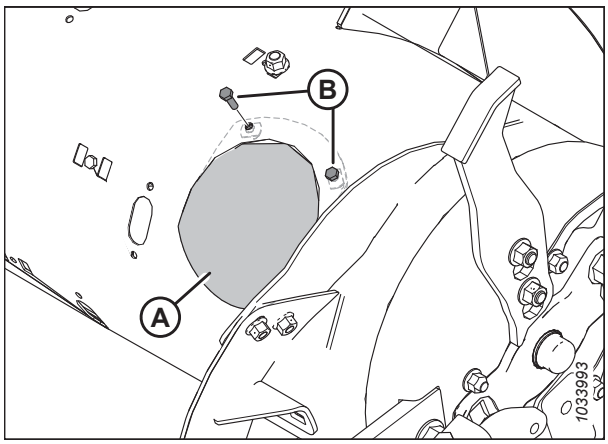


Figure 4.33: Access Cover – Right Side

4.2.7 Installing Bolt-On Flighting

Installing additional pieces of flighting onto the float module auger allows you to change the auger's configuration profile.

Before installing the bolt-on flighting, determine the quantity and type of flighting required. For information on the different flighting configurations, refer to *4.2 FM100 Feed Auger Configurations, page 340*.

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. To improve access, remove the float module from the combine.

   NOTE:

   All illustrations 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.

2. Rotate the auger as needed.

3. Remove and retain bolts (A) and access cover (B). If necessary, remove and retain additional access covers.

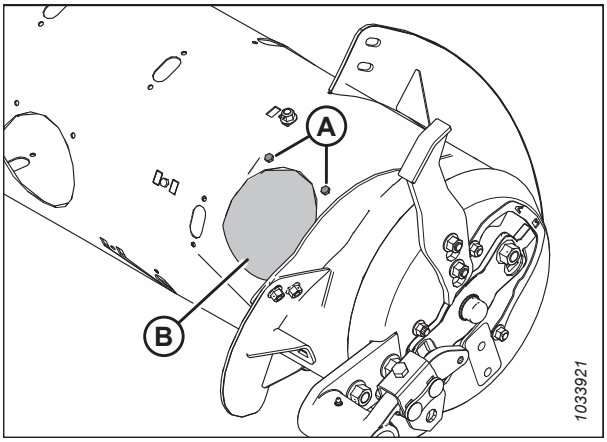


Figure 4.34: Auger Access Cover – Right

4. Line up new bolt-on flighting (A) in position to determine which slot plugs need to be removed from the auger. The new flighting overlaps on the outboard side of the adjacent flighting.

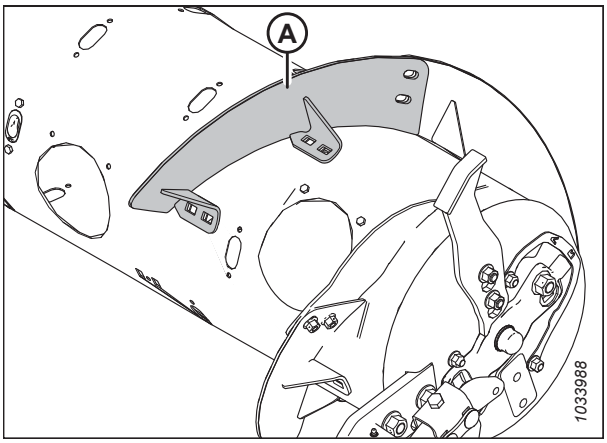


Figure 4.35: Right Side of the Auger

5. Remove applicable slot plugs(s) (A). If the new flighting will be installed at the same location where reverser shield (B) attaches to the auger, remove and retain hardware (C). The bolts that attach the reverser shield to the auger are slightly longer than the other flighting bolts.

   NOTE:

   When modifying or servicing the auger, keep at least one side of the reverser shield attached to the drum if possible. A completely detached reverser shield is more difficult to install because the shield is magnetically attracted to the auger.

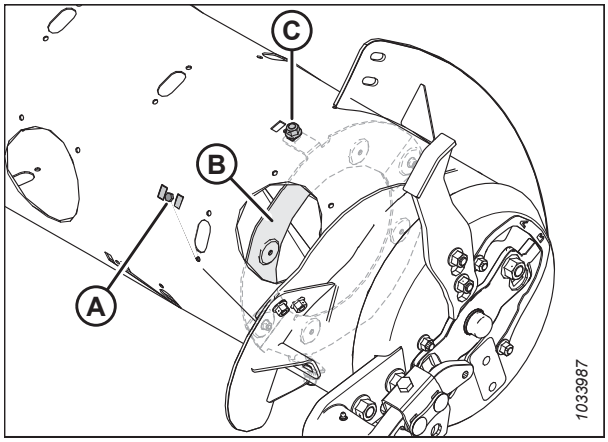


Figure 4.36: Right Side of the Auger

6. Install flighting (A) using M10 x 20 mm square neck carriage bolts and center lock nuts at locations (B). If the flighting attaches to reverser shield (D), install the longer M10 x 25 mm bolt and center lock nut at location (C) to secure the magnetic reverser shield to the auger and flighting.

   IMPORTANT:

   The bolt heads must be installed on the inside of the auger to prevent damage to 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.

7. Torque the six nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on the flighting, then retorque them to 61 Nm (45 lbf·ft).

   NOTE:

   Long flighting (A) shown in this illustration does not attach to the reverser shield. The opposite long flighting does attach to the reverser shield at location (B).

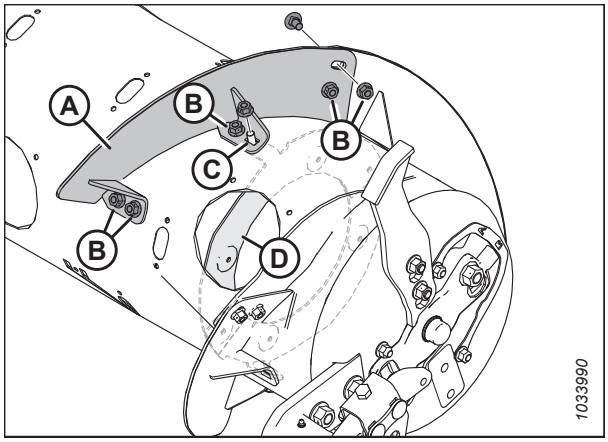


Figure 4.37: Short Flighting – Right

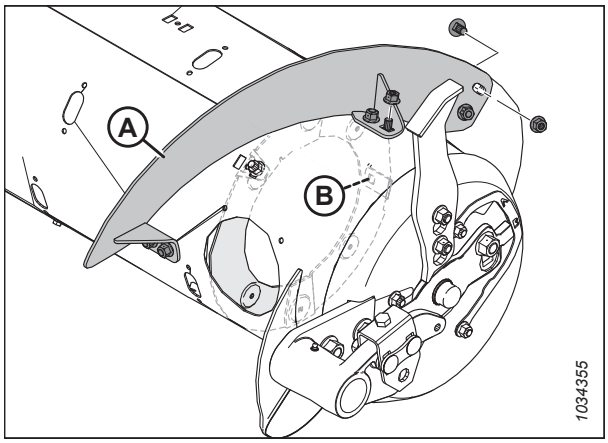


Figure 4.38: Long Flighting – Right

8. Repeat Step *2, page 359* to Step *7, page 360* to install flighting (A) on the left side of the auger. References to the magnetic reverser shield do not apply to the left side.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

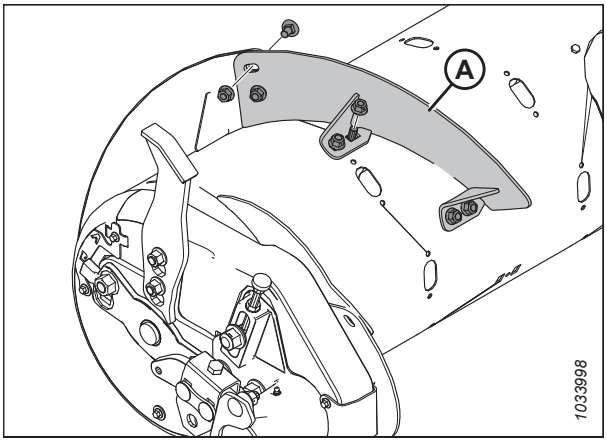


Figure 4.39: Short Flighting – Left

9. 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 them to 9 Nm (80 lbf·in).

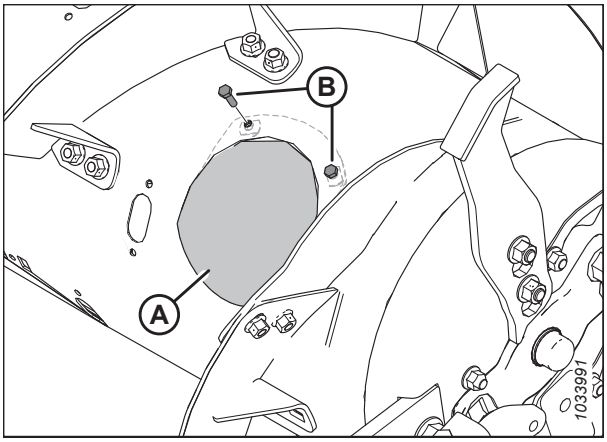


Figure 4.40: Access Cover – Right

10. If converting to Ultra Narrow Configuration and drilling is required to install the remaining flighting, proceed to *4.2.8 Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only, page 361*.

4.2.8 Installing Additional Bolt-On Flighting – Ultra Narrow Configuration Only

When converting to the Ultra Narrow Configuration, some hole-drilling is required to install the additional flighting.

NOTE:

This procedure assumes that the feed auger is currently in the Narrow Configuration (i.e. four long flightings [A] installed).

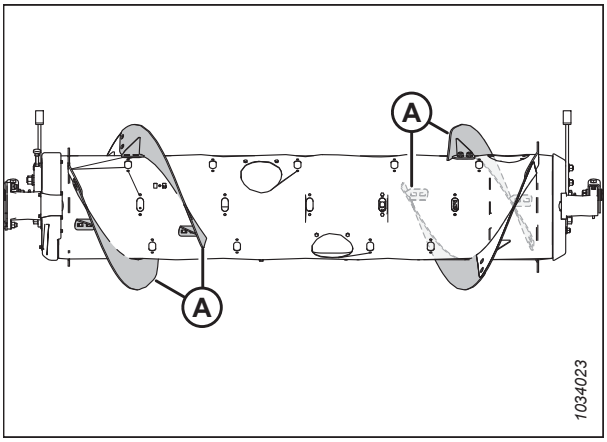


Figure 4.41: Narrow Configuration

To install the four additional long flightings for the Ultra Narrow Configuration, follow these 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.

1. To improve access and ease installation, remove the float module from the combine. For instructions, refer to the header operator's manual or technical manual.

   NOTE:

   All illustrations 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.

2. On the left side of the auger, rotate the auger so that the section of the drum where flighting (A) will be installed faces upward.
3. Place new flighting (A) outboard of flighting (B) on the left side of the auger, as shown.
4. Mark hole locations (C) onto flighting (B).
5. Remove the access cover nearest to flighting (B). Retain the hardware for reassembly.
6. Remove bolt-on flighting (B) from the auger. Retain the hardware for reassembly.

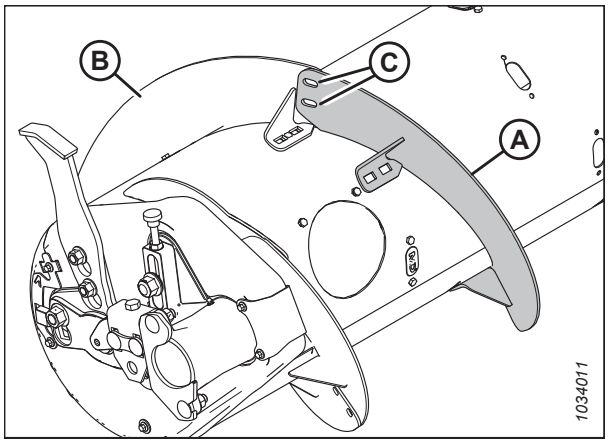


Figure 4.42: Left Side of Auger

7. Drill two 11 mm (7/16 in.) holes at marked locations (A) on the already-installed flighting.
8. Reinstall the bolt-on flighting.

   IMPORTANT:

   Ensure that the carriage bolt heads are on the inside of the auger to prevent damage to the auger's internal components.

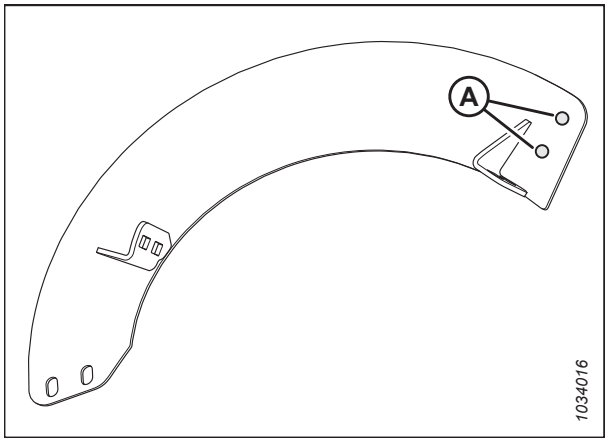


Figure 4.43: Drilling Locations

9. Place new flighting (A) into position on the auger, outboard of flighting (B).

10. Secure the flighting with two M10 x 20 mm button head bolts and center lock nuts (C).

    IMPORTANT:

    Ensure that the bolt heads are on the inboard side (that is, the crop-facing side) of the flighting, and that the nuts are on the outboard side of the flighting.

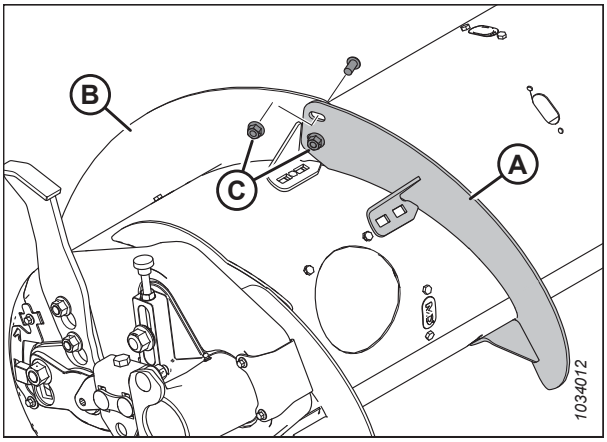


Figure 4.44: Left Side of Auger

11. Stretch flighting (A) to fit the auger tube as shown. Use the slotted holes on the flighting to achieve the best fit around the auger tube.

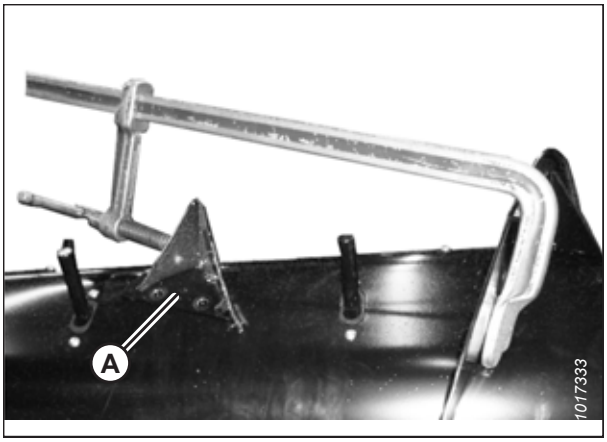


Figure 4.45: Auger Flighting – Stretched Axially

12. Scribe marks (A) through the bolt holes on the flighting.

13. Drill 11 mm (7/16 in.) holes in the auger tube at marks (A).

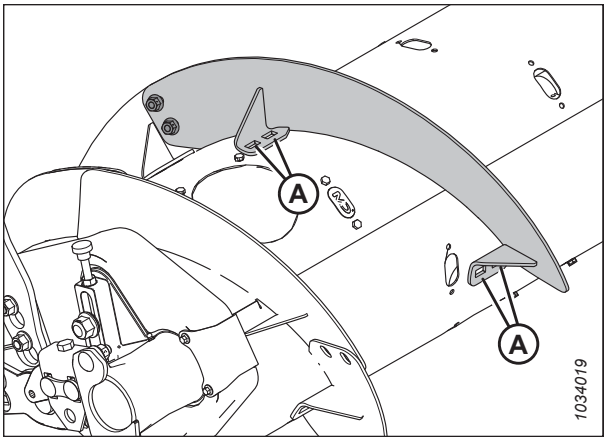


Figure 4.46: Auger Flighting – Left Side

14. Remove and retain nearest access cover(s) (B).

15. Secure the flighting to the auger at drilled holes (A) using four M10 x 20 mm flange head bolts and four center lock nuts.

16. Repeat Step *2, page 362* to Step *15, page 364* for the other flighting on the left side of the auger.

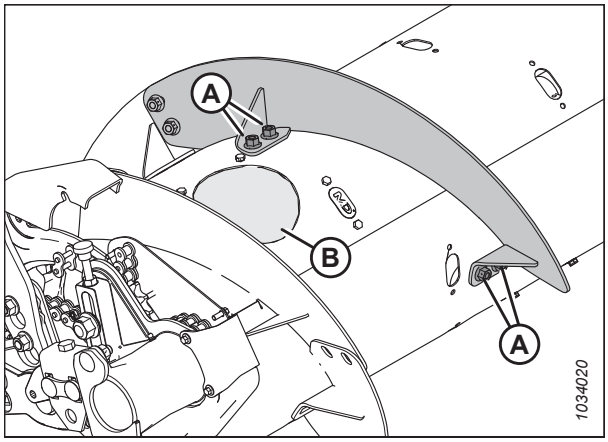


Figure 4.47: Auger Flighting – Left Side

17. Repeat Step *2, page 362* to Step *15, page 364* for both flightings on the right side of the auger.

    NOTE:

    One of flightings (A) on the right side attaches to magnetic reverser shield (C) with bolt (B). Bolt (B) is longer than the other flighting bolts and must be reused at the same location when reattaching the flighting and reverser shield to the auger.

    NOTE:

    When modifying or servicing the auger, keep at least one side of the reverser shield attached to the drum if possible. A completely detached reverser shield is more difficult to install because the shield is magnetically attracted to the auger.

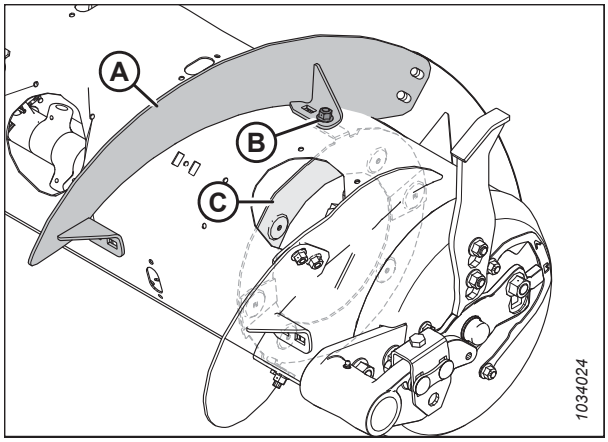


Figure 4.48: Auger Flighting – Right Side

18. Torque all flighting nuts and bolts first to 47 Nm (35 lbf·ft) to eliminate any deflection on the flighting, and then torque the nuts and bolts again to 61 Nm (45 lbf·ft).

    NOTE:

    Flighting performs best when no gaps are present between the flighting and the auger drum. Silicone sealant can be used to fill any gaps.

19. Add or remove auger fingers as necessary to optimize feeding for your combine and crop conditions. For instructions, refer to *Installing Feed Auger Fingers, page 462* or *Removing Feed Auger Fingers, page 459*.

20. If you are not adding or removing any auger fingers, reinstall all access covers and secure them with the retained hardware. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads and torque the hardware to 9 Nm (80 lbf·in).

4.3 FM100 Setup

Refer to this section for information on the recommended settings for your particular model of combine. The recommended settings vary according to the type of crop being harvested and the harvesting conditions.

If feeding problems develop with the float module, refer to Chapter *7 Troubleshooting, page 607*.

4.3.1 Auger Flighting

The auger flighting on the FM100 can be configured for particular harvesting and crop conditions.

For instructions, refer to *4.2 FM100 Feed Auger Configurations, page 340* for combine/crop specific configurations.

4.3.2 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 *5.15 Stripper Bars, page 519*.

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

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

4.4.1 Attaching Header to Challenger®, Gleaner®, or Massey Ferguson® Combines

Physically attach the float module to the combine before connecting the multicoupler and driveline.

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

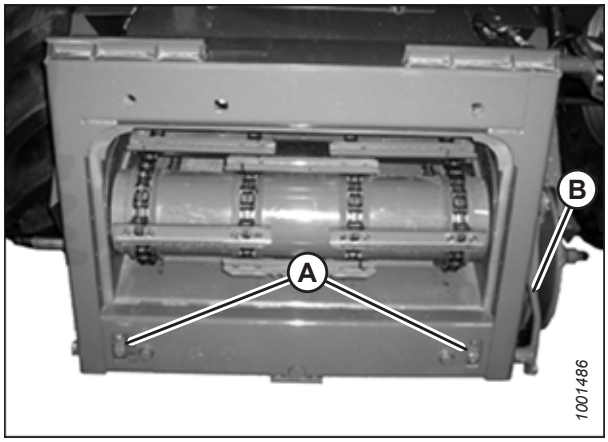


Figure 4.49: Feeder House

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine and slowly approach the header until the feeder house is directly under float module top cross member (A) and alignment pins (C) (refer to Figure *4.51, page 367*) on the feeder house are aligned with holes (B) in the float module frame.

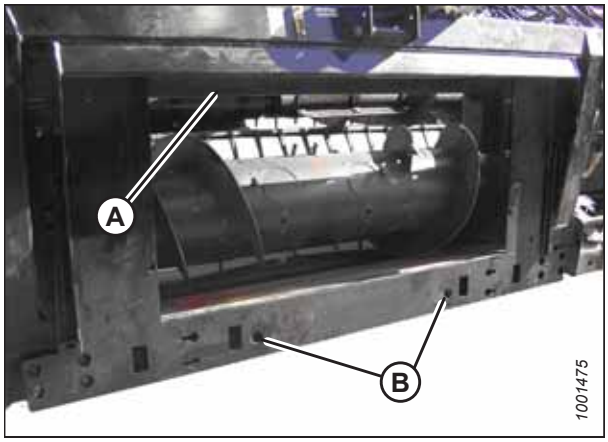


Figure 4.50: Float Module

NOTE:

Your combine feeder house may not be exactly as shown.

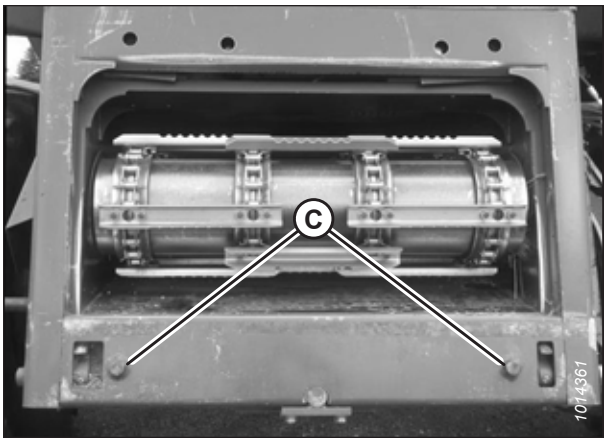


Figure 4.51: Alignment Pins

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

Figure 4.52: Feeder House and Float Module

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

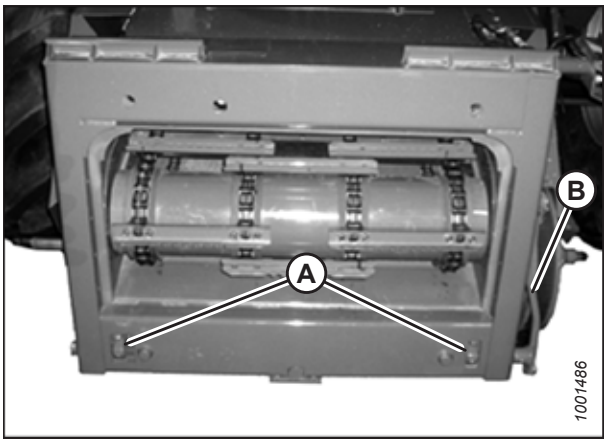


Figure 4.53: Feeder House

DANGER

Ensure that all bystanders have cleared the area.

7. Start the engine. For instructions, refer to the combine operator's manual.
8. Lower the header fully.

NOTE:

The float module is equipped with a multicoupler that connects to the combine. If your combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *4.1, page 368* for a list of kits and installation instructions that are available through your combine Dealer.

Table 4.1 Multicoupler Kits

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

9. 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 on the right side of the header; the float lock on the left side is similar.

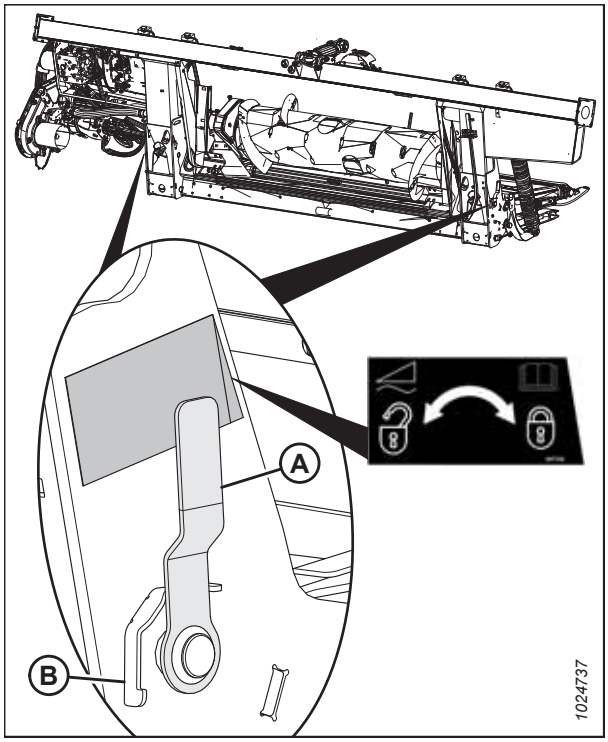


Figure 4.54: Float Lock Handle

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

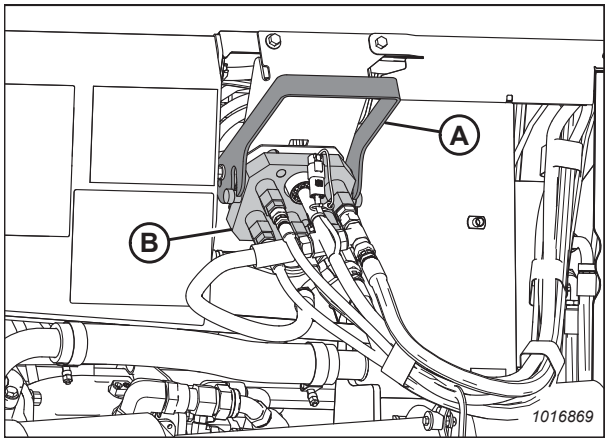


Figure 4.55: Float Module Multicoupler

11. Push handle (A) on the combine to the fully-open position.
12. Clean the mating surfaces of multicoupler (B) and the receptacle if necessary.

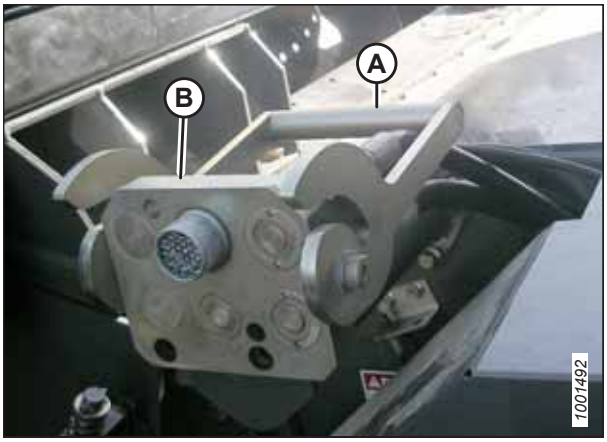


Figure 4.56: Combine Receptacle

13. Position multicoupler (A) onto the combine receptacle, and pull handle (B) to fully engage the multicoupler into the receptacle.
14. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).

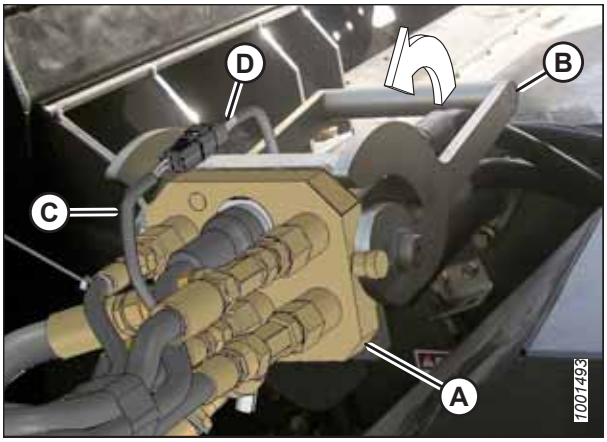


Figure 4.57: Multicoupler

15. Detach safety chain (C) from support bracket (B).
16. Pull collar (D) back to release driveline (A) from the support bracket. Remove the driveline from the support bracket.

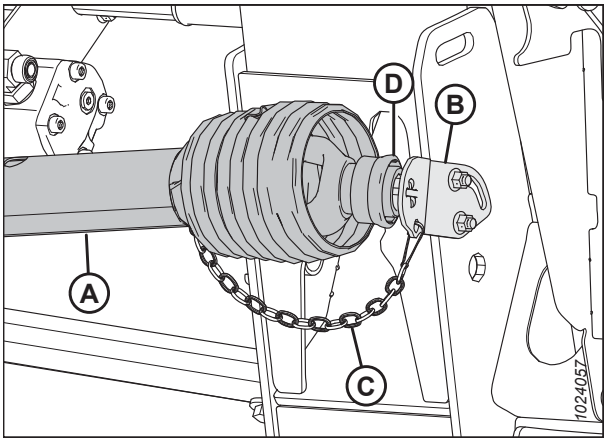


Figure 4.58: Driveline

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

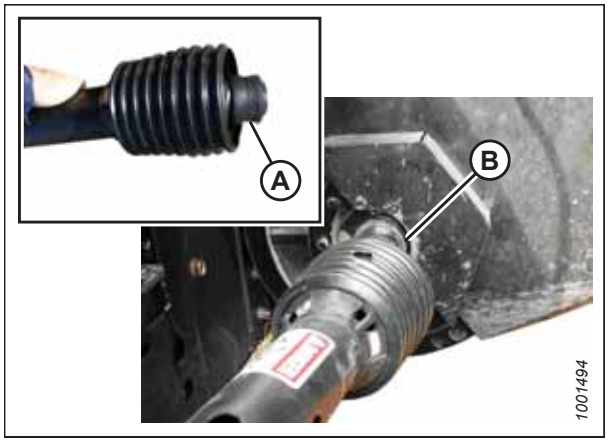


Figure 4.59: Driveline

4.4.2 Detaching Header from Challenger®, Gleaner®, or Massey Ferguson® 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 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.

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

   IMPORTANT:

   If transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.

3. 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 on the right side of the header; the float lock on the left side is similar.

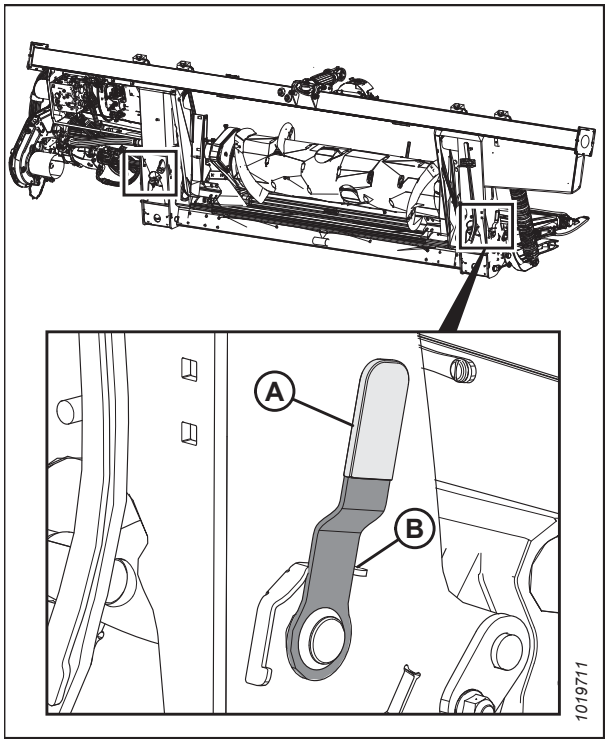


Figure 4.60: Float Lock Handle – Right Side

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

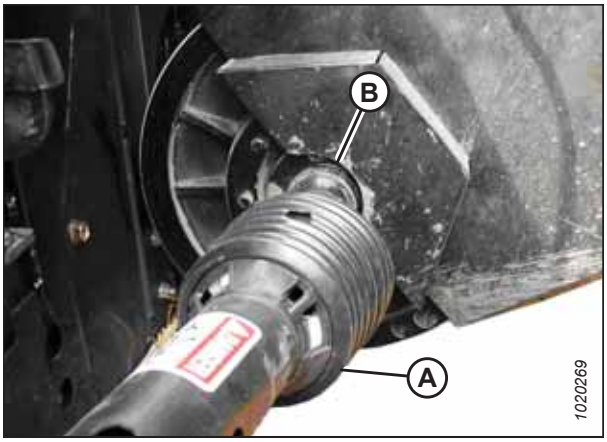


Figure 4.61: Driveline

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

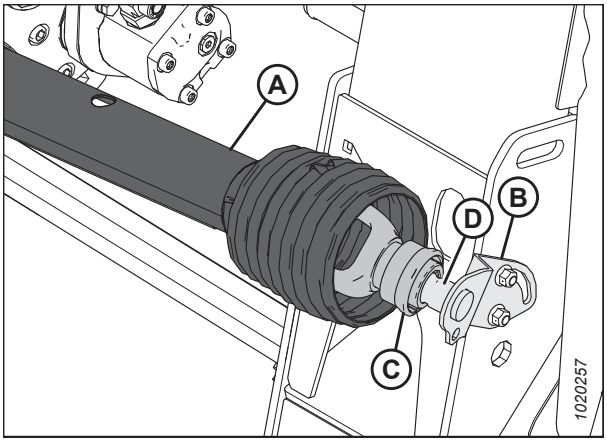


Figure 4.62: Driveline

6. Disconnect the harness at connector (A).
7. Move handle (B) on the combine multicoupler to the fully open position to release multicoupler (C) from the combine.

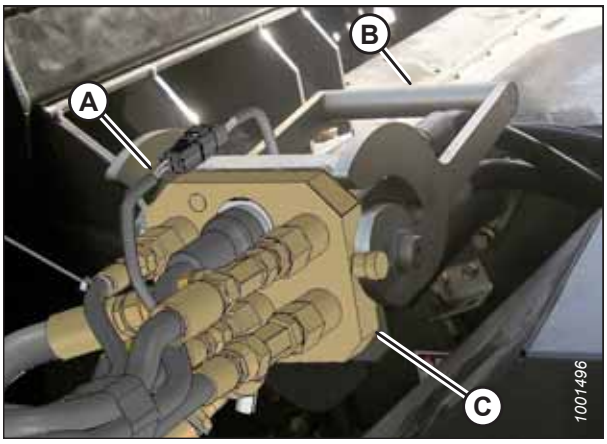


Figure 4.63: Multicoupler

8. Raise handle (A) on the float module, and place multicoupler (B) on the float module receptacle.
9. Lower handle (A) to lock multicoupler (B).

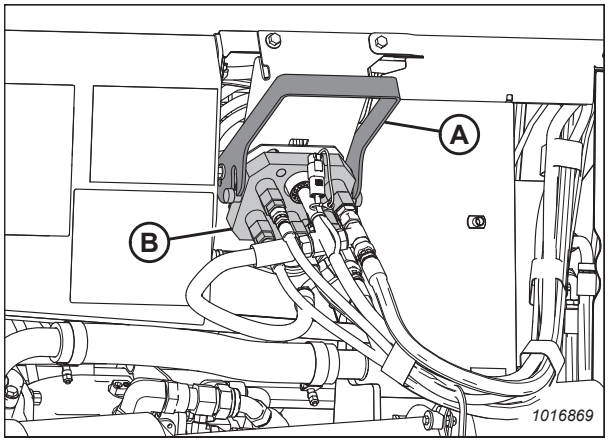


Figure 4.64: Float Module Multicoupler

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

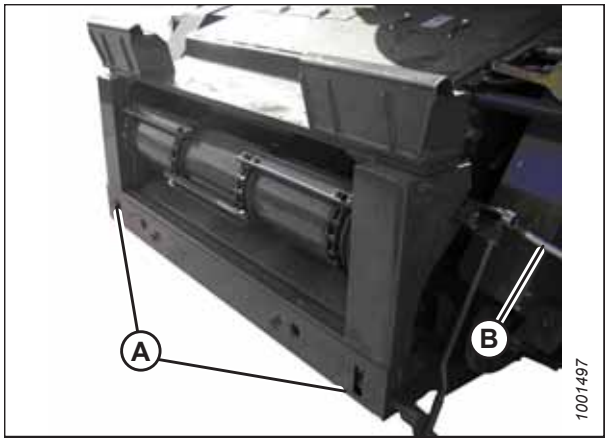


Figure 4.65: Challenger® and Massey Ferguson®

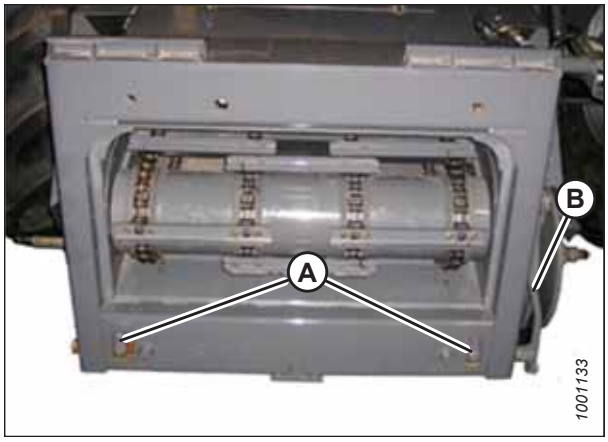


Figure 4.66: Gleaner® R and S Series

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

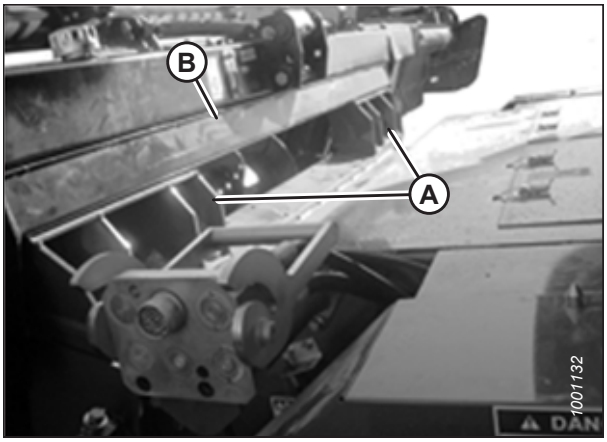


Figure 4.67: Float Module on Combine

4.5 IDEAL™ Series Combines

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

4.5.1 Attaching Header to IDEAL™ Series Combine

Physically attach the float module to the combine before connecting the multicoupler and driveline.

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.

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.

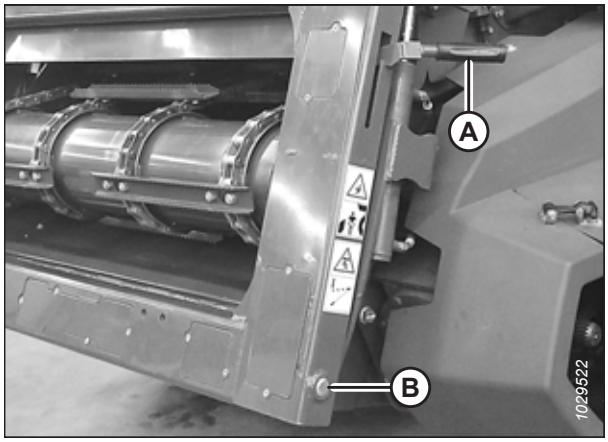


Figure 4.68: Feeder House

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine. For instructions, refer to the combine operator's manual.
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.

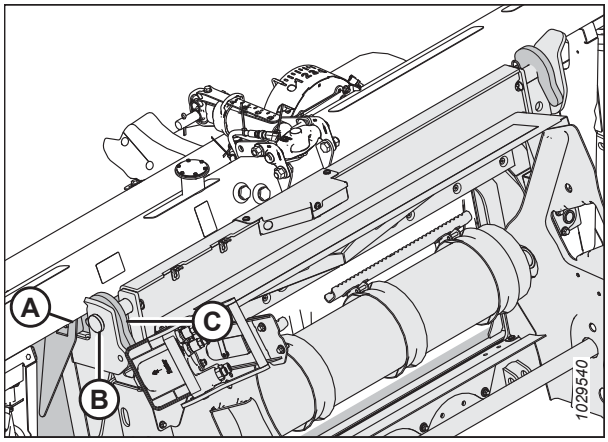


Figure 4.69: Feeder House

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).

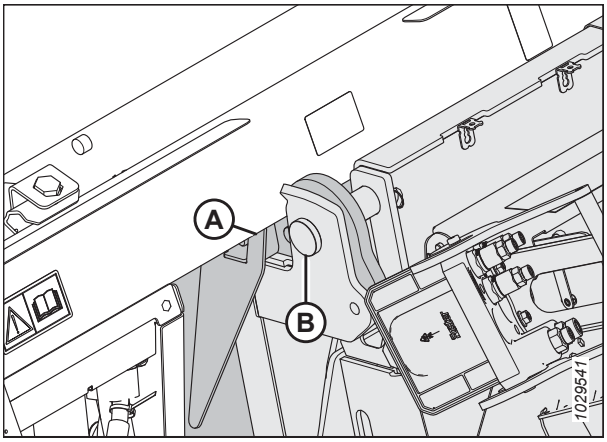


Figure 4.70: Top Beam Resting on Feeder House

6. Position the bottom of the feeder house so that locking pins (B) align with the holes in mount (C).
7. Push lever (A) down to extend locking pins (B) so they engage in mount (C).

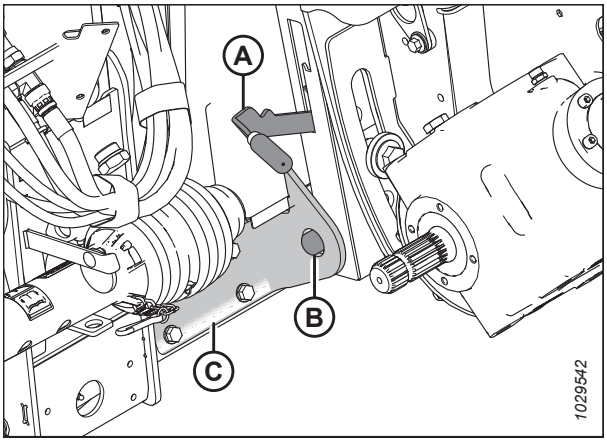


Figure 4.71: Feeder House Locking Pins

8. Rotate lock disc (A) upward and remove driveline (B) from the support.

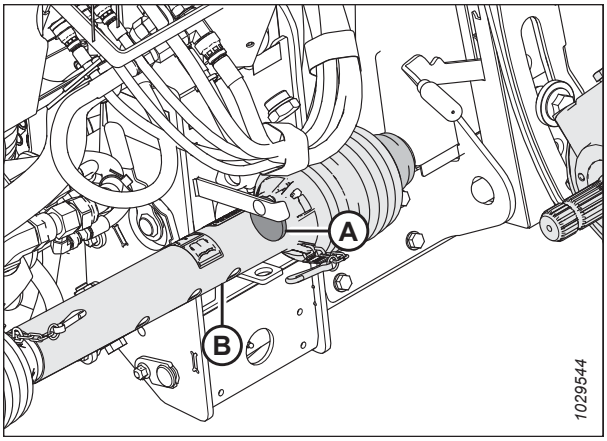


Figure 4.72: Driveline in Storage Position

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

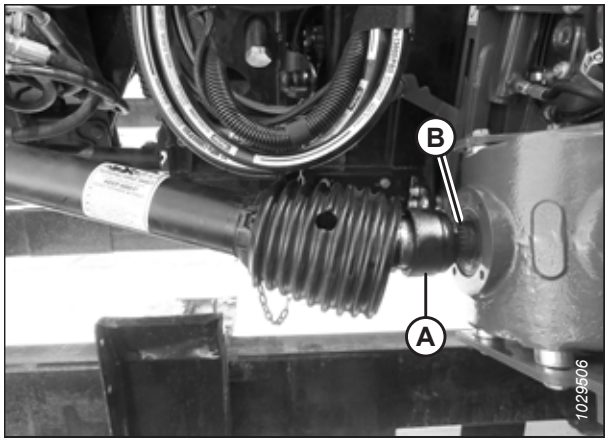


Figure 4.73: Connecting Driveline to Combine

10. Lower handle (A) to release multicoupler (B) from the header.
11. Open cover (C) on the combine receptacle.
12. Push handle (D) to the fully open position.
13. Clean the mating surfaces of the coupler and receptacle if necessary.

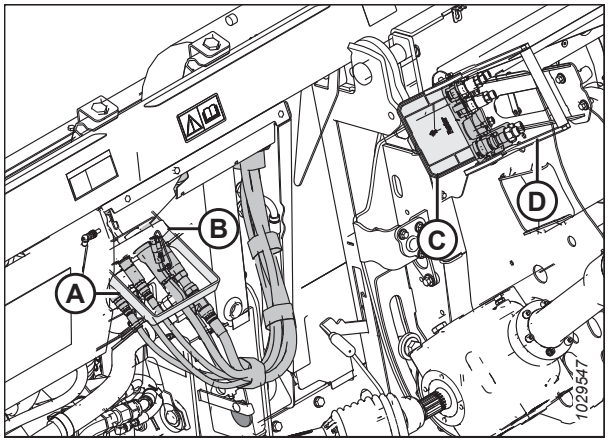


Figure 4.74: Multicoupler Receptacles

14. Position coupler (A) onto the combine receptacle, and pull handle (B) to fully engage the multicoupler into the receptacle.

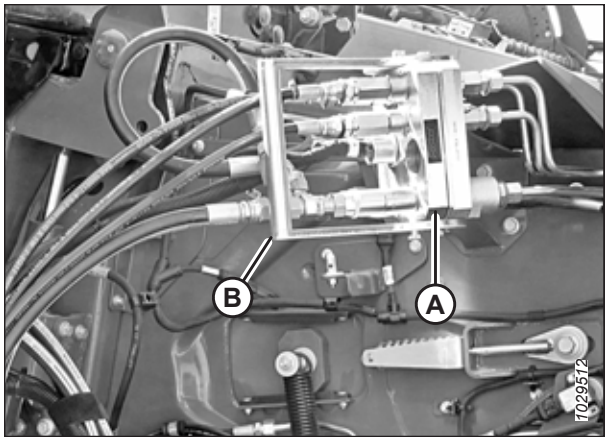


Figure 4.75: Multicoupler

4.5.2 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.

1. Park the combine on a level surface.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Push combine receptacle handle (B) to the fully-open position to release multicoupler (A).

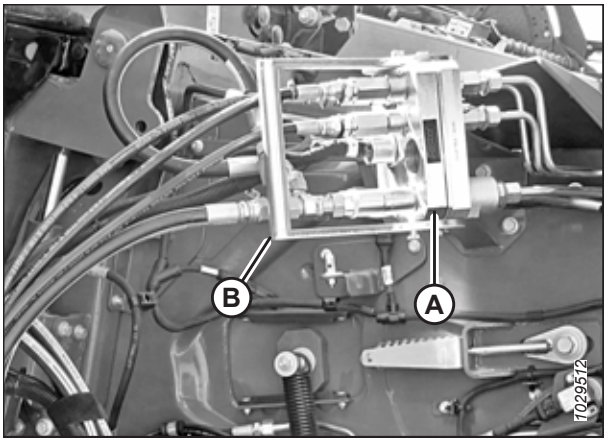


Figure 4.76: Combine Receptacle

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

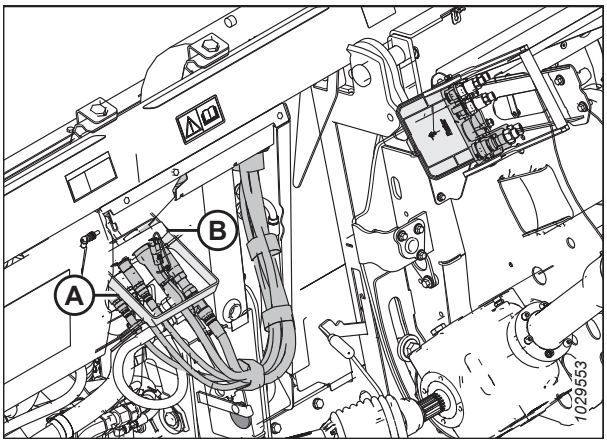


Figure 4.77: Locking Multicoupler

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

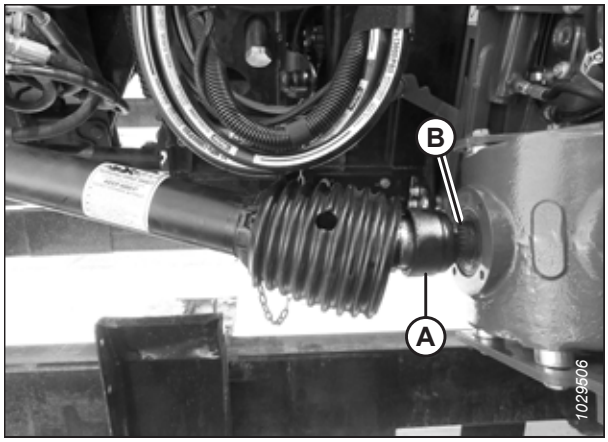


Figure 4.78: Detaching Driveline

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 bracket.

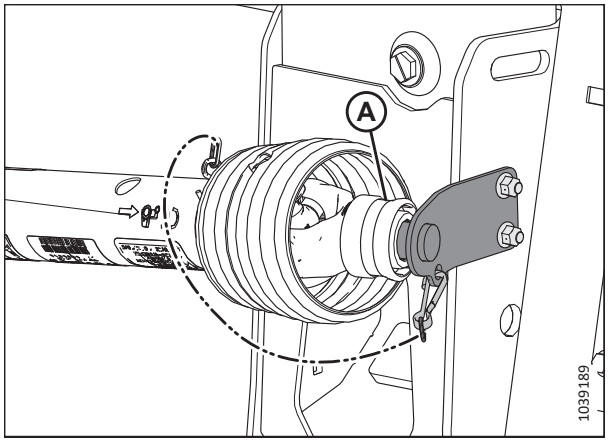


Figure 4.79: Driveline in Storage Position

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

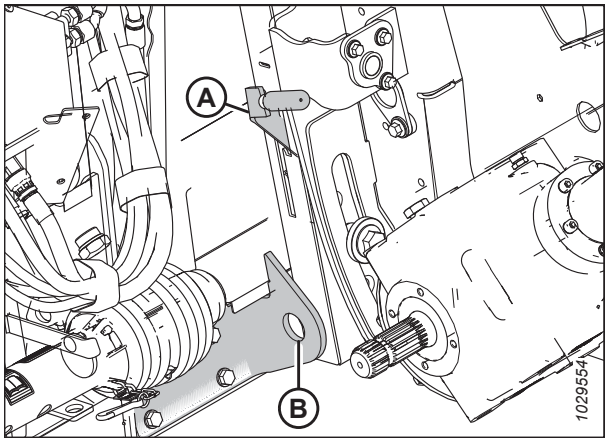


Figure 4.80: Feeder House Locking Pins

9. Start the combine and lower the header to the ground until feeder house pins (A) are clear of hooks (B).

10. Slowly back the combine away from the header.

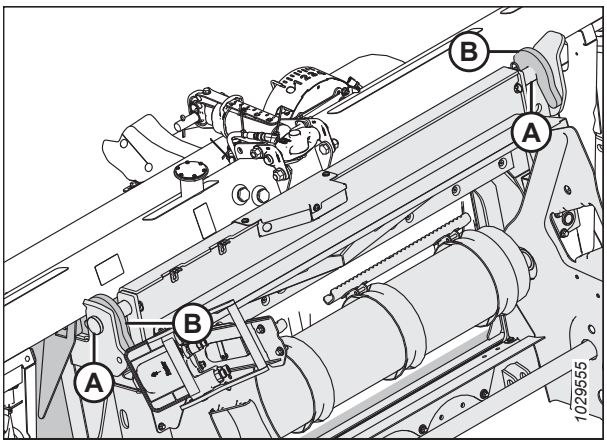


Figure 4.81: Lowering Feeder House

4.6 Case IH Combines

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

4.6.1 Attaching Header to Case IH Combine

Physically attach the float module to the combine before connecting the hydraulic hoses, electrical connectors, and driveline.

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

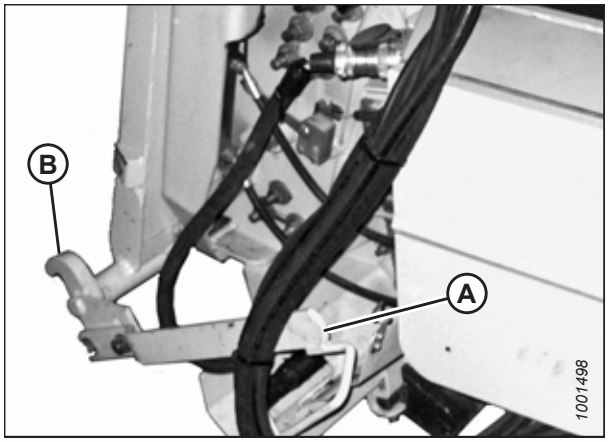


Figure 4.82: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine and 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, ensuring the feeder saddle is properly engaged in the float module frame and that the bottom of the feeder house frame is in contact with the float module frame.
5. Shut down the engine, and remove the key from the ignition.

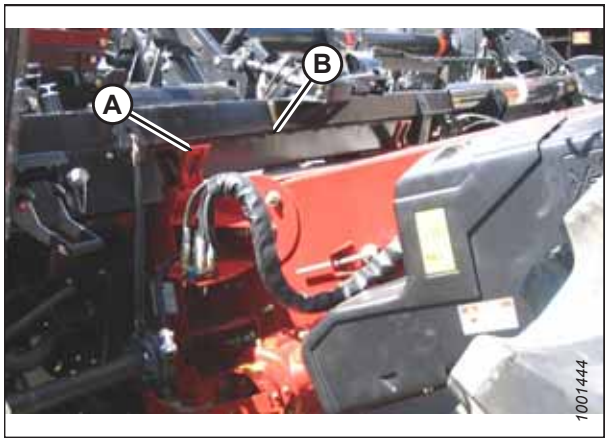


Figure 4.83: Combine and Float Module

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 down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
8. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust the lock. Retighten the bolts.

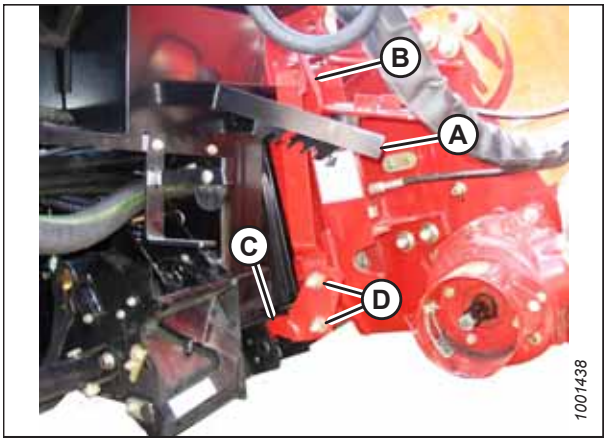


Figure 4.84: Combine and Float Module

9. Open the cover on receptacle (A) located on the left side of the float module.
10. Press lock button (B) and pull handle (C) to the fully-open position.
11. Clean the receptacle mating surfaces.

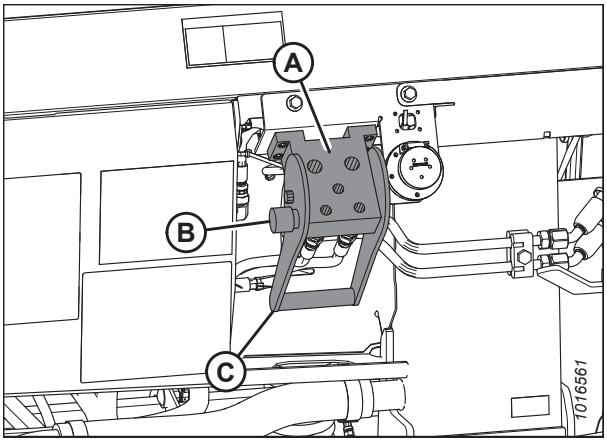


Figure 4.85: Float Module Receptacle

12. Remove hydraulic quick coupler (A) from the combine, and clean the mating surfaces.

Figure 4.86: Combine Connectors

13. Position the coupler onto coupler receptacle (A) and push handle (B) (not shown) to engage the multicoupler pins into the receptacle.

14. Push handle (B) to the closed position until lock button (C) snaps out.

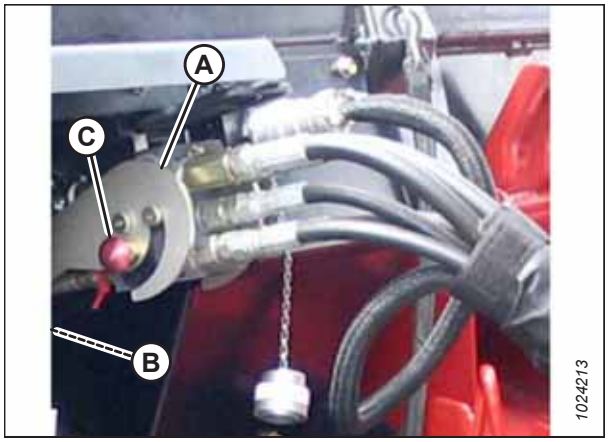


Figure 4.87: Hydraulic Connection

15. Remove the cover from electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

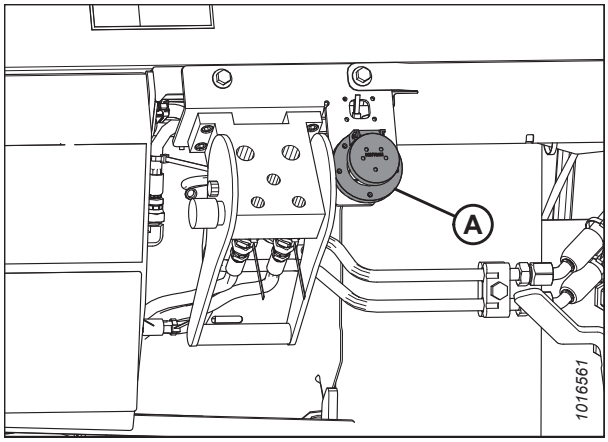


Figure 4.88: Electrical Receptacle

16. Remove electrical connector (A) from the storage cup on the combine and route it to the float module receptacle.

Figure 4.89: Combine Connectors

17. Align the lugs on connector (A) with the slots in receptacle (B), push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

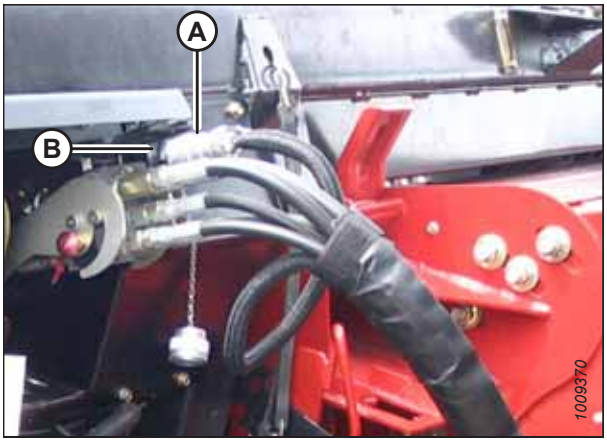


Figure 4.90: Electrical Connection

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

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

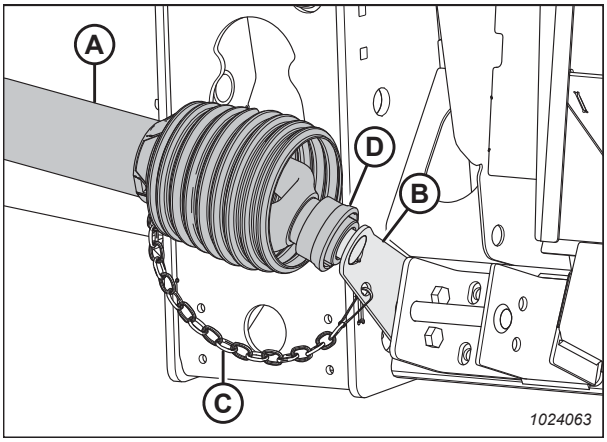


Figure 4.91: Driveline in Storage Position

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

    NOTE:

    If required, raise the driveline shield on the combine output shaft for easier access to install the driveline, then lower the shield once the driveline has been installed.

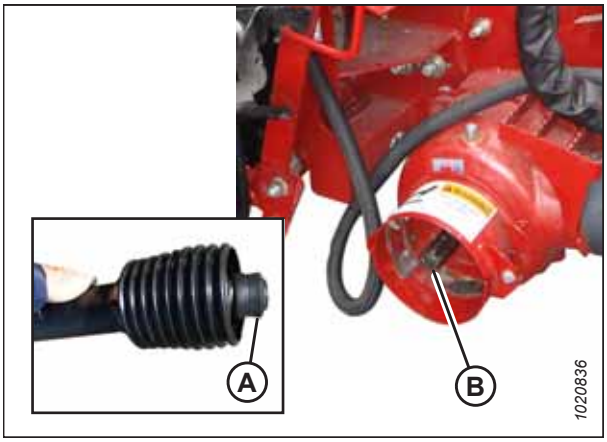


Figure 4.92: Combine Output Shaft

21. 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 on the right side of the header; the float lock on the left side is similar.

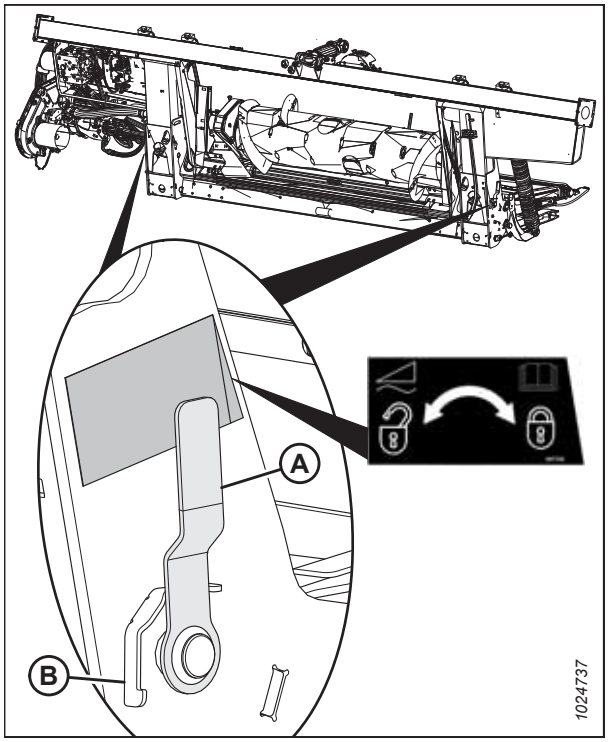


Figure 4.93: Float Lock Handle

4.6.2 Detaching Header from Case IH 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 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.

1. Park the combine on a level surface.
2. 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, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.
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 at the right shows the right side of the header. The float lock on the left side of the header is opposite.
5. Push back collar (A) on the end of the driveline and pull the driveline out of combine output shaft (B) until the collar disengages.

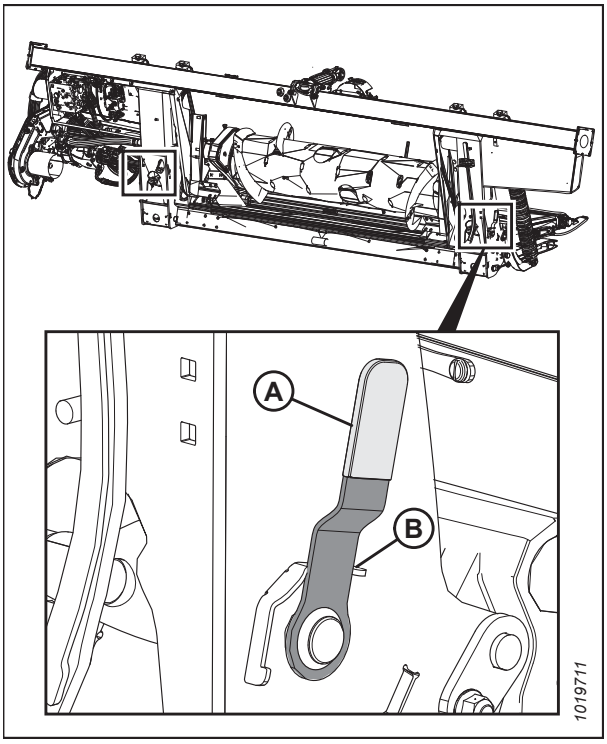


Figure 4.94: Float Lock Handle

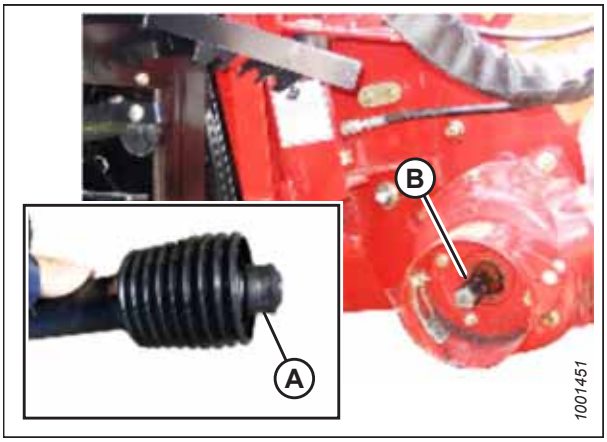


Figure 4.95: Driveline

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 support bracket.

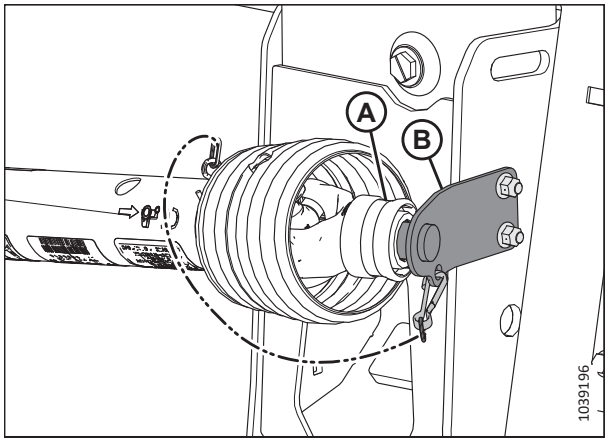


Figure 4.96: Driveline in Storage Position – Driveline B7038 or B7039

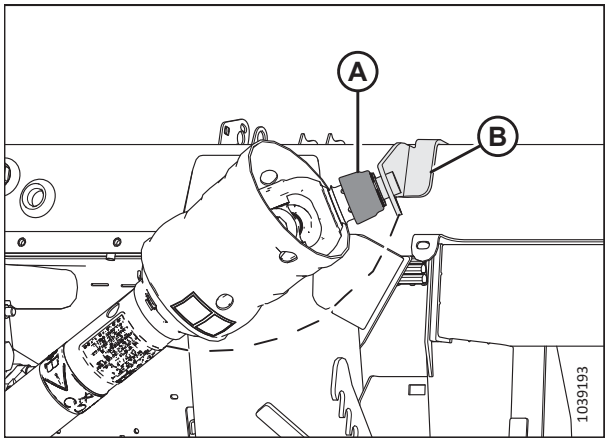


Figure 4.97: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

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

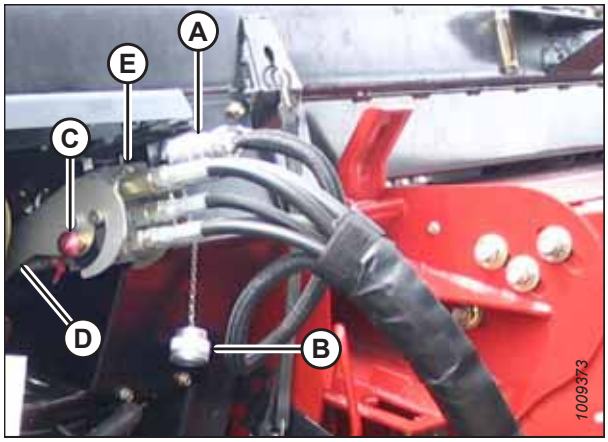


Figure 4.98: Multicoupler

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

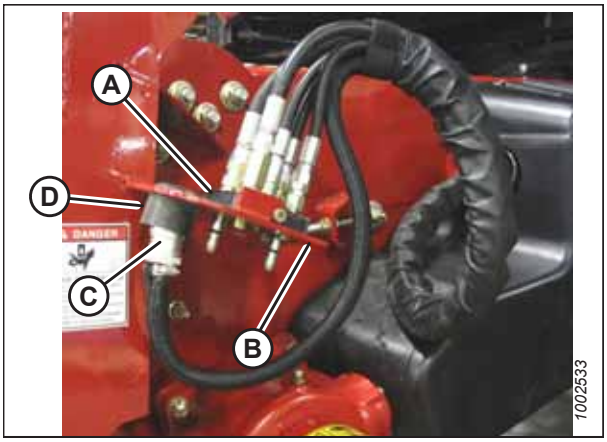


Figure 4.99: Multicoupler Storage

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

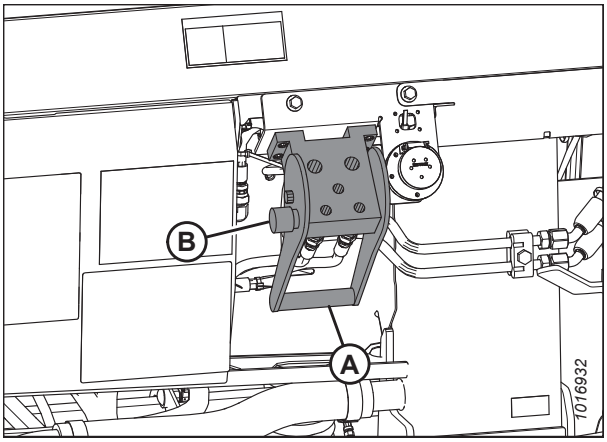


Figure 4.100: Float Module Receptacle

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

WARNING

Ensure that all bystanders have cleared the area.

13. Lower the feeder house until it disengages the float module support.
14. Back the combine away slowly from the float module.

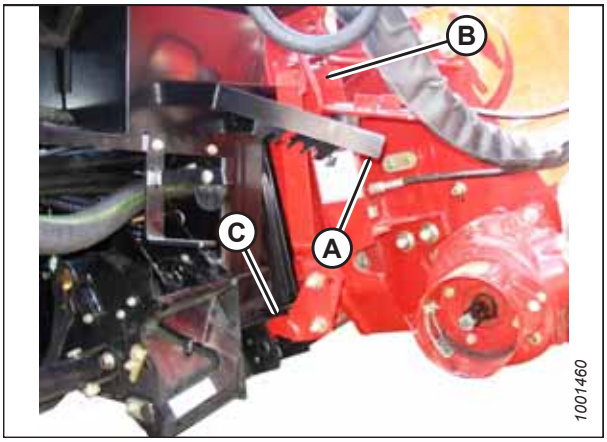


Figure 4.101: Feeder House Locks

4.7 CLAAS Combines

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

The FD1 Series FlexDraper® Header is compatible with CLAAS 500, 600, and 700 series, Tucano, and 7000, 8000 series combines.

NOTE:

Older Tucano combines (model year 2006 and prior) are incompatible with FD1 Series FlexDraper® Headers.

4.7.1 Attaching Header to CLAAS Combine

Physically attach the float module to the combine before connecting the coupler and driveline.

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. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

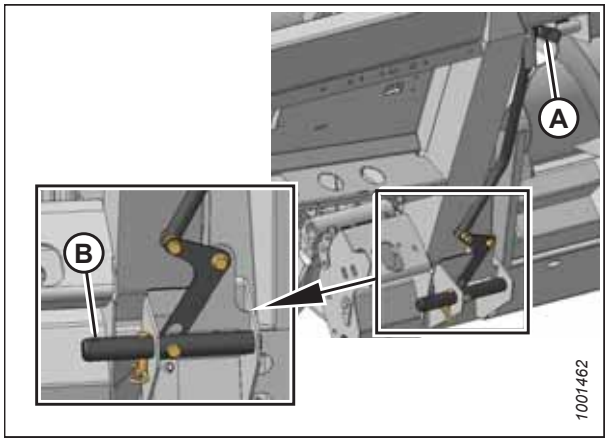


Figure 4.102: Pins Retracted

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine and 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, ensuring the feeder saddle is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.

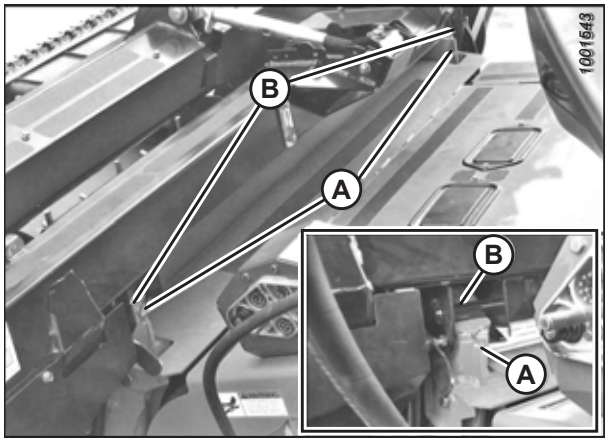


Figure 4.103: Header on Combine

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

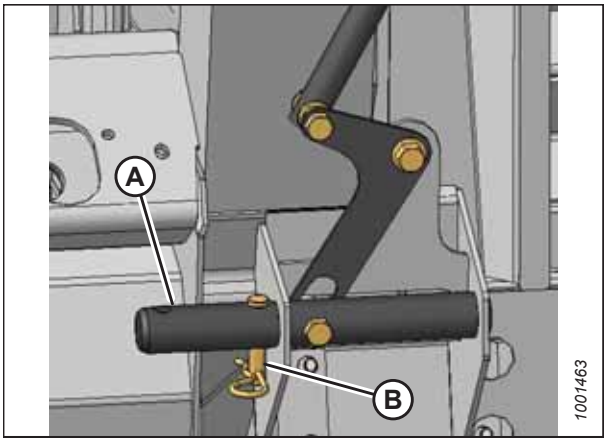


Figure 4.104: Locking Pins

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure it with the hairpin.

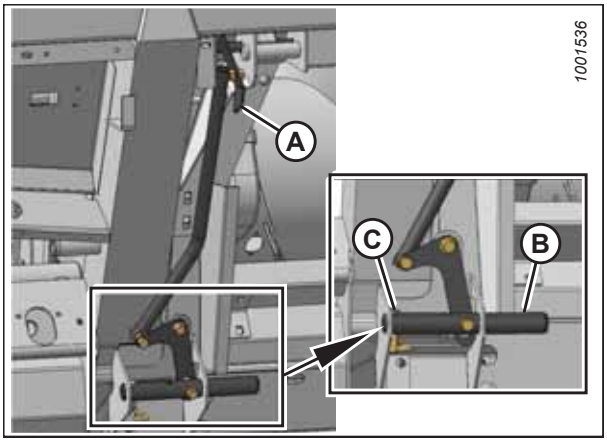


Figure 4.105: Engaging Pins

8. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
9. Clean coupler (B) and the receptacle.

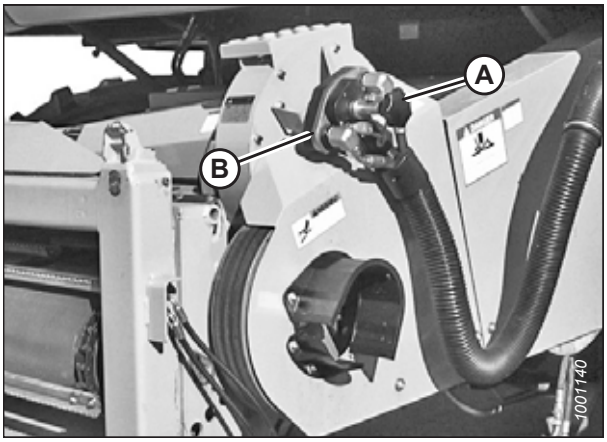


Figure 4.106: Combine Coupler

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

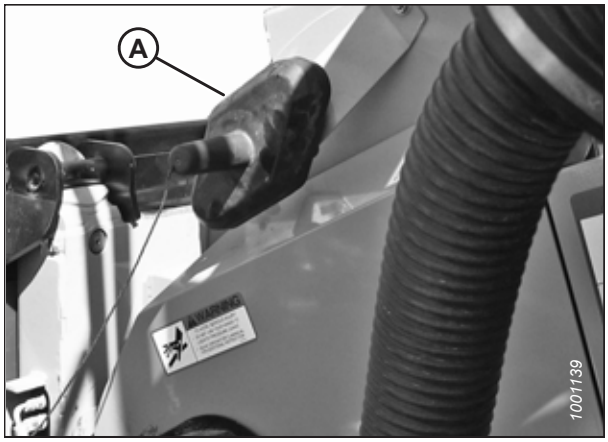


Figure 4.107: Receptacle Cover

11. Clean the mating surface of coupler (A) and position it onto float module receptacle (C).
12. Turn knob (B) to secure the coupler to the receptacle.

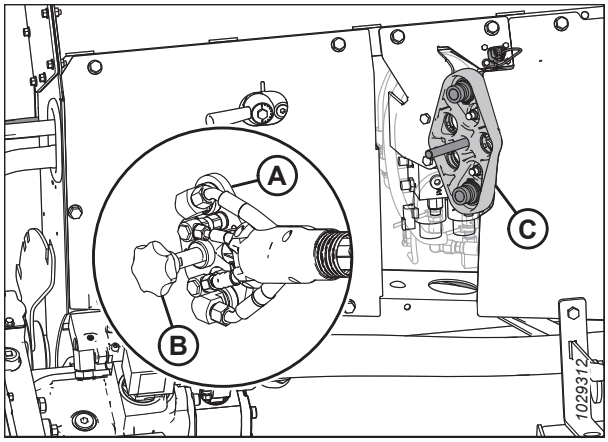


Figure 4.108: Coupler

13. Detach safety chain (C) from support bracket (B).
14. Pull collar (D) back to release driveline (A) from the support bracket. Remove the driveline from the support bracket.

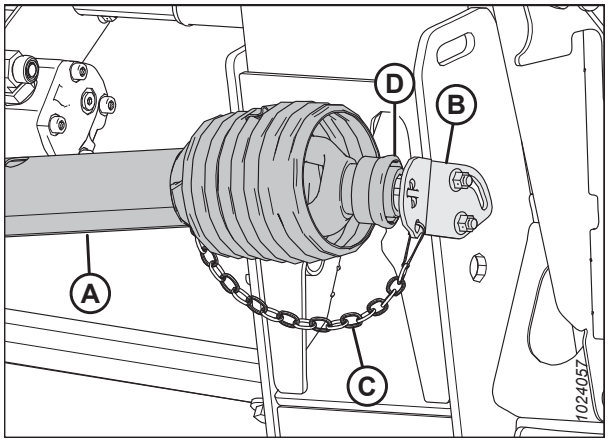


Figure 4.109: Driveline

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

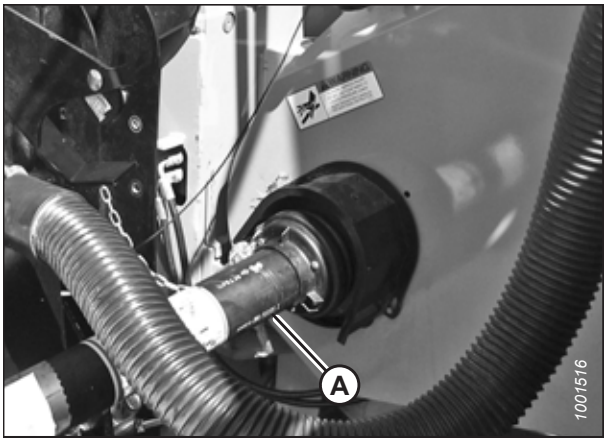


Figure 4.110: Driveline and Output Shaft

16. 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 at right shows the right side of the header. The float lock on the left side of the header is opposite.

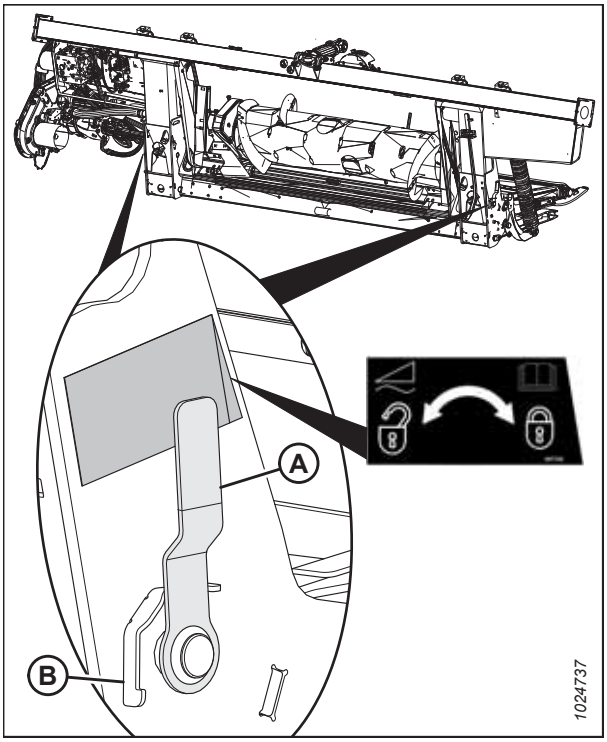


Figure 4.111: Float Lock Handle

4.7.2 Detaching Header from CLAAS 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.

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

   IMPORTANT:

   If transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.
3. 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 at the right shows the right side of the header. The float lock on the left side of the header is opposite.
4. Disconnect driveline (A) from the combine.

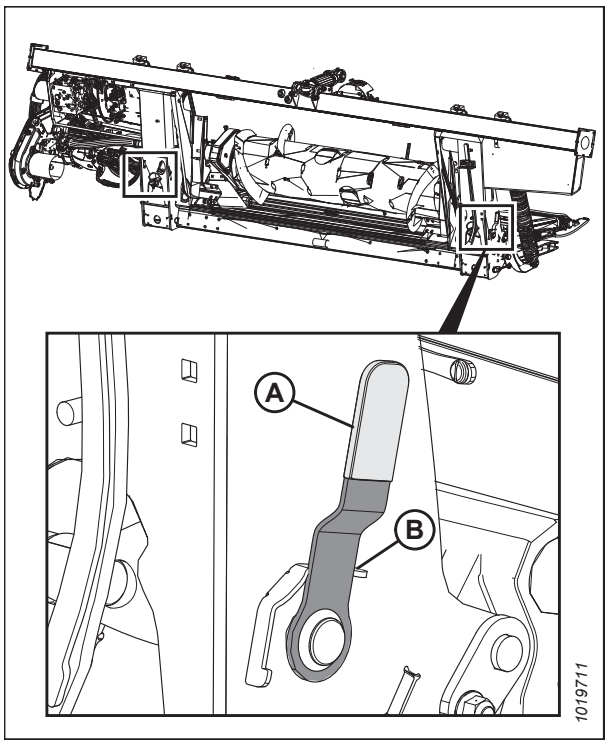


Figure 4.112: Float Lock Handle

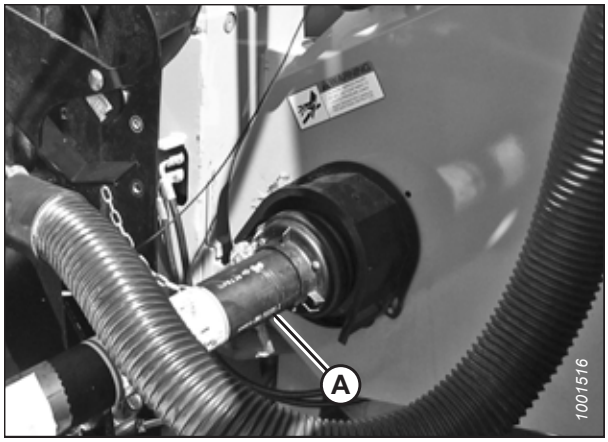


Figure 4.113: Driveline

5. 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.

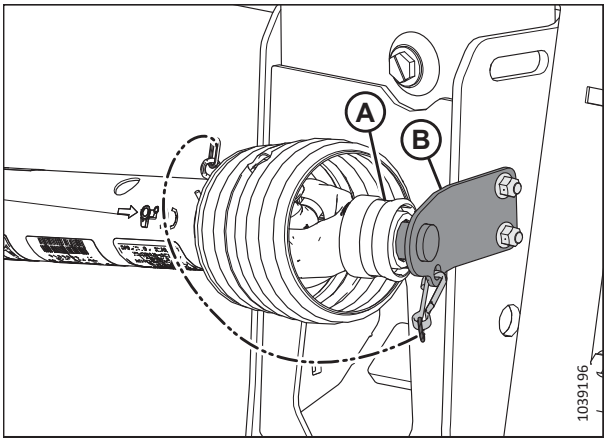


Figure 4.114: Driveline in Storage Position – Driveline MD #B7039

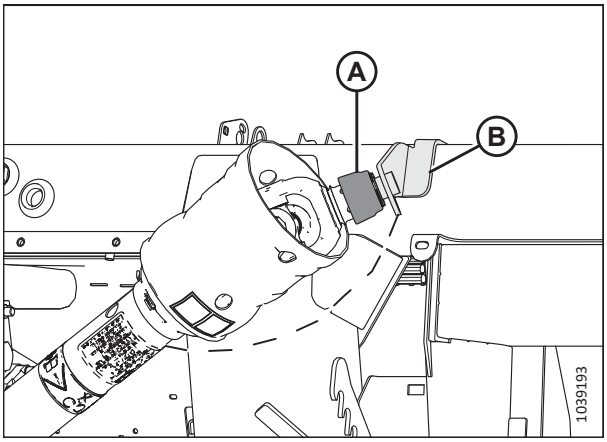


Figure 4.115: Driveline in Storage Position – Sidehill/ Hillside Driveline MD #B7182

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

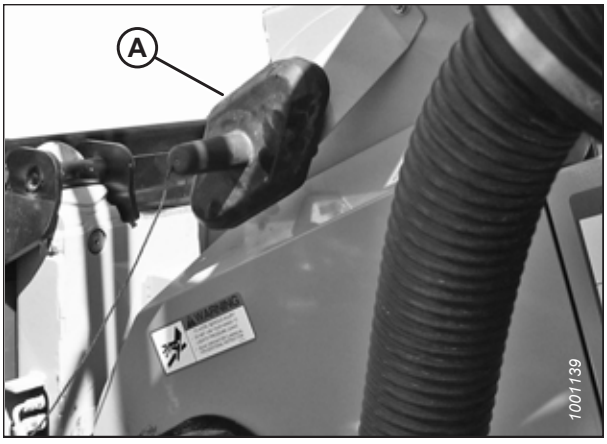


Figure 4.116: Cover

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

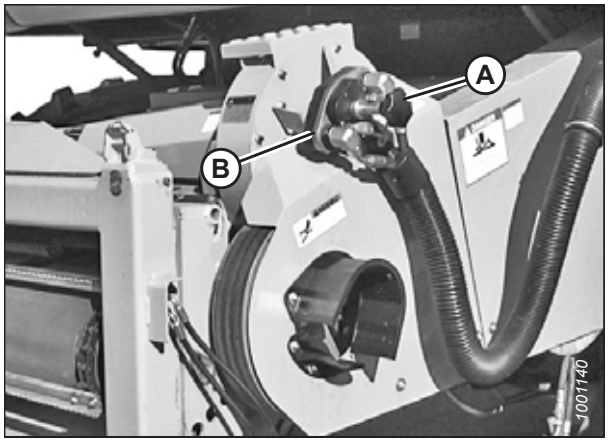


Figure 4.117: Combine Coupler

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

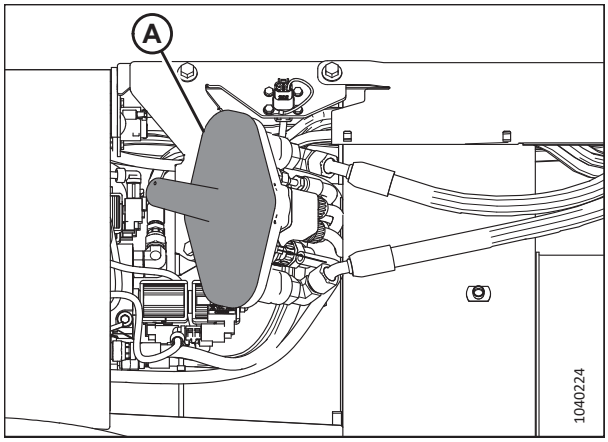


Figure 4.118: Float Module

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

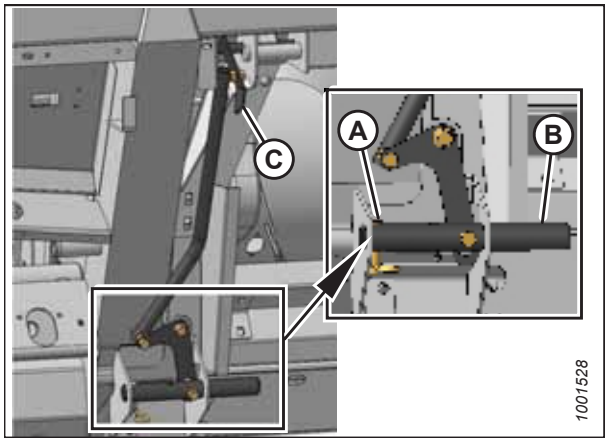


Figure 4.119: Feeder House Locks

12. Lower the feeder house until feeder house posts (A) disengage float module (B).
13. Back the combine away slowly from the float module.

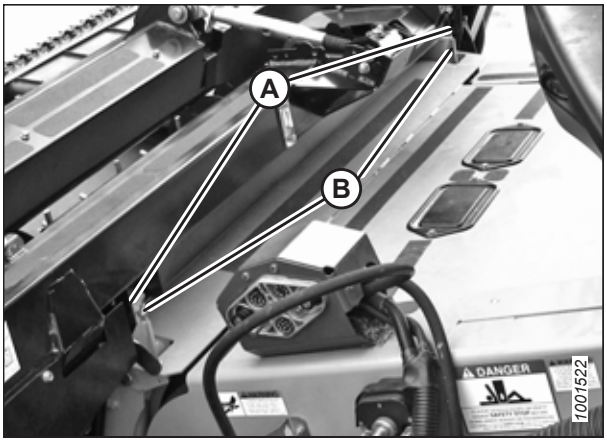


Figure 4.120: Header on Combine

4.8 John Deere Combines

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

The FD1 Series FlexDraper® Header is compatible with John Deere 60, 70, S, and T Series combines.

4.8.1 Attaching Header to John Deere Combine

Physically attach the float module to the combine before connecting the multicoupler and driveline.

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. 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.

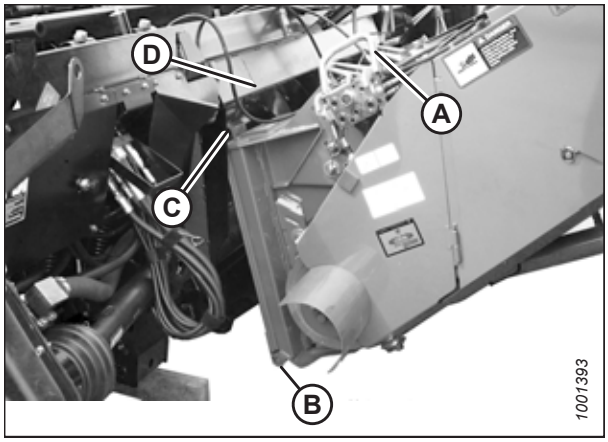


Figure 4.121: Combine and Float Module

DANGER

Ensure that all bystanders have cleared the area.

3. Start the engine and slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
4. Raise the feeder house slightly to lift the header, ensuring the feeder house saddle is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.
6. 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 to store it.

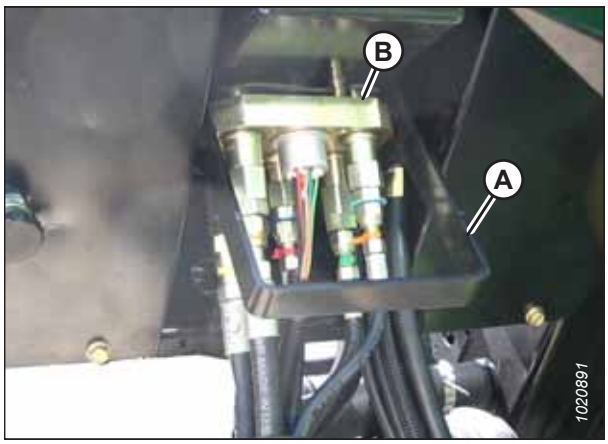


Figure 4.122: Multicoupler Storage

7. Position multicoupler (A) onto the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.
8. Pull handle (B) to a horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

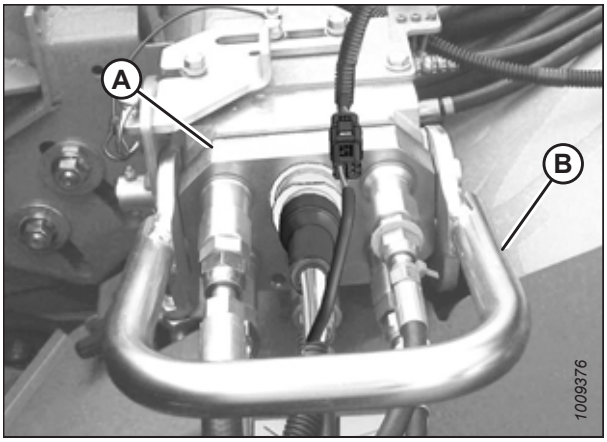


Figure 4.123: Multicoupler

9. 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.

10. Tighten bolts (B).

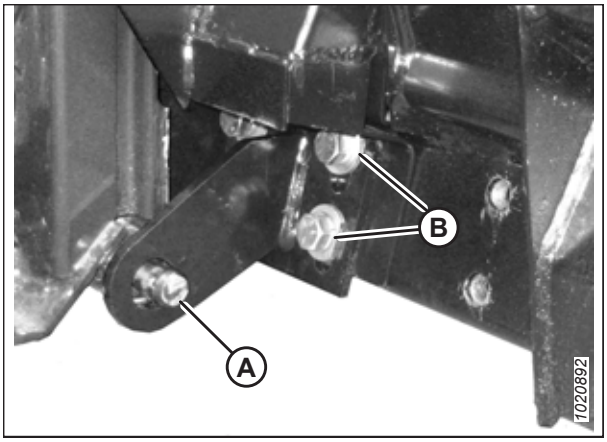


Figure 4.124: Feeder House Pin

11. Slide latch (A) to lock handle (B) in position and secure it with lynch pin (C).
12. If the float module is equipped with the reel fore-aft/header tilt selector, connect harness (D) to combine connector (E).

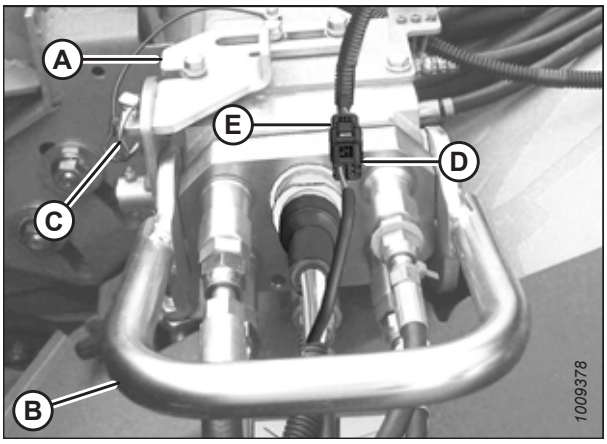


Figure 4.125: Multicoupler

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

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

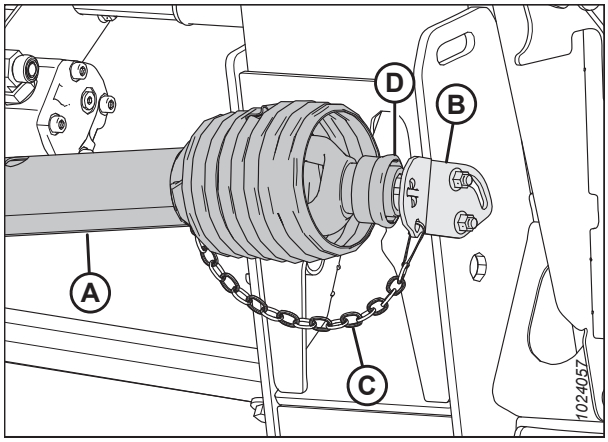


Figure 4.126: Driveline

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

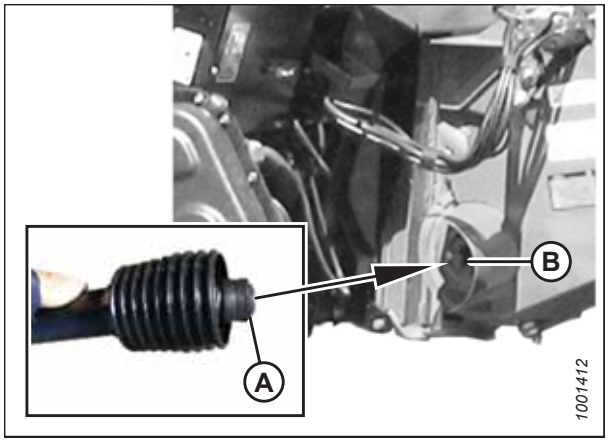


Figure 4.127: Driveline

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

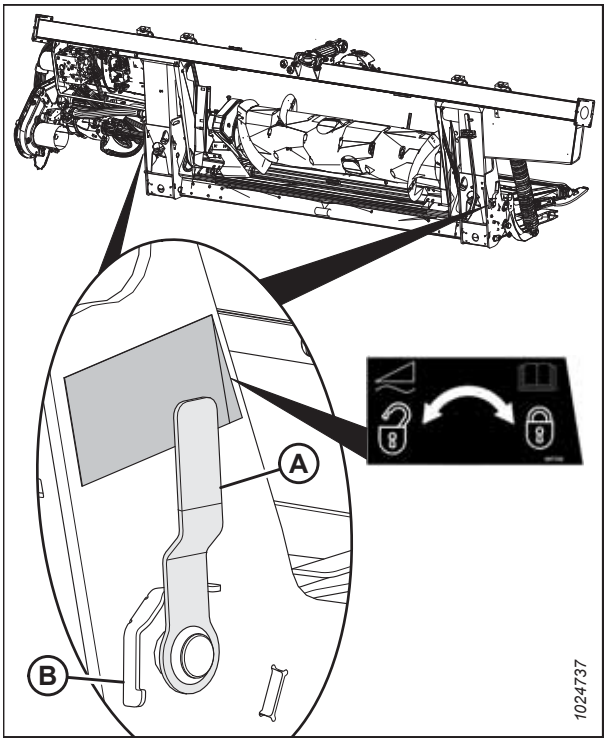


Figure 4.128: Float Lock Handle

4.8.2 Detaching Header from John Deere 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 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.

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

   IMPORTANT:

   If transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.
3. 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 at the right shows the right side of the header. The float lock on the left side of the header is opposite.
4. Open shield (A) on the combine, pull back the collar on driveline (B), and pull the driveline off the combine output shaft.

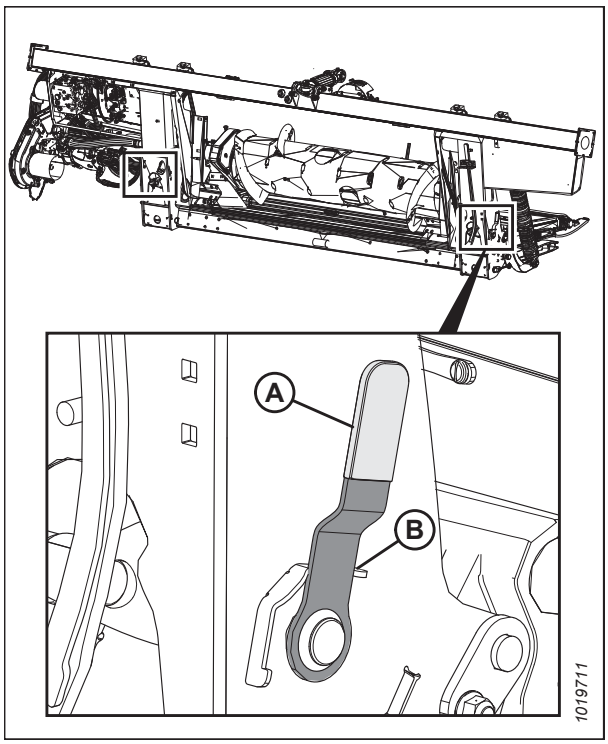


Figure 4.129: Float Lock Handle

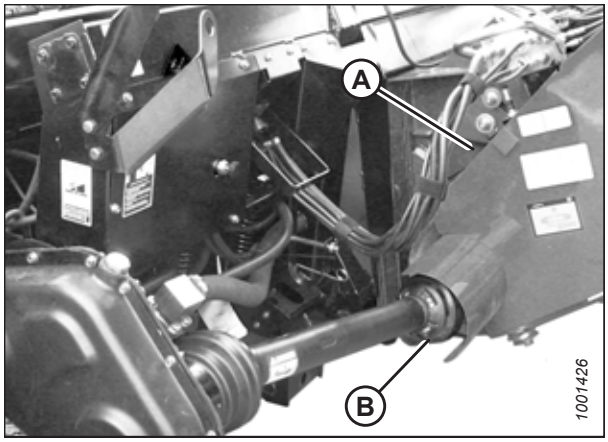


Figure 4.130: Driveline

5. 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.

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

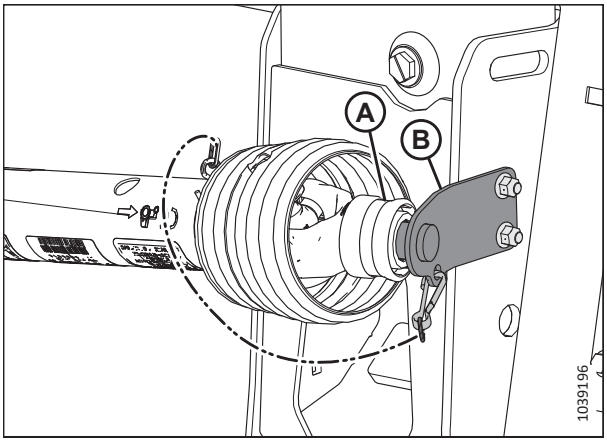


Figure 4.131: Driveline in Storage Position – Driveline MD #B7038 or MD #B7039

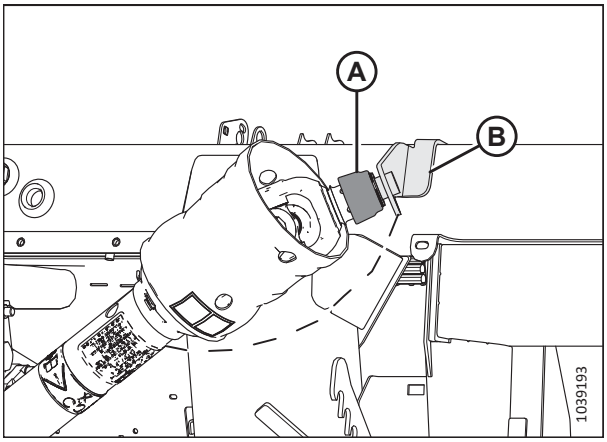


Figure 4.132: Driveline in Storage Position – Sidehill/ Hillside Driveline MD #B7326, or MD #B7182

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

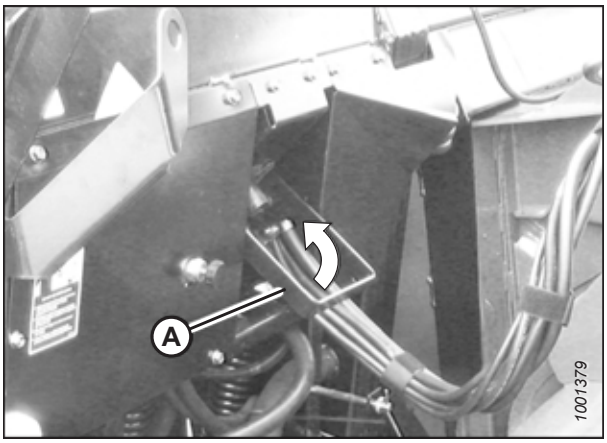


Figure 4.133: Multicoupler Storage

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.

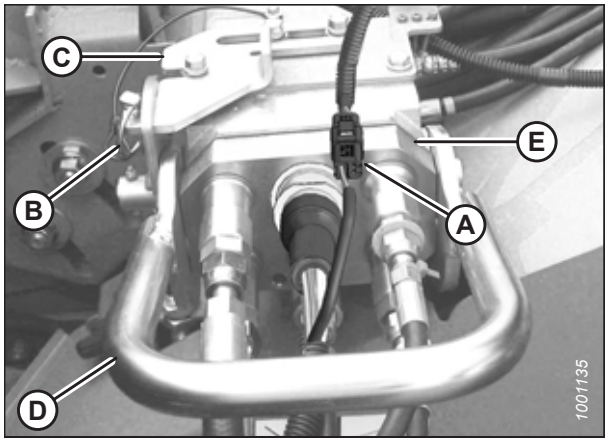


Figure 4.134: Multicoupler

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

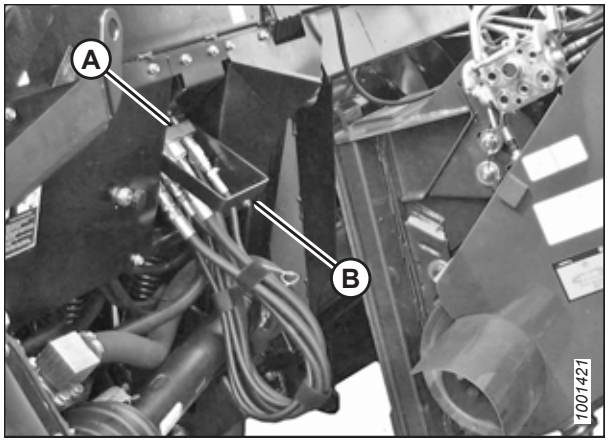


Figure 4.135: Multicoupler Storage

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

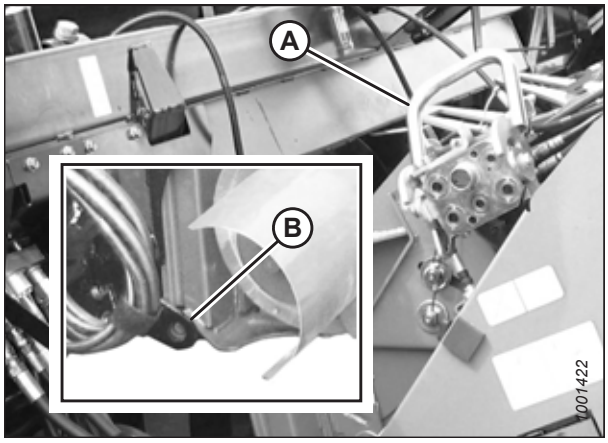


Figure 4.136: Feeder House Locks

13. Lower the feeder house until saddle (A) disengages and clears float module support (B).

14. Back the combine away slowly from the float module.

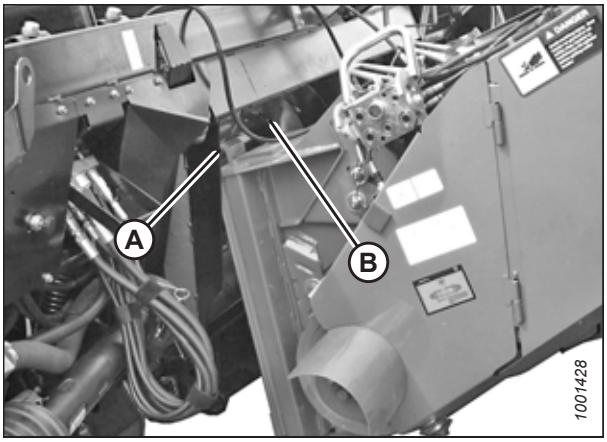


Figure 4.137: Float Module and Feeder House

4.9 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 4.2 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

4.9.1 Attaching Header to New Holland CR/CX Combine

Physically attach the float module to the combine before connecting the hydraulics, electrical, and driveline.

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. Ensure handle (A) is positioned so locks (B) can engage the float module.

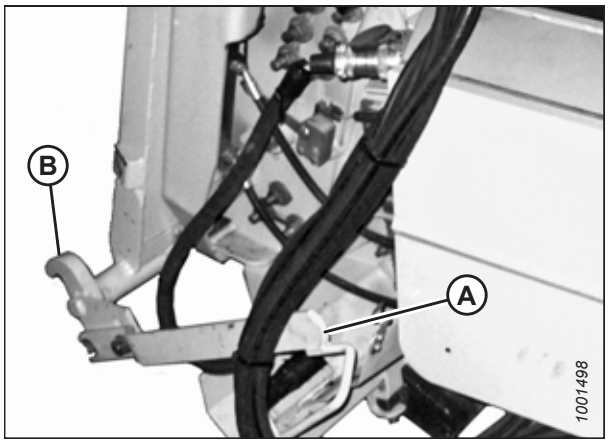


Figure 4.138: Feeder House Locks

DANGER

Ensure that all bystanders have cleared the area.

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

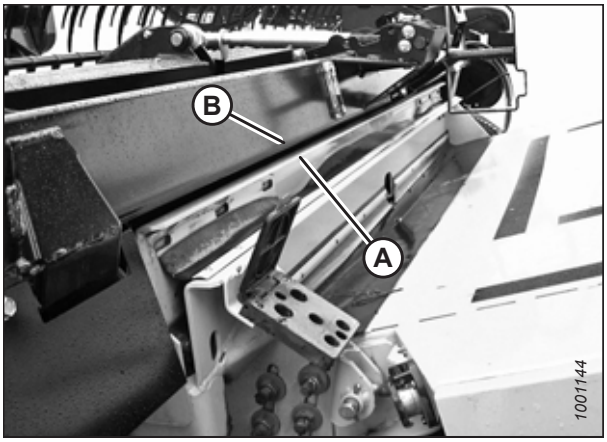


Figure 4.139: Header on Combine

6. 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.
7. Push down on lever (A) so the slot in the lever engages the handle and locks the handle in place.
8. 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.

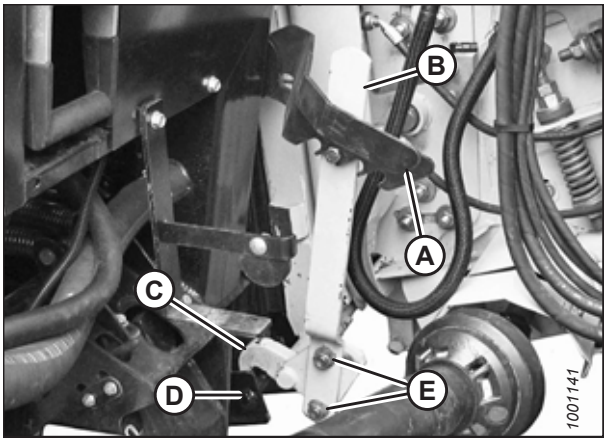


Figure 4.140: Feeder House Locks

9. Open the cover on receptacle (A) located on the left side of the float module.
10. Push in lock button (B) and pull handle (C) to the fully open position.
11. Clean the receptacle mating surfaces.

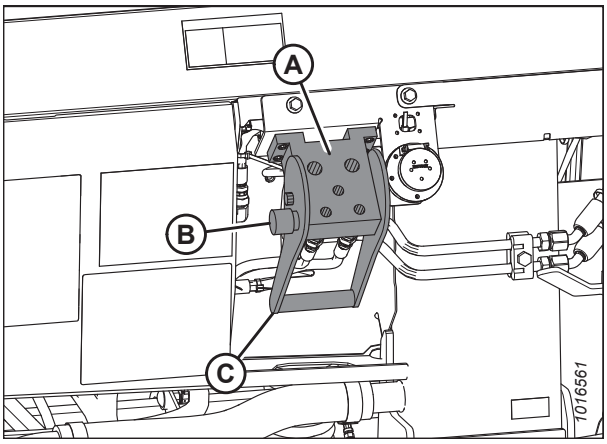


Figure 4.141: Float Module Receptacle

12. Remove hydraulic quick coupler (A) from the storage plate on the combine, and clean the mating surface of the coupler.

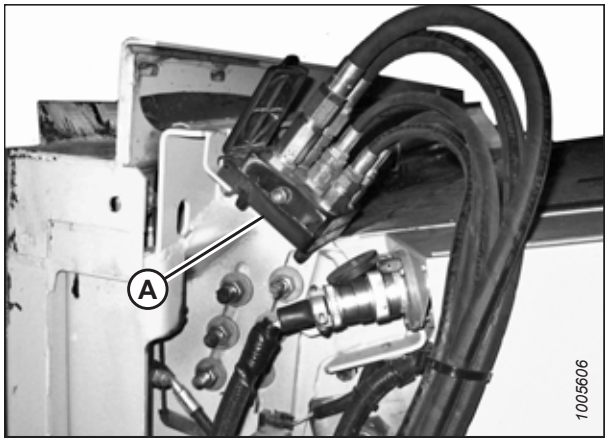


Figure 4.142: Combine Coupler

13. Position coupler (A) onto the float module receptacle, and push handle (B) to engage the pins into the receptacle.
14. Push handle (B) to the closed position until lock button (C) snaps out.
15. Remove the cover on the float module electrical receptacle.
16. Remove connector (D) from the combine.
17. Align the lugs on connector (D) with the slots in the float module receptacle, and push the connector onto the receptacle. Turn the collar on the connector to lock it in place.

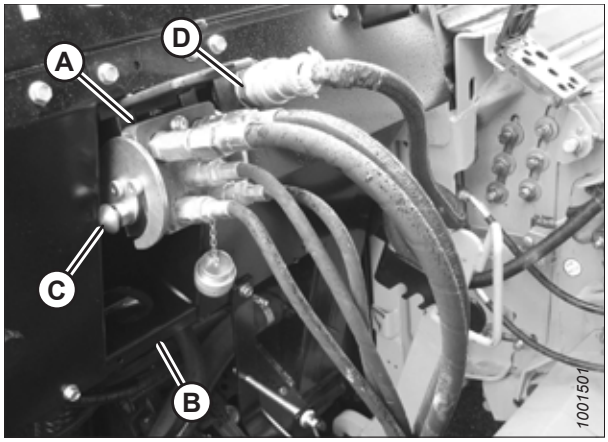


Figure 4.143: Connections

18. Detach safety chain (C) from support bracket (B).
19. Pull collar (D) back to release driveline (A) from the support bracket. Remove the driveline from the support bracket.

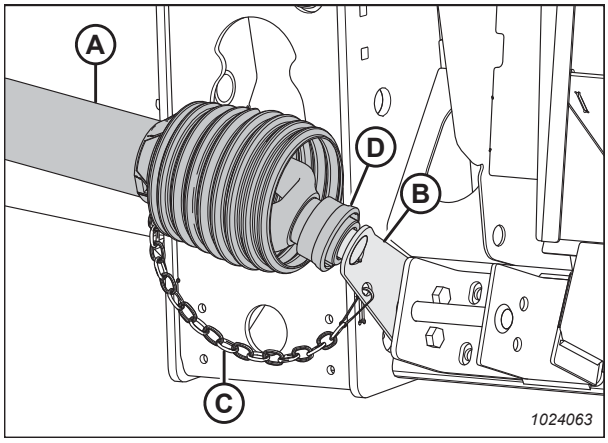


Figure 4.144: Driveline in Storage Position

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

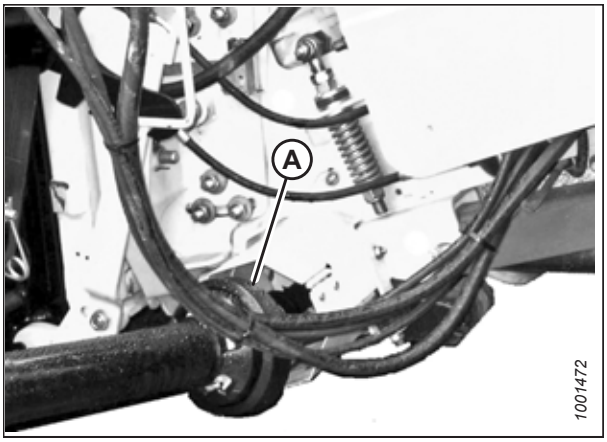


Figure 4.145: Driveline and Output Shaft

21. 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 at right shows the right side of the header. The float lock on the left side of the header is opposite.

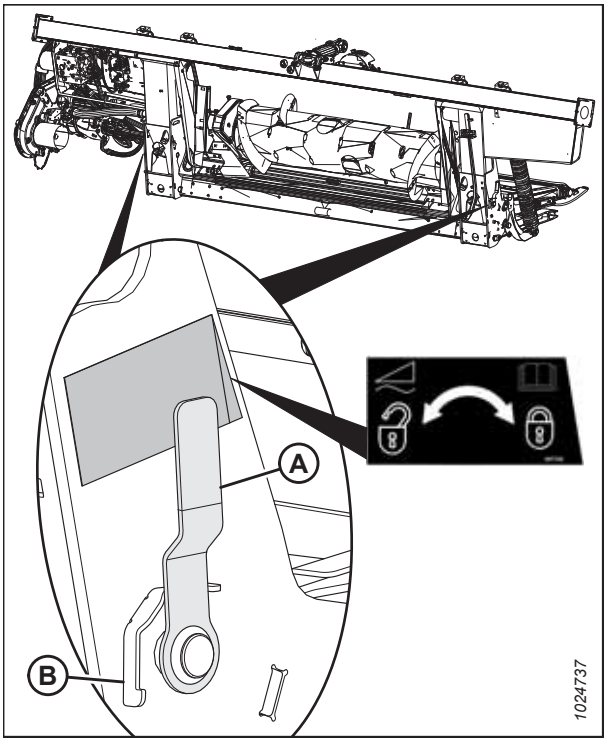


Figure 4.146: Float Lock Handle

4.9.2 Detaching Header from New Holland CR/CX 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.

1. Choose a level area and position the header slightly above the ground.
2. Stop the engine and remove the key from the ignition.

   IMPORTANT:

   If transport wheels are installed, the header may be detached in either transport or field mode. If detaching with the wheels in field mode, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer/Transport Wheels, page 60*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 61*.
3. 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 at the right shows the right side of the header. The float lock on the left side of the header is opposite.
4. 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.

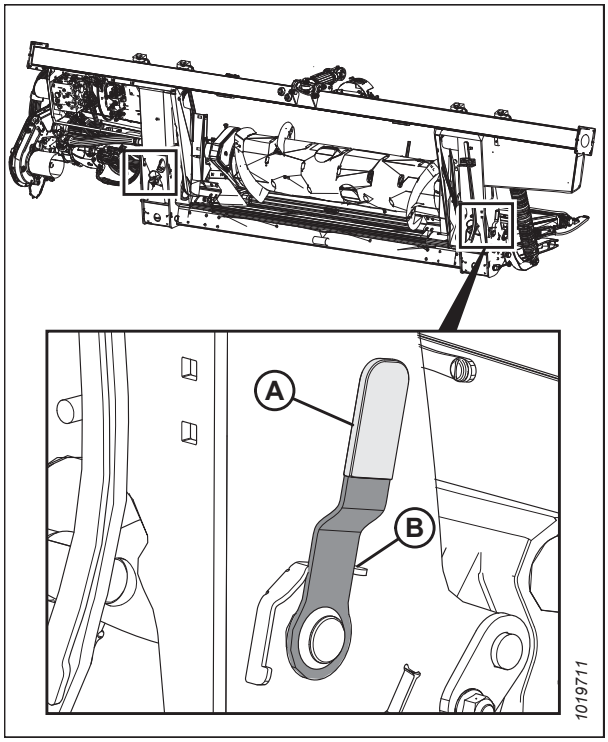


Figure 4.147: Float Lock Handle

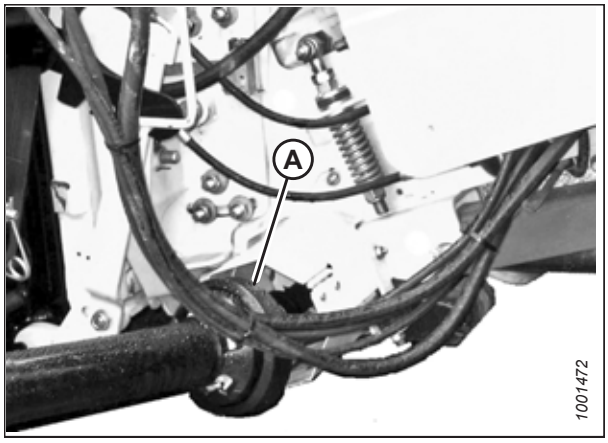


Figure 4.148: Driveline

5. 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.

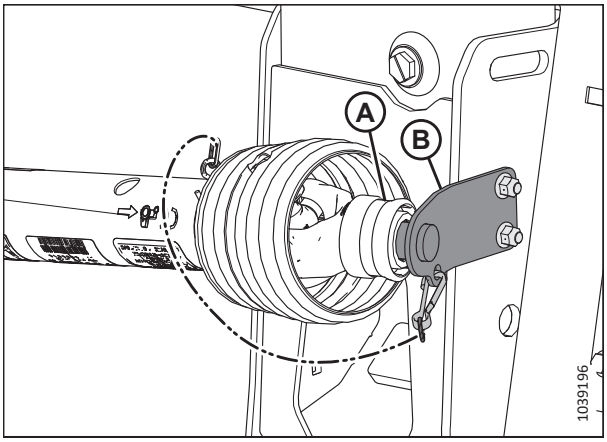


Figure 4.149: Driveline in Storage Position – Driveline B7038 or B7039

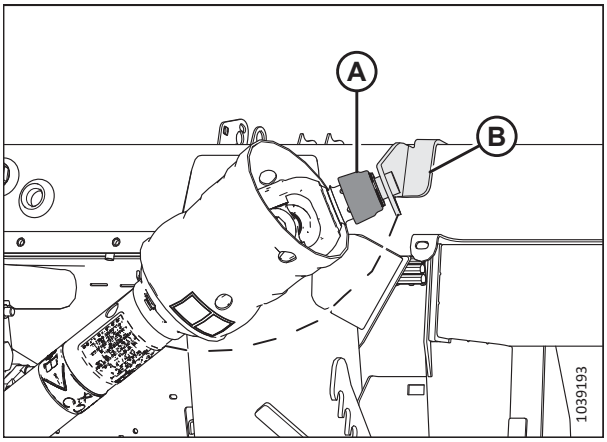


Figure 4.150: Driveline in Storage Position – Sidehill/ Hillside Driveline B7180, B7181, or B7326

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

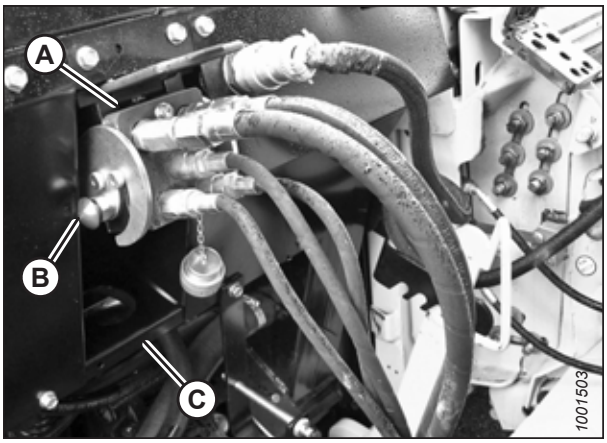


Figure 4.151: Float Module Connections

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

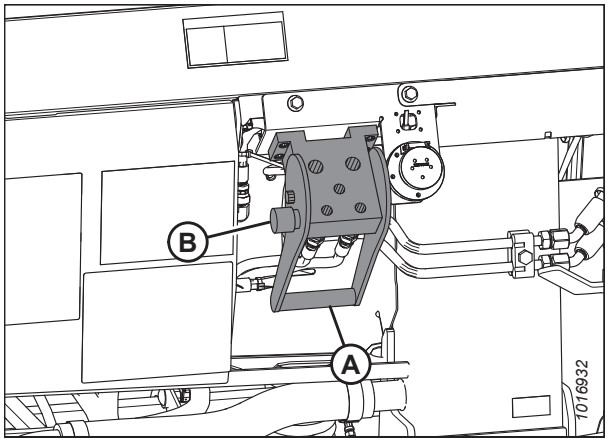


Figure 4.152: Float Module Receptacles

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

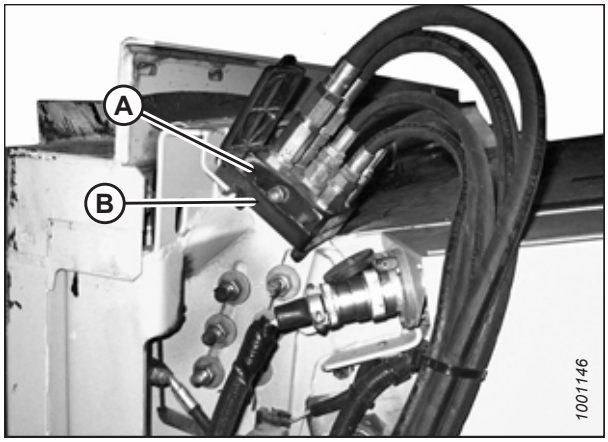


Figure 4.153: Combine Coupler

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

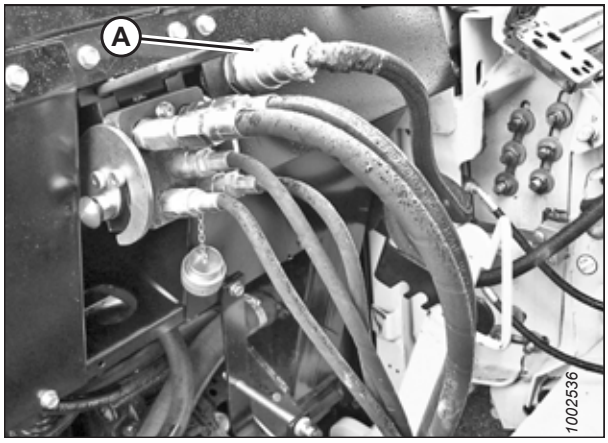


Figure 4.154: Float Module Connections

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

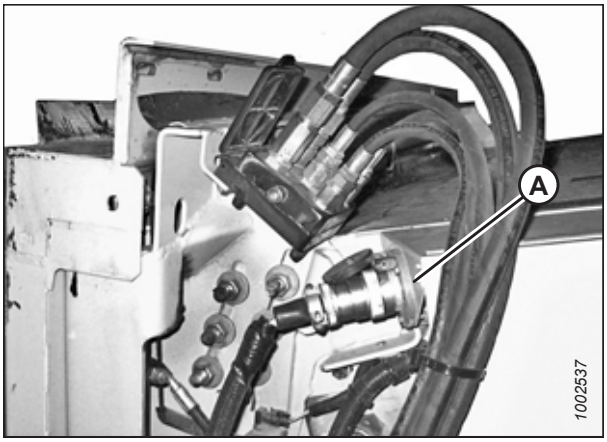


Figure 4.155: Combine Couplers

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

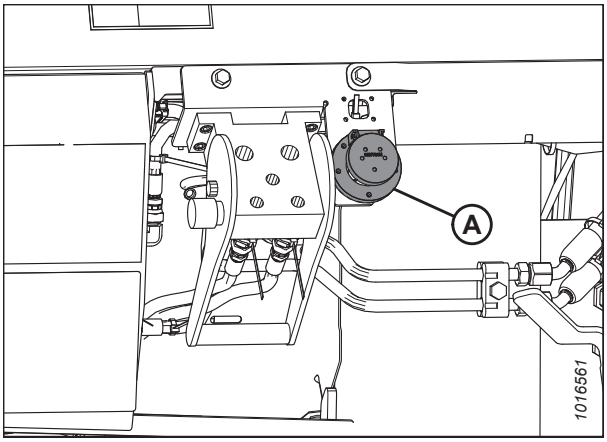


Figure 4.156: Float Module Receptacles

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

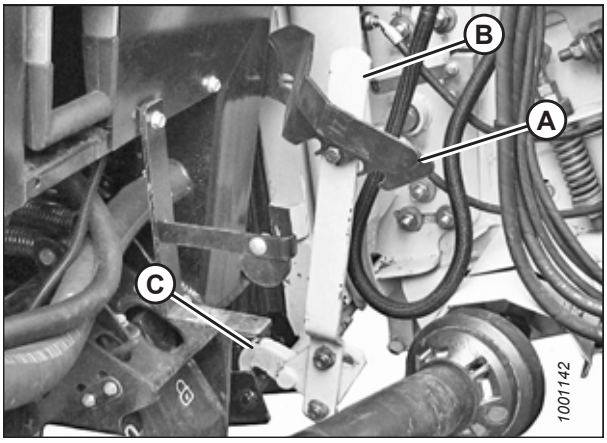


Figure 4.157: Feeder House Locks

13. Lower feeder house (A) until the feeder house disengages float module support (B).

14. Back the combine slowly away from the header.

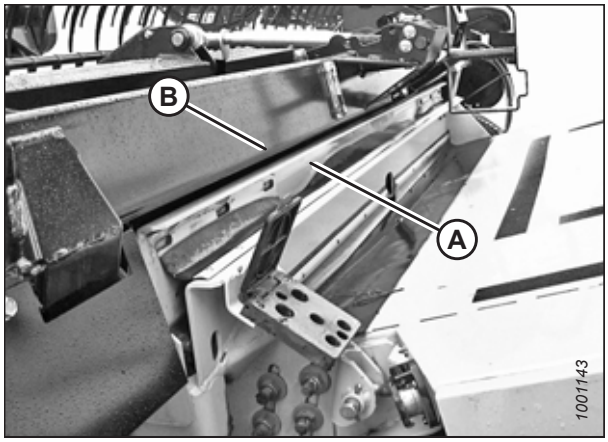


Figure 4.158: Header on Combine

4.9.3 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: Short 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 *5.15.3 Replacing Feeder Deflectors on New Holland CR Combines, page 520*.

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

Table 4.3 Feeder Kits for New Holland CR Model Combines

Feeder House Size	Feeder Kit Size	MacDon Part Number
1250–1350 mm (49–65 in.)	Short: 200 mm (7 7/8 in.)	MD #213613, 213614
1100 mm (43-1/2 in.) and below	Long: 325 mm (12 13/16 in.)	MD #213592, 213593

Chapter 5: Maintenance and Servicing

Information necessary to perform routine maintenance and occasional servicing tasks on your machine is provided here. 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. For replacement parts, refer to the parts catalog provided in the plastic manual case inside the left endshield of the header.

Log hours of operation and use the maintenance record provided (refer to *5.2 Maintenance Schedule/Record, page 414*) to keep track of your scheduled maintenance.

5.1 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.

Before servicing the machine, follow these steps:

1. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the park brake.
4. Wait for all moving parts to stop.

5.2 Maintenance Schedule/Record

The maintenance program is organized according the header's operating hours. This system depends on keeping accurate operating logs.

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 provided here, and maintain extra copies of the maintenance records in case this book is lost or damaged.

Periodic maintenance requirements are organized according to service intervals. If a service interval specifies more than one timeframe (for example, 100 hours or annually) service the machine at whichever interval occurs first.

IMPORTANT:

Recommended intervals are based on typical operating conditions. Service the machine more often if it is operating regularly in adverse conditions, such as severe dust or while carrying heavy loads.

When servicing or maintaining the machine, use only the fluids and lubricants specified in this manual. Refer to the inside back cover for the recommended fluids and lubricants.

CAUTION

Carefully follow all of the safety messages provided in this manual. For instructions, refer to *5.1 Preparing Machine for Servicing, page 413* and *1 Safety, page 1*.

NOTE:

MacDon recommends keeping a record of daily maintenance, which serves as evidence of a properly maintained machine; however, daily maintenance records are not required to meet normal warranty conditions.

Action:	✓ – Check	♦ – Lubricate	▲ – Change
Hour meter reading			
Service date			
Serviced by			
First Use	Refer to *5.3 Break-in Inspection, page 417*.		
End of Season	Refer to *5.5 Equipment Servicing – End-of-Season, page 419*.		
10 Hours or Daily (Whichever Occurs First)[53]			
✓	Hydraulic hoses and lines; refer to *5.6 Checking Hydraulic Hoses and Lines, page 420*		
✓	Knife sections, guards, and hold-downs; refer to *5.12 Knife, page 469*		
✓	Tire pressure; refer to *5.19.3 Checking Tire Pressure, page 585*		
♦	Feed draper rollers, refer to *Every 10 Hours, page 421*		
✓	Link holder hooks; refer to *5.14.7 Checking Link Holder Hooks, page 516*		
25 Hours			
✓	Hydraulic oil level at reservoir; refer to *5.8.1 Checking Oil Level in Hydraulic Reservoir, page 439*		
♦	Knifeheads; refer to *Every 25 Hours, page 422*		
50 Hours or Annually			
♦	Driveline and driveline universals; refer to *Every 50 Hours, page 423*		
♦	Upper cross auger center support and U-joint; refer to *Every 50 Hours, page 423*		

53. MacDon recommends keeping a record of daily maintenance as evidence of a properly maintained machine; however, daily maintenance records are not required to meet normal warranty conditions.

▲	Knife drive box lubricant (first 50 hours only); refer to *Changing Oil in Knife Drive Box, page 495*																	
▲	Header drive gearbox lubricant (first 50 hours only); refer to *Changing Oil in Header Drive Gearbox, page 437*																	
100 Hours or Annually (Whichever Occurs First)																		
✓	Auger to pan and feed draper clearance; refer to *5.11.1 Adjusting Auger to Pan Clearance, page 452*																	
✓	Draper seal; refer to *5.16.5 Adjusting Deck Height, page 529*																	
✓	Gearbox lubricant level; refer to *Checking Oil Level in Header Drive Gearbox, page 436*																	
✓	Reel drive chain tension; refer to *5.18.2 Reel Drive Chain, page 570*																	
✓	Reel finger/cutterbar clearance; refer to *Adjusting Reel Clearance, page 544*																	
✓	Knife drive belt tension; refer to *5.13.2 Knife Drive Belts, page 496*																	
✓	Wheel bolt torque; refer to *5.19.1 Checking Wheel Bolt Torque, page 584*																	
✓	Knife drive box lubricant level; refer to *Checking Knife Drive Box, page 484*																	
✓	Knife drive box mounting bolts; refer to *Checking Knife Drive Box Mounting Bolts, page 487*																	
♦	Auger drive chain; refer to *Every 100 Hours, page 425*																	
♦	Float pivots; refer to *Every 100 Hours, page 425*																	
♦	Float module auger pivots; refer to *Every 100 Hours, page 425*																	
♦	Float spring tensioners; refer to *Every 100 Hours, page 425*																	
♦	Reel drive chain; refer to *Every 100 Hours, page 425*																	
♦	Upper cross auger right bearing; refer to *Every 100 Hours, page 425*																	
200 Hours or Annually (Whichever Occurs First)																		
✓	Draper roller bearings; refer to *5.16.6 Draper Roller Maintenance, page 532*																	
250 Hours or Annually (Whichever Occurs First)																		
✓	Draper seal; refer to *5.16.5 Adjusting Deck Height, page 529*																	
♦	Reel drive U-joint; refer to *Every 250 Hours, page 428*																	

♦	Bell crank linkage; refer to *3.10 Leveling Header, page 317*																	
♦	Transport axle pivot bushings; refer to *Every 250 Hours, page 428*																	
▲	Hydraulic oil filter; refer to *5.8.4 Changing Oil Filter, page 442*																	
500 Hours or Annually (Whichever Occurs First)																		
✓	Draper seal; refer to *5.16.5 Adjusting Deck Height, page 529*																	
♦	Reel shaft bearings; refer to *Every 500 Hours, page 430*																	
♦	Stabilizer/ transport wheel bearings; refer to *Every 500 Hours, page 430*																	
✓	Header drive gearbox chain tension; refer to *5.11.3 Adjusting Auger Drive Chain Tension, page 456*																	
1000 Hours or 3 Years (Whichever Occurs First)																		
▲	Knife drive box lubricant; refer to *Changing Oil in Knife Drive Box, page 495*																	
▲	Header drive gearbox lubricant; refer to *Changing Oil in Header Drive Gearbox, page 437*																	
▲	Hydraulic oil; refer to *5.8.3 Changing Oil in Hydraulic Reservoir, page 440*																	

5.3 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 Instance	Item	Refer to
5 Minutes	Check hydraulic oil level in reservoir (check after first run-up and after the hydraulic hoses have filled with oil).	*5.8.1 Checking Oil Level in Hydraulic Reservoir, page 439*
5 Hours	Check for loose hardware and tighten to required torque.	*8.2 Torque Specifications, page 622*
5 Hours	Check knife drive belts tension (check periodically for first 50 hours).	*Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*
10 Hours	Check auger drive chain tension.	*5.11.2 Checking Auger Drive Chain Tension, page 454*
10 Hours	Check knife drive box mounting bolts.	*Checking Knife Drive Box Mounting Bolts, page 487*
50 Hours	Change float module gearbox oil.	*Changing Oil in Header Drive Gearbox, page 437*
50 Hours	Change float module hydraulic oil filter.	*5.8.4 Changing Oil Filter, page 442*
50 Hours	Change knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 495*
50 Hours	Check gearbox chain tension.	*5.10.5 Adjusting Gearbox Drive Chain Tension, page 450*
50 Hours	Check deck height adjustment.	*5.16.5 Adjusting Deck Height, page 529*

5.4 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 the safety decals and other decals on the header and note the hazard areas.**
- **Be sure all the shields and guards are properly installed and secured. Never alter or remove safety equipment.**
- **Be sure you understand and have practiced 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 *5.7 Lubrication, page 421*.
2. Adjust the tension on the drive belts. For instructions, refer to *Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*.
3. Perform all annual maintenance tasks. For instructions, refer to *5.2 Maintenance Schedule/Record, page 414*.

5.5 Equipment Servicing – End-of-Season

Equipment should be inspected and serviced at the end of each operating season.

CAUTION

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, always cover the machine with a waterproof canvas or other protective material.

   NOTE:

   If storing the machine outdoors, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so that water and snow will not accumulate on the drapers. The weight of water and snow accumulation puts significant stress on the drapers and header.
3. Lower the header onto blocks to keep the cutterbar off of the ground.
4. Lower the reel completely. If the header will be stored 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, leaving excess grease on the fittings.
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. Immediate repair of these items will save time and effort at the beginning of next season.
11. Tighten any loose hardware. For torque specifications, refer to *8.2 Torque Specifications, page 622*.

5.6 Checking Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

WARNING

- **Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pin holes and nozzles which eject fluids under high pressure.**
- **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.**

Figure 5.1: Hydraulic Pressure Hazard

- **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 system is the major cause of hydraulic system damage. Do **NOT** attempt to service hydraulic systems in the field. Precision fits require a perfectly clean connection during overhaul.

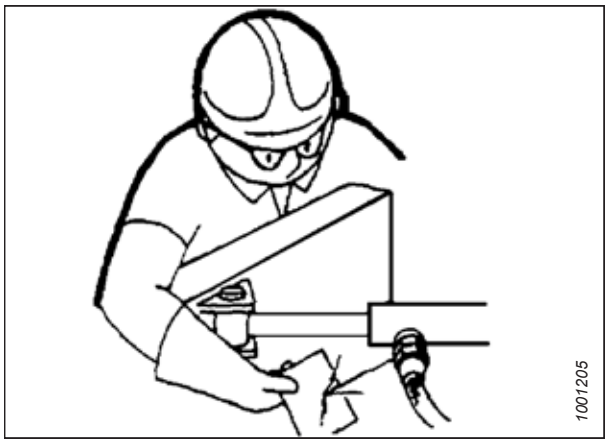


Figure 5.2: Testing for Hydraulic Leaks

1. Start the machine, and engage the header. While running, raise and lower the header and reel. Also extend and retract the reel. Run it for 10 minutes.
2. Shut down the engine, and remove the key from the ignition.
3. Once the machine has been sitting still for several hours, walk around it checking for hoses, lines, and fittings that are visibly leaking oil.

5.7 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 *5.2 Maintenance Schedule/Record, page 414*.

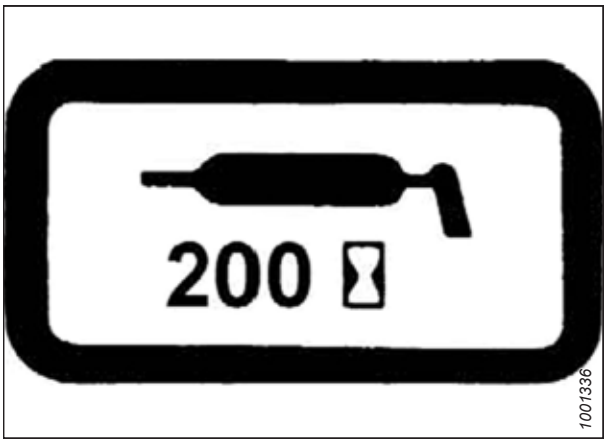


Figure 5.3: Grease Interval Decal

5.7.1 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

The knife, idler roller bearings, and drive roller bearings require greasing every 10 hours in most operating conditions.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless directed otherwise.

Knife: Lubricate the knife every 10 hours or daily, except in sandy conditions. In sandy conditions, lubricate the knife less often; excessive greasing can cause the buildup of sand in greased components.

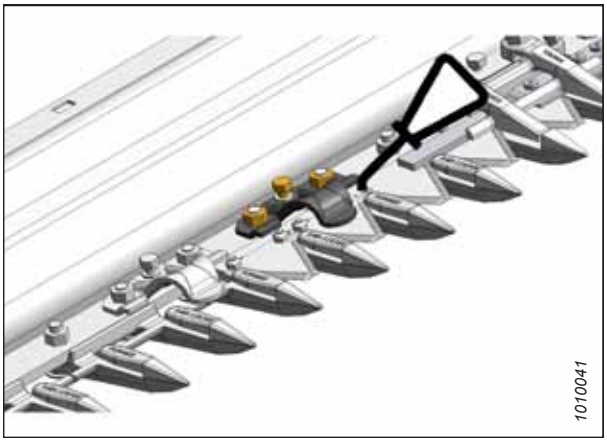


Figure 5.4: Lubricating Knife

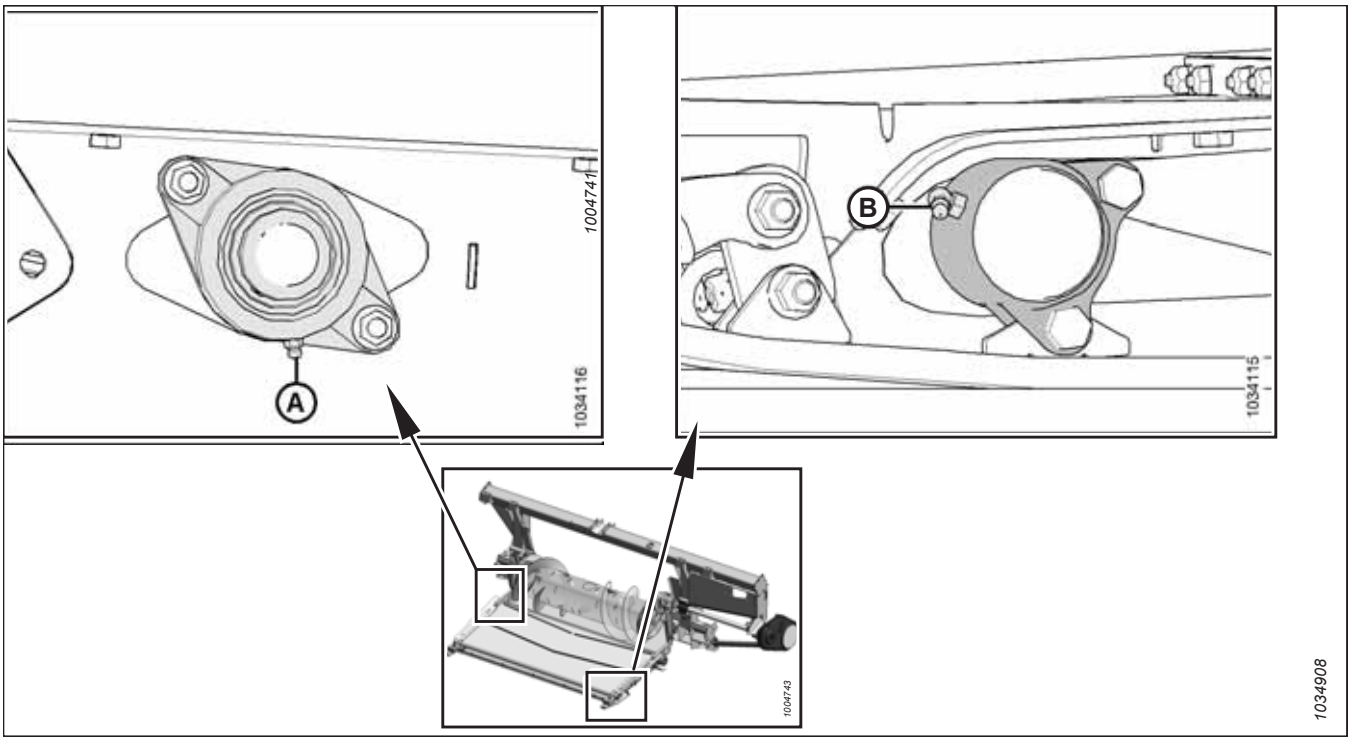


Figure 5.5: Every 10 Hours

A - Drive Roller Bearing

B - Idler Roller Bearing (Both Sides)

IMPORTANT:

When greasing the drive roller bearing, clear any debris and excess grease from around the bearing and bearing housing. Inspect the condition of the bearing and 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.

IMPORTANT:

When greasing the idler roller bearings, clear any debris and excess grease from around the bearing housing. Inspect the condition of the roller and bearing housing. Grease the feed draper idler roller bearing until grease comes out of the seal. Initial greasing on a new header may require additional grease (as much as 5–10 additional pumps). Wipe any excess grease from area after greasing.

Every 25 Hours

The knifehead requires greasing every 25 hours in most operating conditions.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knifehead: Lubricate knifehead (A) every 25 hours. Check for signs of excessive heating on the first few guards after greasing. If required, relieve the pressure by pressing the check-ball in the grease fitting.

IMPORTANT:

Overgreasing the knifehead puts pressure on the knife, causing it to rub against the guards, resulting in excessive wear from binding. Do **NOT** overgrease the knifehead. Apply only one to two pumps using a mechanical grease gun (do **NOT** use an electric grease gun). If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead. For instructions, refer to *5.12.3 Removing Knifehead Bearing, page 471*.

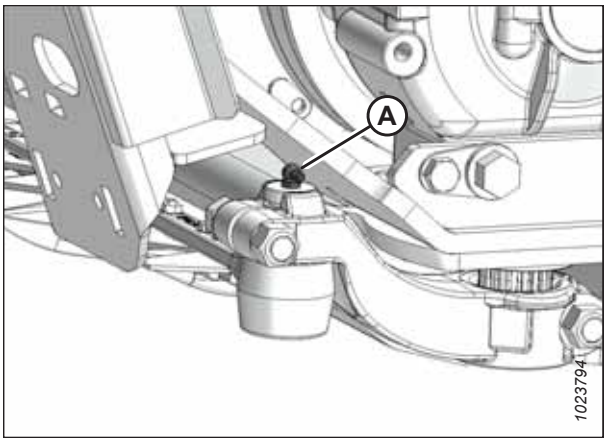


Figure 5.6: Knifehead

Every 50 Hours

Several critical driveline components require greasing every 50 hours in most operating conditions. If the header is equipped with an upper cross auger (UCA), then the UCA U-joint and bearings will also require greasing.

NOTE:

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless directed otherwise.

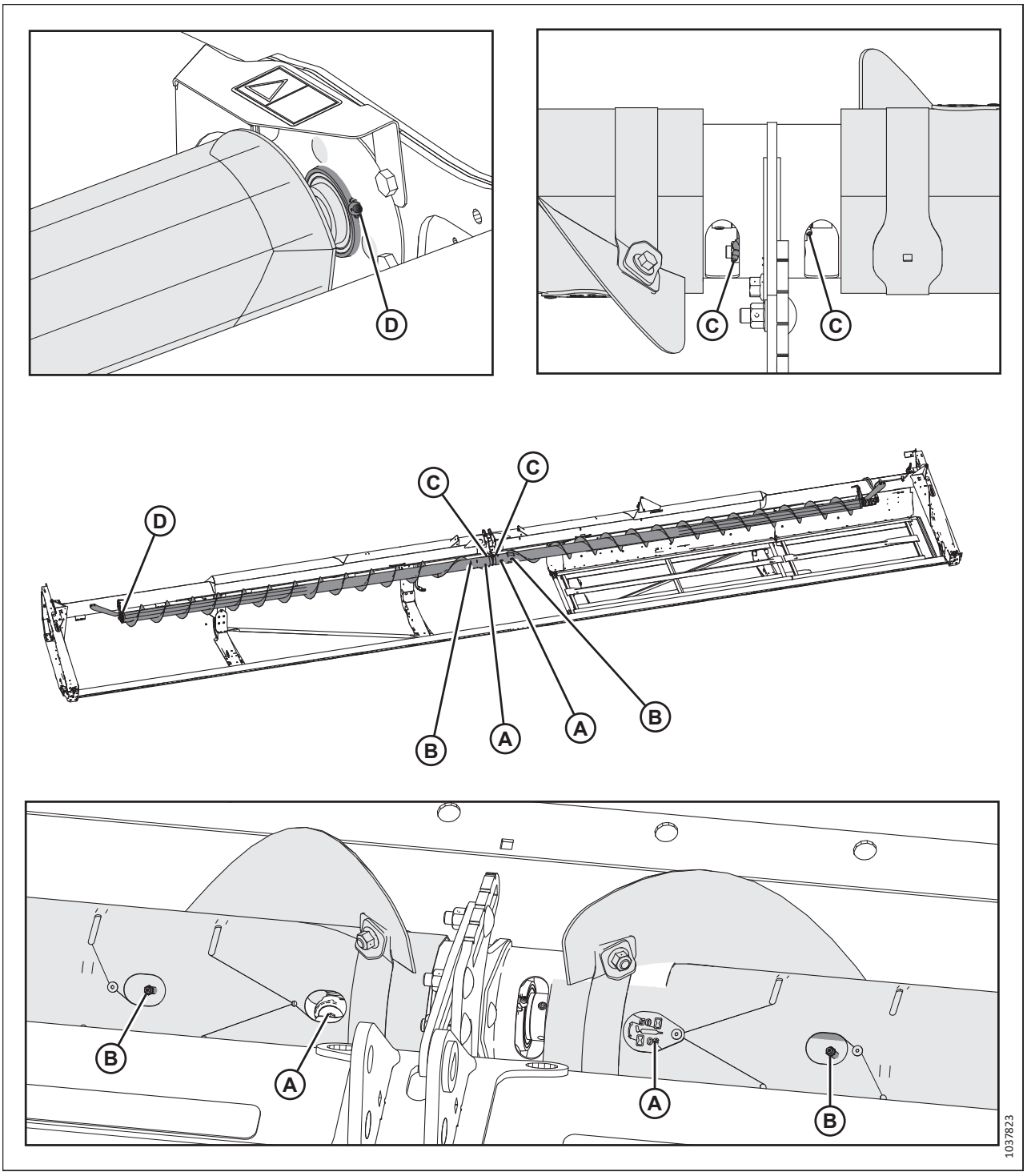


Figure 5.7: Every 50 Hours

A - Upper Cross Auger U-joint (Two Places)[54]
B - Upper Cross Auger - Sliding Hub (Two Places)
C - Upper Cross Auger Bearing (Two Places)
D - Upper Cross Auger Bearing (Right)

54. The U-joint has an extended lubrication cross and bearing kit. Stop adding grease to the zerk when greasing becomes difficult. Overgreasing will damage the U-joint.

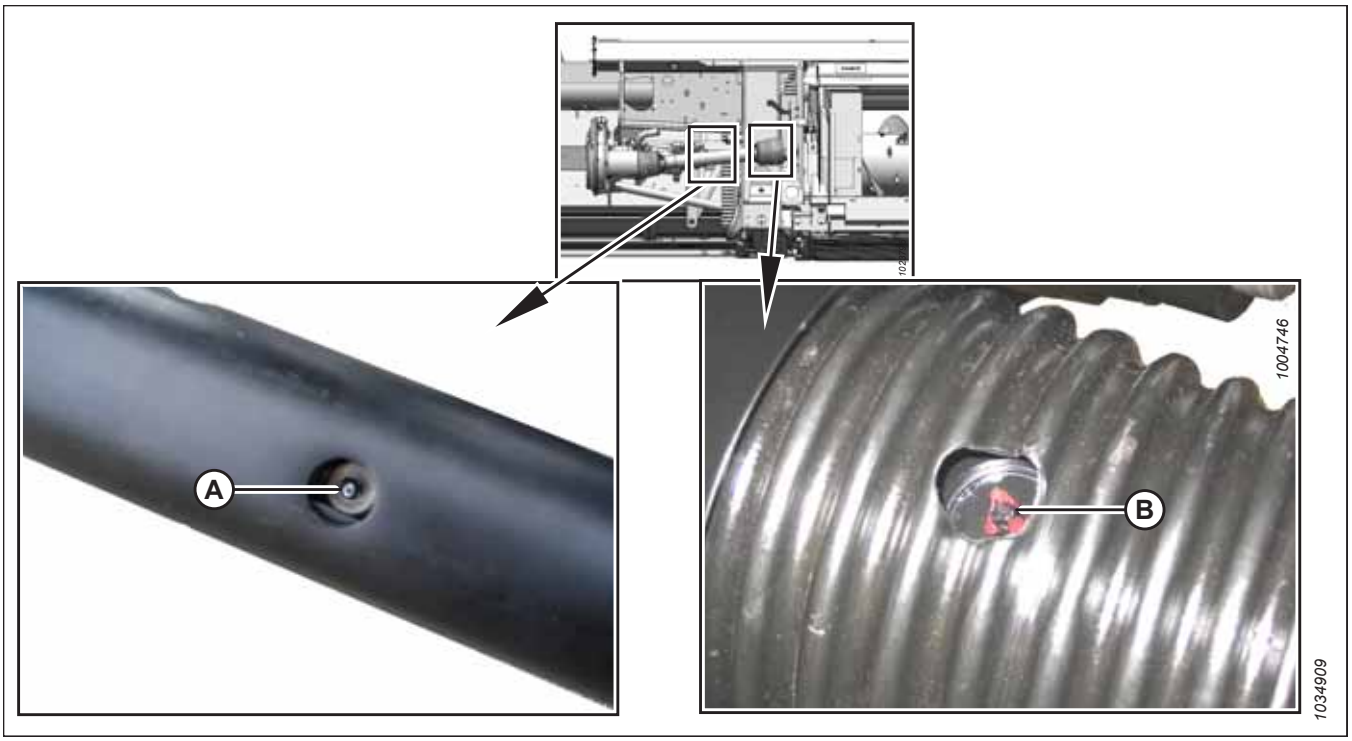


Figure 5.8: Every 50 Hours

A - Driveline Slip Joint[55]

B - Driveline Universal (Two Places)

Every 100 Hours

Several critical driveline components require greasing every 100 hours in most operating conditions.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

55. Use high temperature extreme pressure (EP2) performance grease with 10% max molybdenum disulphide (NLGI Grade 2) lithium base.

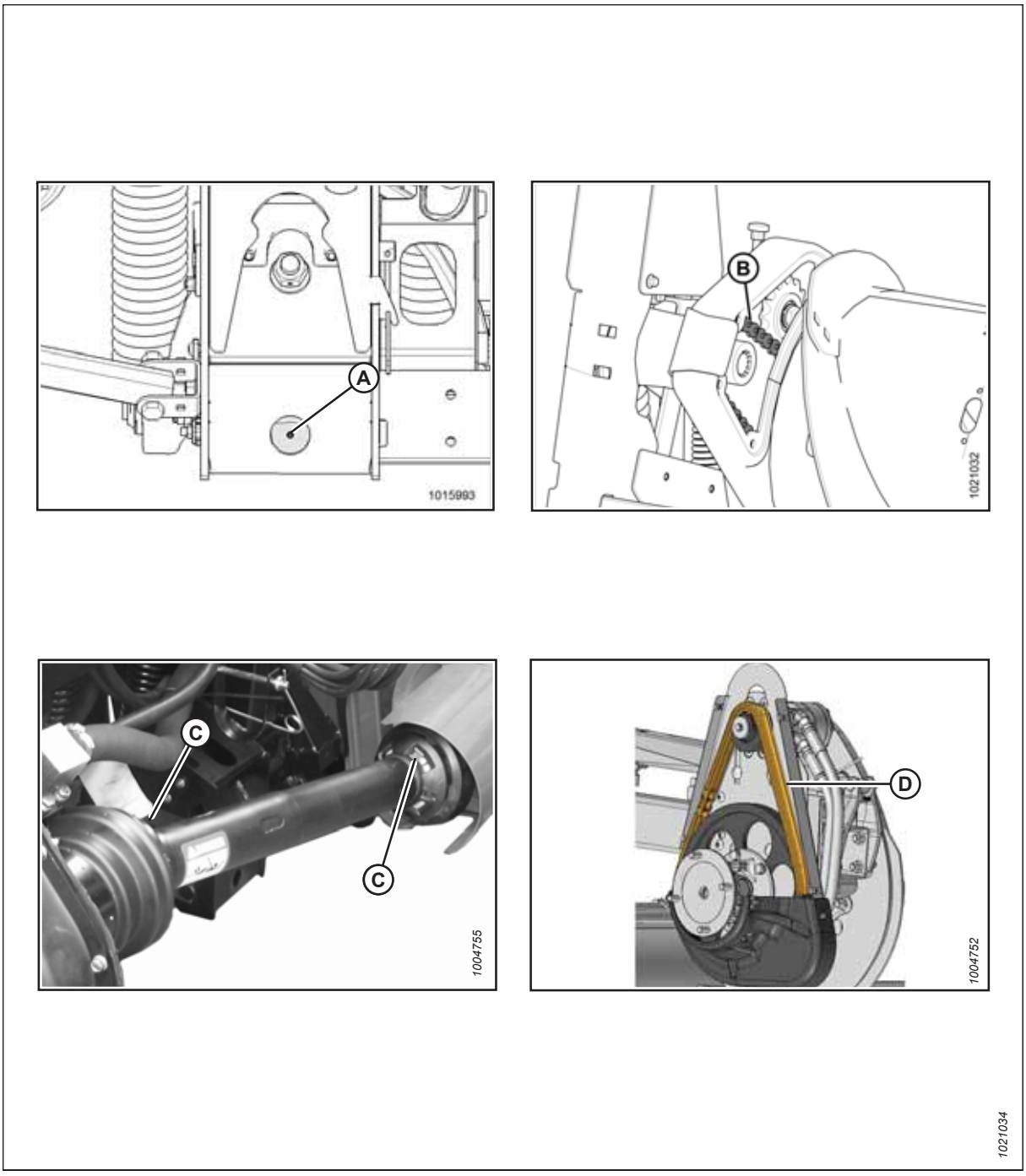
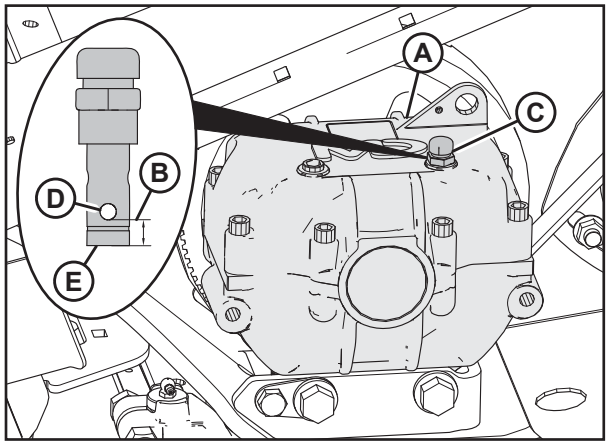
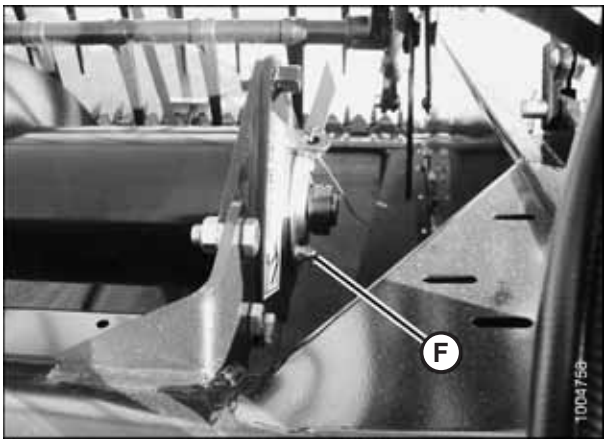


Figure 5.9: Every 100 Hours

A - Float Pivot – Right and Left
B - Auger Drive Chain (refer to *5.7.4 Lubricating Auger Drive Chain, page 434*)
C - Driveline Guard – Two Places
D - Reel Drive Chain – One Place (refer to *5.7.3 Lubricating Reel Drive Chain, page 432*)





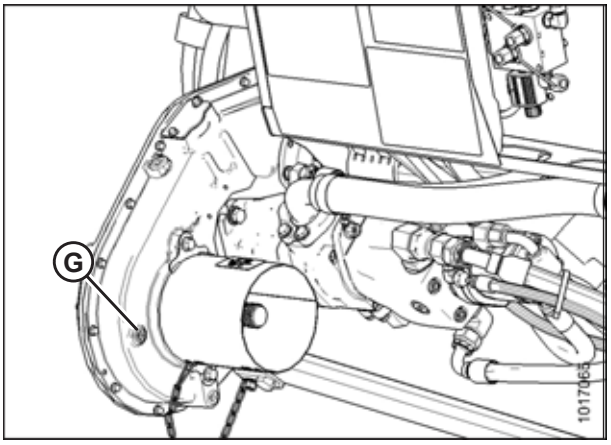


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Figure 5.10: Every 100 Hours

A - Knife Drive Box (Check Oil Level [B] on Dipstick [C]: Between Lowest Edge of Hole [D] and Bottom [E] of Dipstick)
F - Upper Cross Auger Bearing (One Place)
G - Main Drive Gearbox Oil Level (refer to *5.7.5 Lubricating Header Drive Gearbox, page 436*)

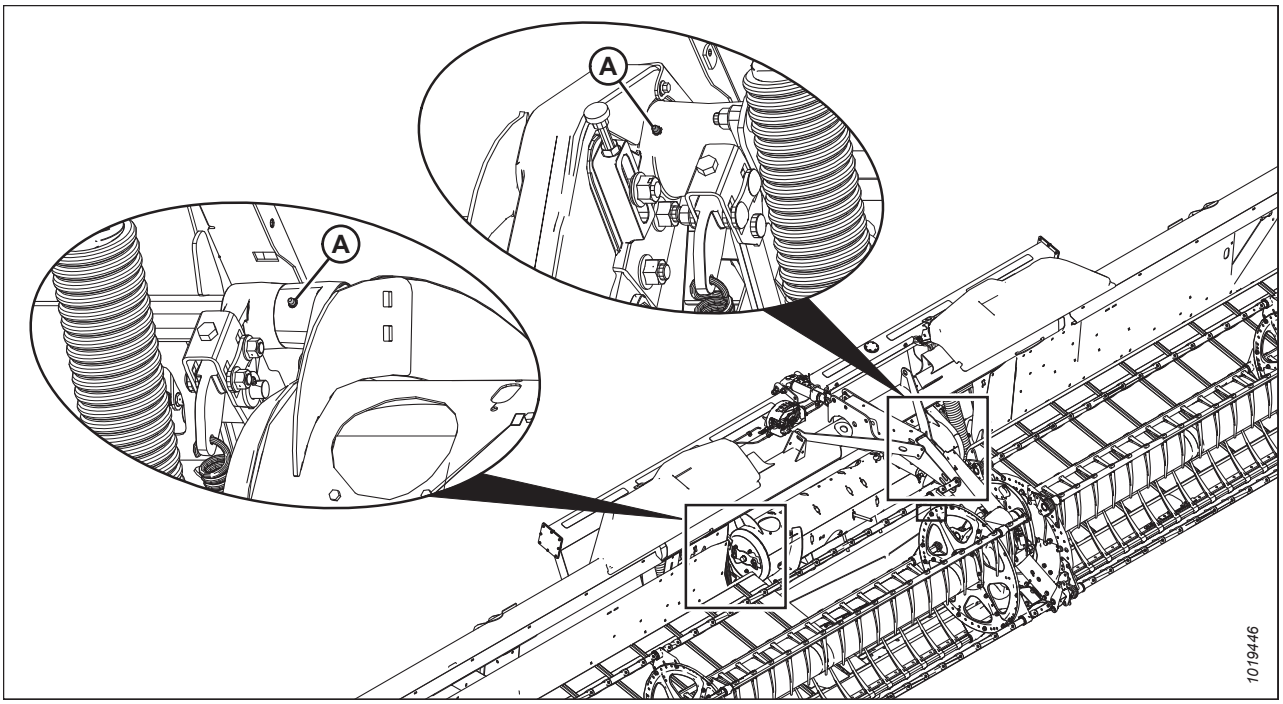

Figure 5.11: Every 100 Hours

A - Auger Pivots

Every 250 Hours

The transport wheels will need lubrication after 250 hours of operation, and the hydraulic oil filter will need to be changed.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

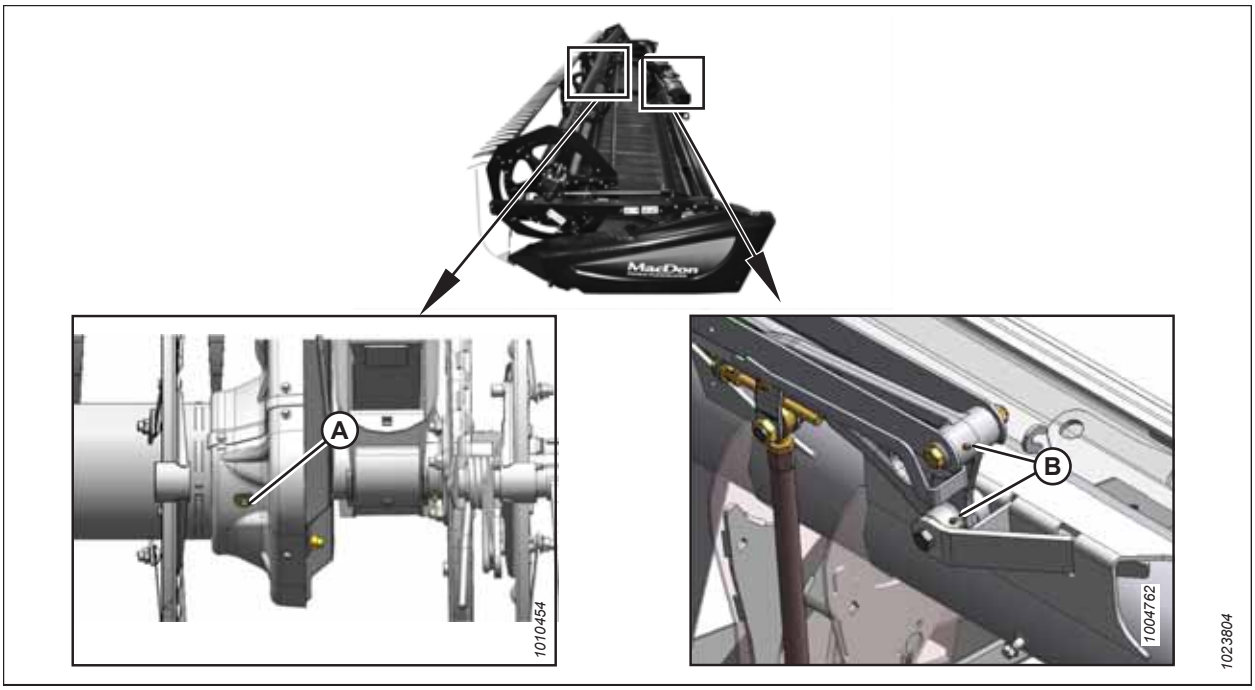

Figure 5.12: Every 250 Hours

A - Reel U-joint (One Place)[56]

B - Flex Linkage (Two Places) – Both Sides

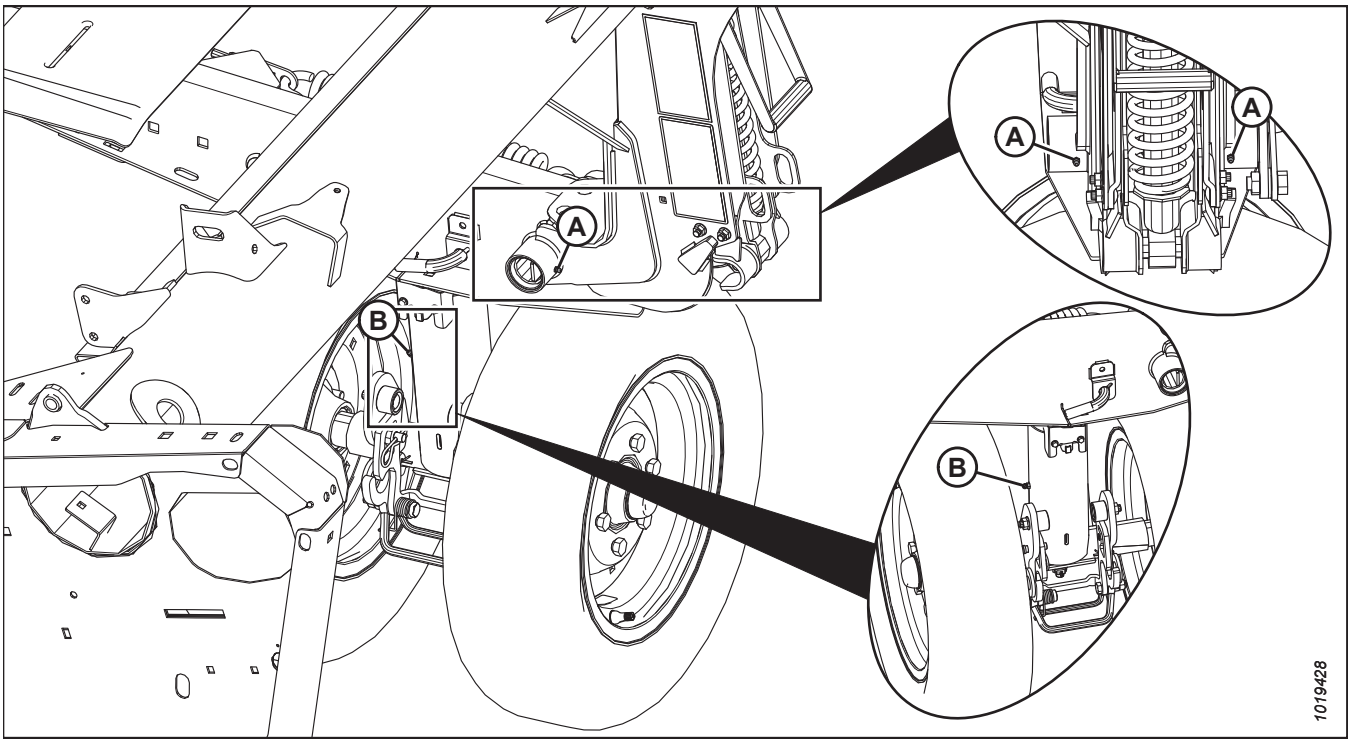

Figure 5.13: Every 250 Hours

A - Frame/Wheel Pivot (Front and Rear) – Both Sides

B - Front Wheel Pivot (One Place)

56. U-joint has an extended lubrication cross and bearing kit. Stop greasing when greasing becomes difficult or if U-joint stops taking grease. Overgreasing will damage U-joint. Six to eight pumps are sufficient at first grease (factory). Increase grease interval as U-joint wears and requires more than six pumps.

Every 500 Hours

After 500 hours of operation, the right transport wheels and several reel components require lubrication.

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

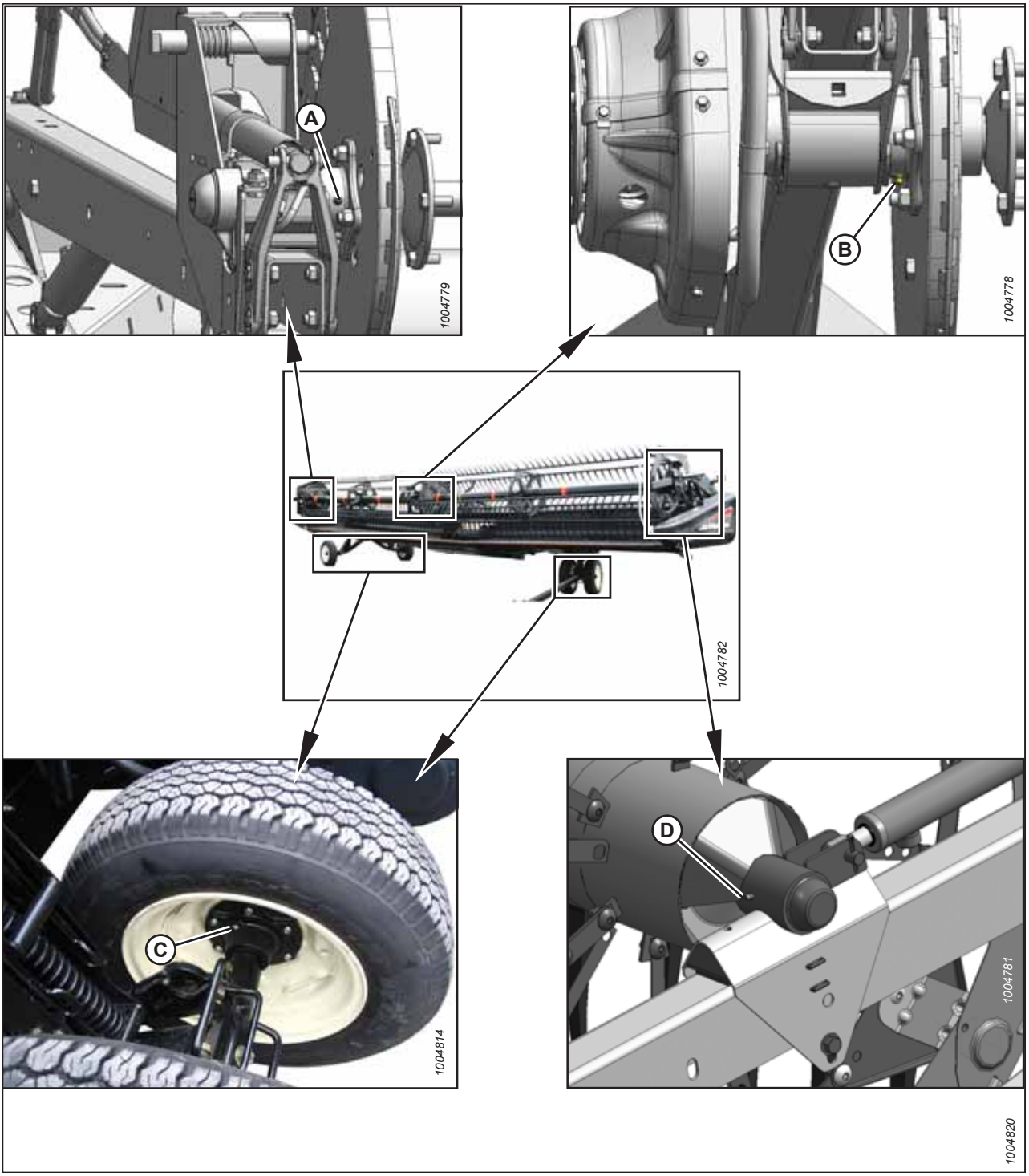

Figure 5.14: Every 500 Hours

A - Reel Right Bearing (One Place)
B - Reel Center Bearing (One Place)
C - Wheel Bearings (Four Places)
D - Reel Left Bearing (One Place)

5.7.2 Greasing Procedure

Greasing points are identified on the machine by decals showing a grease gun and a grease interval specified in terms of 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 information on the recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. For more maintenance information, refer to *5.2 Maintenance Schedule/ Record, page 414*.

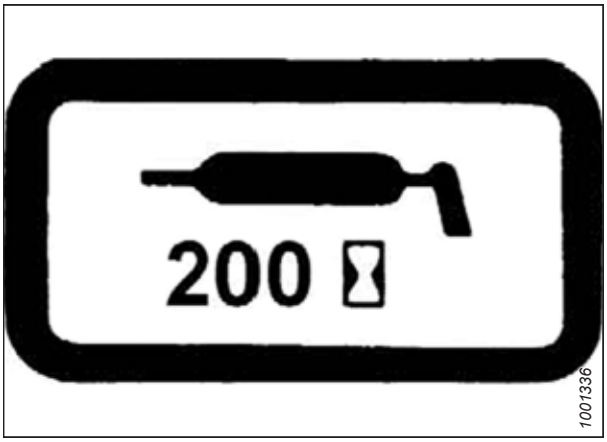

Figure 5.15: Greasing Interval Decal

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

2. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

   IMPORTANT:

   Use clean, high-temperature, extreme-pressure grease only.

   NOTE:

   Replace any loose or broken grease fittings immediately.

3. Inject the grease through the fitting until grease overflows the fitting (except where noted).

4. Leave a blob of excess grease on the fitting. This will prevent the fitting from becoming contaminated.

5. Remove and thoroughly clean any fitting that will not take grease. Clean the lubricant passageway. Replace the fitting if necessary.

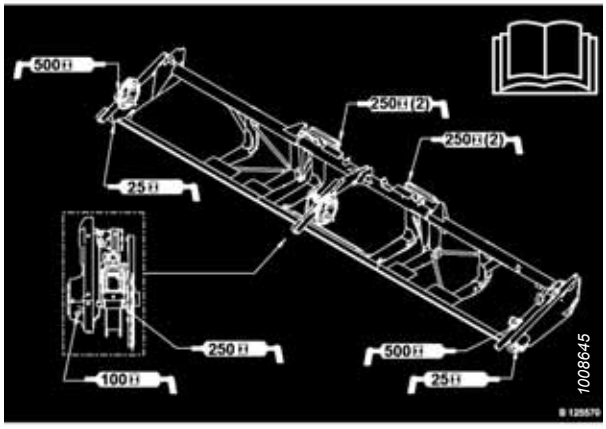

Figure 5.16: FD1 Series Grease Point Decal

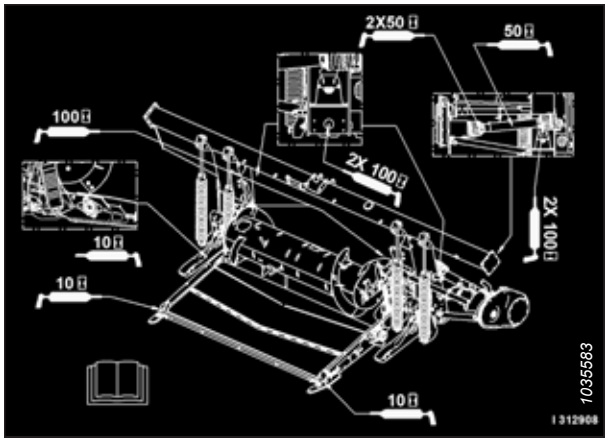

Figure 5.17: FM100 Grease Point Decal

5.7.3 Lubricating Reel Drive Chain

Double-reel headers are equipped with a reel drive chain which requires periodic lubrication. Refer to the maintenance schedule for the recommended maintenance interval.

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. Remove six bolts (A) securing upper cover (B) to the reel drive and lower cover (C).
2. Remove upper cover (B).

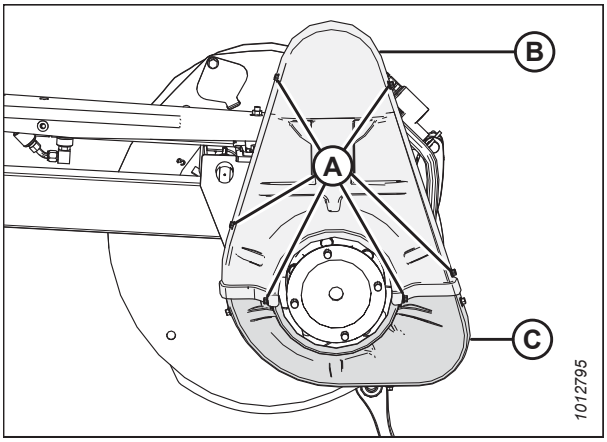

Figure 5.18: Drive Cover

3. Remove three bolts (A) and remove lower cover (B) if necessary.

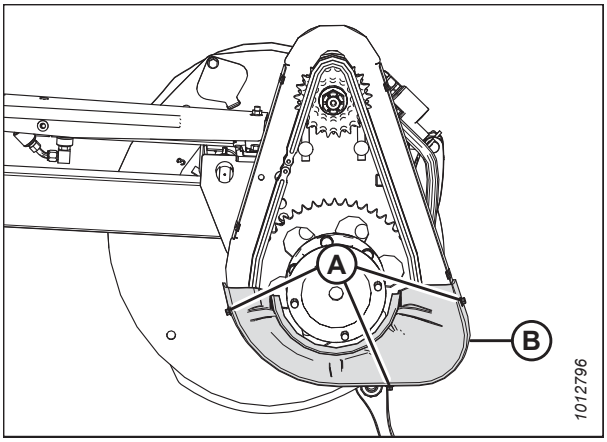

Figure 5.19: Lower Drive Cover

4. Apply a liberal amount of grease to drive chain (A).

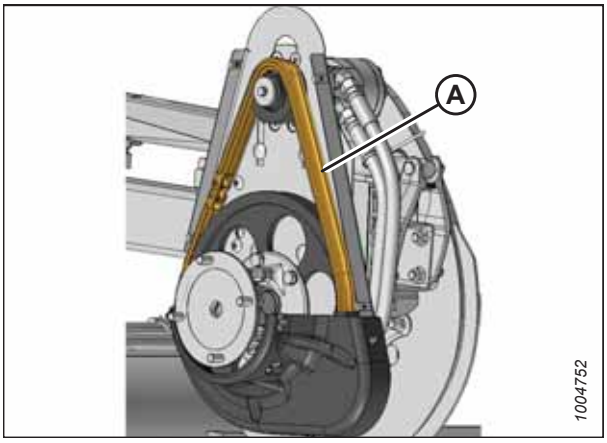

Figure 5.20: Drive Chain

5. Position lower drive cover (B) onto the reel drive (if it was previously removed), and secure it with three bolts (A). Torque the bolts to 12–13.2 Nm (9–10 lbf·ft).

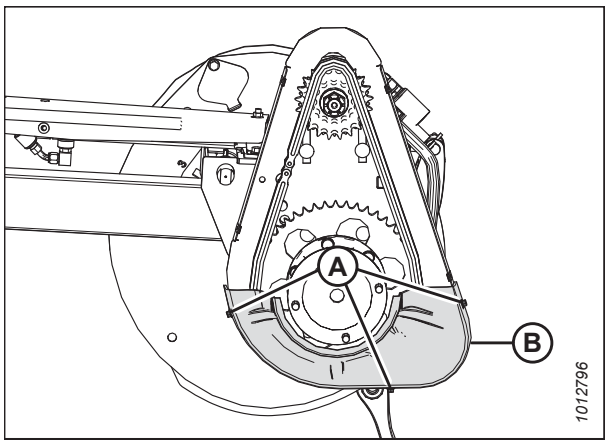

Figure 5.21: Lower Drive Cover

6. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure it with six bolts (A). Torque the bolts to 12–13.2 Nm (9–10 lbf·ft).

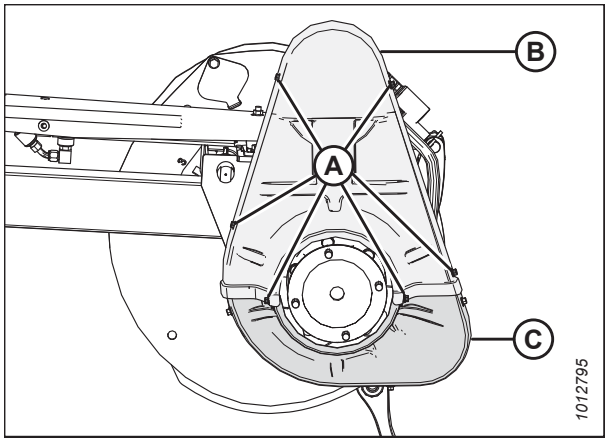

Figure 5.22: Drive Cover

5.7.4 Lubricating Auger Drive Chain

Lubricate the auger drive chain according to the interval specified in the maintenance schedule. The auger drive chain can be lubricated 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 and lower cover and a metal inspection panel. Only the metal inspection panel needs to be removed to perform this procedure.

1. Remove four bolts (A) and metal inspection panel (B).

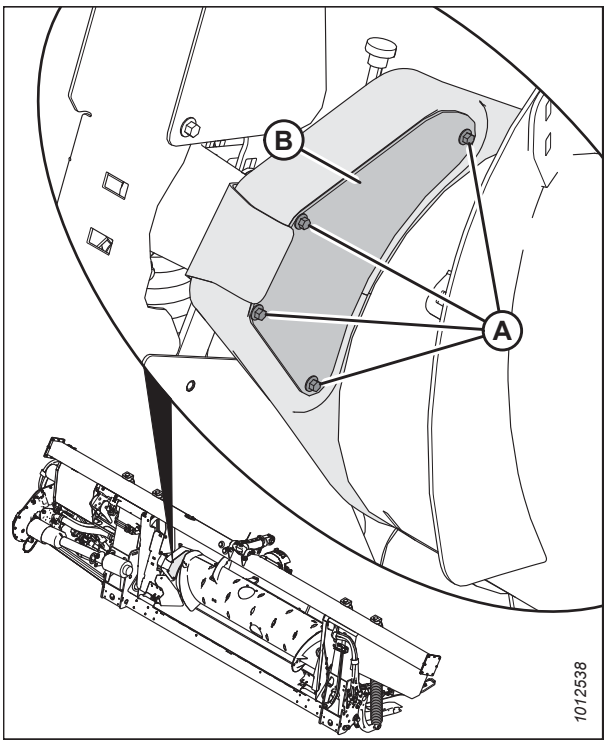

Figure 5.23: Auger Drive Inspection Panel

2. Apply a liberal amount of grease to chain (A), drive sprocket (B), and idler sprocket (C).

3. Rotate the auger and apply grease to more areas of the chain, if necessary.

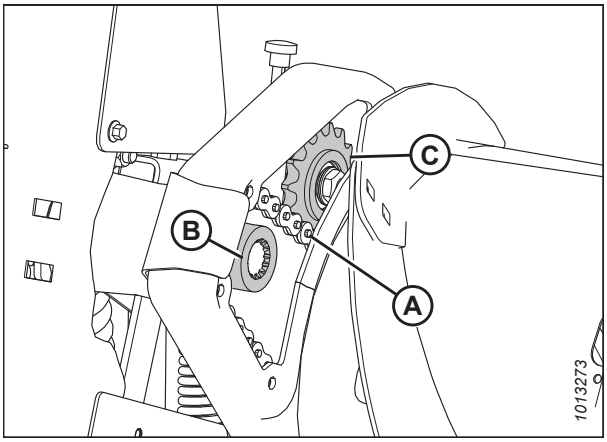

Figure 5.24: Auger Drive Chain

4. Reinstall metal inspection panel (B). Secure the panel with four bolts (A).

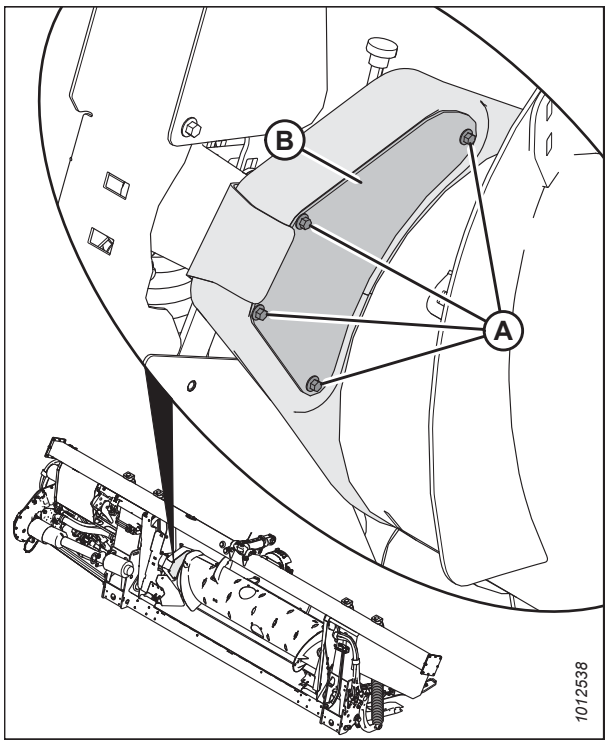

Figure 5.25: Auger Drive Inspection Panel

5.7.5 Lubricating Header Drive Gearbox

The oil in the header drive gearbox will need to be inspected, added to, and changed from time to time.

Checking Oil Level in Header Drive Gearbox

The oil level in the header drive gearbox can be inspected by removing the oil level plug.

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. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.

3. Remove oil level plug (A) and check that the oil level is up to the bottom of the hole.
4. Reinstall oil level plug (A).
5. Add oil if required. For instructions, refer to *Adding Oil to Header Drive Gearbox, page 437*.

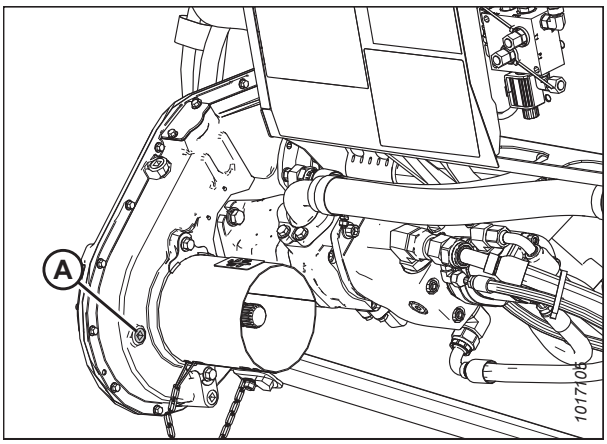

Figure 5.26: Header Drive Gearbox

Adding Oil to Header Drive Gearbox

If the oil level in the header drive gearbox is too low, or if the oil has been drained, more oil will need to be added.

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. Lower the cutterbar to the ground, and ensure the gearbox is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove filler plug (B) and oil level plug (A).
4. Add oil into filler plug hole (B) until it runs out of oil level plug hole (A). Refer to the inside back cover for recommended fluids and lubricants.
5. Replace oil level plug (A) and filler plug (B).

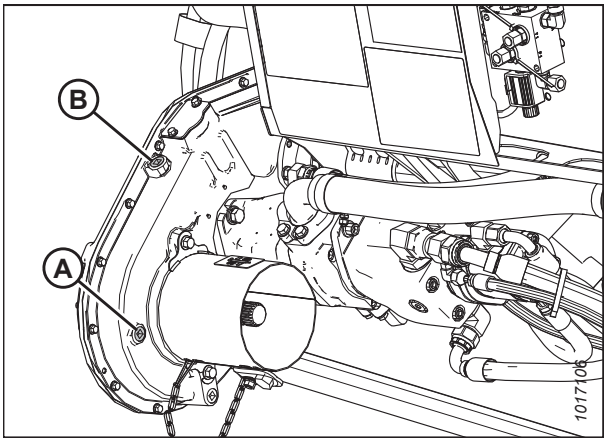

Figure 5.27: Header Drive Gearbox

Changing Oil in Header Drive Gearbox

Change the oil in the header drive gearbox according to the interval specified in the maintenance schedule.

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 suitably sized 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), and allow the oil to drain.
7. Replace oil drain plug (A) and remove oil level plug (B).
8. Add oil through filler plug hole (C) until it runs out of oil level hole (B). Refer to this manual's inside back cover for recommended lubricants.

   NOTE:

   The header drive gearbox holds approximately 2.5 liters (2.6 quarts) of oil.
9. Replace oil level plug (B) and filler plug (C).

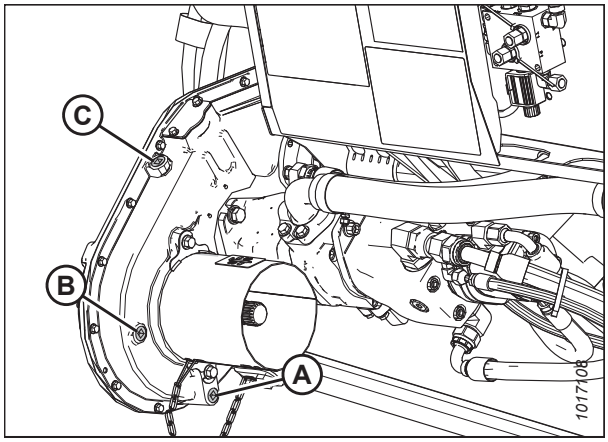

Figure 5.28: Header Drive Gearbox

5.8 Hydraulics

The FM100 Float Module's hydraulic system drives the float module feed draper, header drapers, and knife drives. The combine's hydraulic system drives the reel hydraulics.

The float module frame acts as an oil reservoir. Refer to the inside back cover for information on the float module's oil requirements.

5.8.1 Checking Oil Level in Hydraulic Reservoir

Check the hydraulic oil level in the reservoir according to the interval specified in the maintenance schedule. The procedure for checking the hydraulic oil level differs depending on whether the header is on level or sloped terrain.

NOTE:

Check the oil level when the oil is cold.

1. Check the oil level by looking at lower sight (A) and upper sight (B). Ensure that the cutterbar is barely touching the ground, and the center-link is fully retracted.
2. Ensure that the oil is at the appropriate level for the type of terrain that the header is parked on:
   - **Level terrain (C):** Lower sight (A) should be full, and upper sight (B) should be empty.
   - **Sloped terrain (D):** Lower sight (A) should be full, and upper sight (B) should be half-filled.

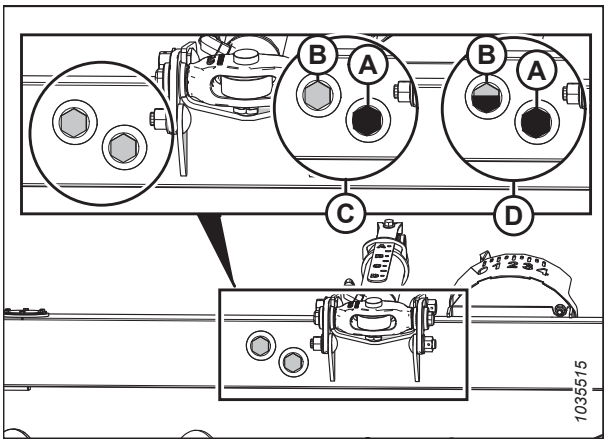

Figure 5.29: Oil Level Sight Glass

NOTE:

It may be necessary to slightly reduce the oil level when the ambient temperature is above 35°C (95°F). This will prevent oil from overflowing at the breather tube when the hydraulic oil reaches operating temperature.

NOTE:

It is acceptable to use the sloped terrain oil level sight glass on level terrain, if the Fill Neck Extension Kit (MD #B6057) is installed on the float module. For more information, refer to *6.1.1 Hillside Extension Kit, page 587*.

5.8.2 Adding Oil to Hydraulic Reservoir

If the oil level in the hydraulic reservoir is low, or if the oil has been drained, oil will need to be added.

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 any dirt or debris from filler cap (A).

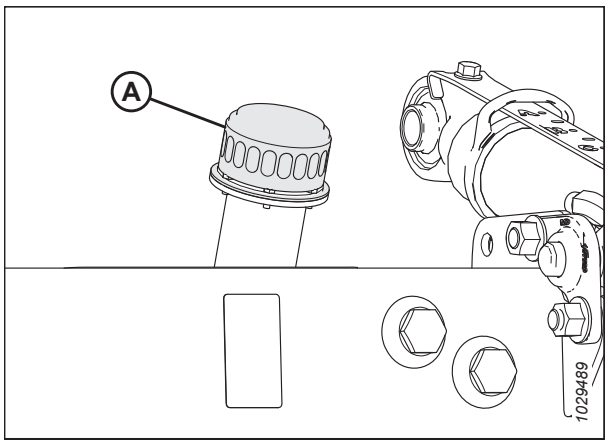

Figure 5.30: Oil Reservoir Filler Cap

CAUTION

The oil reservoir may be under pressure; remove the cap slowly.

3. Turn filler cap (A) clockwise to remove it.
4. Fill the hydraulic oil reservoir with warm oil (approximately 21°C [70°F]) until the appropriate fill level is reached. For instructions, refer to *5.8.1 Checking Oil Level in Hydraulic Reservoir, page 439* for information on how to check the hydraulic oil level. Refer to this manual's inside back cover for information on the capacity of the reservoir and the type of oil to use.

   IMPORTANT:

   Warm oil will flow through the mesh filler screen better than cold oil. Do **NOT** remove the screen.
5. Reinstall filler cap (A).
6. Recheck the oil level. For instructions, refer to *5.8.1 Checking Oil Level in Hydraulic Reservoir, page 439*.

5.8.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir to maintain proper operation of the system.

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. For instructions, refer to the combine operator's manual.
2. Engage the header to warm the oil.
3. Shut down the engine, and remove the key from the ignition.

4. Place a suitably sized container (at least 40 liters [10 gallons]) under each of the two oil drain plugs (A) located at the back on each side of the frame.

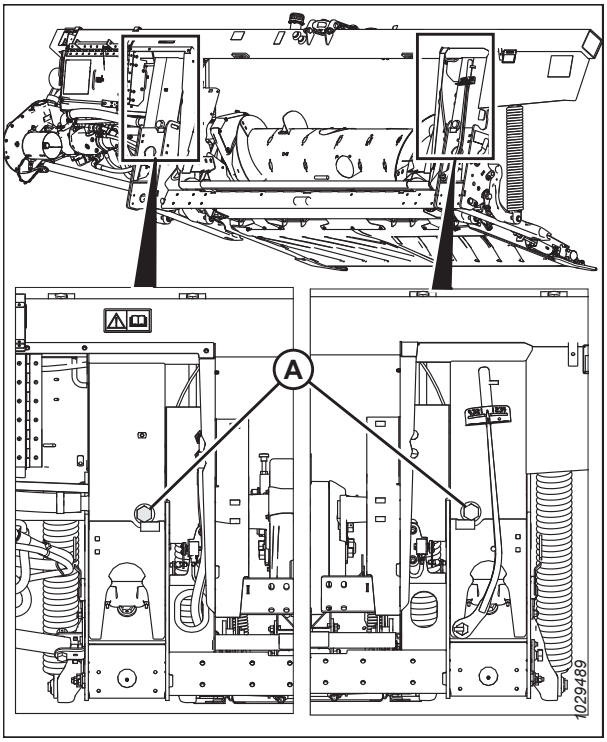

Figure 5.31: Reservoir Drain

5. Clean any dirt or debris from filler cap (A).

CAUTION

Oil reservoir can have up to 10 psi of pressure, remove the cap slowly.

6. Loosen and remove filler cap (A) by turning it counterclockwise.

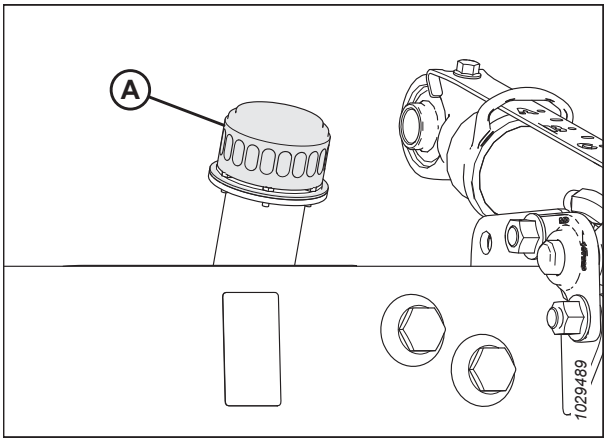

Figure 5.32: Oil Reservoir Filler Cap

7. Remove oil drain plugs (A) with a 1 1/2 in. hex socket and allow the oil to drain.
8. Replace oil drain plugs (A) when the reservoir is empty.
9. Change the oil filter if required. For instructions, refer to *5.8.4 Changing Oil Filter, page 442*.
10. Add approximately 85 liters (22.5 gallons) of oil to the reservoir. For instructions, refer to *5.8.2 Adding Oil to Hydraulic Reservoir, page 439*.

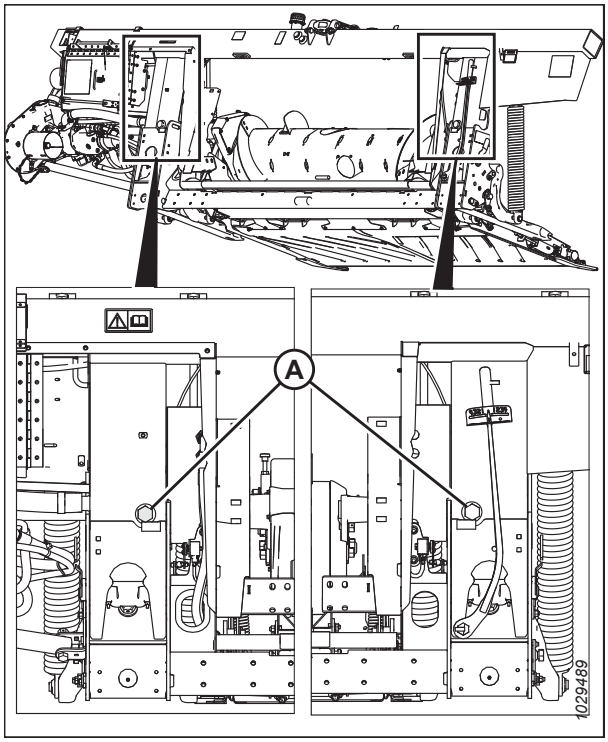

Figure 5.33: Reservoir Drain

5.8.4 Changing Oil Filter

Change the hydraulic oil filter according to the interval specified in the maintenance schedule.

Obtain replacement filter (MD #320360) from 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. Clean around the mating surfaces of filter (B) and manifold (A).
2. Place a suitably sized container (of a capacity of at least 1 liter [0.26 gallons]) under oil drain spout (C).
3. Remove spin-off filter (B) and clean the exposed filter port on manifold (A).
4. Apply a thin film of clean oil to the O-ring provided with the new filter.
5. Place the new filter onto the threaded spindle on manifold (A). Tighten the filter 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 the filter.

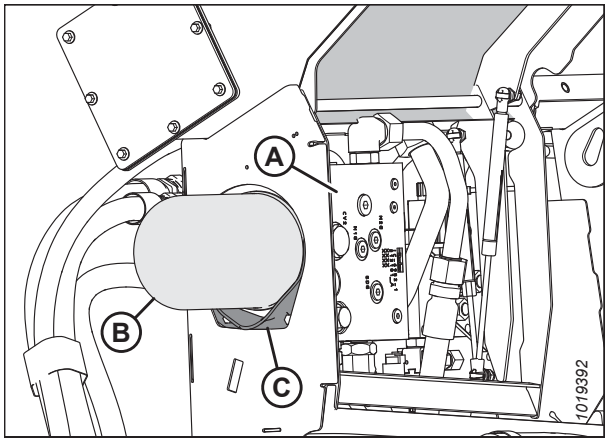

Figure 5.34: FM100 Hydraulics

5.9 Electrical System

The electrical system for the header is powered by the combine. The header has various lights and sensors that require power.

5.9.1 Replacing Light Bulbs

If a light bulb on the header is burnt out 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.

1. Shut down the engine, and remove the key from the ignition.
2. Use a Phillips screwdriver to remove screws (A) from the fixture, and remove the plastic lens. Retain screws (A).
3. Replace the bulb, and reinstall the plastic lens and screws.

NOTE:

Use trade #1156 bulb for amber transport lights and #1157 for red tail lights. The red tail lights are only on headers with the transport option installed.

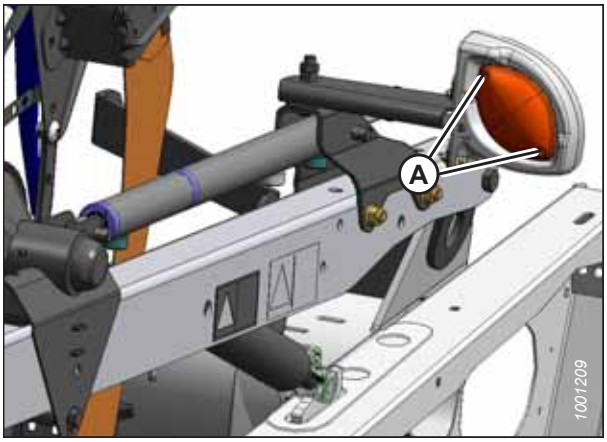

Figure 5.35: Left Transport Light

NOTE:

Slow Speed Transport option light is shown in the illustration at right.

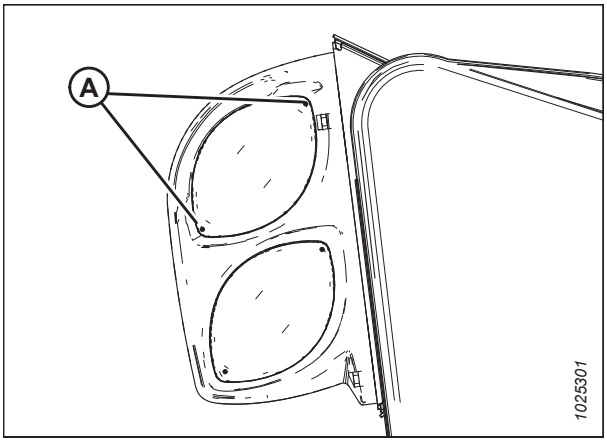

Figure 5.36: Slow Speed Transport Option – Red and Amber Lights

5.10 Header Drive

The header drive consists of a driveline from the combine to the FM100 Float Module gearbox that drives the feed auger and hydraulic pumps. The pumps provide hydraulic power to the drapers, knives, and optional equipment.

5.10.1 Removing Driveline

The driveline connects the combine's power take-off to the header's gearbox. The driveline may need to be removed for storage or service.

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 normally remains attached to the float module and is stored on the support bracket provided when not in use.

1. Shut down the combine, and remove the key from the ignition.
2. If the float module is attached to the combine, remove the driveline from the combine by pulling the quick disconnect collar to release the driveline yoke at the combine shaft.
3. Remove two nuts (A) securing shield (B) to the gearbox.
4. Slide shield (B) over the driveline shield to expose the quick disconnect on the gearbox. Do **NOT** disconnect tether (C).
5. Pull the quick disconnect collar to release the driveline yoke, and pull the driveline off the gearbox shaft.
6. Slide shield (B) off the driveline.

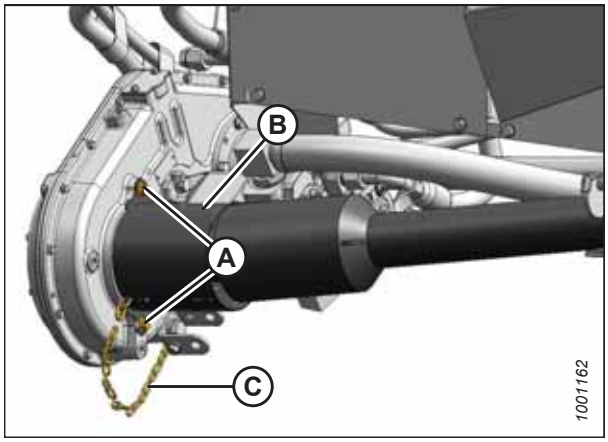

Figure 5.37: Float Module End of Driveline

7. Pull driveline collar (A) away from power take-off (PTO) support (B). Slide yoke (C) off support (B), and release collar (A).

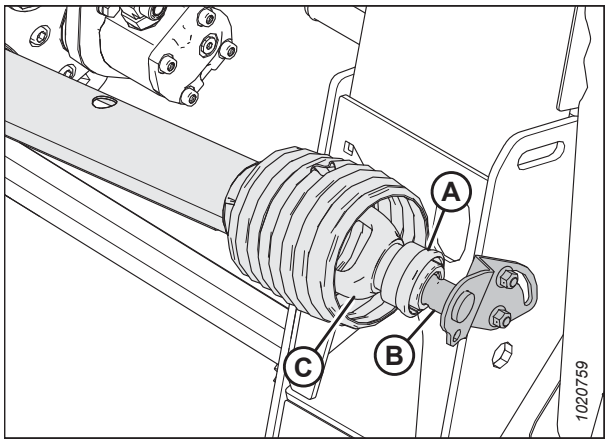

Figure 5.38: Combine End of Driveline

5.10.2 Installing Driveline

The driveline connects the combine's power take-off to the header's gearbox. Follow this procedure carefully when installing the driveline; depending on the driveline's configuration, it may be possible to install the driveline incorrectly.

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 output shaft splines match the float module input shaft splines, ensure the driveline is installed with the longer guard at the float module gearbox end.

IMPORTANT:

Ensure the driveline length corresponds with the length specifications for your specific equipment. For more information, refer to *2.2 FD1 Series FlexDraper® Header Specifications, page 21*.

1. Position the combine end of driveline (A) onto storage support (B). Pull back collar (C) on the driveline and slide the driveline onto the support until it locks in place. Release collar (C).
2. For drivelines equipped with safety chains, attach chain (D) at the combine end to driveline storage support (B).

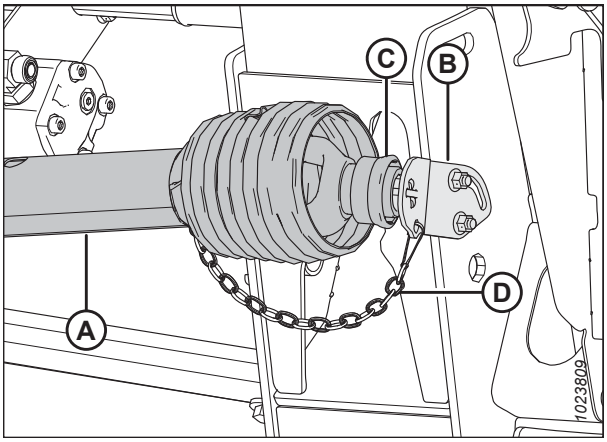

Figure 5.39: Combine End of Driveline

3. Slide shield (A) over driveline (B).
4. Position the driveline quick disconnect onto the float module gearbox shaft, pull back the collar, and slide it onto the shaft until it locks in place. Release the collar.
5. Position shield (A) on the gearbox and secure it with bolts (C).
6. For drivelines equipped with safety chains, attach chain (D) at the module end to chain (E) on the shield.

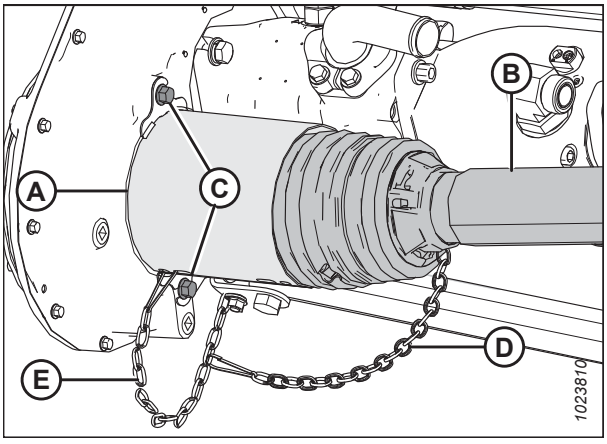

Figure 5.40: Float Module End of Driveline

5.10.3 Removing Driveline Guard

The main driveline guard must remain attached to the driveline during operation, but it can be removed 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. Pull driveline collar (A) away from power take-off (PTO) support (B). Slide yoke (C) off support (B), and release collar (A).

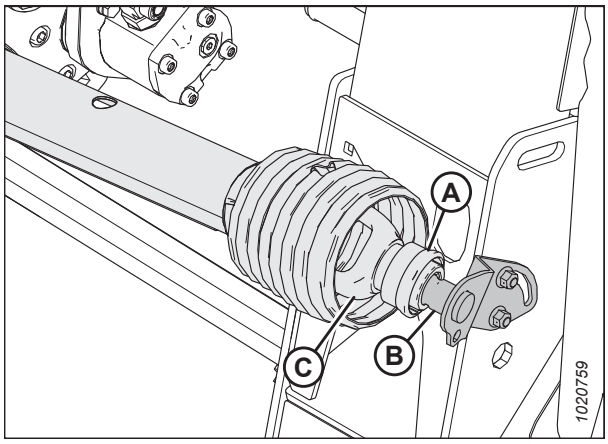

Figure 5.41: Combine End of Driveline

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 5.42: Separated Driveline

4. Use a slotted screwdriver to release grease fitting/lock (A).

Figure 5.43: 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 5.44: Driveline Guard

5.10.4 Installing Driveline Guard

The driveline guard must be installed before the header can be safely operated.

1. Slide the guard onto the driveline, and line up the slotted lug on locking ring (A) with arrow (B) on the guard.

Figure 5.45: Driveline Guard

2. Push the guard onto the ring until the locking ring is visible in slots (A).

Figure 5.46: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise.

Figure 5.47: Driveline Guard

4. Push grease fitting (A) back into the guard.

Figure 5.48: Driveline Guard

5. Assemble the driveline.

   IMPORTANT:

   The splines are keyed to align the universals. Align weld (A) with missing spline (B) when assembling. Failure to align the halves of the shaft can cause excessive vibration and feed auger/gearbox failures.

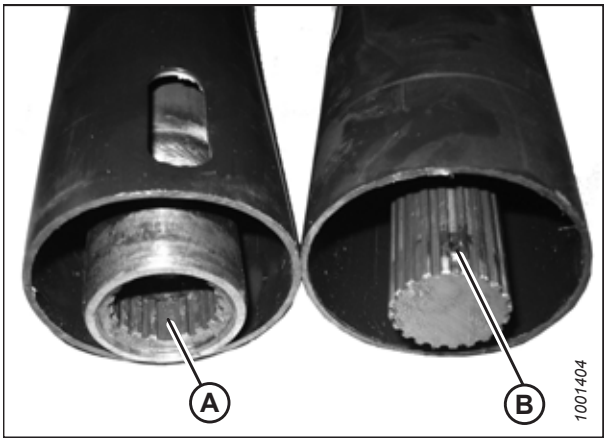

Figure 5.49: Driveline

6. Position the combine end of driveline (A) on power take-off (PTO) storage support (B). Pull back collar (C) on the driveline and slide the driveline onto the support until driveline yoke (D) locks onto the support. Release collar (C).

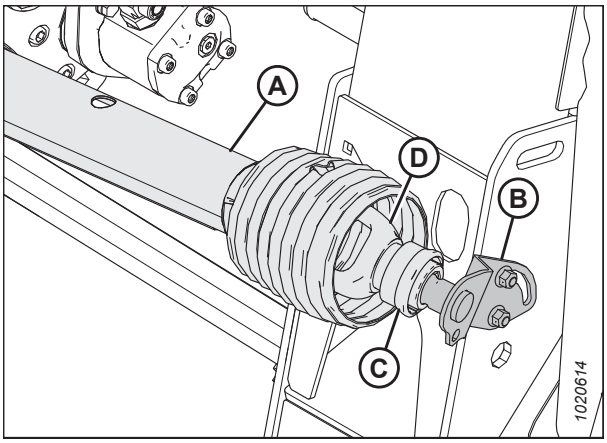

Figure 5.50: Combine End of Driveline

5.10.5 Adjusting Gearbox Drive Chain Tension

The gearbox drive chain tension is factory-set, but tension adjustments must be performed according to the interval specified in the maintenance schedule.

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. Lower the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Remove two bolts and chain adjusting cover (A). Inspect gasket (B). If the gasket is damaged, replace it.
4. Remove retainer plate (C).
5. Tighten bolt (D) to 6.8 Nm (60 lbf·in).
6. Refer to Table *5.1, page 450* and back off (loosen) bolt (D) based on your gearbox configuration.

   NOTE:

   A properly tensioned chain has 10–14 mm (3/8–9/16 in.) of deflection at its midpoint.
7. Reinstall retainer plate (C).
8. Reinstall two bolts and chain adjusting cover (A) and gasket (B). Torque hardware to 9.5 Nm (84 lbf·in).

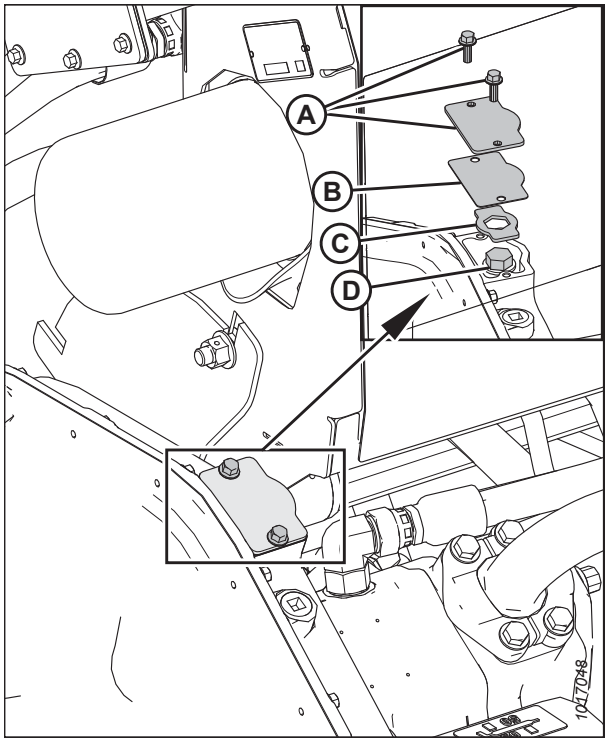

Figure 5.51: Chain Tensioner

Table 5.1 Adjusting Bolt Tightness on Configured Gearboxes

Gearbox Configuration	Gear Ratios	Back Off Amounts
CLAAS	18/38 sprocket ratio, 74 pitch chain	1 turn or 360 degrees
CLAAS	22/38 sprocket ratio, 74 pitch chain	1/2 turn or 180 degrees
Case, New Holland, Challenger®, Gleaner, Massey Ferguson®	29/38 sprocket ratio, 78 pitch chain	1 turn or 360 degrees
Case, New Holland, Challenger®, Gleaner, Massey Ferguson® – Europe	31/38 sprocket ratio, 78 pitch chain	1 1/8 turn or 405 degrees
IDEAL™ Series	29/38 sprocket ratio, 78 pitch chain	1 turn or 360 degrees
John Deere	24/38 sprocket ratio, 74 pitch chain	1 2/3 turn or 600 degrees
John Deere (Europe)	31/38 sprocket ratio, 80 pitch chain	2 1/2 turn or 900 degrees
John Deere	37/38 sprocket ratio, 80 pitch chain	2 1/2 turn or 900 degrees

Table 5.1 Adjusting Bolt Tightness on Configured Gearboxes (continued)

Gearbox Configuration	Gear Ratios	Back Off Amounts
Special	20/38 sprocket ratio, 74 pitch chain	3/4 turn or 270 degrees
Special	22/38 sprocket ratio, 74 pitch chain	1 turn or 360 degrees
Special	26/38 sprocket ratio, 76 pitch chain	1 turn or 360 degrees

5.11 Auger

The FM100 Float Module auger feeds the cut crop from the draper decks into the combine feeder house.

5.11.1 Adjusting Auger to Pan Clearance

Setting a proper auger-to-pan clearance will prevent the fingers or flighting from contacting the feed draper or pan during operation.

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:

Maintain an appropriate distance between the auger and the auger pan. Too little clearance may result in the fingers or flighting contacting and damaging the feed draper or pan when operating the header at certain angles. Look for evidence of contact when greasing the float module.

1. Extend the center-link to the steepest header angle, and position the header 150–254 mm (6–10 in.) off the ground.
2. Lock the header wings. For instructions, refer to *Locking/Unlocking Header Wings, page 73*.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

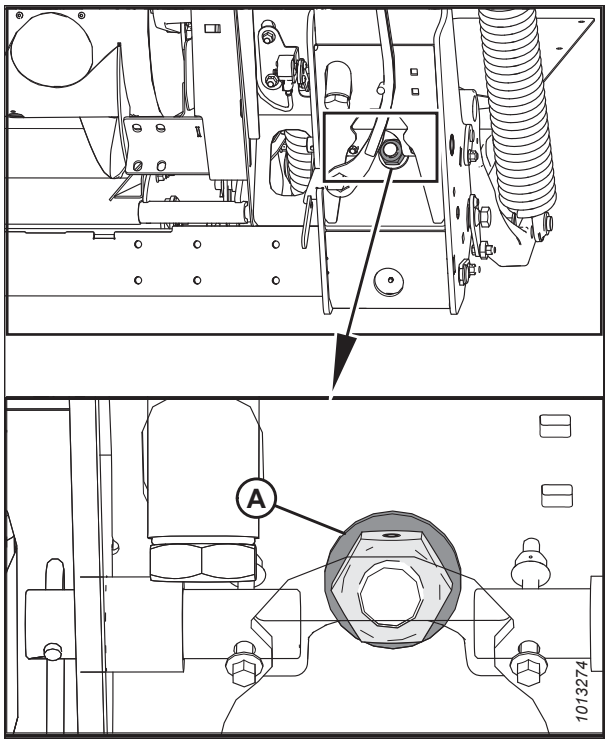

Figure 5.52: Float Lock

5. Before adjusting the auger to pan clearance, check the auger float position to determine how much clearance is required:

   - If bolt head (A) is closest to floating symbol (B), the auger is in the floating position.

   IMPORTANT:

   Make sure bolts (A) are set at the same location on both ends of the header to avoid damaging the machine during operation.

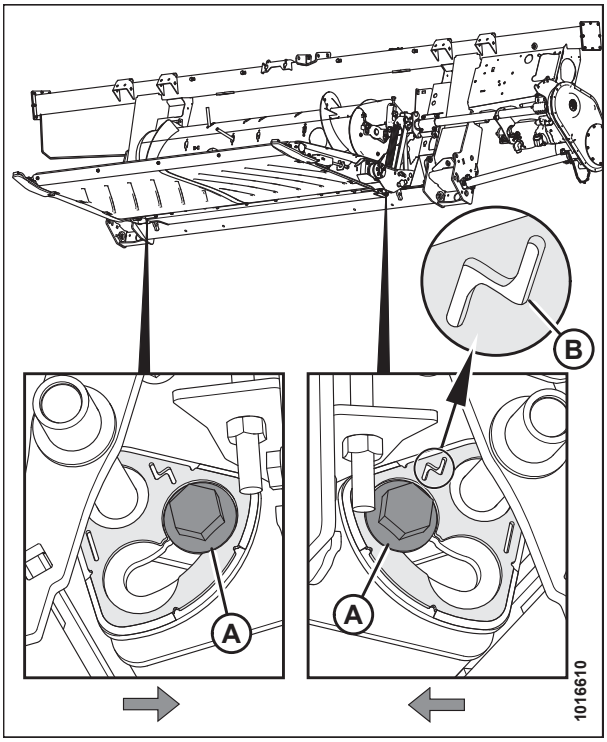

Figure 5.53: Floating Position

   - If bolt head (A) is closest to fixed symbol (B), the auger is in the fixed position.

   IMPORTANT:

   Make sure bolts (A) are set at the same location on both ends of the header to avoid damaging the machine during operation.

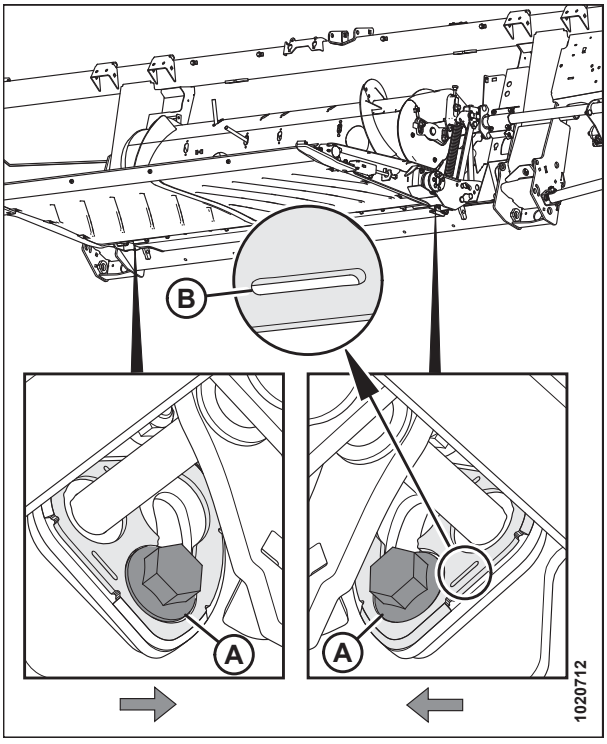

Figure 5.54: Fixed Position

6. Loosen two nuts (B) and rotate the auger to position the flighting over the feed pan.
7. 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 22–26 mm (7/8–1 in.).
   - If the feed auger is in the floating position, set the clearance to 11–15 mm (7/16–5/8 in.).

   NOTE:

   The clearance increases 25–40 mm (1–1 1/2 in.) when the center-link is fully retracted.
8. Repeat Steps *6, page 454* and *7, page 454* for 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.
9. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 96 Nm (71 lbf·ft).
10. Rotate the drum and double-check clearances.

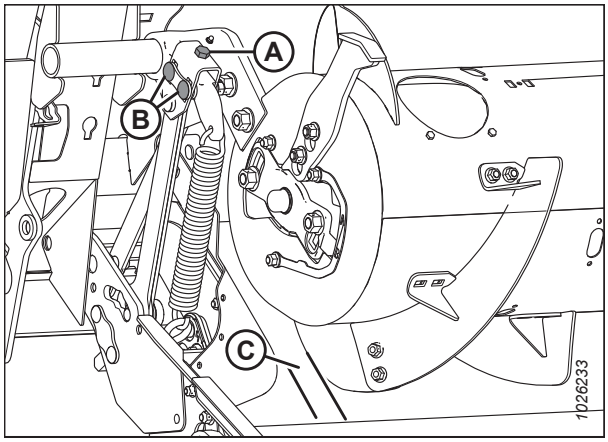

Figure 5.55: Auger Clearance

5.11.2 Checking Auger Drive Chain Tension

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger. The tension on the auger drive chain should be inspected according to the interval specified in the maintenance schedule.

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.

1. Lower the header fully.
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 31*.
5. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 339*.
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) securing the bottom cover.
11. Rotate bottom cover (F) forward and remove it.

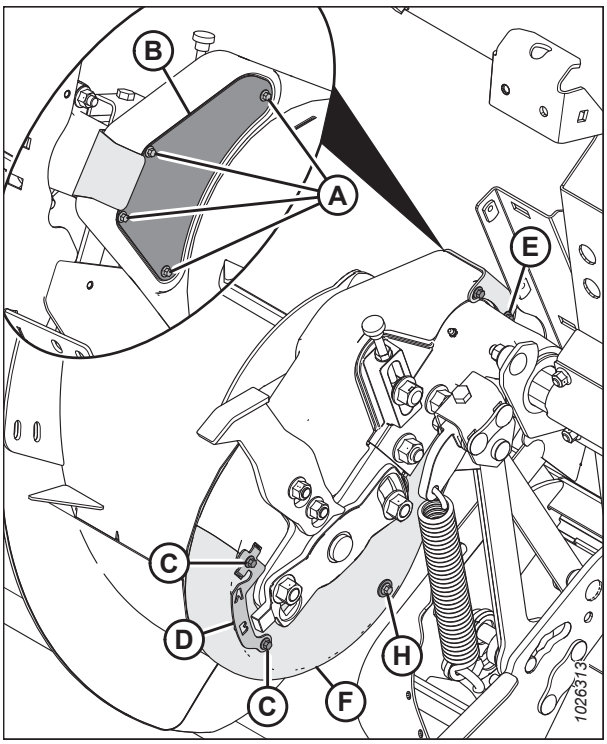

Figure 5.56: Feed Auger Drive – Rear View

12. Check chain at mid span (A). There should be 4 mm (0.16 in.) of deflection. If adjustment is required, refer to *5.11.3 Adjusting Auger Drive Chain Tension, page 456*.

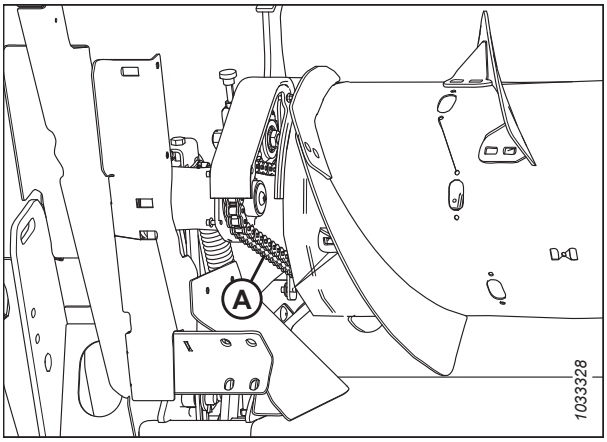

Figure 5.57: Feed Auger Chain – Rear View

13. Position bottom cover (F) as shown. 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 them to 2.7–4.1 Nm (24–36 lbf·in).

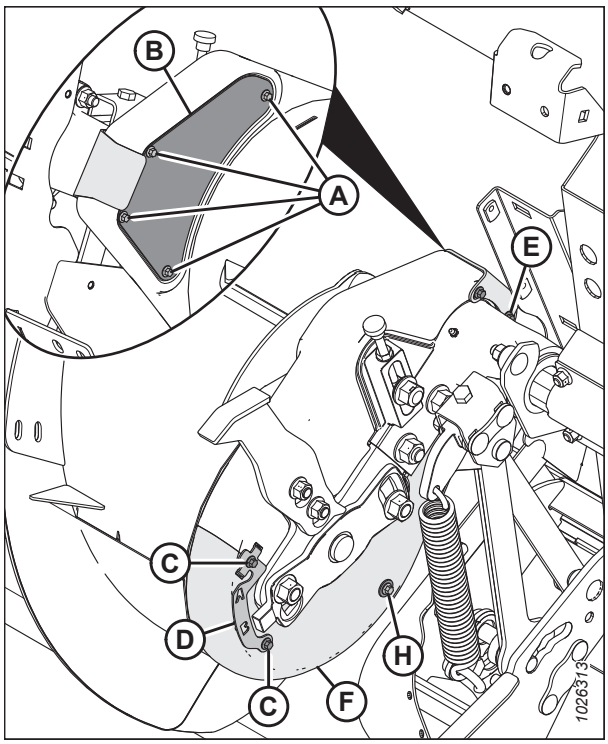

Figure 5.58: Feed Auger Drive – Rear View

5.11.3 Adjusting Auger Drive Chain Tension

If the auger drive chain is not tensioned correctly, the tension 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.

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. Lower the header fully.
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 31*.
5. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 339*.
6. Shut down the engine, and remove the key from the ignition.

7. Remove four bolts (A) and inspection panel (B).

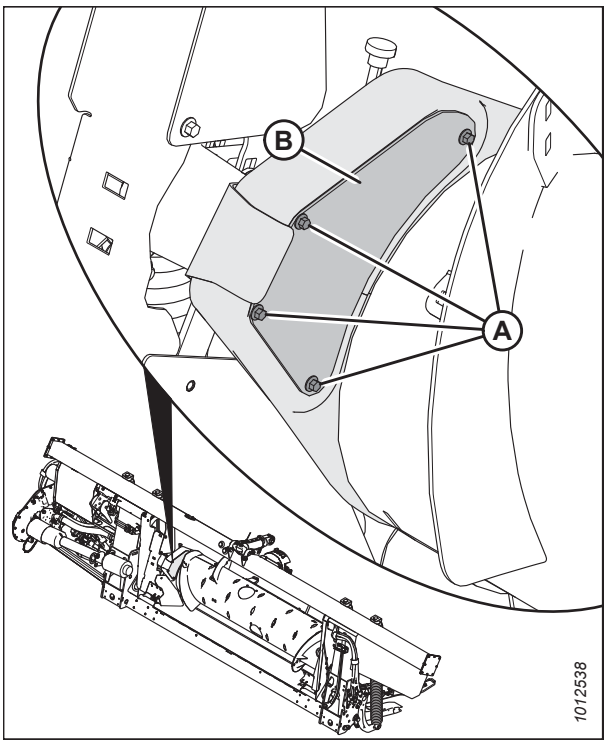

Figure 5.59: Left Side of Auger Drive – Rear View

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. Doing so will remove the slack from the upper strand of the chain.

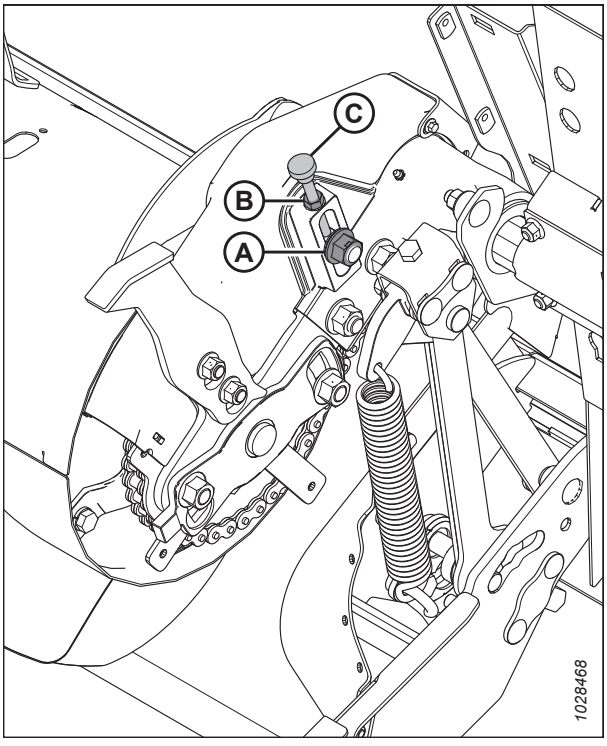

Figure 5.60: Left Side of Auger Drive – Front View

11. Turn adjuster thumbscrew (A) clockwise to increase the tension on the chain until chain deflection (B) is 4 mm (0.16 in.) at the midspan.

    IMPORTANT:

    Do **NOT** overtighten the chain.

    NOTE:

    The covers have been removed from the illustration for the sake of clarity.

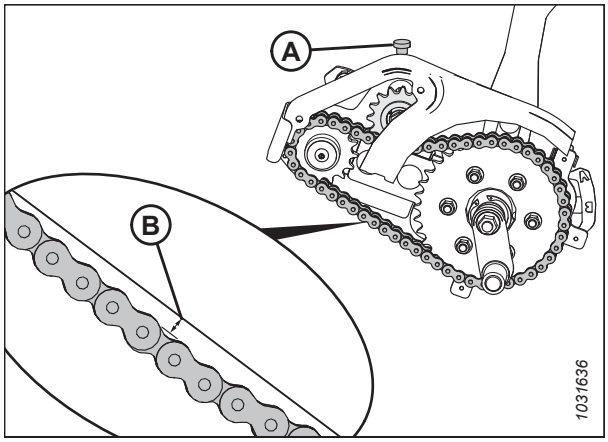

Figure 5.61: Feed Auger Chain Deflection

12. When adjustment is complete, tighten jam nut (A).
13. Tighten idler nut (B) and torque it to 258–271 Nm (190–200 lbf·ft).
14. Recheck the midspan chain deflection after tightening the idler and the jam nut.

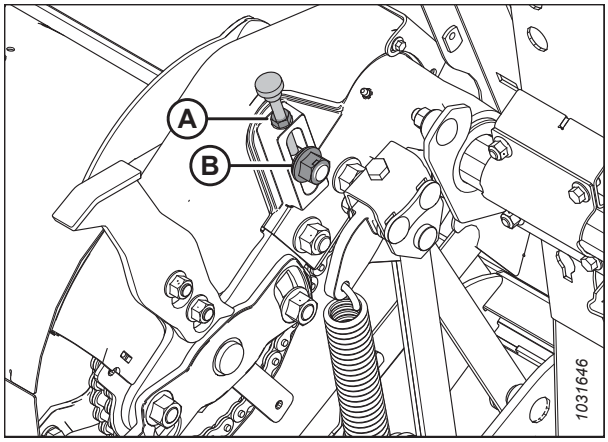

Figure 5.62: Feed Auger Chain – Front View

15. Install inspection panel (B) and secure it with four bolts (A).
16. Torque bolts (A) to 2.7–4.1 Nm (24–36 lbf·in).

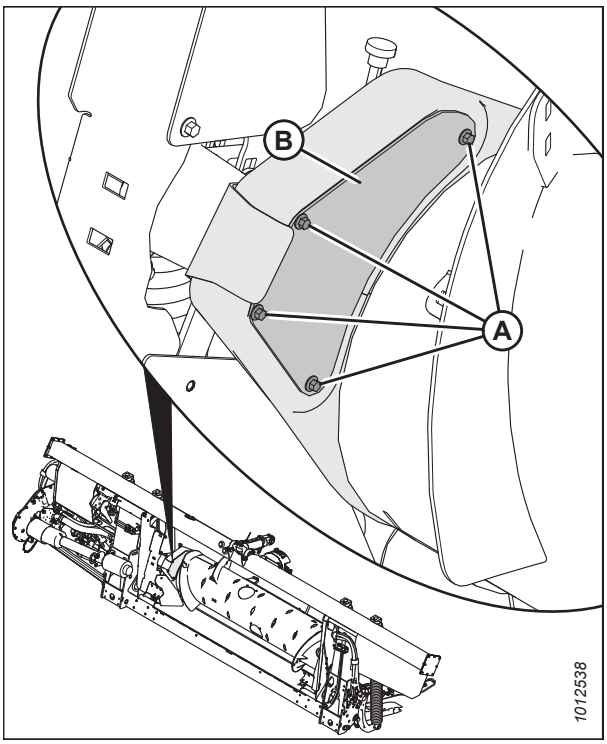

Figure 5.63: Left Side of Auger Drive – Rear View

5.11.4 Auger Flighting

The auger flighting on the FM100 can be configured for particular harvesting and crop conditions.

For instructions, refer to *4.2 FM100 Feed Auger Configurations, page 340* for combine/crop specific configurations.

5.11.5 Auger Fingers

The FM100 auger uses retracting tines to feed the crop into the combine feeder house. Some conditions may require the removal or installation of 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. Fingers may need to be removed 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. For instructions, refer to the combine operator's manual.
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 31*.
5. Locate the access cover closest to the finger to be removed. Remove and retain bolts (A) and access cover (B).

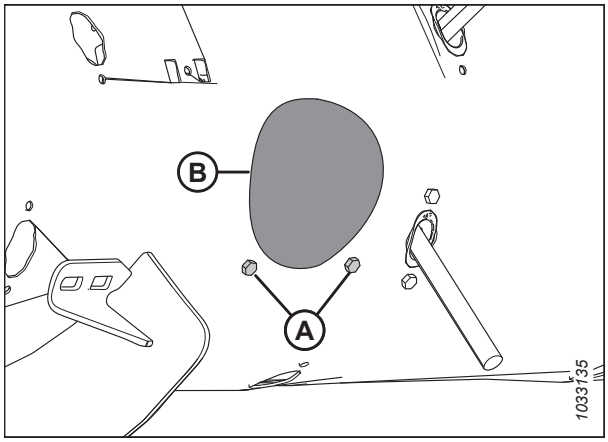

Figure 5.64: Auger Access Hole Cover

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.

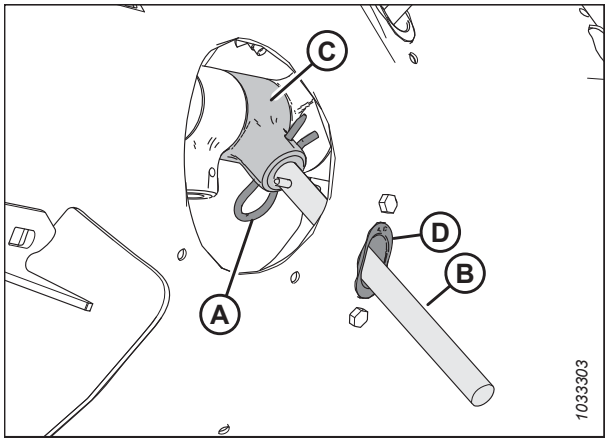

Figure 5.65: Auger Finger

8. Remove and retain two bolts (A) and the tee nuts (not shown) securing finger guide (B) to the auger. Remove guide (B).

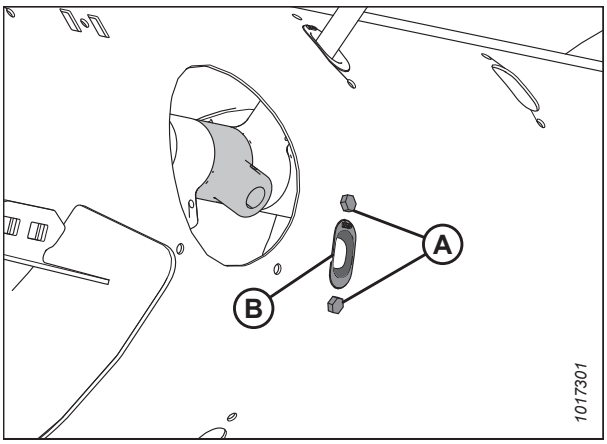

Figure 5.66: Auger Finger Hole

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.

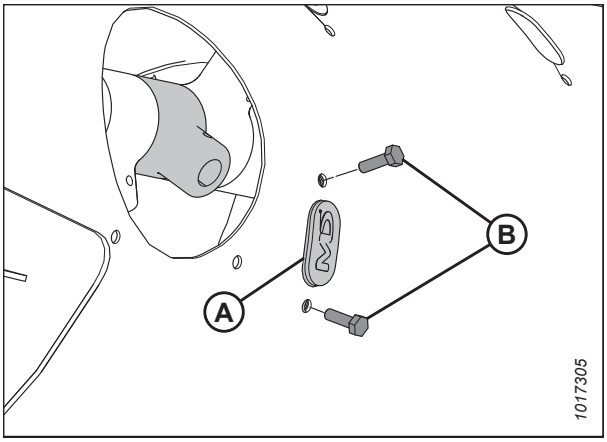

Figure 5.67: Plug Installed in Auger

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 you install them.

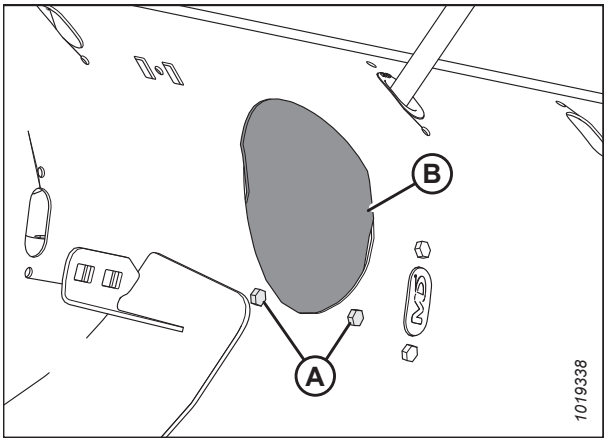

Figure 5.68: Auger Access Hole Cover

Installing Feed Auger Fingers

The feed auger has fingers that extend and retract to pull crop into the feeder house on the combine. Fingers may need to be installed 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. 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 31*.
4. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain the parts for reinstallation.

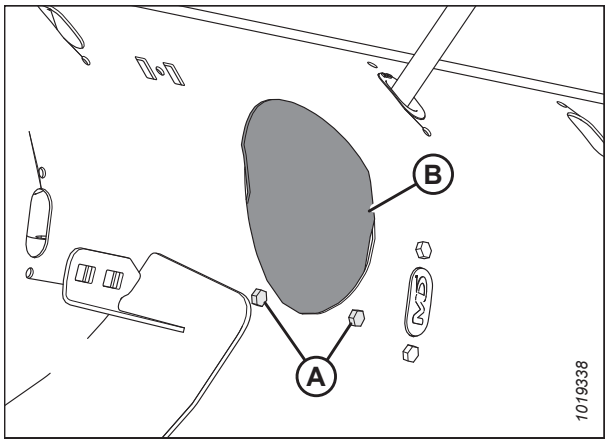

Figure 5.69: Auger Access Hole Cover

5. Remove two bolts (B), tee nuts (not shown), and plug (A).

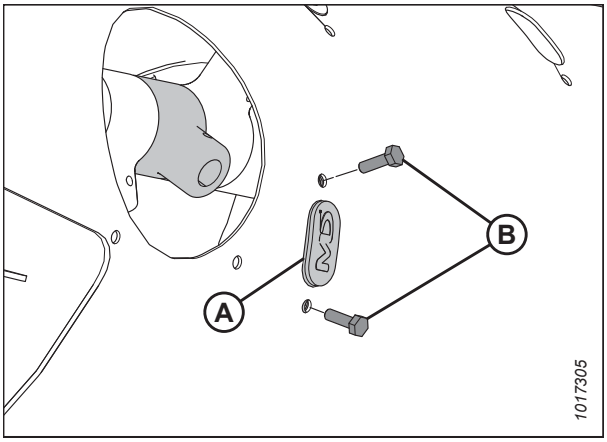

Figure 5.70: Auger Finger Hole

6. 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.

7. Torque bolts (A) to 9 Nm (80 lbf·in).

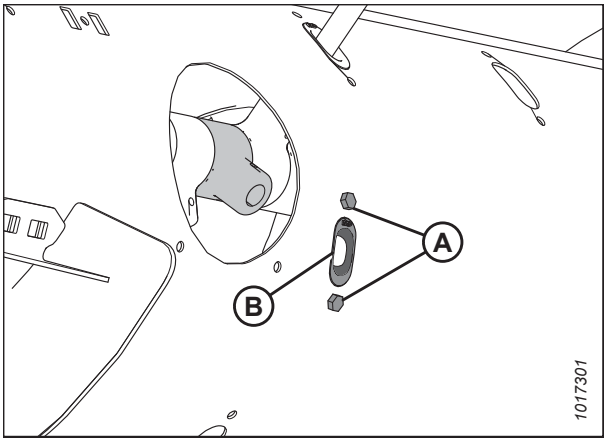

Figure 5.71: Auger Finger Hole

8. Place auger finger (A) inside the drum. Insert auger finger (A) up through the bottom of guide (B) and insert the other end into holder (C).

9. Secure the finger by inserting hairpin (D) into the holder. Ensure that the round end (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 in which the auger rotates.

   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. Fingers that fall into the drum might damage internal components.

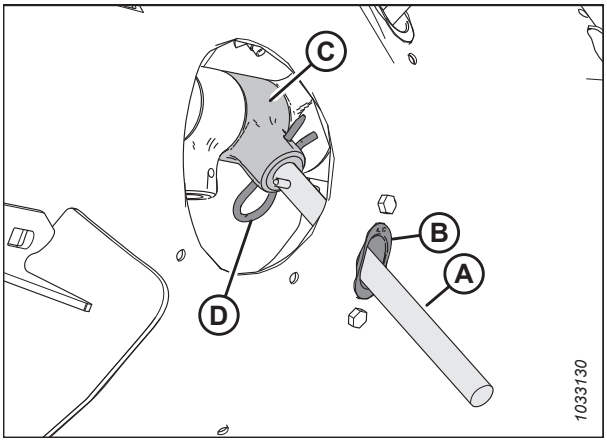

Figure 5.72: Auger Finger

10. 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 installation.

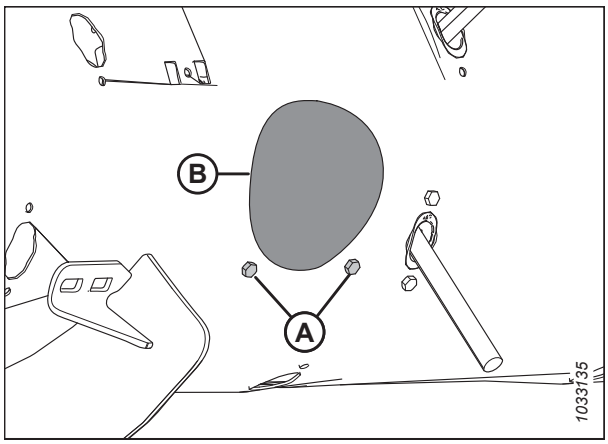

Figure 5.73: Auger Access Hole Cover

Checking Auger Finger Timing

This procedure is for checking the setting that determines the point in the auger drum's revolution at which the fingers are fully extended from the auger.

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.

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 31*.
4. Check that indicator (C) is set to the same position at each end of the auger.

    NOTE:

    The left side of the auger is shown.

    NOTE:

    There are two different auger tine extension positions: **A** and **B**. Position **A** (A) is used for canola and position **B** (B) is used for grains. The factory setting for the indicator is position **B** (B).

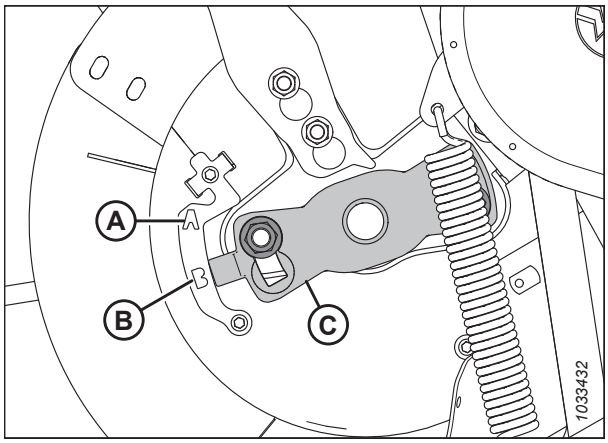

Figure 5.74: Auger Tine Timing – Left Side of Auger Shown

CAUTION

To avoid damaging the auger beyond repair, it is extremely important that both sides are at the same setting.

5. To adjust the indicator position, refer to *Adjusting Auger Finger Timing, page 465*.

6. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.

Adjusting Auger Finger Timing

If the auger finger timing is not satisfactory, it will need to be adjusted. There are two possible auger finger timing settings.

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.

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 31*.
4. Locate finger timing indicator (C) at the end of the auger. There are two auger tine extension positions: Position **A** (A) and position **B** (B).

   NOTE:

   The left side of the auger is shown.
5. Loosen nuts (D) and adjust finger timing indicator (C) to the desired position.

   IMPORTANT:

   The timing indicator on both ends of the auger must be set at the same position; if not, the auger will be damaged beyond repair.

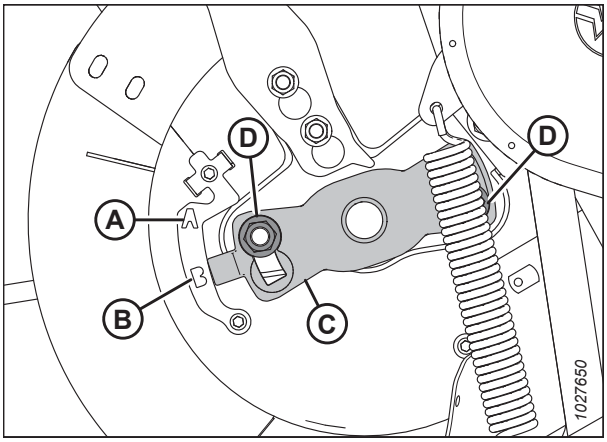

Figure 5.75: Auger Tine Timing Indicator

NOTE:

If finger timing indicator (A) is pointing at position **A**, it indicates that at that point the auger fingers will be fully extended. This allows the crop to be engaged and released earlier before entering the feeder house. This setting is best used for canola or bushy crops.

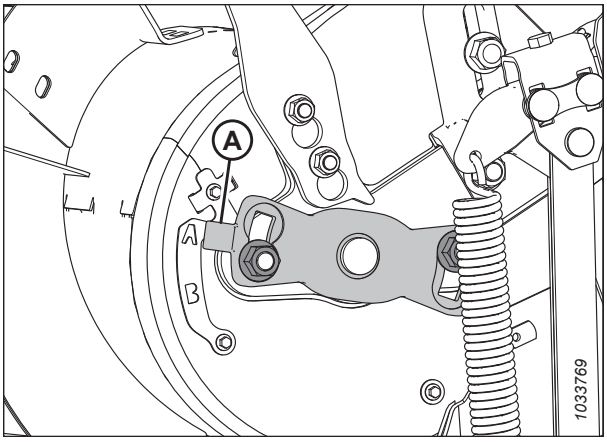

Figure 5.76: Auger Position A

NOTE:

If finger timing indicator (A) is pointing at position **B**, it indicates that at that point the auger fingers will be fully extended. This allows the crop to be engaged and released later before entering the feeder house. This setting is best used for grains or beans.

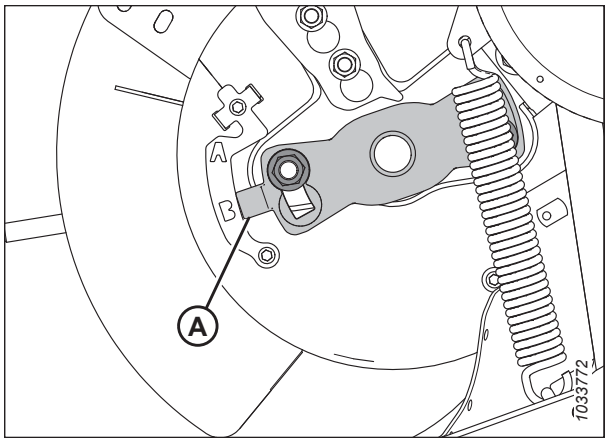

Figure 5.77: Auger Position B

6. Tighten nuts (A) once adjustment is complete. Torque the nuts to 92–138 Nm (68–102 lbf·ft).
7. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.

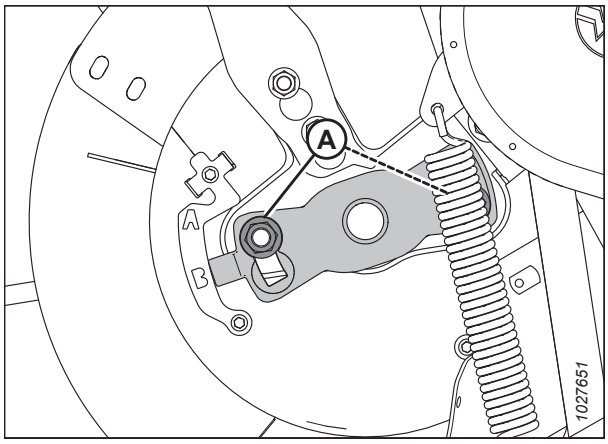

Figure 5.78: Auger Tine Timing Indicator

Replacing Feed Auger Finger Guides

The feed auger fingers have guides that the finger slides against. These guides wear out and 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

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. For instructions, refer to the combine operator's manual.
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 31*.

6. Remove finger (A). For instructions, refer to *Removing Feed Auger Fingers, page 459*.

   NOTE:

   This illustrations in this procedure depict a hollow finger. The procedure for solid fingers is identical.

7. Remove the two bolts securing guide (B) to the feed auger.

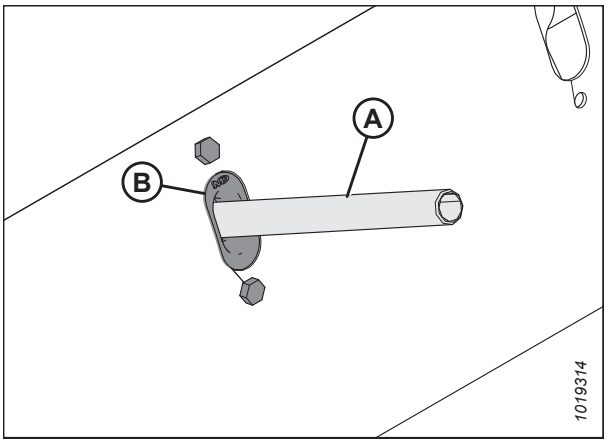

Figure 5.79: Auger Finger

8. If guide bolts (A) are not new bolts, coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent). Insert plastic finger guide (B) from inside the auger and secure it with bolts and tee nuts. Torque bolts to 9 Nm (80 lbf·in). From inside the auger, position plastic guide (B) and secure it with bolts (A).

9. Replace the finger. For instructions, refer to *Installing Feed Auger Fingers, page 462*.

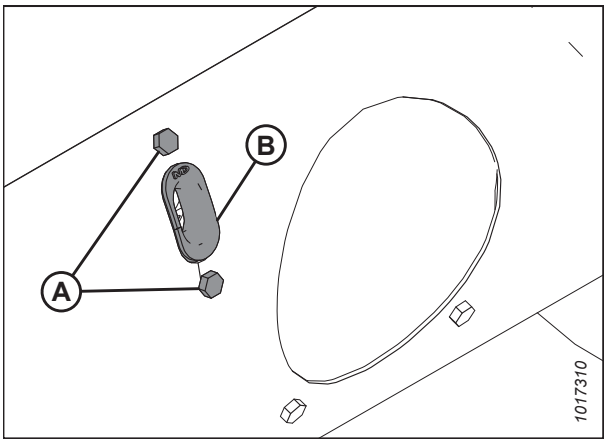

Figure 5.80: Auger Finger Guide

Installing Feed Auger Flighting Slot Plug

When removing bolt-on flighting from the feed auger, the holes should be plugged to avoid material from entering the auger.

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. For instructions, refer to the combine operator's manual.

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 31*.

5. Locate the access cover closest to the finger to be removed. Remove and retain bolts (A) and access cover (B).

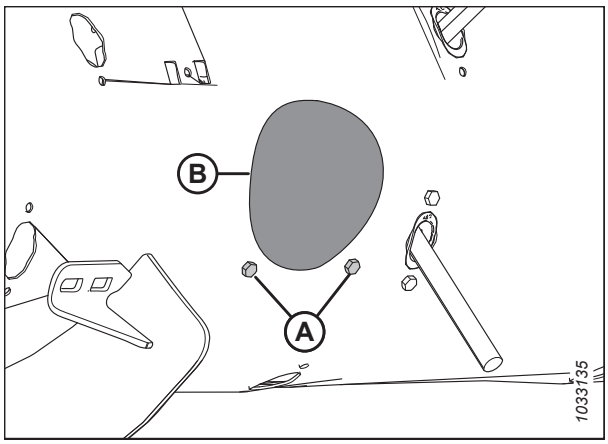

Figure 5.81: Auger Access Hole Cover

6. If flighting slot plug bolt (D) is not a new bolt, coat bolt (D) with medium-strength threadlocker (Loctite® 243 or equivalent). Reach into the auger through access hole (A) and install flighting slot plug (B) (MD #213084) in flighting mounting locations (C) and secure it with M6 bolt (D) (MD #252703) and tee nuts (MD #197263). Torque the bolt to 9 Nm (80 lbf·in).

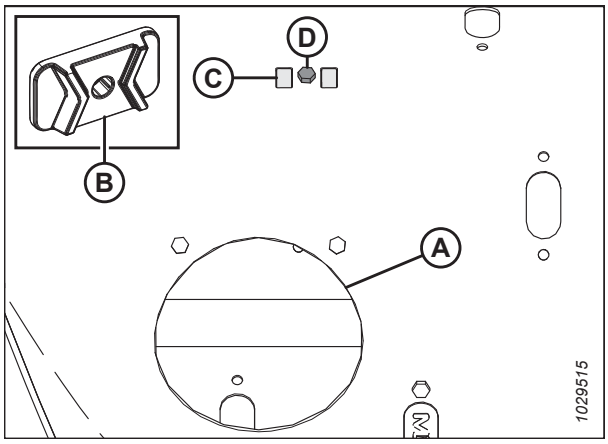

Figure 5.82: Flighting Slot Plug

7. 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 you install them.

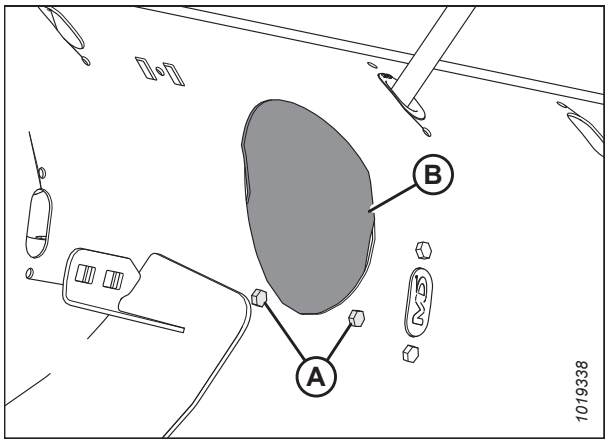

Figure 5.83: Auger Access Hole Cover

5.12 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 *5.1 Preparing Machine for Servicing, page 413*.

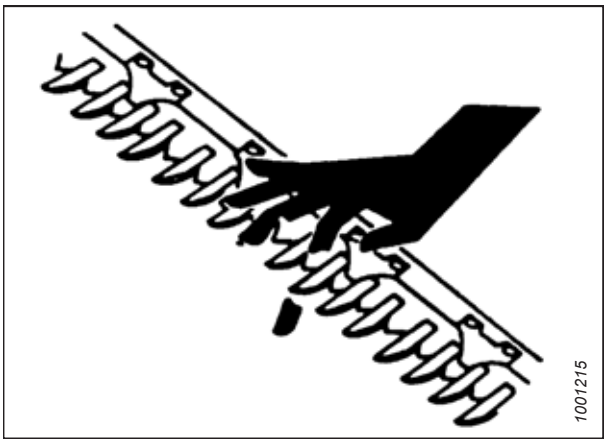

Figure 5.84: Cutterbar Hazard

5.12.1 Replacing Knife Section

Inspect the knife sections daily and ensure they are firmly bolted to the knife back and are not worn or damaged (worn and damaged sections leave behind uncut plants). Worn or damaged sections 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.

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:

Do **NOT** mix finely and coarsely serrated knife sections on the same knife.

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 31*.

4. Stroke the knife as required to center knife section (A) that you want to replace between guards (E).
5. Remove and retain nuts (B).
6. Remove bars (C) and lift knife section (A) off the knife bar.
7. If the knife section is under the bar, remove splice bar (D).
8. Clean dirt off the knife back, and position the new knife section onto the knife back.
9. Reposition bars (C) and/or splice bars (D), and install nuts (B).

   NOTE:

   If replacing screws, ensure they are fully inserted. Do **NOT** use nuts to draw screws into the knife bar.
10. Torque nuts to 11 Nm (97 lbf·in).

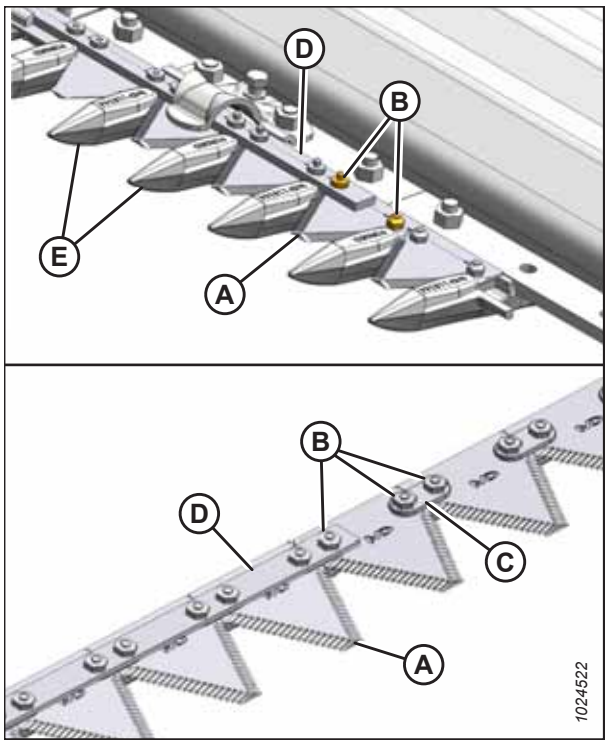

Figure 5.85: Cutterbar

5.12.2 Removing Knife

If the knife is worn or damaged, or if the knifehead bearing requires replacement, the knife will need to be removed. A chain or strap will be needed to pull the knife out of the output arm.

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

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. 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 31*.

4. Manually stroke the knife to its outer limit.
5. Clean the area around the knifehead.
6. Remove grease fitting (B) from the pin.

   NOTE:

   Removing the grease fitting will make it easier to reinstall the knifehead pin later.

7. Remove bolt and nut (A).
8. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
9. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.

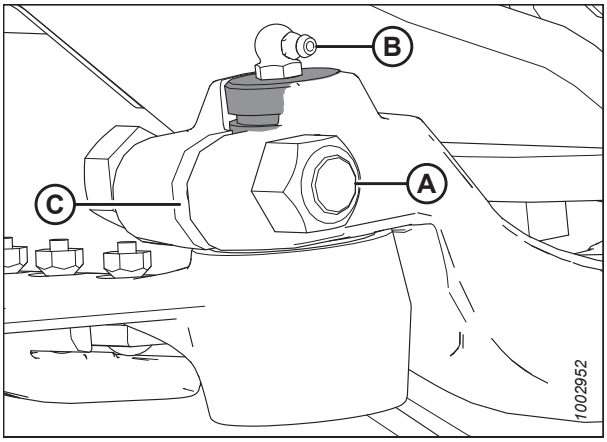

Figure 5.86: Knifehead

10. Push the knife assembly inboard until it is clear of the output arm.
11. Seal the knifehead bearing with plastic or tape to keep out dirt and debris unless it is being replaced.
12. Wrap a chain around the knifehead and pull out the knife.

5.12.3 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.

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

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. 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 31*.
4. Remove the knife. For instructions, refer to *5.12.2 Removing Knife, page 470*.

   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 needle bearing for wear and replace if necessary.

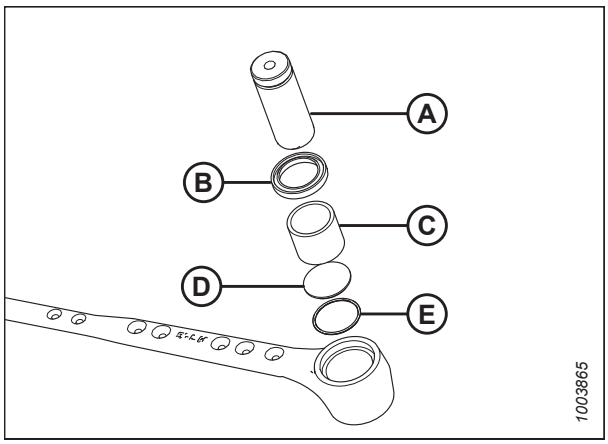

Figure 5.87: Knifehead Bearing Assembly

5.12.4 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.

1. Place O-ring (E) and plug (D) into the knifehead.
2. 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 stamped end (the end with the identification markings) facing up.

3. Install seal (B) into the knifehead with the lip facing outwards.

   IMPORTANT:

   To prevent premature knifehead or knife drive box failure, ensure there is a tight fit between the knifehead pin and the needle bearing, and between the knifehead pin and the output arm.

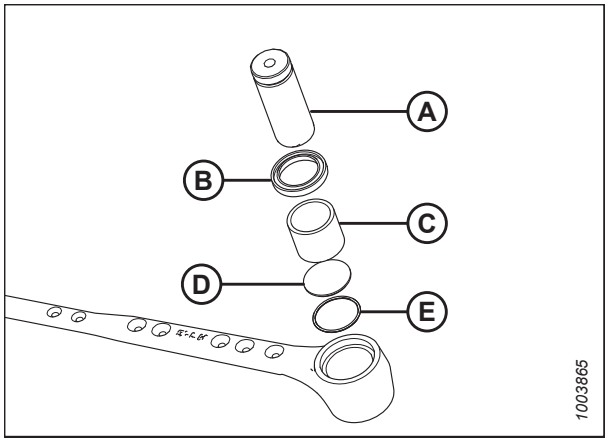

Figure 5.88: Knifehead Bearing Assembly

4. Install the knife. For instructions, refer to *5.12.5 Installing Knife, page 472*.

5.12.5 Installing Knife

Once the necessary maintenance procedures are complete, the knife can be reinstalled, and knifehead can be lubricated.

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

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. 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 31*.
4. Install knife assembly (A). Grease the knife head bearing prior to assembly spread grease around bearing evenly.

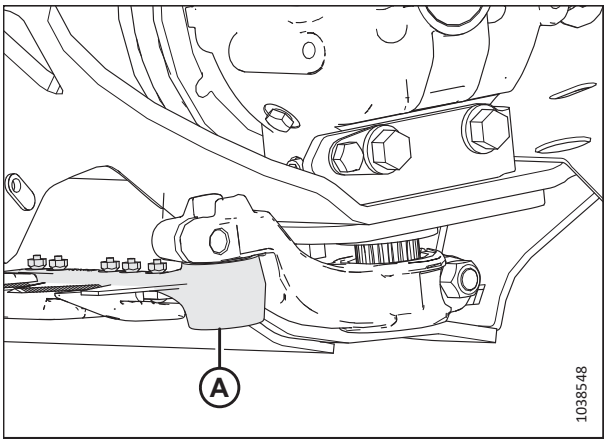

Figure 5.89: Knifehead

5. Fill bearing cavity (B) with grease prior to installing the knifehead pin to prevent any air from getting trapped in the cavity.

   NOTE:

   For easier installation of the knifehead pin, remove the grease fitting from the pin first.

6. Install knifehead pin (C) through drive arm (A) and into the knifehead.
7. Adjust knifehead pin (C) until the bottom edge of groove (D) is 0.5–1.5 mm (0.02–0.06 in.) above the bolt clamping area.

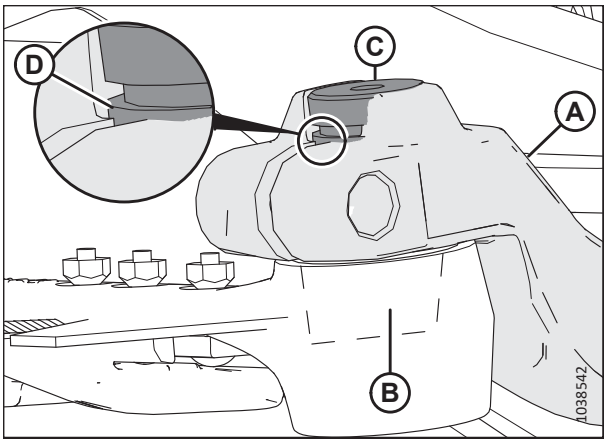

Figure 5.90: Knifehead

8. Secure the pin with 5/8 x 3 in. hex head bolt (A) and nut (B). Torque the hardware to 217 Nm (160 lbf·ft).

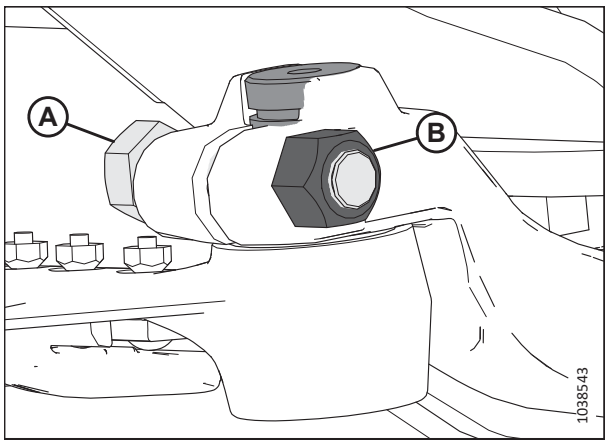

Figure 5.91: Knifehead

9. Stroke the knife in and back out. Check that drive arm (A) has 0.2–1.2 mm (0.008–0.05 in.) of clearance (B) between the drive arm and the knifehead.
10. If required, adjust the position of drive arm (A) on the splined shaft to achieve the proper clearance.
11. Install 5/8 X 3 in. hex bolt (C) and nut (D). Install the bolt from the inboard side of the arm. Torque the bolt to 217 Nm (160 lbf·ft).

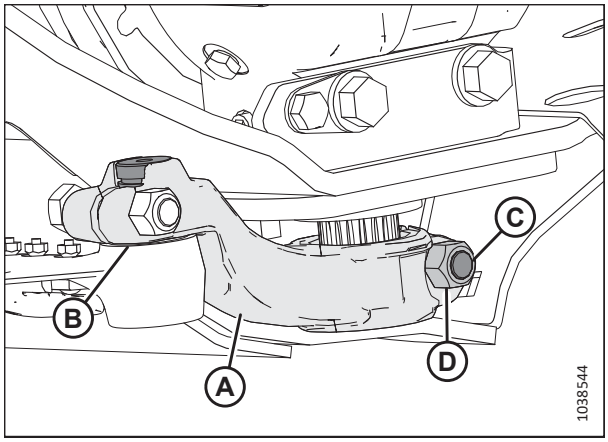

Figure 5.92: Knife Drive Box

12. Reinstall grease fitting (A) (if previously removed), and slowly apply grease to the knifehead until slight downward movement of the knifehead is observed.

    NOTE:

    If air is trapped in the bearing cavity, the knifehead will begin to move down before it's filled with grease.

    IMPORTANT:

    Do **NOT** overgrease the knifehead. Overgreasing leads to knife misalignment causing excessive heating of guards and overloading of drive systems. If overgreasing occurs, remove the grease fitting to release the pressure.

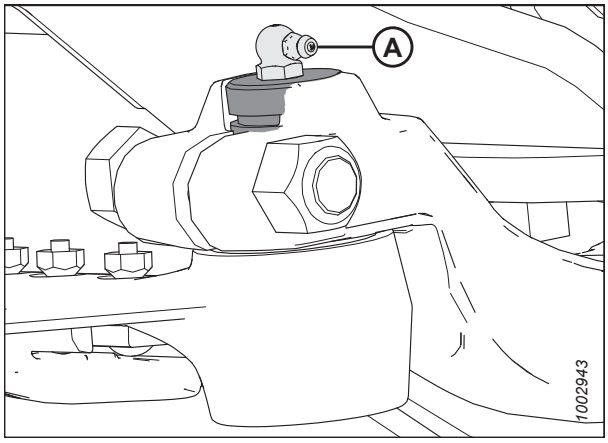

Figure 5.93: Knifehead

5.12.6 Spare Knife

A spare knife contains all the parts required to replace the entire knife on the cutterbar. A spare knife can be ordered when you order a new header.

A spare knife can be stored in header frame backtube (A) at the left end of the header. Ensure that the spare knife is properly secured.

If there is no spare knife in the header backtube, individual knife sections can be ordered from your MacDon Dealer Parts Department.

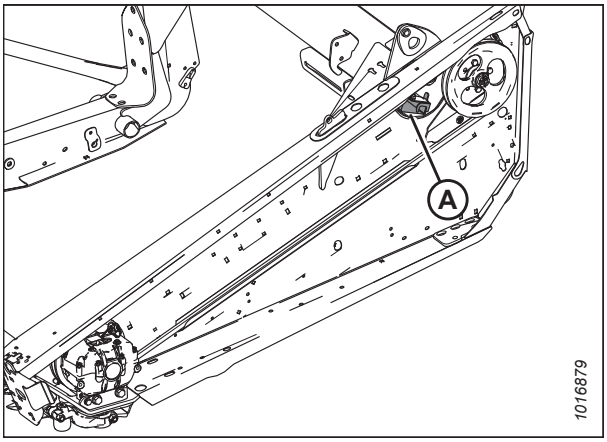

Figure 5.94: Spare Knife

5.12.7 Knife Guards

Perform **DAILY** inspections to ensure the knife guards are aligned and the knife sections are contacting the shear surfaces of the knife guards. Depending on your cutting needs, you may be using either pointed guards or stub guards.

Adjusting Pointed Knife Guards

Adjusting the pointed knife guard involves the use of the guard straightening tool.

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.

NOTE:

Use guard straightening tool (MD #140135), available from your MacDon Dealer.

1. Shut down the engine, and remove the key from the ignition.
2. Position tool (A) as shown, and pull up to adjust the guard tips upwards.

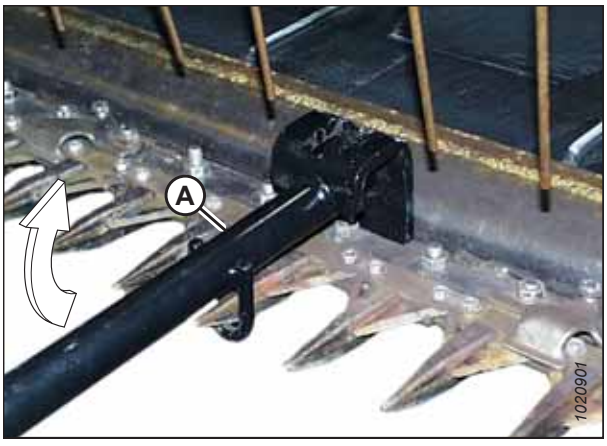

Figure 5.95: Upward Adjustment

3. Position tool (A) as shown, and push down to adjust the guard tips downwards.

   NOTE:

   If material is tough to cut, install short knife guards with top guard and adjuster plate. A kit is available from your MacDon Dealer. For more information, refer to *6.3.5 Stub Guard Conversion Kit, page 593*.

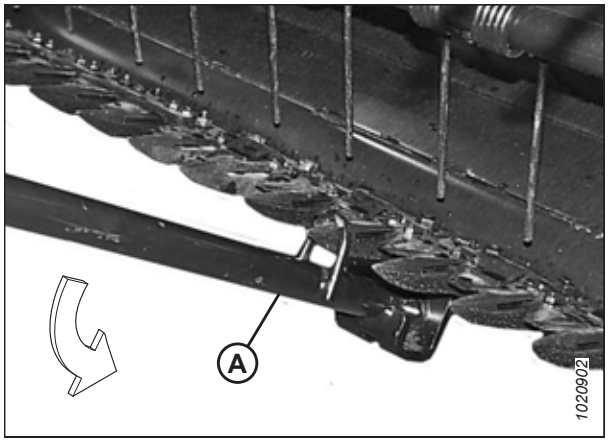

Figure 5.96: Downward Adjustment

Replacing Pointed Guards

To replaced pointed guards, perform the recommended replacement procedure provided here.

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. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove two nuts (B) and bolts attaching guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove guard (A), hold-down (C), and the plastic wearplate (if installed).

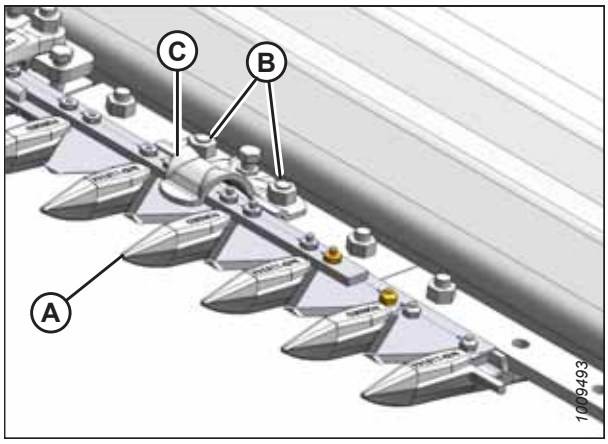

Figure 5.97: Pointed Guards

IMPORTANT:

The first four outboard guards (B) on the drive sides of the header do **NOT** have ledger plates. Ensure proper replacement guards are installed at these locations.

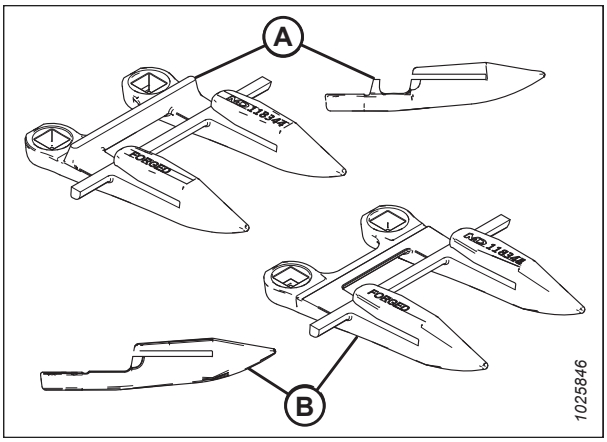

Figure 5.98: Pointed Guards

A - Standard **B - Drive Side**

5. Position new guard (A), hold-down (C), and the plastic wearplate (if applicable) onto the cutterbar. Secure with two nuts (B) and bolts. Do **NOT** tighten.
6. Check and adjust the clearance between the hold-downs and the knife. For instructions, refer to *Checking Pointed Guard Hold-Downs, page 477* or *Checking and Adjusting Hold-Downs with Pointed Guards, page 478*.
7. Torque nuts (B) to 88 Nm (65 lbf·ft).

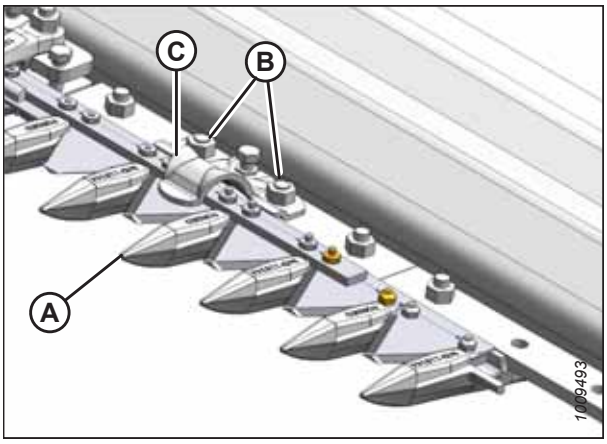

Figure 5.99: Pointed Guards

Checking Pointed Guard Hold-Downs

This procedure is to measure the clearance between hold-downs and knife sections on headers with pointed guards.

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.

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

2. Manually stroke knife to locate section (A) under hold-down (B).
3. At guard locations, push knife section (A) down against guard (C) and measure clearance between hold-down (B) and knife section (A) with a feeler gauge. The clearance should be 0.1–0.6 mm (0.004–0.024 in.).
4. If necessary, refer to *Checking and Adjusting Hold-Downs with Pointed Guards, page 478*.

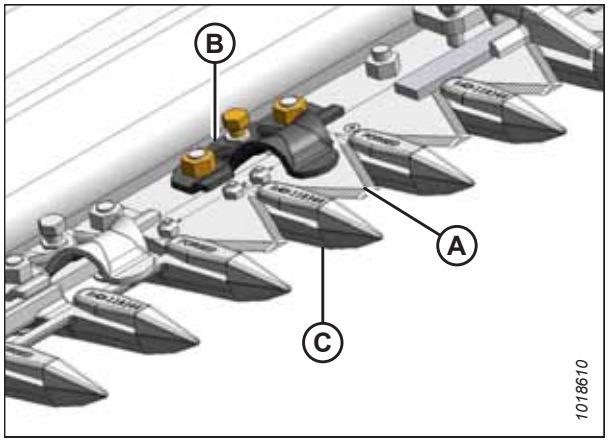

Figure 5.100: Pointed Guard Hold-Down

Double knife:

5. Manually stroke knife to locate sections (A) and (C) under center hold-down (B).
6. Measure clearance between knife sections (A) and (B) with a feeler gauge. The clearances should be:
   - **At tip (E) of hold-down:** 0.1–0.4 mm (0.004–0.016 in.)
   - **At rear (F) of hold-down:** 0.1–1.0 mm (0.004–0.040 in.)
7. If necessary, refer to *Checking and Adjusting Hold-Down at Double-Knife Center Pointed Guard, page 479*.

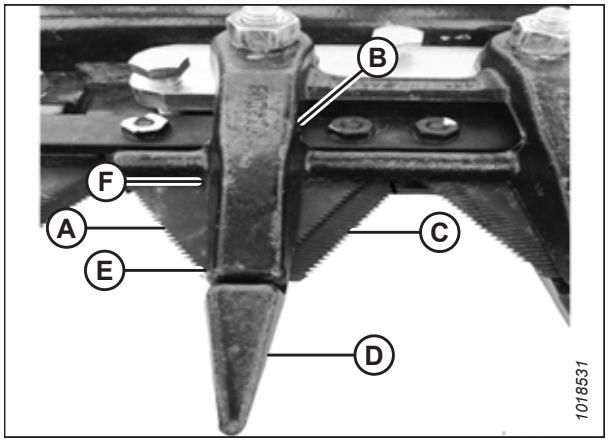

Figure 5.101: Double-Knife Center Guard Hold-Down

Checking and Adjusting Hold-Downs with Pointed Guards

To adjust hold-downs with pointed guards, follow the recommended adjustment procedure provided here.

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. Use a feeler gauge to measure the clearance between the standard guard hold-down (A) and the knife section. Ensure the clearance is 0.1–0.6 mm (0.004–0.024 in.).

3. To lower the front of the hold-down and decrease clearance, turn bolt (B) clockwise; to raise the front of the hold-down and increase clearance, turn bolt (B) counterclockwise.

   NOTE:

   For larger adjustments, it may be necessary to loosen nuts (C), turn adjuster bolt (B), and then retighten nuts.

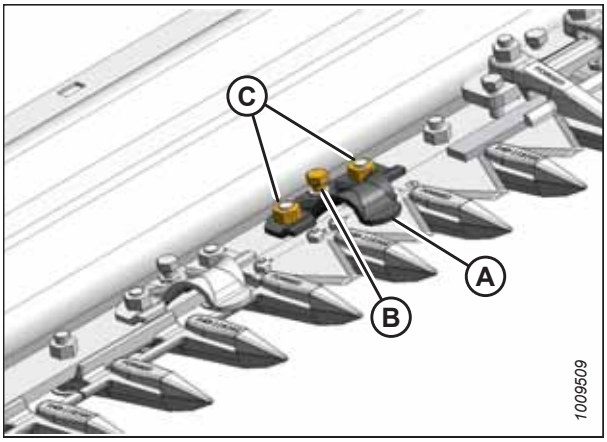

Figure 5.102: Standard Guard Hold-Down

4. Use a feeler gauge to measure the clearance between center guard hold-down (A) and the knife section. Ensure the clearance is between the following measurements:
   - **At hold-down tip (B):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At rear of hold-down (C):** 0.1–1.0 mm (0.004–0.040 in.)

5. Adjust the clearance as follows:
   a. Tighten nuts (D) until they are finger tight.
   b. Turn three adjuster bolts (E) clockwise to raise the front of the hold-down and increase the clearance, or counterclockwise to lower the front of the hold-down and decrease the clearance.
   c. When all the adjustments are complete and the specified clearances are achieved, torque nuts (D) to 88 Nm (65 lbf·ft).

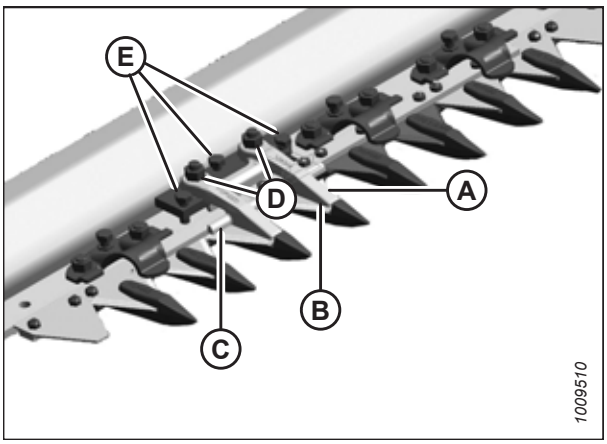

Figure 5.103: Center Guard Hold-Down

DANGER

Ensure that all bystanders have cleared the area.

6. Complete the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust the hold-down clearance as necessary.

Checking and Adjusting Hold-Down at Double-Knife Center Pointed Guard

To adjust the hold-down at the double-knife center pointed guard, follow the recommended adjustment procedure provided here.

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.

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

2. Manually stroke knives until sections (A) are under hold-down (B) as shown.
3. Loosen nuts (C) and back off bolts (D) until they don't contact cutterbar.
4. Lightly clamp hold-down (B) to guard (E) with a C-clamp or equivalent. Position clamp on trash bar at location (F) as shown.
5. Turn bolts (D) until they contact cutterbar, then tighten **ONE** turn.
6. Remove clamp.
7. Tighten nuts (C) and torque to 88 Nm (65 lbf·ft).
8. Check clearances. For instructions, refer to *Checking Pointed Guard Hold-Downs, page 477*.

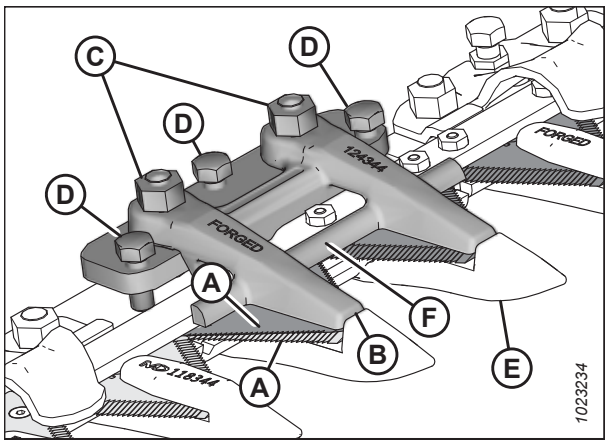

Figure 5.104: Center Guard

Checking Stub Guard Hold-Downs

This procedure is to measure clearance between hold-downs and knife sections on single- and double-knife headers with stub guards.

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.

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

2. Manually stroke knife to locate section under hold-down (A).

3. **Standard guard:** At standard guard locations, push knife section (B) down against guard (C) and measure clearance between hold-down clip (A) and knife section (B) with a feeler gauge. The clearance should be as follows:
   - **At hold-down tip (D):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At rear of hold-down (E):** 0.1–1.0 mm (0.004–0.040 in.)
   - **At sheet metal hold-down (F):** 0.1–0.6 mm (0.004–0.024 in.)

4. If necessary, refer to *Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down, page 482*.

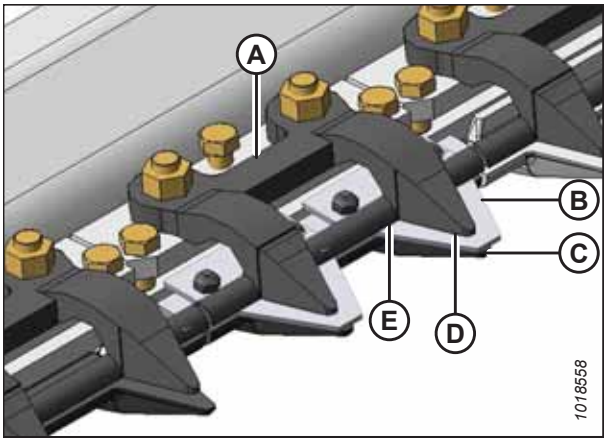

Figure 5.105: Short Knife Forged Hold-Down

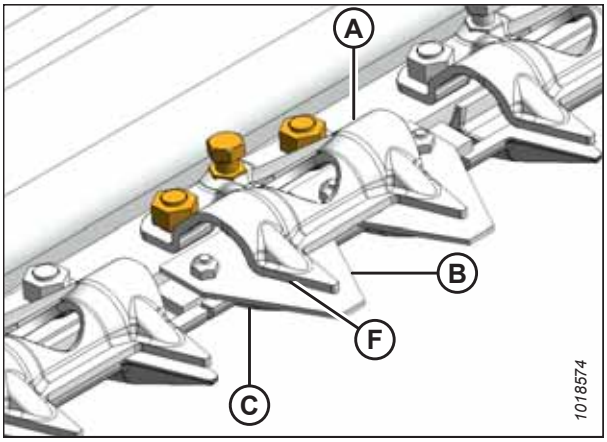

Figure 5.106: Short Knife Sheet Metal Hold-Down

5. **Double-knife center stub guard:** Manually stroke knife to locate sections under hold-down (B). Measure clearance between knife sections (A) and (C) with a feeler gauge. The clearance should be as follows:
   - **At hold-down tip (D):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At rear of hold-down (E):** 0.1–1.0 mm (0.004–0.040 in.)

6. If necessary, refer to *Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down, page 482*.

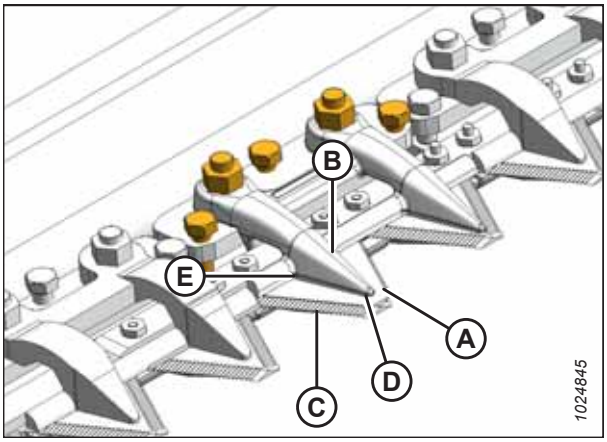

Figure 5.107: Double-Knife Center Short Knife Guard Hold-Down

Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down

To adjust hold-downs with stub guards, follow the recommended adjustment procedure provided here.

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. Use a feeler gauge to measure the clearance between stub guard hold-down (A) and the knife section. Ensure the clearance is between the following measurements:
   - **At hold-down tip (B):** 0.1–0.4 mm (0.004–0.016 in.)
   - **At rear of hold-down (C):** 0.1–1.0 mm (0.004–0.040 in.)
3. Adjust the clearance as follows:
   a. Tighten nuts (D) until they are finger tight.
   b. To lower the front of the hold-down and decrease clearance, turn three adjuster bolts (E) clockwise; to raise the front of the hold-down and increase clearance, turn adjuster bolts (E) counterclockwise.
   c. Torque nuts (D) to 88 Nm (65 lbf·ft) after all the adjustments are complete and the specified clearances are achieved.

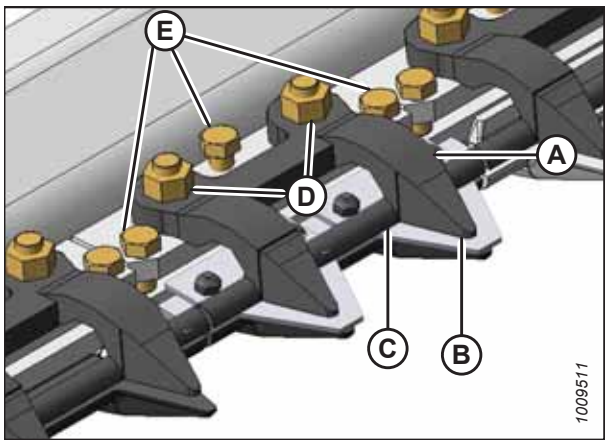

Figure 5.108: Stub Guards

DANGER

Ensure that all bystanders have cleared the area.

4. Complete the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

5.12.8 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. Mud may pack into the cavity behind the shield which could result in knife drive box failure.

Installing Knifehead Shield

The knifehead shield is supplied in flattened form, but it can be bent to suit installation on pointed or stub guard cutterbars. Knifehead shields differ slightly depending on header size and guard configuration, so ensure you are using the proper knifehead shield for your header. Refer to your parts catalog for proper replacement parts.

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

Wear heavy gloves when working around or handling knives.

1. Raise the reel to its full height, and lower the header to the ground.
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 31*.
4. Place knifehead shield (A) against the endsheet as shown. Align the shield so the cutout matches the profile of the knifehead and/or hold-downs.
5. Bend knifehead shield (A) along the slit to conform to the endsheet.
6. Align the mounting holes and secure with two 3/8 x 1/2 in. Torx® head bolts (B).
7. Tighten bolts (B) just enough to hold knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
8. Manually rotate the knife drive box pulley to move the knife and check for areas of contact between the knifehead and knifehead shield (A). Adjust the shield to eliminate interference with the knife if necessary.
9. Tighten bolts (B).

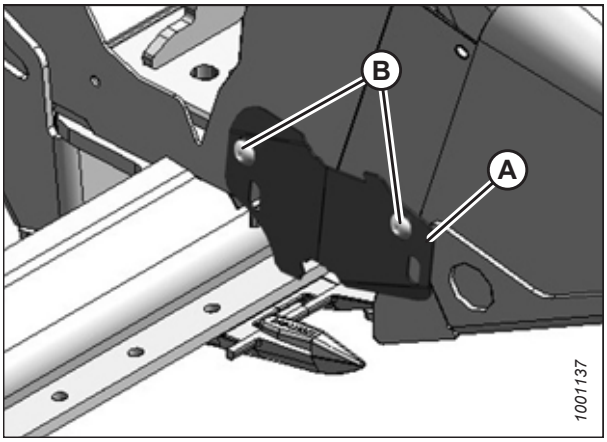

Figure 5.109: Knifehead Shield

5.13 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 back and forth to cut a variety of crops.

5.13.1 Knife Drive Box

The knife drive box is an enclosed oil bath with a 76.2 mm (3 in.) stroke. Knife drive boxes are belt-driven by a hydraulic motor, and convert rotational motion into reciprocating motion at the knife. Double-knife drive systems have two knife drive boxes, one at each end of the header.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 413*.

There is a knife drive box (A) at each end of the header.

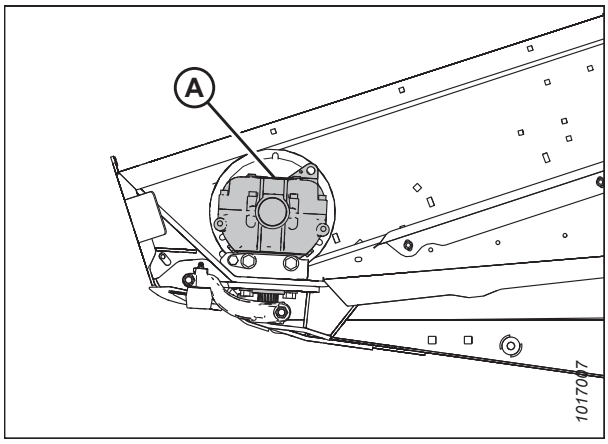

Figure 5.110: Left Knife Drive Box Shown – Right Similar

Checking Knife Drive Box

Single-knife headers have one knife drive box, while double-knife headers have two knife drive boxes. The knife drive box(es) can be accessed by opening the endshield(s). Each knife drive's breather and oil level will need to be inspected.

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. Press down on latch (A) in the opening on the inboard side of the endsheet.
3. Pull the endshield open using handle depression (B).

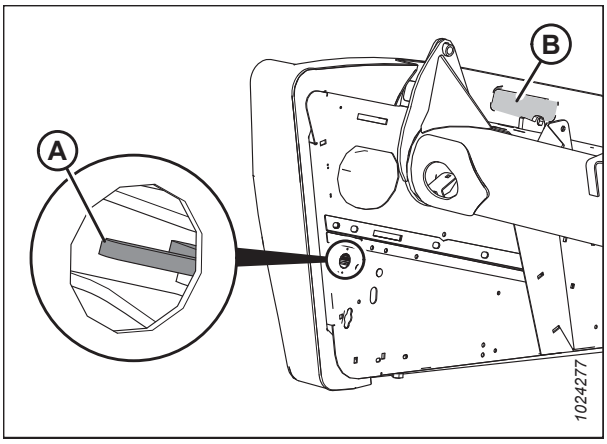

Figure 5.111: Endshield Latch Access

4. Swivel the endshield toward the back of the header and use safety latch (B) to secure endshield support tube (A) to the endsheet.

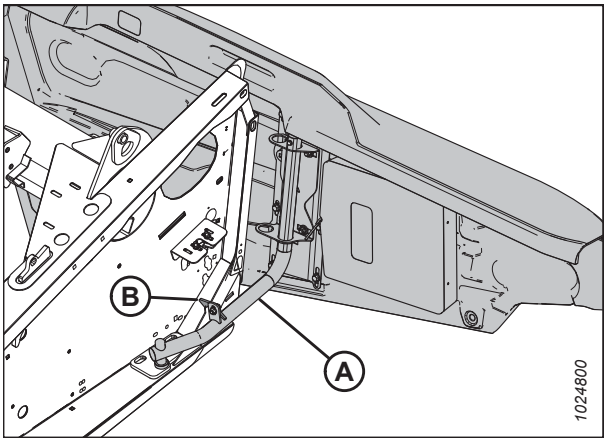

Figure 5.112: Left Endshield Support Tube

IMPORTANT:

The knife drive box's breather is shipped in position (A) (forward) to prevent oil loss during transport. The breather **MUST** be repositioned to location (B) to prevent oil loss during normal operation of the header. Failure to do so can result in damage to the knife drive box.

5. Ensure that the position of plug (A) and breather (B) is as shown. Adjust the plug and breather as needed.
6. Remove breather (B) and check the knife box's oil level. The oil level should be between bottom edge (C) of lower hole (D) and bottom (E) of the breather.

NOTE:

Check the oil level while the top of the knife drive box is horizontal and breather (B) is screwed in.

7. Reinstall the breather and tighten it. Ensure that both the plug and breather have an adequate thread sealant.

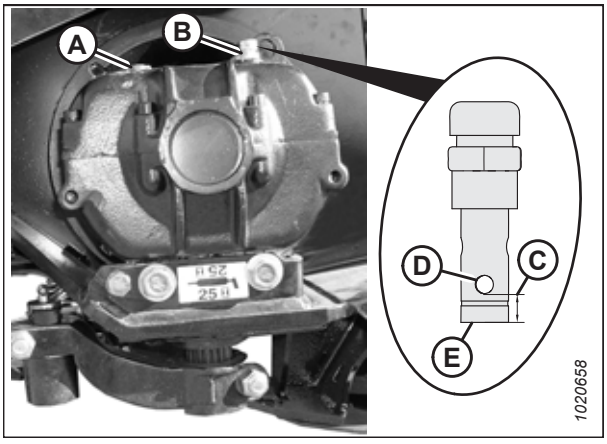

Figure 5.113: Knife Drive Box

Adjusting Knife Drive Box Squareness

To avoid damaging the knifehead, the knife drive box should be adjusted properly.

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 required endshield(s). For instructions, refer to *Opening Endshields, page 33*.
3. Place a straight edge (A) along the face of knife drive box pulley (B) and measure a distance of 1000 mm (39 3/8 in.) between point (C) and point (D).
4. Measure distance (E) between the straight edge and the endsheet at point (C) and point (D). Check that the measurements at point (C) and point (D) are within a tolerance of +/- 3 mm (1/8 in.).

   NOTE:

   If the difference between measurements at point (C) and point (D) is greater than 5 mm (3/16 in.), install a shim.

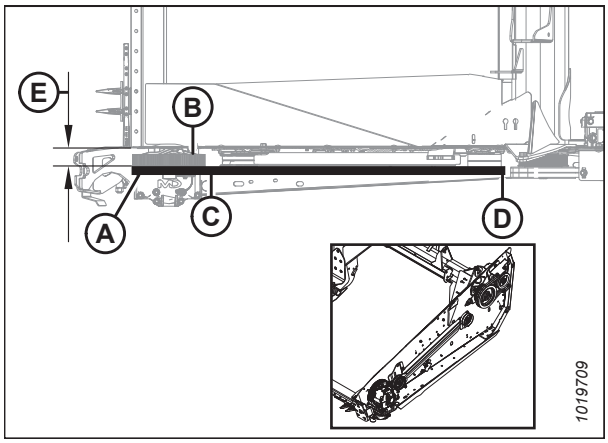

Figure 5.114: Knife Drive Box – Top View

5. Loosen four bolts (A) securing the knife drive box to the frame.

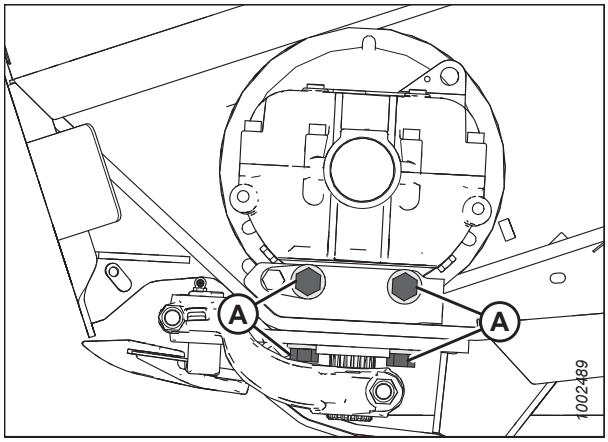

Figure 5.115: Knife Drive Box

6. Manufacture a U-shaped shim (A) to fit under the side bolts securing the knife drive box to the frame. Place the shim between the header mount and the knife drive box. Shim the drive box as required to align the pulley.
7. For bolt installation instructions, refer to *Installing Knife Drive Box, page 493*.
8. Tighten bolts and recheck squareness.
9. For belt tensioning instructions, refer to *Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*.

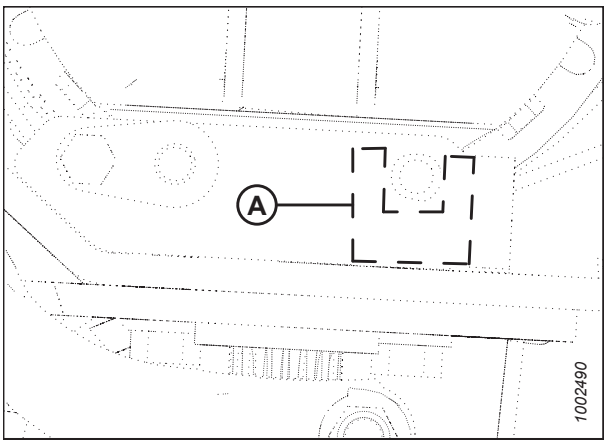

Figure 5.116: U-Shaped Shim

Checking Knife Drive Box Mounting Bolts

Check the torque on the four knife drive box mounting bolts according to the interval specified in the maintenance schedule.

1. Torque side bolts (A) first, then torque bottom bolts (B). Torque all bolts to 271 Nm (200 lbf·ft).

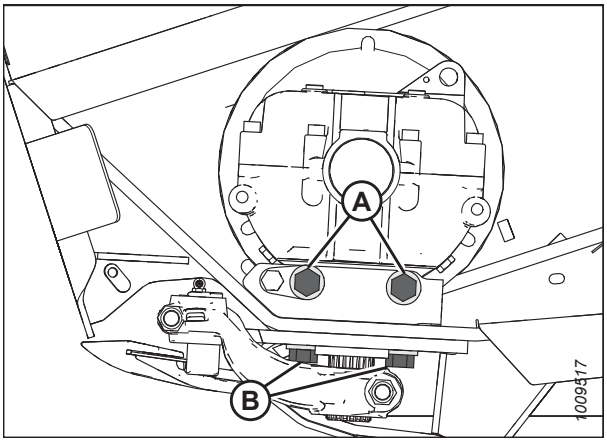

Figure 5.117: Knife Drive Box

Removing Knife Drive Box

The knife drive box may need to be removed for repair at the Dealership.

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. Loosen two bolts (A) securing the motor assembly to the header endsheet.
2. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

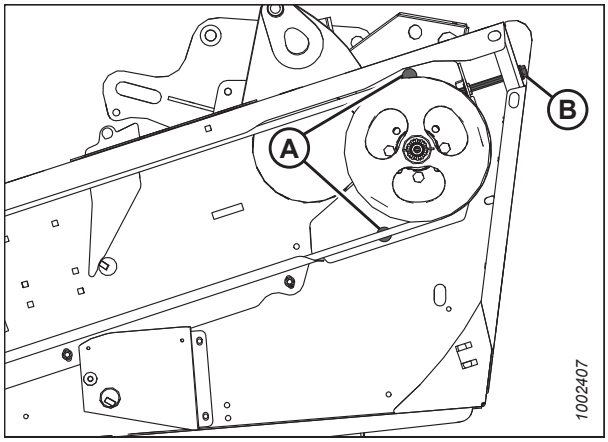

Figure 5.118: Knife Drive

For both timed and untimed headers:

3. To provide clearance between the knife drive box pulley and the endsheet, open access cover (A) on the endsheet behind the cutterbar.

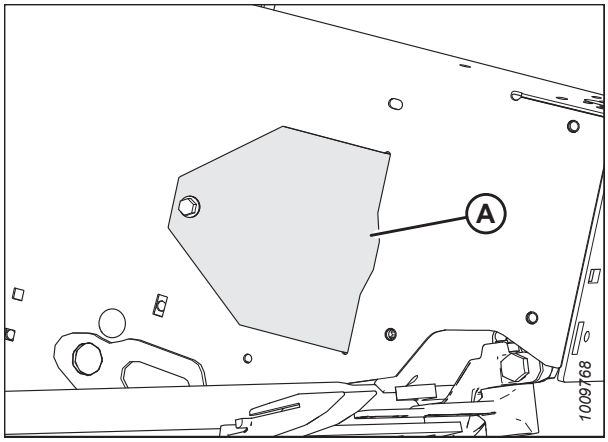

Figure 5.119: Access Cover

4. Remove belt (A) from drive pulley (B).
5. Slip belt (A) over and behind knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

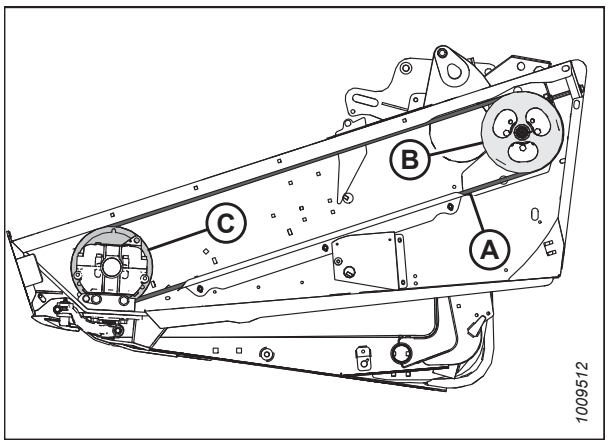

Figure 5.120: Knife Drive

6. Remove the four knife drive box mounting bolts (A) and (B).

   NOTE:

   If shims are set on bolts (A) between the knife drive box and housing, mark the location of the shims for later reinstallation.

   NOTE:

   Do **NOT** remove bolt (D); it is factory-set to properly position the knife drive box in the correct fore-aft position.

CAUTION

The knife drive box and pulley weigh over 35 kg (65 lb.) Use care when removing or installing. Lug (C) can be used for lifting.

7. Remove the knife drive box from the header and set aside.

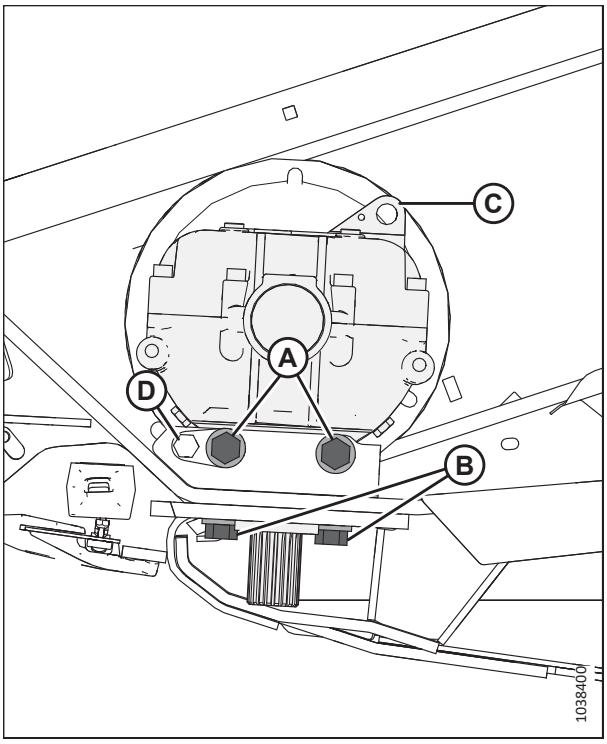

Figure 5.121: Knife Drive Box

Removing Knife Drive Box Pulley

To remove the knife drive box pulley, follow the recommended removal procedure provided here.

NOTE:

Before removing the knife drive box pulley, remove the knife drive box from the header. For instructions on removing the knife drive box, refer to *Removing Knife Drive Box, page 487*.

1. Loosen and remove knife drive box pulley clamping bolt (A) and nut (B).

2. Using a three-jaw puller, remove knife drive box pulley (C).

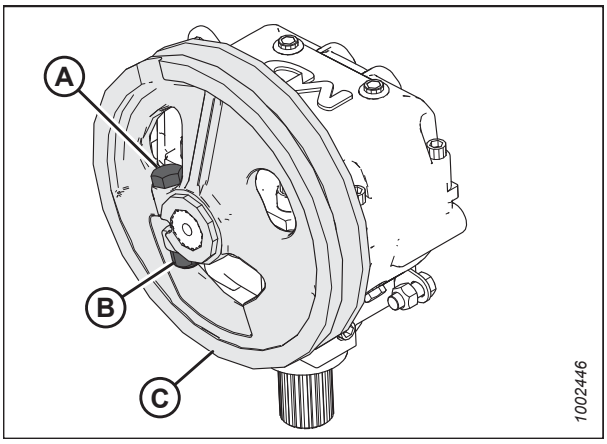

Figure 5.122: Knife Drive Box and Pulley

Installing Drive Arm

The drive arm transfers motion from the knife drive box to the knife. If replacing the knife drive box it will need to be reinstalled.

1. Rotate knife drive pulley (A) until splined output shaft (B) has rotated inboard until it stops and starts rotating in the opposite direction.

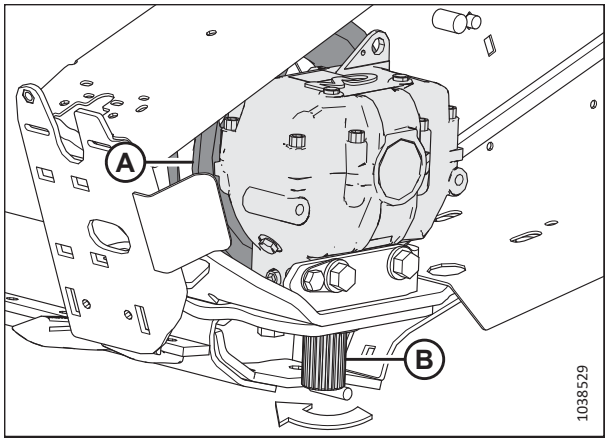

Figure 5.123: Knife Drive Box

2. Align knife drive arm (A) with the splines on the knife drive box. The drive arm should curve up and be positioned to avoid contacting the frame on the inboard stroke.
3. Place mark (B) on the bottom of the splined shaft and drive arm.

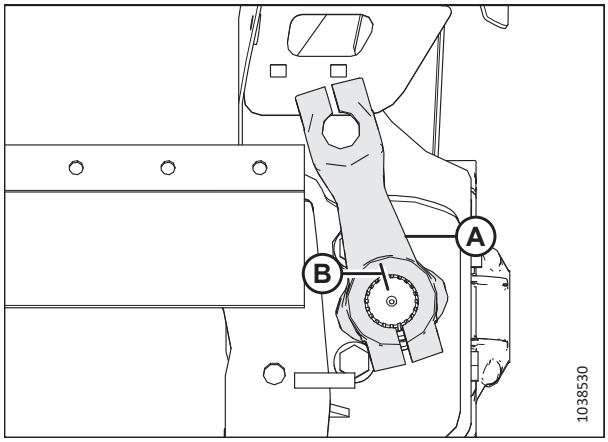

Figure 5.124: Knife Drive Arm – Bottom View

4. Apply two bands (A) of medium-strength threadlocker (Loctite® 243 or equivalent) to the splined shaft as shown. Apply one band at the end of the output shaft and the second band in the middle.
5. Align the marks on the splined shaft and the drive arm. Install knife drive arm (B) onto the splined shaft high enough so that the knifehead can pass beneath it.
6. Rotate the knife drive pulley to move knife drive arm (B) to the farthest outboard position.

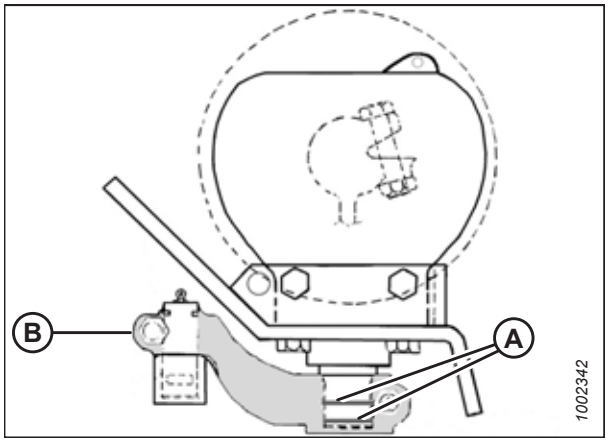

Figure 5.125: Knife Drive Box

7. Install knife assembly (A). Grease the knife head bearing prior to assembly spread grease around bearing evenly.

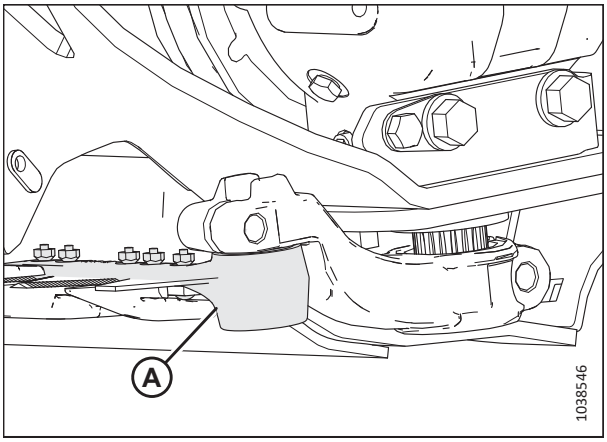

Figure 5.126: Knife Drive Box

8. Fill bearing cavity (B) with grease prior to installing the knifehead pin to prevent any air from getting trapped in the cavity.

   NOTE:

   For easier installation of the knifehead pin, remove the grease fitting from the pin first.

9. Install knifehead pin (C) through drive arm (A) and into the knifehead.

10. Adjust knifehead pin (C) until the bottom edge of groove (D) is 0.5–1.5 mm (0.02–0.06 in.) above the bolt clamping area.

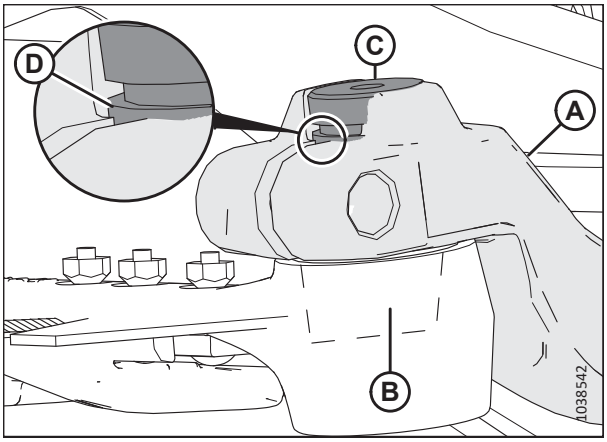

Figure 5.127: Knifehead

11. Secure the pin with 5/8 x 3 in. hex head bolt (A) and nut (B). Torque the hardware to 217 Nm (160 lbf·ft).

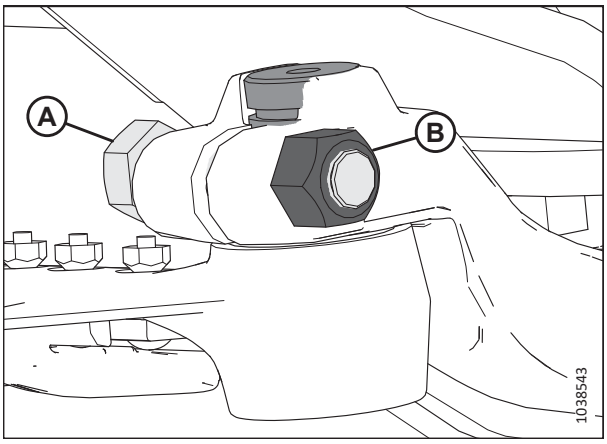

Figure 5.128: Knifehead

12. Stroke the knife in and back out. Check that drive arm (A) has 0.2–1.2 mm (0.008–0.05 in.) of clearance (B) between the drive arm and the knifehead.
13. If required, adjust the position of drive arm (A) on the splined shaft to achieve the proper clearance.
14. Install 5/8 X 3 in. hex bolt (C) and nut (D). Install the bolt from the inboard side of the arm. Torque the bolt to 217 Nm (160 lbf·ft).

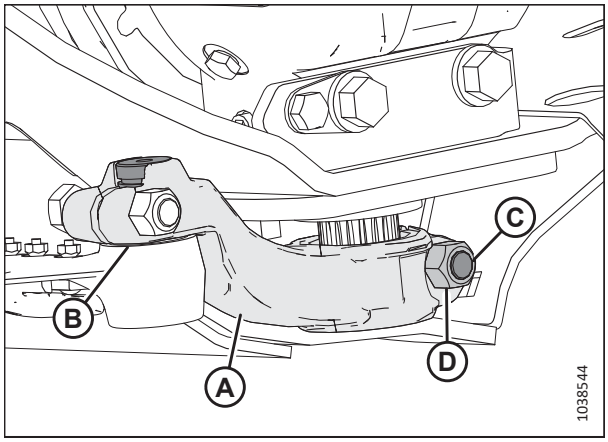

Figure 5.129: Knife Drive Box

15. Reinstall grease fitting (A) (if previously removed), and slowly apply grease to the knifehead until slight downward movement of the knifehead is observed.

    NOTE:

    If air is trapped in the bearing cavity, the knifehead will begin to move down before it's filled with grease.

    IMPORTANT:

    Do **NOT** overgrease the knifehead. Overgreasing leads to knife misalignment causing excessive heating of guards and overloading of drive systems. If overgreasing occurs, remove the grease fitting to release the pressure.

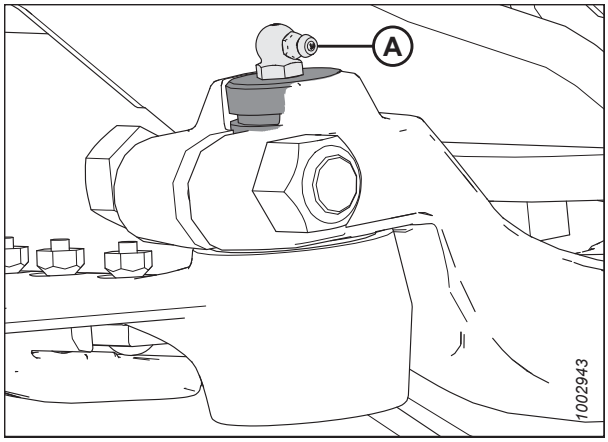

Figure 5.130: Knifehead

Installing Knife Drive Box Pulley

The knife drive box pulley is driven by the knife drive motor and the knife drive belt. To install the knife drive box pulley, follow the recommended installation procedure provided here.

1. Ensure the splines and bores in the pulley and drive arm are free of paint, oil, and solvents.
2. Apply two bands (A) of medium-strength threadlocker (Loctite® 243 or equivalent) around the shaft as shown at right. Apply one band at the end of the spline and the second band in the middle.
3. Press pulley (B) onto the shaft until flush with the end of the shaft.

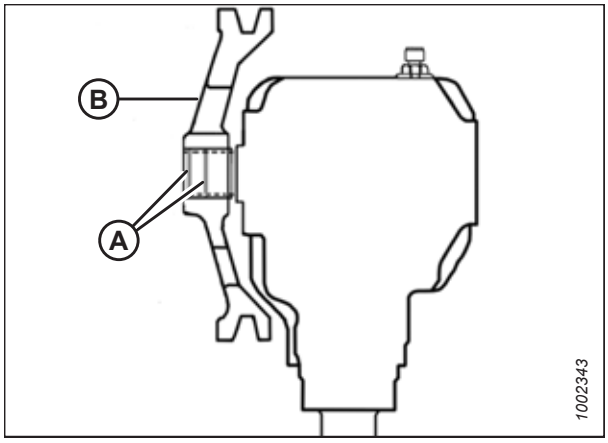

Figure 5.131: Knife Drive Box

4. Secure pulley (C) with a 5/8 x 3 in. hex head bolt (A) and a distorted thread NC lock nut (B). Torque bolt to 217 Nm (160 lbf·ft).

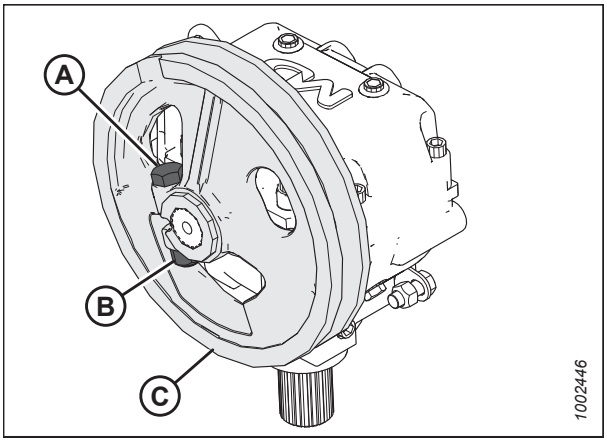

Figure 5.132: Knife Drive Box and Pulley

Installing Knife Drive Box

To install a knife drive box, follow the recommended installation procedure provided here.

CAUTION

The knife drive box and pulley weigh over 35 kg (65 lb.), use the appropriate lifting device when removing or installing. The lug on top, can be used for lifting.

NOTE:

If the pulley was removed from the knife drive box, refer to *Installing Knife Drive Box Pulley, page 492*. If the pulley was **NOT** removed, proceed to Step *1, page 493*.

1. Install the knife drive belt over pulley (C). Position knife drive box (D) onto the header mount.
2. Install two 5/8 x 1 3/4 in. grade 8 hex head bolts (A) on the side, and two 5/8 x 2 1/4 in. grade 8 hex head bolts (B) on the bottom.

   NOTE:

   If shims were removed from bolts (A) in Step *7, page 489*, install them again in the same place between the knife drive box and housing.
3. Tighten knife drive box side bolts (A) slightly, then tighten bottom bolts (B) slightly, to ensure proper contact with the vertical and horizontal mounting surfaces.

   NOTE:

   Do **NOT** torque the bolts at this time.

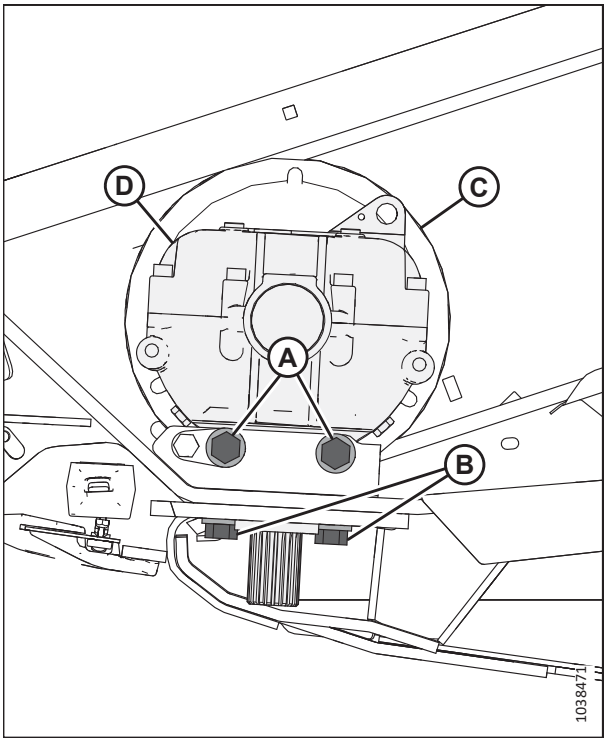

Figure 5.133: Knife Drive Box

4. Align knife drive box pulley (C) with the drive pulley using bolts (A). For instructions, refer to *Adjusting Knife Drive Box Squareness, page 486*.

   NOTE:

   Bolts (B) can be loosened, if required, when adjusting.

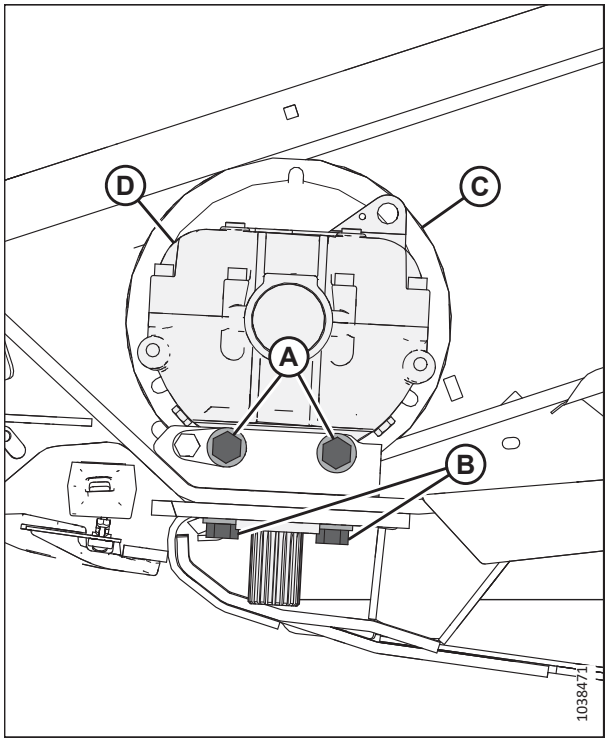

Figure 5.134: Knife Drive Box

5. Torque side bolts (A) first, then torque bottom bolts (B). Torque the bolts to 271 Nm (200 lbf·ft).
6. Install the drive arm. For instructions, refer to *Installing Drive Arm, page 490*.
7. Rotate the pulley Move the drive arm to the mid-stroke position, and ensure the knife bar doesn't contact the front of the first guard. If the knife drive box requires adjustment, contact your MacDon Dealer.
8. Tension the knife drive belts.
   - For untimed headers, refer to *Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*.
9. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

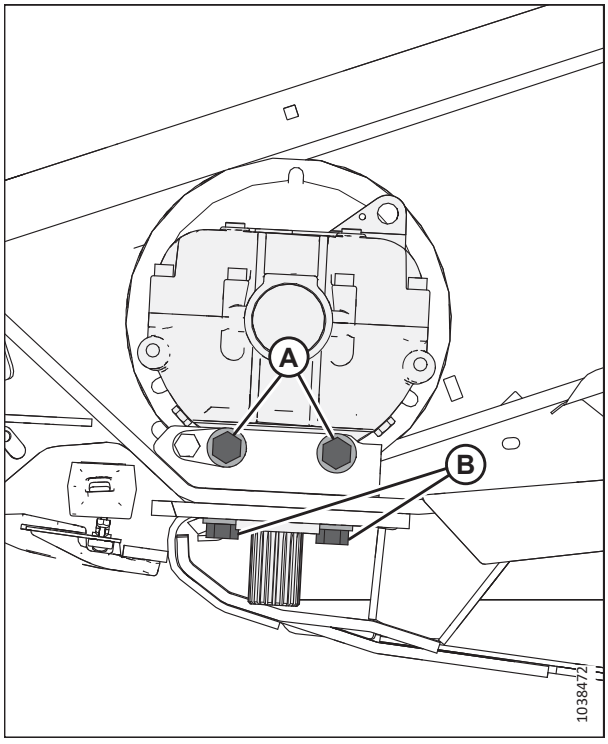

Figure 5.135: Knife Drive Box

Changing Oil in Knife Drive Box

Change the knife drive box lubricant according to the interval specified in the maintenance schedule.

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. Raise the header and place a container large enough to hold approximately 2.2 liters (2.3 quarts) under the knife drive box to collect the oil.
2. Shut down the engine, and remove the key from the ignition.
3. Open the endshield. For instructions, refer to *Opening Endshields, page 33*.
4. Remove breather/dipstick (A) and drain plug (B).
5. Allow the oil to drain from the knife drive box and into the container placed below it.
6. Reinstall drain plug (B).
7. Add oil to the knife drive box. Refer to the inside back cover for recommended fluids and lubricants.
8. Reinstall breather/dipstick (A).
9. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

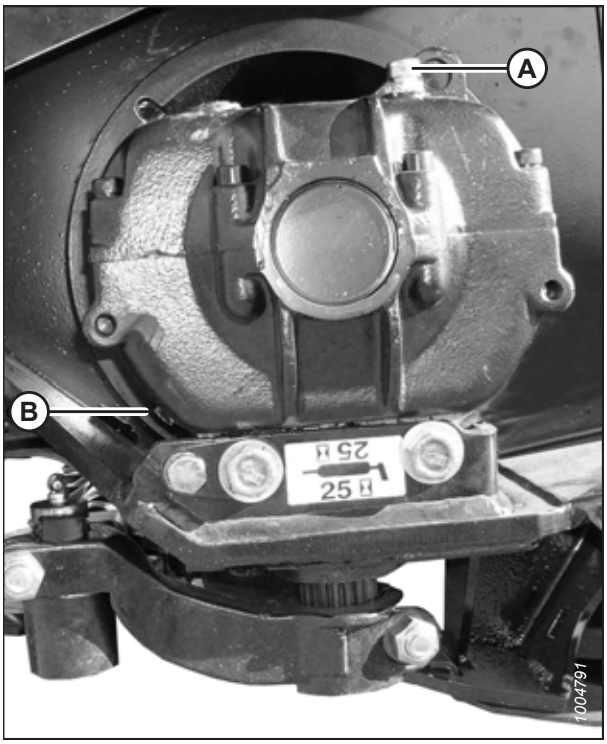

Figure 5.136: Knife Drive Box

5.13.2 Knife Drive Belts

The knife drive provide power to the knife system. There may be one, two, or three drive belts, depending on the header model.

Knife Drive Belts

The knife drive box is driven by a belt connected to the hydraulic motor on the header's left endsheet. There is an identical drive system at the opposite end of FD140 and FD145 double-knife headers.

Removing Single-Knife and Untimed Double-Knife Drive Belts

The procedure for removing untimed double-knife drive belts is the same for both sides of the header.

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. Open the endshield. For instructions, refer to *Opening Endshields, page 33*.
2. Loosen two bolts (A) securing the motor assembly to the header endsheet.
3. Loosen the belt tension by turning tensioning bolt (B) counterclockwise.

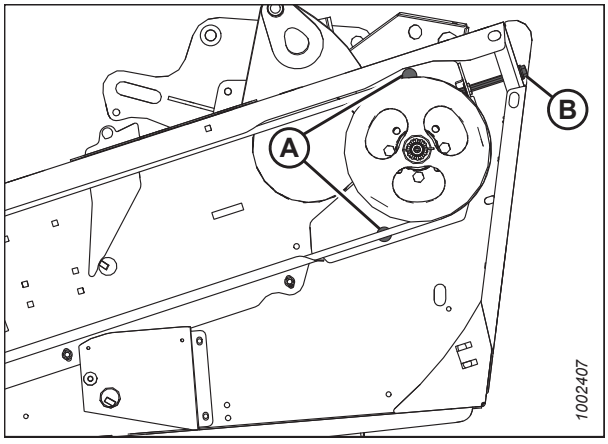

Figure 5.137: Knife Drive

4. To provide clearance between the knife drive box pulley and the endsheet, open access cover (A) on the endsheet behind the cutterbar.

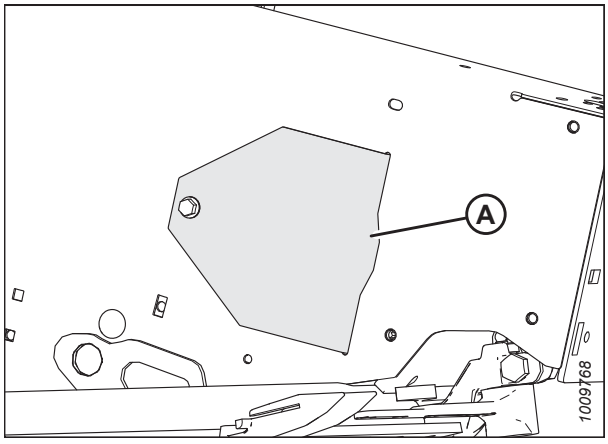

Figure 5.138: Access Cover

5. Remove belt (A) from drive pulley (B).
6. Slip belt (A) over and behind knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

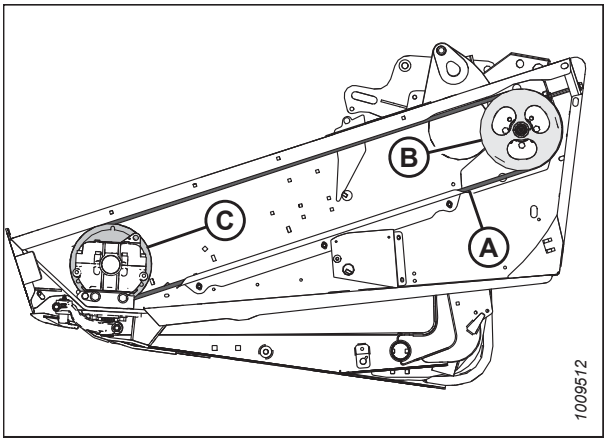

Figure 5.139: Knife Drive

Installing Single-Knife and Untimed Double-Knife Drive Belts

The procedure for installing untimed double-knife drive belts is the same for both sides of the header.

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. Route knife drive belt (A) around knife drive box pulley (C) and knife drive pulley (B). Use the notch in the pulley to assist with the belt installation.

   NOTE:

   Ensure the drive motor is fully forward. Do **NOT** pry the belt over the pulley.

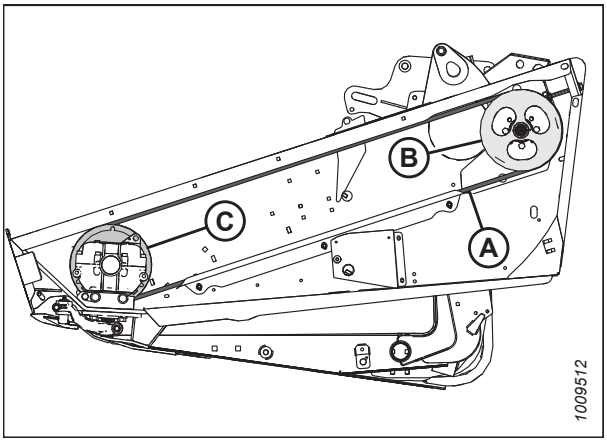

Figure 5.140: Knife Drive

3. Tension the knife drive belt. For instructions, refer to *Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*.
4. Install access cover (A) and secure with bolt.
5. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

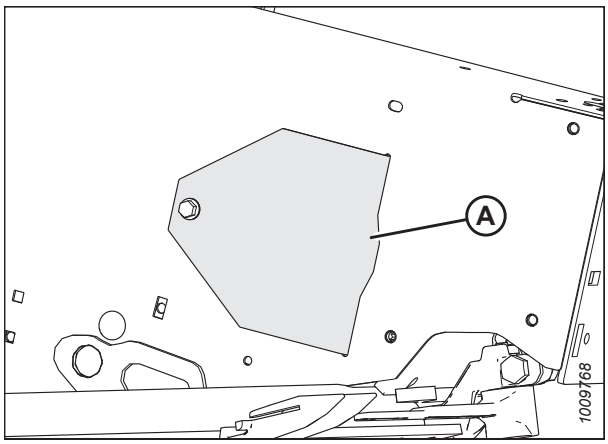

Figure 5.141: Access Cover

Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts

Knife drive systems are fitted with a drive belt which must be tensioned correctly for the knives to stroke properly.

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.

IMPORTANT:

To ensure the service life of the belt and the knife drive, **NEVER** overtighten a drive belt.

1. Shut down the engine, and remove the key from the ignition.
2. Open the left endshield. For instructions, refer to *Opening Endshields, page 33*.
3. Check the tension on knife drive belt (C). A properly tensioned drive belt should deflect 24–28 mm (15/16–1 1/8 in.) when 133 N (30 lbf) of force is applied at the midspan of the belt.
4. Loosen two bolts (A).

   NOTE:

   The belt guide has been removed from the illustration for the sake of clarity.
5. If the tension on the belt needs to be adjusted, turn adjuster bolt (B) clockwise to move the drive motor until the proper level of tension is achieved.

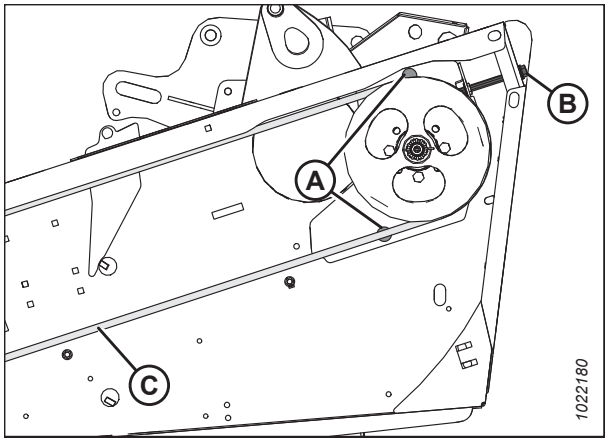

Figure 5.142: Knife Drive Motor and Adjuster

6. Ensure that the clearance between belt (A) and belt guide (B) is 1 mm (1/16 in.).
7. Loosen three bolts (C), and adjust the position of guide (B) as needed.
8. Tighten three bolts (C).
9. Close the endshield. For instructions, refer to *Closing Endshields, page 34*.

   NOTE:

   Readjust the tension of a new belt after a short run-in period (about 5 hours).

10. **Double-knife headers:** Repeat this procedure to check the knife drive's belt tension on the other side of the header.

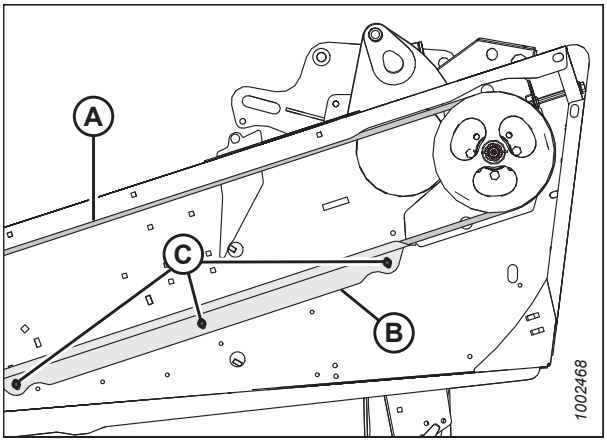

Figure 5.143: Knife Drive Belt Guide

5.14 Feed Deck

The feed deck is located on the FM100 Float Module. It consists of a motor and feed draper that conveys cut crop to the feed auger.

5.14.1 Replacing Feed Draper

Replace the feed draper if it has torn, cracked, or missing slats.

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.

1. Raise the header fully.
2. Engage the header safety props. For instructions, refer to the combine operator's manual.
3. Shut down the engine, and remove the key from the ignition.
4. Raise the reel fully.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
6. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

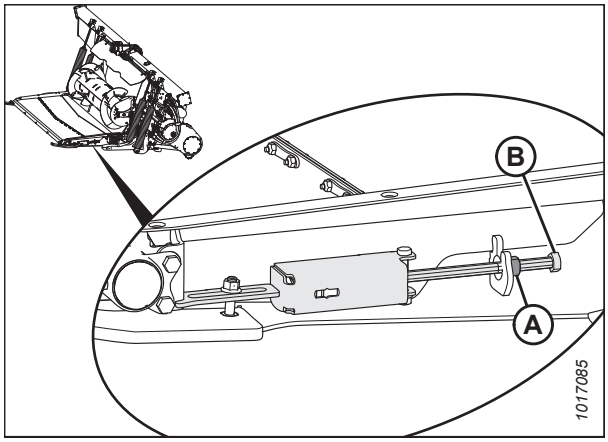

Figure 5.144: Feed Draper Tensioner

7. Unlatch feed deck pan handle (A) from pan handle latch supports (B) on each side of the feed deck. This will drop the door down and allow access to feed deck draper and rollers.

   NOTE:

   Some parts removed from illustration for clarity.

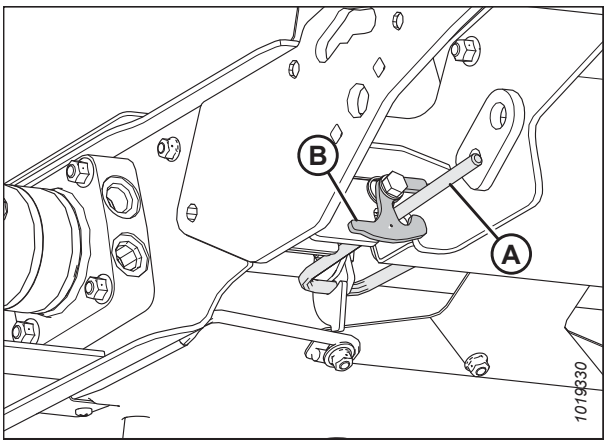

Figure 5.145: Feed Deck Pan Handle and Left Pan Handle Latch

8. Remove nuts and screws (A), and remove draper connector straps (B).
9. Pull the draper from the deck.

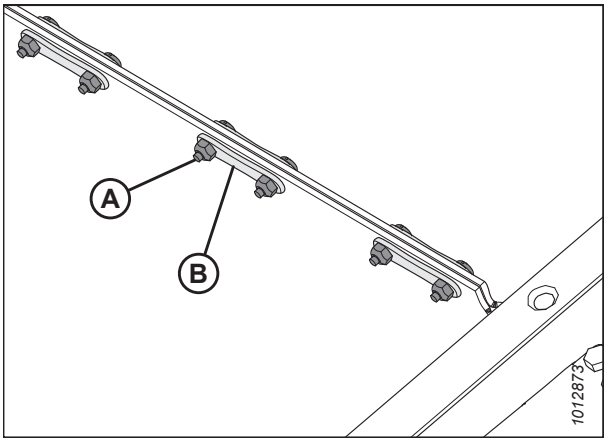

Figure 5.146: Draper Connector

10. Install new draper (A) over drive roller (B). Make sure the draper guides fit into drive roller grooves (C).
11. Pull draper along bottom of feed deck and over idler roller (D).

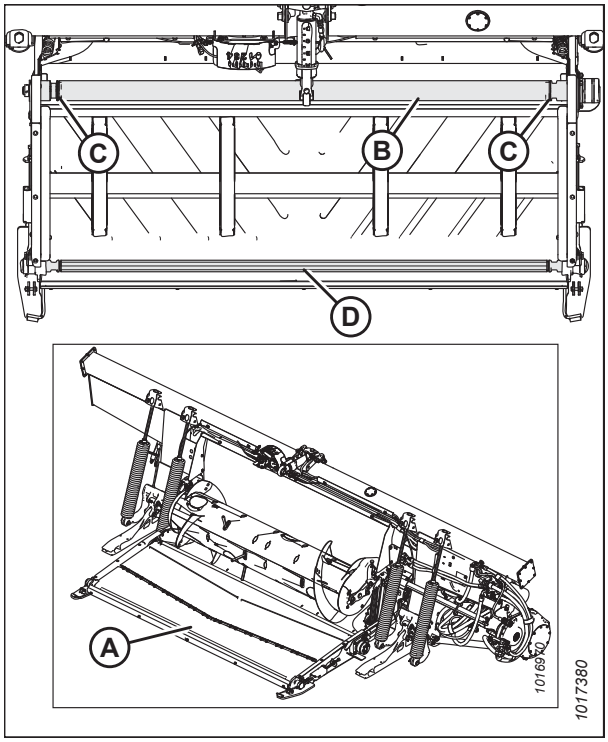

Figure 5.147: Float Module Feed Draper

12. Connect the draper joint with connector straps (B) and secure with nuts and screws (A). Ensure the screw heads face towards the rear of the deck, and tighten only until the end of the screws are flush with the nuts.
13. Adjust the draper tension. For instructions, refer to *5.14.2 Checking and Adjusting Feed Draper Tension, page 503*.

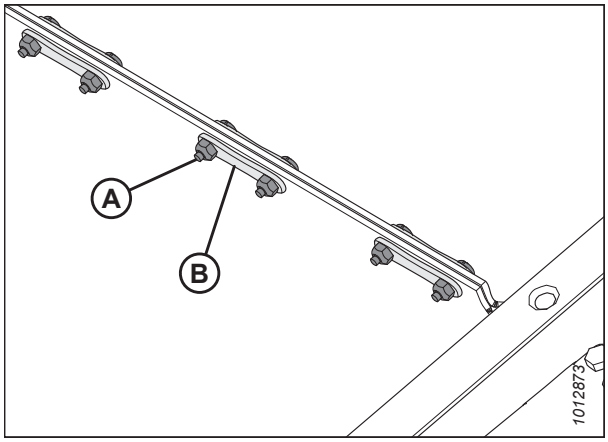

Figure 5.148: Draper Connector Straps

14. Close the feed deck by latching pan handle latch supports (B) on each side of the feed deck to feed deck pan handle (A).

    NOTE:

    Some parts removed from illustration for clarity.

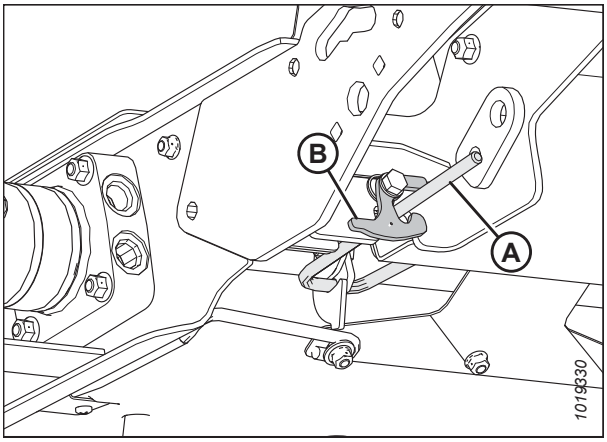

Figure 5.149: Feed Deck Pan Handle and Left Pan Handle Latch

5.14.2 Checking and Adjusting Feed Draper Tension

Check and possibly adjust the feed draper tension to ensure the feed draper operates as it was designed to do.

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 header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props.

Checking draper tension:

4. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove on the drive roller, and the idler roller is between the guides.

    NOTE:

    The illustrations show the left side of the float module. The right side is opposite.

    NOTE:

    The default position of spring retainer (A) (white indicator) is centered (B) in the spring box window; however, the position of the spring retainer varies with draper tracking adjustment at the factory.

5. Check the position of white indicator (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.
6. If adjustment is necessary, proceed to Step *7, page 504*.

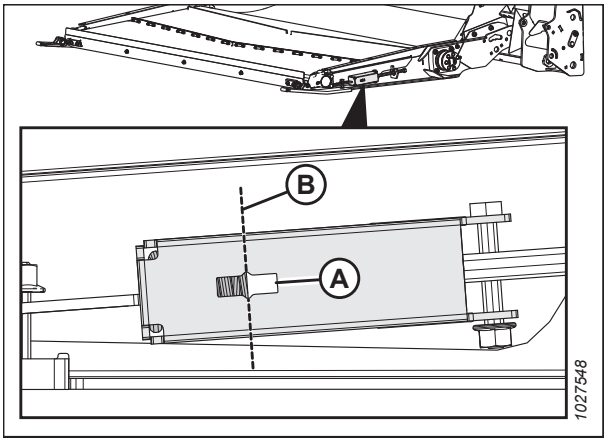

Figure 5.150: Feed Draper Tensioner

Adjusting draper tension:

7. Adjust the draper tension by loosening jam nut (A) and turning bolt (B) clockwise to increase the draper tension, or turning bolt (B) counterclockwise to decrease the draper tension. The draper tension can be adjusted as follows:
   - Tensioner loosened to 3 mm (1/8 in.) (D) (aft of center in indicator window [E])
   - Tensioner tightened to 6 mm (1/4 in.) (C) (forward of center in indicator window [E])

   NOTE:

   For small tension adjustments, you may need to only adjust one side of the draper. For larger tension adjustments and to avoid uneven draper tracking, you may need to adjust both sides of the draper an equal amount.

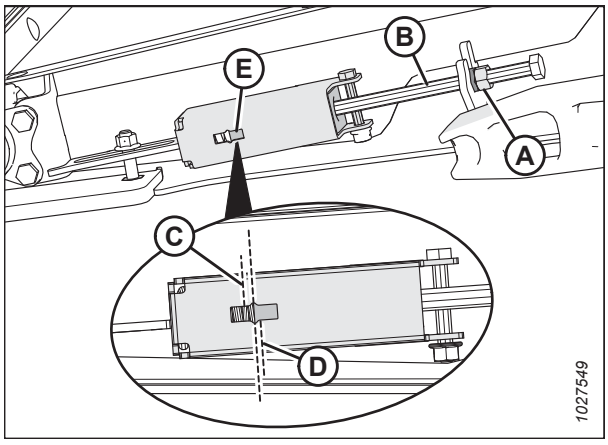

Figure 5.151: Feed Draper Tensioner

8. Tighten jam nut (A).

5.14.3 Feed Draper Drive Roller

The feed draper drive roller is hydraulically driven to rotate the feed draper and convey crop toward the feeder house auger.

Removing Feed Draper Drive Roller

If the feed draper drive roller requires repair or replacement, it 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 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 header fully.
2. Raise the reel fully.
3. Stop 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. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

6. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

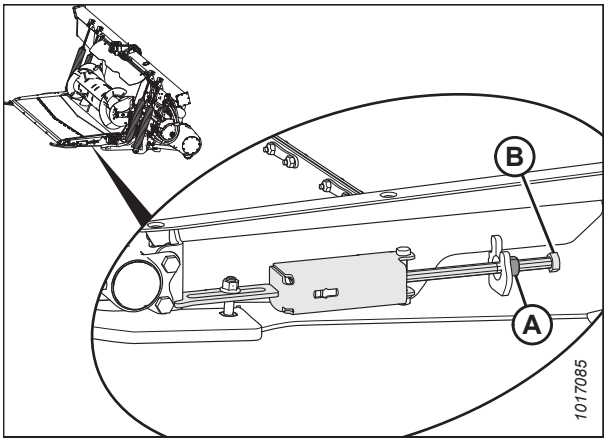

Figure 5.152: Feed Draper Tensioner

7. Remove nuts and screws (A), and remove draper connector straps (B).
8. Pull the draper from the deck.

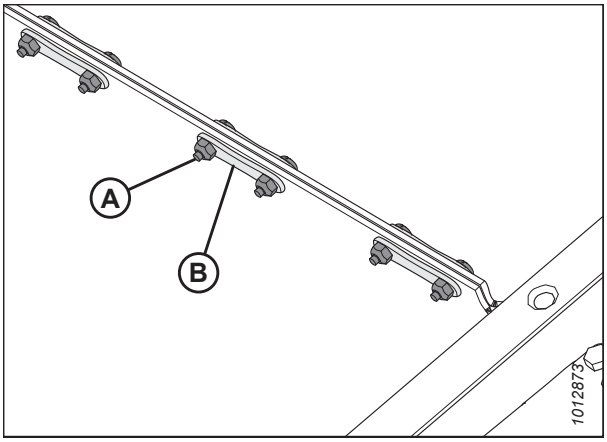

Figure 5.153: Draper Connector

9. Remove two bolts (B) from drive roller cover (A).
10. Remove drive roller covers (C).

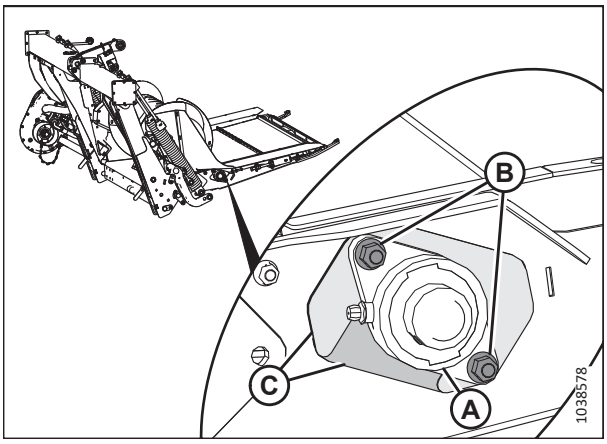

Figure 5.154: Drive Roller Bearing

11. Slide drive roller (A) with bearing assembly (B) as shown until left end comes off of spline.

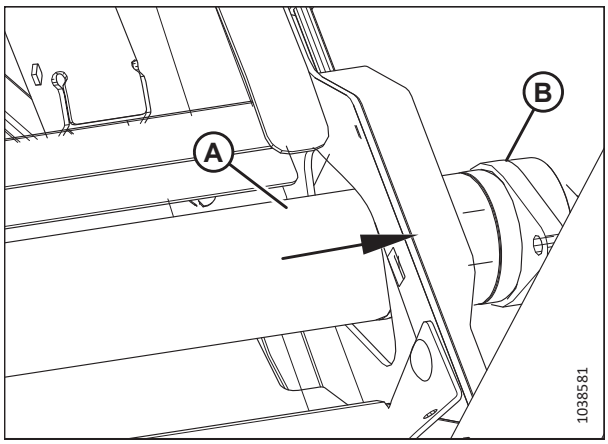

Figure 5.155: Drive Roller

12. Lift left end out of the frame.
13. Slide assembly (A) as shown, guiding bearing housing (B) through frame opening (C).
14. Remove roller (A).

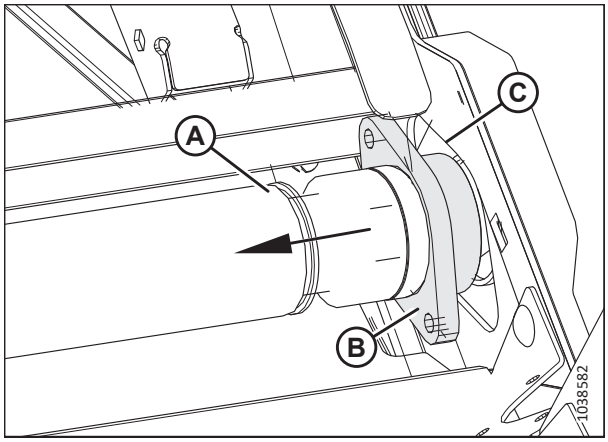

Figure 5.156: Drive Roller

Installing Feed Draper Drive Roller

The feed draper drive roller will need to be attached to the drive motor.

1. Apply grease to the spline.
2. Slide drive roller cover plate (A) onto end of roller (B) as shown.
3. Guide bearing end (C) of drive roller through frame opening (D).

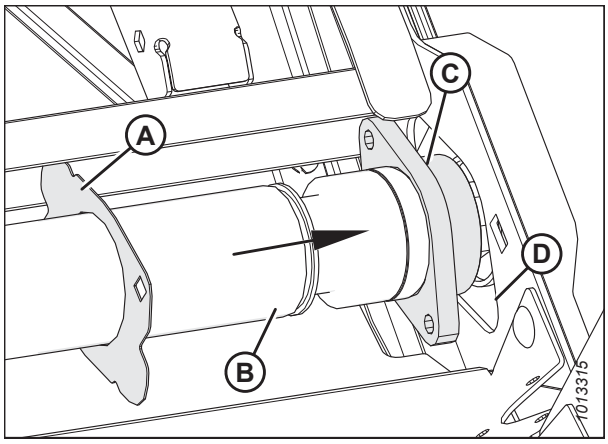

Figure 5.157: Drive Roller – Bearing End

4. Slide left end of drive roller (A) onto motor spline (B) as shown.

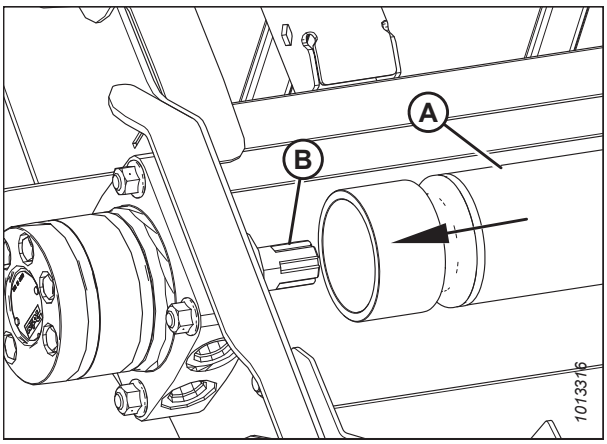

Figure 5.158: Motor

5. Secure bearing and housing (A) with the drive roller cover plate on the frame using two bolts (B).
6. Install the feed deck draper. For instructions, refer to *5.14.1 Replacing Feed Draper, page 500*.
7. Tension the feed draper. For instructions, refer to *5.14.2 Checking and Adjusting Feed Draper Tension, page 503*.

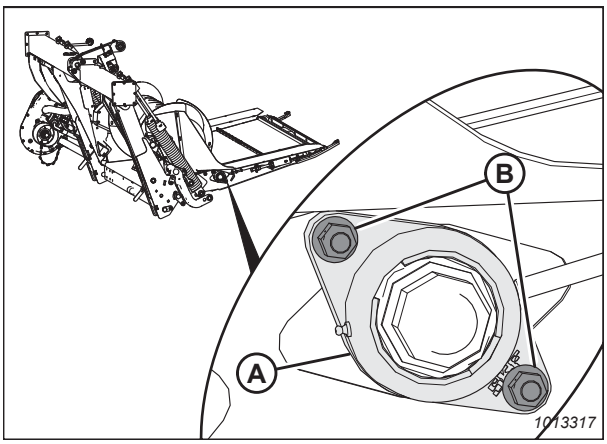

Figure 5.159: Drive Roller Bearing

Replacing Feed Draper Drive Roller Bearing

The feed draper drive roller has a bearing at its unpowered end. If it is damaged or worn, it will need to be replaced.

Removing Feed Draper Drive Roller Bearing

The feed draper drive roller bearing can be removed without removing the drive roller from the float module.

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.

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 header safety props. For instructions, refer to the combine operator's manual.

5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

6. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

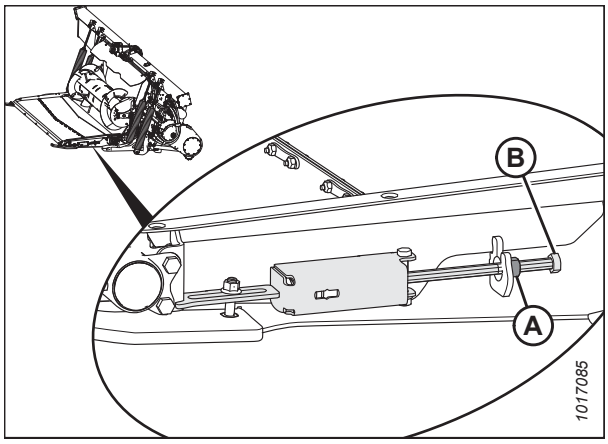

Figure 5.160: Feed Draper Tensioner

7. Loosen set screw (B) on bearing lock (A).

8. Using a hammer and punch, tap bearing lock (A) in the direction opposite to the auger rotation to release the lock.

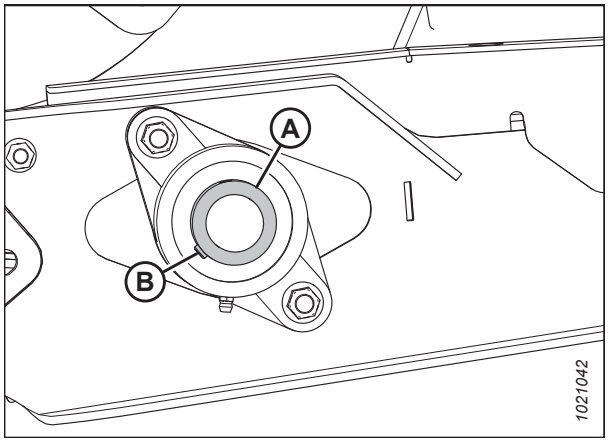

Figure 5.161: Feed Draper Drive Roller Bearing

9. Remove two nuts (A).

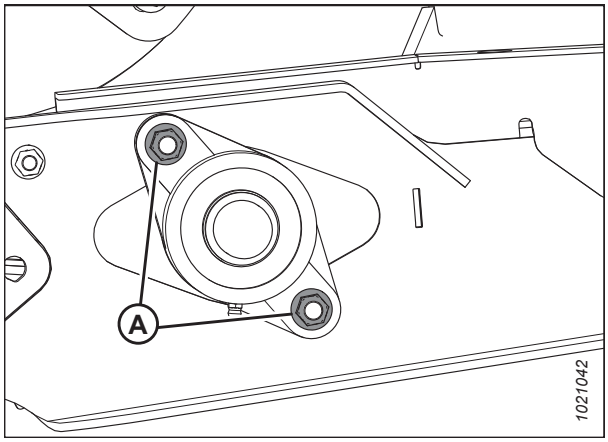

Figure 5.162: Feed Draper Drive Roller Bearing

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 504*.

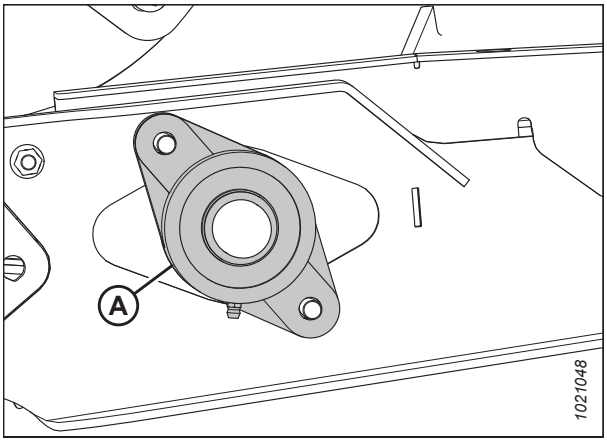

Figure 5.163: Feed Draper Drive Roller Bearing

Installing Feed Draper Drive Roller Bearing

The bearing is held in place with bolts and a lock collar.

1. Install drive roller bearing housing (A) onto shaft (B), and secure with two bolts and nuts (C).

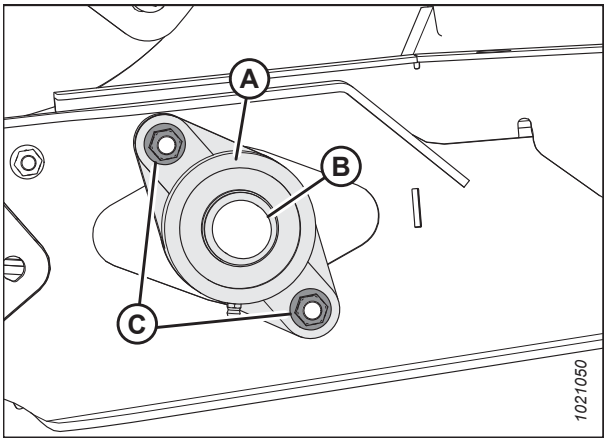

Figure 5.164: Feed Draper Drive Roller Bearing

2. Install bearing lock collar (A) onto the shaft.
3. Using a hammer and punch, tap the bearing lock in the direction of auger rotation to lock.
4. Tighten bearing lock set screw (B).
5. Tension the feed draper. For instructions, refer to *5.14.2 Checking and Adjusting Feed Draper Tension, page 503*.

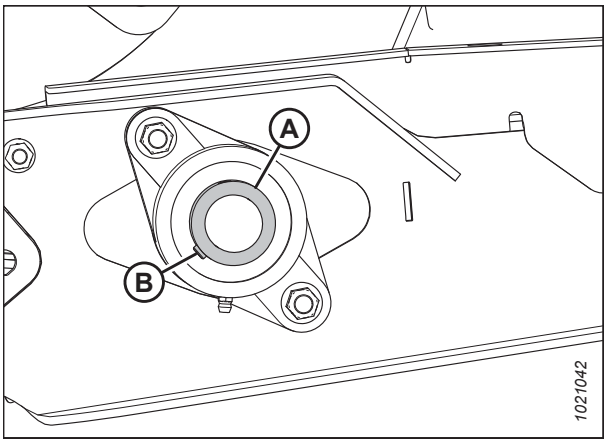

Figure 5.165: Feed Draper Drive Roller Bearing

5.14.4 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 crop to the auger.

Removing Feed Draper Idler Roller

If the bearing in the feed draper idler roller is damaged or worn, it will need to be replaced.

1. Engage the header safety props. For instructions, refer to the combine operator's manual.
2. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

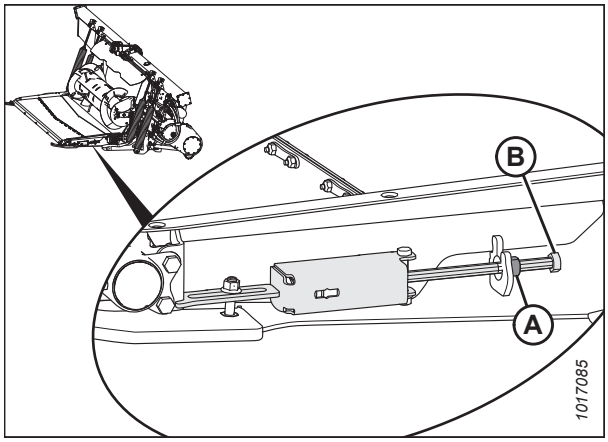

Figure 5.166: Feed Draper Tensioner

3. Remove nuts and screws (A), and remove draper connector straps (B).
4. Open the draper.

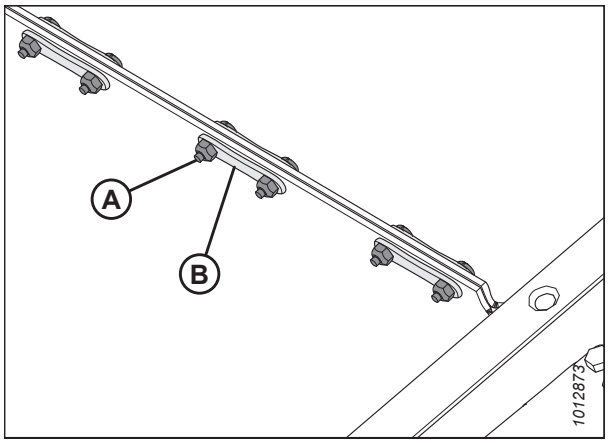

Figure 5.167: Draper Connector

5. Remove nut (D) to have better access to the other two nuts (C).
6. Remove two bolts (A) and nuts (C) from both ends of the idler roller.
7. Remove idler roller assembly (B).

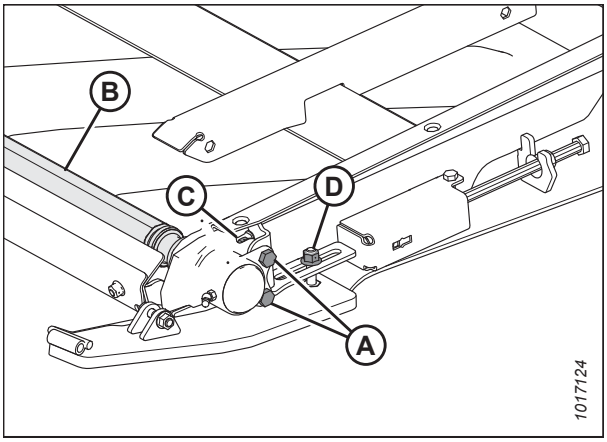

Figure 5.168: Idler Roller

Installing Feed Draper Idler Roller

The feed draper will require tensioning after the feed draper idler roller is installed.

1. Position idler roller assembly (B) in the float module deck.
2. Install two bolts (A) and nuts (C) at both ends of the idler roller. Torque bolts to 12 Nm (9 lbf·ft).

   NOTE:

   Do **NOT** overtighten bolts (A).

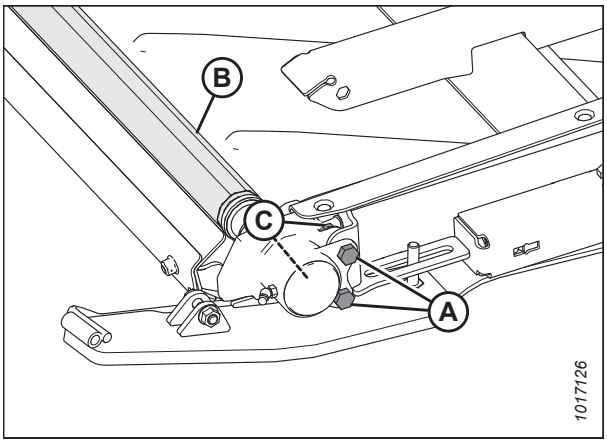

Figure 5.169: Idler Roller

3. Install nut (A).

   IMPORTANT:

   Maintain a 2–4 mm (1/16–3/16 in.) gap (C) between plate (B) and nut (A) to allow the idler roller to float and to move when belt is tensioned or adjusted.

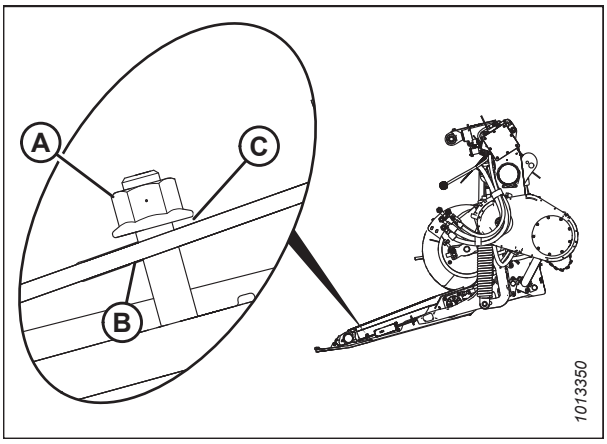

Figure 5.170: Idler Roller

4. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
5. Tension the feed draper. For instructions, refer to *5.14.2 Checking and Adjusting Feed Draper Tension, page 503*.

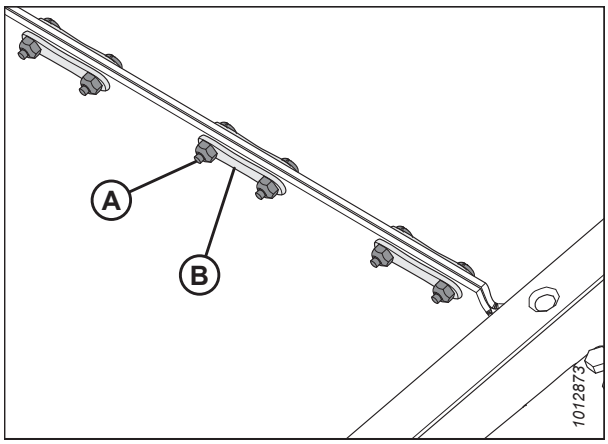

Figure 5.171: Draper Connector

Replacing Feed Draper Idler Roller Bearing

Feed draper idler roller bearings need to be replaced if they are damaged or worn out.

NOTE:

If replacing bearings on one side only, follow the link below, but only remove the hardware from the side that is being replaced. For instructions, refer to *Removing Feed Draper Idler Roller, page 510*.

NOTE:

If replacing both bearings, remove the idler roller from the feed deck. For instructions, refer to *Removing Feed Draper Idler Roller, page 510*.

1. Remove dust cap (A).

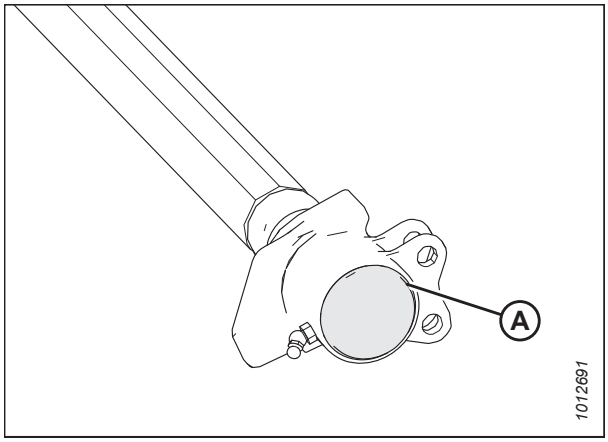

Figure 5.172: Idler Roller

2. Remove nut (A).
3. Slide bearing assembly (B) off of the shaft.

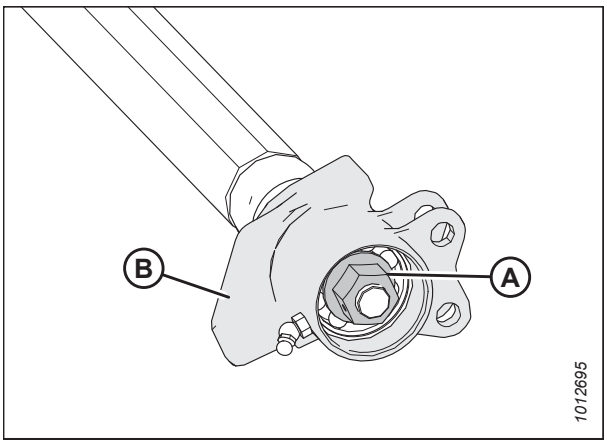

Figure 5.173: Idler Roller

4. Secure housing (D) and remove internal retaining ring (A).

   NOTE:

   If the grease fitting protrudes into the housing, remove it before removing the bearing (B) and seals (C).

5. Use a hydraulic press to remove bearing (B), and two seals (C).
6. Apply oil to bore before assembly.
7. Install seals (C) into housing (D).

   NOTE:

   Ensure the flat side of the seals are facing inward towards the roller.

8. Install bearing (B), and internal retaining ring (A).

   NOTE:

   The open side of the bearing should be facing away from the roller.

9. Brush the shaft with oil, and rotate housing (D) onto the shaft by hand to prevent seal damage.
10. Secure the bearing assembly to the shaft with nut (A). Torque to 88 Nm (65 lbf·ft)
11. Fill the bearing cavity and dust cap with grease, then install dust cap (B).
12. If the grease fitting was removed, reinstall it and continue filling the housing cavity with grease. Grease the feed draper idler roller bearing until grease comes out of the seal. Wipe any excess grease from area after greasing.
13. Install the feed draper idler roller on header. For instructions, refer to *Installing Feed Draper Idler Roller, page 511*.

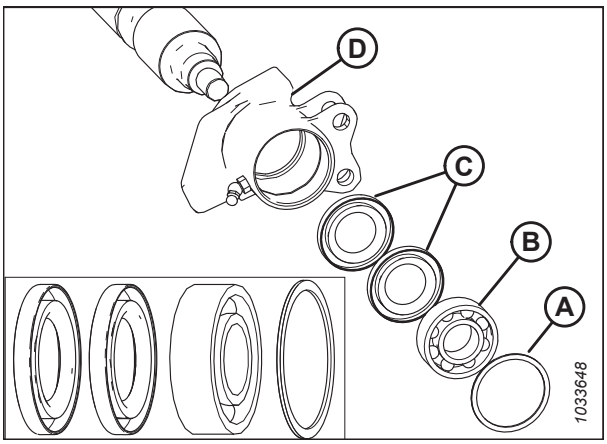

Figure 5.174: Bearing Assembly

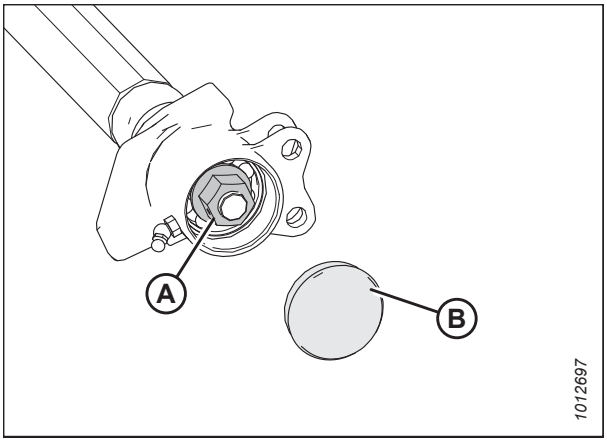

Figure 5.175: Idler Roller

5.14.5 Lowering FM100 Feed Deck Pan

The float module's feed deck pan is held in place with latches.

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. Rotate latches (A) to unlock handle (B).

   NOTE:

   Parts have been removed from the illustration for the sake of clarity.

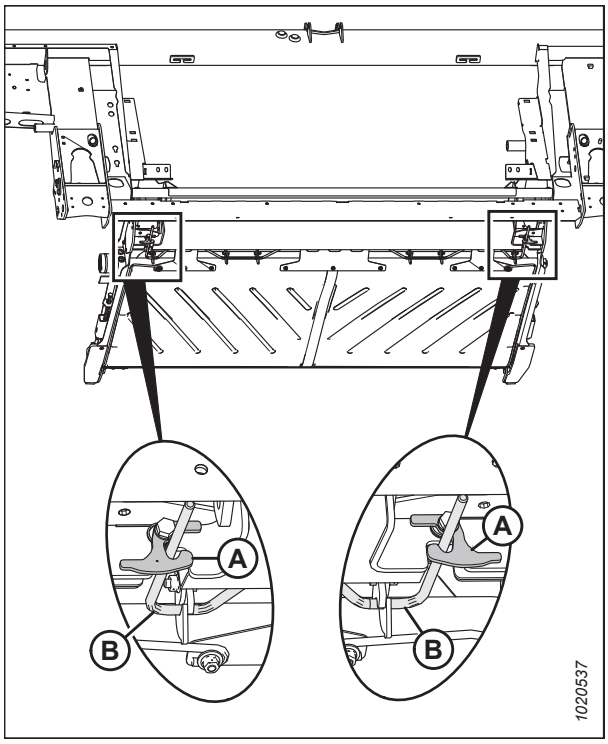

Figure 5.176: Feed Deck Pan – Rear View

6. Hold pan (A) and rotate handles (B) downward to release the pan.

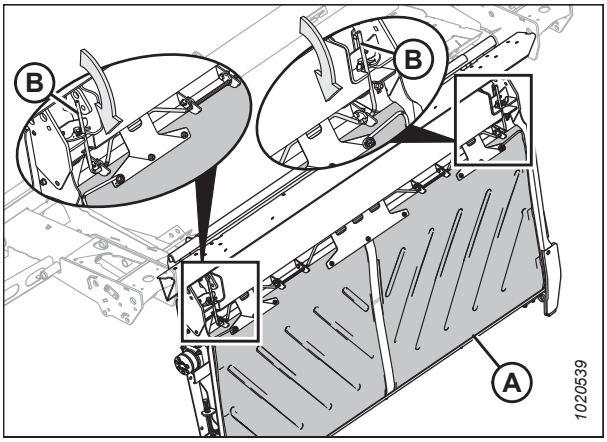

Figure 5.177: Underside of Feed Deck Pan

7. Lower pan (A). Ensure that no debris has fallen into the draper.

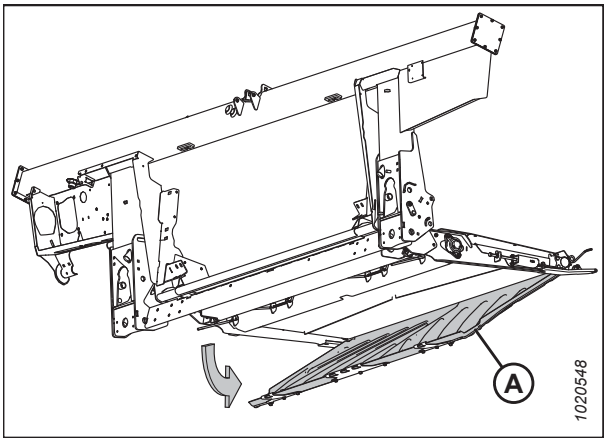

Figure 5.178: Feed Deck Pan — Rear View

5.14.6 Raising FM100 Feed Deck Pan

Once the feed deck pan has been raised, it will need to be secured with the lock latches.

1. Raise feed deck pan (A).
2. Engage lock handle (B) in feed deck pan hooks (C).
3. Rotate handles (B) upwards, bringing feed deck pan (A) into locking position.

   NOTE:

   Ensure that all three deck pan hooks (C) are secured on lock handle (B).

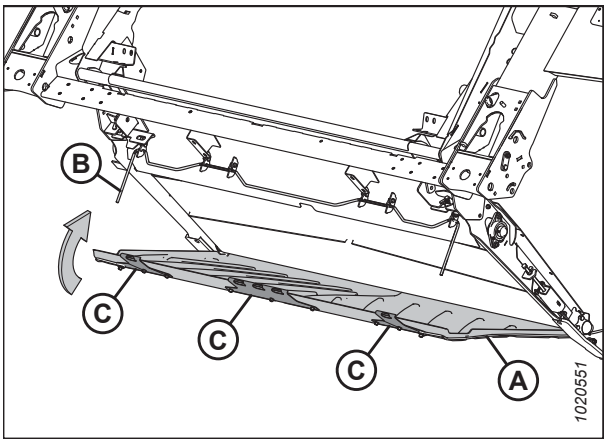

Figure 5.179: Underside of Feed Deck Pan – Rear View

4. Hold feed deck pan (A) in place, and rotate latches (B) to lock handle (C).

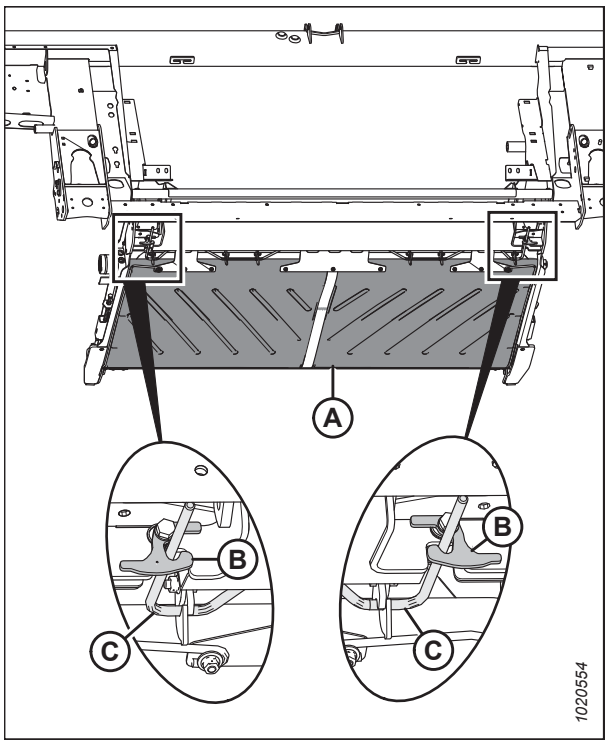

Figure 5.180: Feed Deck Pan – Rear View

5.14.7 Checking Link Holder Hooks

Check the left and right link holder hooks **DAILY** to ensure 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.

1. Raise the header fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the header safety props. For instructions, refer to the combine operator's manual.

4. Before operation, ensure both link holder hooks (A) are engaged on the float module under the feed deck as shown.

   NOTE:

   Figure *5.181, page 517* shows the style of deck hook that is current at the time of this manual's publication. The appearance of older hooks varies slightly.

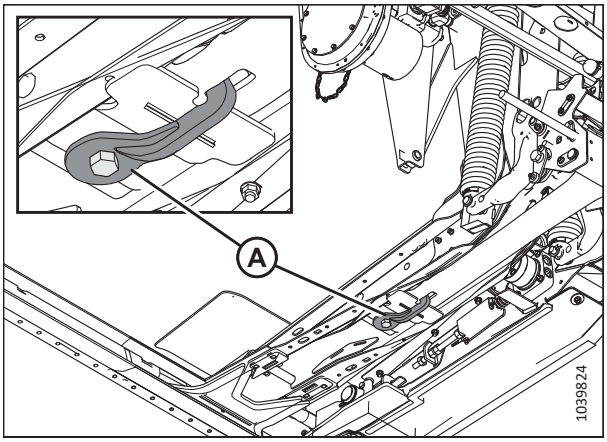

Figure 5.181: Feed Deck – View from Below

- Undamaged link holder hook (A)
- Damaged/broken link holder hook (B)
- Stretched link holder (not shown)

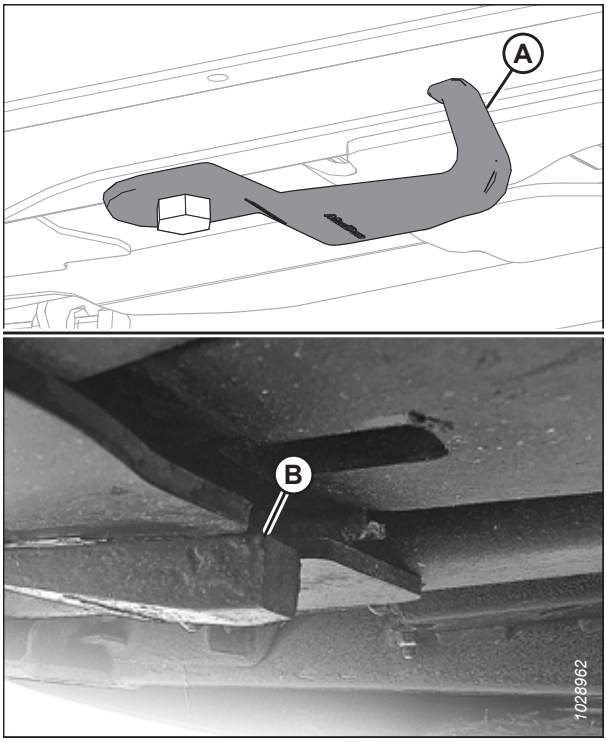

Figure 5.182: Link Holder Hooks

NOTE:

To move hook (A) to the storage position, loosen bolt (B) and rotate the hook 90°.

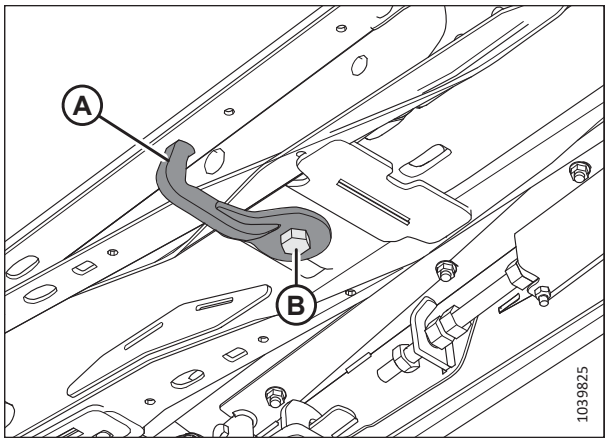

Figure 5.183: Link Holder Hook in Storage Position

5.15 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.

5.15.1 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 *4 Header Attachment/Detachment, page 339*.
2. Remove four bolts and nuts (A) securing stripper bar (B) to the float module frame, and remove the stripper bar.
3. Repeat at the opposite side of the header.

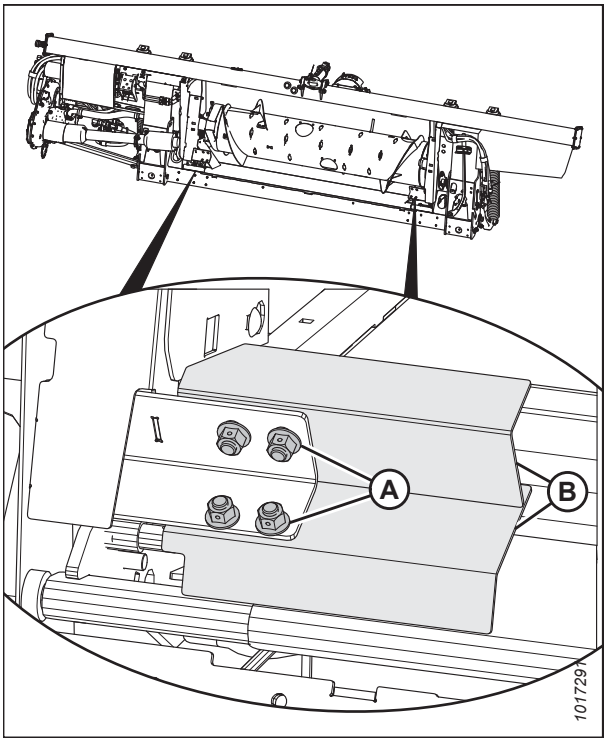

Figure 5.184: Stripper Bar

5.15.2 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 *4 Header Attachment/Detachment, page 339*.

2. Position stripper bar (B) as shown so the notch is at the corner of the frame.

   NOTE:

   It is ok to only install the upper two bolts on the stripper bars, if the lower two bolts are too difficult to install.

3. Secure stripper bar (B) to the float module with four bolts and nuts (A). Ensure the nuts are facing the combine.

4. Repeat at the opposite side of the header.

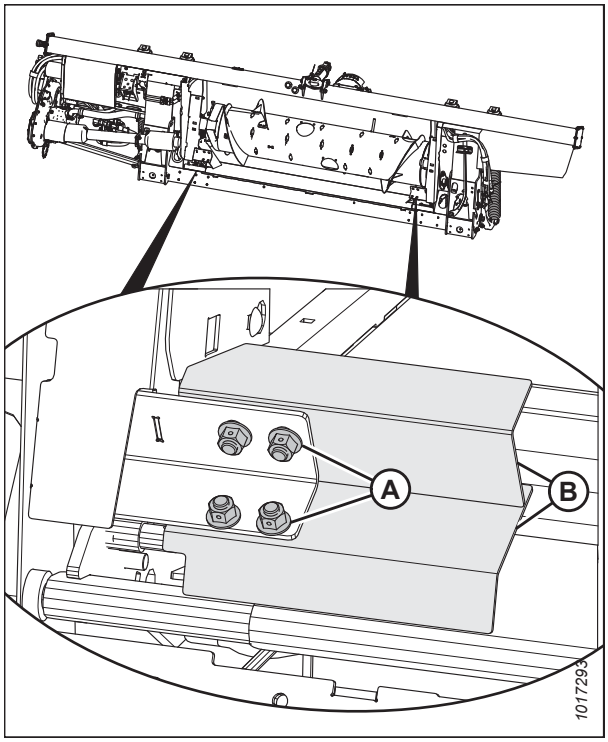

Figure 5.185: Stripper Bar

5.15.3 Replacing Feeder Deflectors on New Holland CR Combines

Wide feeder deflectors are used with New Holland CR combines only. The already installed feeder deflectors will need to be removed and replaced with the new deflectors.

1. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 339*.

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.

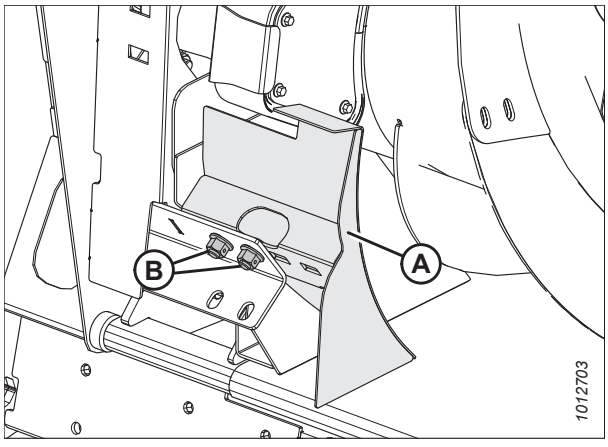

Figure 5.186: Feed Deflector

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 Chapter *4 Header Attachment/Detachment, page 339*.
8. After attaching the header to the combine, fully extend the center-link and check the gap between the deflector and pan. Ensure that the gap is 4–6 mm (5/32–1/4 in.).

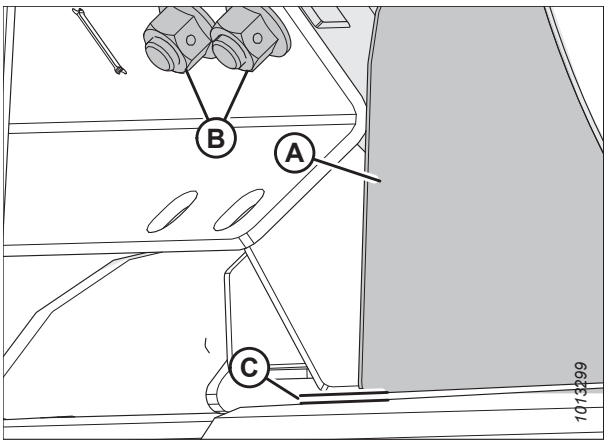

Figure 5.187: Pan and Deflector Distance

5.16 Header Side Drapers

There are two header side drapers. Replace the drapers if they are torn, cracked, or missing slats.

5.16.1 Removing Side Drapers

To remove the side drapers, the draper tension will need to be relieved and the draper connectors 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.

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. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Move the draper until the draper joint is in the work area.
5. Shut down the engine, and remove the key from the ignition.
6. Engage the header safety props. For instructions, refer to the combine operator's manual.
7. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
8. Release the tension on the draper. For instructions, refer to *5.16.3 Checking and Adjusting Draper Tension, page 525*.
9. Remove screws (A) and tube connectors (B) at the draper joint.
10. Remove the draper from the deck.

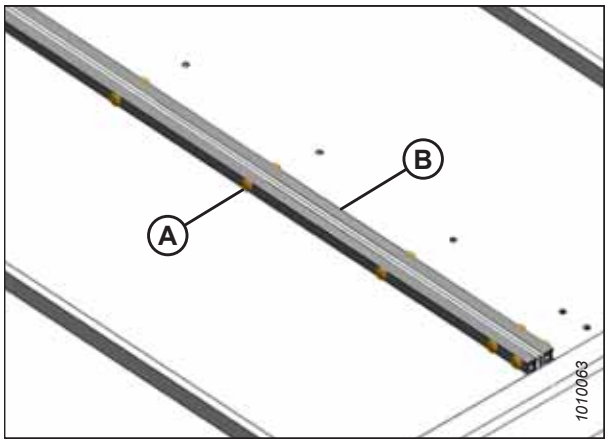

Figure 5.188: Draper Connector

5.16.2 Installing Side Drapers

The draper will need to be fed into the header from below the frame. You will need to apply talc, baby powder, or talc/graphite lubricant to the underside of the draper.

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.

1. Start the engine. For instructions, refer to the combine operator's manual.
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 31*.
7. Apply talc, baby powder, or talc/graphite lubricant mix 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 outboard end under the rollers, and 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, and pull the draper fully into the deck.

Figure 5.189: Installing Draper

11. Loosen mounting bolts (B) on rear deck deflector (A).

    NOTE:

    This may help with draper installation.

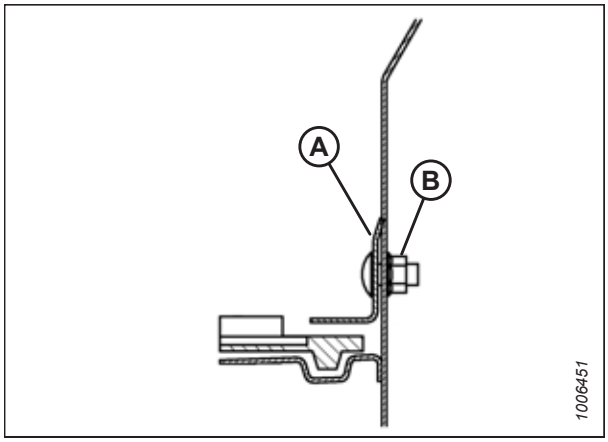

Figure 5.190: Draper Seal

12. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.
13. Adjust the draper tension. For instructions, refer to *5.16.3 Checking and Adjusting Draper Tension, page 525*.

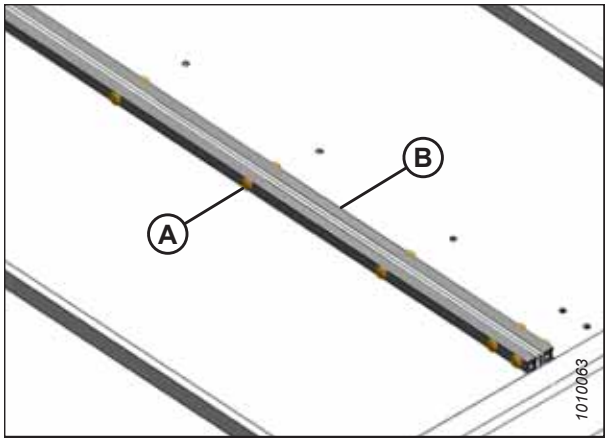

Figure 5.191: Draper Connector

14. Check clearance (A) between draper (B) and cutterbar (C). Clearance should be 1–3 mm (1/16–1/8 in.). If adjustment is necessary, refer to *5.16.5 Adjusting Deck Height, page 529*.

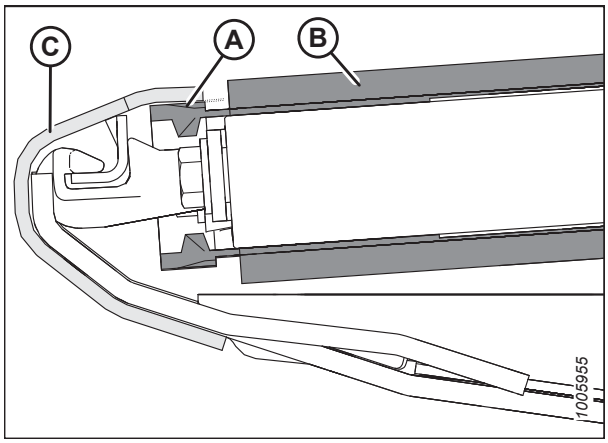

Figure 5.192: Draper Seal

15. If backsheet deflector (A) requires adjustment, loosen nut (D) and move the deflector until there is a 1–7 mm (1/16–1/4 in.) gap (C) between draper (B) and the deflector.

16. Operate the drapers with the engine at idle so the talc or talc/graphite lubricant makes contact and adheres to the draper seal surfaces.

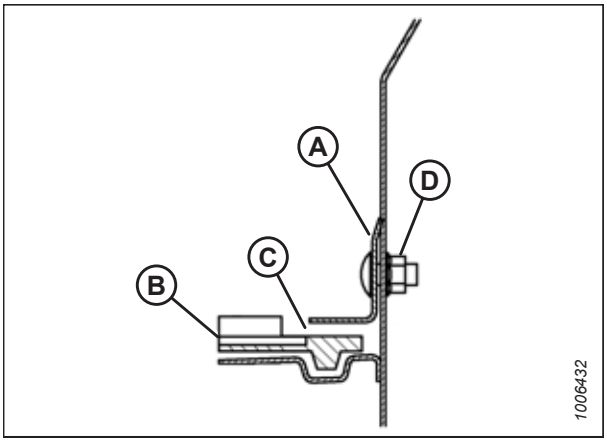

Figure 5.193: Draper Seal

5.16.3 Checking and Adjusting Draper Tension

The header's drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough so that the drapers do not slip when in operation, and so that the draper does not sag below the cutterbar; ensure that the draper is adjusted similarly on both sides of the header.

NOTE:

Draper slip sensors are only on XL series draper headers that **do not** have the Double Draper Drive installed.

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.

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

2. Locate the draper tension adjuster and the tension inspection window on the rear left side of the header.

3. Ensure that white indicator bar (A) is at the halfway point in the window. If this is not the case, then adjustment is required. Proceed to Step *4, page 526*.

DANGER

Ensure that all bystanders have cleared the area.

4. Start the engine. For instructions, refer to the windrower operator's manual.

5. Fully raise the header.

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.

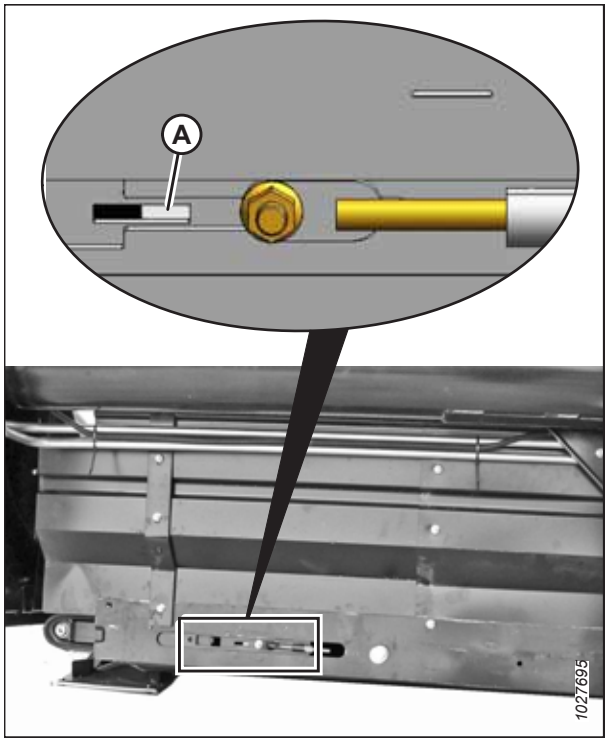

Figure 5.194: Left Draper Tension Adjuster

8. Ensure that the draper guide (the rubber track on the underside of the draper) is properly engaged in groove (A) on the drive roller.

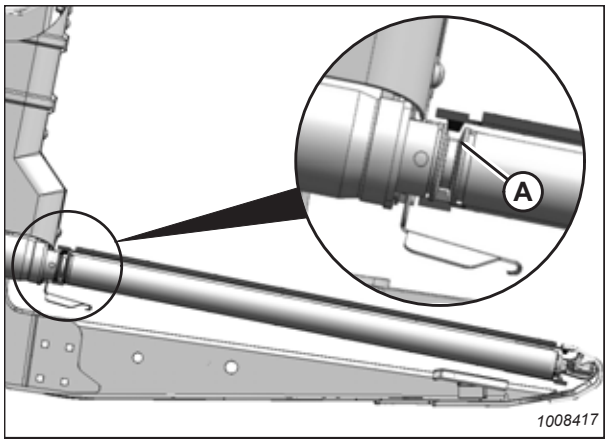

Figure 5.195: Drive Roller

9. Ensure that idler roller (A) sits between draper guides (B).

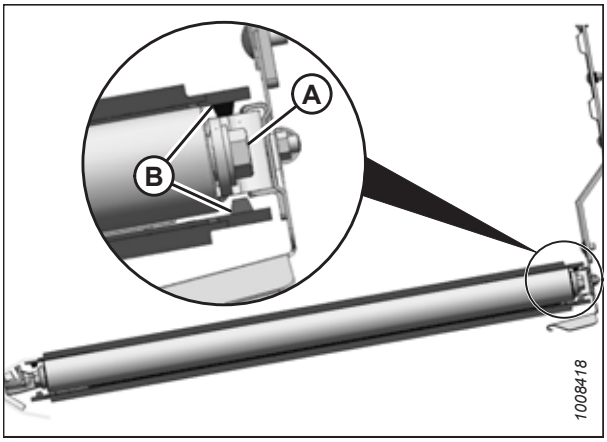

Figure 5.196: Idler Roller

10. To reduce the tension on the draper, turn adjuster bolt (A) counterclockwise. White indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the tension on the draper has lessened. Continue to turn adjuster bolt (A) counterclockwise until the white indicator bar is at the halfway point in the window.

    IMPORTANT:

    Do **NOT** adjust nut (C). This nut is used for draper alignment only.

11. To increase the tension on the draper, turn adjuster bolt (A) clockwise. White indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the tension on the draper has increased. Continue to turn adjuster bolt (A) clockwise until the white indicator bar is at the halfway point in the window.

    IMPORTANT:

    To prevent premature failure of the draper, draper rollers, and/or tightener components, do **NOT** operate the draper if the white bar is not visible in the inspection window.

    IMPORTANT:

    To prevent the header from scooping soil while in operation, ensure that the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

12. Repeat Step *2, page 526* to Step *11, page 527* to inspect and adjust the tension on the other draper belt.

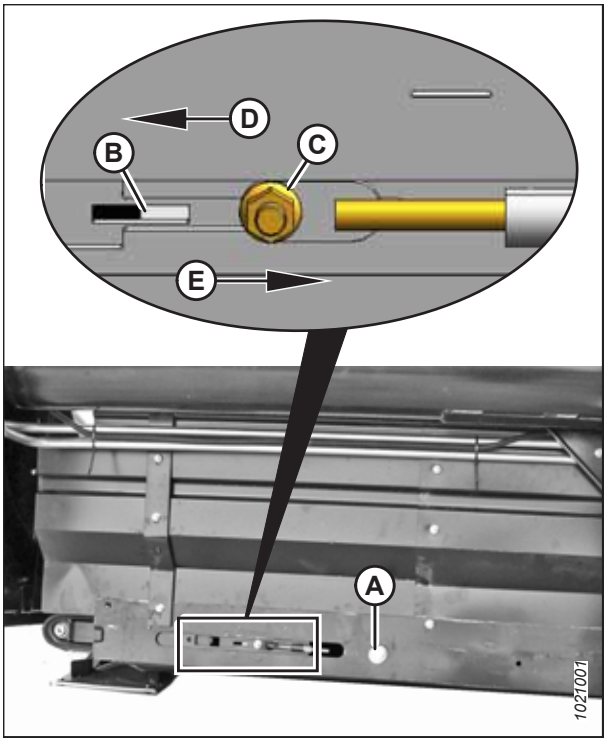

Figure 5.197: Left Tension Adjuster

5.16.4 Adjusting Side Draper Tracking

The side draper tracking is adjusted by aligning the draper drive and idler rollers.

NOTE:

The left draper deck is shown in the illustrations in this procedure. The right deck is opposite.

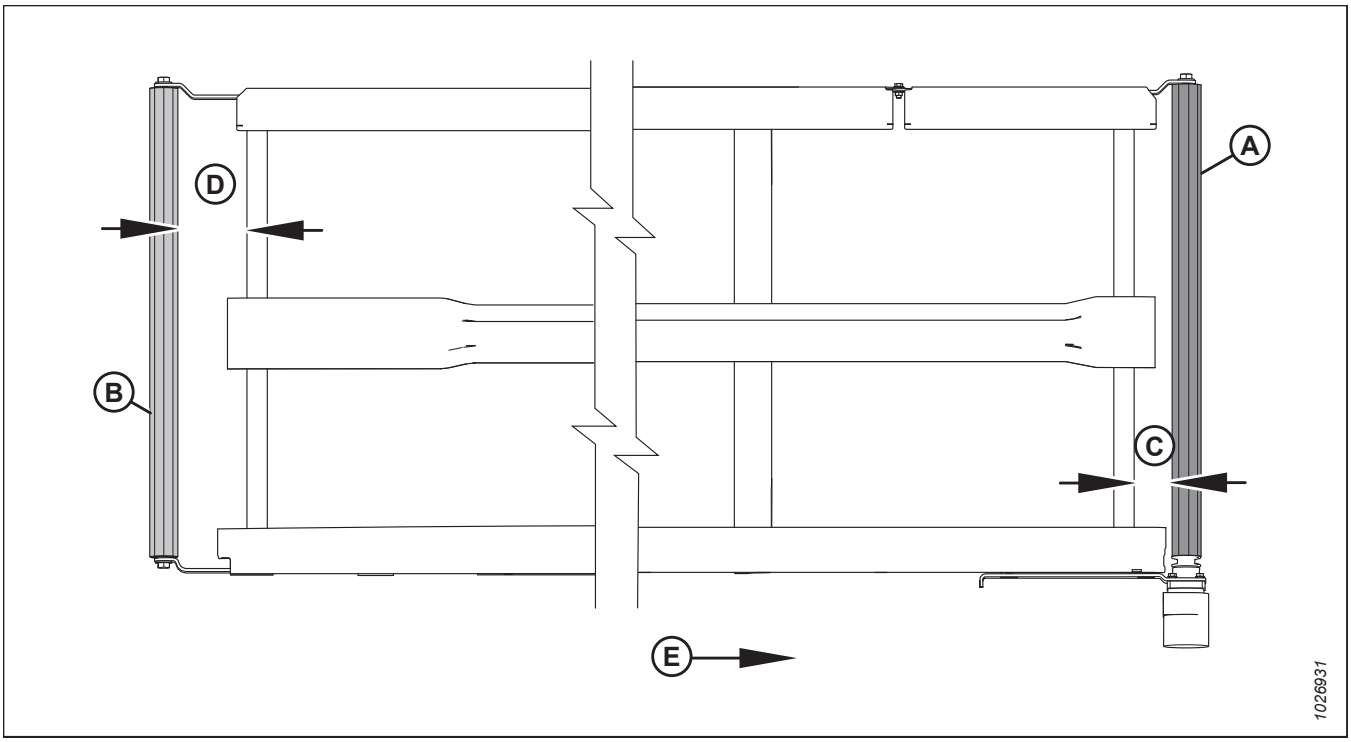

Figure 5.198: Draper Tracking Overview

A - Drive Roller
B - Idler Roller
C - Drive Roller Adjust
D - Idler Roller Adjust
E - Draper Direction

1. To determine which adjustments are necessary, refer to the following table:

Table 5.2 Draper Tracking

Tracking	Adjustment Location	Method
Backward	Increase drive roller (C)	Tighten adjuster nut (C). Refer to Fig. *5.199, page 529*
Forward	Decrease drive roller (C)	Loosen adjuster nut (C). Refer to Fig. *5.199, page 529*
Backward	Increase idler roller (D)	Tighten adjuster nut (C). Refer to Fig. *5.200, page 529*
Forward	Decrease idler roller (D)	Loosen adjuster nut (C). Refer to Fig. *5.200, page 529*

2. Refer to Table *5.2, page 528* and adjust the drive roller (either by increasing or decreasing its alignment) as follows:

   a. Loosen nuts (A) and jam nut (B).

   b. Turn adjuster nut (C).

   NOTE:

   Some parts were removed from the illustration at right for clarity.

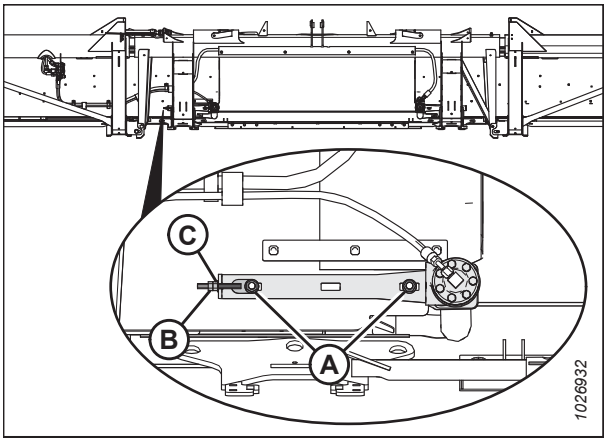

Figure 5.199: Left Deck Drive Roller – Right Side Opposite

3. Refer to Table *5.2, page 528* and adjust the idler roller (either by increasing or decreasing its alignment) as follows:

   a. Loosen nut (A) and jam nut (B).

   b. Turn adjuster nut (C).

   NOTE:

   If the draper does not track at the idler roller end after the idler roller adjustment, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

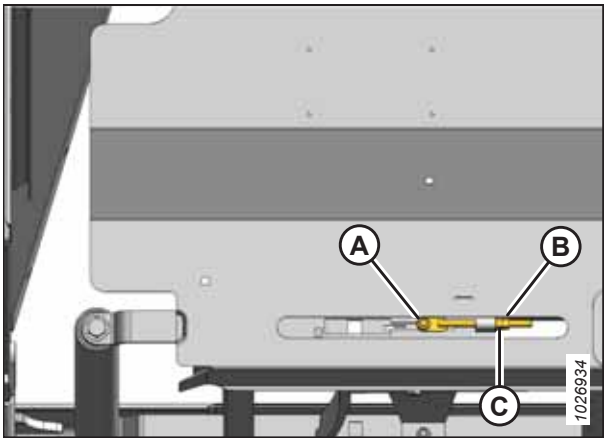

Figure 5.200: Left Deck Idler Roller – Right Side Opposite

5.16.5 Adjusting Deck Height

The draper seal is the gap between the draper and the cutterbar. It should be inspected before the draper is operated to prevent potential damage to the draper system.

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:

The draper seal is set to 0–3 mm (0–1/8 in.) at the factory to prevent material from entering into the side drapers and stalling them. Whenever you are installing new drapers, the draper seal **MUST** be set to at least 1 mm (1/16 in.). This is because new drapers are very tacky and can cause material to accumulate on the underside of the cutterbar, which can cause the draper to rub against the cutterbar and thereby cause the hydraulic pressure in the draper circuit to increase to dangerous levels. A gap of 1–3 mm (1/16–1/8 in.) is acceptable. Follow this procedure to check the gap; adjust the gap if necessary.

1. Lower the header onto blocks.
2. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
3. Shut down the engine, and remove the key from the ignition.
4. Ensure that clearance (A) between draper (B) and cutterbar (C) is 1–3 mm (1/16–1/8 in.).

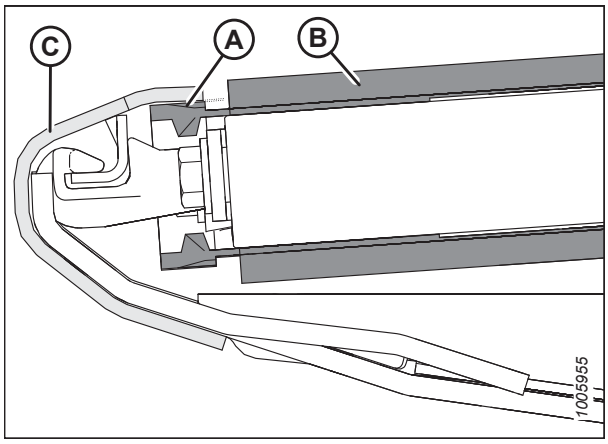

Figure 5.201: Draper Seal

5. Measure the clearance between the draper and the cutterbar at deck supports (A). Depending on the header size, there are between two and eight supports per deck.
6. Reduce the tension on the draper. For instructions, refer to *5.16.3 Checking and Adjusting Draper Tension, page 525*.

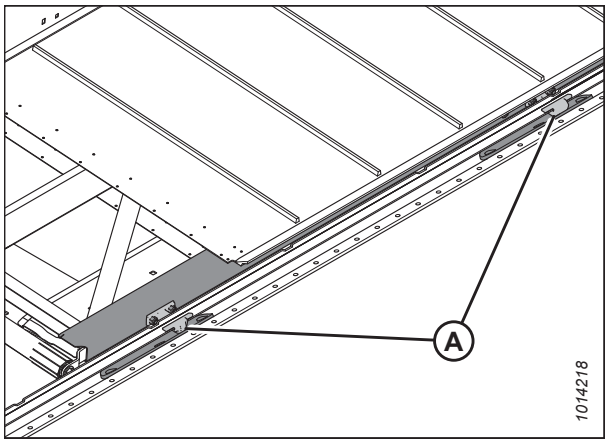

Figure 5.202: Draper Deck Supports

7. Lift the front edge of draper (A) past cutterbar (B) to expose the deck support.

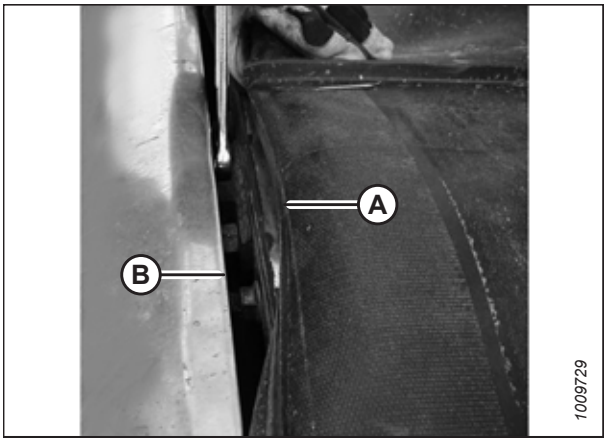

Figure 5.203: Deck Adjustment

8. Loosen two lock nuts (A) on deck support (B) by one half-turn **ONLY**.

   NOTE:

   The deck is shown with the draper removed in the illustration at right. The number of deck supports depends on the width of the header.

   - **FD125:** Six supports
   - **FD130 and FD135:** Eight supports
   - **FD140:** Ten supports
   - **FD145:** Twelve supports

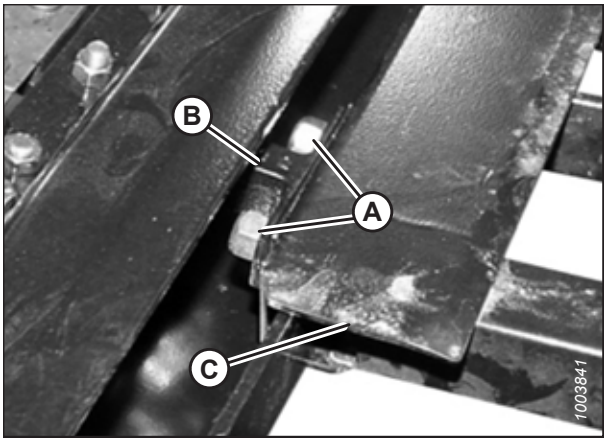

Figure 5.204: Deck Support

9. To lower the deck relative to the deck supports, tap deck (C) with a hammer. To raise the deck relative to the deck supports, tap deck support (B) using a hammer and punch.
10. Measure the thickness of the draper belt.
11. Locate a feeler gauge of the same thickness as the draper belt plus 1 mm (1/16 in.).
12. Slide feeler gauge along deck (A) under the cutterbar in order to properly set the gap.
13. To create a seal, adjust deck (A) so that clearance (B) between cutterbar (C) and the deck is the same thickness as the draper belt plus 1 mm (1/16 in.).

    NOTE:

    When checking the clearance at either roller, measure the gap beginning at the roller tube, **NOT** the deck.

14. Tighten deck support hardware (D).
15. Recheck gap (B) with a feeler gauge. For instructions, refer to Step *11, page 531*.

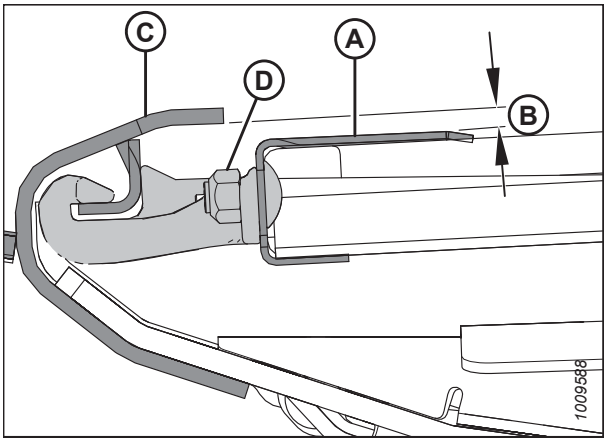

Figure 5.205: Deck Support

16. Repeat Step *8, page 531* to Step *15, page 531* for each draper deck support requiring adjustment.
17. Tension the draper. For instructions, refer to *5.16.3 Checking and Adjusting Draper Tension, page 525*.
18. If necessary, adjust backsheet deflector (A) by loosening nut (D) and moving the deflector until there is a 1–7 mm (1/16–1/4 in.) gap (indicated by callout [C]) between draper (B) and the deflector.

DANGER

Ensure that all bystanders have cleared the area.

19. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.
20. Lower the reel fully.
21. Shut down the engine, and remove the key from the ignition.

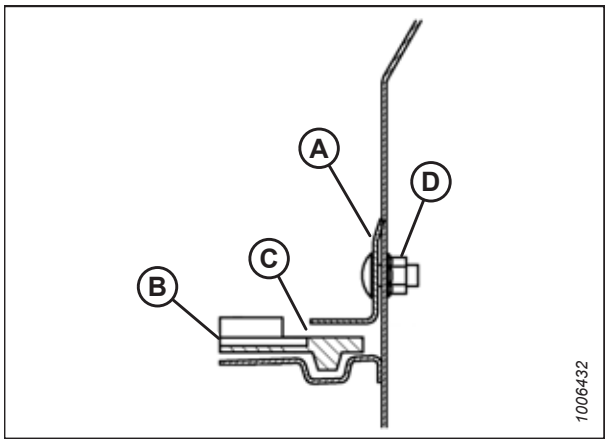

Figure 5.206: Backsheet Deflector

5.16.6 Draper Roller Maintenance

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.

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 maximum recommended temperature. For instructions, refer to:

   - *Replacing Header Draper Idler Roller Bearing, page 534*
   - *Replacing Side Draper Drive Roller Bearing, page 538*

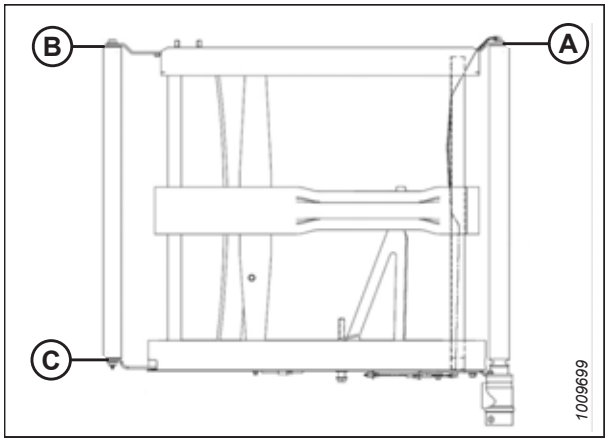

Figure 5.207: Roller Arms

Draper Deck Idler Roller

If the draper deck idler rollers are worn or damaged, they will need to be replaced.

Removing Side Draper Idler Roller

To gain access to the idler roller, you will need to remove the draper connector.

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.

1. Start the engine. For instructions, refer to the combine operator's manual.
2. If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).
3. Raise the reel fully.
4. Raise the header fully.
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 31*.
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.

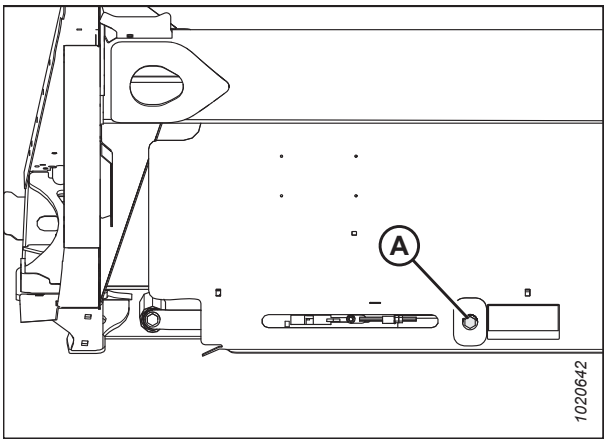

Figure 5.208: Tensioner

9. Remove screws (A), tube connectors (B), and nuts from the draper joint to uncouple the draper.
10. Pull the draper off the idler roller.

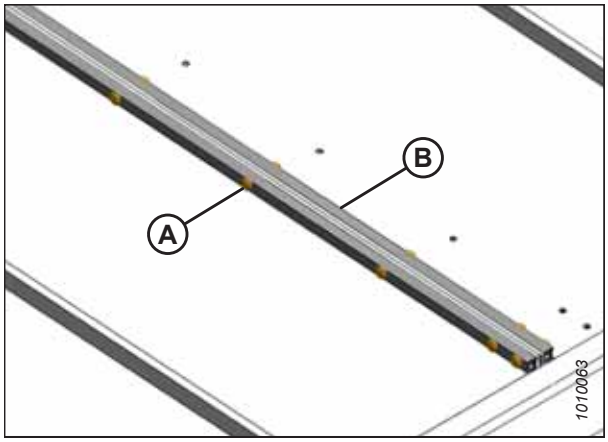

Figure 5.209: Draper Connector

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.

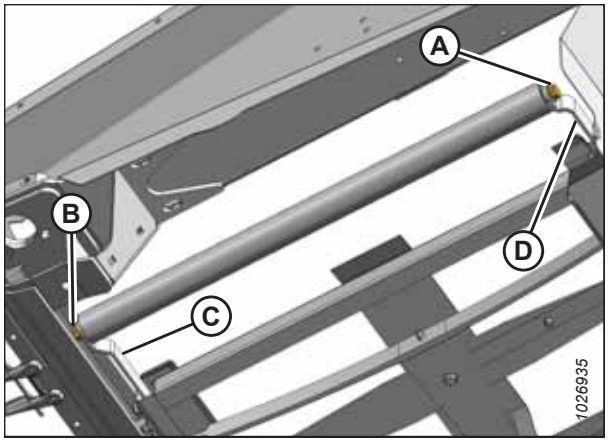

Figure 5.210: Idler Roller

Replacing Header Draper Idler Roller Bearing

You will need a slide hammer to remove and replace the bearing on an idler roller.

1. Remove the draper idler roller assembly. For instructions, refer to *Removing Side Draper Idler Roller, page 533*.

2. 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).
3. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

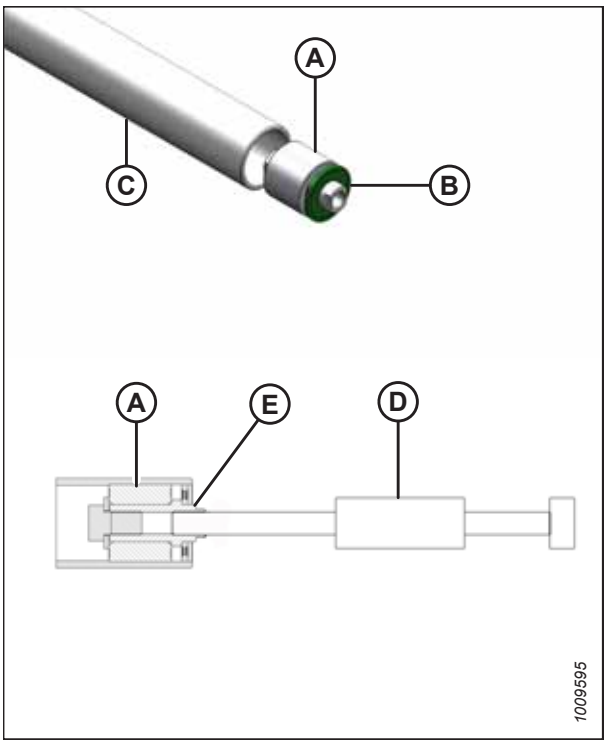

Figure 5.211: Roller Bearing

4. 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.
5. Apply grease in front of bearing assembly (A). Refer to the inside back cover of this book for grease specifications.
6. 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.
7. 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.

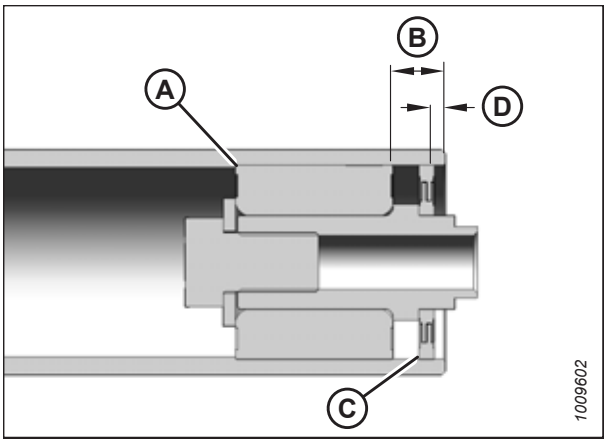

Figure 5.212: Roller Bearing

Installing Header Draper Idler Roller

Once the idler roller is in place, the draper connector can be reinstalled.

1. Position the stub shaft into the idler roller in forward arm (B) on the deck.
2. Push on the roller to slightly deflect the forward arm so the stub shaft at the rear of the roller can be slipped into rear arm (C).
3. Install bolts (A) with washers, and torque to 93 Nm (70 lbf·ft).
4. Wrap the draper over the idler roller, close the draper, and set the tension. For instructions, refer to *5.16.2 Installing Side Drapers, page 523*.
5. Run the machine and verify the draper tracks correctly. Adjust the draper tracking if required. For instructions, refer to *5.16.4 Adjusting Side Draper Tracking, page 527*.

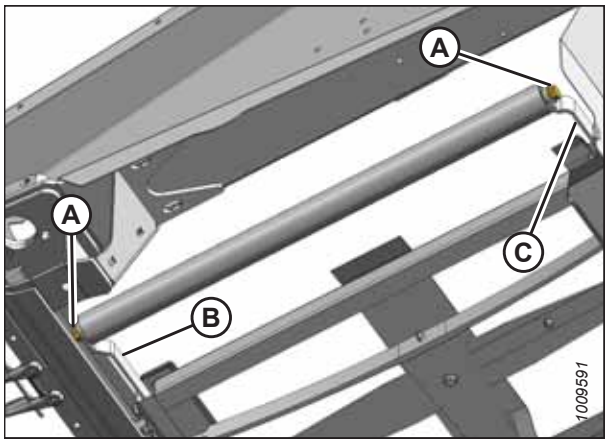

Figure 5.213: Idler Roller

Draper Deck Drive Roller

If a draper deck drive roller is worn or damaged, it will need to be replaced.

Removing Side Draper Drive Roller

To gain access to the drive roller, the draper connector 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.

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.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the engine. For instructions, refer to the combine operator's manual.
2. If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).
3. Raise the reel fully.
4. Raise the header fully.
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 31*.
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.

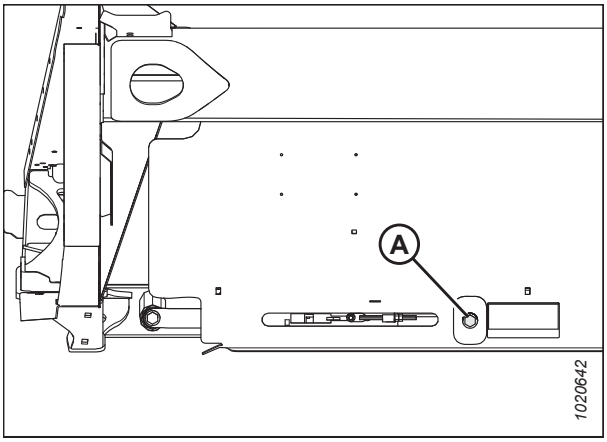

Figure 5.214: Draper Tensioner

9. Remove tube connectors (B), screws (A), and nuts from the draper joint.
10. Pull the draper off the drive roller.

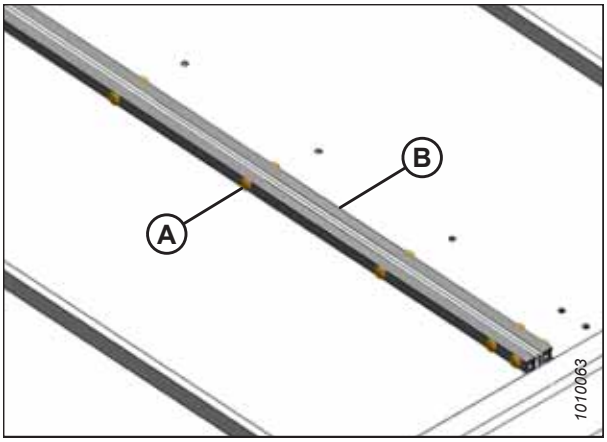

Figure 5.215: Draper Connector

11. Align the set screws with hole (A) in the guard. Remove the two set screws holding the motor onto the drive roller.

    NOTE:

    The set screws are 1/4 turn apart.

12. Remove four 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.

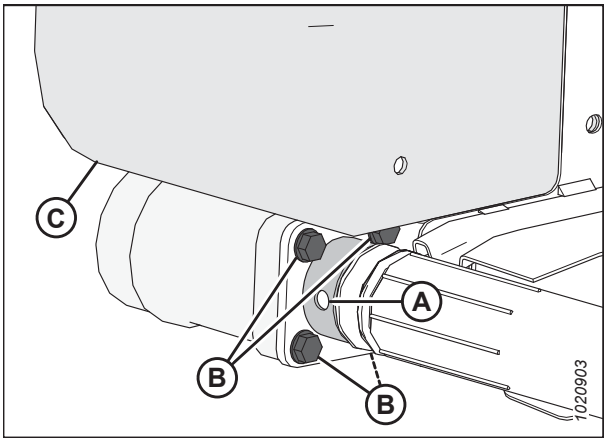

Figure 5.216: Drive Roller

13. Remove bolt (A) securing the opposite end of drive roller (B) to the support arm.
14. Remove drive roller (B).

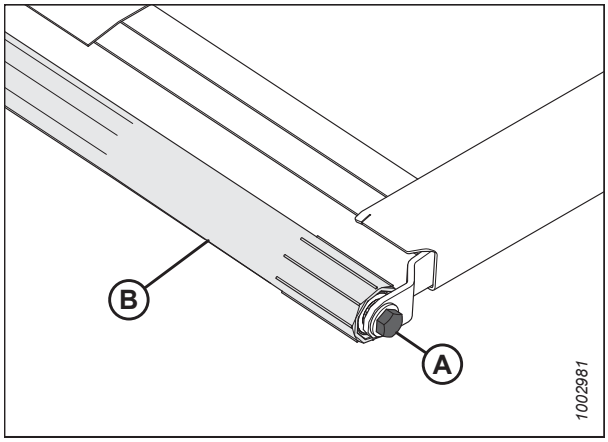

Figure 5.217: Drive Roller

Replacing Side Draper Drive Roller Bearing

You will need a slide hammer to remove and replace the bearing on a drive roller.

1. Remove the draper idler roller assembly. For instructions, refer to *Removing Side Draper Drive Roller, page 536*.
2. 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).
3. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

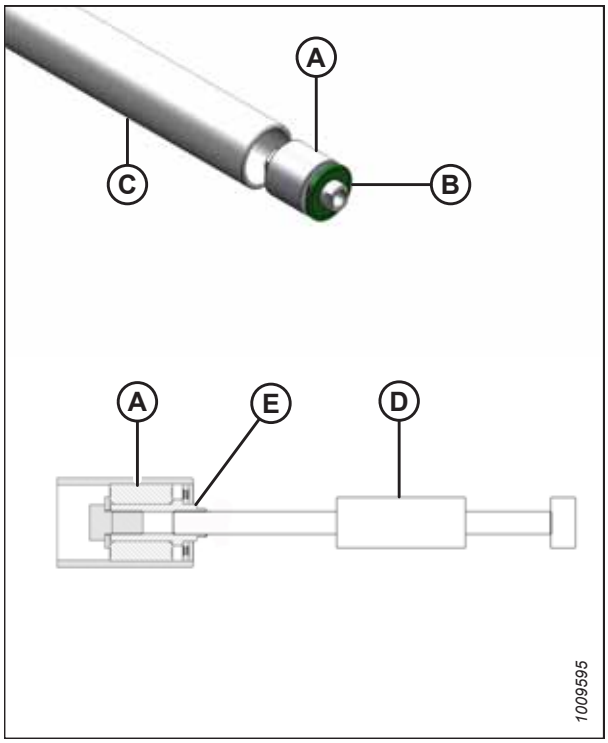

Figure 5.218: Roller Bearing

4. 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.
5. Apply grease in front of bearing assembly (A). Refer to the inside back cover of this book for grease specifications.
6. 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.
7. 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.

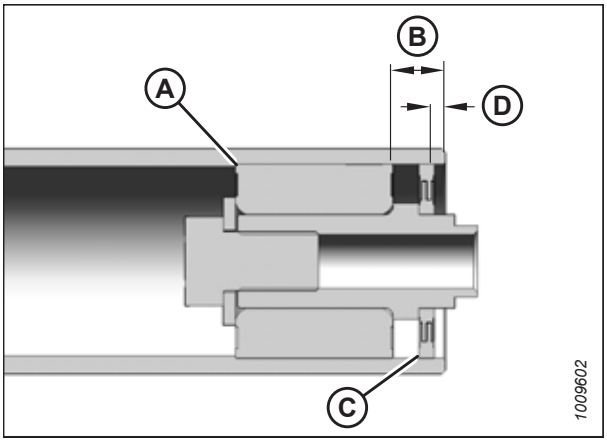

Figure 5.219: Roller Bearing

Installing Side Draper Drive Roller

Once the drive roller is in place, the draper connector can be reinstalled.

1. Position drive roller (B) between the roller support arms.
2. Install bolt (A) to secure the drive roller to the arm closest to the cutterbar.
3. Torque the bolt to 95 Nm (70 lbf·ft).
4. Grease the motor shaft and insert it into the end of drive roller (B).

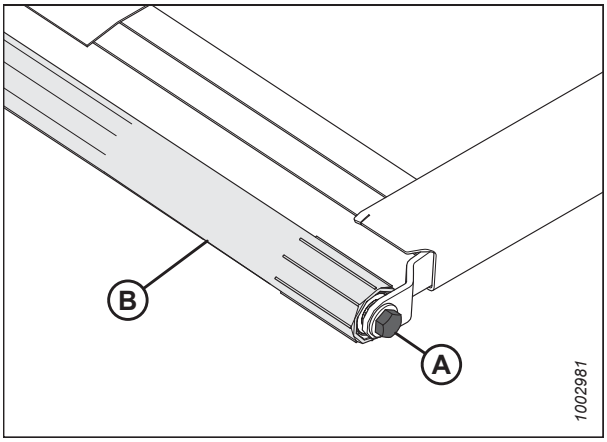

Figure 5.220: Drive Roller

5. Secure the motor to the roller support with four bolts (B), and torque them to 27 Nm (20 lbf·ft).

   NOTE:

   Tighten any loosened bolts and reinstall plastic shield (C) if previously removed.
6. Ensure the motor is all the way into the roller, and tighten the two set screws (not shown in the illustration at right) through access hole (A).

   NOTE:

   The set screws are 1/4 turn apart.

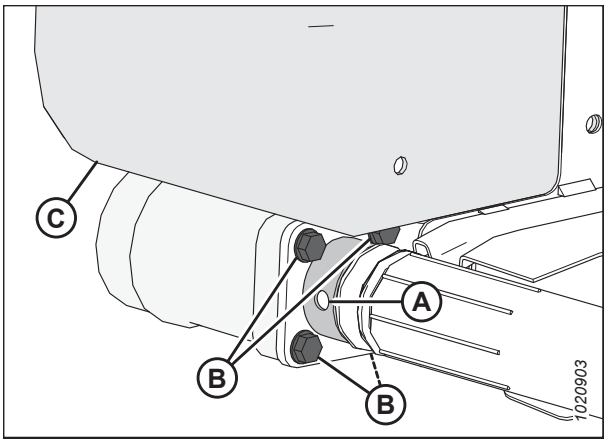

Figure 5.221: Drive Roller

7. Wrap the draper over the drive roller and attach the ends of the draper using tube connectors (B), screws (A), and nuts.

   NOTE:

   The heads of the screws must face the center opening.

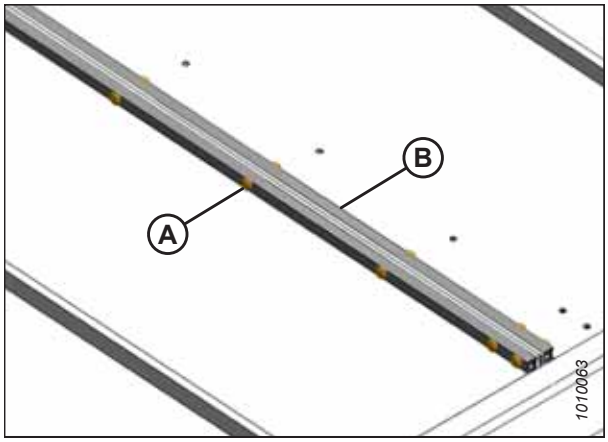

Figure 5.222: Draper Connector

8. Tension the draper. Locate adjuster bolt (A) and follow the directions on decal (B), or refer to *5.16.3 Checking and Adjusting Draper Tension, page 525* for proper draper tensioning.
9. Disengage the reel and header safety props.

DANGER

Ensure that all bystanders have cleared the area.

10. Start the engine, and lower the header and the reel.
11. Run the machine to verify the draper tracks correctly. If additional adjustment is necessary, refer to *5.16.4 Adjusting Side Draper Tracking, page 527* for instructions.

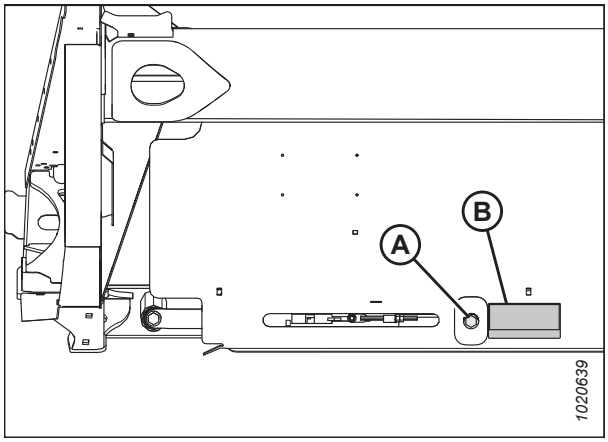

Figure 5.223: Draper Tensioner – Left Side Shown

5.16.7 Replacing Draper Clips – Option

Optional draper clips prevent wear to draper cleats caused by friction with the support tracks.

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.

1. Start the engine. For instructions, refer to the combine operator's manual.
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 31*.
5. Shut down the engine, and remove the key from the ignition.

NOTE:

Views are from the left end of the header.

6. Remove existing draper clips (A) from the draper.
7. Clean the area with water and a rag. Coat the installation surface of the clip with a small amount of dish soap to allow the clip to slide on easier.

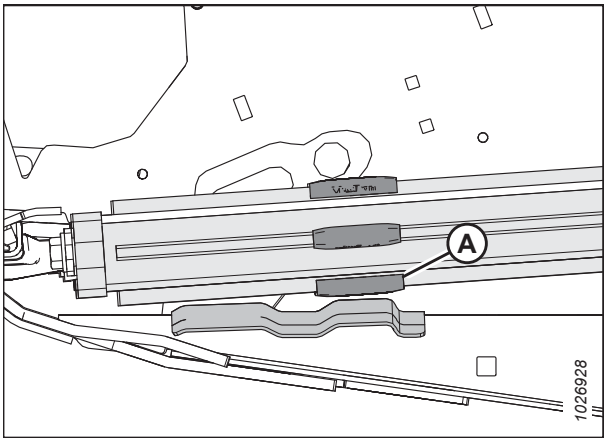

Figure 5.224: Draper Clips

8. Rotate the draper until the cleat is aligned with a roller. Using a rubber mallet, hit clip (A) directly down onto the cleat, being careful not to hit too hard as the clip may break. It may take a couple hits to fit properly.
9. Repeat the clip installation procedure for each cleat on both drapers.

NOTE:

The clips may have a small gap (approximately 1 mm [1/16 in.]) between the draper cleat and the clip.

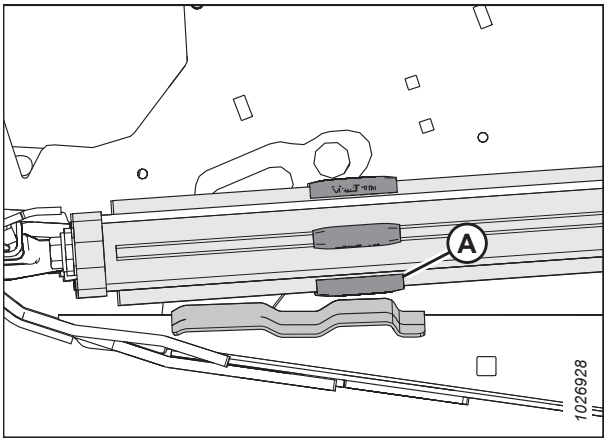

Figure 5.225: Clip Installation

5.17 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 machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 413*.

5.17.1 Reel-to-Cutterbar Clearance

Correctly setting the clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar when the header is operating. The clearance is set at the factory, but some adjustment may be necessary before the header can be operated.

The finger to guard/cutterbar clearance values when the reels are fully lowered are shown in the table below.

Table 5.3 Finger to Guard/Cutterbar Clearance

Header Width	Single Reel	Double Reel
	(X) 3 mm (+/- 1/8 in.) at Flex Locations ONLY with Header in Full-Frown Mode	(X) 3 mm (+/- 1/8 in.) at Reel Ends and Flex Locations with Header in Full-Frown Mode
FD125	20 mm (3/4 in.)	—
FD130	—	20 mm (3/4 in.)
FD135	—	20 mm (3/4 in.)
FD140	—	20 mm (3/4 in.)
FD145	—	20 mm (3/4 in.)

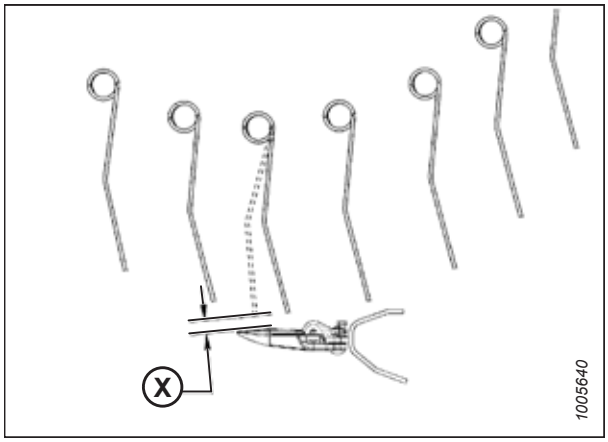

Figure 5.226: Finger Clearance

Measuring Reel Clearance

Measure the clearance between the reel fingers and the cutterbar before operating the 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.

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. Move spring handles (A) down to the UNLOCK position.

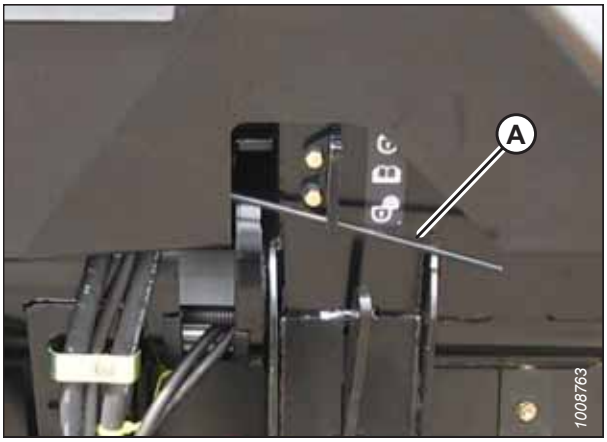

Figure 5.227: Wing Lock in Unlocked Position

5. Raise the header and place two 150 mm (6 in.) blocks (A) under the cutterbar, just inboard of the wing flex points.
6. Lower header fully, allowing it to flex into full frown mode.

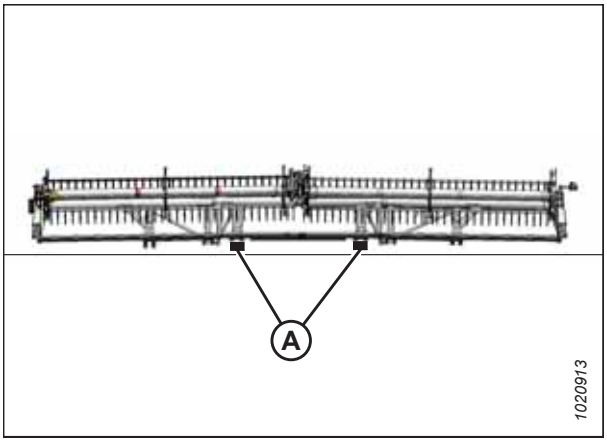

Figure 5.228: FlexDraper® Header Block Locations

7. Set the fore-aft position to the middle position (**5**), as shown on fore-aft position decal (A).
8. Lower the reel fully.
9. Shut down the engine, and remove the key from the ignition.

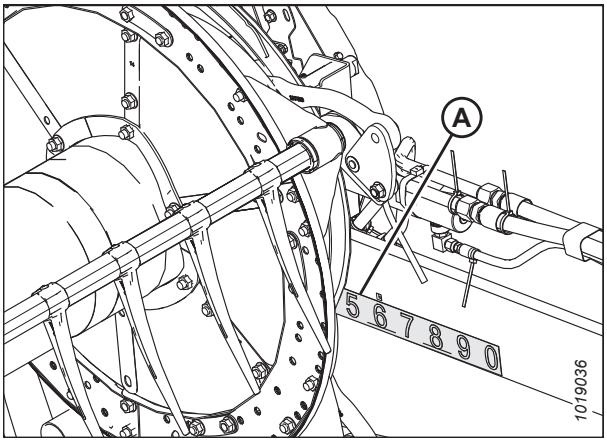

Figure 5.229: Fore-Aft Position

10. Measure clearance (X) between guard (A) and finger (B) at the specified measurement locations. For the clearance specifications, refer to *5.17.1 Reel-to-Cutterbar Clearance, page 542*.

    For the measurement locations, refer to Figure *5.231, page 544*.

    NOTE:

    The reel is factory-set to provide more clearance at the center of the reel than at the ends (frown) to compensate for reel flexing.

    NOTE:

    When measuring the reel clearance at the center of a double-reel header, measure the lowest reel.

    Single Reel: Measure the reel clearance at hinge points (A).

    Double Reel: Measure the reel clearance at hinge points (A) and at outer ends (B) of the reels.

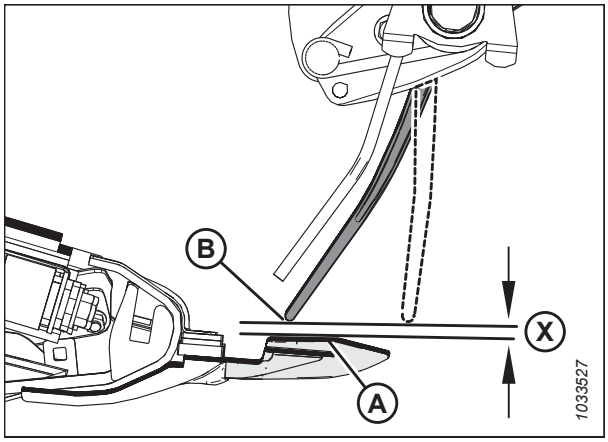

Figure 5.230: Reel-to-Cutterbar Clearance

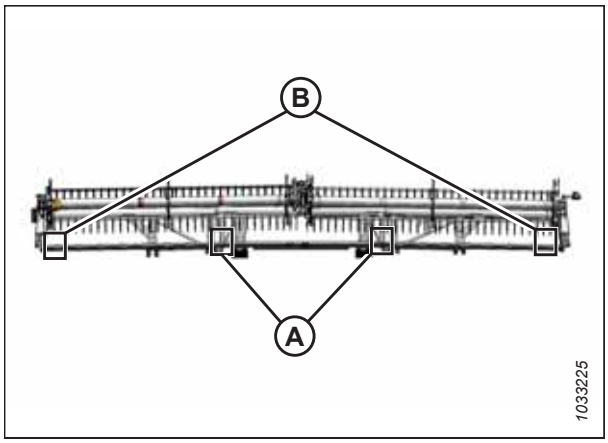

Figure 5.231: Measurement Locations – Double Reel Shown

11. Adjust the reel clearance, if necessary. For instructions, refer to *Adjusting Reel Clearance, page 544*.

Adjusting Reel Clearance

Adjust the reel until there is enough clearance to prevent the reel fingers from contacting the cutterbar during operation.

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.

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. 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 31*.
5. **Single-reel headers:** Adjust the outboard reel arm lift cylinders to set the clearance at the outboard ends of the reel as follows:
   a. Loosen bolt (A).
   b. Turn cylinder rod (B) out of the clevis to raise the reel and thereby increase the reel-to-cutterbar clearance, or else turn the cylinder rod into the clevis to lower the reel and thereby decrease the reel-to-cutterbar clearance.
   c. Tighten bolt (A).
   d. Repeat Steps to to set the reel-to-cutterbar clearance on the opposite side of the header.

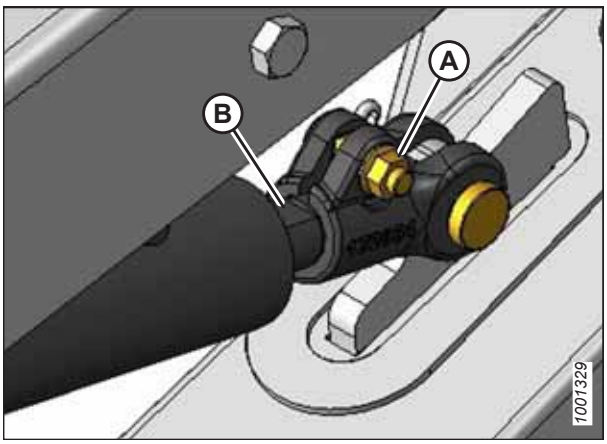

Figure 5.232: Outside Reel Arm

6. **Double-reel headers:** adjust center arm lift cylinder stop (A) to change the reel-to-cutterbar clearance at the inboard ends of the reels and the clearance at the header's flex points as follows:
   a. Loosen nut (B).
   b. Turn nut (C) counterclockwise to raise the reel and increase the reel-to-cutterbar clearance, or clockwise to lower the reel and decrease the reel-to-cutterbar clearance.
   c. Tighten nut (B).

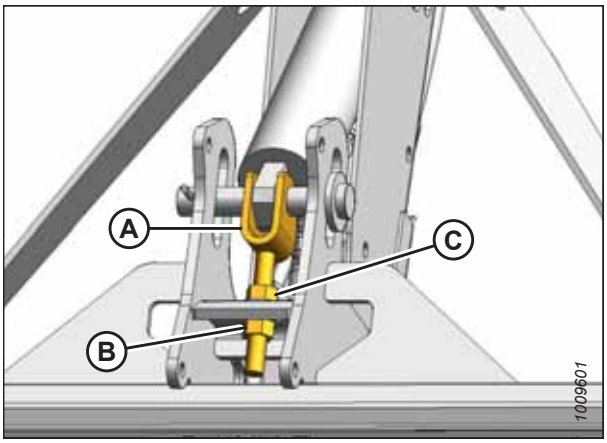

Figure 5.233: Underside of Center Arm

7. Measure the reel clearance again. For instructions, refer to *Measuring Reel Clearance, page 542*. If necessary, repeat the reel-to-cutterbar clearance adjustment procedure.

DANGER

Ensure that all bystanders have cleared the area.

8. Start the engine.
9. Move the reel back to ensure that the steel end fingers do **NOT** contact the deflector shields.
10. If contact between the steel end fingers and the deflector shields occurs, adjust the reel upward to maintain the reel-to-cutterbar clearance at all reel fore-aft positions. If contact between the steel end fingers and the deflector shields still occurs after adjusting the reel, trim the steel end fingers to obtain the proper clearances.

    NOTE:

    Periodically inspect the equipment for abrasion damage caused by insufficient equipment clearance. Adjust the clearances as needed.

5.17.2 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 Frown

The reel 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 decal [A]) to provide adequate clearance at all reel fore-aft positions.
2. 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.
3. Shut down the engine, and remove the key from the ignition.

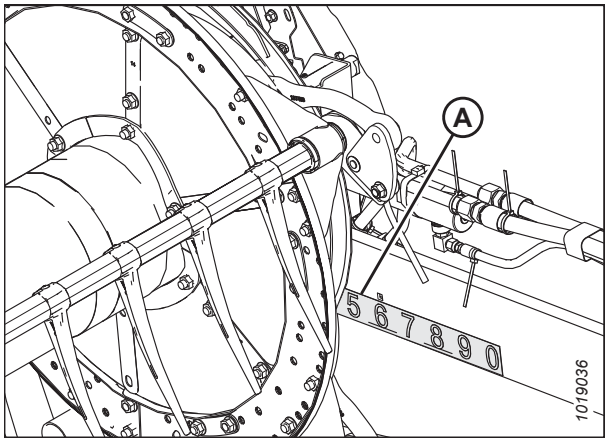

Figure 5.234: Fore-Aft Position Decal

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.

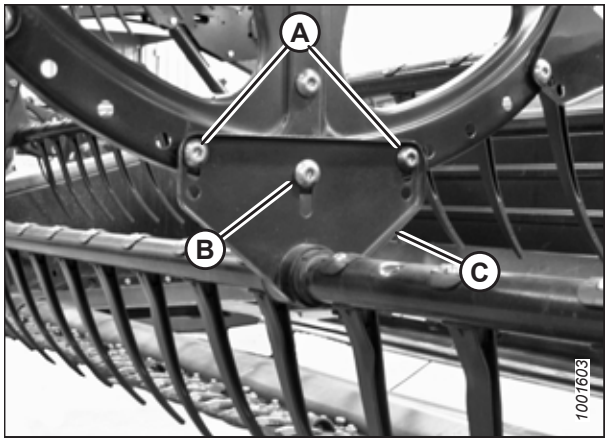

Figure 5.235: Center Reel Disc

5.17.3 Centering Reel on Single-Reel Header

Center the reel to minimize loss from uneven gathering.

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. Unlock the wings.
2. Start the engine.
3. Lower the reel and adjust the fore-aft position to 5 on the reel arm indicator decal.
4. Raise the header enough to put 150 mm (6 in.) blocks under the outboard skid shoes.
5. Lower the header onto the blocks. The ends of the header will be higher than the center section, causing the header to smile.
6. Shut down the engine, and remove the key from the ignition.
7. Measure clearance (A) at locations (B) between reel tine tube and endsheet at both ends of header. The clearances should be the same if reel is centered. Refer to the following steps to center reel.

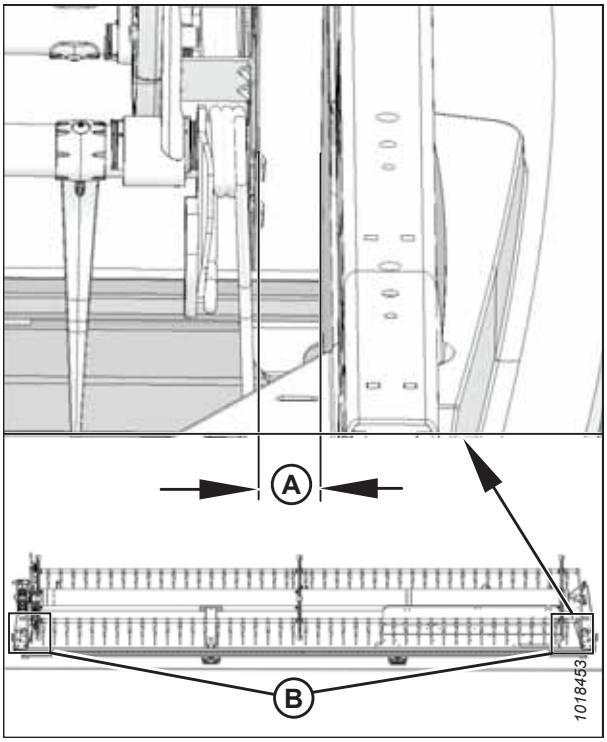

Figure 5.236: Centering Reel

8. Loosen bolt (A) on brace (B) on the right side of the reel.
9. Move the forward end of reel support arm (C) laterally as required to achieve the specified clearance.
10. Tighten bolt (A) and torque the bolt to 382 Nm (282 lbf·ft).

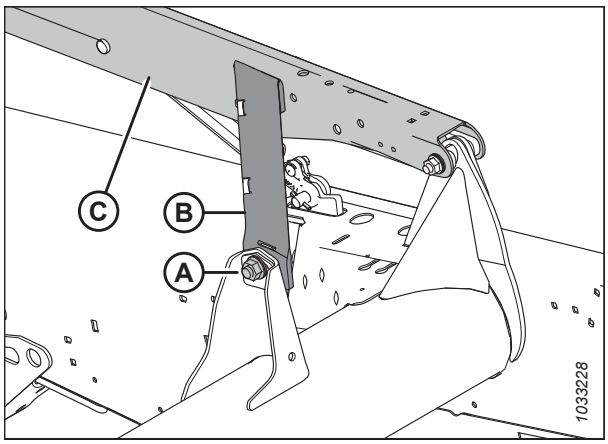

Figure 5.237: Reel Support Arm – Non-European Headers

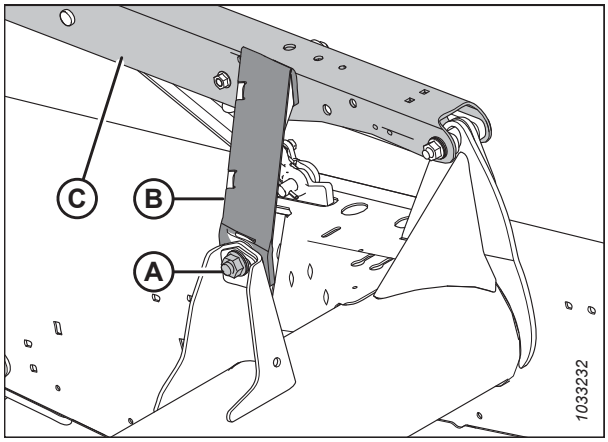

Figure 5.238: Reel Support Arm – European Headers

5.17.4 Centering Double Reels

To center the reel on a double-reel header, you may need to adjust the reel's position by loosening its connection to the reel center support arm.

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. Position the header so that the cutterbar is 150 mm (6 in.) off the ground.
3. Shut down the engine, and remove the key from the ignition.

4. At each location (B), measure the clearance (indicated by [A]) between the reel tine tube and the endsheet. The clearances must be within 20 mm (25/32 in.) of each other. If not, refer to the following steps to center the reels.

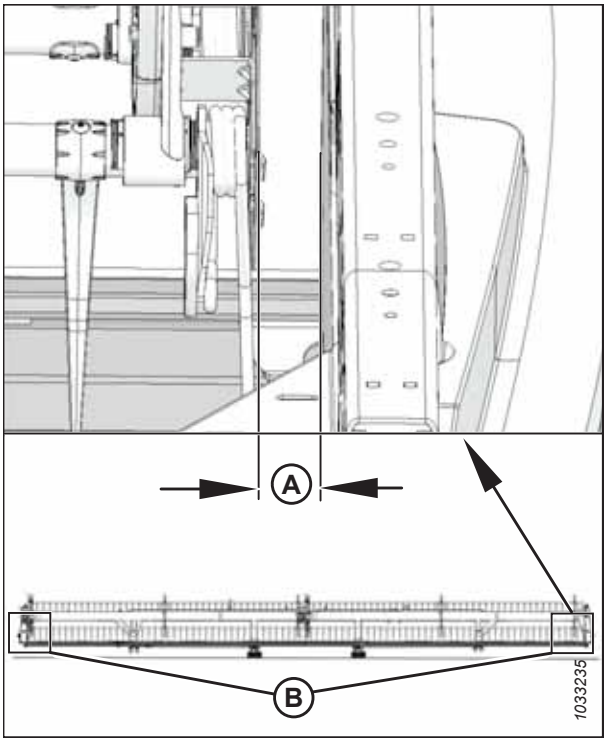

Figure 5.239: Centering Reel

5. Loosen bolts (A) on each brace (B).
6. Move the forward end of reel center support arm (C) laterally as needed to center both reels.
7. Tighten bolts (A) and torque them to 382 Nm (282 lbf·ft).

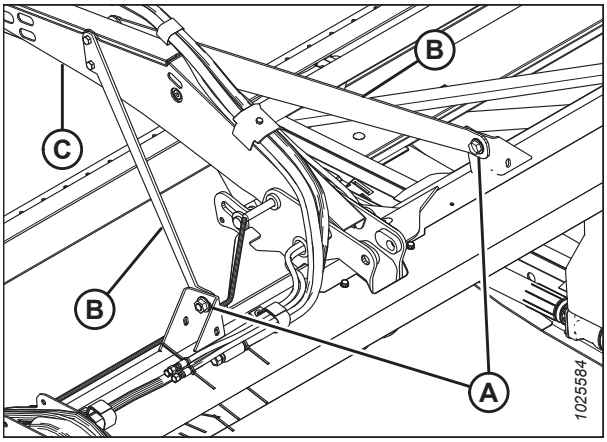

Figure 5.240: Reel Center Support Arm Braces – Non-European Configured

5.17.5 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 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.

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 avoid damaging it and other components.

1. Lower the header fully.
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 31*.
5. 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 553*.
6. Attach tine tube arms (B) to the reel disc at original attachment locations (A).
7. Cut the damaged finger so it can be removed from the tine tube.
8. Remove bolts from the existing fingers and slide the fingers over to replace the finger that was cut off in Step *7, page 550* (remove tine tube arms [B] from the tine tubes as necessary).

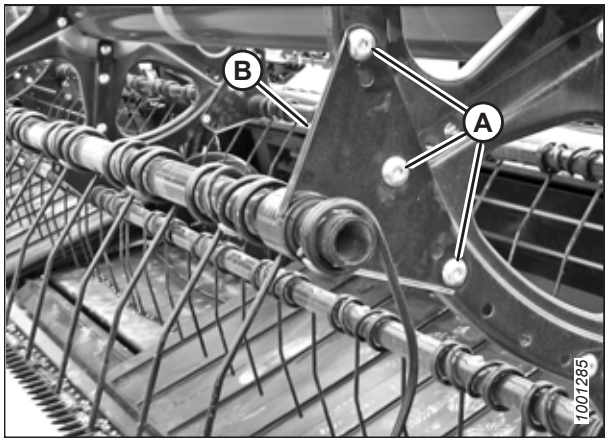

Figure 5.241: Tine Tube Arm

Installing Steel 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:

Ensure the tine tube is supported 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 Fingers, page 550*.

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 559*.
3. Attach the fingers to the tine tube with bolts and nuts (B).

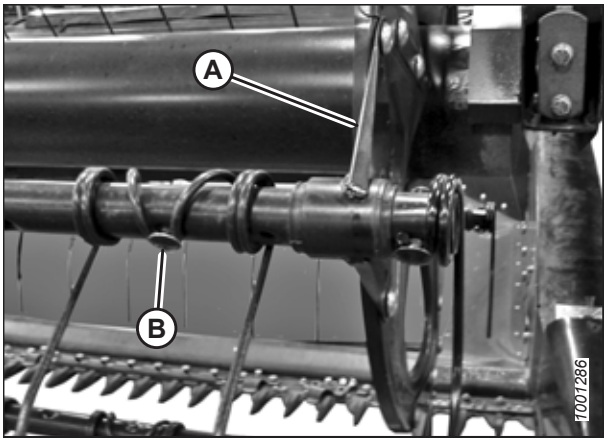

Figure 5.242: Tine Tube

Removing Plastic 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.

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. Lower the header fully.
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 31*.

5. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

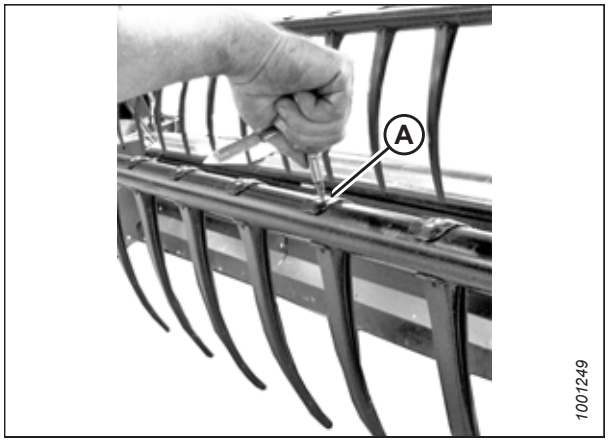

Figure 5.243: Removing Plastic Finger

6. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.

Figure 5.244: Removing Plastic Finger

Installing Plastic 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 Fingers, page 551*.

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 5.245: 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.

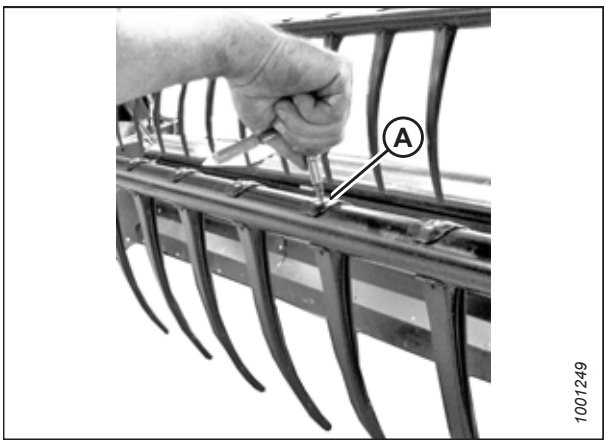

Figure 5.246: Installing Plastic Finger

5.17.6 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.

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 and other components.

1. Lower the header fully.
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 31*.

   NOTE:

   If replacing only the cam end bushing, proceed to Step *10, page 555*.

Center disc and tail end bushings

5. 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.

6. 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.

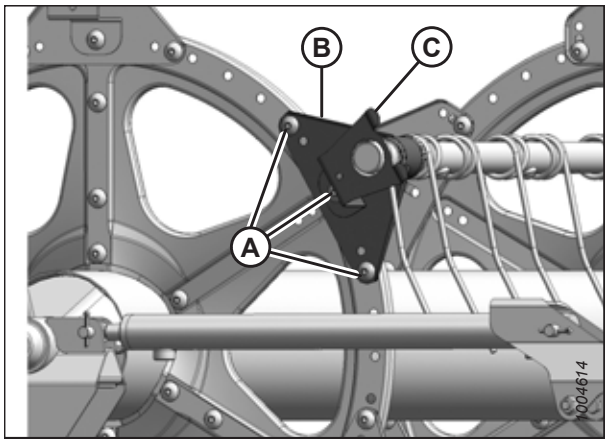

Figure 5.247: Tail End

7. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

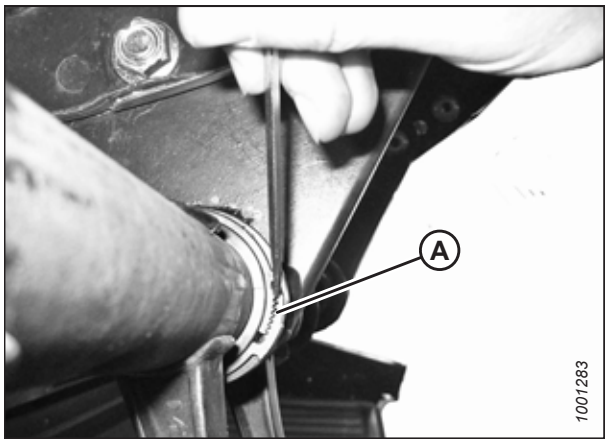

Figure 5.248: Bushing Clamp

8. Rotate tine tube arm (A) until clear of the disc and slide the arm inboard off of bushing (B).

9. Remove bushing halves (B). If required, remove the next steel or plastic finger, so the arm can slide off the bushing. Refer to the following procedures as necessary:

   - *Removing Plastic Fingers, page 551*
   - *Removing Steel Fingers, page 550*

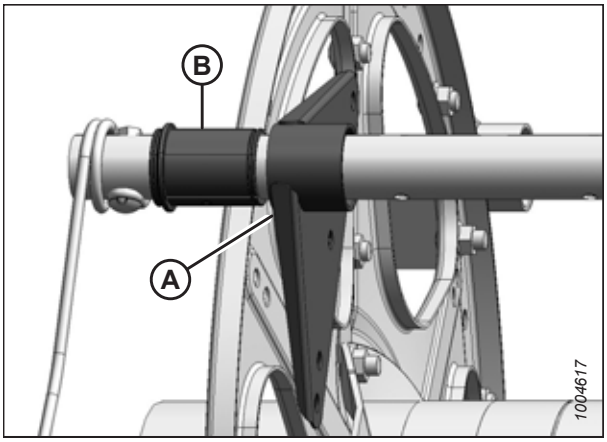

Figure 5.249: Bushing

Cam end bushings

10. Remove the endshields and endshield support (A) from the applicable tine tube location on the cam end.

    NOTE:

    Removing cam end bushings requires the tine tube to be moved through the disc arms to expose the bushing.

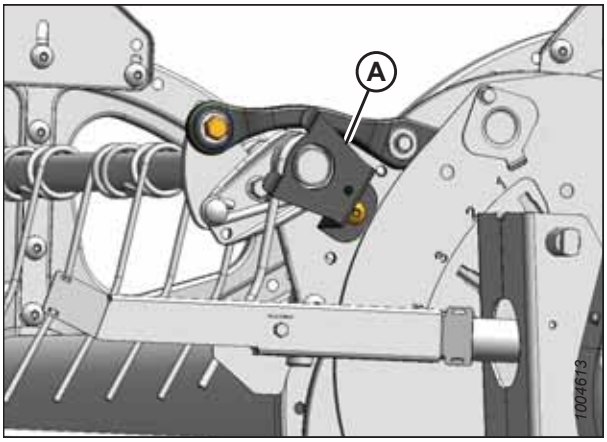

Figure 5.250: Cam End

11. 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.

12. Remove bolts (A) securing tine tube arms (B) to the tail and center discs.

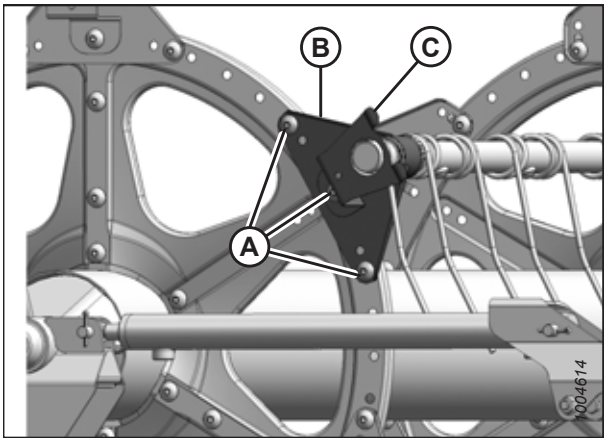

Figure 5.251: Tail End

Tine tube reinforcing kit (option)

13. Release the bushing clamps or disconnect the support channels from the tine tube support (if installed) depending on which tine tube is being moved. Three tine tubes (A) require channel disconnection and two tine tubes (B) require only bushing clamp removal.

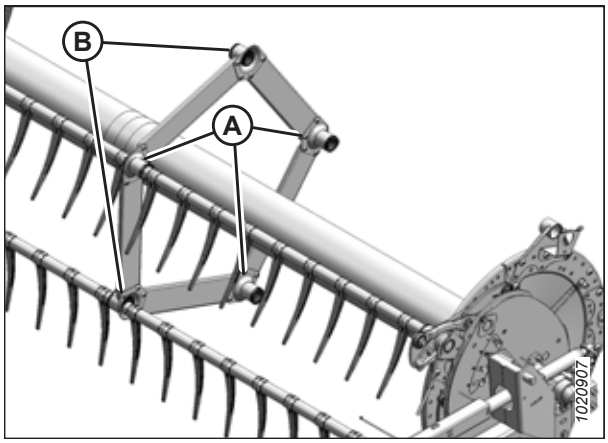

Figure 5.252: Tine Tube Supports

14. Remove bolt (A) from the cam linkage so tine tube (B) is free to rotate.

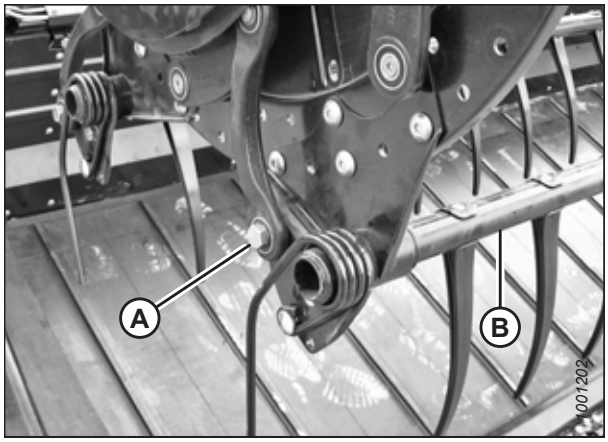

Figure 5.253: Cam End

15. Release bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

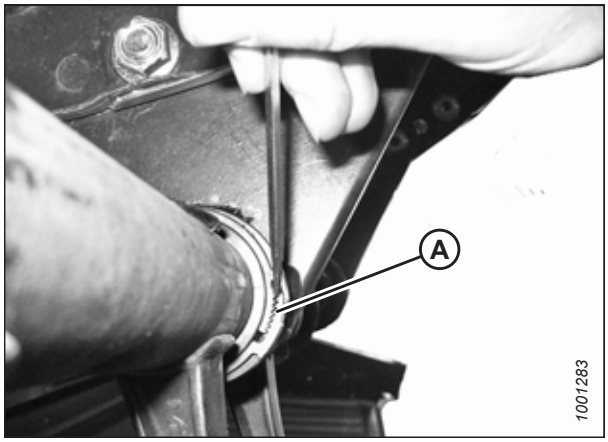

Figure 5.254: Bushing Clamp

16. Slide tine tube (A) outboard to expose bushing (B).

17. Remove bushing halves (B). If required, remove the next steel or plastic finger so the arm can slide off the bushing. Refer to the following procedures if necessary:

    - *Removing Plastic Fingers, page 551*
    - *Removing Steel Fingers, page 550*

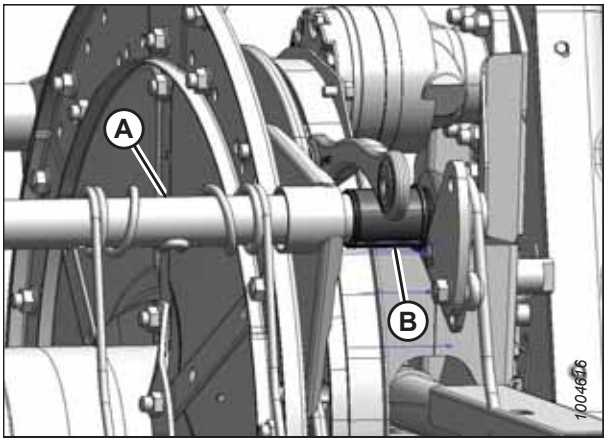

Figure 5.255: Cam End

Tine tube reinforcing kit bushings – option

18. Locate support (A) that requires a new bushing.

19. Remove four bolts (B) securing channel (C) to support (A).

20. Remove screw (E) and remove finger (D) if it is too close to the support to allow access to the bushing. For instructions, refer to *Removing Plastic Fingers, page 551* or *Removing Steel Fingers, page 550*.

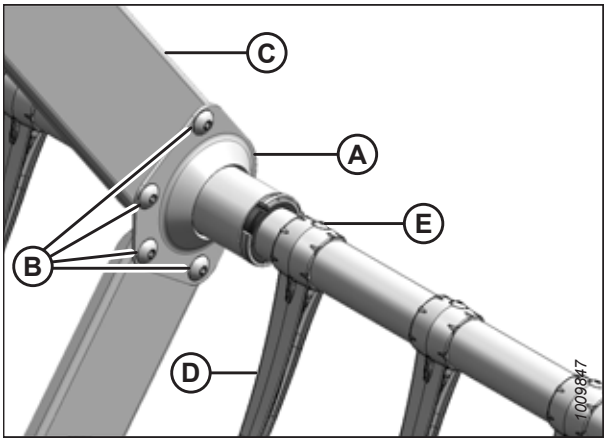

Figure 5.256: Tine Tube Support

21. Release bushing clamps (A) using a small screwdriver to separate the serrations.

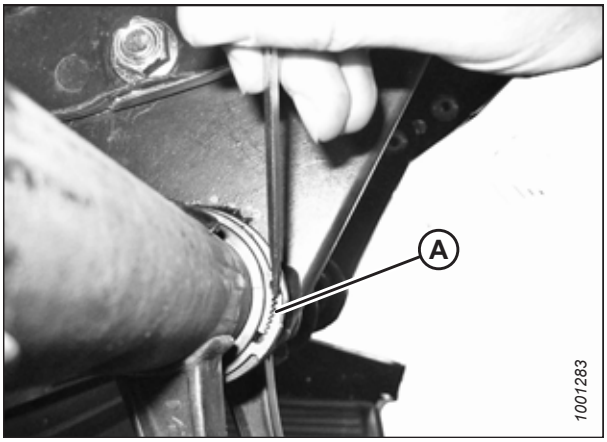

Figure 5.257: Bushing Clamp

22. Move clamps (A) off the bushings.

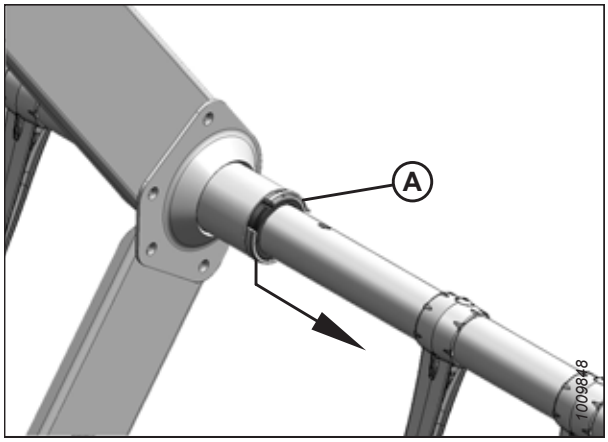

Figure 5.258: Tine Tube Reinforcing Kit Bushing Clamp – Option

23. On each reel, there are three right-facing supports (A). Slide the support off bushing halves (B).

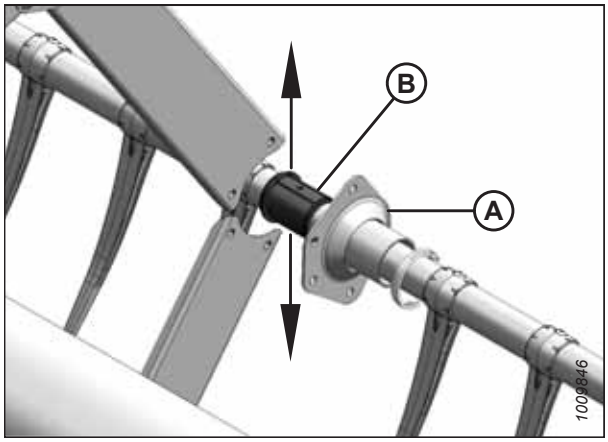

Figure 5.259: Tine Tube Reinforcing Kit Support – Option

24. On each reel, there are two left-facing supports (A). Rotate the supports until the flanges clear the channels before moving them off bushing (B). Move the tube slightly away from the reel if necessary.

25. Remove bushing halves (B) from the tine tubes.

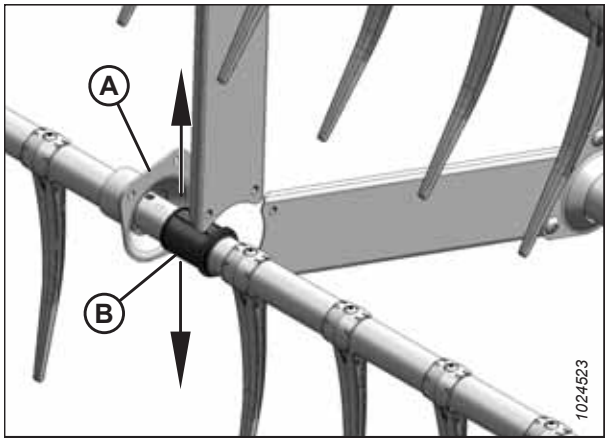

Figure 5.260: Tine Tube Reinforcing Kit Opposite Support – Option

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 553* 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 pliers in a vise and grind a notch (B) into the end of each arm to fit the clamp as shown.

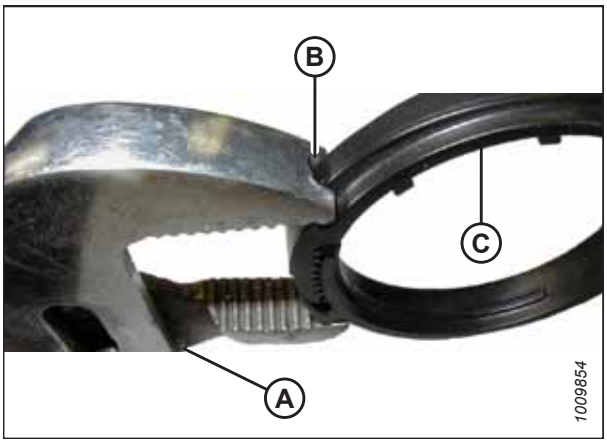

Figure 5.261: Modified Channel Lock Pliers

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) towards the tail end of the reel to insert bushing (B) into the tine tube arm. If the tine tube supports are installed, ensure the bushings at those locations slide into the support.
4. Reinstall the previously removed fingers. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 551*
   - *Removing Steel Fingers, page 550*

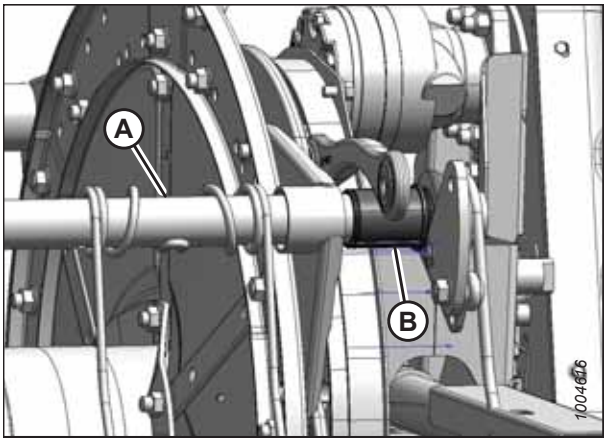

Figure 5.262: Cam End

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 the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

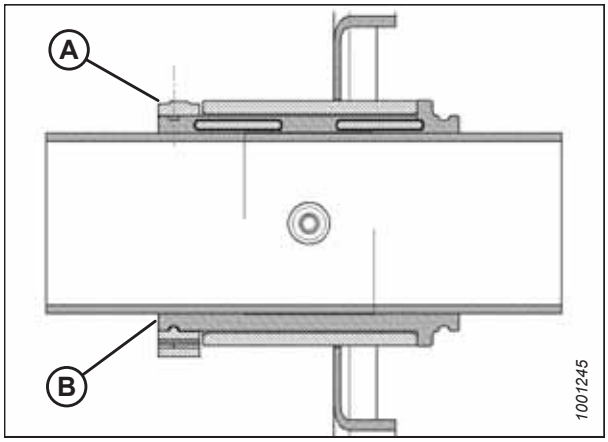

Figure 5.263: Bushing

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.

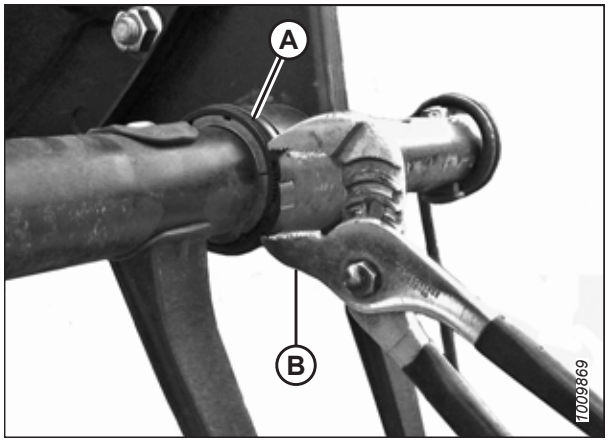

Figure 5.264: Installing Clamp

8. Line up tine tube (B) with the cam arm and install bolt (A). Torque the bolt to 165 Nm (120 lbf·ft).

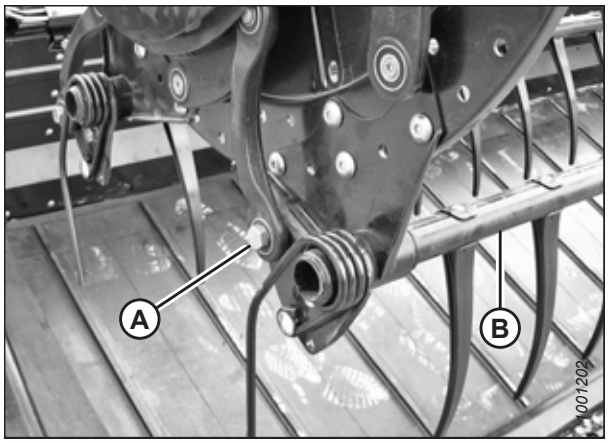

Figure 5.265: Cam End

9. Install bolts (A) securing tine tube arm (B) to the center disc.
10. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

    NOTE:

    There are no endshields on the center discs.

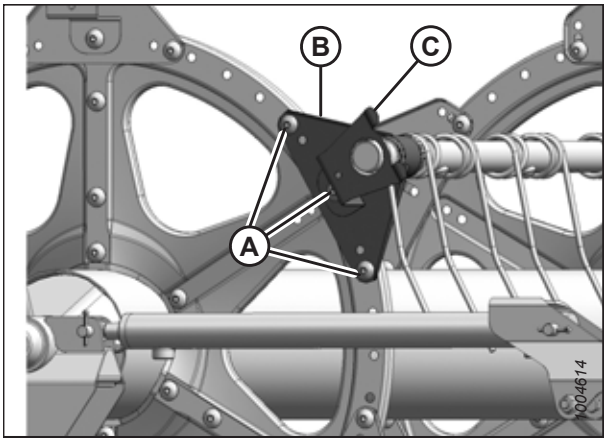

Figure 5.266: Tail End

11. Install endshield support (A) at the applicable tine tube location at the cam end.
12. Reinstall the reel endshields. For instructions, refer to *Replacing Reel Endshields, page 565*.

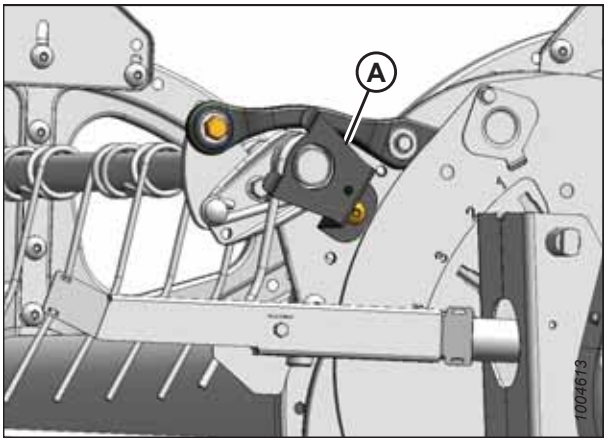

Figure 5.267: Cam End

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) and position against the disc at the original location.
15. Reinstall the previously removed fingers. For instructions, refer to:
    - *Removing Plastic Fingers, page 551*
    - *Removing Steel Fingers, page 550*

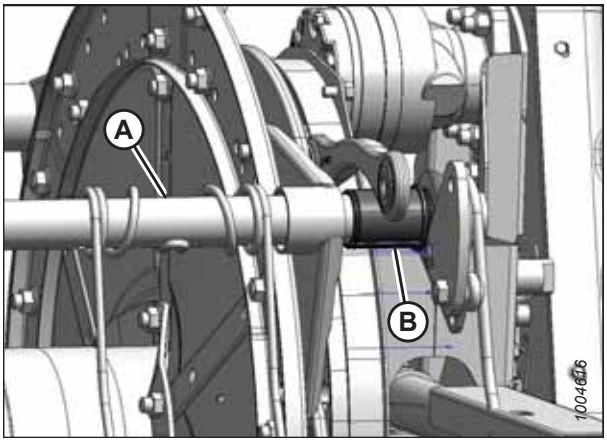

Figure 5.268: Cam End

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 the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

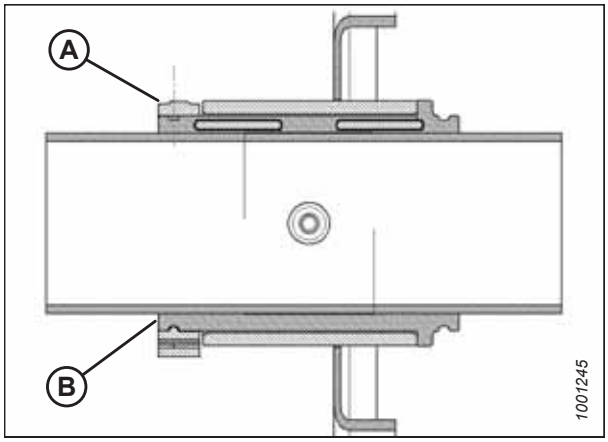

Figure 5.269: Bushing

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.

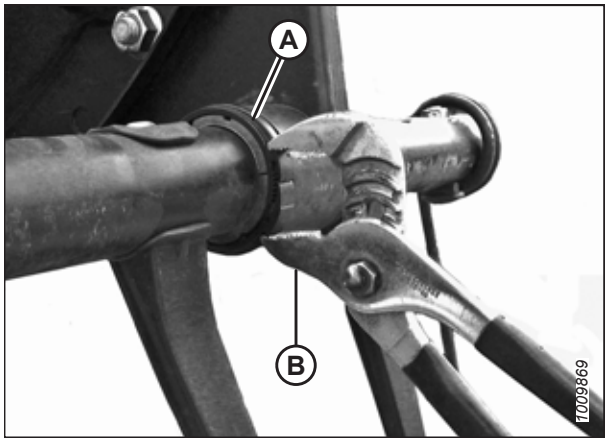

Figure 5.270: Installing Clamp

19. Install bolts (A) securing tine tube arm (B) to the center disc.

20. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

    NOTE:

    There are no endshields on the center discs.

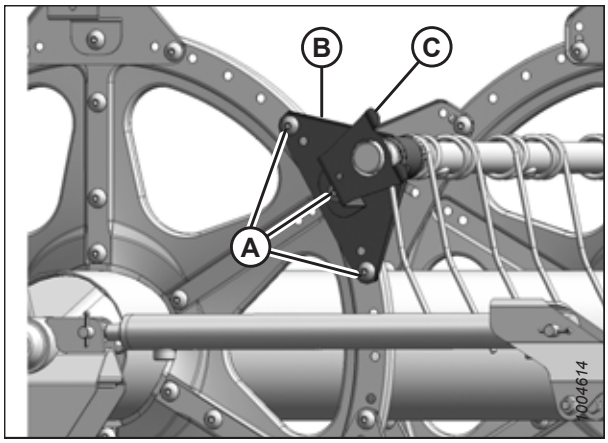

Figure 5.271: Tail End

Tine tube reinforcing kit – option

21. 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.

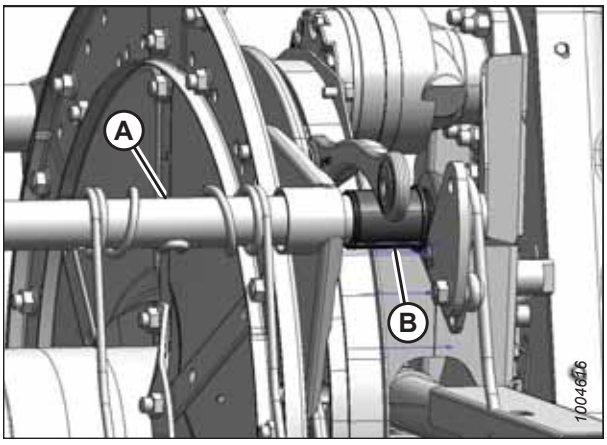

Figure 5.272: Cam End

22. On each reel, there are three right-facing supports (A). Slide the support onto bushing (B).

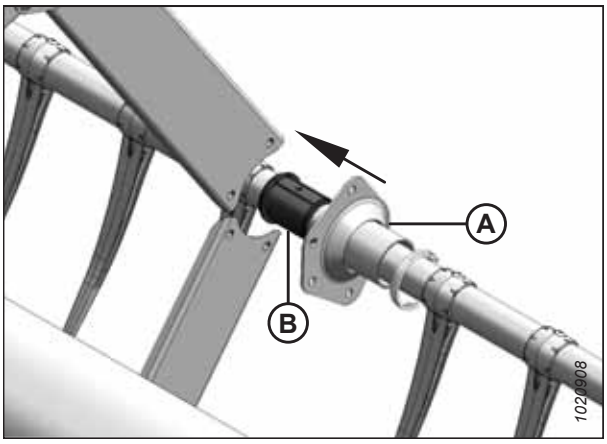

Figure 5.273: Tine Tube Reinforcing Kit Support – Option

23. On each reel, there are two left-facing supports (A). Rotate support (A) until its flanges clear channels (C) before moving the support onto bushing (B).

    NOTE:

    If necessary, move tine tube (D) slightly away from the reel to allow the support flange enough room to clear the channel.

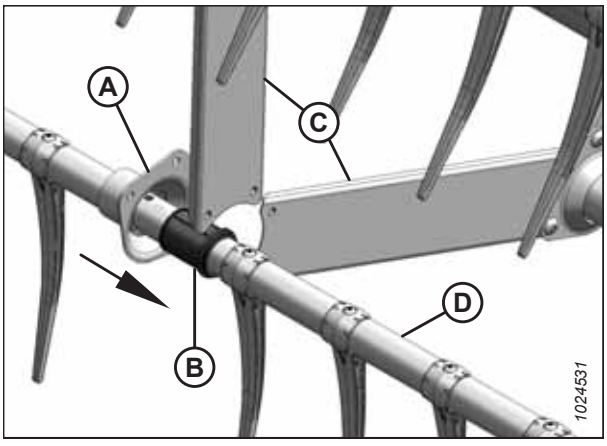

Figure 5.274: Tine Tube Reinforcing Kit Opposite Support – Option

24. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).

25. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

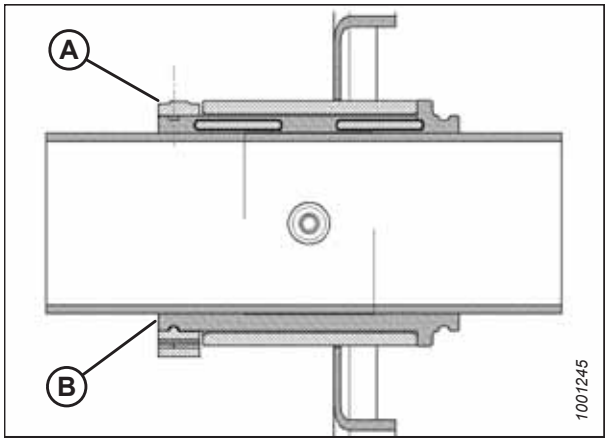

Figure 5.275: Bushing

26. 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.

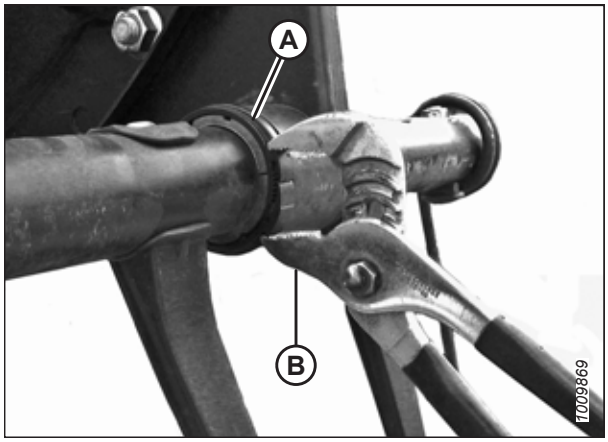

Figure 5.276: Installing Clamp

27. Reattach channels (C) to three right-facing supports (A) on each reel with screws (B) and nuts. Torque the screws to 43 Nm (32 lbf·ft).

28. Using screws (E), reinstall any fingers (D) that were previously removed. For instructions, refer to:

    - *Installing Plastic Fingers, page 552*
    - *Installing Steel Fingers, page 550*

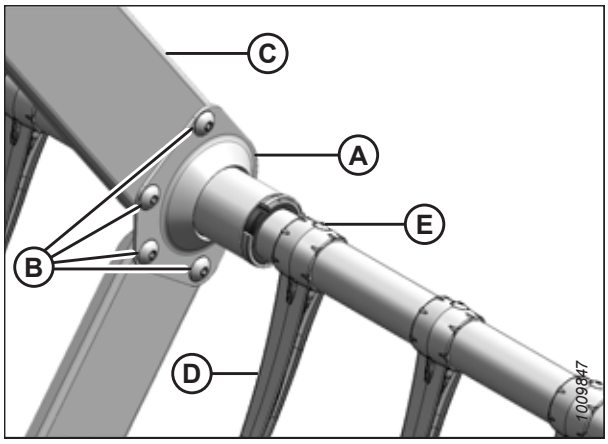

Figure 5.277: Tine Tube Reinforcing Kit Support – Option

29. Reattach channels (C) to two left-facing supports (A) on each reel with screws (B) and nuts. Torque the screws to 43 Nm (32 lbf·ft).

30. Using screws (E), reinstall any fingers (D) that were previously removed. For instructions, refer to:

    - *Installing Plastic Fingers, page 552*
    - *Installing Steel Fingers, page 550*

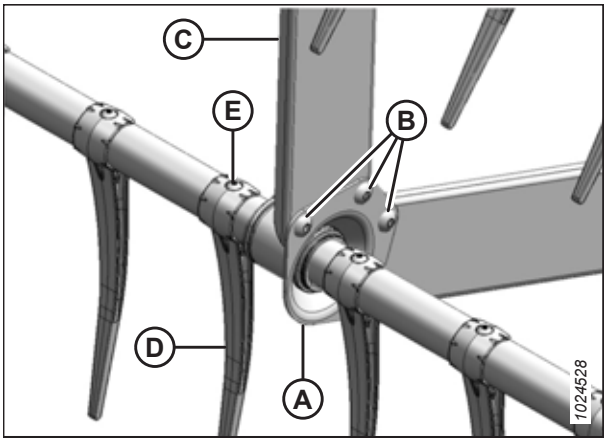

Figure 5.278: Tine Tube Reinforcing Kit Opposite Support – Option

5.17.7 Reel Endshields

Reel endshields and 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's necessary to replace severely damaged components.

You can attach reel endshields to either end of the reel.

Replacing Reel Endshields

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. For instructions, refer to the windrower operator's manual.
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).

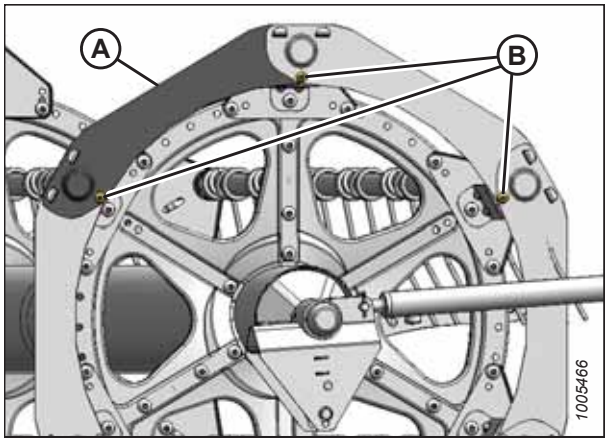

Figure 5.279: Reel Endshields

7. Lift the end of reel endshield (A) off support tabs (B).

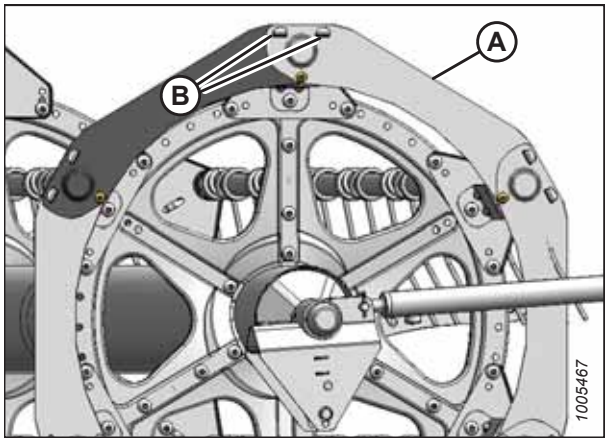

Figure 5.280: Reel Endshields

8. Remove the reel endshield from the supports.

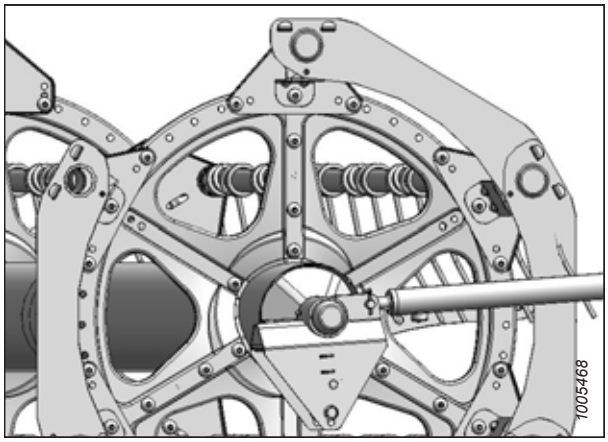

Figure 5.281: Reel Endshield Removed

9. Slightly lift the end of reel endshield (A) off of support tabs (B).
10. Install new reel endshield (C), behind reel endshield (A).
11. Reattach reel endshield (C), then attach endshield (A) onto support tabs (B).
12. Reinstall three bolts (D).
13. Tighten all hardware.

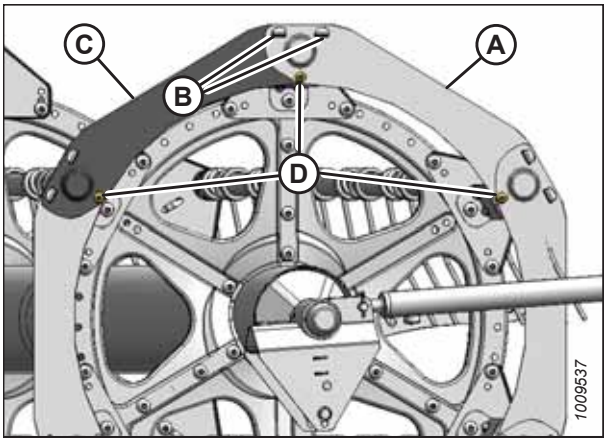

Figure 5.282: Reel Endshields

Replacing Reel Endshield Supports

If the reel endshield supports are damaged, they 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. Lower the header fully.
2. Lower the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Rotate the reel manually until the reel endshield support requiring replacement is accessible.
5. Remove bolt (B) from support (A).
6. Remove bolts (C) from support (A) and two adjacent supports.

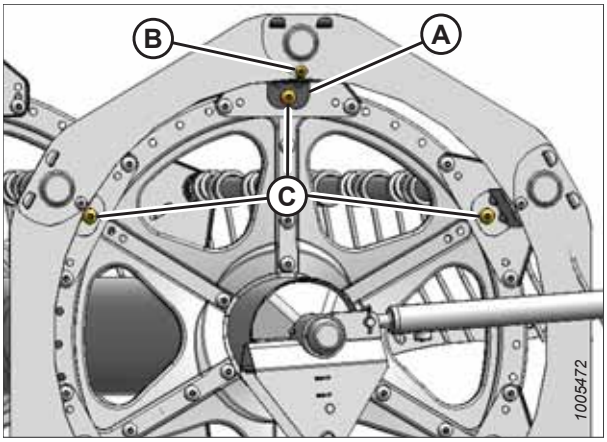

Figure 5.283: Reel Endshield Supports

7. Move reel endshields (A) away from the tine tube and rotate support (B) towards the reel to remove it.
8. Insert tabs of new support (B) into the slots in reel endshields (A). Ensure the tabs engage both reel endshields.
9. Secure support (B) to the disc sector with bolt (C) and nut. Do **NOT** tighten.
10. Secure reel endshields (A) to support (B) with bolt (D) and nut. Do **NOT** tighten.
11. Reattach the supports with bolts (E) and nuts.
12. Check the clearance between the tine tube and reel endshield support and adjust if necessary.
13. Torque the nuts to 27 Nm (20 lbf·ft).

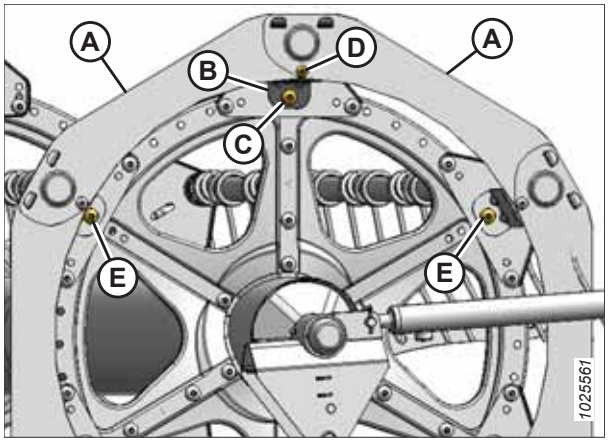

Figure 5.284: Reel Endshield Supports

5.18 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.

5.18.1 Reel Drive Cover

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

Removing Reel Drive Cover

The chain drive is protected by a removable 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. Remove six bolts (A) securing upper cover (B) to the reel drive and lower cover (C).
3. Remove upper cover (B).

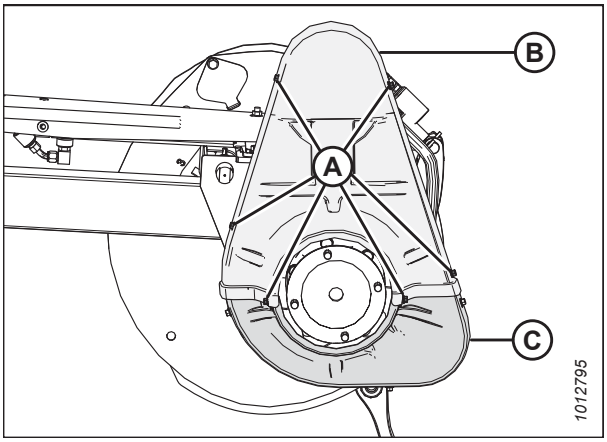

Figure 5.285: Drive Cover

4. Remove three bolts (A) and remove lower cover (B) if necessary.

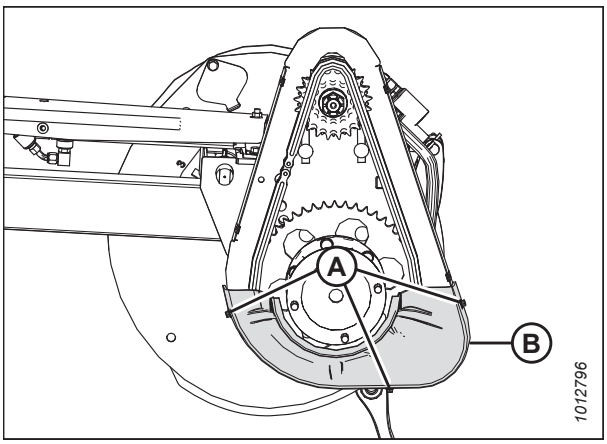

Figure 5.286: Lower Drive Cover

Installing Reel Drive Cover

Once your maintenance or service tasks are complete, the reel drive cover can be reinstalled.

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) onto the reel drive (if it was previously removed), and secure it with three bolts (A). Torque the bolts to 12–13.2 Nm (9–10 lbf·ft).

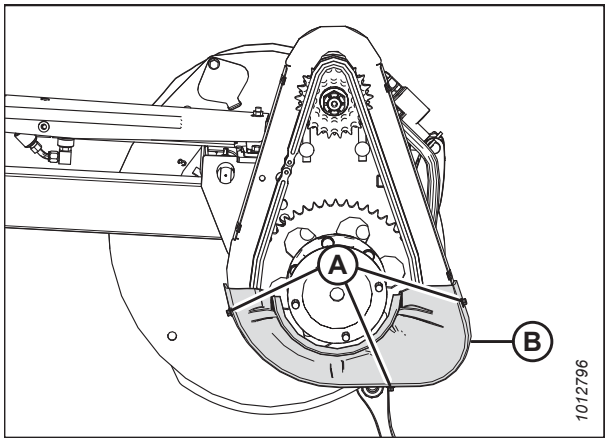

Figure 5.287: Lower Drive Cover

3. Position upper drive cover (B) onto the reel drive and lower cover (C), and secure it with six bolts (A). Torque the bolts to 12–13.2 Nm (9–10 lbf·ft).

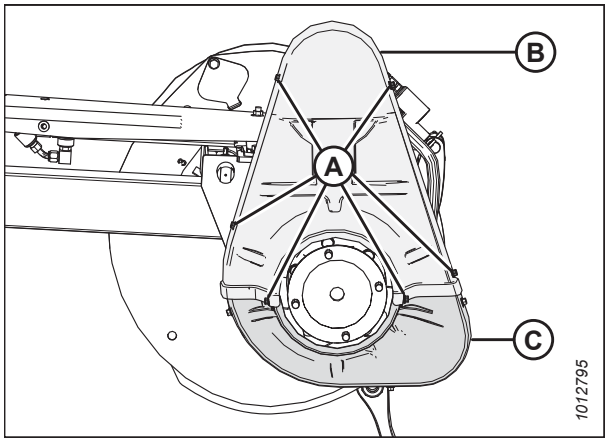

Figure 5.288: Drive Cover

5.18.2 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 reel drive chain will need to be loosened in order for it to be removed or retensioned.

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. Lower the header fully.
2. Adjust the reel to full forward position for easier access to the work area.
3. Shut down the engine, and remove the key from the ignition.
4. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 569*.
5. Loosen six nuts (A).

   NOTE:

   Parts removed from illustration for clarity.
6. Slide motor (B) and motor mount (C) down towards the reel shaft.

   IMPORTANT:

   Do **NOT** operate the reel with the reel cover removed.
7. To retighten the drive chain, refer to *Tightening Reel Drive Chain, page 571*.

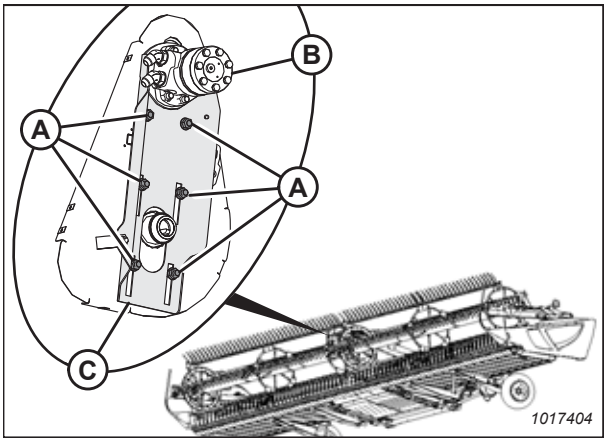

Figure 5.289: Reel Drive

Tightening Reel Drive Chain

You will need to check the deflection at the reel drive chain's midspan to ensure that the chain is tensioned appropriately.

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. Lower the header fully.
2. Adjust the reel to full forward position for easier access to the work area.
3. Shut down the engine, and remove the key from the ignition.
4. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 569*.
5. Slide motor (A) and motor mount (B) upward until chain (C) is tight.
6. Ensure there is 3 mm (1/8 in.) of slack at the chain midspan. Adjust if necessary.

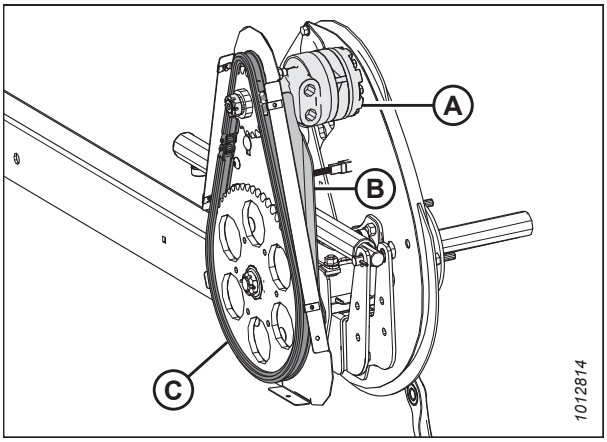

Figure 5.290: Single-Reel Drive – Double Reel Similar

7. Tighten six nuts (A). Torque to 73 Nm (54 lbf·ft).
8. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 570*.

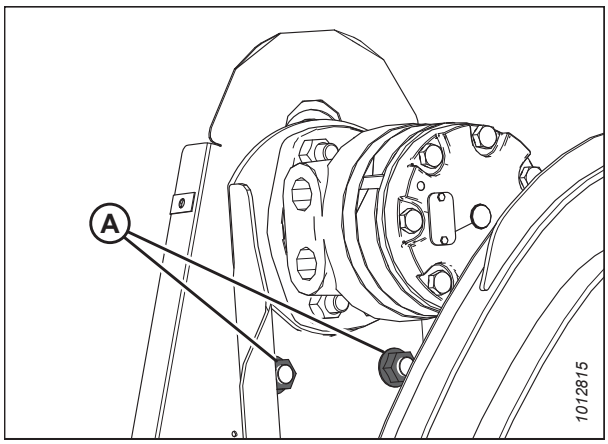

Figure 5.291: Single-Reel Drive – Double Reel Similar

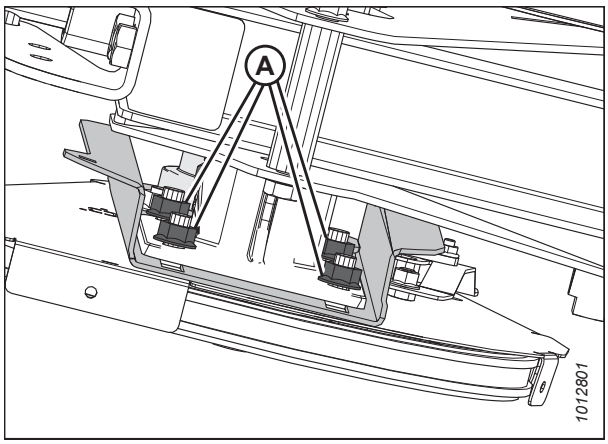

Figure 5.292: Single-Reel Drive – Viewed from Underside of Reel

5.18.3 Reel Drive Sprocket

The reel drive sprocket is attached to the reel drive motor.

For Case IH and New Holland combine models, configure the combine according to the reel sprocket size in order to optimize the auto reel to ground speed control. Refer to the combine service manual for more information.

Removing Reel Drive Sprocket

You may need a gear puller to remove the sprocket from the motor shaft.

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 569*.

3. Loosen reel drive chain (A). For instructions, refer to *Loosening Reel Drive Chain, page 570*.
4. Remove reel drive chain (A) from reel drive sprocket (B).

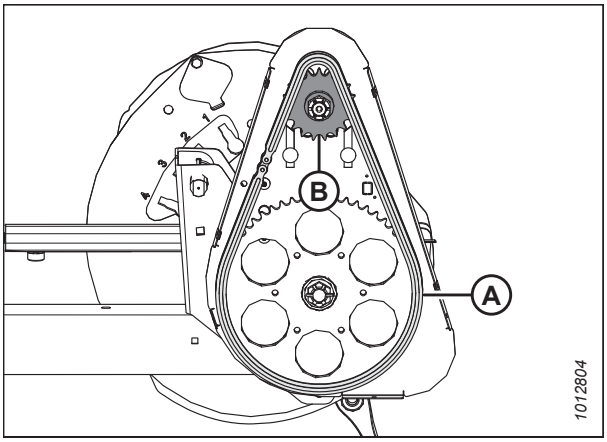

Figure 5.293: Reel Drive Sprocket

5. Remove cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
6. Remove reel drive sprocket (D). Ensure the key remains in the shaft.

   IMPORTANT:

   To avoid damaging the motor, use a puller if the drive sprocket (D) does not come off by hand. Do **NOT** use a pry bar and/or hammer to remove the drive sprocket.

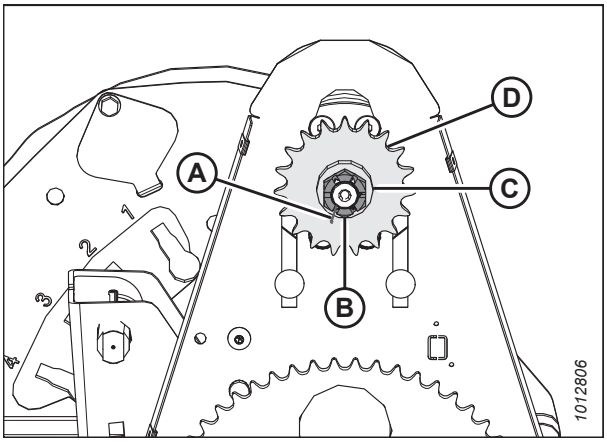

Figure 5.294: Reel Drive Sprocket

Installing Reel Drive Sprocket

Once your maintenance or service tasks are complete, the reel drive sprocket can be installed on the motor shaft.

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 (D) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure with flat washer (C) and slotted nut (B).
2. Torque slotted nut (B) to 54 Nm (40 lbf·ft).
3. Install cotter pin (A). If necessary, tighten slotted nut (B) to the next slot to install the cotter pin.

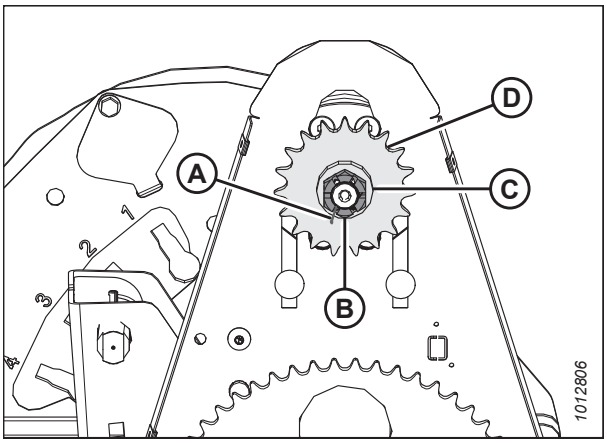

Figure 5.295: Reel Drive

4. Install drive chain (A) onto drive sprocket (B).
5. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 571*.
6. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 570*.

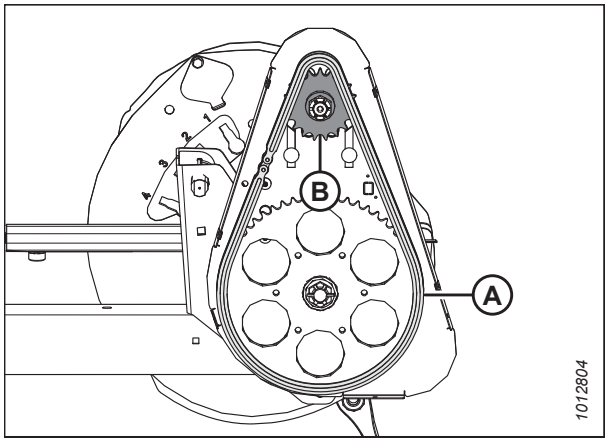

Figure 5.296: Reel Drive

5.18.4 Double-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 *5.7 Lubrication, page 421*.

Replace the U-joint if severely worn or damaged. For instructions, refer to *Removing Double-Reel Drive U-Joint, page 574*.

Removing Double-Reel Drive U-Joint

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 569*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) or equivalent lifting devices.

   IMPORTANT:

   To avoid damaging or denting the center tube, support the reel as close to the end disc as possible.

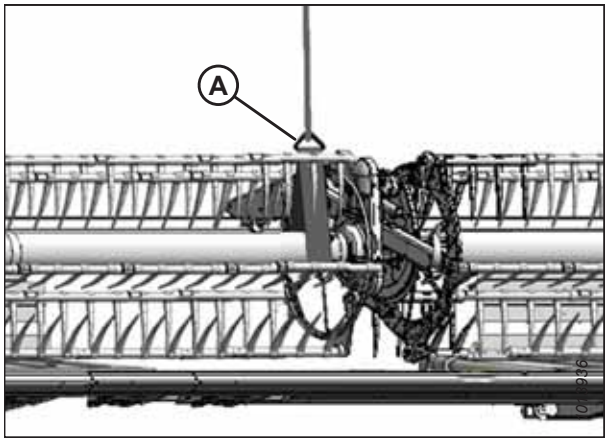

Figure 5.297: Supporting Reel

4. Remove four bolts (A) securing the reel tube to U-joint flange (B), and move the reel sideways.

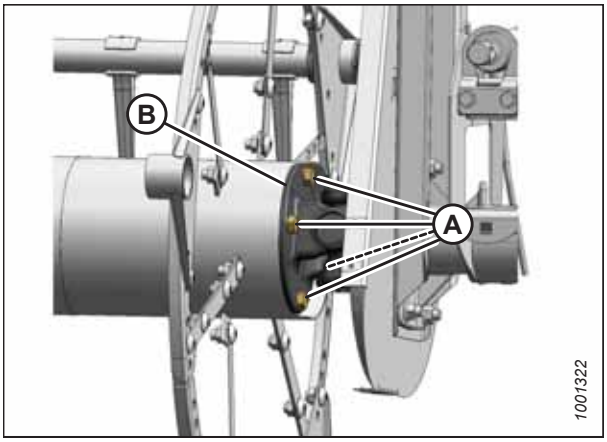

Figure 5.298: U-Joint

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.

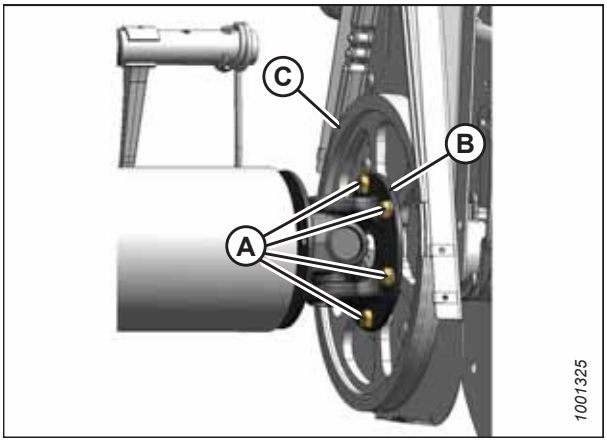

Figure 5.299: U-Joint

Installing Double-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.

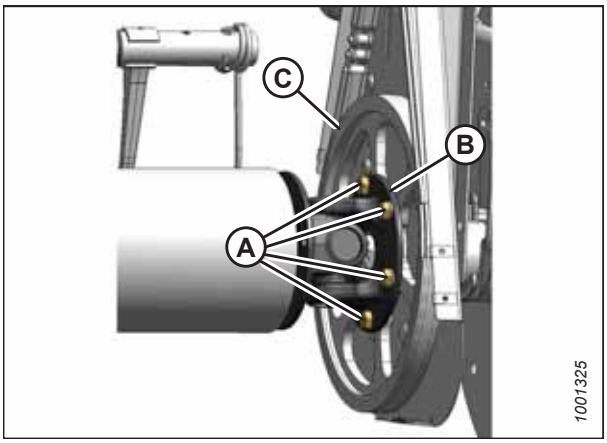

Figure 5.300: U-Joint

3. Position the right reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
4. Rotate the reel until the holes in the end of the reel tube and U-joint flange (B) line up.
5. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure in the flange.
6. Torque the ten bolts to 108 Nm (80 lbf·ft).

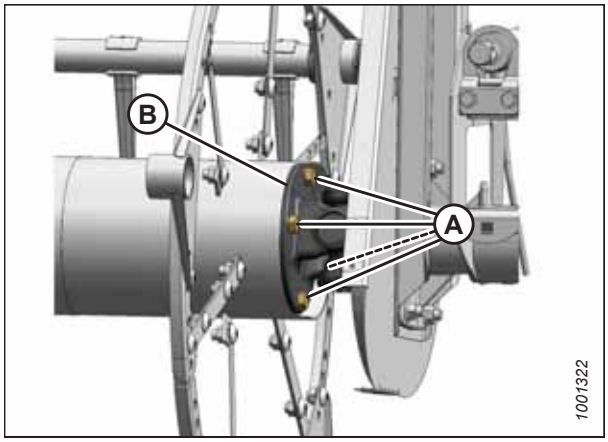

Figure 5.301: U-Joint

7. Remove sling (A) from the reel.
8. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 570*.

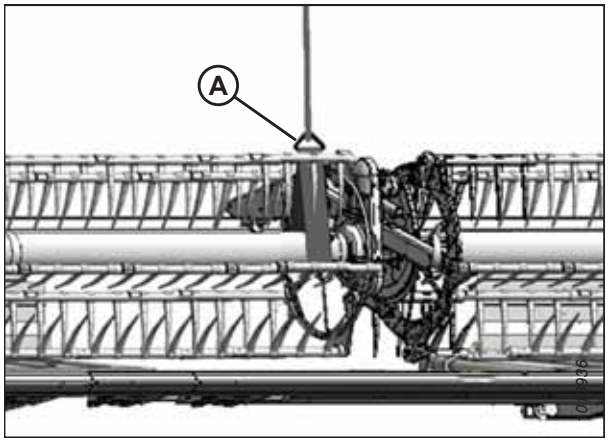

Figure 5.302: Supporting Reel

5.18.5 Reel Drive Motor

The reel drive motor is used on the reel drive system on single-reel and double-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

The reel drive chain and sprocket will need to be removed before the reel drive motor can be accessed.

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 570*.
3. Remove the drive sprocket. For instructions, refer to *Removing Reel Drive Sprocket, page 572*.

4. Mark hydraulic lines (A) and their connections on 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.

6. Remove four nuts and bolts (C), and remove motor (B). Retrieve the spacer (if installed) from between motor (B) and the motor mount.

7. 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.

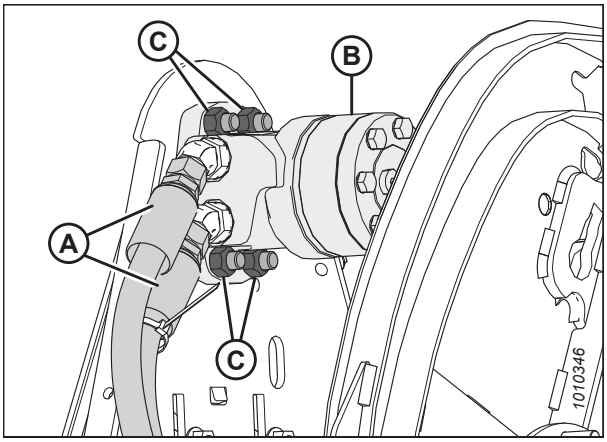

Figure 5.303: Reel Motor and Hoses

Installing Reel Drive Motor

Once the motor is in place, the reel drive sprocket and chain will need to be reinstalled.

1. Slide motor mount (A) up or down so the motor mounting holes (B) are accessible through the openings in the chain case.

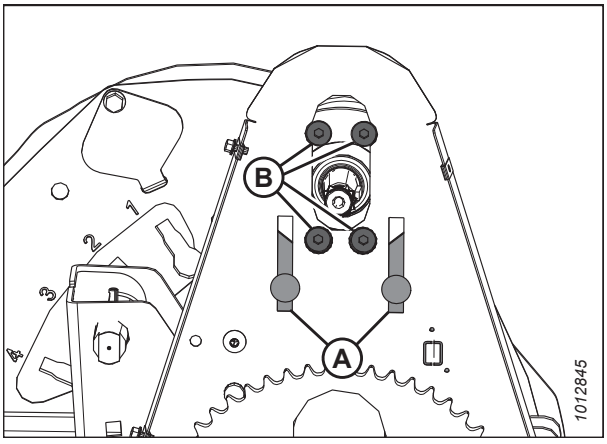

Figure 5.304: Reel Drive Motor Mounting Holes

2. Attach motor (A) (and spacer if previously removed) to motor mount (B) with four 1/2 x 1 3/4 in. countersunk bolts and nuts (C).

3. If installing a new motor, install the hydraulic fittings (not shown) from the original motor.

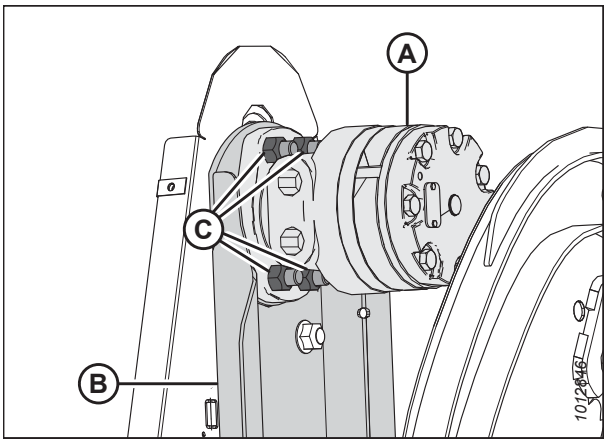

Figure 5.305: Reel Drive Motor

4. Remove the caps or plugs from the ports and lines and connect hydraulic lines (A) to hydraulic fittings (B) on motor (C).

   NOTE:

   Ensure hydraulic lines (A) are installed in their original locations.

5. Install the drive sprocket. For instructions, refer to *Installing Reel Drive Sprocket, page 573*.

6. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 571*.

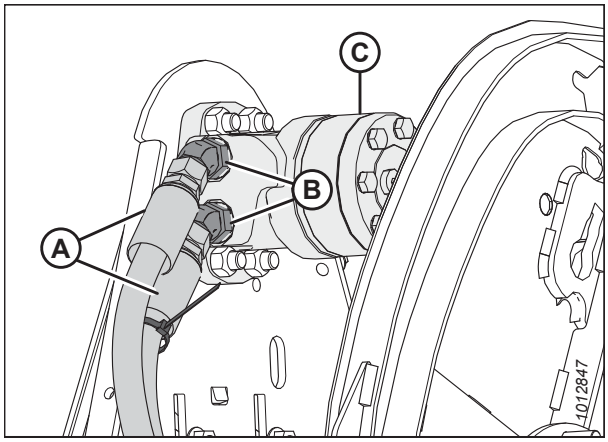

Figure 5.306: Reel Motor and Hoses

5.18.6 Replacing Drive Chain

The drive chain allows the hydraulic reel drive motor to turn the reel. It can be replaced if 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 569*.

3. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 570*.

4. Support the inboard end of the right reel with a front-end loader and nylon slings (A) or equivalent lifting devices.

   IMPORTANT:

   Avoid damaging or denting the center tube by supporting the reel as close to the end of the reel as possible.

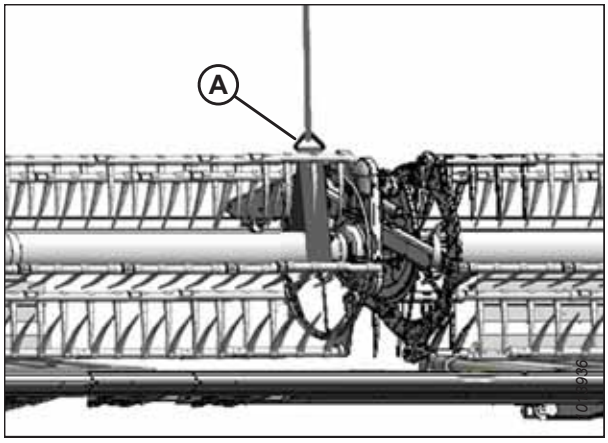

Figure 5.307: Supporting Reel

5. Remove four bolts (A) securing the reel tube to U-joint flange (B).

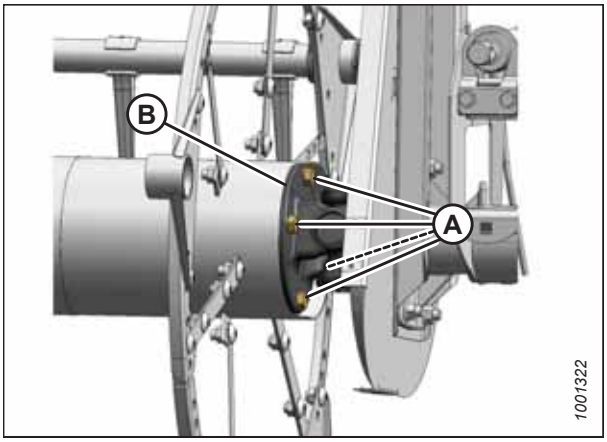

Figure 5.308: U-Joint

6. Move the right reel sideways to separate reel tube (A) from U-joint (B).
7. Remove drive chain (C).
8. Route chain (C) over U-joint (B) and position onto the sprockets.

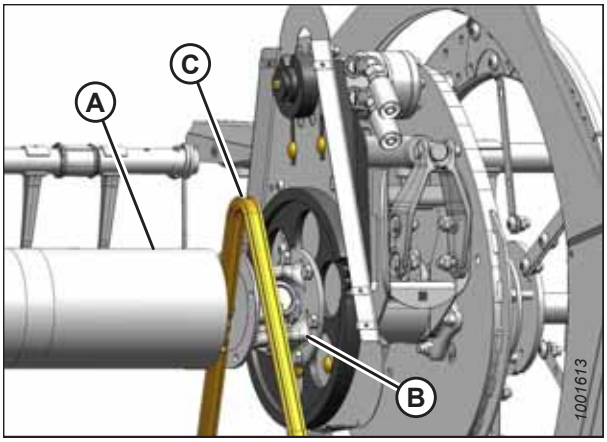

Figure 5.309: Replacing Chain

9. Position the right reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
10. Rotate the reel until the holes in end of the reel tube and U-joint flange line up.
11. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure them to the flange with lock washers.
12. Torque bolts (A) to 109 Nm (80 lbf·ft).

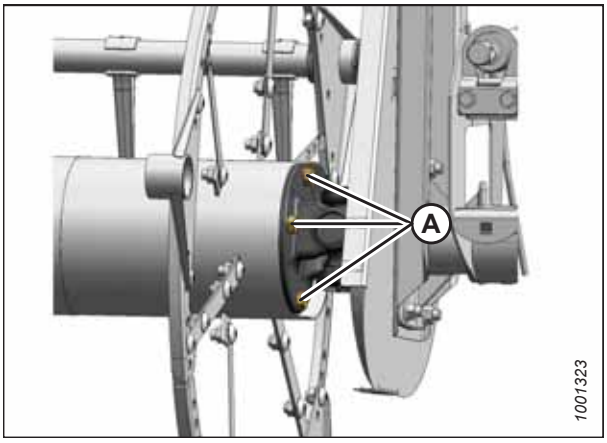

Figure 5.310: U-Joint

13. Remove temporary reel sling (A).
14. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 571*.
15. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 570*.

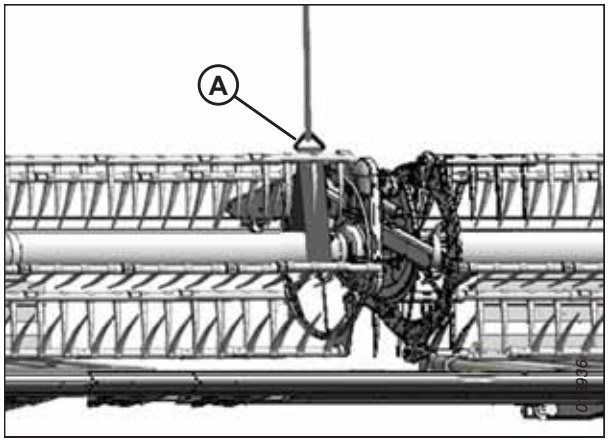

Figure 5.311: Supporting Reel

5.18.7 Replacing Single-Reel Header Drive Chain

Chains wear out and 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 reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 569*.
3. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 570*.
4. Lift chain (A) off drive sprocket (B).
5. Lower the chain until it is free from lower sprocket (C), and then remove the chain from the drive.
6. Position new chain (A) around the bottom teeth on lower sprocket (C).
7. Lift the chain onto drive sprocket (B), ensuring all the links are properly engaged in the teeth.
8. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 571*.
9. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 570*.

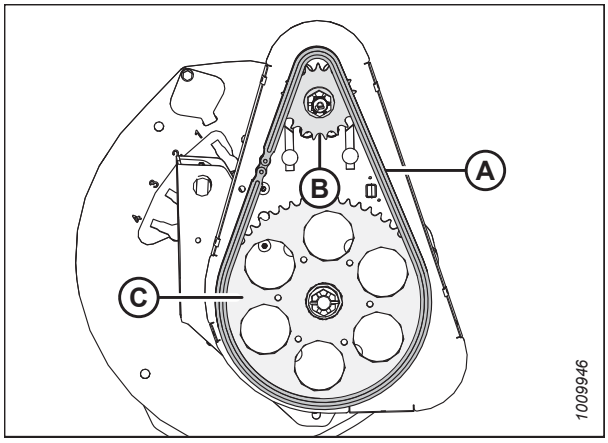

Figure 5.312: Reel Drive

5.18.8 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, page 581*
- *Replacing John Deere Reel Speed Sensor, page 582*

- *Replacing CLAAS Reel Speed Sensor, page 583*

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 569*.
3. Disconnect electrical connector (A) from the header harness.

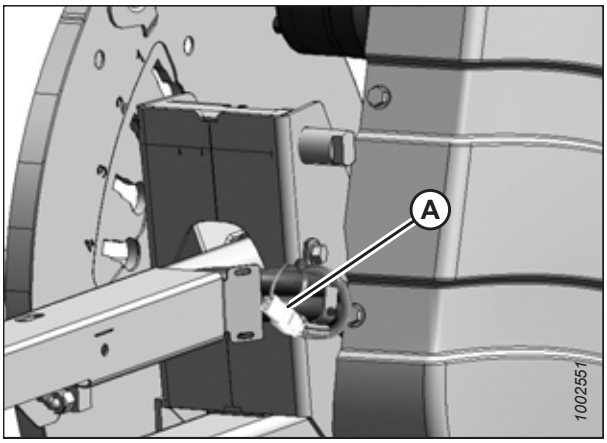

Figure 5.313: Reel Drive Assembly – Electrical Harness

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.).

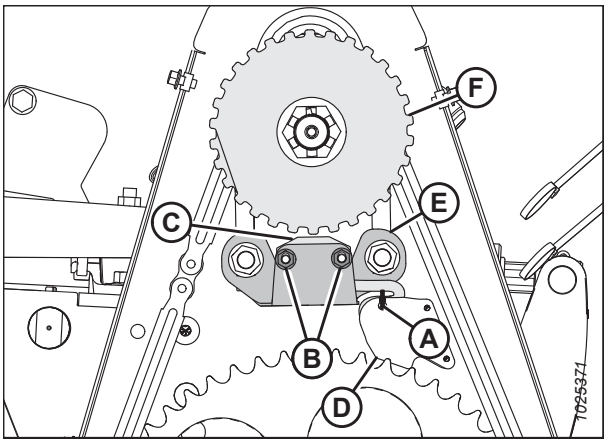

Figure 5.314: Reel Drive Assembly – Speed Sensor

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 570*.

11. Verify proper operation of the sensor.

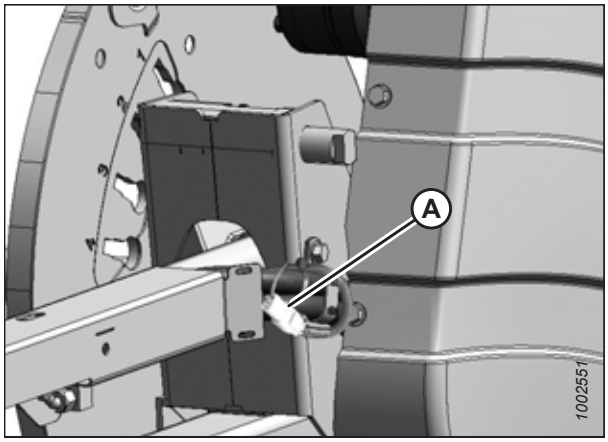

Figure 5.315: Reel Drive Assembly – Electrical Harness

Replacing John Deere Reel Speed Sensor

The reel speed sensor is located on the reel drive and senses how fast the reel drive sprocket is turning. If the sensor is 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 569*.

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 570*.

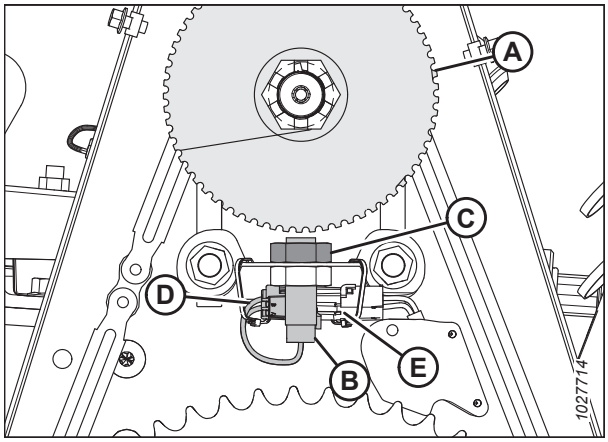

Figure 5.316: Speed Sensor

Replacing CLAAS 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 569*.
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 with nut (E).
8. Adjust the gap between sensor disc (C) and sensor (B) to 3.5 mm (0.14 in.) using nuts (A) and (D).
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).

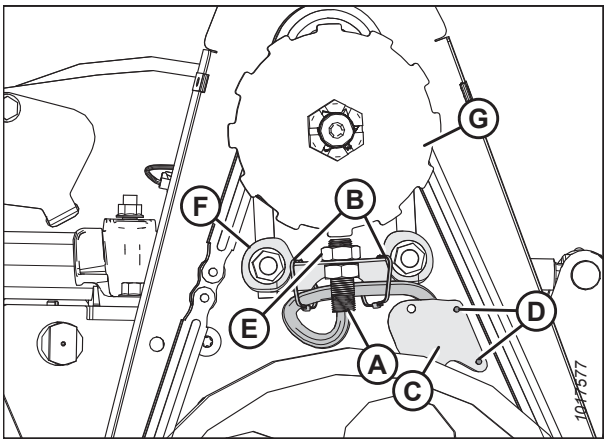

Figure 5.317: Speed Sensor

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 570*.

5.19 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 *6.4.4 Stabilizer Wheels and Transport Package, page 597* for more information.

5.19.1 Checking Wheel Bolt Torque

The transport wheel bolt torque should be checked after one operating hour following the installation of 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. Follow the bolt tightening sequence shown, and torque the wheel bolts to 115 Nm (85 lbf·ft).

   IMPORTANT:

   Whenever a wheel is removed and reinstalled, check the wheel bolt torque after 1 hour of operation and every 100 hours thereafter.

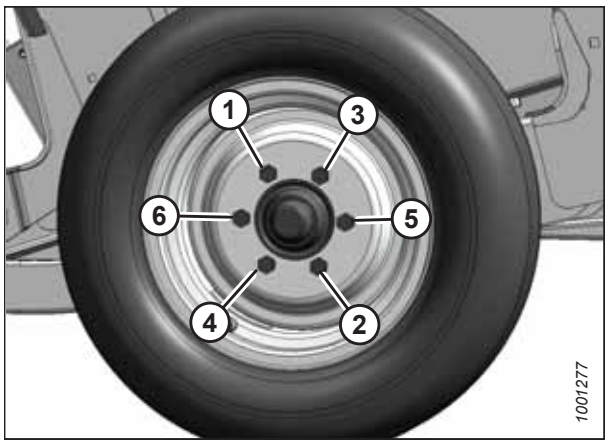

Figure 5.318: Bolt Tightening Sequence

5.19.2 Checking Axle Bolt Torque

After the transport system has been installed, the axle bolt torque will need to be checked daily until no change in torque is observed.

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.

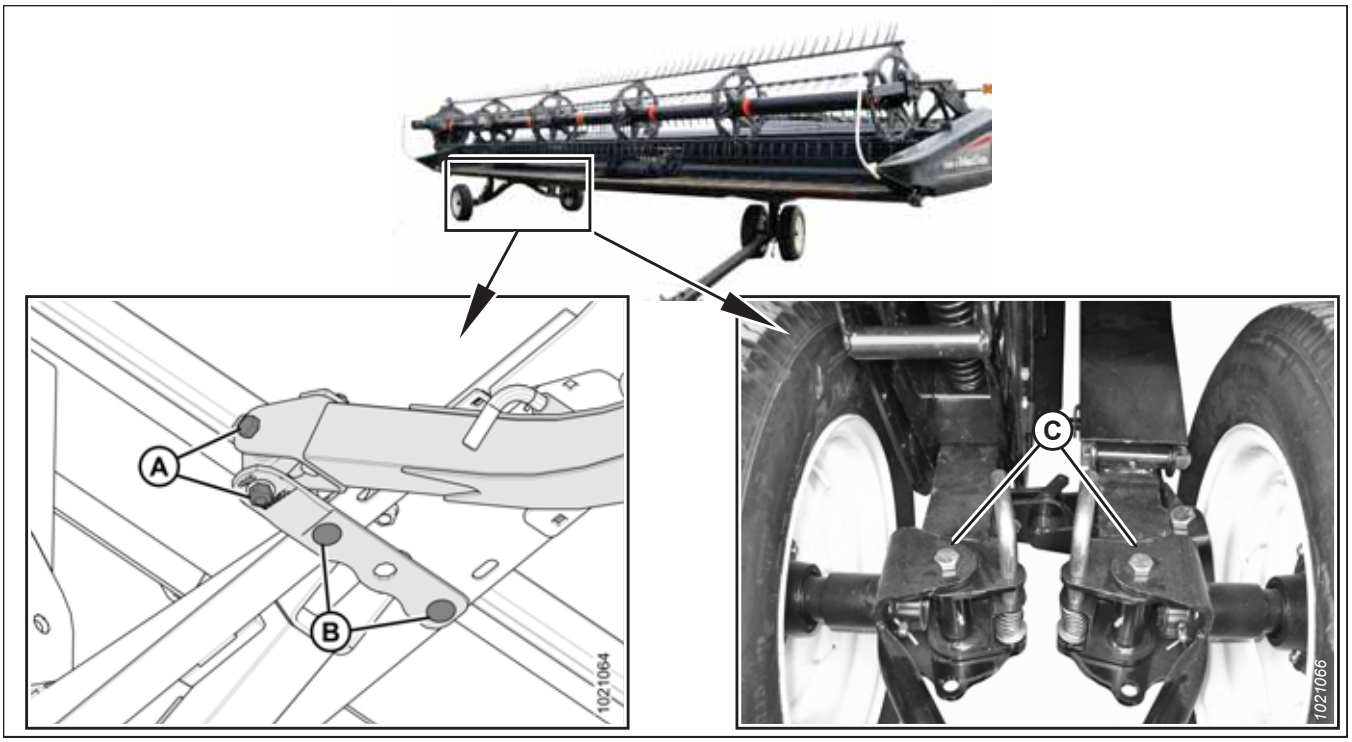

Figure 5.319: Axle Bolts

1. Check and tighten axle bolts **DAILY** until torque is maintained as follows:
   - (A): 244 Nm (180 lbf·ft)
   - (B): 203 Nm (150 lbf·ft)
   - (C): 244 Nm (180 lbf·ft)

5.19.3 Checking Tire Pressure

Proper tire pressure ensures tires perform properly and wear evenly.

WARNING

- **A tire can explode during inflation, which could cause serious injury or death.**
- **Do NOT stand over tire. Use a clip-on chuck and extension hose.**
- **Do NOT exceed maximum inflation pressure indicated on tire label or sidewall.**
- **Replace tires that have defects.**
- **Replace wheel rims that are cracked, worn, or severely rusted.**
- **Never weld a wheel rim.**

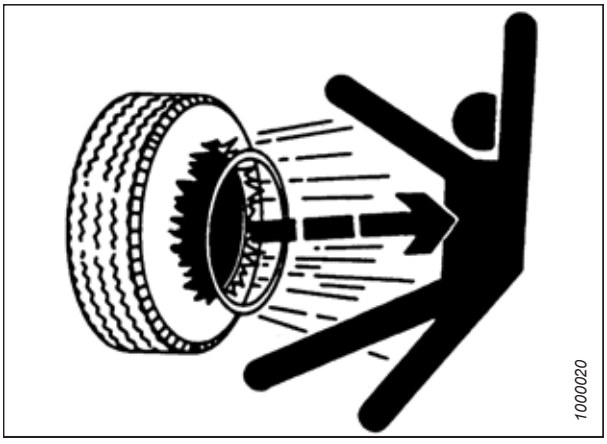

Figure 5.320: Inflation Warning

- **Never use force on an inflated or partially inflated tire.**
- **Make sure the tire is correctly seated before inflating 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.**
- **Make sure all the air is removed from the tire before removing the tire 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 *5.4, page 586*.
2. Make sure the tire is correctly seated on the rim before inflating.
   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 maximum inflation pressure indicated on tire label or sidewall.

Table 5.4 Tire Pressure

Size	Load Range	Pressure
ST205/75 R15	D	517 kPa (75 psi)
ST205/75 R15	E	586 kPa (85 psi)

Chapter 6: Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

6.1 FM100 Float Module

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.

6.1.1 Hillside Extension Kit

The Hillside Extension kit allows overfilling the hydraulic reservoir on FM100 Float Modules.

This allows operation on steep hillsides while maintaining oil supply to the suction side of pump.

Installation instructions are included in the kit.

MD #B6057

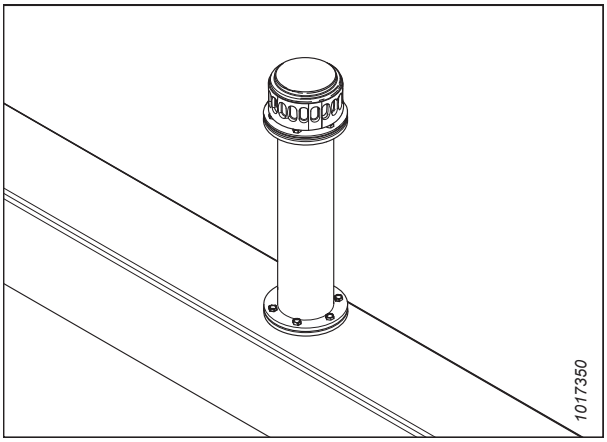

Figure 6.1: Hillside Extension Kit

6.2 Reel

Several kits are available to change the operating characteristics of the reel.

6.2.1 Multi-Crop Rapid Reel Conversion Kit

For use on double-reel headers only, the Multi-Crop Rapid Reel Conversion kit decreases the time required to change the fore-aft cylinder position on the reel support arm from the normal operating location to a farther aft location that minimizes crop disturbance. The kit also allows the reel fore-aft cylinders to be quickly moved to the normal operating location.

MD #B6590

NOTE:

The Multi-Crop Rapid Reed Conversion kit is not available for European-configured FD1 Series headers.

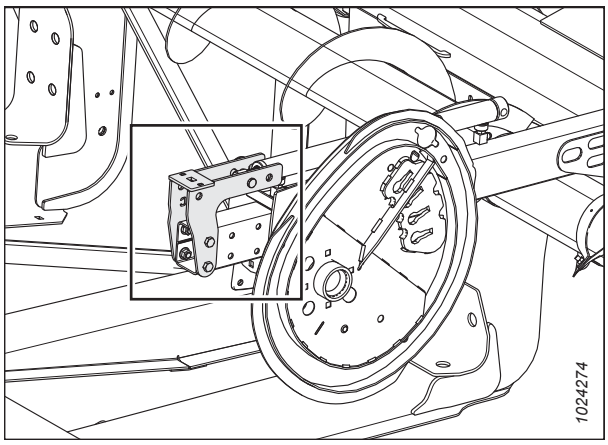

Figure 6.2: Center Arm – Left and Right Arms Similar

6.2.2 Reel Arm Extension Kit – European-Configured Headers Only

This kit provides extensions for the outer reel support arms on FD1 Series Draper Headers configured for the European market.

These extensions provide the additional reel arm length required to properly install a Vertical Knife Mount kit (MD #B6137, MD #B6138) onto the header. The Reel Arm Extension kit also includes reel fore-aft brackets allowing quick reel repositioning from the reel's most forward position to its most rearward position.

NOTE:

Parts removed from illustration for clarity.

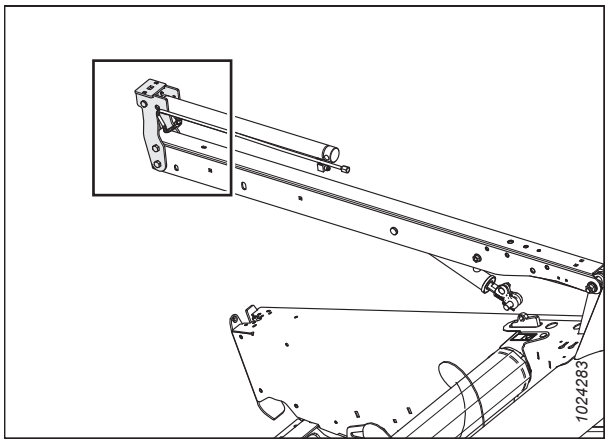

Figure 6.3: Right Arm – Center and Left Arms Similar

6.2.3 Reel Arm Extension Kit – North American-Configured Headers Only

This kit provides extensions for the outer reel support arms on FD1 Series Draper Headers configured for the North American market.

This kit provides extensions for the outer reel support arms on a North American-configured FD1 Series header. The Reel Arm Extension kit also includes reel fore-aft brackets allowing quick reel repositioning from the reel's most forward position to its most rearward position.

NOTE:

Parts removed from illustration for clarity.

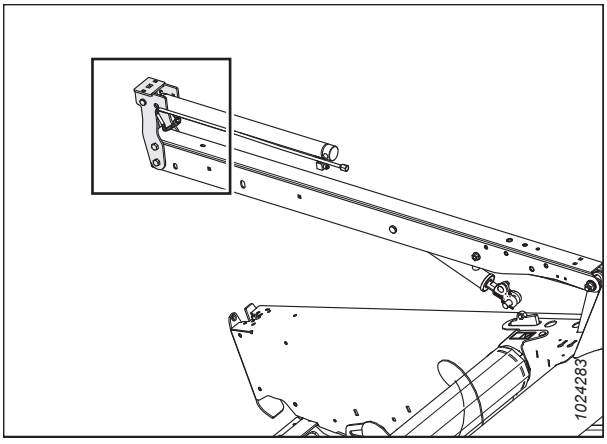

Figure 6.4: Right Arm – Center and Left Arms Similar

6.2.4 Lodged Crop Reel Finger Kit

The steel fingers provided in the Lodged Crop Reel Finger kit attach to the ends of every other tine bar and help to clear material in heavy, hard-to-cut crops such as lodged rice.

Each kit contains three steel fingers (for example, steel finger [A]) for the cam end of the reel and three fingers for the tail end. Hardware and installation instructions are included in the kit.

MD #B4831

IMPORTANT:

When operating a header with the reel lowered and in the aft position, lodged crop fingers could contact the draper deflectors. Contact will be greater if wide draper deflectors are installed.

IMPORTANT:

The Lodged Crop Fingers kit should not be installed on a header with an upper cross auger and either the Short Reel Brace kit or Rapid Reel Conversion kit, as the lodged crop fingers will contact the auger when the reel is in the full aft position.

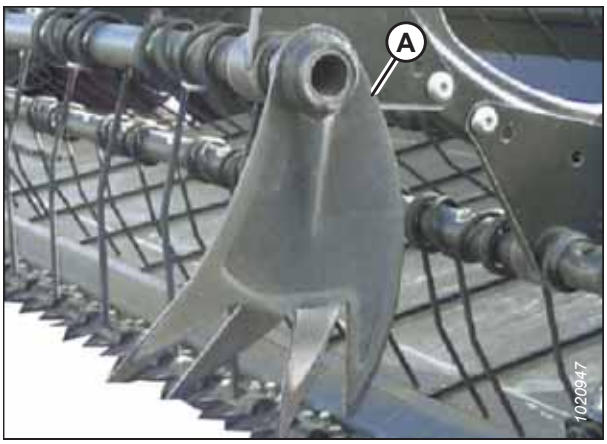

Figure 6.5: Lodged Crop Fingers

6.2.5 Reel Tine Tube Conversion Kit

These kits allow conversion from a six-bat reel to a nine-bat reel and conversion from a five-bat reel to a six-bat reel.

Five-bat to six-bat reels:

- FD130 – Plastic Fingers MD #B6344
- FD135 – Plastic Fingers MD #B6345

Six-bat to nine-bat reels:

- FD125 – Plastic Fingers MD #B5937
- FD130 – Plastic Fingers MD #B6347

NOTE:

You must also order additional endshields when converting the reel.

6.2.6 Reel Endshield Kit

The steel shields provided in the reel endshield kit attach to the ends of the reels and help to clear material in heavy, hard-to-cut crops. They are standard equipment on all headers, except those with nine-bat reels. Hardware and installation instructions are included in the kit.

See your MacDon Dealer for more information.

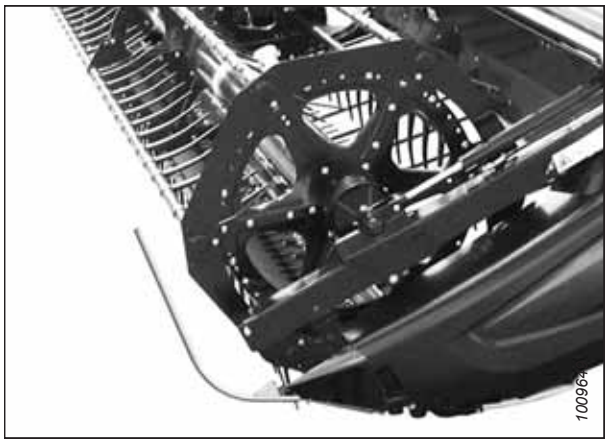

Figure 6.6: Reel Endshields

6.2.7 Tine Tube Reinforcing Kit

Tine tube reinforcing kits are available for five- and six-bat reels. They are designed to support high reel loads when cutting extremely heavy crops. Installation instructions are provided in the kit.

The following tine tube reinforcing kits are available:

- Five-Bat Reels – MD #B5825
- Six-Bat Reels – MD #B5826

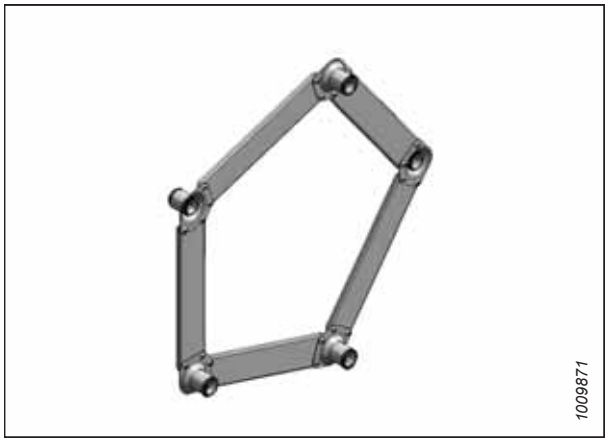

Figure 6.7: Five-Bat Reinforcing Kit Shown – Six-Bat Reinforcing Kit Similar

6.3 Cutterbar Kits

The cutterbar is located on the front of the header. It supports the knife and guards which is used to cut the crop.

6.3.1 Cutterbar Wearplate

Cutterbar wearplates are recommended for cutting on the ground when the soil is adhering to the steel.

All FD1 Series Headers are factory-equipped with wearplates. If worn-out, the following bundles can be ordered to replace all wearplates at once. Alternatively, refer to the parts catalog to service single wearplates.

- FD125 – MD #B4838
- FD130 – MD #B4839
- FD135 – MD #B4840
- FD140 – MD #B4841
- FD145 – MD #B5114

Figure 6.8: Cutterbar Wearplates

6.3.2 Knife Cutout Cover

Knife cutout covers attach to the endsheets and prevent cut crop, particularly severely lodged crop, from passing through the knifehead opening and accumulating in the knife drive box and endsheet.

Order the following kits according to your guard type:

- Regular Guards – MD #220101
- Stub Guards – MD #220103

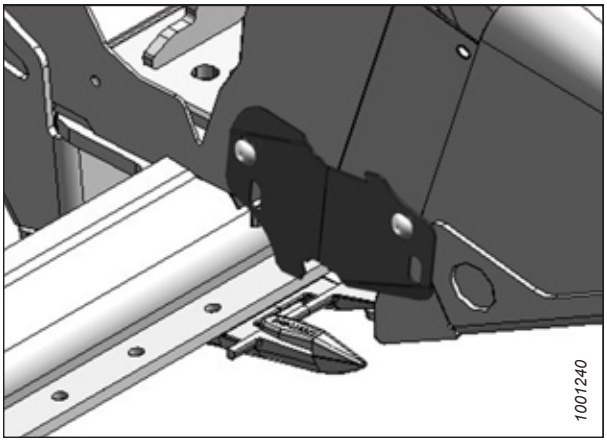

Figure 6.9: Knife Cutout Cover

6.3.3 Extended Center Filler

The Extended Center Filler kit (MD #B6450) includes a reinforced flap (3 mm [1/8 in.] thick) which extends onto the feed draper of a MacDon FM100 Float Module to help reduce loss when cutting crops such as beans and peas. Installation instructions are included with the kit.

MD #B6450

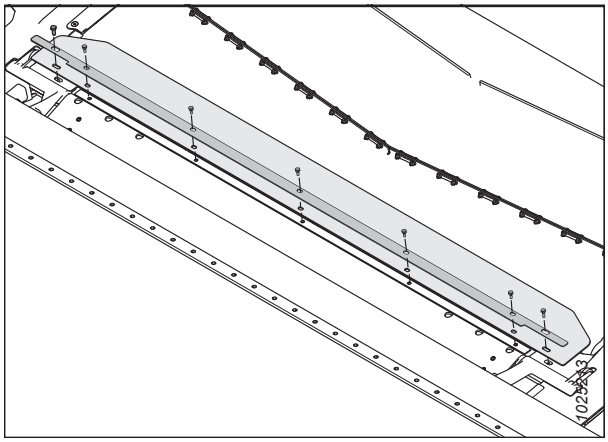

Figure 6.10: Extended Filler

6.3.4 Rock Retarder

The Rock Retarder kit consists of a steel angle that is bolted to the cutterbar immediately aft of the knife, and helps prevent rocks and large debris from being swept onto the drapers with the crop. Installation instructions are included with the kit.

Rock retarder (A)

Order bundles by header size:

- FD125, FD130, and FD135 – MD #B5084
- FD140 and FD145 – MD #B5085

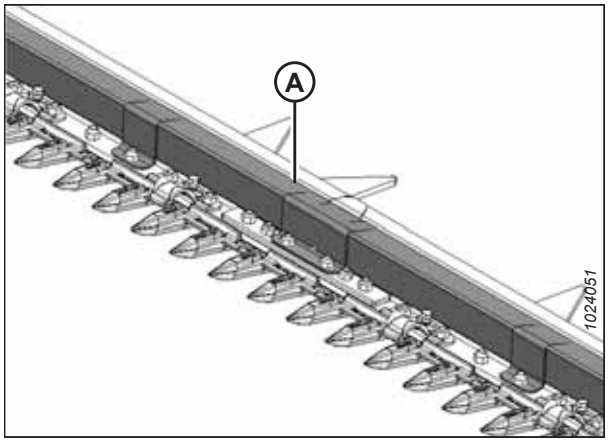

Figure 6.11: Rock Retarder

6.3.5 Stub Guard Conversion Kit

Stub guards, complete with top guides and adjuster shoes, are designed to cut tough crops.

Installation and adjustment instructions are included in the kits.

Order one of the following bundles according to your header size:

- FD125 – MD #B5011
- FD130 – MD #B5012
- FD135 – MD #B5013

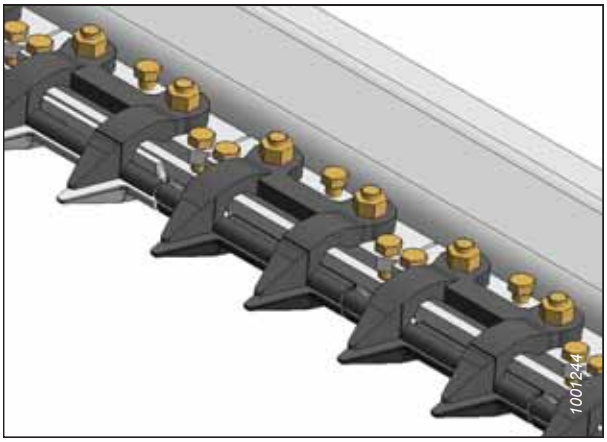

Figure 6.12: Stub Guards

6.3.6 Vertical Knives

These hydraulically driven knives can be installed in place of the standard divider cones. They help to minimize crop shatter at the dividers when harvesting canola.

Three types of kits are required to install vertical knives on the header:

- One set of knives – MD #B6410
- Two mounting kits (for the left and right sides of the header) – refer to "Knife Mounts" in Table *6.1, page 594*.
- One plumbing kit – refer to "Knife Plumbing" in Table *6.1, page 594*.

Table 6.1 Kits Required to Install Vertical Knives on a Header

Required Kit	Kits per Header
Knives	Order one of MD #B6410
Knife Mounts	Order the set of bundles according to your header configuration: **Non-European:** • One of MD #B9048 [57] • One of MD #B9051 [58] **European:** • One of MD #B6137 [59] • One of MD #B6138 [60]
Knife Plumbing	Order one of the following bundles according to your model of header: • FD125 – MD #B6265 • FD130 – MD #B6247 • FD135 – MD #B6248 • FD140 – MD #B6249 • FD145 – MD #B6250

57. The Left Vertical Knife Mount kit (MD #B9048) cannot be installed onto the header by itself and must be installed with the Right Vertical Knife Mount kit (MD #B6609).
58. The Right Vertical Knife Mount kit (MD #B9051) can be installed onto the header either by itself or with the Left Vertical Knife Mount kit (MD #B6608).
59. The Left Vertical Knife Mount kit (MD #B6137) cannot be installed onto the header by itself and must be installed with the Right Vertical Knife Mount kit (MD #B6138).
60. The Right Vertical Knife Mount kit (MD #B6138) can be installed onto the header either by itself or with the Left Vertical Knife Mount kit (MD #B6137).

6.3.7 Vertical Knife Mounts

The vertical knife mounts allow the installation of vertically oriented knives onto both ends of the header.

The vertical knives themselves are not sold by MacDon and must be purchased from a separate supplier.

Installation and adjustment instructions are included in the kits.

Order mount kits based on whether they will be installed on the left or right side of the header:

NOTE:

While the Right Vertical Knife Mount kit can be installed independently of the Left Vertical Knife Mount kit, the Left Vertical Knife Mount kit **must** be installed with the Right Vertical Knife Mount kit.

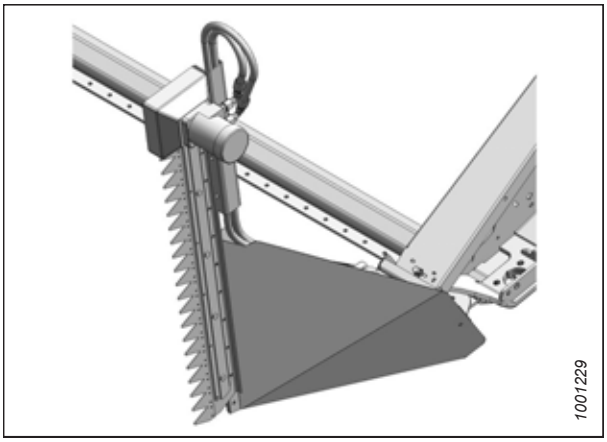

Figure 6.13: Vertical Knife Mount

Headers with Standard Reel Arms:

- Left – MD #B6608 (includes hardware and some plumbing. This mount requires installation of MD #B6609)
- Right – MD #B6609 (includes flow control, template, hardware, and some plumbing. This mount can be installed individually or with MD #B6608)

Headers with Short Reel Arms:

- Left – MD #B6137
- Right – MD #B6138 (includes flow control, template, hardware, and some plumbing. This mount can be installed individually or with MD #B6137)

6.3.8 Vertical Knife Plumbing Kits

Order one of the following bundles according to your header type:

- FD125 – MD #B6265
- FD130 – MD #B6247
- FD135 – MD #B6248
- FD140 – MD #B6249
- FD145 – MD #B6250

6.4 Header Kits

Header options add features or enhancements to the header frame rather than a specific system or function.

6.4.1 Divider Quick Latch Kit

Divider Quick Latch kits attach to the endsheets. They allow for quick removal and storage of endsheet divider cones and, if required, reduce the transport width of the header. Installation instructions are included in the kit.

MD #B6158

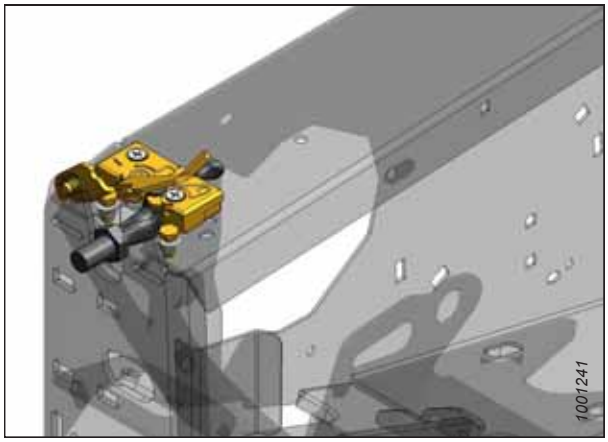

Figure 6.14: Divider Latch

6.4.2 Stabilizer Wheels

Stabilizer wheels help stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. Installation and adjustment instructions are included in the kit.

Available as an attachment for use with FD130, FD135, FD140, and FD145 headers.

MD #C1986

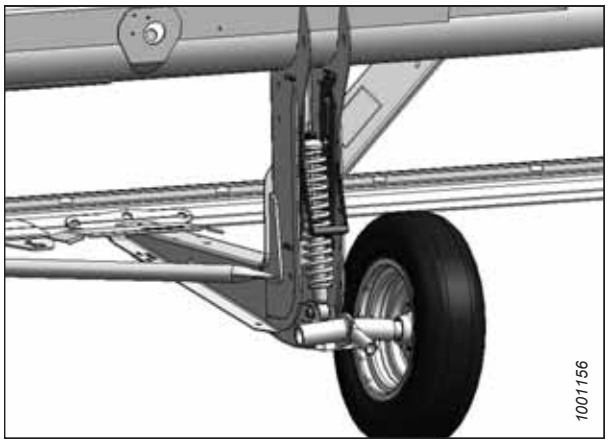

Figure 6.15: Stabilizer Wheel

6.4.3 Secondary Stabilizer Wheel

The secondary stabilizer wheel is added to existing stabilizer wheels to help stabilize the header in field conditions that would otherwise cause the header to bounce and result in uneven cutting height. Installation and adjustment instructions are included with the kit.

Available as an attachment for use with FD130, FD135, FD140, and FD145 headers.

MD #B6179[61]

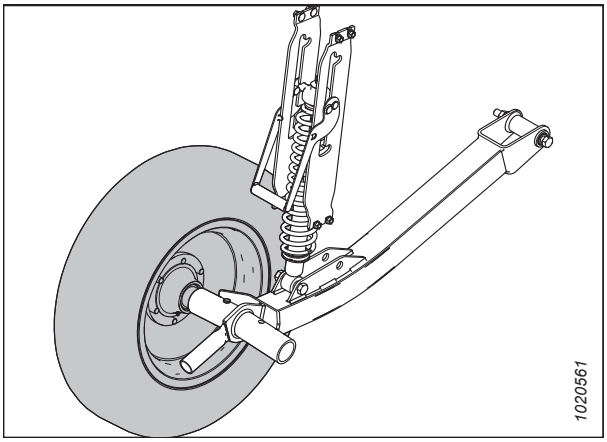

Figure 6.16: Secondary Stabilizer Wheel

6.4.4 Stabilizer Wheels and Transport Package

Stabilizer wheels help stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. The wheels included in this kit can also be used to tow the header. Installation and adjustment instructions are included in the kit.

Stabilizer/transport wheels help to stabilize the header in field conditions that would otherwise cause the header to bounce, resulting in uneven cutting heights. This system is similar to the Stabilizer Wheel option. For instructions, refer to *6.4.2 Stabilizer Wheels, page 596*.

Stabilizer/transport wheels are used to convert the header into transport mode for slow-speed towing behind a properly-configured combine (or agricultural tractor). A tow pole and installation instructions are included in the kit.

MD #C2007

61. Kit consists of one wheel assembly; two kits are required to upgrade both sides of the header.

6.4.5 Stubble Light Kit

Stubble lights are used in low light conditions and allow the operator to see the stubble cut behind the header. The Stubble Light Mounting kit is available for MacDon FD130, FD135, FD140, and FD145 headers. This kit is currently compatible with John Deere combines only.

MD #B6634

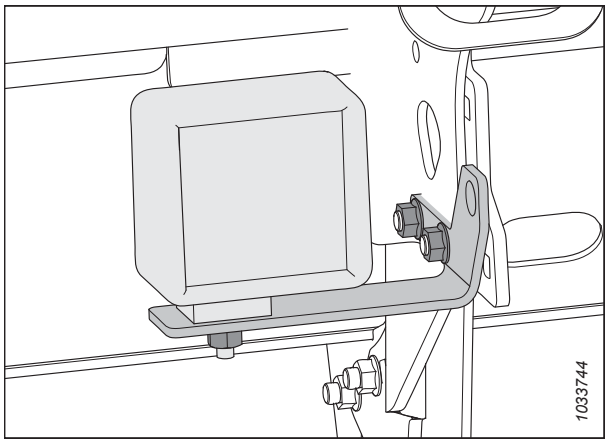

Figure 6.17: Stubble Light Installed on Headers Equipped with Transport

6.4.6 Skid Shoe Kits

Skid Shoe kits provide improved performance when cutting low to the ground.

Installation instructions are included in the kits.

- MD #B5615 – Inboard Skid Shoes
- MD #B4963 – Outboard Skid Shoes

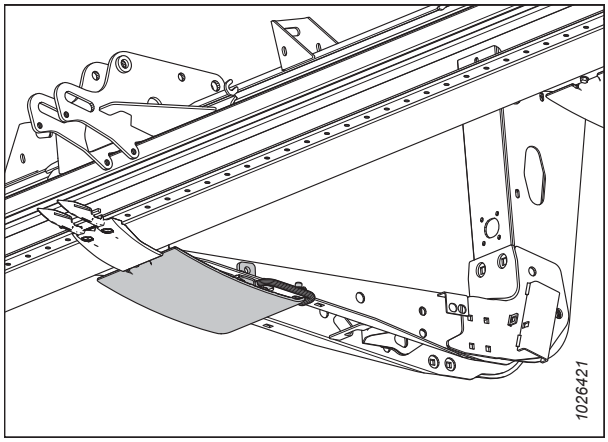

Figure 6.18: Center Skid Shoe – Inboard Shown, Outboard Similar

6.4.7 Steel Skid Shoes

Steel skid shoes offer extra abrasion resistance.

IMPORTANT:

Not recommended for wet mud or conditions prone to sparking.

Installation instructions are included with the kit.

MD #B9053

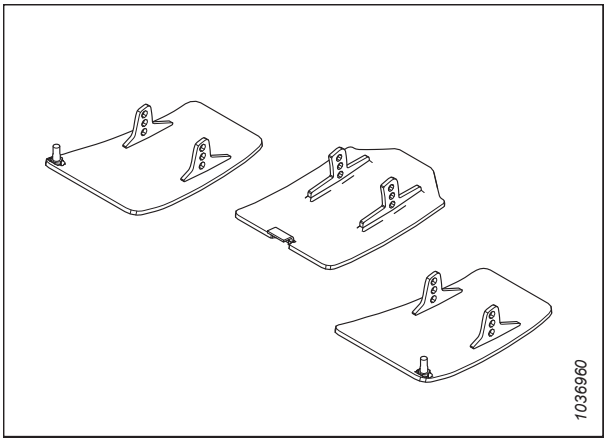

Figure 6.19: Steel Skid Shoe

6.5 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.

6.5.1 FM100 Dual Auto Header Height Control Sensor Kit

This kit adds two sensors to the float linkage, adding automatic lateral tilt compensation for the header. When installed, the combine will automatically tilt the feeder house from side to side to follow uneven terrain during operation.

NOTE:

Not recommended for extremely hilly conditions.

Installation instructions are included in the kit.

MD #B6211

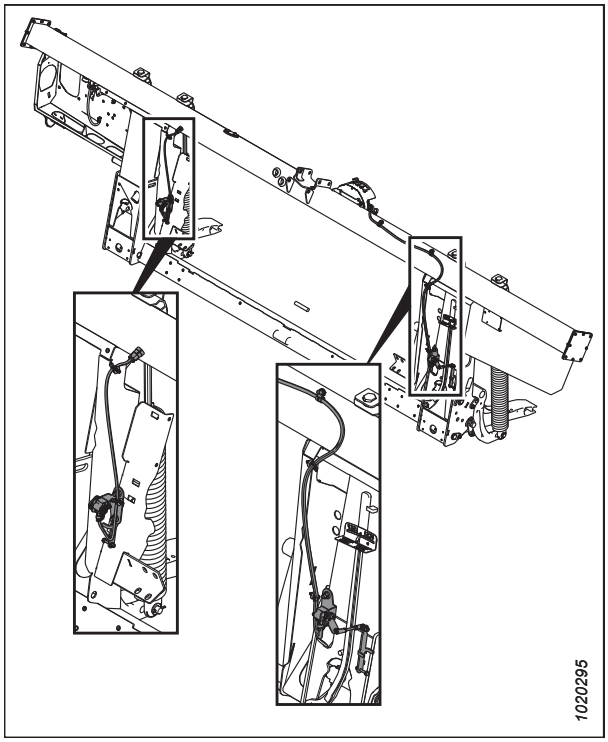

Figure 6.20: Dual AHHC Sensors

6.5.2 FM100 Feed Auger Flighting

The auger flighting on the FM100 Float Module can be configured to specific combines and crop conditions.

For example, additional auger flighting (A) can be added to the auger drum to achieve different performance objectives. Refer to *4.2 FM100 Feed Auger Configurations, page 340* for combine/crop specific configurations.

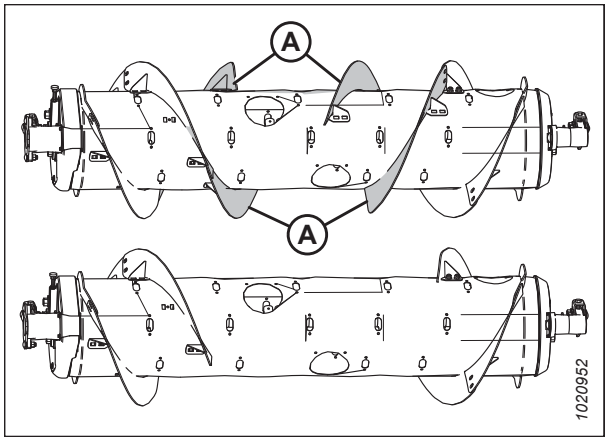

Figure 6.21: FM100 Feed Auger Flighting

6.5.3 Floating Crop Dividers

Floating crop 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.

MD #B7346

MD #B7384

NOTE:

To ensure that the Floating Crop Divider kit (MD #B7346) is compatible with FD1 headers, FD1 Adapter Plate (MD #B7384) is needed.

NOTE:

Do **NOT** use the floating crop divider for single reel headers as the reel drives interfere with the top deflector.

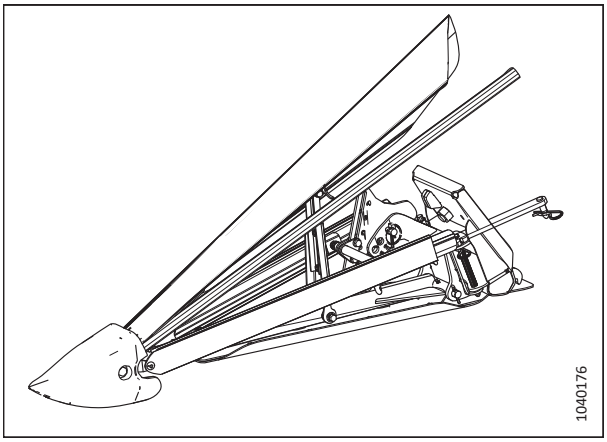

Figure 6.22: Floating Crop Divider

6.5.4 In-Cab Draper Speed Control Kit

Installing this kit allows Operators to adjust the side draper's speed from the combine's cab.

NOTE:

The John Deere cab draper control is shown in the illustration below. The Case New Holland and generic cab draper control look and operate similarly to it.

Installation instructions are included in the kit.

- MD #B6701 – Cab Draper Control, John Deere
- MD #B6702 – Cab Draper Control, Case New Holland
- MD #B6703 – Cab Draper Control, Generic

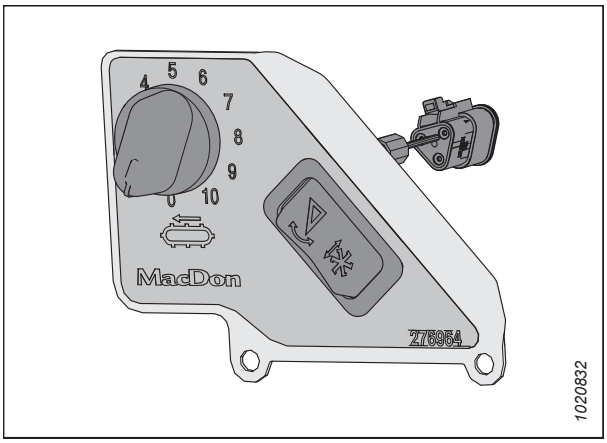

Figure 6.23: In-Cab Draper Speed Control Panel

6.5.5 Wide Draper Deflector

Wide metal draper deflectors attach to the inboard side of the endsheets to prevent material from falling through the gap between the endsheet and the draper.

Installation instructions are included with the kit.

IMPORTANT:

The wide draper deflector is **NOT** compatible with the Lodged Crop Reel Finger (MD #B4831) option.

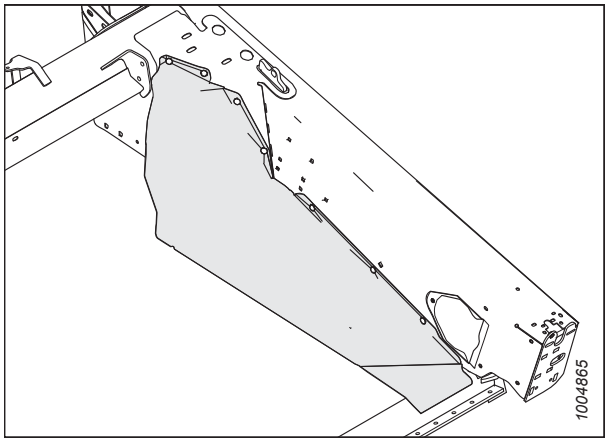

Figure 6.24: Wide Draper Deflector

6.5.6 Draper Clips

Draper clips offer additional wear protection for the draper cleats. They may prove useful in situations where conditions are dry or consistently hot.

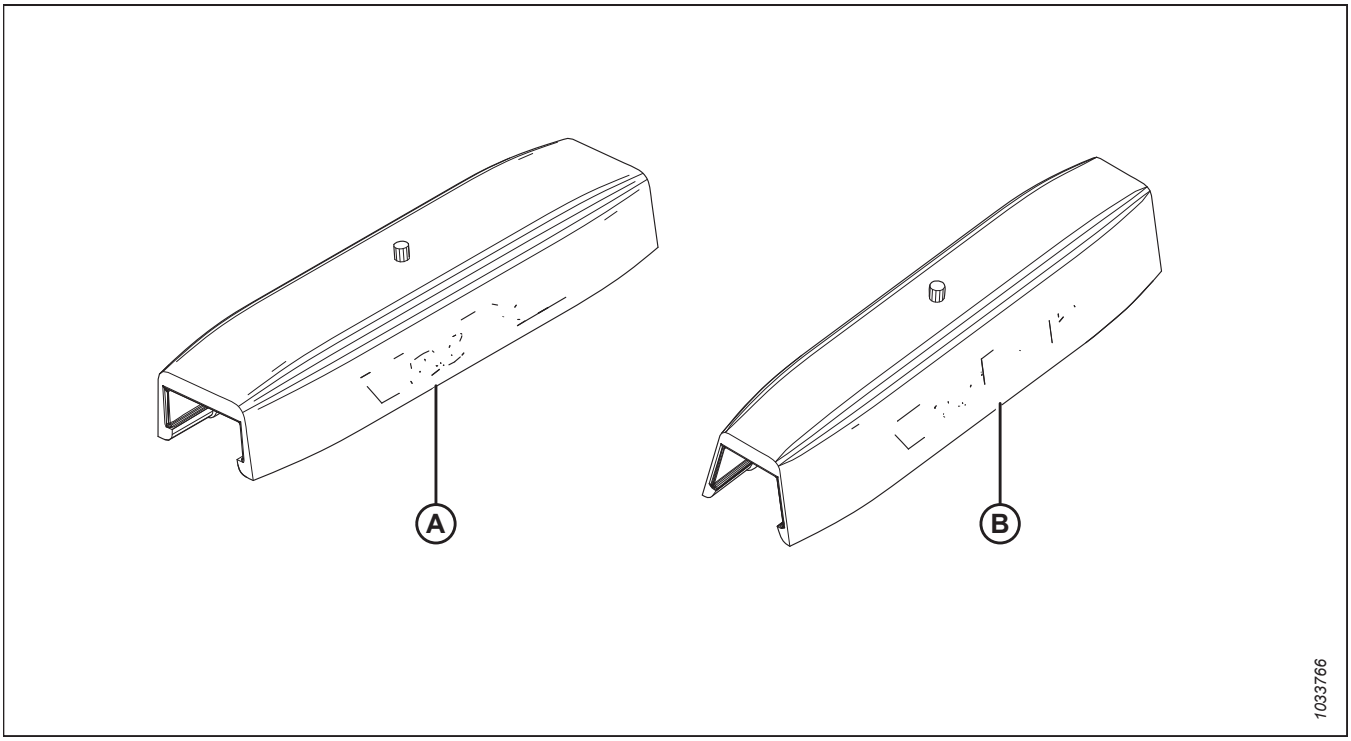

Figure 6.25: Draper Clips

Installation instructions are included with the kit.

- MD #294859 for square cleats (A) (for drapers MD #172195, MD #172196, MD #172197, MD #172198)
- MD #294858 for tapered cleats (B) (for drapers MD #220635, MD #220636, MD #220637, MD #220638, MD #220639, MD #220640)

6.5.7 Stripper Bar Kit

Stripper bars improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

Select the stripper bar kit based on combine feeder house width. For information, refer to Table *6.2, page 603*.

NOTE:

MD #B6043 is for John Deere S Series only.

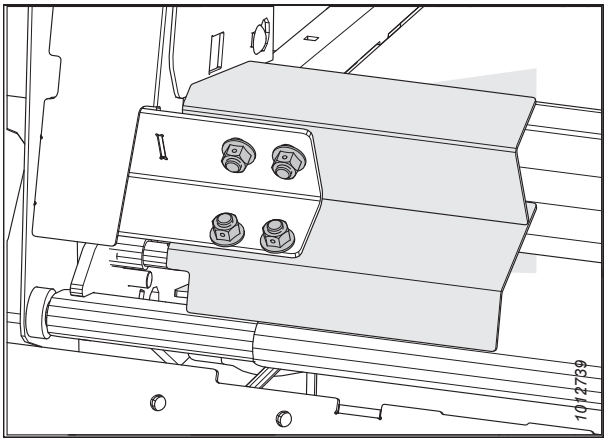

Figure 6.26: Stripper Bar Kit

NOTE:

Installation instructions are included in the kits.

Table 6.2 Stripper Bar Configurations and Recommendations

Bundle ()	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.)
B6043	265 mm (10 1/2 in.) (with cutout)	1317 mm (52 in.)	For John Deere S Series only
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

6.5.8 Auger Dent Repair Kit

This kit allows Operators to repair dents close to the finger/guide area that the feed auger may have sustained during regular use.

Attachment hardware and installation instructions are included in the kit.

MD #237563

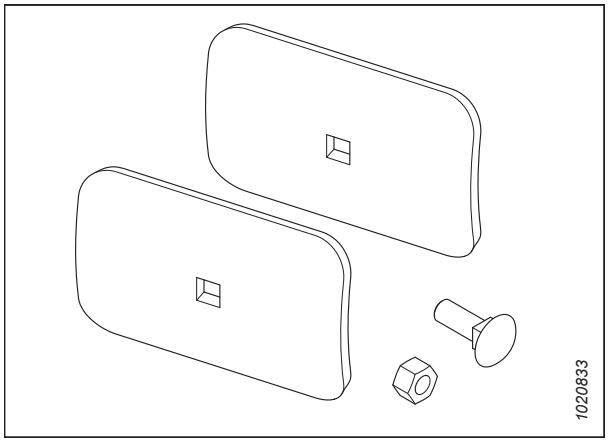

Figure 6.27: Auger Dent Repair Kit

6.5.9 Upper Cross Auger

The upper cross auger (UCA) sits in front of the backtube and 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-feed crops.

UCA (A) can be ordered from the following list of kits according to your header model:

For FD1 North American headers:

- FD125 – MD #B9012
- FD130 – MD #B9011
- FD135 – MD #B9010
- FD140 – MD #B9009
- FD145[62] – MD #B9049

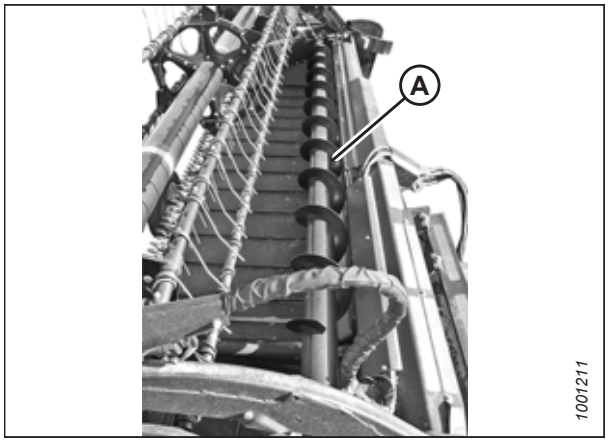

Figure 6.28: Upper Cross Auger

62. This is a 12.2 m (40 ft.) auger, and is backtube mounted. It does **NOT** span the full length of the header.

6.5.10 European Combine Upper Cross Auger

The European combine upper cross auger (UCA) sits in front of the header's backtube and improves crop feeding at the center of the header in heavy crop conditions.

UCA (A) is ideal for high-volume harvesting of forages, oats, canola, rapeseed, mustard, and other tall, bushy, and hard-to-feed crops.

IMPORTANT:

This optional kit is **ONLY** available for European markets, and should **ONLY** be used on combines. Do **NOT** use the European Combine UCA on self-propelled windrowers, as damage will occur at higher operating speeds.

Installation instructions are included with the kit.

Order from the following bundles according to header model:

- FD125 – MD #B9044
- FD130 – MD #B9045
- FD135 – MD #B9046
- FD140 – MD #B9047
- FD145 – MD #B9050[63]

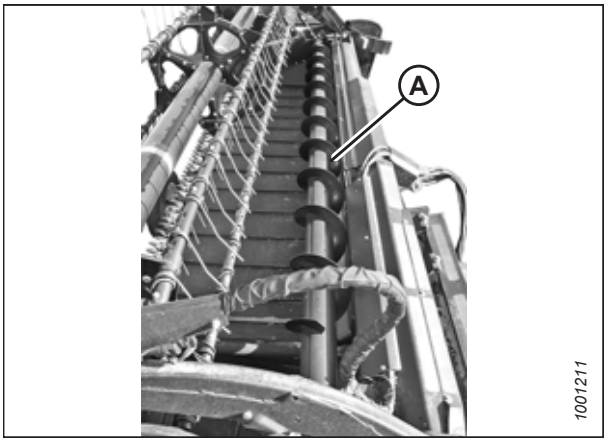

Figure 6.29: Upper Cross Auger

6.5.11 Rice Divider Rods

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.

Installation instructions are included in the kit.

MD #B5609

Figure 6.30: Rice Divider Rod

63. This is a 12.2 m (40 ft.) auger, and is backtube-mounted. It does **NOT** span the full length of the header.

6.5.12 Full Interface Filler Kit

The Full Interface Filler Kit eliminates the gap between the feed deck and the header frame.

NOTE:

This kit is only available for European-configured headers.

Installation instructions are included in the kit.

MD #B6446

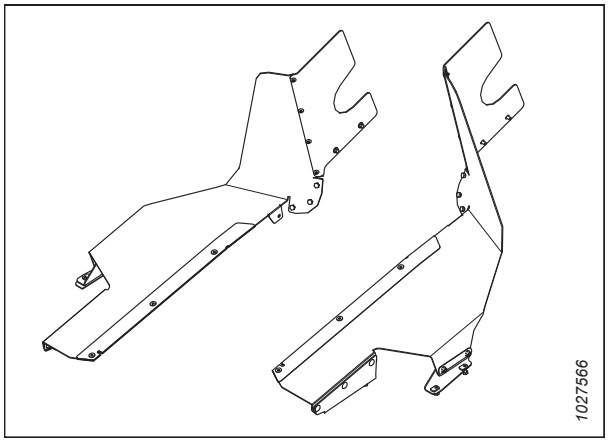

Figure 6.31: Full Interface Filler Kit

Chapter 7: Troubleshooting

Troubleshooting tables are provided to help you diagnose and solve any problems you may have with the header.

7.1 Crop Loss

Use the following table to diagnose and correct crop loss problems.

Table 7.1 Troubleshooting Crop Loss at Cutterbar

Problem	Solution	Refer to
Symptom: Does not pick up downed crop		
Cutterbar too high	Lower cutterbar	• *3.8.1 Cutting off Ground, page 59* • *3.8.2 Cutting on Ground, page 65*
Header angle too low	Increase header angle	*3.8.5 Header Angle, page 84*
Reel too high	Lower reel	*3.8.10 Reel Height, page 97*
Reel too far back	Move reel forward	*3.8.11 Reel Fore-Aft Position, page 103*
Ground speed too fast for reel speed	Increase reel speed or reduce ground speed	• *3.8.6 Reel Speed, page 92* • *3.8.7 Ground Speed, page 93*
Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	*3.8.12 Reel Tine Pitch, page 116*
Reel fingers not lifting crop sufficiently	Install crop lifters	See your MacDon Dealer
Symptom: Heads shattering or breaking off		
Reel speed too fast	Reduce reel speed	*3.8.6 Reel Speed, page 92*
Reel too low	Raise reel	*3.8.10 Reel Height, page 97*
Ground speed too fast	Reduce ground speed	*3.8.7 Ground Speed, page 93*
Crop too ripe	Operate at night when humidity is higher	—
Symptom: Material accumulating in gap between cut-out in endsheet and knifehead		
Crop heads leaning away from knifehead hole in endsheet	Add knifehead shields (except in damp or sticky soils)	*5.12.8 Knifehead Shield, page 482*
Symptom: Strips of uncut material		
Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
Broken knife sections	Replace broken sections	*5.12.1 Replacing Knife Section, page 469*
Symptom: Excessive bouncing at normal field speed		
Float set too light	Adjust header float	*3.8.3 Header Float, page 67*
Symptom: Divider rod running down standing crop		
Divider rods too long	Remove divider rod	*3.8.13 Crop Dividers, page 118*
Symptom: Crop not being cut at ends		
Reel not frowning or not centered in header	Adjust reel horizontal position or reel frown	• *3.8.11 Reel Fore-Aft Position, page 103* • *5.17.2 Reel Frown, page 546*

Table 7.1 Troubleshooting Crop Loss at Cutterbar (continued)

Problem	Solution	Refer to
Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely but still keep sections from lifting off guards	• *Checking and Adjusting Hold-Downs with Pointed Guards, page 478*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.12 Knife, page 469*
Header is not level	Level header	*3.10 Leveling Header, page 317*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position and/or finger pitch	• *3.8.11 Reel Fore-Aft Position, page 103* • *3.8.12 Reel Tine Pitch, page 116*
Divider runs down thick crop at ends preventing proper feeding due to material bridging the guards	Replace 3–4 end guards with short guards	• *5.12.7 Knife Guards, page 475* • *6.3.5 Stub Guard Conversion Kit, page 593* • See your MacDon Dealer
Symptom: Bushy or tangled crop flows over divider rod, builds up on endsheets		
Divider rods providing insufficient separation	Install long divider rods	*3.8.13 Crop Dividers, page 118*
Symptom: Cut grain falling ahead of cutterbar		
Ground speed too slow	Increase ground speed	*3.8.7 Ground Speed, page 93*
Reel speed too slow	Increase reel speed	*3.8.6 Reel Speed, page 92*
Reel too high	Lower reel	*3.8.10 Reel Height, page 97*
Cutterbar too high	Lower cutterbar	• *3.8.1 Cutting off Ground, page 59* • *3.8.2 Cutting on Ground, page 65*
Reel too far forward	Move reel back on arms	*3.8.11 Reel Fore-Aft Position, page 103*
Cutting at speeds over 10 km/h (6 mph) with 10-tooth reel drive sprocket	Replace with 19-tooth reel drive sprocket	*5.18.3 Reel Drive Sprocket, page 572*
Worn or broken knife components	Replace components	*5.12 Knife, page 469*

7.2 Cutting Action and Knife Components

Use the following tables to diagnose and correct the cutting action or knife component problems.

Table 7.2 Troubleshooting Cutting Action and Knife Components

Problem	Solution	Refer to
Symptom: Ragged or uneven cutting of crop		
Knife hold-down clips not adjusted properly	Adjust hold-down clips	• *Checking and Adjusting Hold-Downs with Pointed Guards, page 478*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.12 Knife, page 469*
Knife is not operating at recommended speed	Check the combine engine speed and feeder house	The combine operator's manual
Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.8.6 Reel Speed, page 92* • *3.8.7 Ground Speed, page 93*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	• *3.8.11 Reel Fore-Aft Position, page 103* • *3.8.12 Reel Tine Pitch, page 116*
Cutterbar too high	Lower cutting height	*3.8.1 Cutting off Ground, page 59* or *3.8.2 Cutting on Ground, page 65*
Header angle too flat	Steepen header angle	*3.8.5 Header Angle, page 84*
Bent knife causing binding of cutting parts	Straighten bent knife and align guards	*5.12.7 Knife Guards, page 475*
Cutting edge of guards not close enough or parallel to knife sections	Align guards	*5.12.7 Knife Guards, page 475*
Tangled/tough-to-cut crop	Install short guards	• MacDon Dealer • *Checking and Adjusting Hold-Downs with Pointed Guards, page 478* or *Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down, page 482* • *6.3.5 Stub Guard Conversion Kit, page 593*
Reel too far back	Move reel forward	*3.8.11 Reel Fore-Aft Position, page 103*
Loose knife drive belt	Adjust drive belt tension	*Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*
Symptom: Knife plugging		
Reel too high or too far forward	Lower reel or move reel rearward	• *3.8.10 Reel Height, page 97* • *3.8.11 Reel Fore-Aft Position, page 103*
Ground speed too slow	Increase ground speed	*3.8.7 Ground Speed, page 93*

Table 7.2 Troubleshooting Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Loose knife drive belt	Adjust drive belt tension	*Checking and Tensioning Untimed Double-Knife Drive Belts Knife Drive Belts, page 498*
Improper knife hold-down clip adjustment	Adjust hold-down	• *Checking and Adjusting Hold-Downs with Pointed Guards, page 478*
Dull or broken knife section	Replace knife section	*5.12.1 Replacing Knife Section, page 469*
Bent or broken guards	Align or replace guards	*5.12.7 Knife Guards, page 475*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.8.11 Reel Fore-Aft Position, page 103* • *3.8.12 Reel Tine Pitch, page 116*
Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust header frown	• *5.17.1 Reel-to-Cutterbar Clearance, page 542* • *5.17.2 Reel Frown, page 546*
Float too heavy	Adjust springs for lighter float	*3.8.3 Header Float, page 67*
Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	*3.8.2 Cutting on Ground, page 65*
Mud or dirt build-up on cutterbar	Flatten header angle	*3.8.5 Header Angle, page 84*
Knife is not operating at recommended speed	Check engine speed of combine or header knife speed	*Checking Knife Speed, page 97*
Symptom: Excessive header vibration		
Knife hold-down clips not adjusted properly	Adjust hold-down clips	• *Checking and Adjusting Hold-Downs with Pointed Guards, page 478* or • *Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down, page 482*
Excessive knife wear	Replace knife	• *5.12.2 Removing Knife, page 470* • *5.12.5 Installing Knife, page 472*
Knife not operating at recommended speed	Check engine speed of combine	Combine operator's manual
Excessive knife wear	Replace knife	• *5.12.2 Removing Knife, page 470* • *5.12.5 Installing Knife, page 472*
Loose or worn knifehead pin or drive arm	Tighten or replace parts	*5.12.1 Replacing Knife Section, page 469*
Symptom: Excessive vibration of float module and header		
Incorrect knife speed	Adjust knife speed	*Checking Knife Speed, page 97*

Table 7.2 Troubleshooting Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Driveline U-joints worn	Replace U-joints	• *Removing Double-Reel Drive U-Joint, page 574* • *Installing Double-Reel U-Joint, page 575*
Bent cutterbar	Straighten cutterbar	MacDon Dealer
Symptom: Excessive breakage of knife sections or guards		
Knife hold-down clips not adjusted properly	Adjust hold-down clips	• *Checking and Adjusting Hold-Downs with Pointed Guards, page 478* or • *Checking and Adjusting Hold-Down with Stub Guards – Forged Hold-Down, page 482*
Cutterbar operating too low in stony conditions	Raise cutterbar using skid shoes	*3.8.2 Cutting on Ground, page 65*
Float is set too heavy	Adjust float springs for lighter float	*3.8.3 Header Float, page 67*
Bent or broken guard	Straighten or replace guard	*5.12.7 Knife Guards, page 475*
Header angle too steep	Flatten header angle	*3.8.5 Header Angle, page 84*
Symptom: Knife back breakage		
Bent or broken guard	Straighten or replace guard	*5.12.7 Knife Guards, page 475*
Worn knifehead pin	Replace knifehead pin	• *5.12.3 Removing Knifehead Bearing, page 471* • *5.12.4 Installing Knifehead Bearing, page 472*
Dull knife	Replace knife	*5.12.2 Removing Knife, page 470*
Knife speed too fast	Lower knife speed	*Checking Knife Speed, page 97*
Loose knife section hardware	Check/tighten all knife hardware	—

7.3 Reel Delivery

Use the following tables to determine the cause of reel delivery problems and the recommended solutions.

Table 7.3 Troubleshooting Reel Delivery

Problem	Solution	Refer to
Symptom – Reel not releasing material in normal standing crop		
Reel speed too fast	Reduce reel speed	*3.8.6 Reel Speed, page 92*
Reel too low	Raise reel	*3.8.10 Reel Height, page 97*
Reel tines too aggressive	Reduce cam setting	*3.8.12 Reel Tine Pitch, page 116*
Reel too far back	Move reel forward	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom – Reel not releasing material in lodged and standing crop (reel fully lowered)		
Reel tines too aggressive for standing crop	Reduce cam setting (one or two)	*3.8.12 Reel Tine Pitch, page 116*
Symptom – Wrapping on reel end		
Reel tines too aggressive	Reduce cam setting	*3.8.12 Reel Tine Pitch, page 116*
Reel too low	Raise reel	*3.8.10 Reel Height, page 97*
Reel speed too fast	Reduce reel speed	*3.8.6 Reel Speed, page 92*
Crop conditions	Install optional endshields	MacDon Dealer
Reel not centered in header	Center reel in header	*5.17.4 Centering Double Reels, page 548*
Symptom – Reel releases crop too quickly		
Reel tines not aggressive enough	Increase cam setting	*3.8.12 Reel Tine Pitch, page 116*
Reel too far forward	Move reel back	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom – Reel will not lift		
Reel lift couplers are incompatible or defective	Change quick coupler	MacDon dealer
Symptom – Reel will not turn		
Quick couplers not properly connected	Connect couplers	*4 Header Attachment/Detachment, page 339*
Reel drive chain disconnected or broken	Connect/replace chain	• *5.18.6 Replacing Drive Chain, page 578* • *5.18.7 Replacing Single-Reel Header Drive Chain, page 580*

Table 7.3 Troubleshooting Reel Delivery (continued)

Problem	Solution	Refer to
Symptom – Reel motion uneven under no load		
Excessive slack in reel drive chain	Tighten chain	*Tightening Reel Drive Chain, page 571*
Symptom – Reel motion is uneven or stalls in heavy crops		
Reel speed too fast	Reduce reel speed	*3.8.6 Reel Speed, page 92*
Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	*3.8.12 Reel Tine Pitch, page 116*
Reel too low	Raise reel	*3.8.10 Reel Height, page 97*
Relief valve on the combine (not on combine float module) has low relief pressure setting	Increase relief pressure to manufacturer's recommendations	Combine operator's manual
Low oil reservoir level on the combine **NOTE:** Sometimes there is more than one reservoir	Fill to proper level	Combine operator's manual
Relief valve malfunction	Replace relief valve	Combine operator's manual
Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace with high torque (10-tooth or 14-tooth) reel drive sprocket	*5.18.3 Reel Drive Sprocket, page 572*
Symptom – Plastic fingers cut at tip		
Insufficient reel to cutterbar clearance	Increase clearance	*5.17.1 Reel-to-Cutterbar Clearance, page 542*
Symptom – Plastic fingers bent rearward at tip		
Reel digging into ground with reel speed slower than ground speed	Raise header	• *3.8.1 Cutting off Ground, page 59* • *3.8.2 Cutting on Ground, page 65*
Reel digging into ground with reel speed slower than ground speed	Decrease header tilt	*3.8.5 Header Angle, page 84*
Reel digging into ground with reel speed slower than ground speed	Move reel aft	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom – Plastic fingers bent forward at tip		
Reel digging into ground with reel speed faster than ground speed	Raise header	• *3.8.1 Cutting off Ground, page 59* • *3.8.2 Cutting on Ground, page 65*
Reel digging into ground with reel speed faster than ground speed	Decrease header tilt	*3.8.5 Header Angle, page 84*
Reel digging into ground with reel speed faster than ground speed	Move reel aft	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom – Plastic fingers bent close to tine tube		

Table 7.3 Troubleshooting Reel Delivery (continued)

Problem	Solution	Refer to
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Correct plugging/cutting issues	*3.11 Unplugging Cutterbar, page 319*
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Stop reel before plugging becomes excessive	*3.11 Unplugging Cutterbar, page 319*

7.4 Header and Drapers

Use the following tables to determine the issue with the header and the drapers and find the recommended repair procedure.

Table 7.4 Header and Drapers Troubleshooting

Problem	Solution	Refer to
Symptom: Insufficient header lift		
Low relief pressure	Increase relief pressure	MacDon Dealer
Symptom: Insufficient side draper speed		
Speed control set too low	Increase speed control setting	*3.8.8 Side Draper Speed, page 94*
Combine header drive too slow	Adjust to correct speed for combine model	Combine operator's manual
Symptom: Insufficient feed draper speed		
Relief pressure too low	Test side draper hydraulic system	MacDon Dealer
Worn out gear pump	Replace gear pump	MacDon Dealer
Combine header drive too slow	Adjust to correct speed for combine model	Combine operator's manual
Symptom: Feed draper will not move		
Drapers are loose	Tighten drapers	*5.14.2 Checking and Adjusting Feed Draper Tension, page 503*
Drive or idler roller wrapped with material	Loosen draper and clean rollers	*5.14.2 Checking and Adjusting Feed Draper Tension, page 503*
Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	*5.14.2 Checking and Adjusting Feed Draper Tension, page 503*
Roller bearing seized	Replace roller bearing	*5.16.6 Draper Roller Maintenance, page 532* • *Removing Feed Draper Drive Roller Bearing, page 507*
Low hydraulic oil	Fill the combine hydraulic oil reservoir to full level	Combine operator's manual
Incorrect relief setting at flow control valve	Adjust relief setting	MacDon Dealer
Drapers are loose	Tighten drapers	*5.16.3 Checking and Adjusting Draper Tension, page 525*
Drive or idler roller wrapped with material	Loosen draper and clean rollers	*5.16.3 Checking and Adjusting Draper Tension, page 525*
Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	*5.16.3 Checking and Adjusting Draper Tension, page 525*
Roller bearing seized	Replace roller bearing	*5.16.6 Draper Roller Maintenance, page 532*
Low hydraulic oil	Fill combine hydraulic oil reservoir to full level	Combine operator's manual
Incorrect compensator setting at pump	Adjust compensator setting	MacDon Dealer
Symptom: Side Draper stalling		
Material not feeding evenly off knife	Lower reel	*3.8.10 Reel Height, page 97*

Table 7.4 Header and Drapers Troubleshooting (continued)

Problem	Solution	Refer to
Material not feeding evenly off knife	Install stub guards	• *5.12.7 Knife Guards, page 475* • *6.3.5 Stub Guard Conversion Kit, page 593* • MacDon Dealer
Symptom: Hesitation in flow of bulky crop		
Header angle too low	Increase header angle	*3.8.5 Header Angle, page 84*
Material overload on drapers	Increase side draper speed	*3.8.8 Side Draper Speed, page 94*
Material overload on drapers	Install upper cross auger	*6.5.9 Upper Cross Auger, page 604*
Material overload on drapers	Add flighting extensions	MacDon Dealer
Symptom: Drapers back-feed		
Drapers running too slow in heavy crop	Increase draper speed	*3.8.8 Side Draper Speed, page 94*
Symptom: Crop is thrown across opening and under opposite side draper		
Drapers running too fast in light crop	Reduce draper speed	*3.8.8 Side Draper Speed, page 94*
Symptom: Material accumulates inside or under front edge of draper		
Deck height improperly adjusted	Adjust deck height	*5.16.5 Adjusting Deck Height, page 529*
Symptom: Material accumulating on end deflectors and releasing in bunches		
End deflectors too wide	For headers with manual deck shift only, trim deflector or replace with narrow deflector (MD #172381)	*3.11 Unplugging Cutterbar, page 319*

7.5 Cutting Edible Beans

Use the following tables to diagnose and correct cutting edible bean problems.

Table 7.5 Cutting Edible Beans Troubleshooting

Problem	Solution	Refer to
Symptom: Plants being stripped and complete or partial plants left behind		
Header off ground	Lower header to ground and run on skid shoes and/or cutterbar	*3.8.2 Cutting on Ground, page 65*
Float set too light—rides on high spots and does not lower soon enough	Set float to 335–338 N (75–85 lbf). Increase or decrease as necessary to prevent header from bouncing excessively or plowing into soft ground	*3.8.3 Header Float, page 67*
Reel too high with cylinders fully retracted	Adjust reel height	*3.8.10 Reel Height, page 97*
Finger pitch not aggressive enough	Adjust finger pitch	*3.8.12 Reel Tine Pitch, page 116*
Reel too far aft	Move reel forward until the fingertips skim the soil surface with header on the ground and the header angle properly adjusted	*3.8.11 Reel Fore-Aft Position, page 103*
Header angle too shallow	Adjust header angle	*Adjusting Header Angle from Combine, page 86*
Header angle too shallow	Increase header angle by fully retracting lift cylinders (if cutting on ground)	*Adjusting Header Angle from Combine, page 86*
Reel too slow	Adjust reel speed to be marginally faster than ground speed	*3.8.6 Reel Speed, page 92*
Ground speed too fast	Lower ground speed	*3.8.7 Ground Speed, page 93*
Skid shoes too low	Raise skid shoes to highest setting	*3.8.2 Cutting on Ground, page 65*
Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install plastic wear strips on bottom of cutterbar and skid shoes	—
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar and raises cutterbar off the ground	Ground too wet – allow soil to dry	—
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar and raises cutterbar off the ground	Manually clean the bottom of cutterbar when excessive accumulation occurs	—
Plastic wear strip for cutterbar has been installed over top of steel wearplates	Remove steel cutterbar wearplates when installing the plastic wear strips for cutterbar	—
Header not level	Level header	*3.10 Leveling Header, page 317*
Worn or damaged knife sections	Replace sections or replace knife	*5.12.1 Replacing Knife Section, page 469*
Parts of vines get caught in pointed guard tip. (Occurs more in row-cropped beans that are hilled from cultivating.)	Install short guard conversion kit	*6.3.5 Stub Guard Conversion Kit, page 593*
Symptom: Excessive losses at dividers		

Table 7.5 Cutting Edible Beans Troubleshooting (continued)

Problem	Solution	Refer to
Divider rod running down crop and shattering pods	Remove divider rod	*3.8.13 Crop Dividers, page 118*
Vines and plants build up on endsheet	Install divider rod	*3.8.13 Crop Dividers, page 118*
Symptom: Plant vines pinched between top of draper and cutterbar		
Cutterbar fills with debris when draper to cutterbar gap is properly adjusted	Raise header fully at each end of field (or as required) and shift decks back and forth to help clean out cutterbar	—
Shifting the decks with header raised does not clean out cutterbar debris.	Manually remove debris from cutterbar cavity to prevent damaging the drapers	—
Symptom: Crop accumulating at guards and not moving rearward onto drapers		
Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.8.12 Reel Tine Pitch, page 116*
Reel too high	Lower reel	*3.8.10 Reel Height, page 97*
Minimum reel clearance to cutterbar setting too high	Adjust minimum reel height with cylinders fully retracted	*5.17.1 Reel-to-Cutterbar Clearance, page 542*
Reel too far forward	Reposition reel	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom: Crop wrapping around reel		
Reel too low	Raise reel	
Symptom: Reel shattering pods		
Reel too far forward	Reposition reel	*3.8.11 Reel Fore-Aft Position, page 103*
Reel speed too high	Reduce reel speed	*3.8.6 Reel Speed, page 92*
Bean pods too dry	Cut at night when heavy dew is present and pods have softened	—
Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.8.12 Reel Tine Pitch, page 116*
Symptom: Cutterbar guards breaking		
Float insufficient (float setting too heavy)	Increase float (adjust to lighter float setting)	*3.8.3 Header Float, page 67*
Excessive number of rocks in field	Consider installing optional short guards **Note:** Install a few guards on one section of the cutterbar and compare the performance of the two different guard styles	• *5.12.7 Knife Guards, page 475* • *6.3.5 Stub Guard Conversion Kit, page 593*
Symptom: Cutterbar pushing too much debris and dirt		
Header too heavy	Readjust float to make header lighter	• *3.8.3 Header Float, page 67* *Checking and Adjusting Header Float, page 68*
Header angle too steep	Decrease header angle	*3.8.5 Header Angle, page 84*
Guards plug with debris or and soil	Install short guard kit	*6.3.5 Stub Guard Conversion Kit, page 593*
Insufficient support for header	Install center skid shoes on header	*3.8.2 Cutting on Ground, page 65*

Table 7.5 Cutting Edible Beans Troubleshooting (continued)

Problem	Solution	Refer to
Symptom: Crop wrapping around reel ends		
Uncut crop interfering on reel ends	Add reel endshields	For information, refer to the header parts catalog.
Symptom: Cutterbar fills up with dirt		
Excessive gap between draper and cutterbar	Adjust front deck supports to achieve proper clearance between cutterbar and draper	*5.16.5 Adjusting Deck Height, page 529*
Excessive gap between draper and cutterbar	Raise header fully at each end of field (or as required) and shift decks back and forth to help clean out cutterbar	—
Symptom: Reel occasionally carries over plants in same location		
Steel fingers bent and hooking plants from drapers	Straighten fingers (steel)	—
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Raise reel	*3.8.10 Reel Height, page 97*
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Adjust reel fore-aft position to move fingers out of the ground	*3.8.11 Reel Fore-Aft Position, page 103*
Symptom: Cutterbar pushing soil		
Tire tracks or row crop ridges	Cut at angle to crop rows or ridges	—
Rolling terrain along length of field	Cut at 90° to undulations (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 draper speed	*3.8.8 Side Draper Speed, page 94*
Finger pitch too slow	Increase finger pitch	*3.8.12 Reel Tine Pitch, page 116*

Chapter 8: Reference

The procedures and information in this chapter can be referred to as needed.

8.1 Installing Sealed Bearing

Sealed bearings are held in place on a shaft with a locking collar and a flangette.

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 the shaft by applying a coating of a rust prevention chemical.
3. Install flangette (A), bearing (B), second flangette (C), and then lock collar (D).

   NOTE:

   Only one side of the bearing has a locking cam.
4. Install flangette bolts (E).

   NOTE:

   Do **NOT** tighten the bolts yet.
5. Use a hammer and a punch to lock the collar. Tap the collar in the direction in which the shaft rotates.Tighten the set screw in the collar.
6. Tighten flangette bolts (E).
7. Loosen the flangette bolts on the mating bearing by one turn and then retighten the bolts. This will allow the bearing to move into alignment on the shaft.

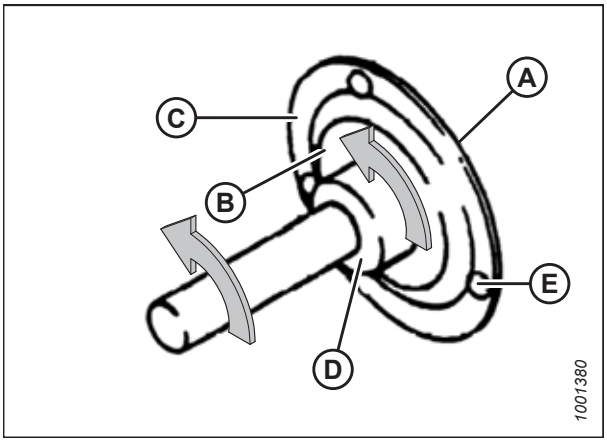

Figure 8.1: Sealed Bearing

8.2 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.

8.2.1 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 8.1 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

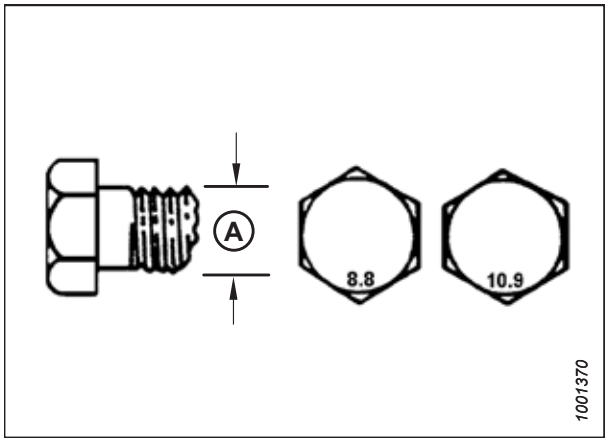

Figure 8.2: Bolt Grades

Table 8.2 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

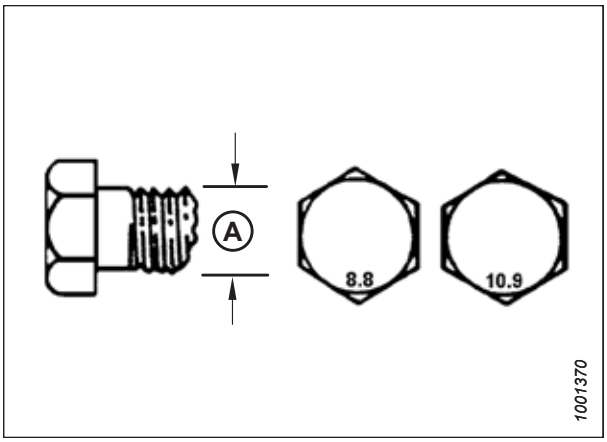

Figure 8.3: Bolt Grades

Table 8.3 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

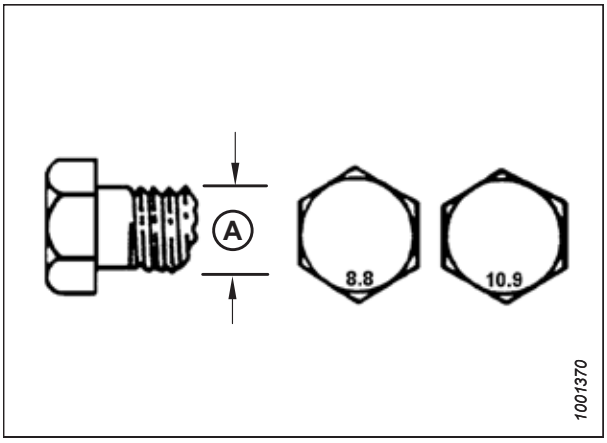

Figure 8.4: Bolt Grades

Table 8.4 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

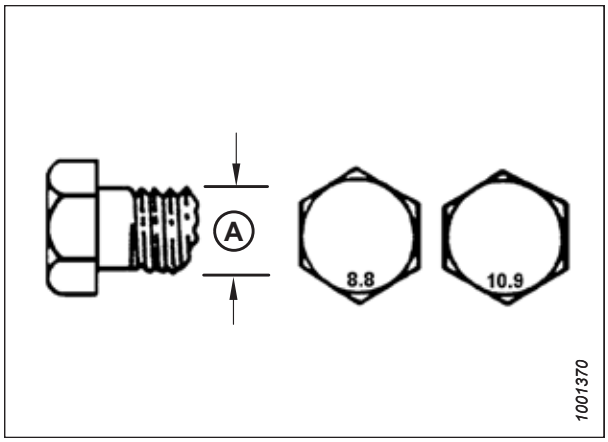

Figure 8.5: Bolt Grades

8.2.2 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 8.5 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	–	–	–	–

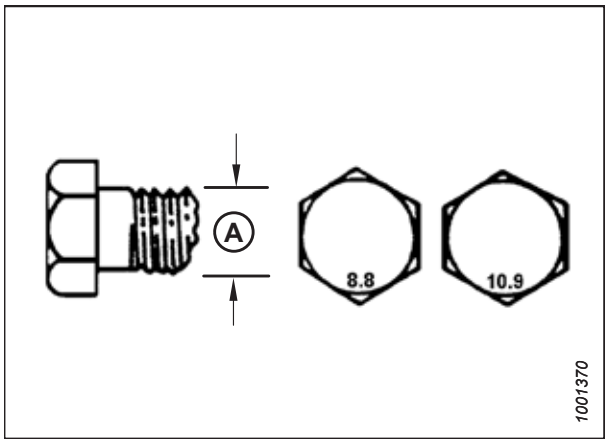

Figure 8.6: Bolt Grades

8.2.3 Flare-Type Hydraulic Fittings

The standard torque values are provided for flare-type 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 flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto the fitting without lubrication until contact is made between the flared surfaces.
3. Torque fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table *8.6, page 625*.
4. Secure fitting (D) with two wrenches. Place one wrench on fitting body (D), and tighten nut (E) with the other wrench to the torque value shown in Table *8.6, page 625*.
5. Verify the final condition of connection.

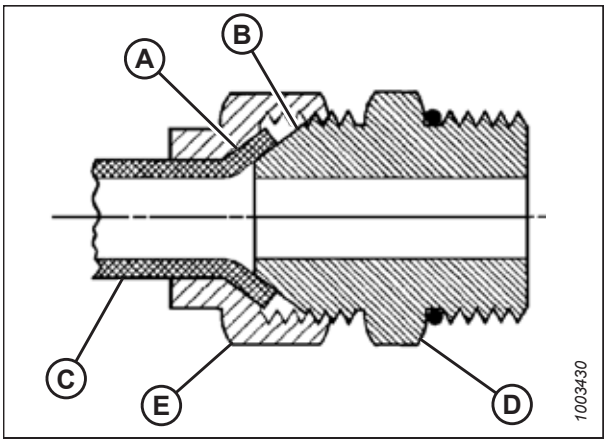

Figure 8.7: Hydraulic Fitting

Table 8.6 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[64]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-2	5/16–24	4–5	3–4	—	—
-3	3/8–24	7–8	5–6	—	—
-4	7/16–20	18–19	13–14	2 1/2	2
-5	1/2–20	19–21	14–15	2	2
-6	9/16–18	30–33	22–24	2	1 1/2
-8	3/4–16	57–63	42–46	2	1 1/2
-10	7/8–14	81–89	60–66	1 1/2	1 1/2
-12	1 1/16–12	113–124	83–91	1 1/2	1 1/4
-14	1 3/16–12	136–149	100–110	1 1/2	1 1/4
-16	1 5/16–12	160–176	118–130	1 1/2	1
-20	1 5/8–12	228–250	168–184	1	1
-24	1 7/8–12	264–291	195–215	1	1
-32	2 1/2–12	359–395	265–291	1	1
-40	3–12	—	—	1	1

64. Torque values shown are based on lubricated connections as in reassembly.

8.2.4 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).

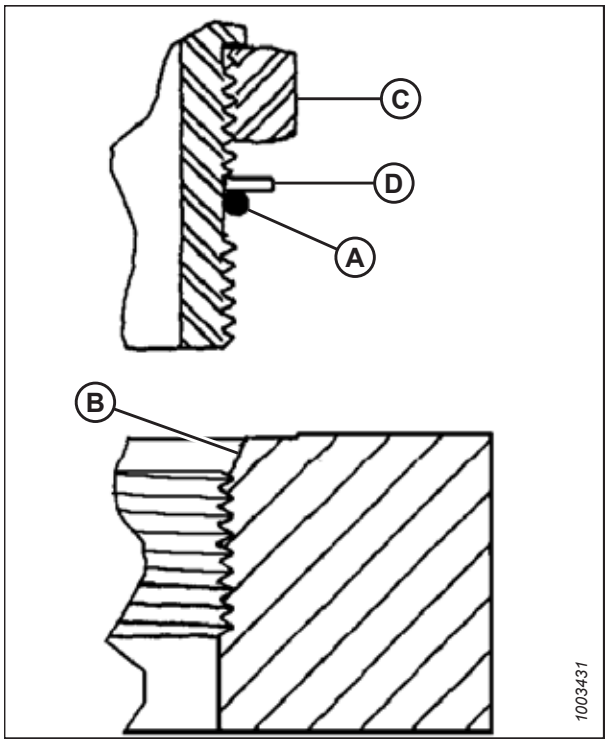

Figure 8.8: Hydraulic Fitting

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.

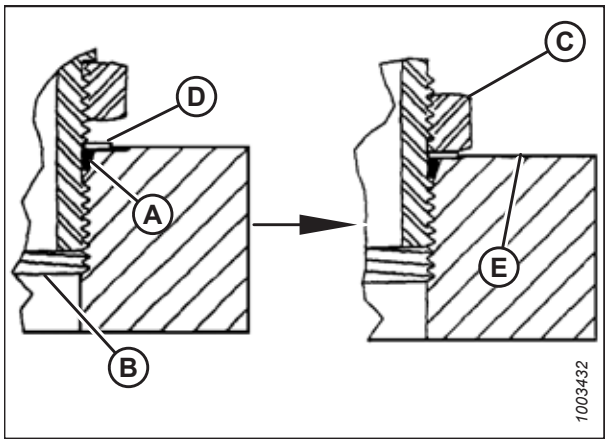

Figure 8.9: Hydraulic Fitting

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[65]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115

65. Torque values shown are based on lubricated connections as in reassembly.

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[66]	
		Nm	lbf·ft (*lbf·in)
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

8.2.5 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 *8.8, page 627*.
6. Verify the final condition of the fitting.

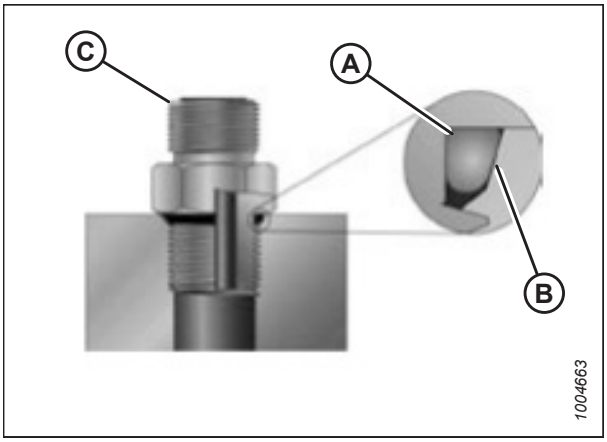

Figure 8.10: Hydraulic Fitting

Table 8.8 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[66]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37

66. Torque values shown are based on lubricated connections as in reassembly.

Table 8.8 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[67]	
		Nm	lbf·ft (*lbf·in)
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

8.2.6 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 *8.9, page 629*.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 8.11: Hydraulic Fitting

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 *8.9, page 629*.

   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).

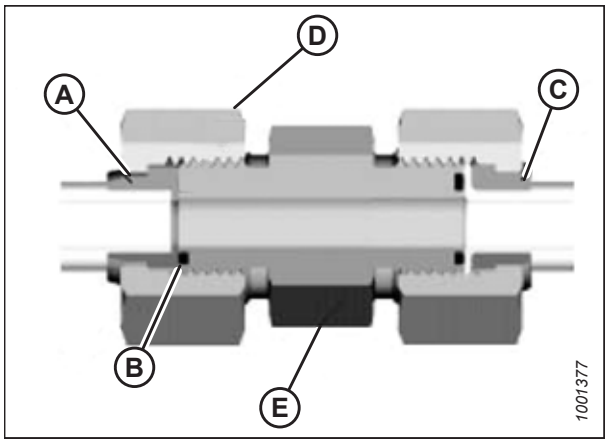

Figure 8.12: Hydraulic Fitting

67. Torque values shown are based on lubricated connections as in reassembly.

6. Use three wrenches when assembling unions or joining two hoses together.

7. Verify the final condition of the fitting.

Table 8.9 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[68]	
			Nm	lbf·ft
-3	Note[69]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[69]	5/16	–	–
-6	11/16	3/8	40–44	29–32
-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[69]	7/8	–	–
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

8.2.7 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.

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 *8.10, page 630*. 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.

68. Torque values and angles shown are based on lubricated connection as in reassembly.
69. O-ring face seal type end not defined for this tube size.

Table 8.10 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

8.3 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 8.11 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 grease with 1% max. molybdenum disulphide (NLGI grade 2) lithium base	As required unless otherwise specified	—
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance grease 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	2.2 liters (2.3 quarts)
Gear Lubricant	SAE 85W-140	API service class GL-5	Main drive gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	Single grade transmission/ hydraulic fluid (THF). Recommended viscosity: • 60.1 cSt @ 40° C (104° F) • 9.5 cSt @ 100° C (212° F) Recommended brands: • AGCO Power Fluid 821 XL • Case Hy-Tran Ultraction • John Deere Hy-Gard J20C • Petro-Canada Duratran	Lubricant trans / hydraulic oil	Header drive systems reservoir	85 liters (22.5 US gallons)

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