MacDon

D1-Series
Draper Header for Combines

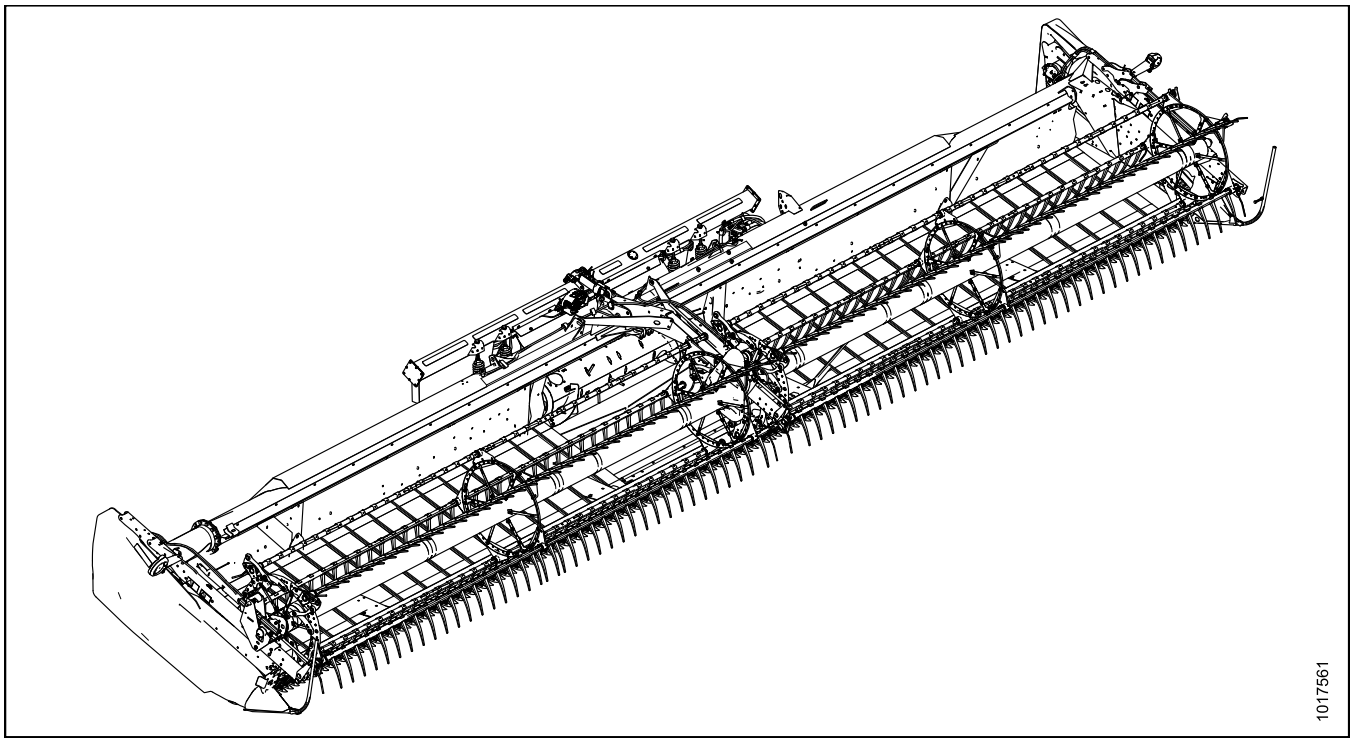
IMPORTANT: PAGE 31 HAS BEEN UPDATED SINCE THIS MANUAL WAS PUBLISHED.

Operator's Manual

147835 Revision A
2016 Model Year
Original Instruction

The harvesting specialists.

D1-Series Draper Header for Combines



Published: April 2016

Declaration of Conformity

EC Declaration of Conformity

[1] MacDon

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

[2] Combine Draper Header

[3] MacDon D1 Series

[4] As per shipping document

[5] March 31, 2016

[6] _____
Christoph Martens
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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germany)
hartmut.hartmann@prodoku.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:

Хартмут Хартман
Wersener Holz 2a
D-49504 Lotte (Германия)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Německo)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Tyskland)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Deutschland)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germany)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Saksamaa)
hartmut.hartmann@prodoku.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 :

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Allemagne)
hartmut.hartmann@prodoku.com

The Harvesting Specialists MacDon

1017493

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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germania)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Németország)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Vokietija)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Vācija)
harttmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Duitsland)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Niemcy)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Alemanha)
hartmut.hartmann@prodoku.com

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul maşinii: [2]

Denumirea şi modelul: [3]

Număr (numere) serie: [4]

corespunde tuturor dispoziţiilor esenţiale 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 şi locul declaraţiei: [5]

Identitatea şi semnătura persoanei împuternicite pentru întocmirea declaraţiei: [6]

Numele şi semnătura persoanei autorizate pentru întocmirea cărţii tehnice:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Germania)
hartmut.hartmann@prodoku.com

RS

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 tehnièke datoteke:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemaèka)
hartmut.hartmann@prodoku.com

SE

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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Tyskland)
hartmut.hartmann@prodoku.com

SI

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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemčija)
hartmut.hartmann@prodoku.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:

Hartmut Hartmann
Wersener Holz 2a
D-49504 Lotte (Nemecko)
hartmut.hartmann@prodoku.com

10017508

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] March 31, 2016

[6] _____
Christoph Martens
Product Integrity

EN

We, [1]

Represented by Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Germany
HRN 31002, Amtsgericht Zweibrucken

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

to which the declaration, fulfills all relevant provisions and essential requirements of the following directive: 2006/42/EC, via self-certification.

For the relevant implementation of the provisions of the Directives, the following (harmonized) standards have been applied:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Other standards: see Operator's Manual

Place and date of declaration: [5]

Name and signature of authorized person: [6]

BG

Ние, [1]

Представлявани от Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Германия
HRN 31002, Amtsgericht Zweibrucken

Декларираме, че следният продукт:

тип машина: [2]

Наименование и модел: [3]

сериен номер(а): [4]

вписан в декларацията, отговаря на всички приложими разпоредби и съществени изисквания на следните директива: 2006/42/ЕО & 2004/108/ЕО, чрез самостоятелно сертифициране.

За съответното изпълнение на разпоредбите на тези Директиви са приложени следните (хармонизирани) стандарти:
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Други стандарти: вижте Ръководството за оператора

място и дата на декларацията: [5]

Име и подпис на упълномощеното лице: [6]

CZ

My [1]

Zastoupení Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Německo
HRN 31002, Amtsgericht Zweibrucken

Prohlašujeme, že produkt:

Typ zařízení: [2]

Název a model: [3]

Sériové číslo (Sériová čísla): [4]

splňuje všechna relevantní ustanovení a základní požadavky následujících směrnic: 2006/42/EC, na základě vlastní certifikace

V případě relevantních implementací ustanovení směrnice byly použity následující (harmonizované) normy:
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Ostatní normy: viz Návod k obsluze

Místo a a datum prohlášení: [5]

Jméno a podpis pověřené osoby: [6]

DA

Vi, [1]

Repræsenteret af Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Tyskland
HRN 31002, Amtsgericht Zweibrucken

Erklære, at produktet:

Maskintype: [2]

Navn og model: [3]

Serienummer (-numre): [4]

hvortil erklæringen gælder, opfylder alle relevante bestemmelser og obligatoriske krav i følgende direktiv: 2006/42/EF, via selvcertificering.

For relevant implementering af bestemmelserne i direktiverne er følgende (harmoniserede) standarder blevet gjort gældende:
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Andre standarder: Se operatørmanualen

Sted og dato for erklæringen: [5]

Den bemyndigede persons navn og underskrift: [6]

DE

Wir, [1]

Vorgestellt von Molitor AgroTec GmbH,
Schwarzwald Straße 67
66482 Zweibrücken / Deutschland
HRN 31002, Amtsgericht Zweibrücken

Erklären, dass das Produkt:

Maschinentyp: [2]

Name & Modell: [3]

Seriennummer(n): [4]

die entsprechenden Vorschriften und wichtigen Anforderungen der folgenden Direktive entspricht/entsprechen: 2006/42/EC, über Selbstzertifizierung.

Für die entsprechende Umsetzung der Bestimmungen der Direktiven wurden folgende (harmonisierten) Normen angewendet:
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Weitere Normen: Siehe Betriebshandbuch

Ort und Datum der Erklärung: [5]

Name und Unterschrift der berechtigten Person: [6]

ES

Nosotros, [1]

Representado por Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Alemania
HRN 31002, Amtsgericht Zweibrucken

Declaramos que el producto:

Tipo de máquina: [2]

Nombre y modelo: [3]

Números de serie: [4]

con lo cual la declaración, cumple con todas las disposiciones relevantes y los requerimientos fundamentales de las siguientes directiva: 2006/42/EC, mediante autocertificación.

Para la implementación pertinente de las disposiciones de las directivas, se han aplicado los siguientes estándares (armonizados):
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Otros estándares: Consulte el Manual del operador.

Lugar y fecha de la declaración: [5]

Nombre y firma de la persona autorizada: [6]

ET

Meie, [1]

keda esindab Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Saksamaa
HRN 31002, Zweibruckeni kohalik kohus,

Deklareerime käesolevaga, et toode:

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumber: [4]

täidab kõik järgnevate direktiiv asjakohased nõuded ja tingimused: 2006/42/EÜ.

Nimetatud direktiivide nõuete järgimisel on rakendatud alltoodud (harmoneeritud) standardeid:
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Muud standardid: vt kasutusjuhendit

Deklaratsiooni koostamise koht ja aeg: [5]

Volitatud isiku nimi ja allkiri: [6]

FR

Nous, [1]

Représenté par Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Allemagne
HRN 31002, Amtsgericht Zweibrucken

Déclarons, que le produit:

Type de machine: [2]

Nom et modèle: [3]

Numéro(s) de série: [4]

par la présente déclaration, remplit toutes les dispositions et e igences essentielles de directive suivantes : 2006/42/EC, par une auto-certification.

Pour la mise en œuvre adéquate des dispositions des directives, les normes (harmonisées) suivantes ont été appliquées :
EN ISO 4254-1:2013
EN ISO 4254-7:2008
Autres normes: consultez le manuel d'utilisation

Lieu et date de la déclaration: [5]

Nom et signature de la personne autorisée: [6]

The Harvesting Specialists MacDon

1017360

EC Declaration of Conformity

IT

Noi, [1]

Rappresentata da Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Germania
HRN 31002, Amtsgericht Zweibrucken

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero di serie: [4]

cui fa riferimento la dichiarazione, soddisfa tutte le disposizioni rilevanti e i requisiti essenziali delle seguenti direttiva: 2006/42/CE, mediante auto-certificazione.

Per l'implementazione delle disposizioni principali delle Direttive, sono stati applicati i seguenti standard (armonizzati):

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Altri standard: si veda il Manuale dell'operatore

Luogo e data della dichiarazione: [5]

Nome e firma della persona autorizzata: [6]

HU

Mi, [1]

Képviselőnk Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Németország
HRN 31002, Amtsgericht Zweibrucken

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Nev és modell: [3]

Sériaszám: [4]

melyre a nyilatkozat vonatkozik, teljesíti az alábbi irányelv összes vonatkozó előírását, illetve lényegi követelményeit: 2006/42/EC, öntanúsítás útján.

Az Irányelvek vonatkozó előírásainak gyakorlatba történő ültetésekor az alábbi (harmonizált) szabványok kerültek alkalmazásra:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Egyéb szabványok: lásd a Felhasználói Kézikönyvet

A nyilatkozattétel ideje és helye: [5]

Felhatalmazott személy neve és aláírása: [6]

LT

Mes, [1]

Atstovaujami Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Vokietija
HRN 31002, Amtsgericht Zweibrucken

Šiuo deklaruojame, kad produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

Kuris yra šios deklaracijos dalykas, atitinka visas susijusias nuostatas ir esminius reikalavimus pagal šias direktyva: 2006/42/EB savisertifikavimo pagrindu.

Dėl susijusių nuostatų, išdėstytų minėtose direktyvose, įgyvendinimo, taikomi šie (harmonizuoti) standartai:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Kiti standartai: Žr. Operatoriaus instrukciją

Deklaracijos data ir vieta: [5]

Pavardė ir parašas įgalioto asmens: [6]

LV

Mēs, [1]

Ko pārstāv Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Vācija
HRN 31002, Amtsgericht Zweibrucken

Deklarējam, ka produkts:

Mašīna Tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

ar šo deklarāciju apstiprinām, ka ir nodrošināta atbilstība visām būtiskajām direktīvu 2006/42/EK, veicot pašsertifikāciju.

Šo direktīvu būtisko noteikumu īstenošanai piemēroti šādi (saskanotie) standarti:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Citi standarti: skatīt lietotāja rokasgrāmatu

Deklarācijas parakstīšanas vieta un datums: [5]

Pilnvarotās personas vārds, uzvārds un paraksts: [6]

NL

Wij, [1]

Vertegenwoordigd door Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Duitsland
HRN 31002, Amtsgericht Zweibrucken

Verklaren, dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

waarop de verklaring betrekking heeft, voldoet aan alle relevante bepalingen en essentiële vereisten van de volgende richtlijn: 2006/42/EC, via zelfcertificering.

Voor de relevante implementatie van de bepalingen van de richtlijnen zijn de volgende (geharmoniseerde) normen toegepast:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Andere normen: zie de Bedieningshandleiding

Plaats en datum van verklaring: [5]

Naam en handtekening van bevoegde persoon: [6]

PO

My niżej podpisani, [1]

Reprezentowani przez Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Niemcy
HRN 31002, Amtsgericht Zweibrucken

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

tórego oświadczenie, spełnia wszystkie odpowiednie przepisy i wymagania następujących dyrektywa: 2006/42/WE, własne certyfikaty,

W celu odpowiedniego spełnienia przepisów dyrektyw zastosowaliśmy następujące (zharmonizowane) normy:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Inne normy: patrz Instrukcja obsługi

Data i miejsce oświadczenia: [5]

Imię i nazwisko, podpis osoby upoważnionej: [6]

PT

Nós, [1]
Representados por Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Alemanha
HRN 31002, Amtsgericht Zweibrucken

Declaramos, que o produto:

Tipo de Máquina: [2]

Nome e Modelo: [3]

Número (s) de Série: [4]

a que a presente declaração se destina, cumpre todas as disposições relevantes e requisitos essenciais das seguintes Diretiva: 2006/42/CE, através de auto-certificação.

Para uma implementação relevante das disposições das Diretivas, aplicaram-se as seguintes normas (harmonizadas):

EN ISO 4254-1:2013
EN ISO 4254-7:2008

Outras normas: consulte o Manual do Operador

Local e data da declaração: [5]

Nome e assinatura da pessoa autorizada: [6]

RO

Noi, [1]

Reprezentaţi de Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Germania
HRN 31002, Amtsgericht Zweibrucken

Declarăm, că următorul produs:

Tipul maşinii: [2]

Denumirea şi modelul: [3]

Număr (numere) serie: [4]

pentru care facem declaraţia, corespunde tuturor dispoziţiilor şi cerinţelor esenţiale ale următoarelor directive: 2006/42/EC, pe calea auto-certificării.

Pentru implementarea dispoziţiilor Directivelor, au fost aplicate următoarele standarde (armonizate):

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Alte standarde: vezi Manualul Operatorului

Data şi locul declaraţiei: [5]

Numele şi semnătura persoanei autorizate: [6]

RS

Mi, [1]

čiji je predstavnik Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Nemačka
HRN 31002, Amtsgericht Zweibrucken

Izjavljujemo da proizvod:

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Na koji se deklaracija odnosi, ispunjava sve važeće odredbe i suštinske zahteve sledećih direktiva: 2006/42/EC, kroz samostalnu sertifikaciju.

U cilju relevantne implementacije odredbi ovih direktivi, primenjeni su sledeći (usklađeni) standardi:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Drugi standardi: pogledati priručnik za rukovanje

Mesto i datum izdavanja deklaracije: [5]

Ime i potpis ovlašćenog lica: [6]

SE

Vi, [1]

Representerade av Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Tyskland
HRN 31002, Amtsgericht Zweibrucken

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

för vilken intyget gäller, uppfyller alla relevanta bestämmelser och viktiga krav enligt följande direktiv: 2006/42/EC, via självcertifiering.

För relevant genomförande av bestämmelserna i direktiven har följande (harmoniserade) standarder tillämpats:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Övriga standarder: se användarhandboken

Plats och datum för intyget: [5]

Namn och signatur av behörig person: [6]

SI

Mi, [1]

Ki nas zastopa Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Nemčija
HRN 31002, okrožno sodišče Zweibrucken

Izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska številka: [4]

za katerega je namenjena izjava, izpolnjuje vse zadevne določbe in temeljne zahteve naslednjih direktiva: 2006/42/ES prek samocertificiranja.

Za zadevno implementacijo določb direktiv so bili uporabljeni naslednji (usklajeni) standardi:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Drugi standardi: glejte Uporabniški priročnik

Kraj in datum izjave: [5]

Ime in podpis pooblaščene osebe: [6]

SK

My, [1]

Zastúpení pánom Molitor AgroTec GmbH,
Schwarzwald Strasse 67
66482 Zweibrucken / Nemecko
HRN 31002, Amtsgericht Zweibrucken

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

spĺňa príslušné ustanovenia a základné požiadavky nasledujúcich smerníc: 2006/42/ES, prostredníctvom vlastnej certifikácie.

Pri realizácii ustanovení týchto smerníc sa uplatňujú nasledujúce (harmonizované) normy:

EN ISO 4254-1:2013
EN ISO 4254-7:2008
Ďalšie normy: pozri Návod na obsluhu

Miesto a dátum prehlásenia: [5]

Meno a podpis oprávnenej osoby: [6]

10017361

Introduction

This instructional manual contains information on the D1-Series Draper Header and the FM100 Combine Float Module. It must be used in conjunction with your combine operator's manual.

The D1-Series Draper Header is specially designed to work well in all straight cut conditions—whether cutting on or above the ground.

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.

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

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

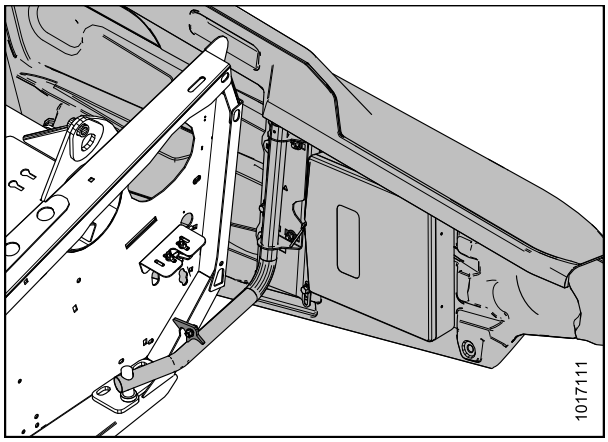


Figure 1: Manual Storage Location

Model and Serial Number

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

NOTE:
Right-hand (RH) and left-hand (LH) designations are determined from the operator's position, facing forward.

Draper Header

Header Model: _____

Serial Number: _____

Year: _____

The serial number plate (A) is located beside the knife drive motor on the left-hand endsheet.

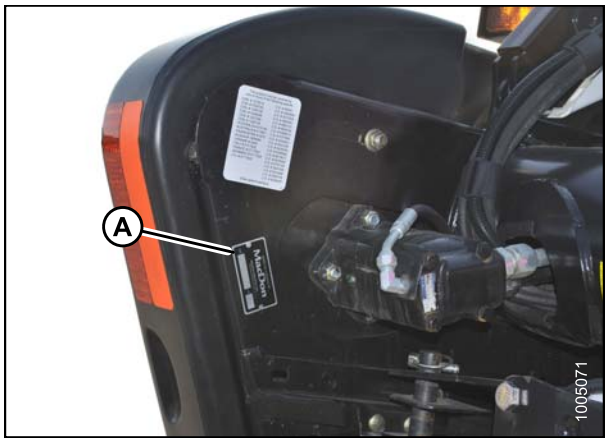


Figure 2: Header

Combine Float Module

Float Module Model: _____

Serial Number: _____

Year: _____

The serial number plate (A) is located on the underside of the reservoir at the left end.

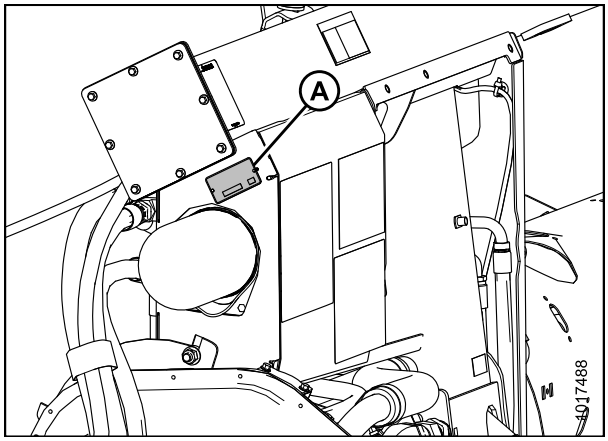


Figure 3: Float Module

Slow Speed Transport/Stabilizer Wheel Option

Serial Number: _____

Year: _____

The serial number plate (A) is located on the right-hand axle assembly.

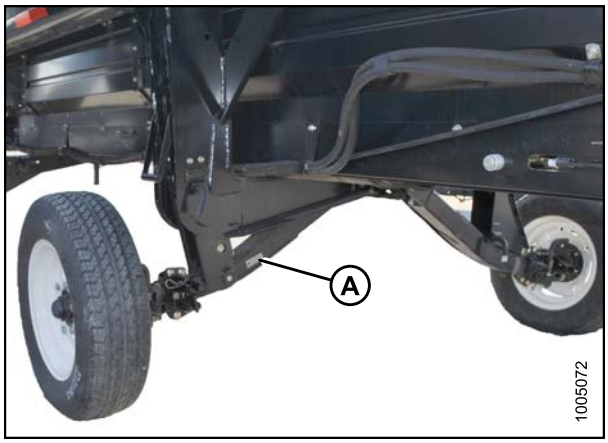


Figure 4: Transport/Stabilizer Option

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1 Safety

1.1 Safety Alert Symbols

This 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. The appropriate signal word for each situation has been selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may be used to alert against unsafe practices.

1.3 General Safety

CAUTION

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

Protect yourself.

- When assembling, operating, and servicing machinery, wear all the protective clothing and personal safety devices that **could** be necessary for the job at hand. Don't 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
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as ear muffs or ear plugs to help protect against objectionable or loud noises.

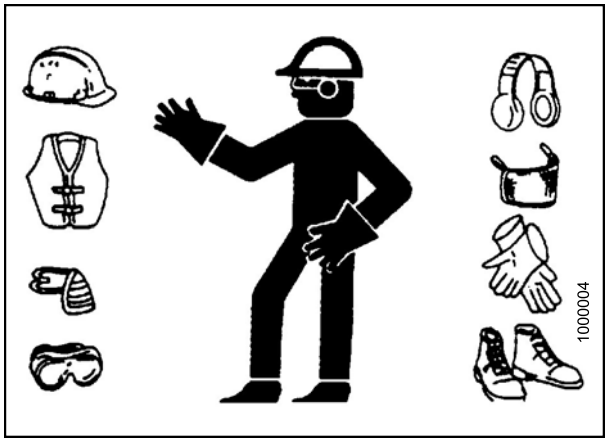


Figure 1.2: Safety Equipment

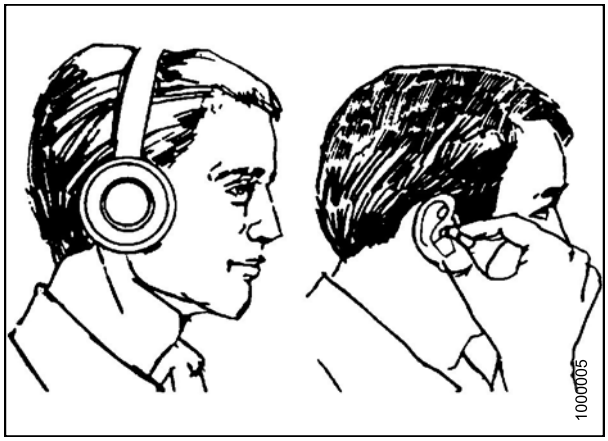


Figure 1.3: Safety Equipment

- Provide a first aid kit for use in case of emergencies.
- Keep a fire extinguisher on the machine. Be sure the fire extinguisher is properly maintained. Be familiar with its proper use.
- Keep young children away from the machinery at all times.
- Be aware that accidents often happen when the Operator is tired or in a hurry. Take the time to consider the safest way. Never ignore the warning signs of fatigue.

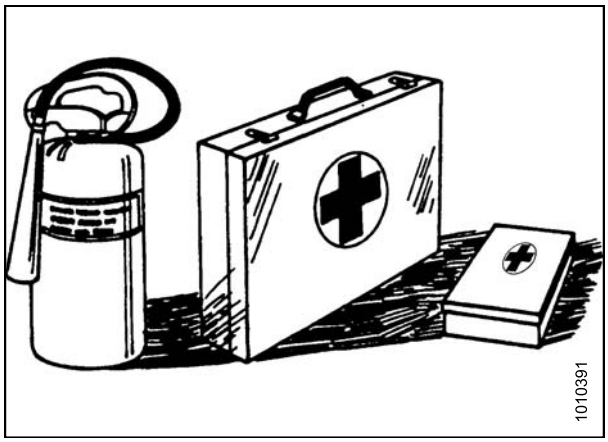


Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.
- Keep all shields in place. Never alter or remove safety equipment. Make sure driveline guards can rotate independently of the shaft and can telescope freely.
- Use only service and repair parts made or approved by the equipment manufacturer. Substituted parts may not meet 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. Non-authorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid bodily injury or death from unexpected startup of machine, always shut down the engine and remove the key from ignition before leaving operator's seat for any reason.

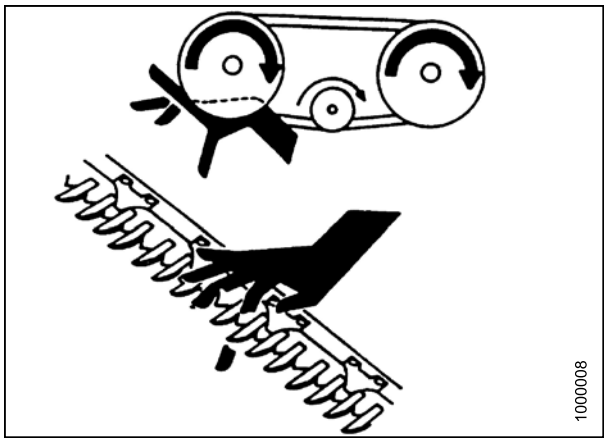


Figure 1.6: Safety around Equipment

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

Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operation and/or maintenance of the machine.
- Place all controls in Neutral, stop the engine, set the park brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, and/or repairing.
- Follow good shop practices:
  - Keep service areas clean and dry
  - Be sure electrical outlets and tools are properly grounded
  - Use adequate lighting for the job at hand
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Make sure 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 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 other mechanically-driven component by hand (for example, accessing a lube fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.
- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.

Figure 1.8: Safety around Equipment

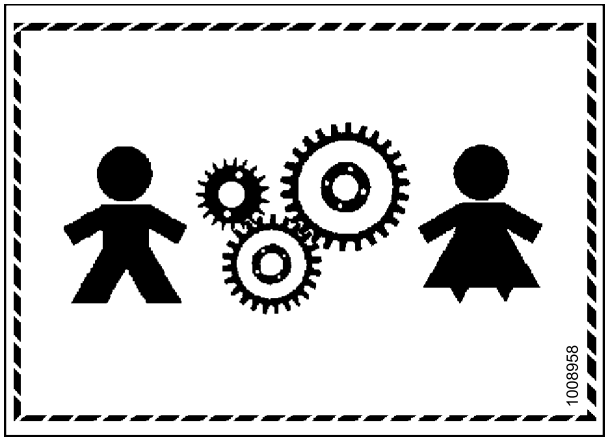


Figure 1.9: Equipment NOT Safe for Children

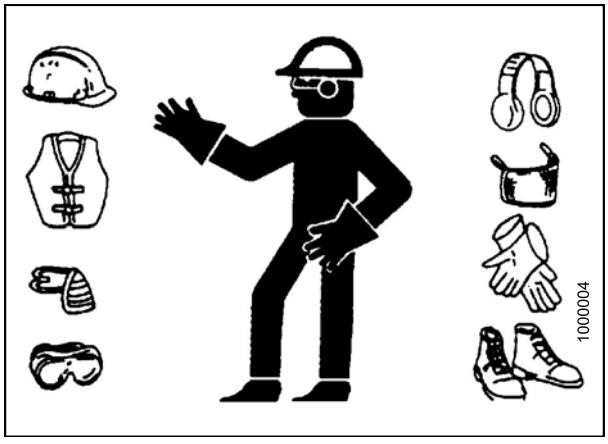


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

- Always place all hydraulic controls in Neutral before dismounting.
- Make sure that all 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 the hydraulic lines, fittings, or hoses by using tapes, clamps, cements, or welding. The hydraulic system operates under extremely high pressure. Makeshift repairs will fail suddenly and create hazardous and unsafe conditions.

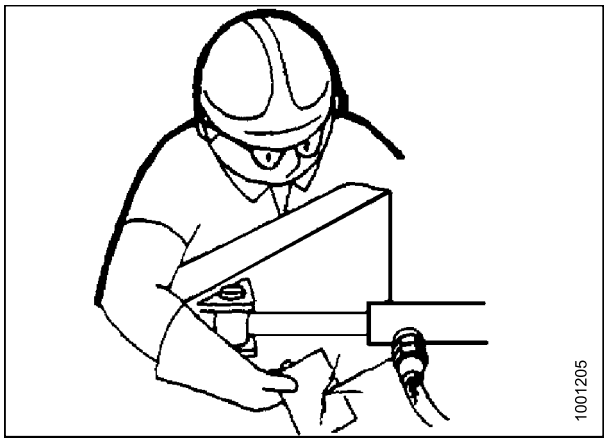


Figure 1.11: Testing for Hydraulic Leaks

- Wear proper hand and eye protection when searching for high-pressure hydraulic leaks. Use a piece of cardboard as a backstop instead of 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

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

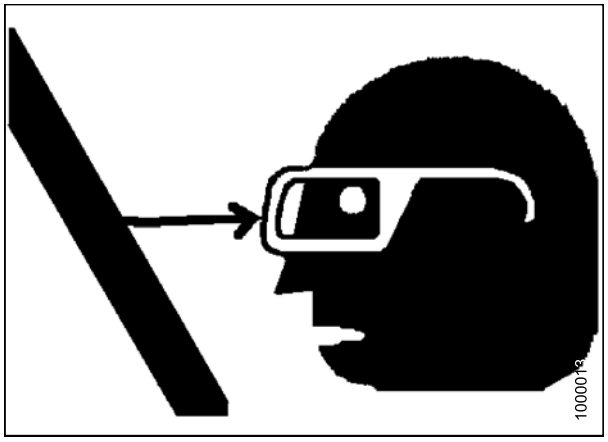


Figure 1.13: Safety around Equipment

1.6 Safety Signs

- Keep safety signs clean and legible at all times.
- Replace safety signs that are missing or become illegible.
- If original parts on which a safety sign was installed are replaced, be sure the repair part also bears the current safety sign.
- Safety signs are available from your Dealer Parts Department.

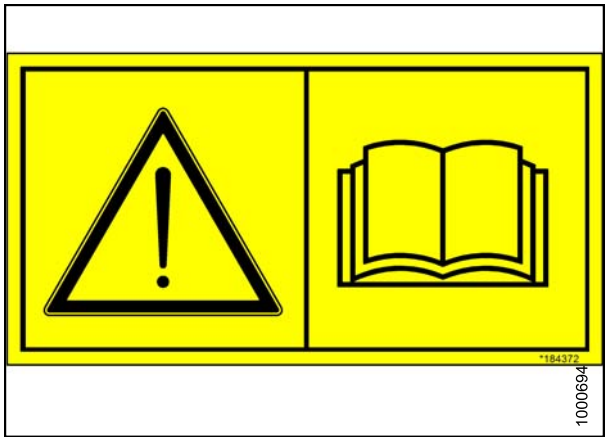


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

1. Clean and dry the installation area.
2. Decide on the exact location before you remove the decal backing paper.
3. Remove the smaller portion of the split backing paper.
4. Place the sign in position and slowly peel back the remaining paper, smoothing the sign as it is applied.
5. Prick small air pockets with a pin and smooth out.

1.7 Safety Decal Locations

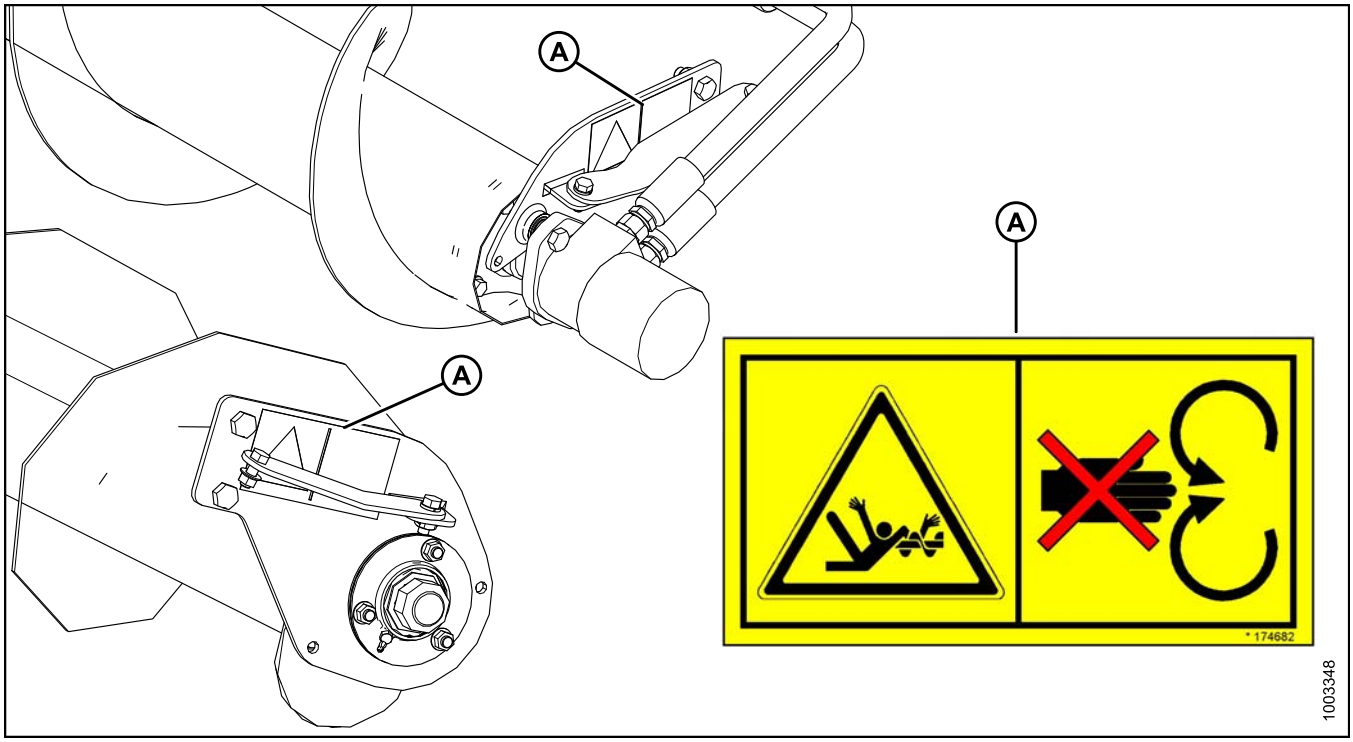


Figure 1.15: Upper Cross Auger

A - MD #174682

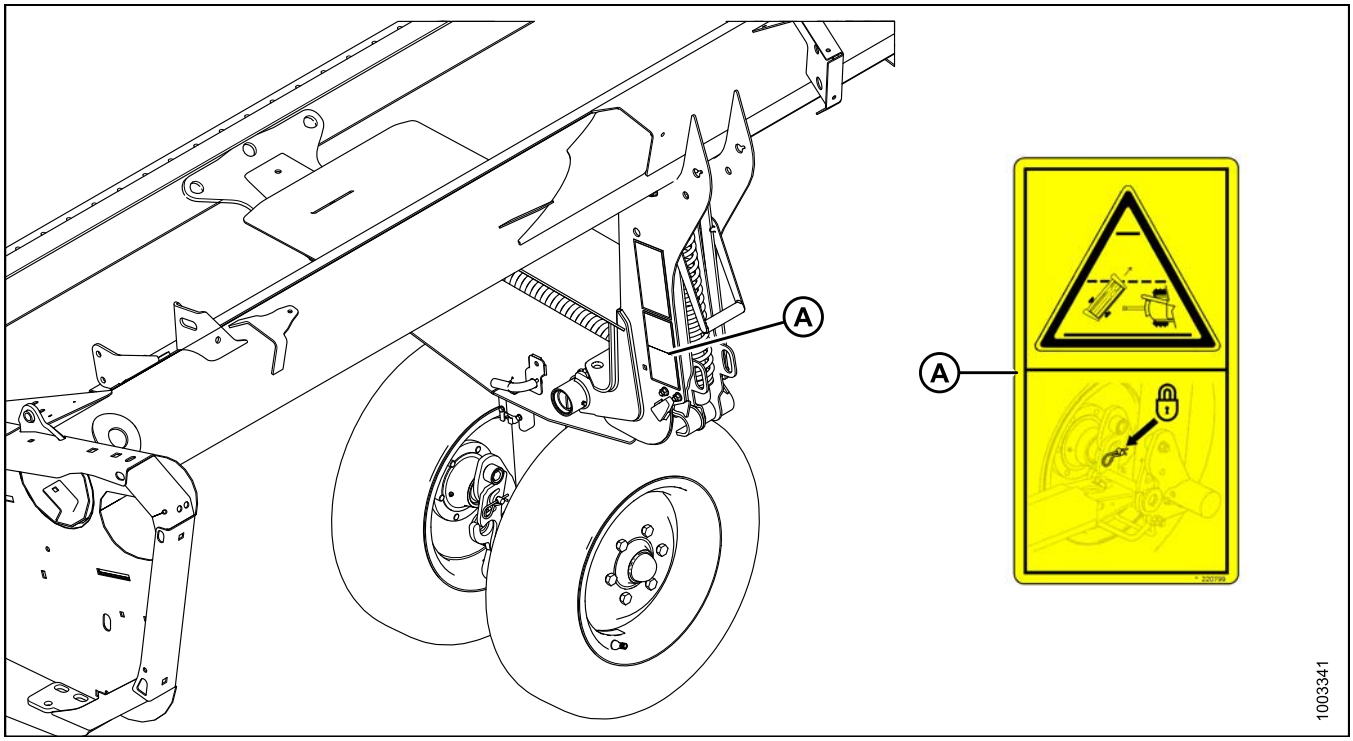


Figure 1.16: Slow Speed Transport

A - MD #220799

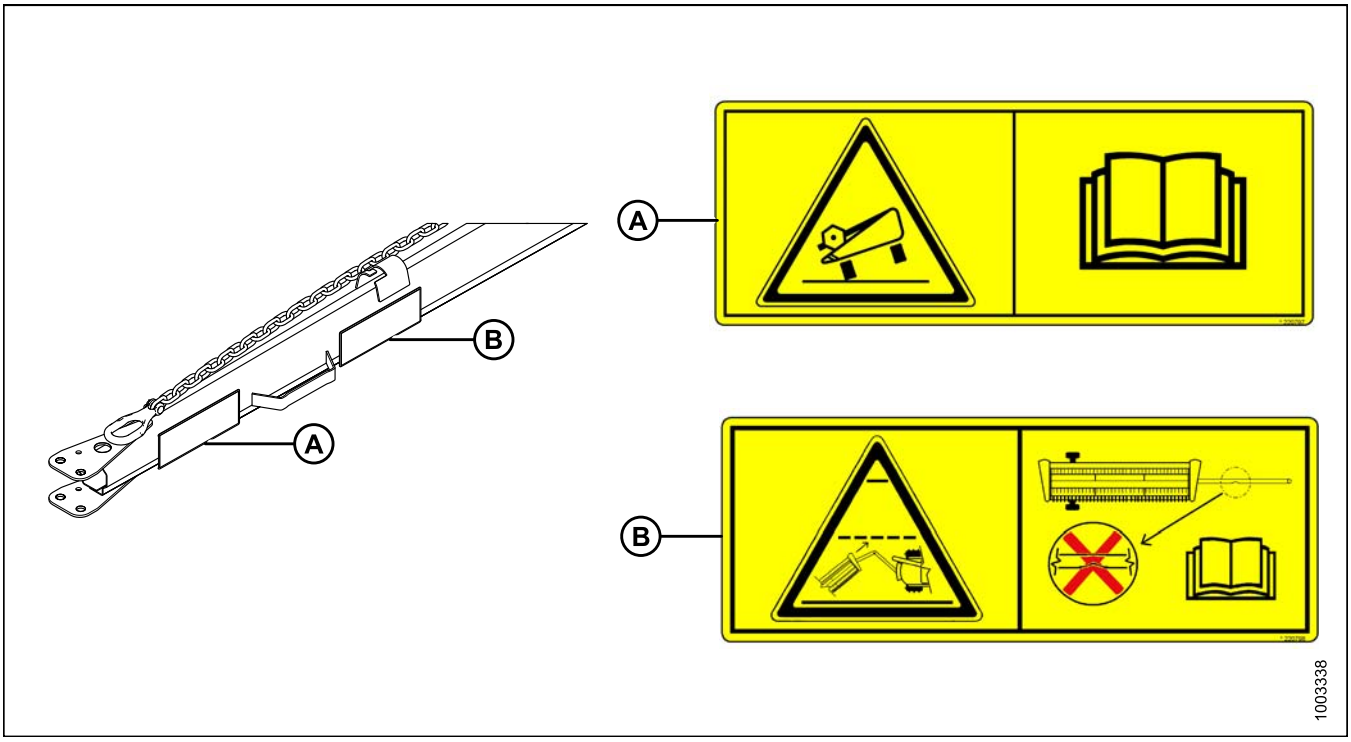


Figure 1.17: Slow Speed Transport Tow-Bar

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

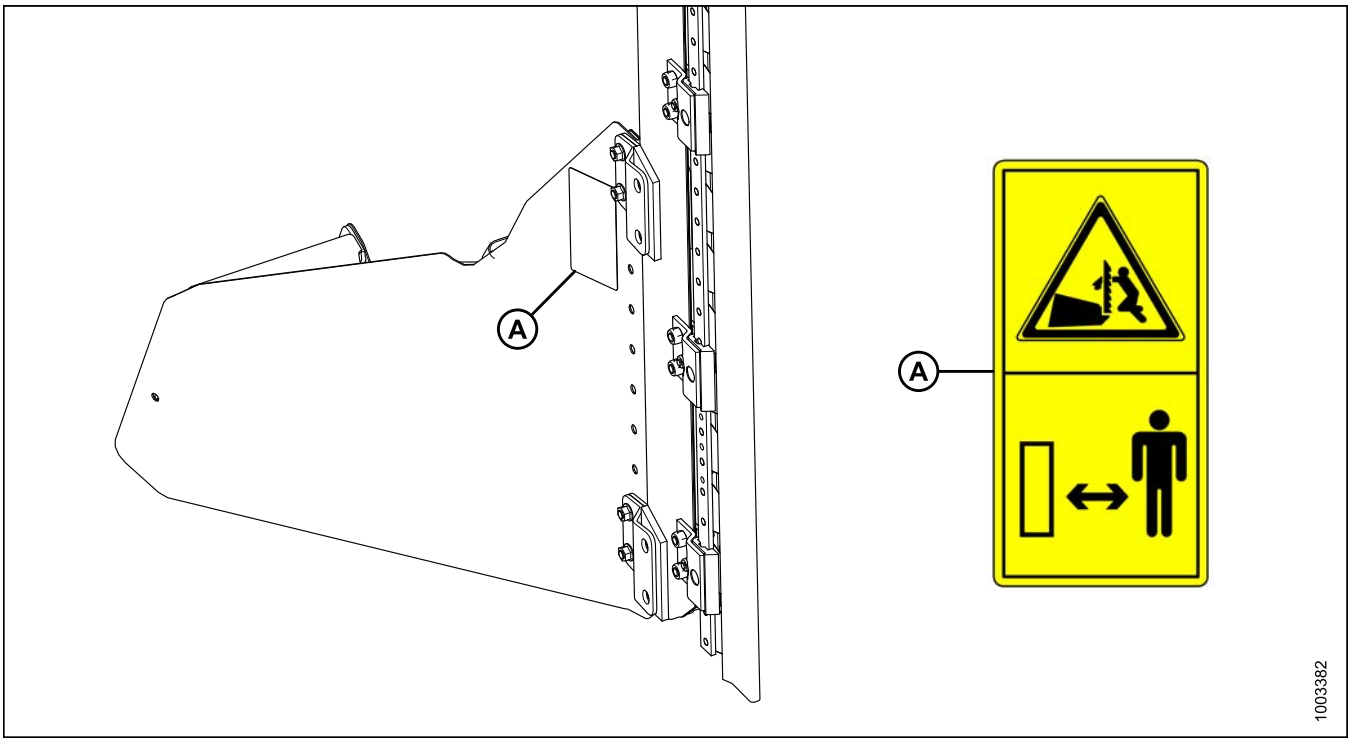


Figure 1.18: Vertical Knife

A - MD #174684

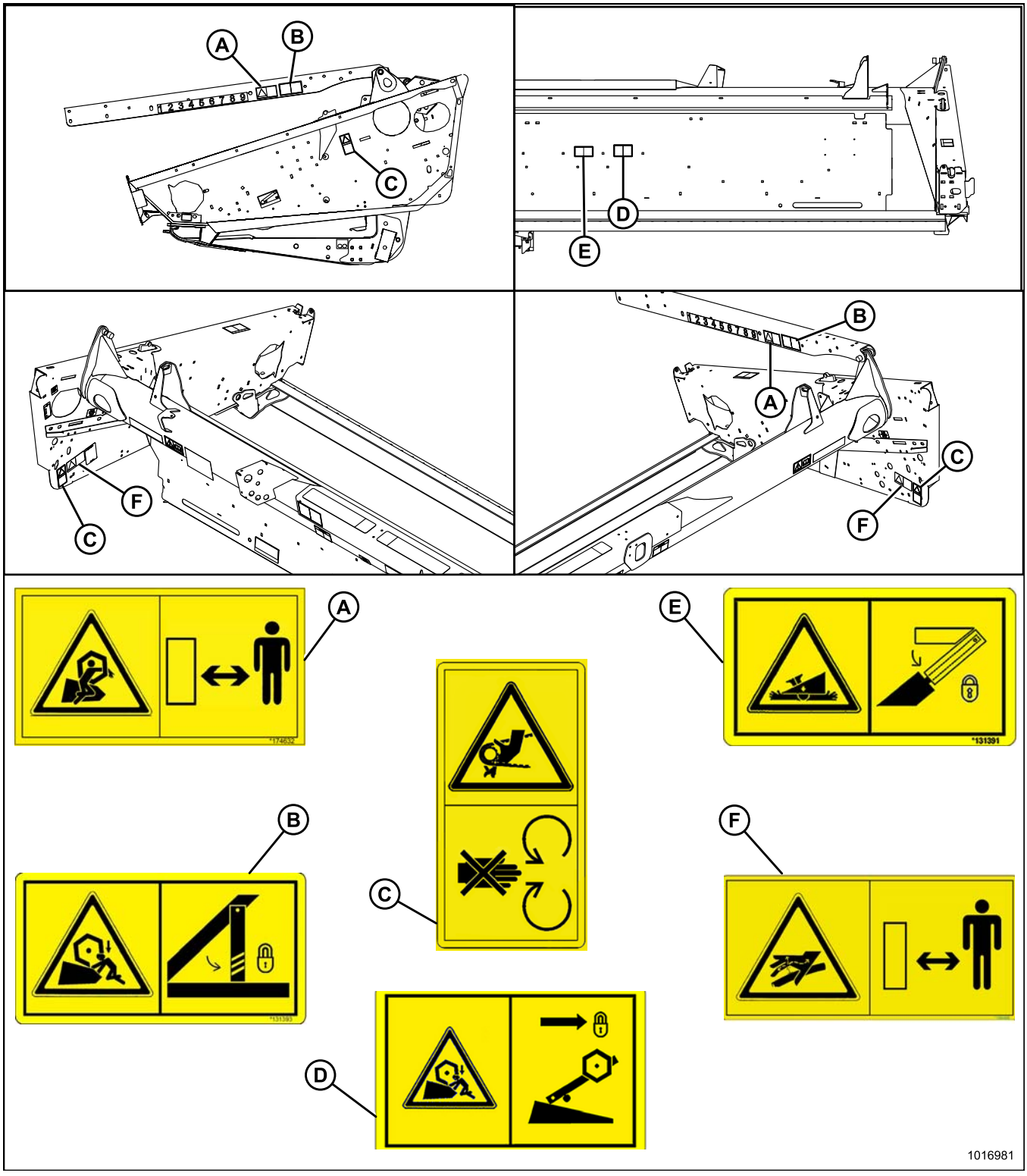


Figure 1.19: Endsheets, Reel Arms, and Backsheet

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

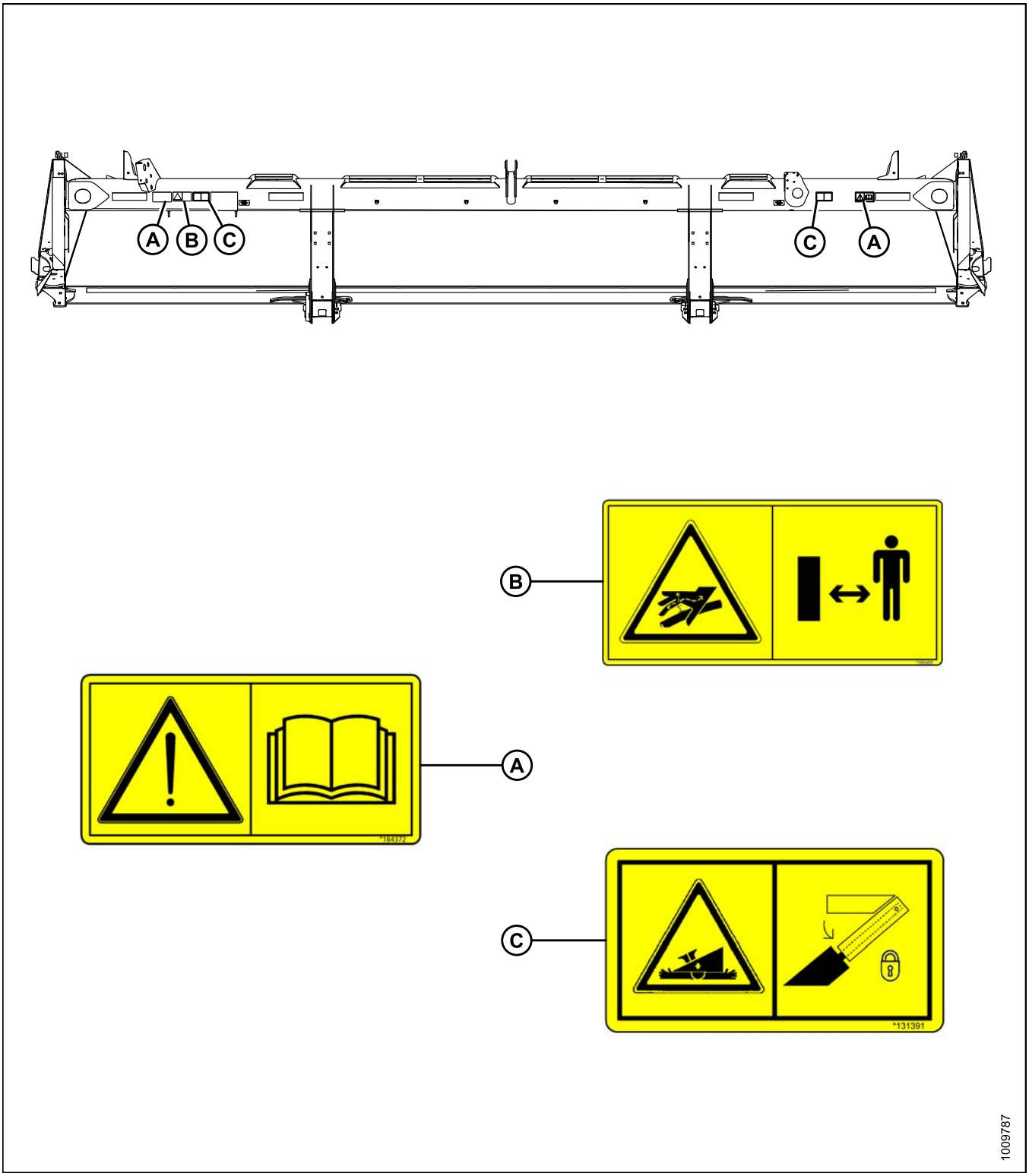


Figure 1.20: Backtube: 20-Foot Header

A - MD #184372 **B - MD #166466** **C - MD #131391**

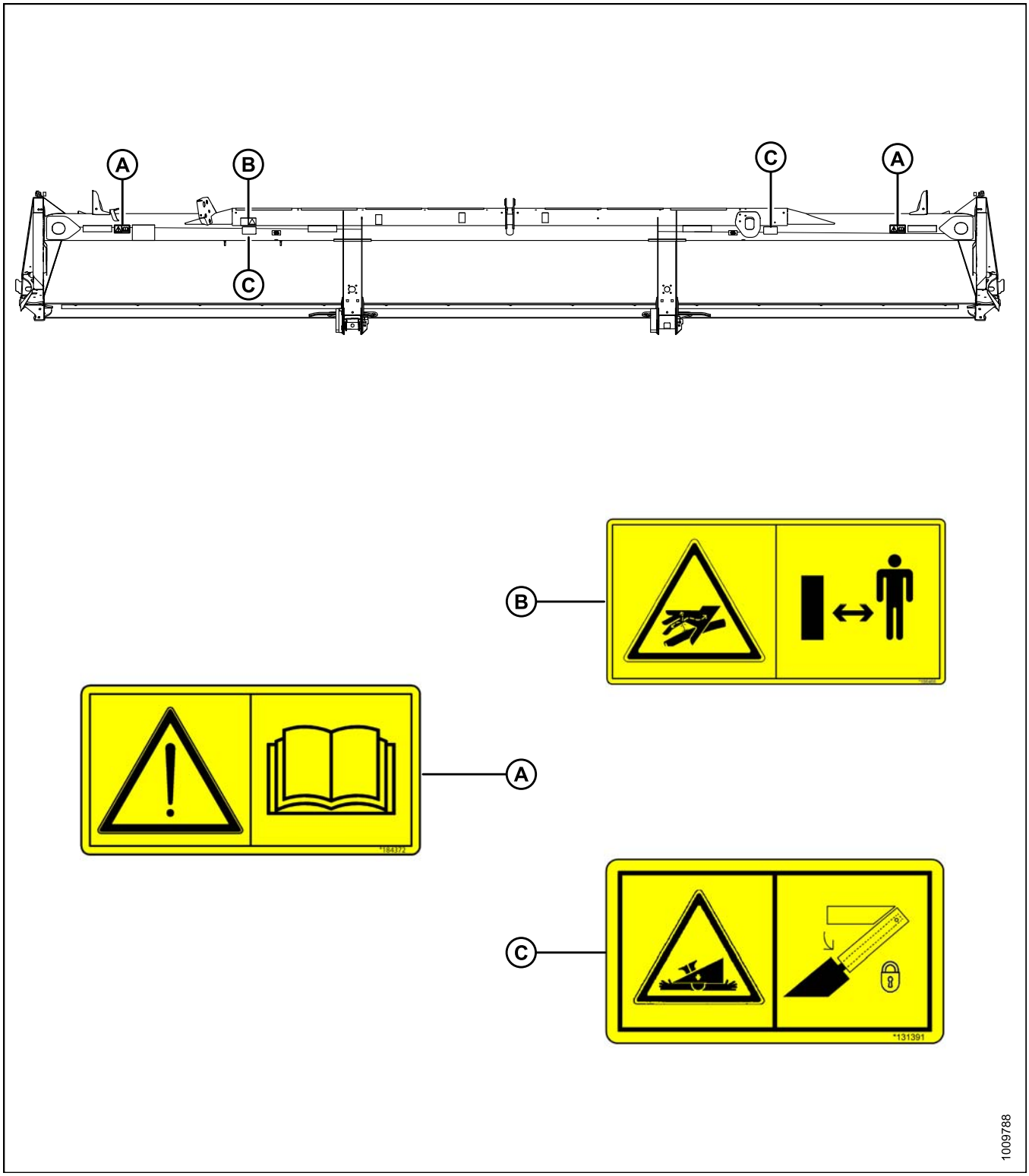


Figure 1.21: Backtube: 25-Foot Header

A - MD #184372 **B - MD #166466** **C - MD #131391**

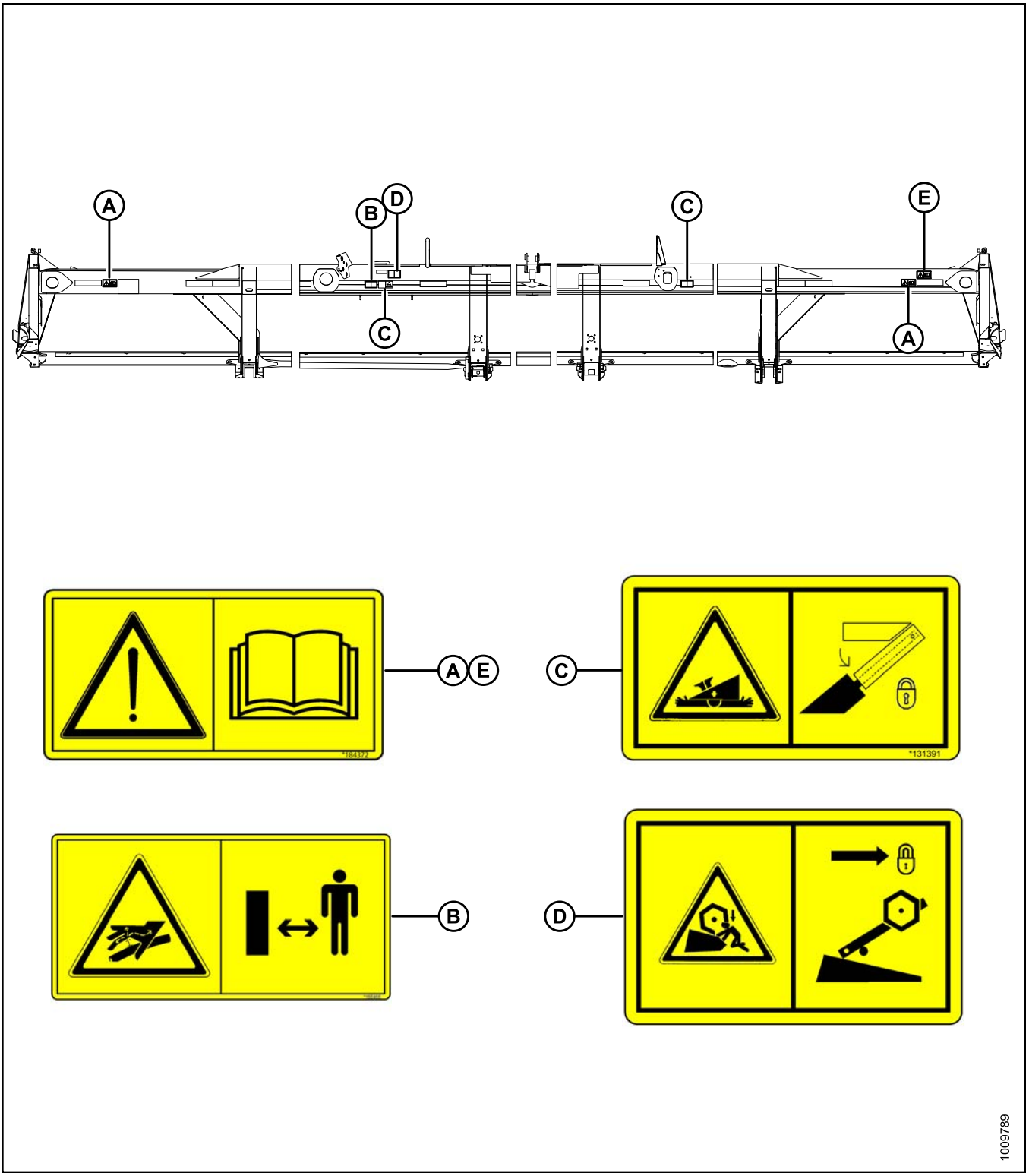


Figure 1.22: Backtube: 30-, 35-, 40-, and 45-Foot Headers

A - MD #184372 (Except 40-ft. Split Frame)
B - MD #166466
C - MD #131391
D - MD #131392 (30- & 35-ft. Double Reel Only)
E - MD #184372 (40–ft. Split Frame)

1.8 Understanding Safety Signs

MD #113482

General hazard pertaining to machine operation and servicing

CAUTION

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

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

Figure 1.23: MD #113482

MD #131391

Crushing hazard

DANGER

- Rest header on ground or engage safety props before going under unit.

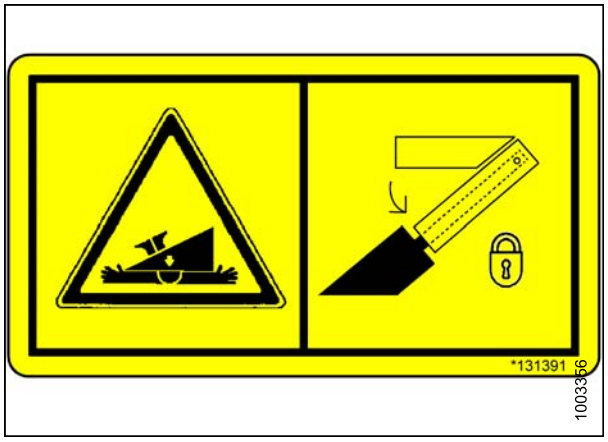


Figure 1.24: MD #131391

MD #131392

Crushing hazard

WARNING

- To avoid injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage safety prop on each reel support arm before working on or under reel.
- Refer to header operator's manual.

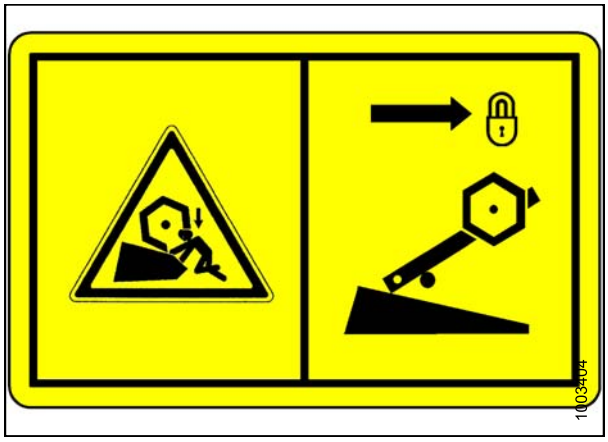


Figure 1.25: MD #131392

MD #131393

Reel hazard

WARNING

- To avoid injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage safety prop on each reel support arm before working on or under reel.
- Refer to header operator's manual.

Figure 1.26: MD #131393

MD #166466

High pressure oil hazard

WARNING

- Do not go near leaks.
- High pressure oil easily punctures skin causing serious injury, gangrene, or death.
- If injured, seek emergency medical help. Immediate surgery is required to remove oil.
- Do not use finger or skin to check for leaks.
- Lower load or relieve hydraulic pressure before loosening fittings.

Figure 1.27: MD #166466

MD #174436

High pressure oil hazard

WARNING

- Do not go near leaks.
- High pressure oil easily punctures skin causing serious injury, gangrene, or death.
- If injured, seek emergency medical help. Immediate surgery is required to remove oil.
- Do not use finger or skin to check for leaks.
- Lower load or relieve hydraulic pressure before loosening fittings.

Figure 1.28: MD #174436

MD #174632

Reel entanglement hazard

CAUTION

- To avoid injury from entanglement with rotating reel, stand clear of header while machine is running.

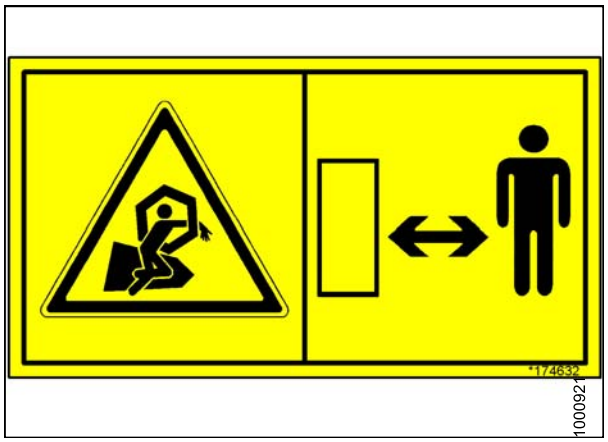


Figure 1.29: MD #174632

MD #184372

General hazard pertaining to machine operation and servicing

CAUTION

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

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

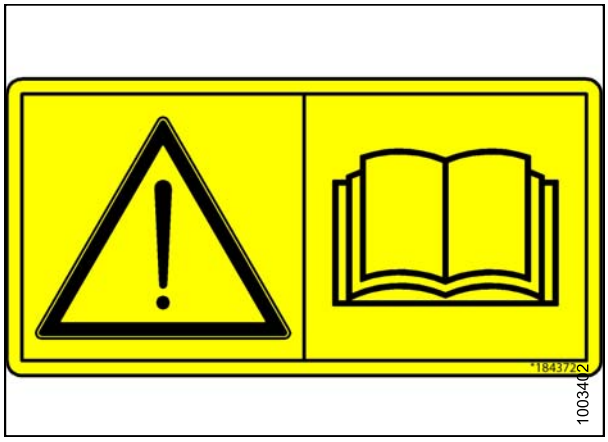


Figure 1.30: MD #184372

MD #184422

Keep shields in place hazard

WARNING

- Do not place hand.
- To avoid injury, stop the engine and remove the key before opening power drive system shield.
- Keep all shields in place.

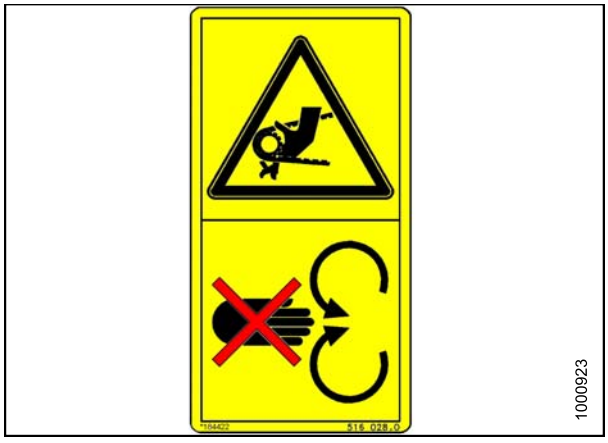


Figure 1.31: MD #184422

MD #220797

Tipping hazard in transport mode

WARNING

- Read the operator's manual for more information on potential tipping or roll-over of header while transporting.

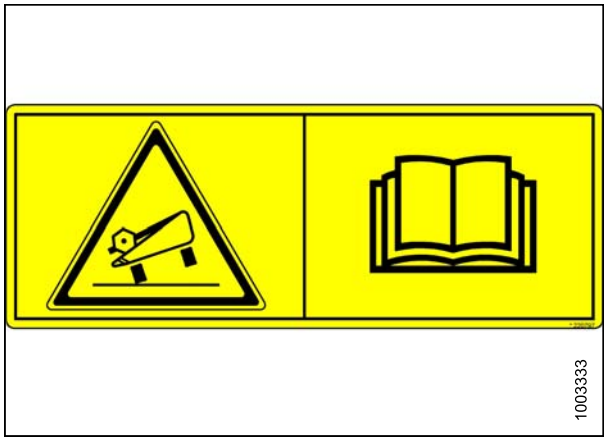


Figure 1.32: MD #220797

MD #220798

Loss of control hazard in transport

CAUTION

- Do not tow the header with a dented or otherwise damaged tow pole (the circle with the red X shows a dent in the pole).
- Consult the operator's manual for more information.

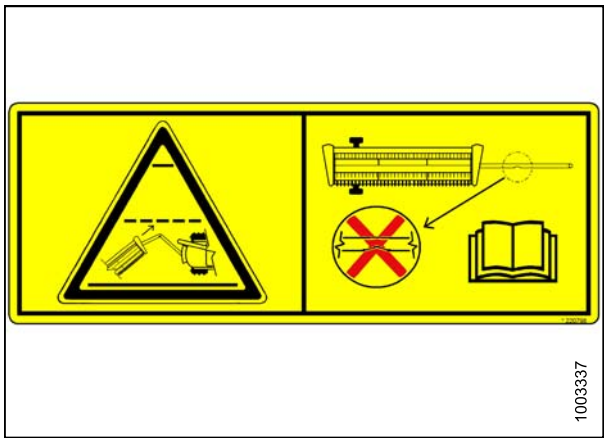


Figure 1.33: MD #220798

MD #220799

Transport/roading hazard

WARNING

- Ensure tow-bar lock mechanism is locked.

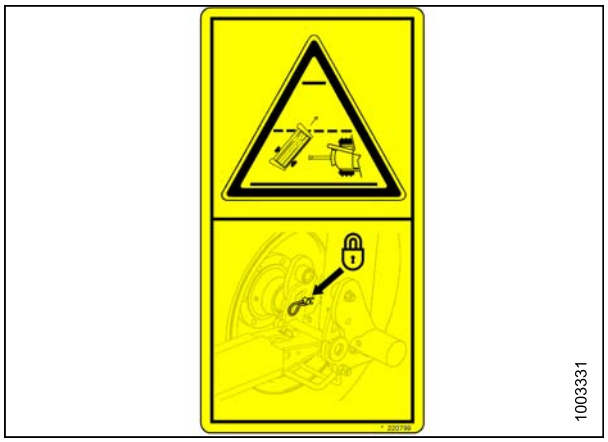


Figure 1.34: MD #220799

2 Product Overview

2.1 Definitions

The following terms and acronyms may be 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 that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between the header and the machine to which it is attached: It is used to change header angle
CGVW	Combined vehicle gross weight
D1-Series header	MacDon D120, D125, D130, D135, D140, or D145 combine draper header from the D1 model number series
DK	Double knife
DKD	Double-knife drive
DDD	Double-draper drive
DR	Double reel
Export header	Header configuration typical outside North America
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other and the fitting has been tightened to a point where the fitting is no longer loose
FFFT	Flats from finger tight
GSL	Ground speed lever
GVW	Gross vehicle weight
Hard joint	A joint made with the use of a fastener where the joining materials are highly incompressible
Header	A machine that cuts and lays crop into a windrow and is attached to a self-propelled windrower
Hex key	A hex key or Allen key (also known by various other synonyms) is a tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive)
HDS	Hydraulic deck shift
hp	Horsepower
JIC	Joint Industrial Council: A standards body that developed the standard sizing and shape for original 37° flared fitting
Knife	A cutting device which uses a reciprocating cutter (also called a sickle)
MDS	Mechanical deck shift
n/a	Not applicable

Term	Definition
Nut	An internally threaded fastener that is designed to be paired with a bolt
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
ORB	O-ring boss: A style of fitting commonly used in port opening 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
rpm	Revolutions per minute
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict the use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread in one of the mating parts
SDD	Single-draper drive
SK	Single knife
SKD	Single-knife drive
Soft joint	A joint made with the use of a fastener where the joining materials are compressible or experience relaxation over a period of time
spm	Strokes per minute
SR	Single reel
Truck	A four-wheel highway/road vehicle weighing no less than 7500 lb. (3400 kg)
Timed knife drive	Synchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor
Tension	Axial load placed on a bolt or screw, usually measured in pounds (lb.) or Newtons (N)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in foot-pounds (ft·lbf) or Newton-meters (N·m)
Torque angle	A tightening procedure where the fitting is assembled to a precondition (finger tight) and then the nut is turned further a number of degrees or a number of flats to achieve its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in the bolt or screw
UCA	Upper cross auger
Untimed knife drive	Unsynchronized motion applied at the cutterbar to two separately driven knives from a single hydraulic motor or two hydraulic motors
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or a locking mechanism

2.2 Specifications

The following symbol and letters are used in Table *2.1 Header Specifications, page 21* and Table *2.2 Header Attachments, page 24*:

- **S**: standard
- **O_F**: optional (factory installed)
- **O_D**: optional (dealer installed)
- **—** : not available

D1-Series | Attachments

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)			
20-foot header		(240 in. [6096 mm])	S
25-foot header		(300 in. [7620 mm])	S
30-foot header		(360 in. [9144 mm])	S
35-foot header		(420 in. [10,668 mm])	S
40-foot header		(480 in. [12,192 mm])	S
45-foot header		(540 in. [13,716 mm])	S
Cutterbar lift range		Varies with combine model	—
Knife			
Single-knife drive (all sizes): One hydraulic motor with V-belt to one heavy duty MD knife drive box			O_F
Double-knife drive 20–35 foot (timed): One hydraulic motor with two cogged belts to two heavy duty MD knife drive boxes			O_F
Double-knife drive 40- and 45-foot (untimed): Two hydraulic motors with V-belts to two heavy duty MD knife drive boxes			O_F
Knife stroke		3 in. (76 mm)	S
Single-knife speed[1]	25-foot header	1200–1450 (strokes/min.)	S
	30-foot header	1200–1400 (strokes/min.)	S
	35-foot header	1100–1300 (strokes/min.)	S
	40-foot header	1050–1200 (strokes/min.)	S
Double-knife speed[1]	20- and 25-foot headers	1400–1700 (strokes/min.)	S
	30- and 35-foot headers	1200–1500 (strokes/min.)	S
	40- and 45-foot headers	1100–1400 (strokes/min.)	S

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

Knife Sections			
Over-serrated / solid / bolted / 9 serrations per inch			O_F
Over-serrated / solid / bolted / 14 serrations per inch			O_F
Knife overlap at center (double-knife headers)		1/8 in. (3 mm)	S
Guards and Hold-Downs			
Guard: pointed / forged / double heat treated (DHT) Hold-down: Sheet metal / adjustment bolt			O_F
Guard: pointed / forged / case hardened (CH) Hold-down: Sheet metal / adjustment bolt			O_F
Guard: stub / forged bottom / forged top / adjustment plate			O_F
Guard: stub / forged bottom / sheet metal top / adjustment bolt			O_F
Guard: four point / no-choke design (two long points with tangs / two short points without tangs)			O_F
Guard Angle (Cutterbar on Ground)			
Center-link retracted	20- and 25-foot headers	7.0 Degrees	S
Center-link retracted	30–45-foot headers	2.0 Degrees	S
Center-link extended	20- and 25-foot headers	12.4 Degrees	S
Center-link extended	30–45-foot headers	7.4 Degrees	S
Conveyor (Draper) and Decks			
Draper width		41-19/32 in. (1057 mm)	S
Draper drive		Hydraulic	S
Draper speed (FM100 Float Module controlled)		0–464 fpm (141 m/min.)	S
Delivery opening width		73-19/32 in. (1870 mm)	S
PR15 Pick-Up Reel			S
Quantity of tine tubes		5, 6, or 9	—
Center tube diameter: All reel sizes except 35-foot single span		8 in. (203 mm)	—
35-foot single span		10 in. (254 mm)	—
Finger tip radius	Factory assembled	31-1/2 in. (800 mm)	—
	Adjustment range	30-3/16 – 31-1/2 in. (766–800 mm)	—
Effective reel diameter (via cam profile)		65 in. (1650 mm)	—
Finger length		11 in. (290 mm)	—
Finger spacing (staggered on alternate bats)		6 in. (150 mm)	—
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S

Frame and Structure				
Header width	Field mode		Cut width + 15.1 in. (384 mm)	S
	Transport mode - reel fore-aft fully retracted, shortest center-link	(B)[2] long dividers installed	106 in. (2684 mm)	—
		(A)[2] long dividers removed	98 in. (2500 mm)	—

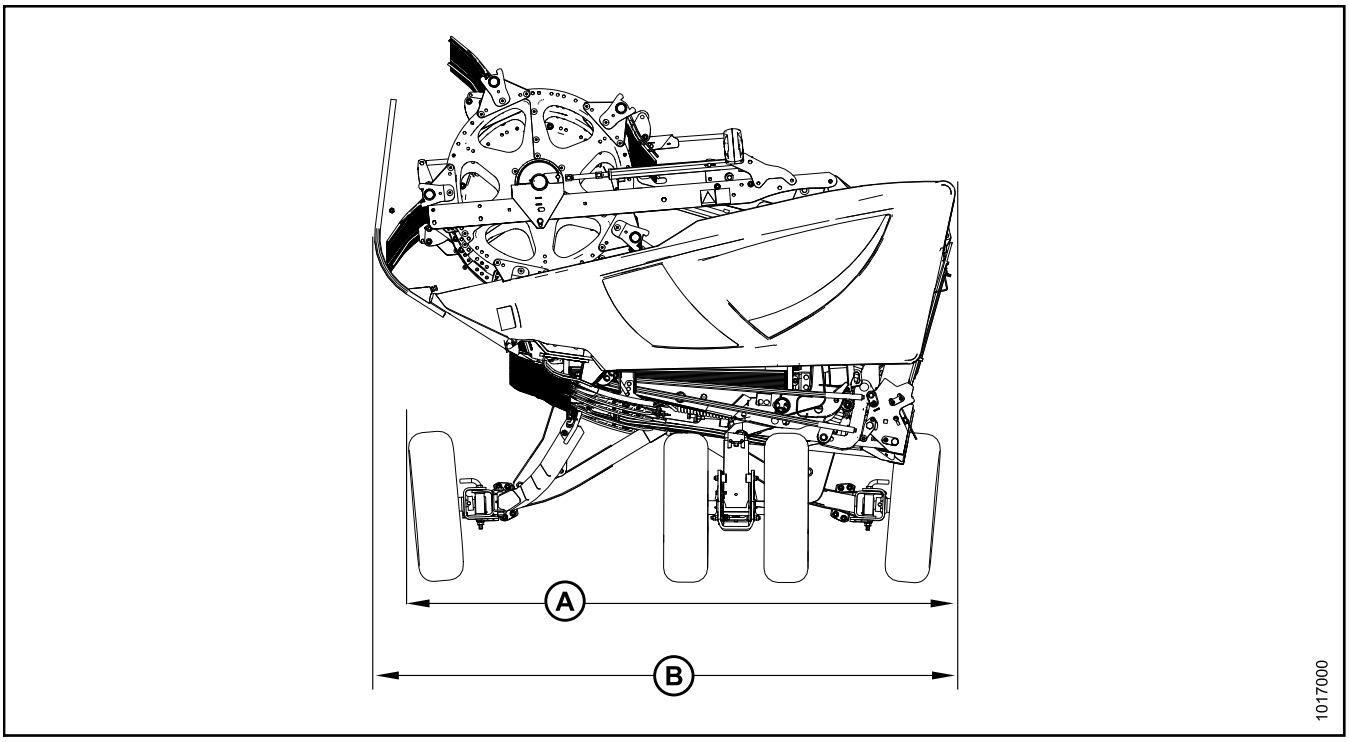


Figure 2.1: Header Width

2. Refer to Figure *2.1: Header Width, page 23*.

Table 2.2 Header Attachments

FM100 Float Module				S
Feed draper		Width	78-11/16 in. (2000 mm)	S
		Speed	350–400 fpm (107–122 m/min)	S
Feed auger		Width	65-5/16 in. (1660 mm)	S
		Outside diameter	22 in. (559 mm)	S
		Tube diameter	14 in. (356 mm)	S
		Speed (varies with combine model)	150 rpm	S
Oil reservoir capacity			16 US gallons (60 litres)	S
Oil type			DURATRAN™	—
Driveline overall length[3]	Case, New Holland	Maximum (extended)	48-7/16 in. (1230 mm)	O_F
		Minimum (compressed)	38-3/16 in. (970 mm)	
	Challenger, Gleaner, John Deere, Lexion, Massey Ferguson	Maximum (extended)	49-11/16 in. (1262 mm)	
		Minimum (compressed)	36-1/16 in. (916 mm)	
Upper Cross Auger				O_D
Outside diameter			12 in. (305 mm)	—
Tube diameter			6 in. (152 mm)	—
Stabilizer Wheel / Slow Speed Transport				O_D
Wheels			15 in.	—
Tires			P205/75 R-15	—

Table 2.3 Header Weight

Estimated weight range with base header and no float module (variances are due to different package configurations)		
20-foot header		3146–3600 lb. (1430–1633 kg)
25-foot header		3547–3872 lb. (1605–1753 kg)
30-foot header		4370–4812 lb. (1981–2178 kg)
35-foot header		4808–5337 lb. (2181–2480 kg)
40-foot header	North America frame	5197–5704 lb. (235 –2593 kg)
	Export frame	5437 lb. (2461 kg)
45-foot header	North America frame	5990 lb. (2711 kg)
	Export frame	5990 lb. (2711 kg)

3. Subtract 10-7/16 in. (265 mm) for length between yoke pins.

2.3 Component Identification

2.3.1 D1-Series Combine Header

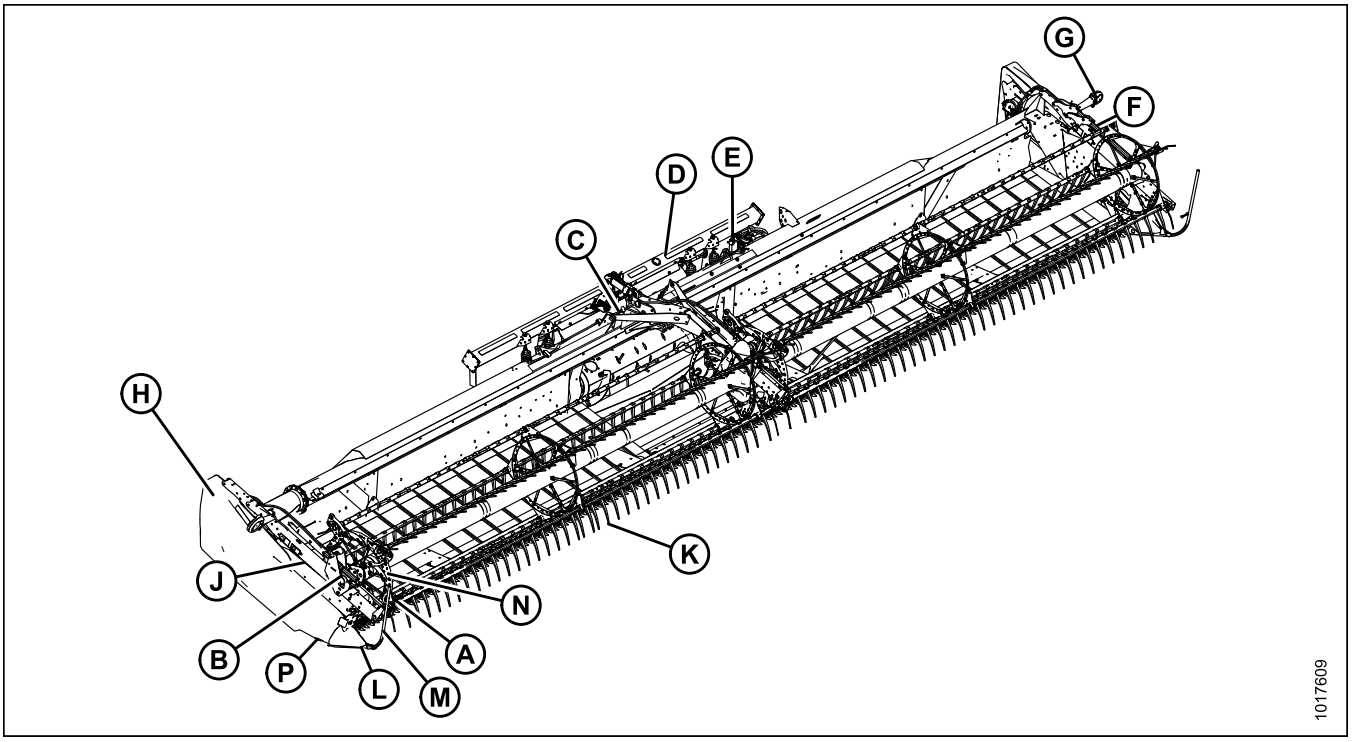


Figure 2.2: D1-Series Combine Header – Double Reel Shown

A - Pick-Up Reel
B - Reel Drive and Cam
C - Center-Link
D - FM100 Float Module
E - Hydraulic Connections
F - Reel Fore-Aft Cylinder
G - Transport Light
H - Endshield
J - Reel Lift Cylinder
K - Reel Fingers
L - Divider Cone
M - Divider Rod
N - Reel Endshields
P - Knife Drive Box (Behind Endshield)

2.3.2 FM100 Float Module

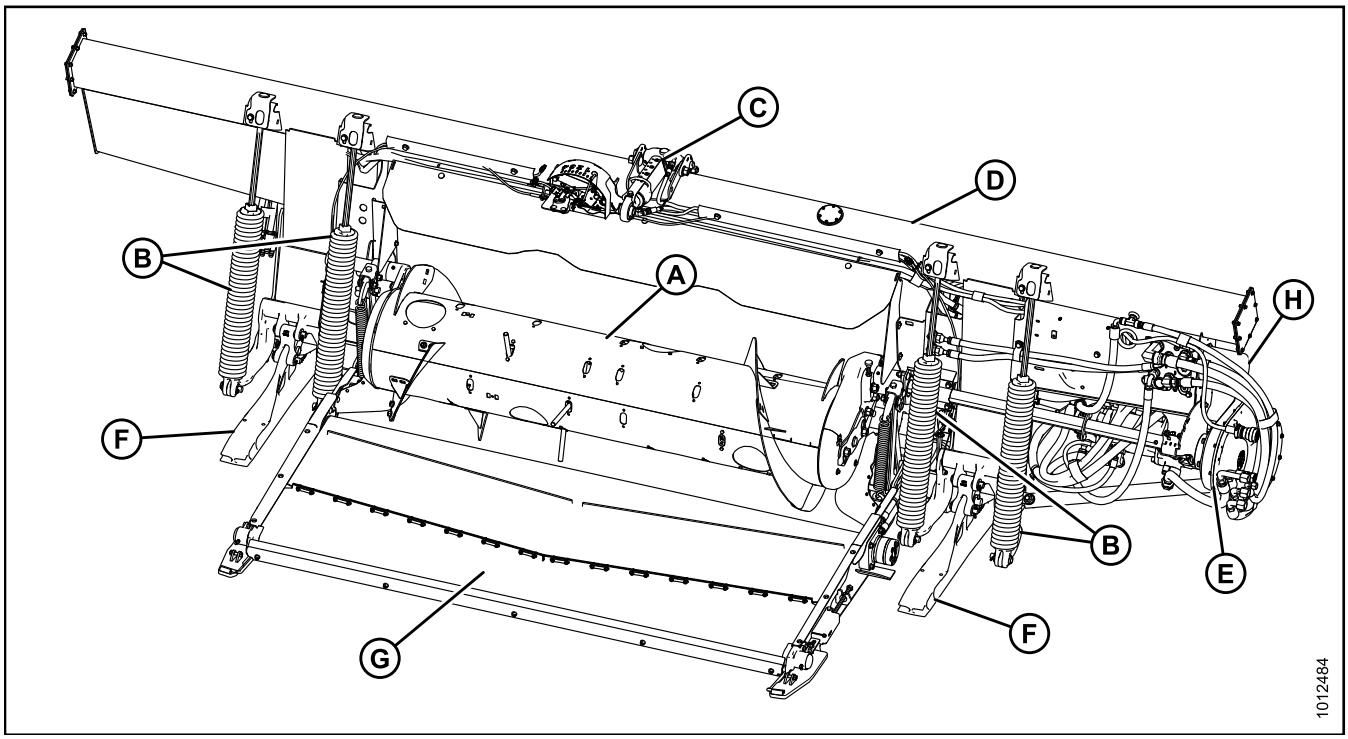


Figure 2.3: Header Side of FM100 Float Module

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

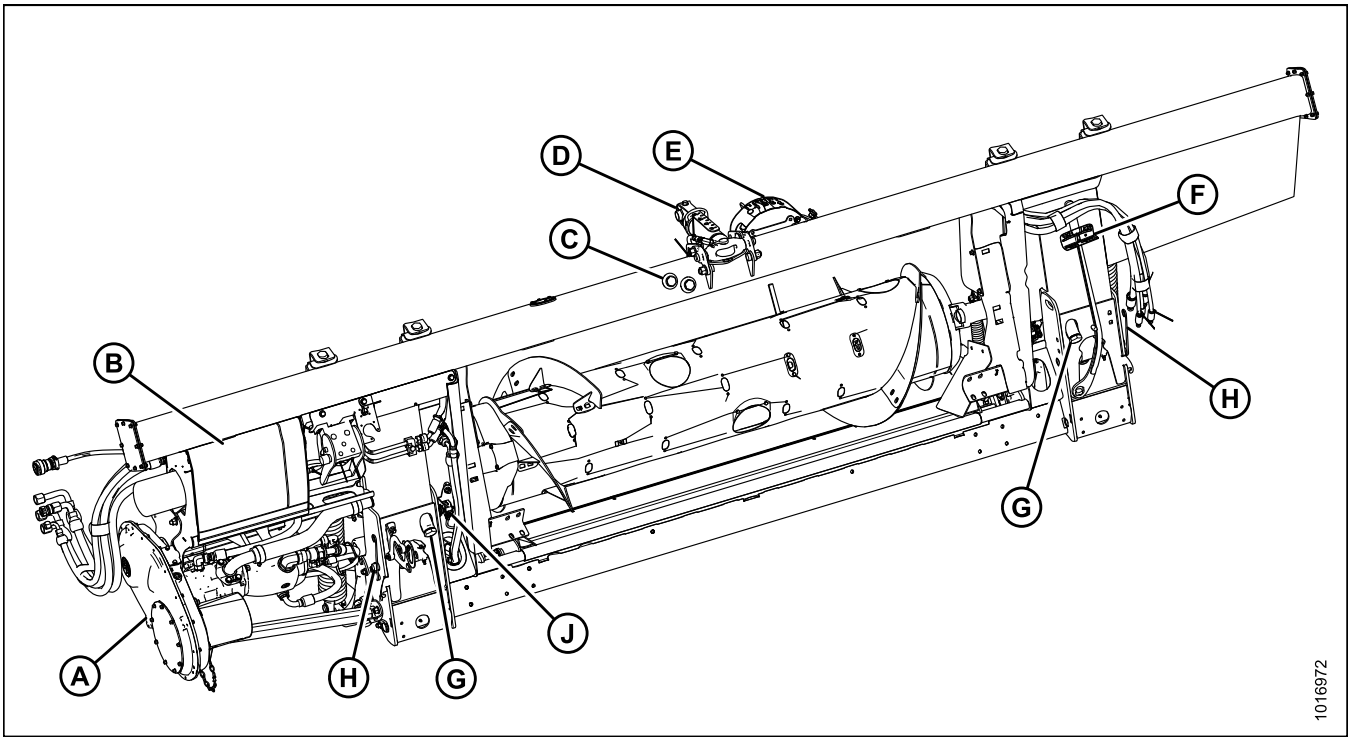


Figure 2.4: Combine Side of FM100 Float Module

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 Tube (x2)
H - Float Lock Handle (x2)
J - Auto Header Height Control (AHHC) Sensor

3 Operation

3.1 Owner/Operator Responsibilities

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 anyone 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 also 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

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 combine seat.**
- **Check the operation of all controls in a safe, clear area before starting work.**
- **Do NOT allow riders on the combine.**

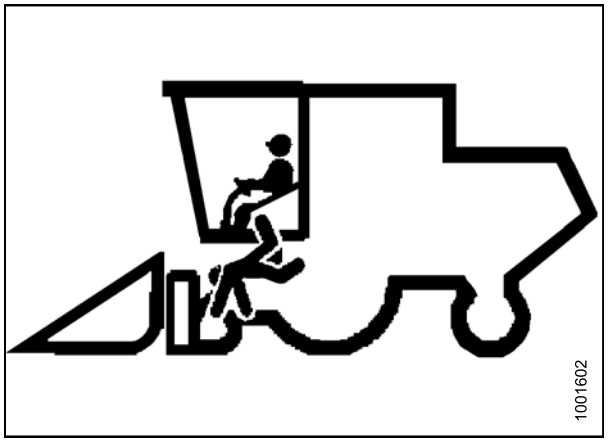


Figure 3.1: No Riders

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 transmission in gear when travelling downhill.**
- **Never attempt to get on or off a moving machine.**
- **Do NOT leave operator's station while the engine is running.**
- **To avoid bodily injury or death from unexpected startup of a machine, always stop the engine and remove the key before adjusting or removing plugged material from the machine.**
- **Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. Refer to *3.4 Shutting down the Machine, page 41*.**
- **Operate only in daylight or good artificial light.**

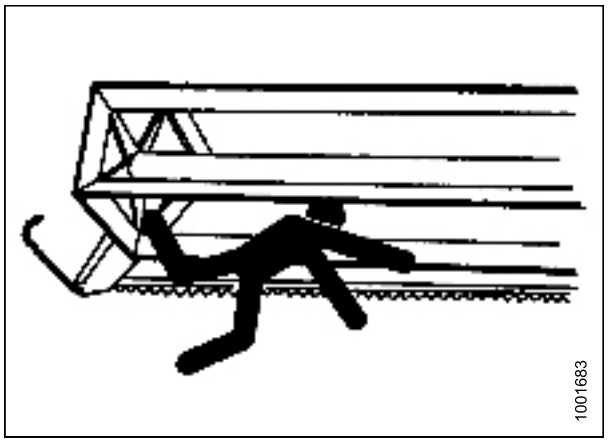


Figure 3.2: Bystander Safety

3.2.1 Header Safety Props

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

DANGER

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

3.2.2 Reel Safety Props

The reel safety props, located on the reel support arms, prevent the reel from unexpectedly lowering.

IMPORTANT:

To prevent damage to the reel support arms, do **NOT** transport the header while reel safety props are 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 the previous step on the opposite side of the header.

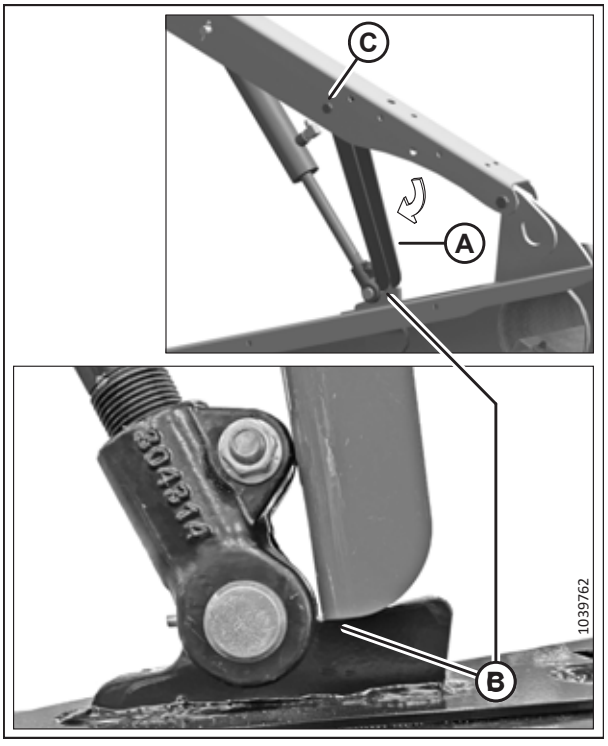


Figure 3.3: Engaged Reel Safety Prop – Left Shown

THE CONTENT ON THIS PAGE HAS CHANGED SINCE THIS MANUAL (147835 REVISION A) WAS PUBLISHED.

3. Use handle (A) to move lock rod to inboard position (B), which engages pin (C) under prop.
4. Lower reel until safety props contact the outer arm cylinder mounts and the center arm pins.

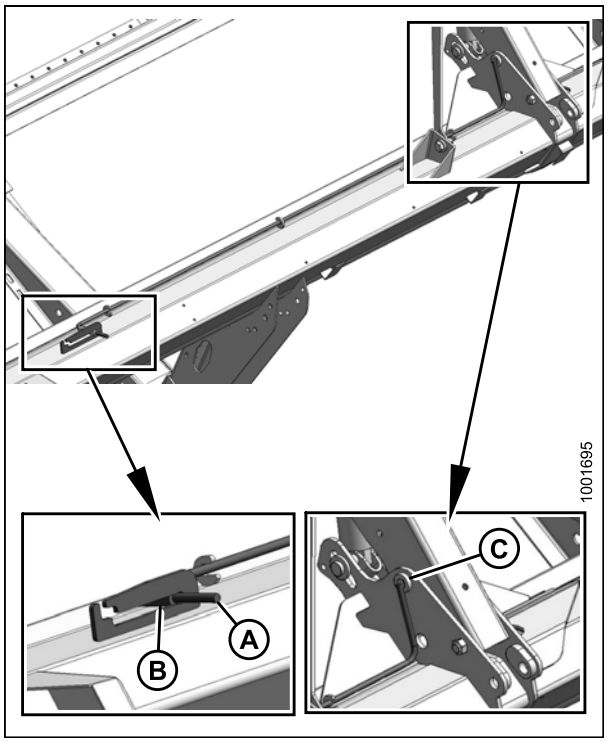


Figure 3.4: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

1. Raise the reel to maximum height.
2. Move the reel safety props (A) back inside the reel arms.

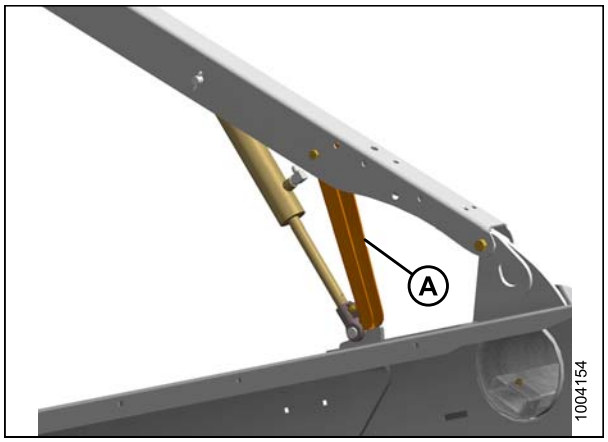


Figure 3.5: Reel Safety Prop – Left Side

3. Use the handle (B) on double-reel headers to move the lock rod (A) to the outboard position.

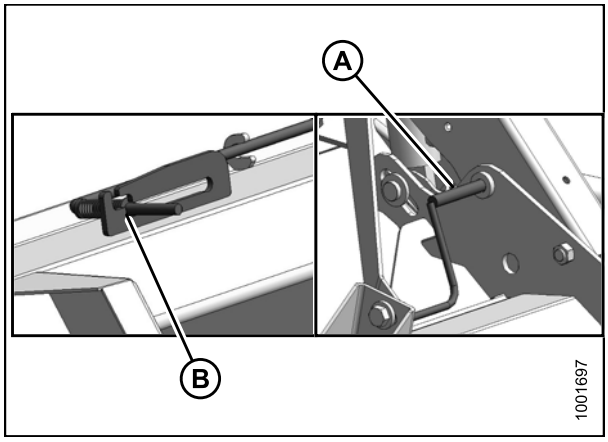


Figure 3.6: Reel Safety Prop – Center Arm

3.2.3 Endshields

A hinged, polyethylene endshield is fitted on each end of the header.

Opening Endshields

1. Push release lever (A) located on the backside of the endshield to unlock the shield.
2. Pull endshield open using handle depression (B).

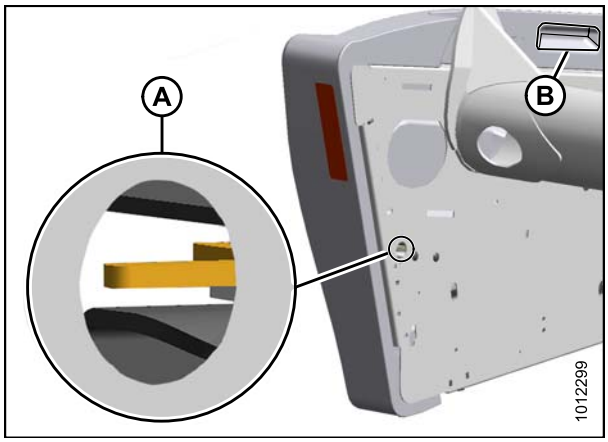


Figure 3.7: Left Endshield

3. Pull endshield at handle depression (A). Endshield is retained by a hinge tab (B) and will open in direction (C).

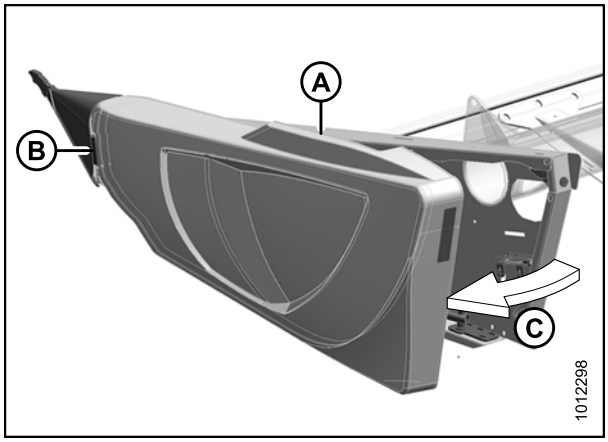


Figure 3.8: Left Endshield

4. Pull the endshield free of hinge tab (A) if additional clearance is required, and swing shield towards the rear of the header.
5. Engage safety catch (B) on hinge arm to secure the shield in fully open position.

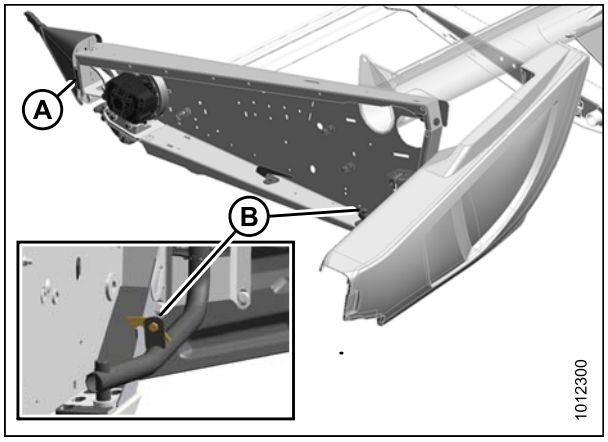


Figure 3.9: Left Endshield

Closing Endshields

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

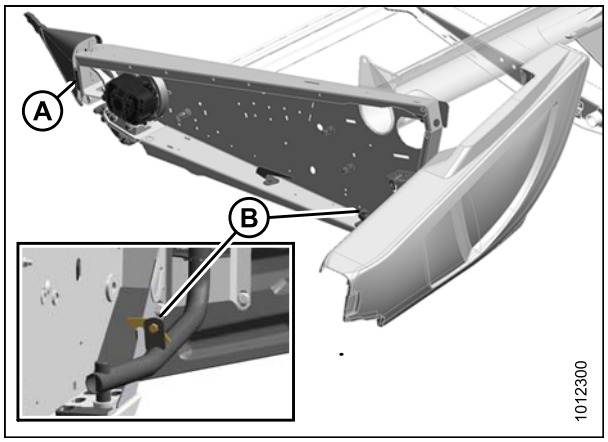


Figure 3.10: Left Endshield

3. Swing endshield in direction (A) into closed position. Engage lock with a firm push.
4. Verify that endshield is locked.

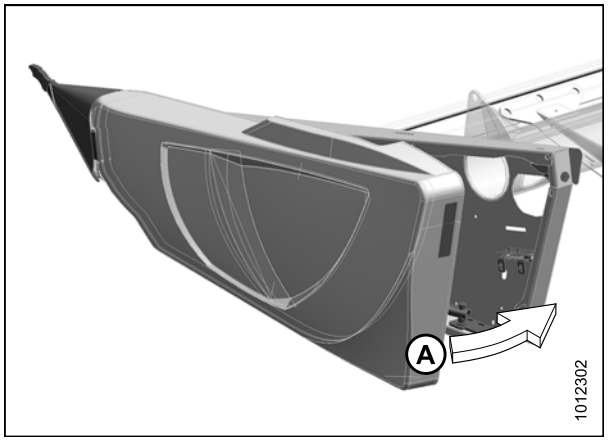


Figure 3.11: Left Endshield

Removing Endshields

1. Fully open endshield. Refer to *Opening Endshields, page 33*.
2. Engage lock (A) to prevent endshield movement.
3. Remove self-tapping screw (B).
4. Slide endshield upwards and remove from hinge arm.
5. Place endshield away from work area.

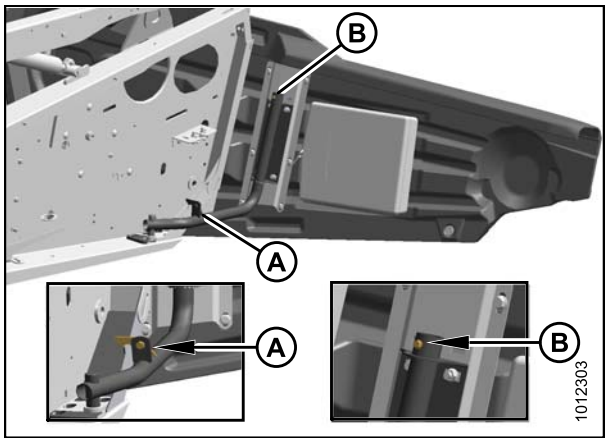


Figure 3.12: Left Endshield

Installing Endshields

1. Guide endshield onto hinge arm and slowly slide it downwards.
2. Install self-tapping screw (B).
3. Disengage lock (A) to allow endshield movement.
4. Close endshield. Refer to *Closing Endshields, page 34*.

NOTE:
Endshields may expand or contract when subjected to large temperature changes. Top pin and lower latch bracket positions can be adjusted to compensate for dimensional changes. Refer to *Checking and Adjusting Endshields, page 36*.

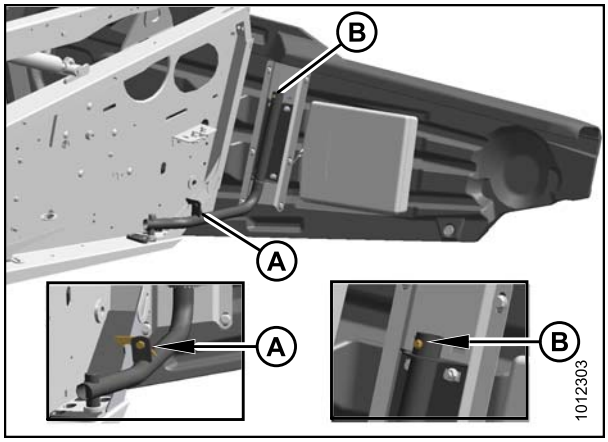


Figure 3.13: Left Endshield

Checking and Adjusting Endshields

Endshields are subject to expansion or contraction caused by large temperature variations. The position of the top pin and lower catch can be adjusted to compensate for dimensional changes.

1. Check gap (X) between front end of shields and header frame and compare to the values in Table *3.1 Endshield Gap at Various Temperatures, page 36*.

Table 3.1 Endshield Gap at Various Temperatures

Temperature in Degrees F (C)	Gap (X) in Inches (mm)
25 (–4)	1-1/10 (28)
45 (7)	1 (24)
65 (18)	13/16 (20)
85 (29)	5/8 (16)
105 (41)	1/2 (12)
125 (52)	5/16 (8)
145 (63)	3/16 (4)
165 (89)	0

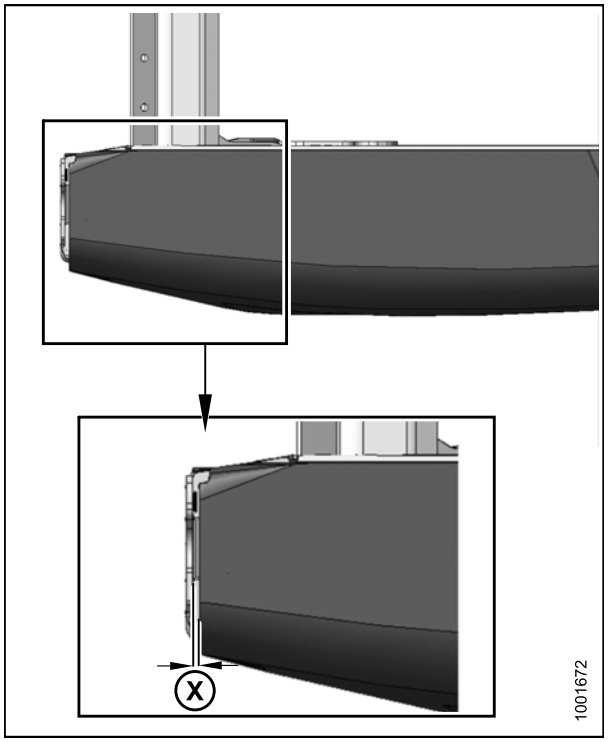


Figure 3.14: Gap between Endshield and Header Frame

NOTE:
If adjustment is required, follow these steps:

Opening the endshield:

2. Push release lever (A) located on the backside of the endshield to unlock the shield.
3. Pull endshield open using handle depression (B).

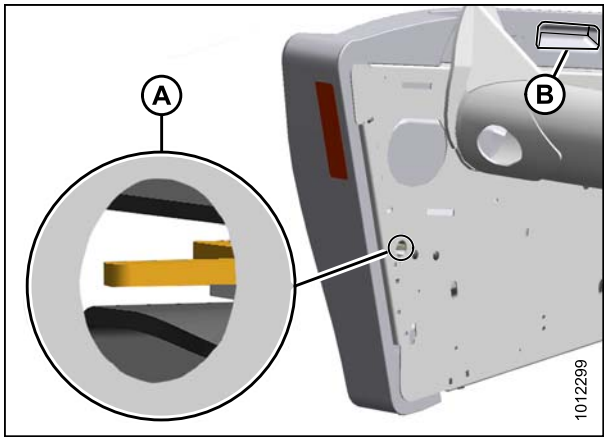


Figure 3.15: Left Endshield

4. Pull endshield at handle depression (A). Endshield is retained by a hinge tab (B) and will open in direction (C).

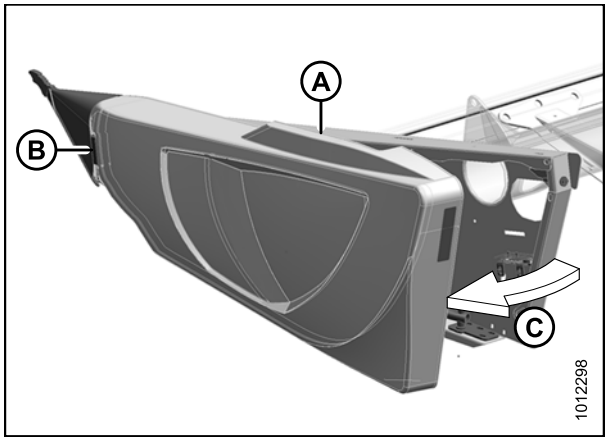


Figure 3.16: Left Endshield

5. Pull the endshield free of hinge tab (A) if additional clearance is required, and swing shield towards the rear of the header.
6. Engage safety catch (B) on hinge arm to secure the shield in fully open position.

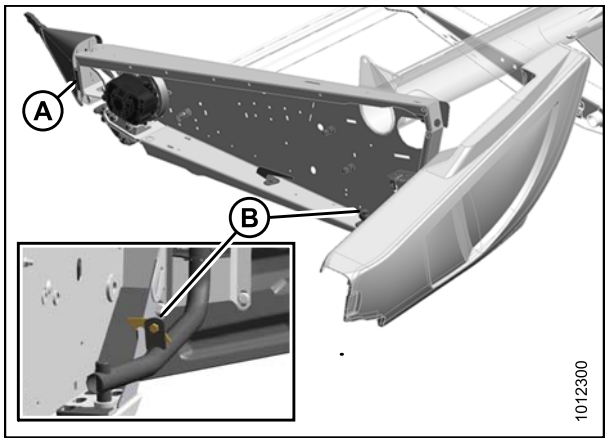


Figure 3.17: Left Endshield

Adjusting the endshield gap:

7. Loosen the four bolts (A) on the support tube bracket (B).

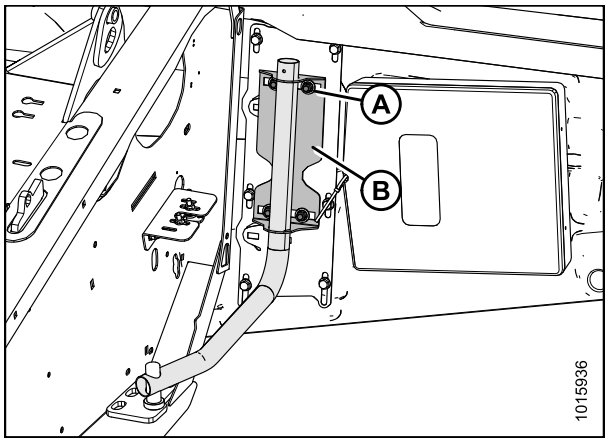


Figure 3.18: LH Endshield Support Tube

8. Loosen the three bolts (A) on latch assembly (B).
9. Adjust latch assembly to achieve the desired gap between the front end of shield and header frame in accordance with Table *3.1 Endshield Gap at Various Temperatures, page 36*.
10. Tighten the three bolts (A) on latch assembly.
11. Tighten the four bolts on the support tube bracket.
12. Close endshield.

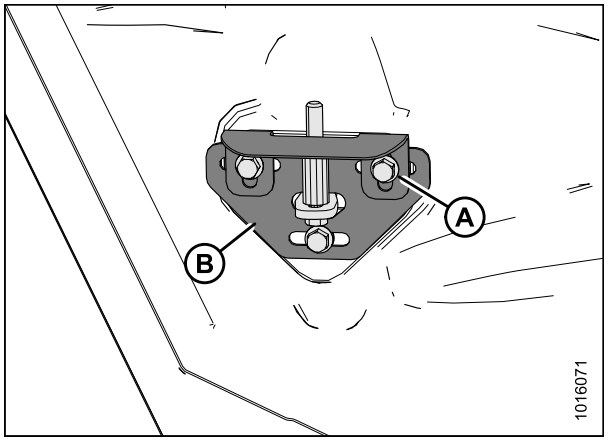


Figure 3.19: LH Endshield Latch Assembly

Closing the endshield:

13. Disengage lock (B) to allow endshield to move.
14. Insert front of endshield behind hinge tab (A) and into divider cone.

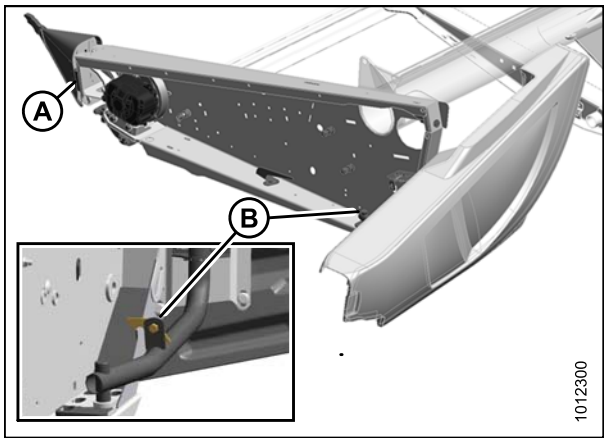


Figure 3.20: Left Endshield

15. Swing endshield in direction (A) into closed position. Engage lock with a firm push.
16. Verify that endshield is locked.

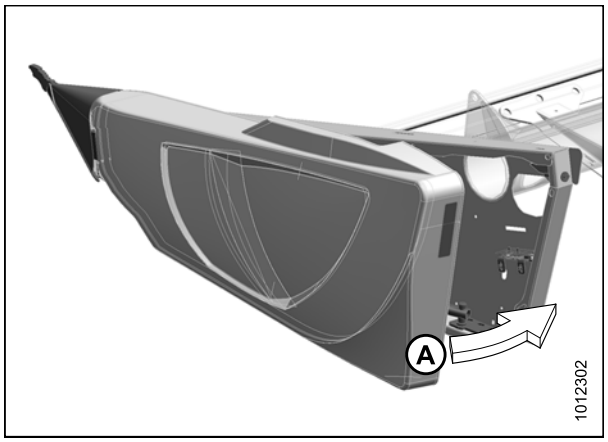


Figure 3.21: Left Endshield

3.2.4 Daily Start-Up Check

CAUTION

- **Clear the area of other persons, pets, etc. 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 with slip-resistant soles.**
- **Remove foreign objects from the machine and surrounding area.**
- **Carry with you any protective clothing and personal safety devices that could be necessary through the day. Do NOT take chances. You may need a hard hat, protective glasses or goggles, heavy gloves, a respirator or filter mask, or wet weather gear.**
- **Protect against noise. Wear a suitable hearing protective device such as ear muffs or ear plugs to protect against objectionable or uncomfortably loud noises.**

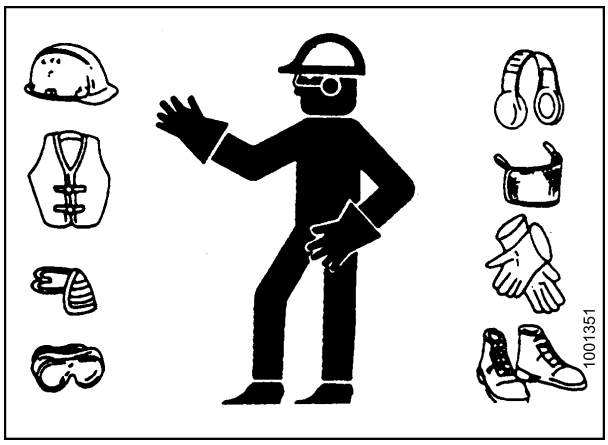


Figure 3.22: Safety Devices

Complete the following tasks each day before start-up:

1. Check the machine for leaks and any parts that are missing, broken, or not working correctly.

   NOTE:
   Use proper procedure when searching for pressurized fluid leaks. Refer to *5.3.5 Checking Hydraulic Hoses and Lines, page 305*.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 301*.

3.3 Break-in Period

CAUTION

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

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

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:
   Reels and side drapers will not operate until oil flow fills the lines.

2. Refer to *5.3.2 Break-In Inspection, page 303* and perform all the specified tasks.

3.4 Shutting down the Machine

DANGER

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

To shut down, and before leaving the combine seat for any reason, follow these steps:

- Park on level ground whenever possible.
- Lower the header fully.
- Place all controls in NEUTRAL or PARK.
- Disengage the header drive.
- Lower and fully retract the reel.
- Stop the engine and remove the key from the ignition.
- Wait for all movement to stop.

3.5 Cab Controls

CAUTION

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

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

3.6 Header Setup

3.6.1 Header Attachments

Several attachments to improve the performance of your D1-Series header are available as options that can be installed by your MacDon Dealer. Refer to *6 Options and Attachments, page 463* for descriptions of available items.

3.6.2 Header Settings

Table *3.2 D1-Series/FM100 Combine Header Recommended Settings, page 44* provides a guideline for setting up the D1 Draper Header; however, the suggested settings can be changed to suit various crops and conditions not covered in the table.

Refer also to *3.6.4 Reel Settings, page 49*.

For FM100 auger configurations, refer to *4.1 Float Module Feed Auger Configurations, page 222*.

Table 3.2 D1-Series/FM100 Combine Header Recommended Settings

Crop Type	Stubble Height in. (mm)	Crop Condition	Divider Rods	Draper Speed Setting[4]	Header Angle[5][6]	Reel Cam	Reel Speed %[7]	Reel Position	Skid Shoe Position[6]	Stabilizer Wheels[8]	Upper Cross Auger
Cereals	<4 (102)	Light	Off	8	B – C	3	10–15	6 or 7	Up or middle	Storage	Not required
		Normal	On	7		2	10				Recommended
		Heavy									
		Lodged	Off			3 or 4	5–10	4 or 5			Not required
	4–8 (102–203)	Light	Off	8	B – C	4	10–15	6 or 7	Middle or down	As required[6]	Not required
		Normal	On	7	A	2	10				Recommended
		Heavy									
		Lodged	Off		D	3 or 4	5–10	4 or 5	Down		Not required
	8 + (203+)	Light	Off	8	A	4	10–15	6 or 7	Not applicable	As required[6]	Not required
		Normal	On	7		2	10				
		Heavy			B – C						
		Lodged	Off			3 or 4	5–10	4 or 5			
Canola	4–8 (102–203)	Light	On	7	A	2	5–10	6 or 7	Down	As required[6]	Recommended
		Normal			B – C	1	10		Middle or down		
		Heavy		8				3 or 4	Down		
		Lodged		7	D	2	5–10		Middle or down		
	8 + (203+)	Light	On	7	A	2	5–10	6 or 7	Not applicable	As required[6]	Recommended
		Normal			B – C		10				
		Heavy		8		1 or 2		3 or 4			
		Lodged		7	D	2 or 3	5–10				

4. Setting on FM100 draper control.
5. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
6. Cutting height is controlled with a combination of skid shoes and header angle.
7. Percentage above ground speed.
8. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.

Crop Type	Stubble Height in. (mm)	Crop Condition	Divider Rods	Draper Speed Setting[4]	Header Angle[5][6]	Reel Cam	Reel Speed %[7]	Reel Position	Skid Shoe Position[6]	Stabilizer Wheels[8]	Upper Cross Auger
California Rice	<4 (102)	Light	Rice divider rod[9]	4	D	2	10–15	6 or 7	Up or middle	Storage	Not required
		Normal			B – C		10	4 or 5			
		Heavy									
		Lodged			D		5–10				
	4–8 (102–203)	Light	Rice divider rod[9]	4	D	3	10–15	6 or 7	Middle or down	As required[6]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	4	5–10				
	8 + (203+)	Light	Rice divider rod[9]	4	A	3	10–15	6 or 7	Not applicable	As required[6]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	4	5–10				
Delta Rice	2–6 (51–152)	Light	Off	6	D	2 or 3	10–15	6 or 7	Middle or down	As required[6]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	3 or 4	5–10	4 or 5			
	6 + (152+)	Light	Off	6	A	2 or 3	10–15	6 or 7	Not applicable	As required[6]	Not required
		Normal			B – C		10				
		Heavy									
		Lodged			D	3 or 4	5–10	4 or 5			
Edible Beans	On ground	Light	On	8	D	2	5–10	6 or 7	Up or middle	Storage	Not required
		Normal		7	B – C		10				
		Heavy									
		Lodged			D		5–10				
Flax	2–6 (51–153)	Light	On	8	B – C	2	5–10	6 or 7	Middle or down	As required[6]	Not required
		Normal		7	A		10				
		Heavy			B – C						
		Lodged			D		5–10		Down		

9. Available from your Dealer. Rice divider rod not required on both ends of header.

Crop Type	Stubble Height in. (mm)	Crop Condition	Divider Rods	Draper Speed Setting[4]	Header Angle[5,6]	Reel Cam	Reel Speed %[7]	Reel Position	Skid Shoe Position[6]	Stabilizer Wheels[8]	Upper Cross Auger
Peas	On ground	Light	On	7	B – C	2	5–10	6 or 7	Up or middle	Storage	Recom-mended
		Normal					10				
		Heavy			D		5–10	4 or 5			
		Lodged									
Lentils	On ground	Light	On	8	B – C	2	5–10	6 or 7	Up or middle	Storage	Not required
		Normal		7			10				
		Heavy			D		5–10				
		Lodged									

3.6.3 Optimizing Header for Straight Combining Canola

Ripe canola can be straight combined, but most varieties are very susceptible to shelling and subsequent seed loss. This section provides recommended attachments, settings, and adjustments to optimize D1-Series Draper Headers for straight combining canola.

Recommended Attachments

The optimization process includes the following modifications to the header:

- Installing a full-length upper cross auger
- Installing vertical knives
- Installing short center reel braces

NOTE:
Each kit includes installation instructions and the necessary hardware. Refer to *6 Options and Attachments, page 463*.

Recommended Settings

Optimizing the header requires adjustments to the following settings:

- Moving the reel fore-aft cylinders to the alternative aft location. Refer to *Repositioning Fore-Aft Cylinders on Double Reel, page 77* or *Repositioning Fore-Aft Cylinders on Single Reel, page 75*.
- Adjusting reel fore-aft position. Refer to *Adjusting Reel Fore-Aft Position, page 73*.
- Adjusting reel height so that fingers just engage the crop. Refer to *3.7.8 Reel Height, page 69*.
- Setting reel cam to position 1. Refer to *Adjusting Reel Cam, page 84*.
- Setting reel speed equal to ground speed and increase as required. Refer to *3.7.4 Reel Speed, page 64*.
- Set the side draper speed to position nine on FM100 control valve. Refer to *3.7.6 Draper Speed, page 66*.
- Adjust finger timing to early position.
- Lock drum flotation.

Checking and Adjusting Feed Auger Spring Tension

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 tension is factory-set and is adequate for most crop conditions.

DANGER

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

1. Raise header to full height, shut down combine, and remove key from ignition.
2. Engage header lift cylinder safety props.
3. Check the thread length protruding past the nut (B). Length should be 7/8–1 in. (22–26 mm).

If adjustment is required, follow these steps:

4. Loosen the upper jam nut (A) on spring tensioner.
5. Turn lower nut (B) until the length of protruding thread (C) is 7/8–1 in. (22–26 mm).
6. Tighten jam nut (A).
7. Repeat for opposite side.

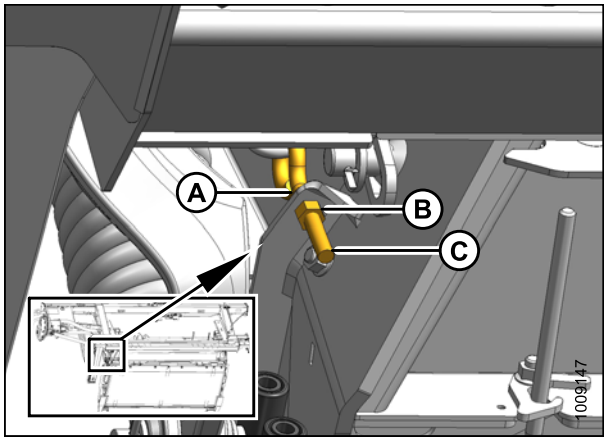
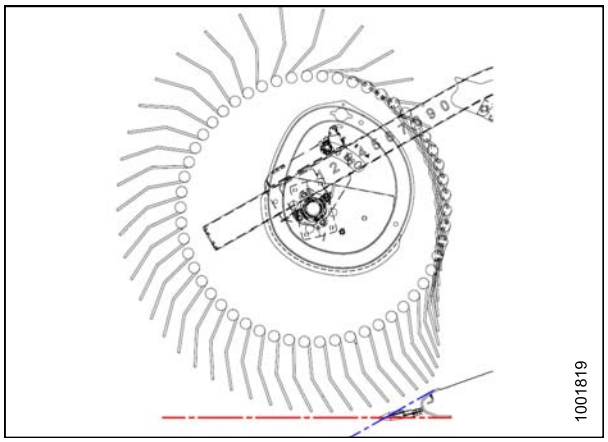
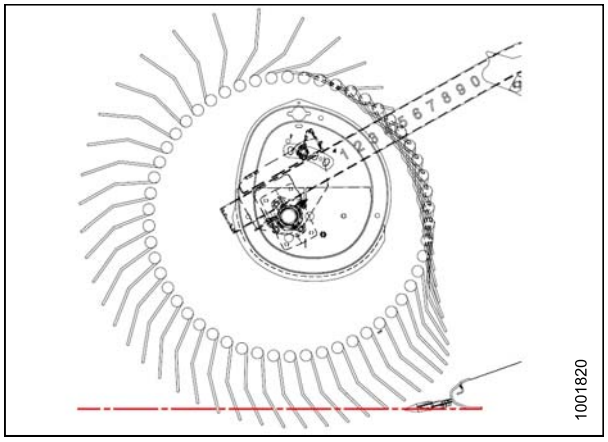
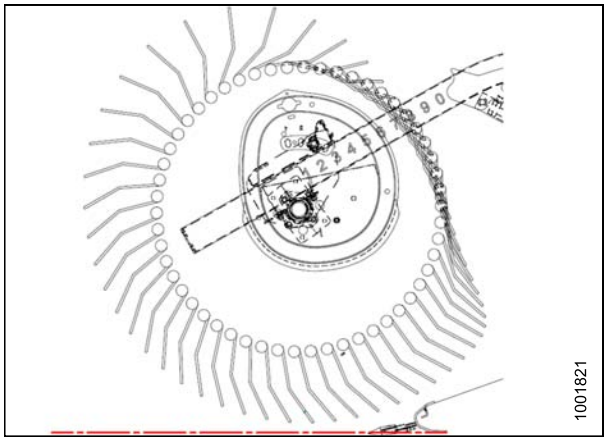
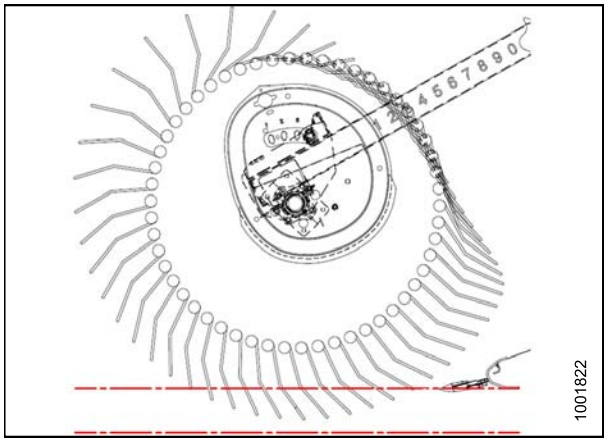


Figure 3.23: Spring Tensioner

3.6.4 Reel Settings

Table 3.3 D1-Series Recommended Reel Settings

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0)	6 or 7	
2 (20%)	3 or 4	

Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
3 (30%)	6 or 7	
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 skid shoes or header angle to compensate. Adjust the reel rearwards to position the reel further 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 further from the ground, while keeping material flowing onto drapers.
- To leave the maximum amount of stubble behind 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 (minimum area of exposed draper between the reel and the header backsheet) occurs with the reel in the furthest aft position.
- Maximum crop carrying capacity (maximum area of exposed draper between the reel and the header backsheet) occurs with the reel in the furthest forward position.
- The tip speed of the fingers/tines at the cutterbar becomes higher than the reel speed at higher cam settings due to the nature of the cam action. Refer to Table *3.3 D1-Series Recommended Reel Settings, page 49*.

3.7 Header Operating Variables

Satisfactory function of the header in all situations requires making proper adjustments to suit various crops and conditions.

Correct operation reduces crop loss and increases productivity. As well, proper adjustments and timely maintenance will increase the length of service you receive from your machine.

The variables listed in Table *3.4 Operating Variables, page 51* 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 adjustments have been preset at the factory, but the settings can be changed to suit crop conditions.

Table 3.4 Operating Variables

Variable	Refer to
Cutting height	*3.7.1 Cutting Height, page 51*
Header float	*3.7.2 Header Float, page 57*
Header angle	*3.7.3 Header Angle, page 63*
Reel speed	*3.7.4 Reel Speed, page 64*
Ground speed	*3.7.5 Ground Speed, page 65*
Reel height	*3.7.8 Reel Height, page 69*
Reel fore-aft position	*3.7.9 Reel Fore-Aft Position, page 73*
Reel tine pitch	*3.7.10 Reel Tine Pitch, page 82*
Crop divider rods	*3.7.11 Crop Dividers, page 85*
Feed auger configurations	*4.1 Float Module Feed Auger Configurations, page 222*

3.7.1 Cutting Height

The header design allows you to cut the crop above the ground in relation to the desired stubble height or to cut the crop at ground level with the header on the ground. Cutting height will vary depending on the type of crop, crop conditions, etc.

Cutting off the Ground

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. The system produces even stubble height and greatly reduces operator fatigue.

Cutting height is controlled using a combination of the combine header height control and a stabilizer wheel system (or stabilizer/slow speed transport wheel system).

The stabilizer wheel system (or stabilizer/slow speed transport wheel system) is available only for 30-, 35-, 40-, and 45-foot headers.

If stabilizer wheels are installed, refer to *Adjusting Stabilizer Wheels, page 54* to change the wheel position.

If stabilizer/slow speed transport wheels are installed, refer to *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52* to change the wheel position.

Adjusting Stabilizer/Slow Speed 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/slow speed transport wheels.

DANGER

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

1. Raise the header so the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Check that the float is working properly. Refer to *Checking and Adjusting Header Float, page 58*.
3. Remove the hairpin (A) from the latch on the right wheel assembly.
4. Disengage the latch (B), lift the wheel out of the hook, and place on the ground as shown. (This reduces weight of assembly and makes adjusting the wheel position easier.)
5. Lift the left wheel slightly to support the weight, and the 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 the handle (C) to lock.
8. Lift the right wheel back into the field position and ensure the latch (B) is engaged.
9. Secure the latch with hairpin (A).
10. 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 the slot (B) in the upper support.
12. Push down on the handle (A) to lock.

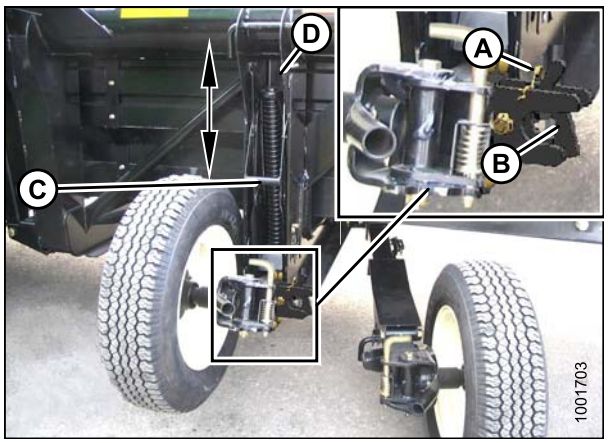


Figure 3.24: Right Wheel

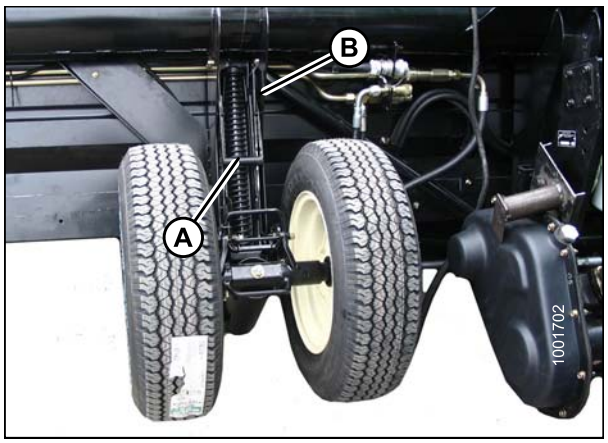


Figure 3.25: Left Wheel

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

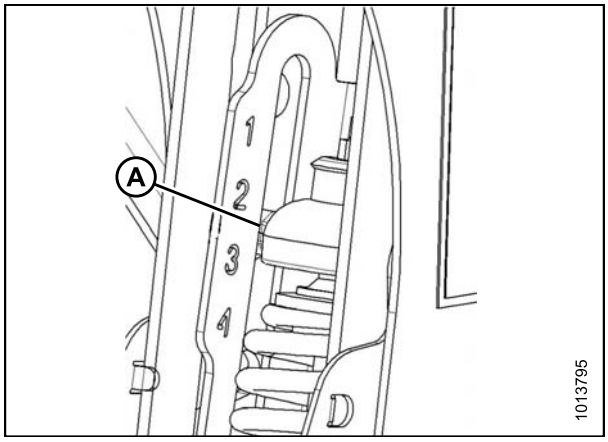


Figure 3.26: Load Indicator

IMPORTANT:
Continuous operation with excessive spring compression (i.e., load indicator reading greater than 4 or a compressed length [A] less than 11-5/8 in. [295 mm]) can result in damage to the suspension system.

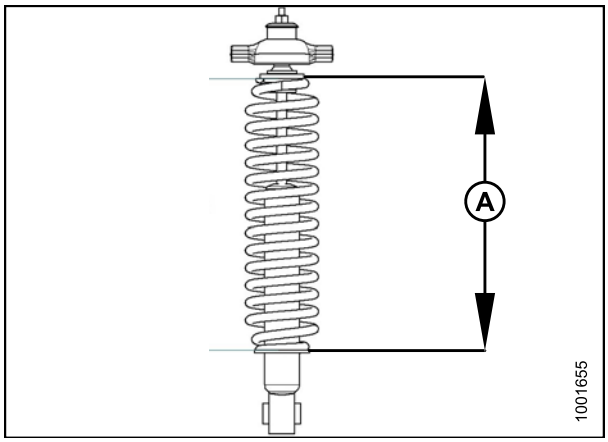


Figure 3.27: Spring Compression

14. Adjust the header angle to the desired working angle with the machine's header angle controls. If header angle is not critical, set it to mid-position.
15. Use the combine's auto header height control (AHHC) to automatically maintain cutting height. Refer to *3.8 Auto Header Height Control (AHHC), page 92* and your combine operator's manual for details.

NOTE:
The height sensor on the FM100 Float Module must be connected to the combine header control module in the cab.

NOTE:
Header angle adjustments or AHHC ground pressure control may be used to adjust the cutting height while moving.

Adjusting Stabilizer Wheels

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

Refer to *3.6.2 Header Settings, page 43* for recommended use in specific crops and crop conditions.

DANGER

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

1. Raise the header until the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Check that the float is working properly. Refer to *3.7.2 Header Float, page 57*.

CAUTION

Handle may be under tension—especially when the wheels are on the ground. Raise the header until the wheels are off the ground before making adjustments.

3. Support the wheel weight by lifting slightly with one hand on handle (B), and pull up on the handle (A) to release the lock.
4. Lift the wheel using handle (B), and engage the support channel into the center slot (C) in the upper support.
5. Push down on the handle (A) to lock.

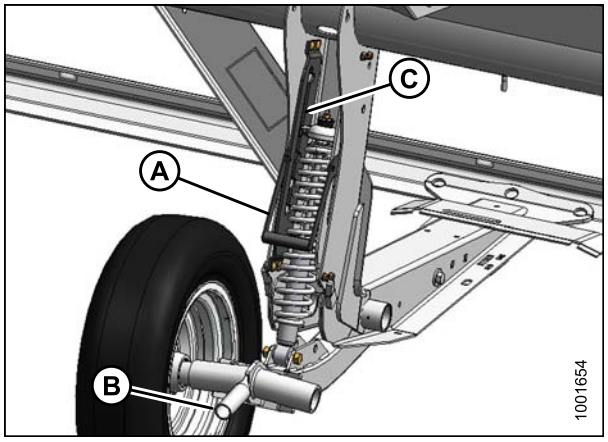


Figure 3.28: Stabilizer Wheel

6. Lower the header to the desired cutting height using the combine controls and check the load indicator.

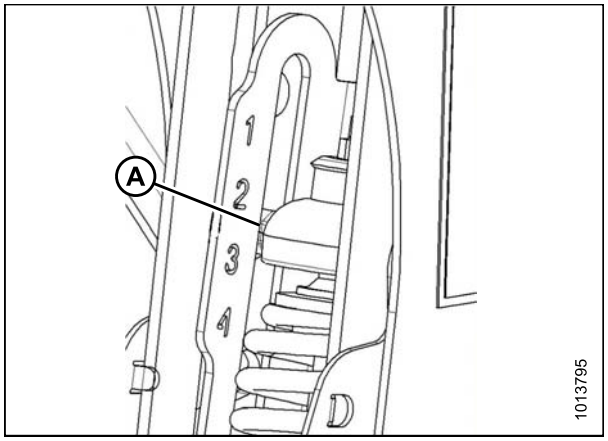


Figure 3.29: Load Indicator

IMPORTANT:
Continuous operation with excessive spring compression (i.e., load indicator reading greater than 4 or a compressed length less than 11-5/8 in. [295 mm]) (A) can result in damage to the suspension system.

7. Adjust the header angle to the desired working angle with the machine's header angle controls. If header angle is not critical, set it to mid-position.
8. Use the combine's Auto Header Height Control (AHHC) to automatically maintain cutting height. Refer to *3.8 Auto Header Height Control (AHHC), page 92* and your combine operator's manual for details.

NOTE:
The height sensor on the FM100 Float Module must be connected to the combine height control system in the cab.

NOTE:
Header angle adjustments or AHHC ground pressure control may be used to adjust the cutting height while moving.

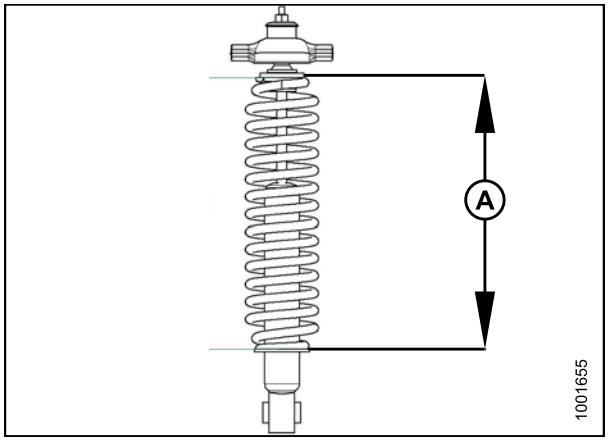


Figure 3.30: Spring Compression

Cutting on the 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—it is **NOT** controlled by the header lift cylinders. The skid shoes and center-link allow the you to adjust to field conditions and maximize the amount of material cut while reducing damage to the knife caused by stones and debris.

The header float system floats the header over the surface to compensate for ridges, trenches, and other variations in ground contour to prevent the cutterbar from pushing into the ground or leaving uncut crop.

Refer to the following for additional information:

- *Adjusting Inner Skid Shoes, page 56*
- *Adjusting Outer Skid Shoes, page 56*
- *3.7.3 Header Angle, page 63*
- *3.7.2 Header Float, page 57*

Adjusting Inner Skid Shoes

DANGER

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

1. Raise header to full height, engage safety props.
2. Shut off the engine, and remove key.
3. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
   - *Adjusting Stabilizer Wheels, page 54*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52*
4. Remove the lynch pin (A) from each skid shoe.
5. Hold the shoe (B) and remove the pin (C) by disengaging from the frame and pulling away from the shoe.
6. Raise or lower the skid shoe (B) to achieve the desired position using the holes in the support (D) as a guide.
7. Install the pin (C), engage in frame, and secure with lynch pin (A).
8. Check that all of the skid shoes are adjusted to the same position.
9. Adjust the header angle to the desired working position using the machine's header angle controls. If the header angle is not critical, set it to the mid-position.
10. Check the header float. Refer to *3.7.2 Header Float, page 57*.

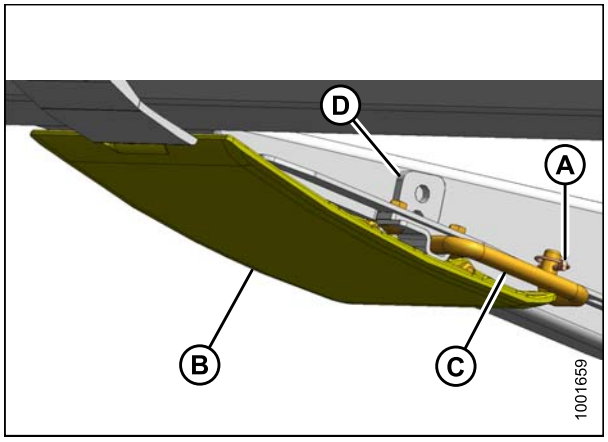


Figure 3.31: Inner Skid Shoe

Adjusting Outer Skid Shoes

DANGER

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

1. Raise the header to its full height, engage the safety props.
2. Shut off the engine, and remove the key from the ignition.
3. Raise the stabilizer wheels or slow speed transport wheels fully (if installed). Refer to the following:
   - *Adjusting Stabilizer Wheels, page 54*
   - *Adjusting Stabilizer/Slow Speed Transport Wheels, page 52*

4. Remove the lynch pin (A) from each skid shoe (B).
5. Hold the shoe (B) and remove the pin (C) by disengaging from the frame and pulling away from the shoe.
6. Raise or lower the skid shoe (B) to achieve the desired position using the holes in the support (D) as a guide.
7. Reinstall pin (C), engage in frame, and secure with lynch pin (A).
8. Check that all of the skid shoes are adjusted to the same position.
9. Check the header float. Refer to *3.7.2 Header Float, page 57*.

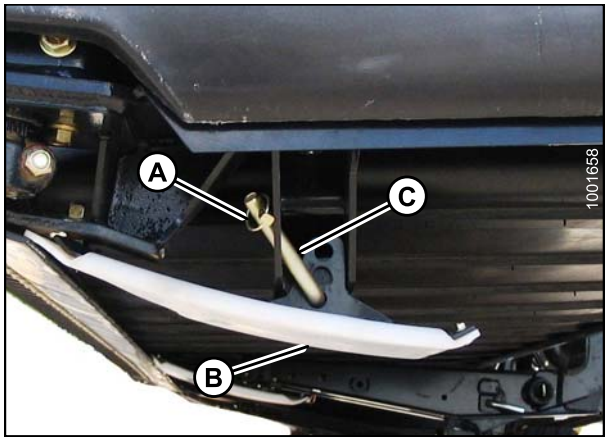


Figure 3.32: Outer Skid Shoe

3.7.2 Header Float

The header float system reduces the ground pressure at the cutterbar allowing the header to more easily follow the ground and quickly respond to sudden ground contour changes or obstacles.

Header float is indicated on the float indicator (A). The 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. Float can be changed to suit field and crop conditions and is dependent on what options have been installed. Refer to *Checking and Adjusting Header Float, page 58*.

The D1-Series combine header performs best with minimum ground pressure under normal conditions. Readjust the float if adding optional attachments that affect the weight of the header.

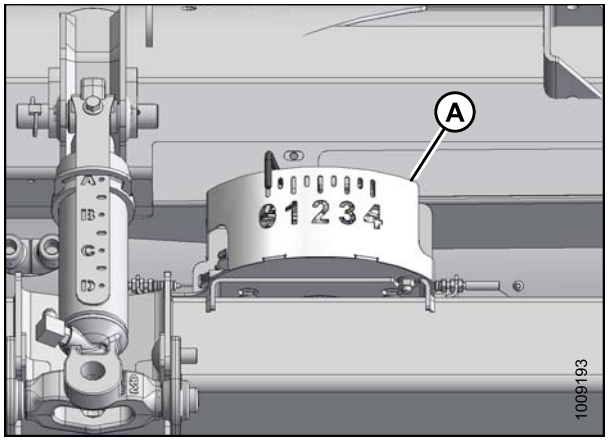


Figure 3.33: Float Indicator

1. Set the float for cutting on the ground as follows:
   a. Ensure the header float locks are disengaged. Refer to *Locking/Unlocking Header Float, page 63*.
   b. Lower feeder house using the combine header controls until the float indicator (A) reaches the desired float value (cutterbar ground force). Set the float indicator to 2 initially and adjust as necessary.

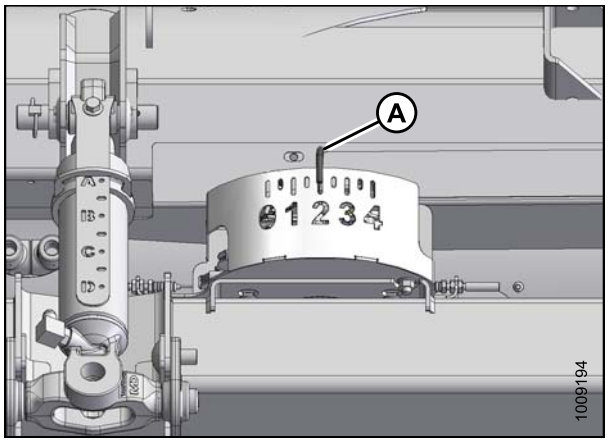


Figure 3.34: Cutting on the Ground

2. Set the float for cutting off the ground as follows:
   a. Set up the stabilizer wheels. Refer to *Cutting off the Ground, page 51*.
   b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

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 header float and adjust to the factory-recommended settings.

DANGER

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

1. Level the header and float module. If the header and float module are not level, perform the following checks before adjusting the float:

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

   - Park the combine on a level surface.
   - Check that the combine feeder house is level. Refer to your combine operator's manual for instructions.
   - Check that the top of the float module is level with the combine axle.
   - Ensure the combine tires are inflated equally.

2. Adjust header so that the cutterbar is 6–10 in. (150–254 mm) off the ground.
3. Adjust the center-link to between B and C on the indicator (A).

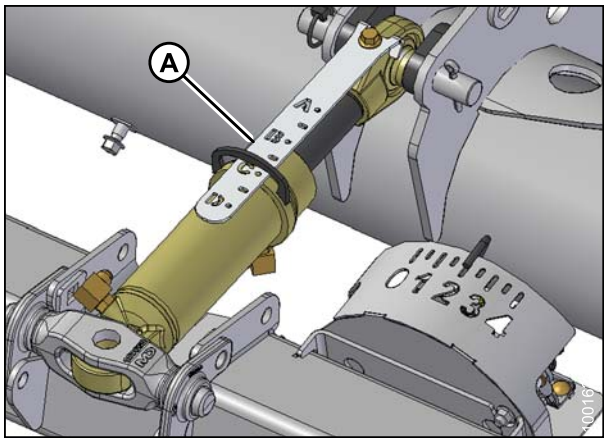


Figure 3.35: Center-Link

4. Adjust the reel fore-aft position to between 5 and 6 on the position indicator decal (A) located on the right side reel arm.
5. Lower the reel fully.
6. Stop the engine and remove key from the ignition.

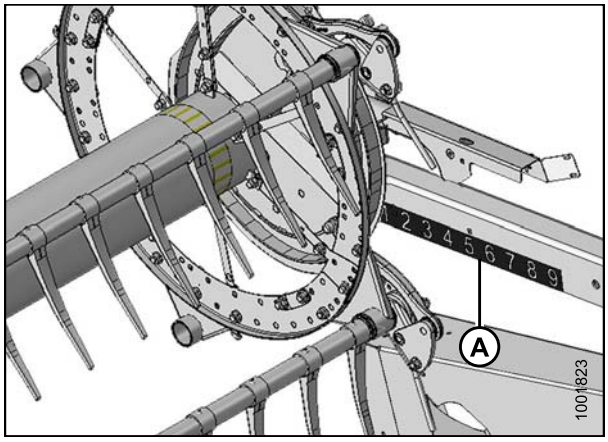


Figure 3.36: Fore-Aft Position

7. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (B) (UNLOCK).

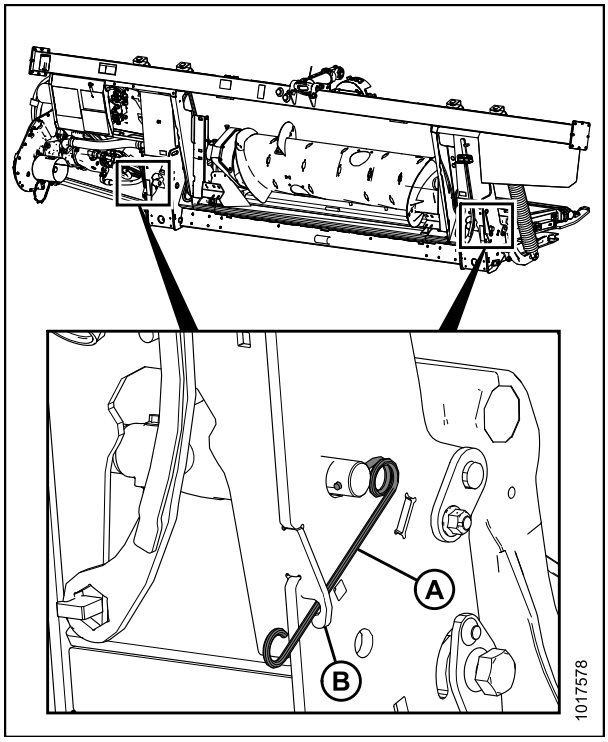


Figure 3.37: Header Float Lock

8. Place stabilizer wheels and slow speed transport wheels (if equipped) in storage position as follows:
   a. Support the wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.
   b. Lift the wheels to the desired height, and engage the support channel into the slot (B) in the upper support.
   c. Push down on the handle (A) to lock.

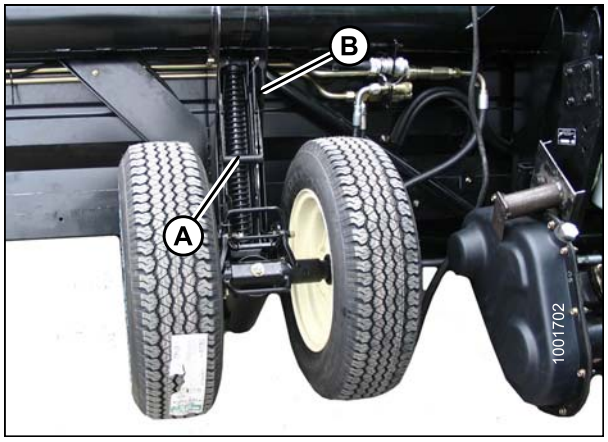


Figure 3.38: Left Wheel

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

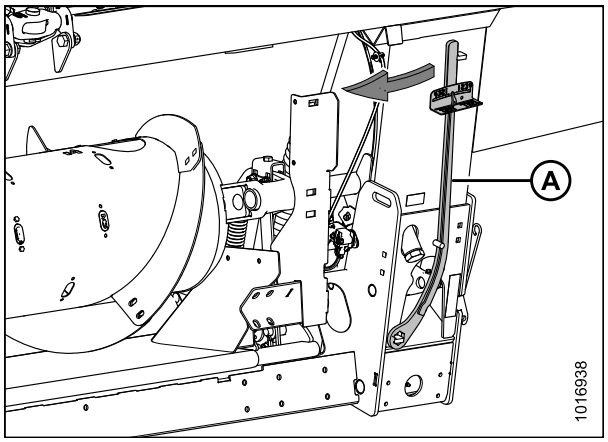


Figure 3.39: Torque Wrench Storage Location

10. Place the supplied torque wrench (A) onto the float lock (B). Note the position of the wrench for checking left or right side.
11. Push down on wrench to rotate bell crank (C) forward.

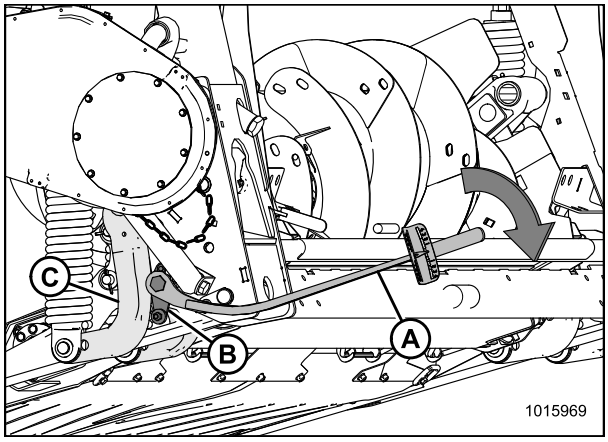


Figure 3.40: Left Side

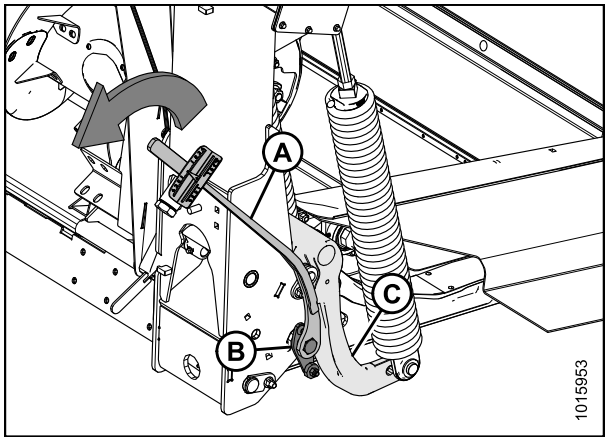


Figure 3.41: Right Side

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

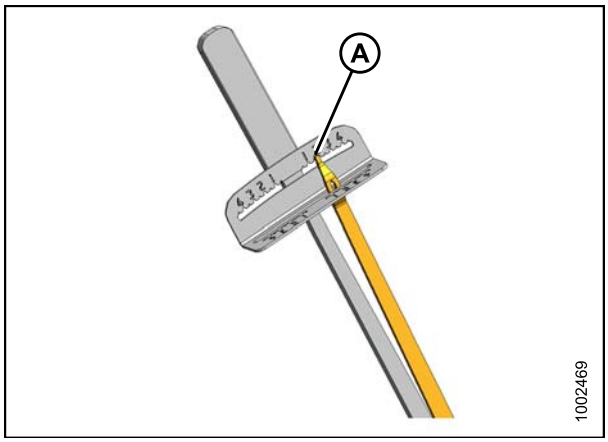


Figure 3.42: Indicator

13. Use the following table as a guide for float settings:
    - If reading on the wrench is high, the header is heavy
    - If reading on the wrench is low, the header is light

Table 3.5 Float Settings

Header Size (feet)	Torque Settings	
	Cutting on the Ground	Cutting off the Ground
20, 25, 30, and 35	1-1/2 to 2	2 to 2-1/2
40 and 45	2 to 2-1/2	2-1/2 to 3

14. Before adjusting the float spring adjustment bolts (A), remove the spring locks by removing bolts (B).
15. To increase float (decrease header weight), turn left side adjustment bolts (A) clockwise. Repeat at opposite side.
16. To decrease float (increase header weight), turn left side adjustment bolts (A) counterclockwise. Repeat at opposite side.

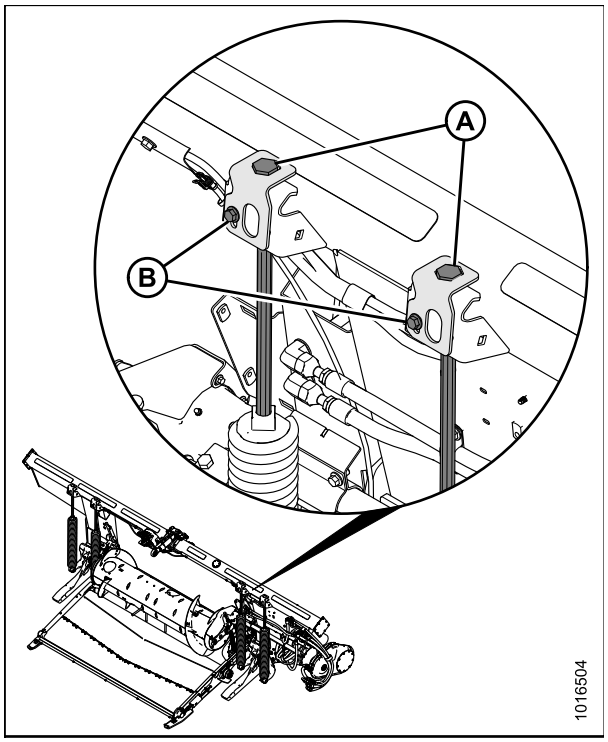


Figure 3.43: Float Adjustment (Left Side Shown)

17. Use the following guidelines when adjusting float:
    - Adjust the float so the wrench readings are equal on both sides of the header.
    - Turn each bolt pair equal amounts. Refer to Step *12., page 61*, and repeat torque wrench reading procedure.
    - Set header float as light as possible without causing excessive bouncing to prevent knife component breakage, soil scooping, or soil build-up at the cutterbar in wet conditions.
    - Use a slower ground speed with a light float setting, if necessary, to avoid excessive bouncing and leaving a ragged cut.
    - Use the stabilizer wheels in conjunction with header float to minimize bouncing at the header ends and to control cut height when cutting off the ground. Refer to *3.7.1 Cutting Height, page 51*.

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

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 there is no relative movement between the float module and the header. The float locks also must be locked when detaching from the combine to enable the feeder house to release the float module.

To **disengage float locks (unlock)**, push down float lock handle (A) and place it under the hook. In this position, the header is unlocked, and can float with respect to the float module.

To **engage float locks (lock)**, push down float lock handle (A) away and out of the hook. In this position, the header cannot move with respect to the float module.

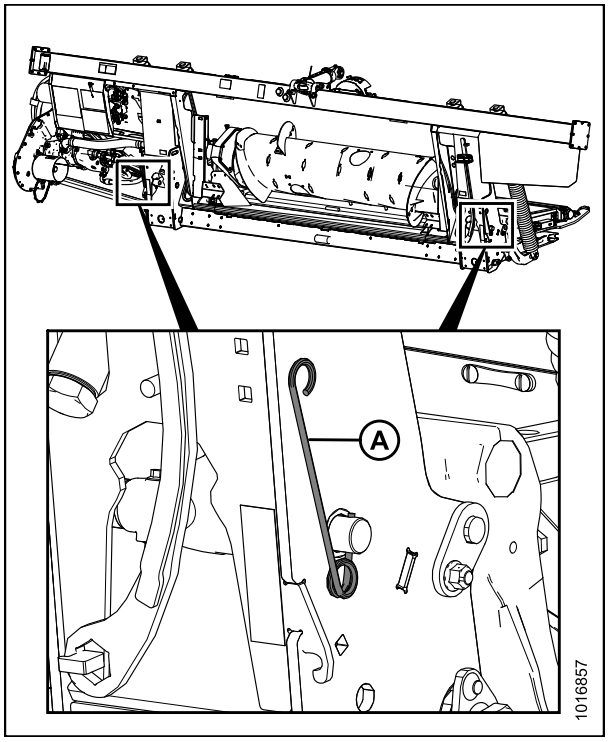


Figure 3.44: Float Lock (in Locked Position)

3.7.3 Header Angle

Header angle is adjustable to accommodate different crop conditions and/or soil types.

Header angle (A) controls the distance (B) between the knife and the ground and is a critical component for effective cutting on the ground. Adjusting the center-link determines the position of the knife and guards and pivots the header at the point of skid shoe/ground contact (C).

Header angle (A) is equal to guard angle (D) which is the angle between the upper surface of the guards and the ground.

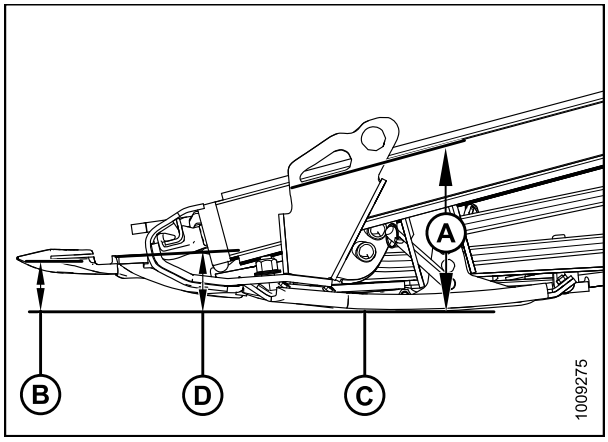


Figure 3.45: Header Angle

Adjusting Header Angle

Header angle can be adjusted using the center-link between the combine and the header.

Refer to your combine operator's manual for adjustment details.

3.7.4 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:
Nine-bat reels are available on 20- and 25-foot headers from the factory. A conversion kit to change from a six-bat reel to a nine-bat reel is available for these headers.

For recommended reel speeds in specific crops and conditions, refer to *3.6.2 Header Settings, page 43*.

The reel speed is adjustable using the controls in the combine cab. Refer to your 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 *3.6 Optional Reel Drive Sprockets, page 64*, and contact your MacDon Dealer for ordering information.

Table 3.6 Optional Reel Drive Sprockets

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

For installation details, refer to *5.14.3 Replacing Reel Drive Sprocket, page 447*.

3.7.5 Ground Speed

Operating at the proper ground speed will result in cleanly cut crops and evenly distributed material into the combine.

Reduce ground speed in difficult cutting conditions to reduce loads on cutting components and drives.

Use lower ground speeds in very light crops (e.g., short soybeans) to allow the reel to pull in short plants. Start at 3.0–3.5 mph (4.8–5.8 km/h) and adjust as required.

Higher ground speeds may require heavier float settings to prevent excessive bouncing that causes uneven cutting and possible damage to the cutting components. Increase ground pressure first before increasing the float. If ground speed is increased, draper and reel speeds should generally be increased to handle the extra material.

Figure *3.46: Ground Speed vs Acres, page 65* illustrates the relationship between ground speed and area cut for the various sized headers.

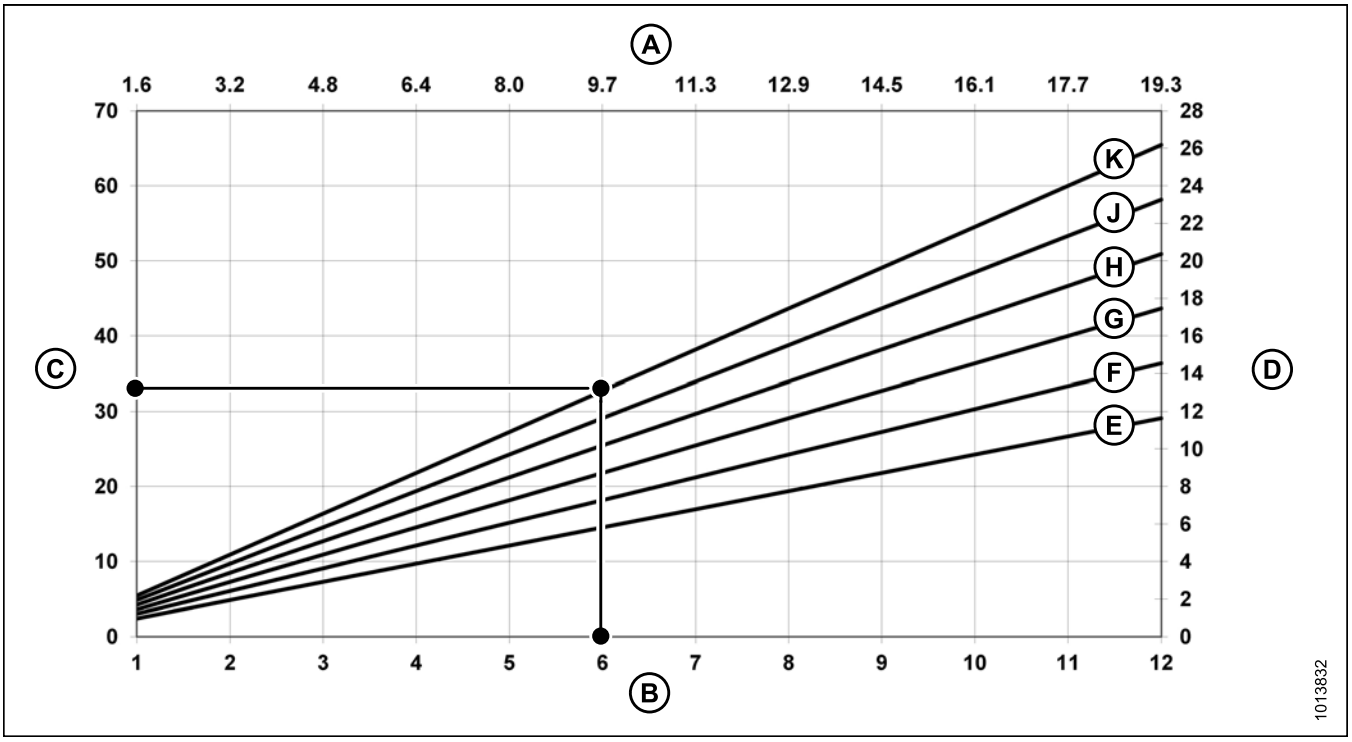


Figure 3.46: Ground Speed vs Acres

A - Kilometers/Hour
B - Miles/Hour
C - Acres/Hour
D - Hectares/Hour
E - 20 Foot
F - 25 Foot
G - 30 Foot
H - 35 Foot
J - 40 Foot
K - 45 Foot

Example: A 45-foot header operating at a ground speed of 6 mph (9.7 km/h) would produce a cut area of approximately 33 acres (13.4 hectares) in one hour.

3.7.6 Draper Speed

Correct draper speed is an important factor for achieving good flow of the 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 draper speed to achieve efficient crop feeding onto the float module feed draper. Refer to *Adjusting Header Draper Speed, page 66*.

Adjusting Header Draper Speed

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

The 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 set by using the flow control valve on the float module which regulates the flow to the draper hydraulic motors.

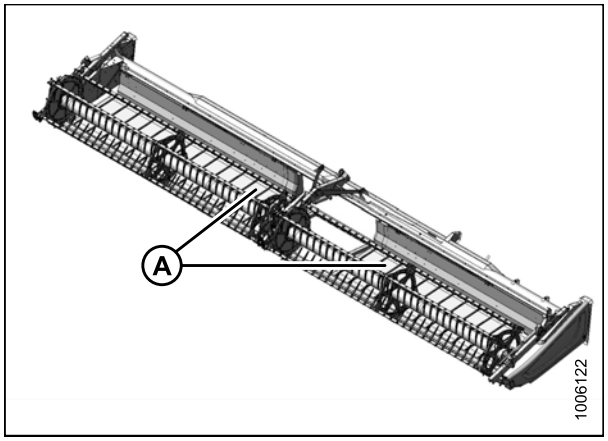


Figure 3.47: Side Drapers

To access the flow control valve, pull bottom of compartment cover (A) to open.

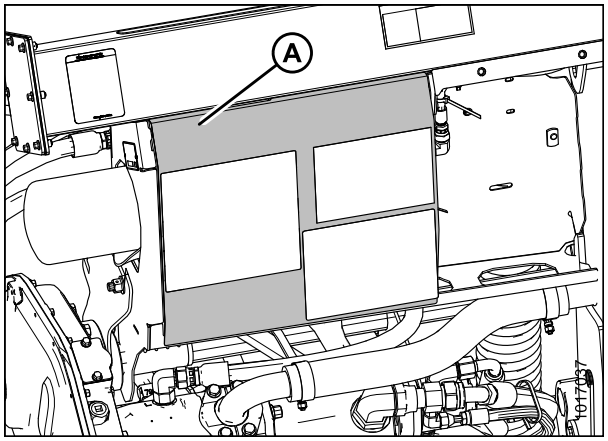


Figure 3.48: Hydraulic Compartment Cover

The flow control (A) valve 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.

To change the draper speed, shut down the combine and rotate the flow control valve dial to adjust the control.

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

- *3.6.2 Header Settings, page 43*
- *3.6.3 Optimizing Header for Straight Combining Canola, page 47*

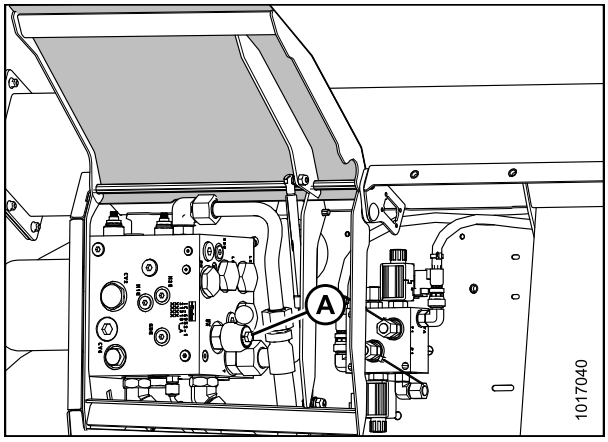


Figure 3.49: Flow Control Valve

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.

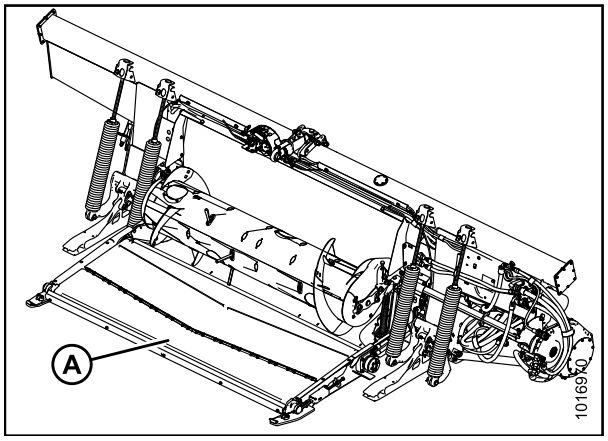


Figure 3.50: FM100 Float Module

3.7.7 Knife Speed

The header knife drive is powered by the float module's hydraulic pump which is driven by the combine feeder house. There is no separate adjustment to control the knife speed from the combine.

IMPORTANT:
For variable speed feeder houses, the rpm values in Table *3.7 Feeder House Speed, page 68* represent the MINIMUM feeder house speeds. Reduce the flow to the knife drive motor if operating above these rpm values to prevent knife over-speeding and knife failure.

Table 3.7 Feeder House Speed

Combine	Feeder House Speed (rpm)
John Deere	490
Case IH	580
Gleaner	625
Massey Ferguson	625
Challenger	625
New Holland	580
Lexion[10]	420

IMPORTANT:
Ensure the knife speed is within the range of rpm values in Table *3.8 D1-Series Header Knife Speed, page 68*. Refer to *Checking Knife Speed, page 68*.

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

Table 3.8 D1-Series Header Knife Speed

Header Size (ft.)	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
25	600–725	700–850
30	600–700	600–750
35	550–650	600–750
40	525–600	550–700
45	—	550–700

Checking Knife Speed

DANGER

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

10. The rear shaft speed on Lexion combines is 420 rpm (speed shown on cab display monitor also will be 420). The output shaft speed is actually 750 rpm.

1. Stop the combine engine and remove the key from the ignition.
2. Open the left endshield (A).

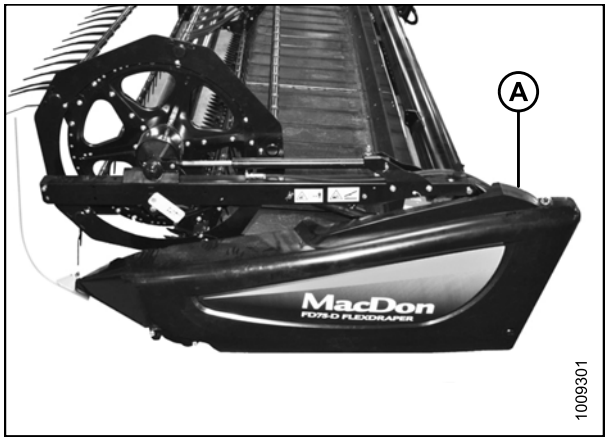


Figure 3.51: Left Endshield

WARNING

Check to be sure all bystanders have cleared the area.

3. Start the combine engine, engage the header drive, and run the combine at operating rpm.
4. Measure the rpm of the knife drive box pulley (A) with a hand-held tachometer.
5. Shut down the combine.
6. Compare pulley rpm measurement with the rpm values in the knife speed chart. Refer to *3.7.7 Knife Speed, page 68*.
7. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

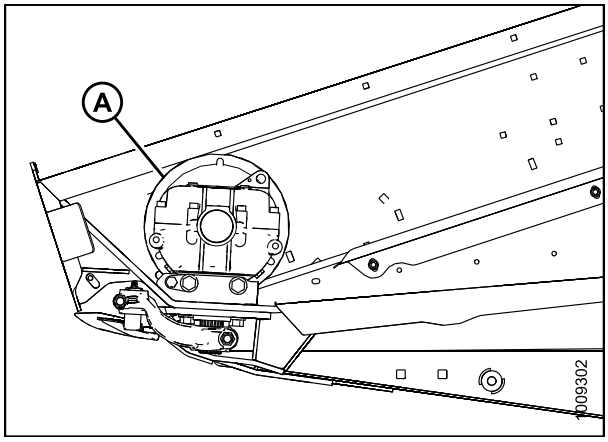


Figure 3.52: Knife Drive Pulley

3.7.8 Reel Height

Crop type and crop condition determine the operating height of the reel. Set the reel height and fore-aft position to carry material past the knife and onto the drapers with minimal damage to the crop. Refer to *3.7.9 Reel Fore-Aft Position, page 73*.

The reel height can be controlled manually using switches inside the combine cab, or assigned to button presets on the ground speed lever (GSL). Refer to your combine operator's manual for instructions on controlling reel height or setting up auto reel height presets.

Table 3.9 Reel Height

Crop Condition	Reel Position
Lodged rice	Lowered (also change reel speed and/or cam setting)
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 being pushed down by the tine tubes

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 cutterbar

Refer to *3.6.2 Header Settings, page 43* to determine recommended reel heights for specific crops and crop conditions.

IMPORTANT:
Maintain adequate clearance to prevent fingers contacting the knife or the ground. Refer to *5.13.1 Reel Clearance to Cutterbar, page 420*.

Manually Checking Voltage Range

The output voltage range of the auto reel height sensor can be checked from inside the combine. For instructions refer to the combine operator's manual. To check the voltage range of the auto reel height sensor manually, follow these steps:

CAUTION

Check to be sure all bystanders have cleared the area.

IMPORTANT:
To measure the output voltage of the reel height sensor, the combine needs to be turned ON and supplying power to the sensor. Always engage the combine parking brake to and stay away from the reel.

1. Engage the combine parking brake.
2. Lower the reel fully.
3. Use a voltmeter to measure the voltage between the ground (Pin 2 wire) and the signal (Pin 3 wire) at the reel height sensor (A). Ensure the voltage is within the Y voltage range. Refer to *3.10 Reel Height Sensor Voltage Limits, page 71*.
4. If voltage is outside the specified range, refer to *Adjusting Reel Height Sensor, page 71*.

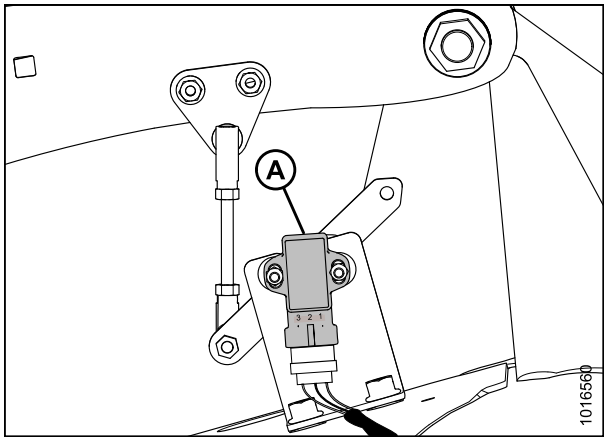


Figure 3.53: Reel Height Sensor (Reel Down)

CAUTION

Check to be sure all bystanders have cleared the area.

5. Raise the reel fully.
6. Use a voltmeter to measure the voltage between the ground (Pin 2 wire) and the signal (Pin 3 wire) at the reel height sensor (A). Ensure the voltage is within the X voltage range. Refer to *3.10 Reel Height Sensor Voltage Limits, page 71*.
7. If voltage is outside the specified range, refer to *Adjusting Reel Height Sensor, page 71*.

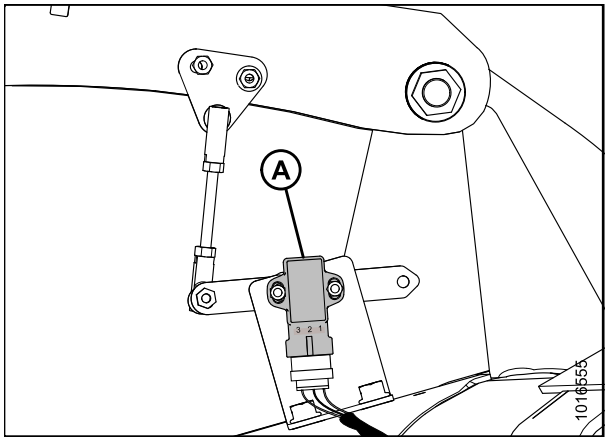


Figure 3.54: Reel Height Sensor (Reel Up)

Table 3.10 Reel Height Sensor Voltage Limits

Combine Type	Voltage Range	
	X Voltage	Y Voltage
Case New Holland	0.3–0.7 V	4.3–4.7 V
John Deere	4.3–4.7 V	0.3–0.7 V
Lexion	4.3–4.7 V	0.3–0.7 V

Adjusting Reel Height Sensor

DANGER

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

IMPORTANT:
Ensure reel height is properly set before adjusting reel height sensor. Refer to *5.13.1 Reel Clearance to Cutterbar, page 420*.

1. Lower the reel fully, shut down engine, and remove key from ignition.
2. Loosen two center lock flange nuts (A), and adjust sensor mounting bracket (B) until the threaded rod (C) is parallel with the sensor arm (D). Tighten center lock flange nuts.

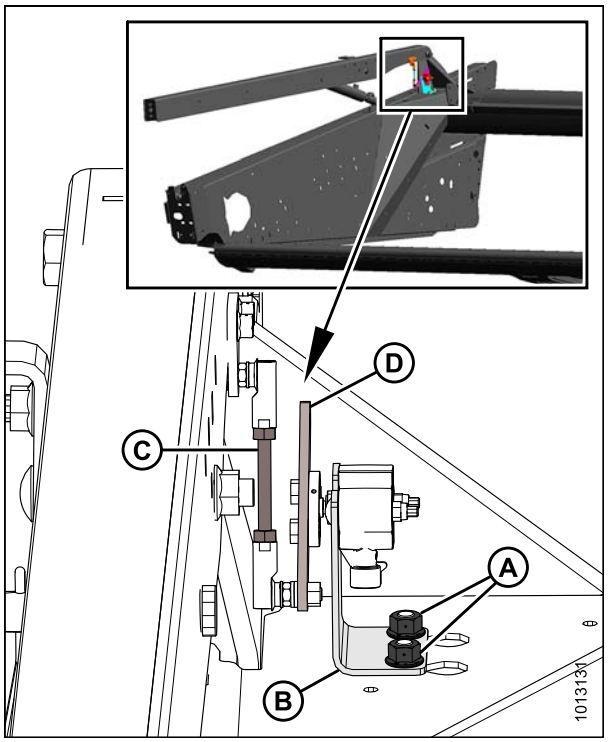


Figure 3.55: Reel Height Sensor – Right Reel Arm

3. Lower the reel fully.
4. Use the combine display or a voltmeter (if measuring the sensor manually) to measure the upper voltage range between the ground (Pin 2) and signal (Pin 3) wires at the reel height sensor (C).
5. Adjust length of threaded rod (A) to achieve an upper voltage range of 4.1–4.5 V.
6. Raise the reel fully and use combine display or a voltmeter (if measuring the sensor manually) to measure the lower voltage range. Loosen two M5 hex nuts (B) and rotate sensor (C) to achieve a lower voltage range of 0.5–0.9 V.
7. Lower the reel fully and recheck the upper voltage range to ensure it is still within the 4.1–4.5 V tolerance. If the upper voltage range is not within the correct tolerance, repeat adjustment procedure from Step *5., page 72*.

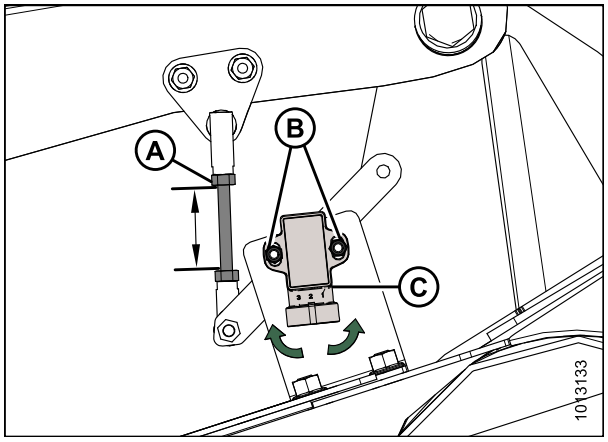


Figure 3.56: Reel Height Sensor – Right Reel Arm

3.7.9 Reel Fore-Aft Position

Reel fore-aft position is a critical factor for achieving the best results in adverse conditions. The reel position is factory-set for normal conditions, but it can be adjusted forwards or backwards as required using the controls inside the cab.

The reel can be moved approximately 9 in. (227 mm) further aft by repositioning the fore-aft cylinders on the reel arms to accommodate certain crop conditions.

For double-reel headers, refer to *Repositioning Fore-Aft Cylinders on Double Reel, page 77*.

For single-reel headers, refer to *Repositioning Fore-Aft Cylinders on Single Reel, page 75*.

If the combine is equipped with the Multi-Crop Rapid Reel Conversion option, refer to *Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 80*.

Decal (A) is attached to the right reel support arm for identifying reel position. The aft edge of the 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).

IMPORTANT:
If experiencing difficulty picking up flattened crop, adjust to a steeper header angle. Refer to *3.7.3 Header Angle, page 63* 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 *3.6.2 Header Settings, page 43*.

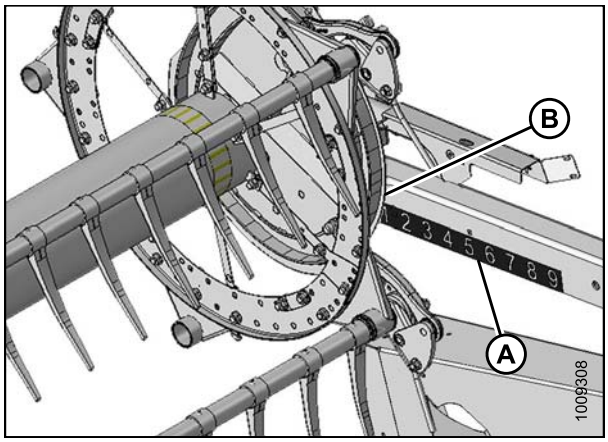


Figure 3.57: Fore-Aft Decal

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 *3.7.10 Reel Tine Pitch, page 82* for adjustment details.

Adjusting Reel Fore-Aft Position

1. Select FORE-AFT mode on the selector switch in the cab.

2. Operate the hydraulics to move the reel to the desired position while using the decal (A) as a reference.
3. Check the reel clearance to cutterbar after making changes to the cam setting. Refer to the following for measurement and adjustment procedures:
   - *5.13.1 Reel Clearance to Cutterbar, page 420*
   - *5.13.2 Reel Frown, page 423*

   IMPORTANT:
   Operating with the reel too far forward can result in the fingers contacting the ground. When operating with the reel in this position, lower the skid shoes or adjust the header tilt as required to prevent damaging the fingers.

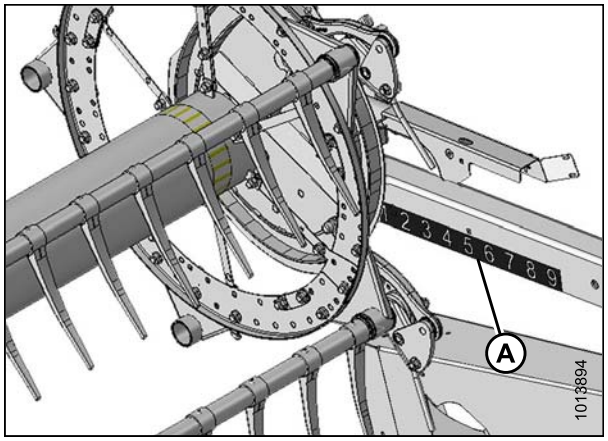


Figure 3.58: Fore-Aft Decal

Repositioning Fore-Aft Cylinders on Single Reel

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

DANGER

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

Reposition the right reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop the engine and remove the key from the ignition.
3. Remove the four bolts (A) securing the cylinder bracket (B) to the reel arm.
4. Push/pull the reel until bracket (B) lines up with the fore/aft set of holes (C).
5. Reinstall the four bolts (A) securing the cylinder bracket (B) to the reel arm at the new position.

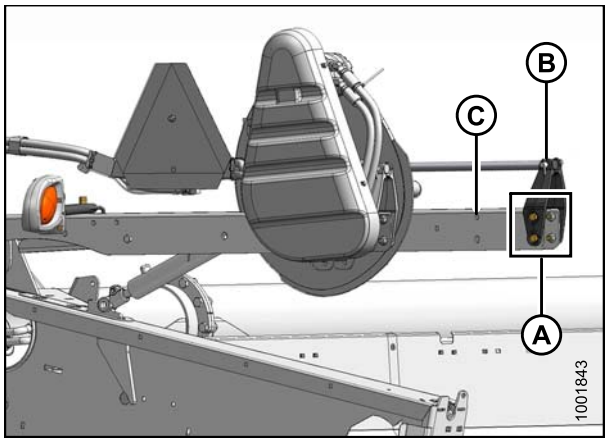


Figure 3.59: Right Arm Cylinder – Forward Position

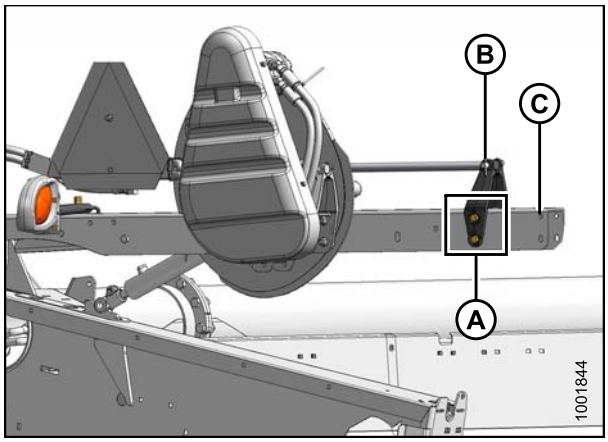


Figure 3.60: Right Arm Cylinder – Rearward Position

Reposition the left reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

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

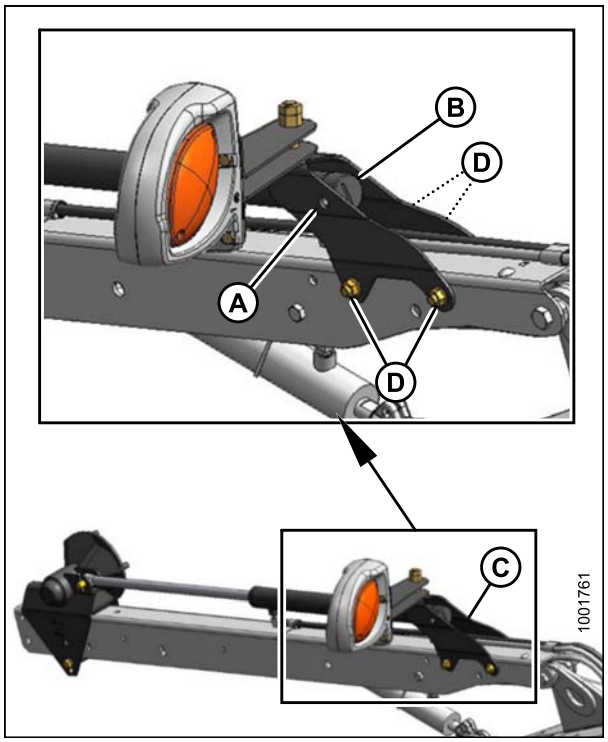


Figure 3.61: Forward Position

5. Reposition the bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
6. Push the reel back and attach cylinder (B) to the bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
7. Secure the light harness to the bracket/light assembly (C) using a cable tie.
8. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
9. Adjust the reel tine pitch if necessary. Refer to *3.7.10 Reel Tine Pitch, page 82*.

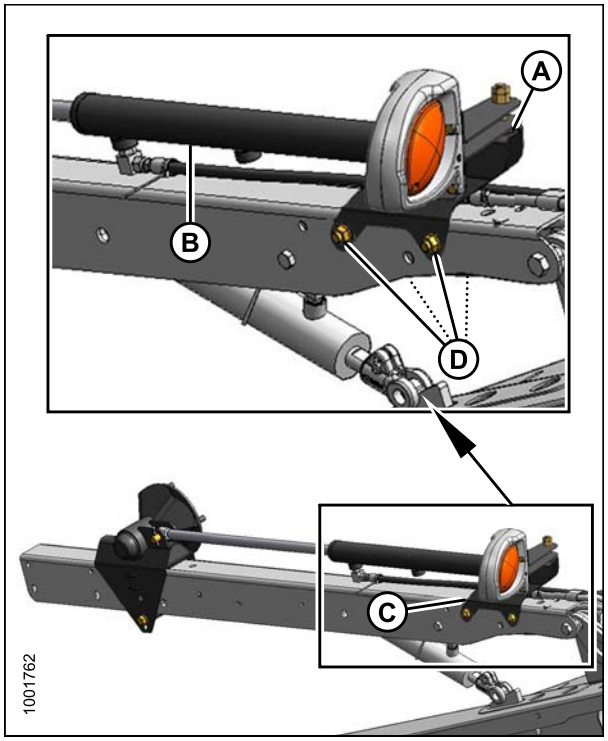


Figure 3.62: Rearward Position

Repositioning Fore-Aft Cylinders on Double Reel

The reel can be moved approximately 9 in. (227 mm) further aft by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola. If the Multi-Crop Rapid Reel Conversion option is installed, refer to *Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option, page 80*.

DANGER

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

Reposition the center arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.
3. Remove four bolts (A) securing cylinder bracket (B) to reel arm.
4. Push/pull reel until bracket (B) lines up with the fore/aft set of holes (C).
5. Reinstall four bolts (A) to secure bracket (B) to reel arm at new position.

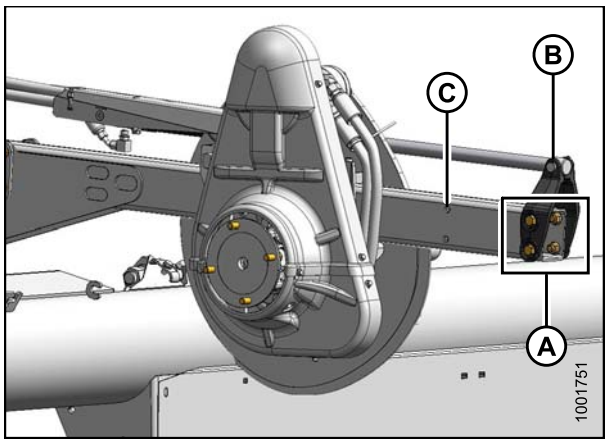


Figure 3.63: Forward Position

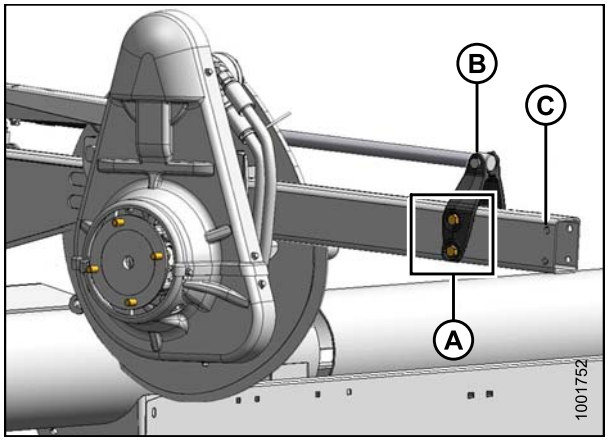


Figure 3.64: Rearward Position

Reposition right arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

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

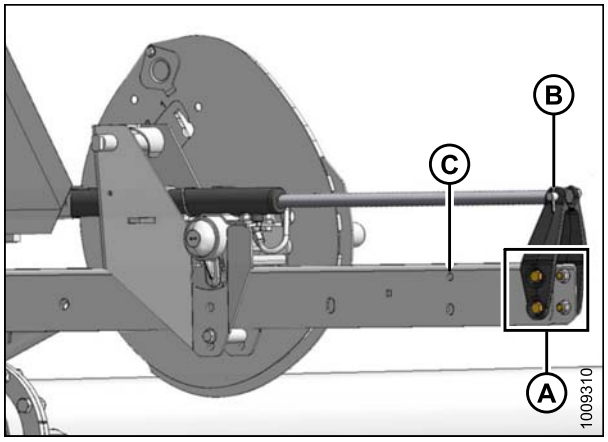


Figure 3.65: Forward Position

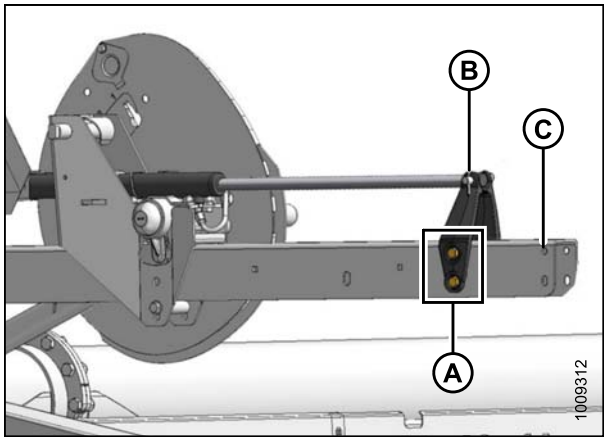


Figure 3.66: Rearward Position

Reposition the left reel arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

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

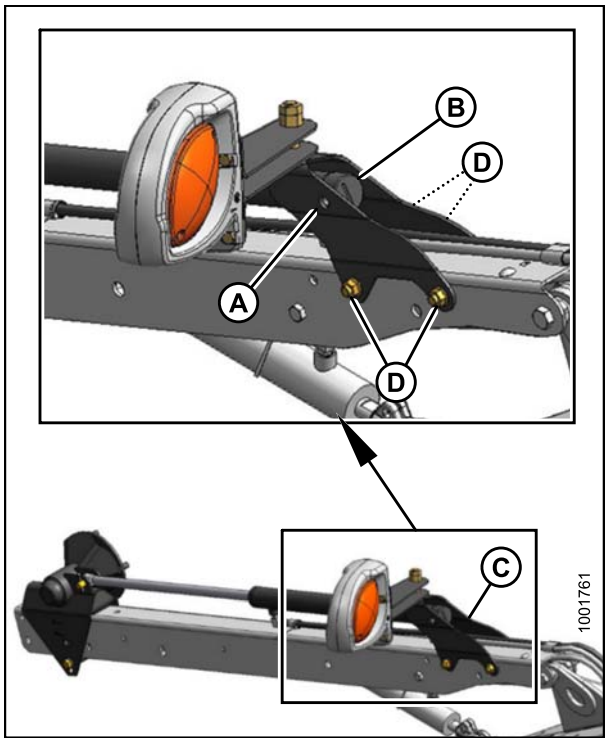


Figure 3.67: Forward Position

5. Reposition the bracket/light assembly (C) on the reel arm as shown, and secure with four bolts (D). Tighten bolts.
6. Push the reel back and attach cylinder (B) to the bracket/light assembly (C) with pin (A). Secure pin with cotter pin.
7. Secure the light harness to the bracket/light assembly (C) using a cable tie.
8. Check the reel clearance to the backsheet, upper cross auger (if installed), and reel braces.
9. Adjust the reel tine pitch if necessary. Refer to *3.7.10 Reel Tine Pitch, page 82*.

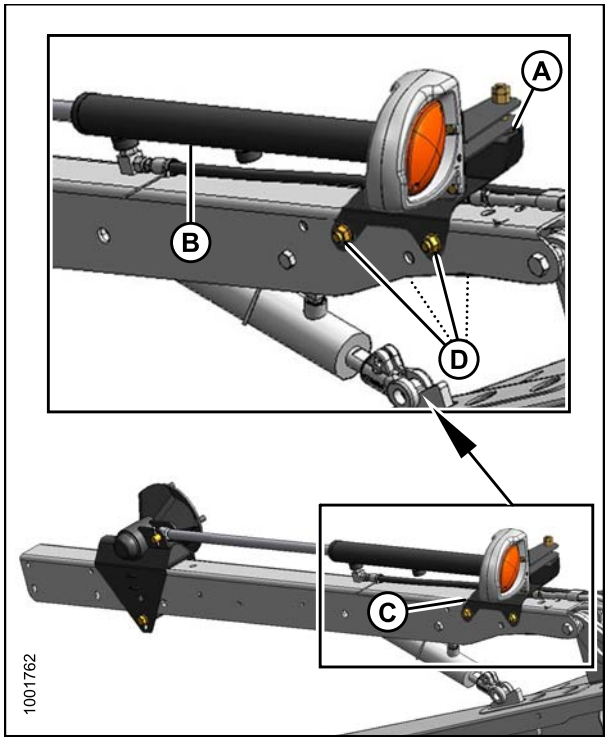


Figure 3.68: Rearward Position

Repositioning Fore-Aft Cylinders with Multi-Crop Rapid Reel Conversion Option

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

DANGER

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

Reposition the left arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Position reel fully aft with support arms horizontal.
2. Stop the engine and remove the key from the ignition.
3. Remove cotter pin (A) and clevis pin (B).
4. Push the reel back until the cylinder barrel (C) lines up with the aft holes in bracket (D).
5. Reinstall clevis pin (B) at the new position and secure with cotter pin (A).

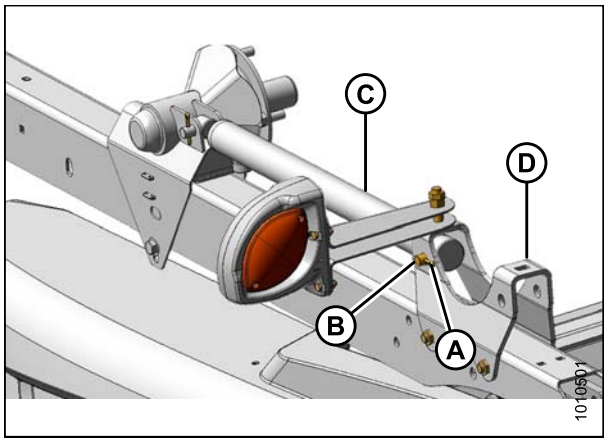


Figure 3.69: Forward Position – Left Arm

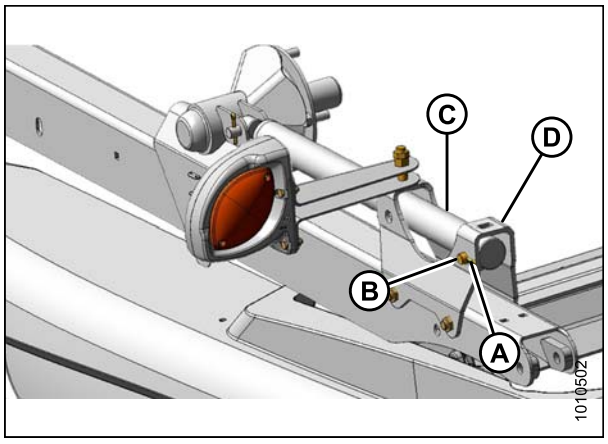


Figure 3.70: Aft Position – Left Arm

Reposition the center arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Remove cotter pin (A) and clevis pin (B).
2. Push the reel back until the cylinder barrel (C) lines up with the aft holes in bracket (D).
3. Reinstall clevis pin (B) at the new position and secure with cotter pin (A).

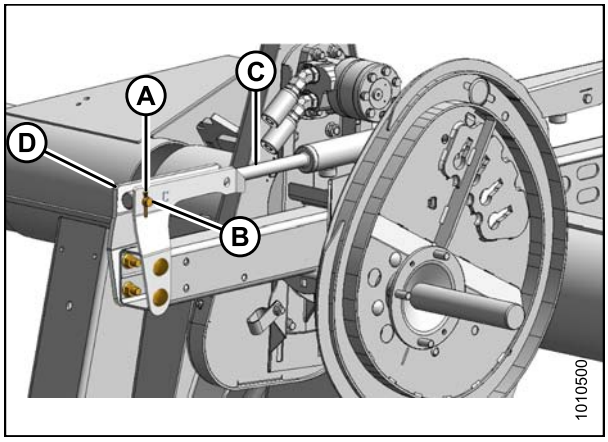


Figure 3.71: Forward Position – Center Arm

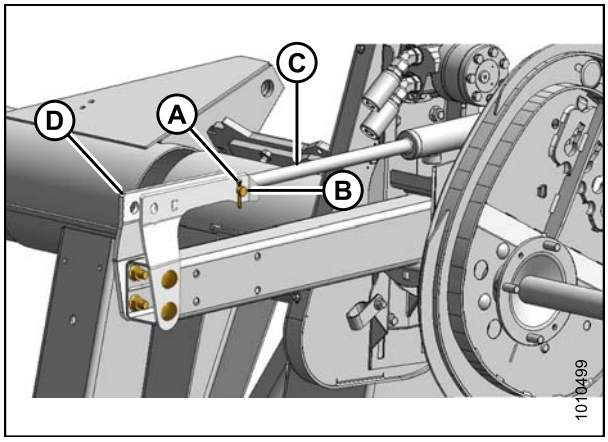


Figure 3.72: Aft Position – Center Arm

Reposition the right arm cylinder as follows:

NOTE:
Reel components not shown in illustration for improved clarity.

1. Remove cotter pin (A) and clevis pin (B).
2. Push the reel back until cylinder rod (C) lines up with the aft holes in bracket (D).
3. Reinstall clevis pin (B) at the new position and secure with cotter pin (A).

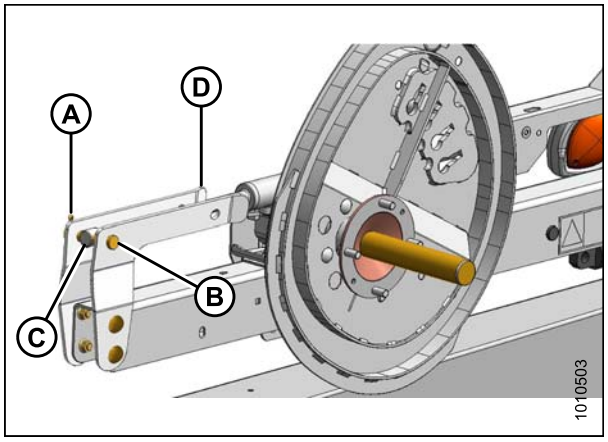


Figure 3.73: Forward Position – Right Arm

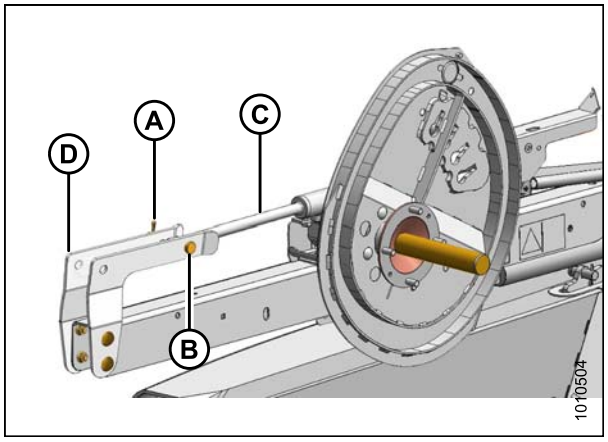


Figure 3.74: Aft Position – Right Arm

3.7.10 Reel Tine Pitch

IMPORTANT:
The following describes the conceptual and operational guidelines of the pick-up reel. Please read carefully before operating the machine.

The pick-up reel is designed to pick up flattened and severely lodged crops. Because the cam setting is mainly used to determine how the crop gets delivered onto the drapers, it is not always necessary to increase the tine pitch (select a higher cam setting) to pick up lodged crops.

The positioning of the fingers relative to the ground (tine pitch) is not significantly affected by the cam setting. 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. Refer to *3.6.2 Header Settings, page 43*.

Reel Cam Settings

The following outlines the function of each cam setting and provides set-up guidelines for various crop conditions.

The setting numbers are visible above the slots on the cam disc. Refer to *Adjusting Reel Cam, page 84*.

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 and works best if the cutterbar is on the ground.
- Some crops will not be delivered past the cutterbar when the cutterbar is raised off the ground and the reel is pushed forward; therefore, set the initial reel speed approximately equal to the ground speed.

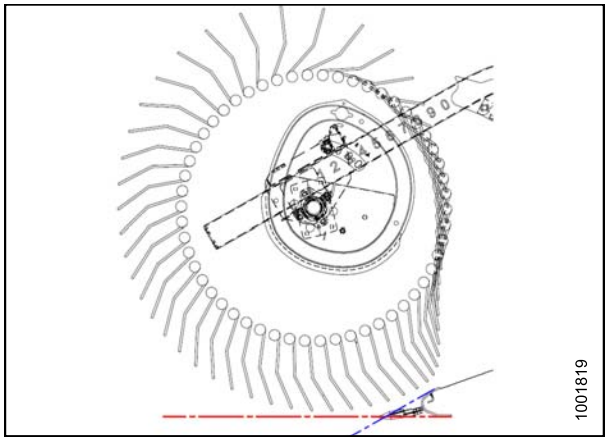


Figure 3.75: Finger Profile – Position 1

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 generates a fingertip speed that is approximately 20% faster than the reel speed.

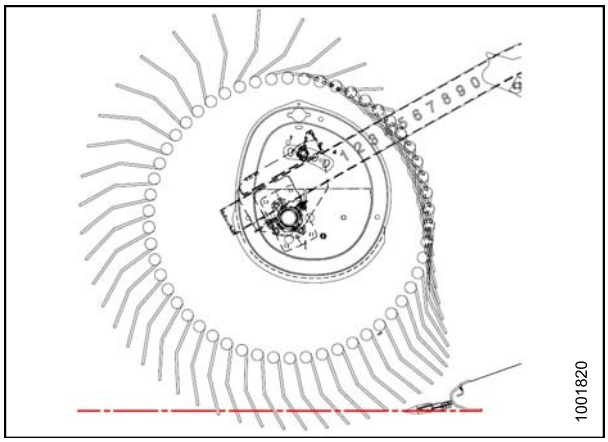


Figure 3.76: Finger Profile – Position 2

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 generates a fingertip speed that is approximately 30% faster than the reel speed.

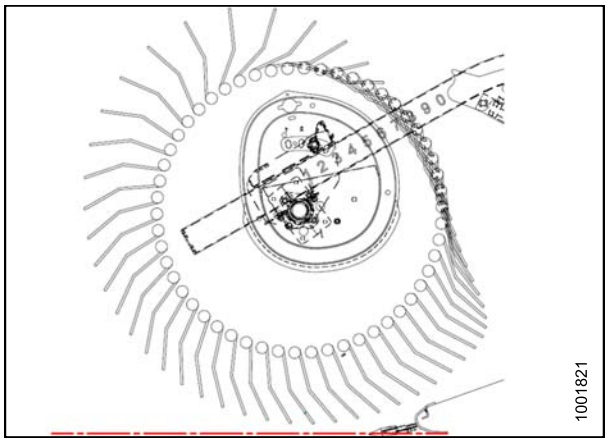


Figure 3.77: Finger Profile – Position 3

Cam Position 4, Reel Position 2 or 3 is used with the reel fully forward to leave the maximum amount of stubble in lodged crops.

- This position allows the reel to reach forward and lift the crop across the knife and onto the drapers.
- This setting generates a fingertip speed that is approximately 35% faster than the reel speed.

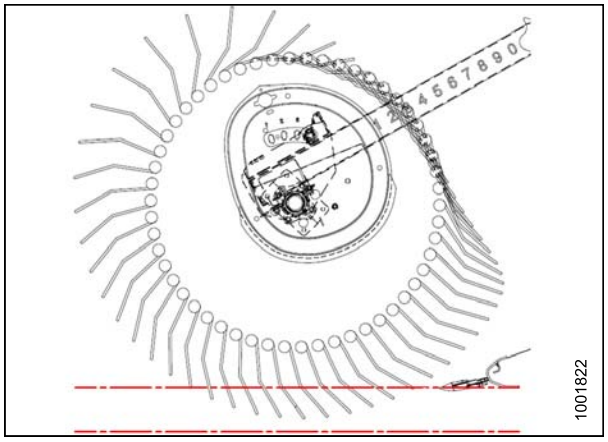


Figure 3.78: Finger Profile – Position 4

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.

- Leaves a significant amount of stubble when cutting height is set to approximately 8 in. (203 mm). In damp materials such as rice, it's possible to double the ground speed because of the reduction of cut material.
- This setting generates a fingertip speed that is approximately 35% faster than the reel speed.

NOTE:
Higher cam settings with the reel fore-aft position set between 4–5 sharply decreases the draper capacity because the reel disrupts the crop flow across the drapers and the fingers engage the crop that is moving on the drapers. High cam settings are recommended only with the reel at, or close to, full forward settings.

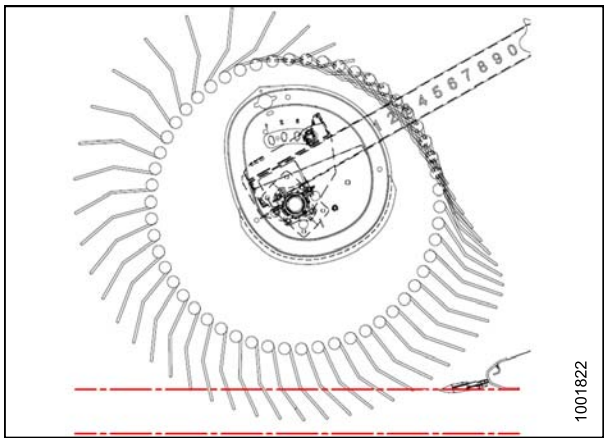


Figure 3.79: Finger Profile – Position 4

IMPORTANT:
The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft position (refer to *5.13.1 Reel Clearance to Cutterbar, page 420*). Refer to *3.6.2 Header Settings, page 43* for recommended reel tine pitch in specific crops and crop conditions.

Adjusting Reel Cam

DANGER

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

1. Turn the latch pin (A) counterclockwise using a 3/4 in. wrench to release the cam disc.
2. Use the wrench on bolt (B) to rotate the cam disc and align the 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 illustration for improved clarity).

3. Turn the latch pin (A) clockwise to engage and lock the cam disc.
4. Repeat the above procedure for the opposite reel.

   IMPORTANT:
   Ensure the cam is secured into position before operating the machine.

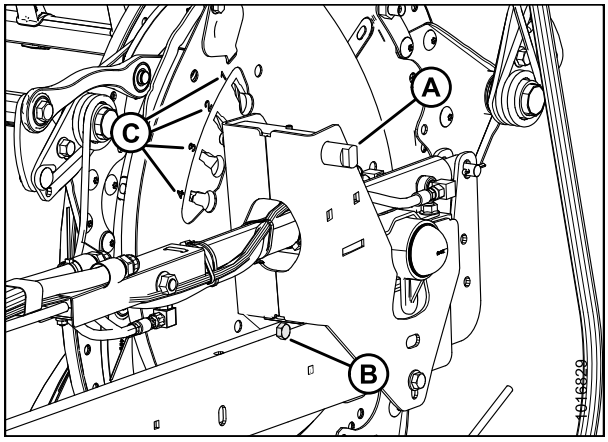


Figure 3.80: Cam Disc Positions

3.7.11 Crop Dividers

Crop dividers are used to help divide the crop when harvesting. They are removable to allow installation of vertical knives and to decrease transport width.

Removing Crop Dividers with Latch Option from Header

DANGER

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

1. Lower reel, raise header, stop engine, remove key, and engage header safety props. Refer to your combine operator's manual for instructions.
2. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
3. Lift safety lever (A).
4. Hold onto crop divider (B), push lever (C) to open latch, and lower crop divider.

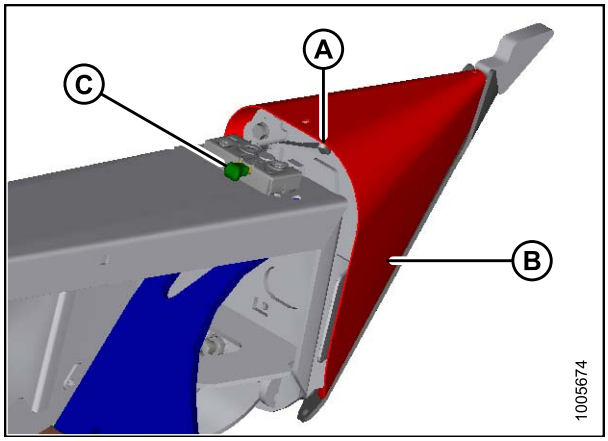


Figure 3.81: Crop Divider

5. Lift crop divider off endsheet and store as follows:
   a. Insert pin (A) on crop divider into hole in endsheet at location shown.
   b. Lift crop divider and position lugs (B) on crop divider into bracket on endsheet. Ensure lugs engage bracket.
6. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

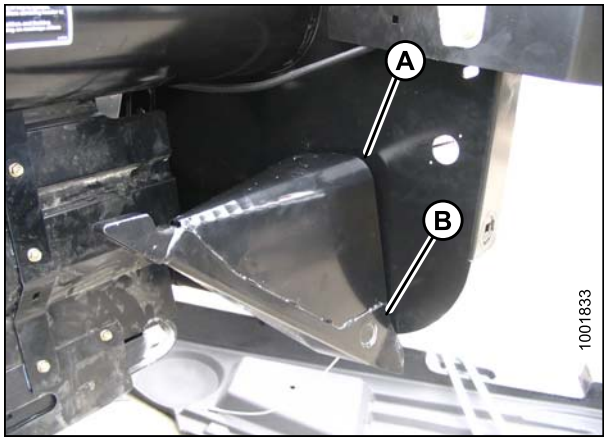


Figure 3.82: Stored Crop Divider

Removing Crop Dividers without Latch Option from Header

DANGER

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

1. Lower reel and raise header. Refer to your combine operator's manual for instructions.
2. Stop engine and remove key.
3. Engage safety props. Refer to your combine operator's manual for instructions.
4. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
5. Remove bolt (A), lock washer, and flat washer.
6. Lower crop divider (B) and then lift to remove from endsheet.
7. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

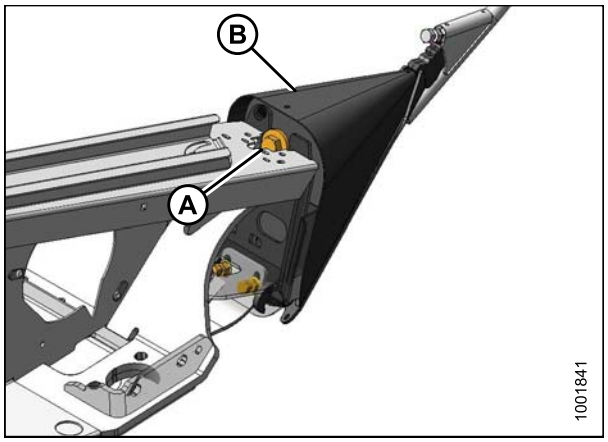


Figure 3.83: Crop Divider

Installing Crop Dividers with Latch Option onto Header

DANGER

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

1. Lower reel and raise header. Refer to your combine operator's manual for instructions.
2. Stop engine and remove key.
3. Engage safety props. Refer to your combine operator's manual for instructions.

4. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
5. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

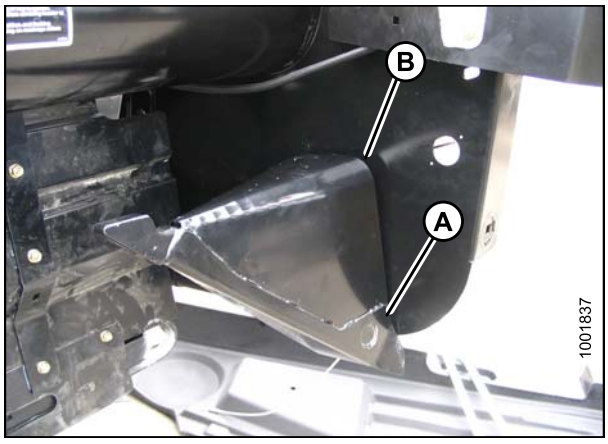


Figure 3.84: Stored Crop Divider

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

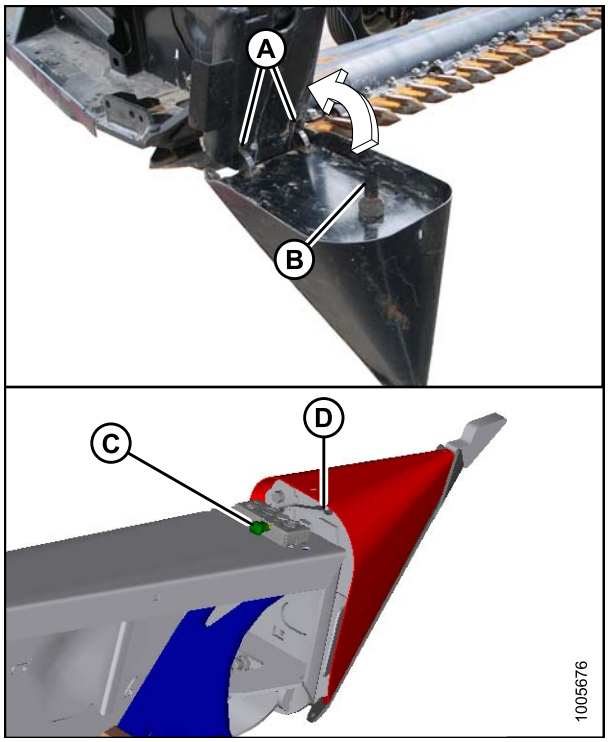


Figure 3.85: Crop Divider

9. Pull at the tip of the crop divider and ensure there is no lateral movement. If necessary, adjust bolts (A) to tighten crop divider and eliminate lateral movement.
10. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

Figure 3.86: Crop Divider

Installing Crop Dividers without Latch Option onto Header

DANGER

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

1. Lower reel and raise header. Refer to your combine operator's manual for instructions.
2. Stop engine and remove key.
3. Engage safety props. Refer to your combine operator's manual for instructions.
4. Open or remove endshields. Refer to *3.2.3 Endshields, page 33*.
5. Remove crop divider from storage location by lifting crop divider to disengage lugs (A) at lower end and then lowering it slightly to disengage pin (B) from endsheet.

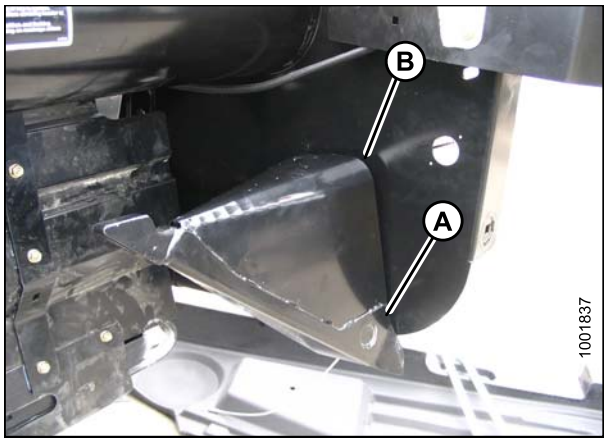


Figure 3.87: Stored Crop Divider

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

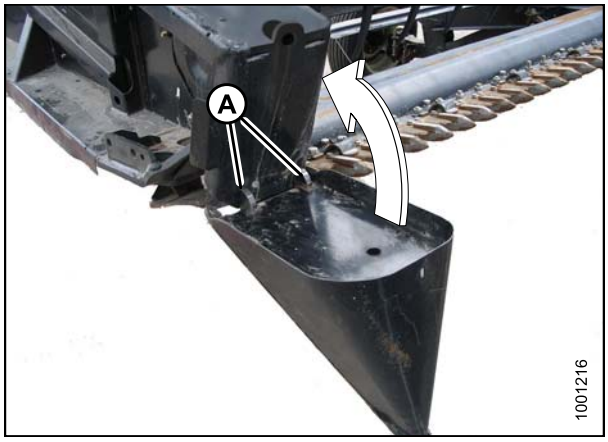


Figure 3.88: Crop Divider

7. Lift forward end of crop divider and install bolt (A) and special stepped washer (B) (step towards divider). Tighten bolt.
8. Pull at the tip of the crop divider and ensure there is no lateral movement. If necessary, adjust bolts (C) to tighten crop divider and eliminate lateral movement.
9. Close or install endshields. Refer to *3.2.3 Endshields, page 33*.

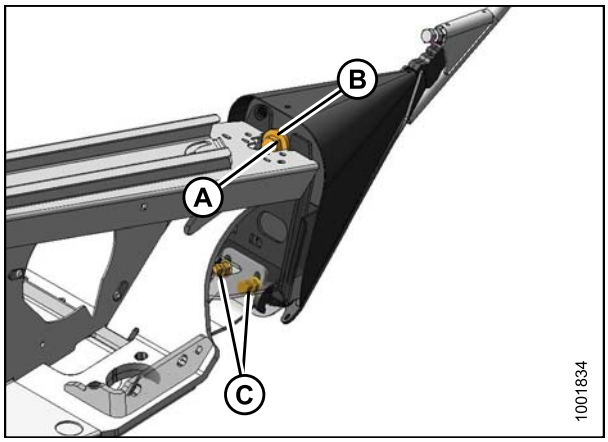


Figure 3.89: Crop Divider

3.7.12 Crop Divider Rods

Crop divider rods are used in conjunction with crop dividers. The removable crop divider rods are most useful when crop is down, but in standing crops, using only crop dividers is recommended.

Table 3.11 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

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

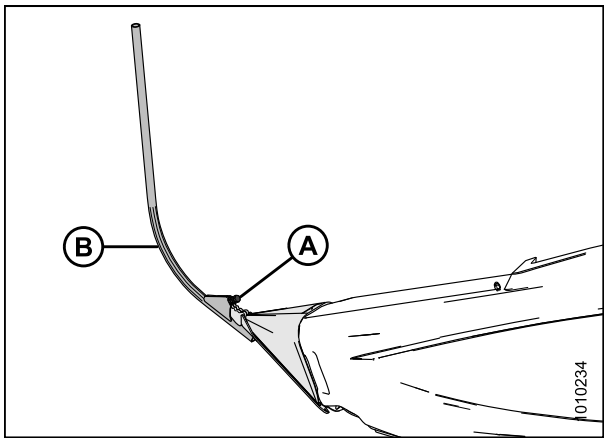


Figure 3.90: Crop Divider Rod

2. Store both crop divider rods inboard on the right side endsheet.

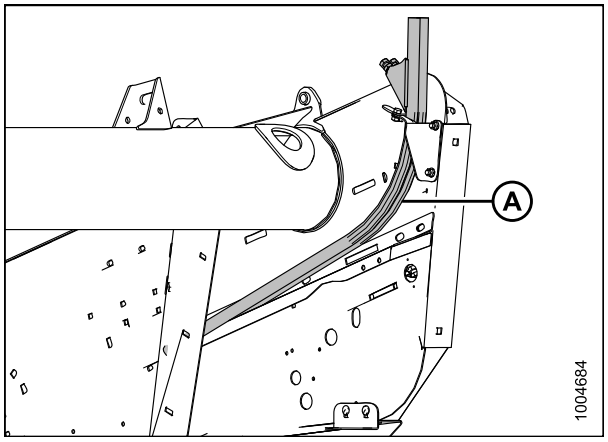


Figure 3.91: Right Side Endsheet

Installing Crop Divider Rods

1. Remove crop divider rods from storage location on inboard of right side endsheet.

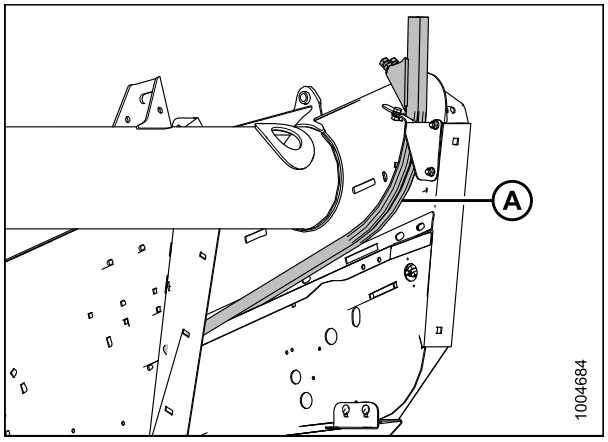


Figure 3.92: Right Side Endsheet

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

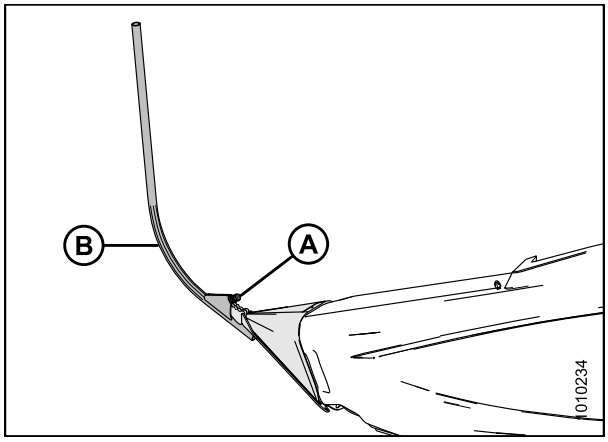


Figure 3.93: Divider Rod on Crop Divider

Rice Divider Rods

Optional rice divider rods provide improved performance in tall and tangled rice crops. Refer to *6.4.7 Rice Divider Rods, page 470*.

The installation and removal procedures are the same as for standard crop divider rods.

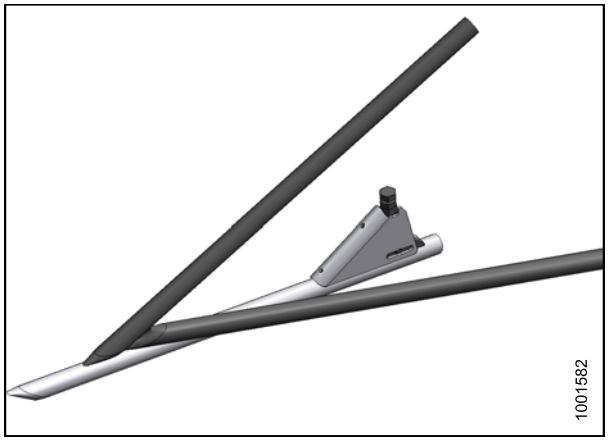


Figure 3.94: Divider Rod for Rice

3.8 Auto Header Height Control (AHHC)

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

A sensor is installed in the 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 an optimum float as the header follows ground contours. A two-sensor system is also available as an optional kit.

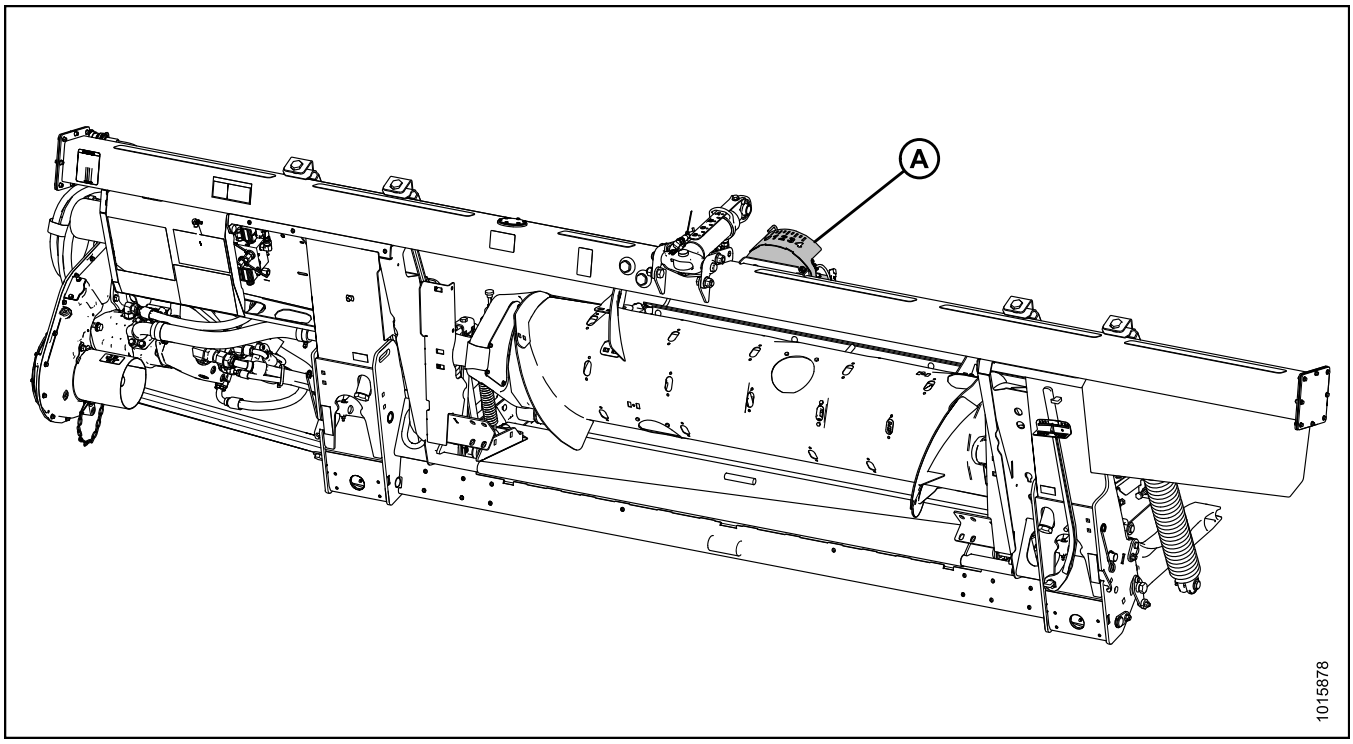


Figure 3.95: FM100 Float Module

FM100 Float Modules are factory-equipped for AHHC; however, before using the AHHC feature, you must do the following:

1. Ensure that the AHHC sensor's output voltage range is appropriate for the combine.
   For more information, refer to *3.8.1 Sensor Output Voltage Range – Combine Requirements, page 94*.
2. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the instructions for your combine).
3. Calibrate the AHHC system so that the combine can correctly interpret data from the height sensor on the combine float module (refer to the instructions for your combine).

   NOTE:
   Once calibration is complete, you are ready to use the AHHC feature in the field. Individual combine settings can improve AHHC performance (refer to your combine instruction manual).

Refer to the following instructions for your specific combine model:

- *3.8.2 Case IH 2500 and 5088/6088/7088 Combines, page 103*
- *3.8.3 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, 7230/8230/9230 and 7240/8240/9240 Combines, page 105*
- *3.8.4 Challenger and Massey Ferguson Combines, page 117*
- *3.8.5 Gleaner R65/R66/R75/R76 and S Series Combines, page 125*
- *3.8.6 John Deere 60 Series Combines, page 135*
- *3.8.7 John Deere 70 Series Combines, page 143*
- *3.8.8 John Deere S and T Series Combines, page 150*
- *3.8.9 Lexion 500 Series Combines, page 162*
- *3.8.10 Lexion 600 and 700 Series Combines, page 171*
- *3.8.11 New Holland Combines, page 177*

3.8.1 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 3.12 Combine Voltage Limits

Combine	Low Voltage Limit	High Voltage Limit	Range (Difference between High and Low Limits)
Challenger, Gleaner A, Massey Ferguson	0.5 V	4.5 V	2.5 V
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
Gleaner 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
Lexion 500/600/700 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 23/2588 series, Lexion 500/600/700 series). For these models, check output voltage manually. Refer to *Manually Checking Voltage Range (One-Sensor System), page 94* or *Manually Checking Voltage Range (Two-Sensor System), page 97*.

Manually Checking Voltage Range (One-Sensor System)

The one-sensor system is standard for the FM100 Float Module. If equipped with the optional two-sensor system, refer to *Manually Checking Voltage Range (Two-Sensor System), page 97*.

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

2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

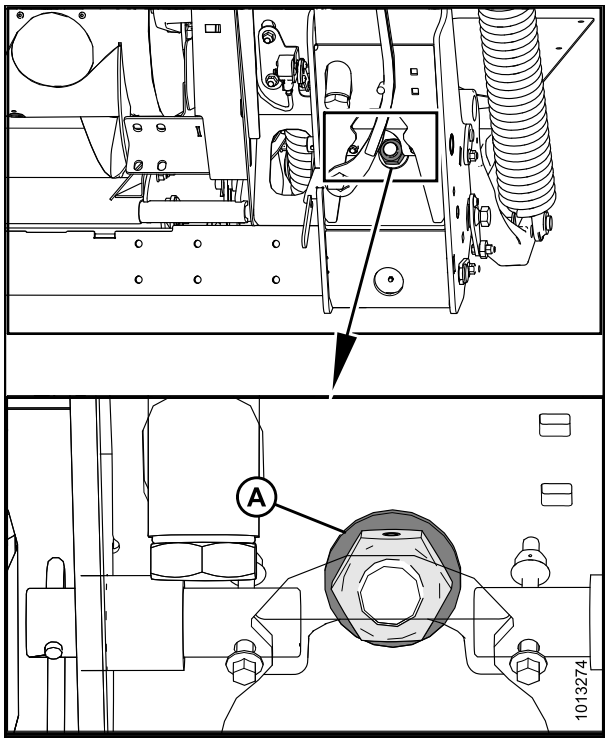


Figure 3.96: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

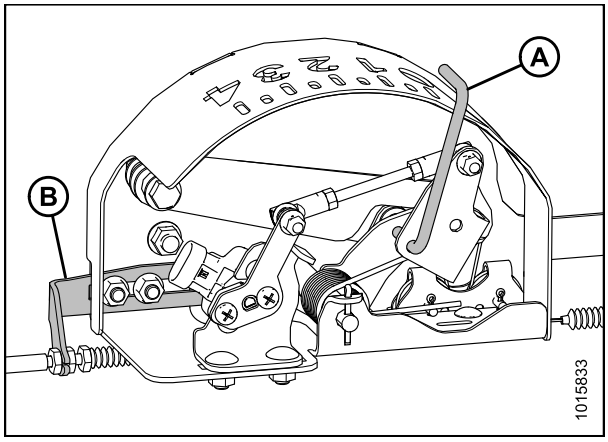


Figure 3.97: Float Indicator Box

4. Use a 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 it is at the high voltage limit for the combine. Refer to Table *3.12 Combine Voltage Limits, page 94*.

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

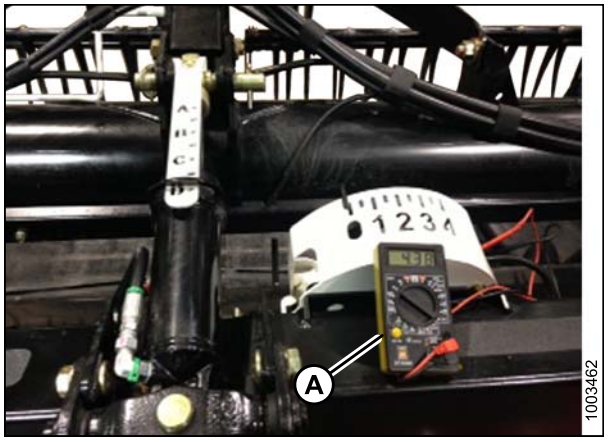


Figure 3.98: Measuring Voltage at Float Indicator Box

5. Fully lower the combine feeder house, and float the header up off the down stops (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.

6. Use a voltmeter (A) to measure the voltage between the ground and signal wires at the AHHC sensor in the float indicator box. It should be at the low voltage limit for the combine. Refer to Table *3.12 Combine Voltage Limits, page 94*.

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

7. 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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

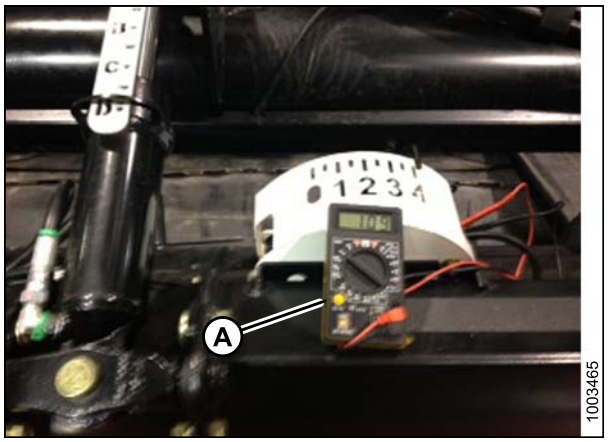


Figure 3.99: Measuring Voltage at Float Indicator Box

Manually Checking Voltage Range (Two-Sensor System)

FM100 Float Modules equipped with the optional two-sensor system have a left- and right-hand sensor located on the back frame of the float module.

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

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

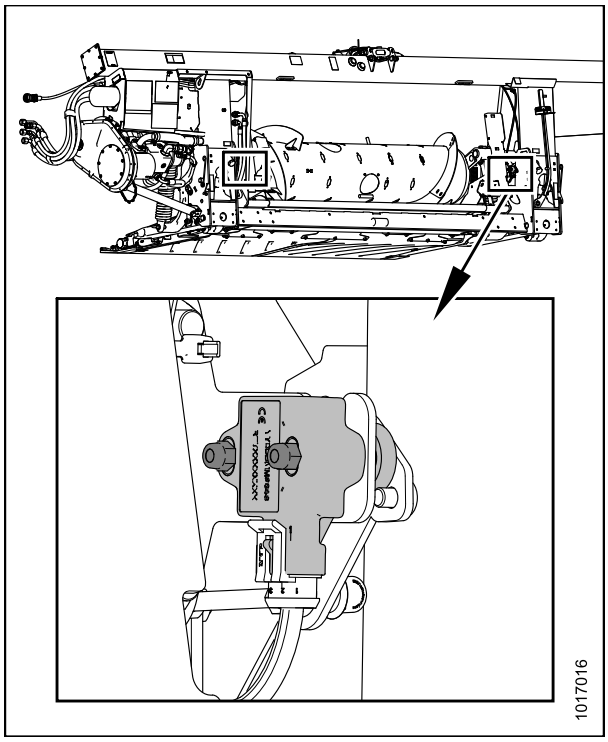


Figure 3.100: Optional Two-Sensor System

2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

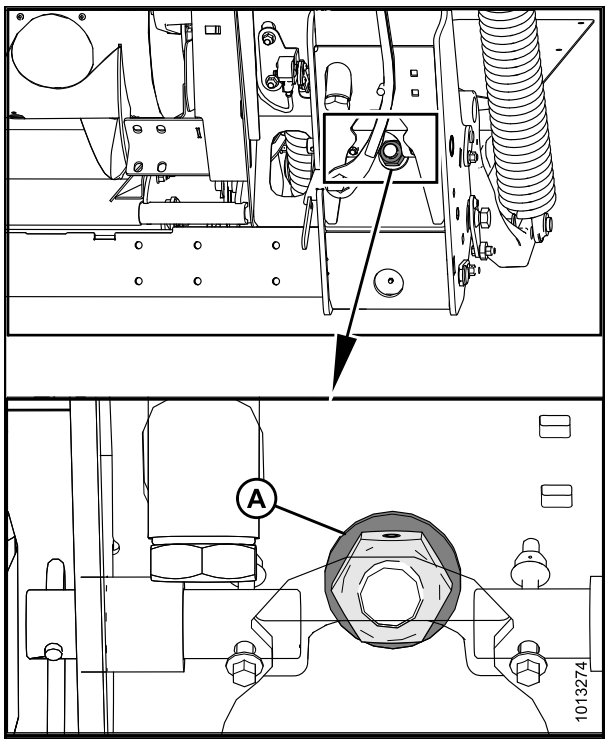


Figure 3.101: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

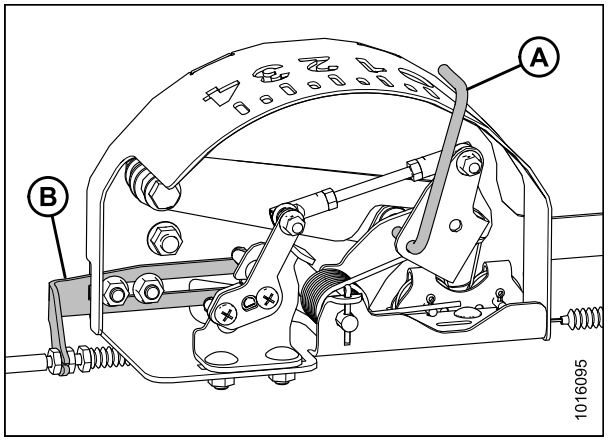


Figure 3.102: Float Indicator Box

4. Use a voltmeter to measure the voltage between the ground (Pin 2) and signal (Pin 3) wires of the AHHC sensor (A) at the back of the float module side frame. Ensure it is at the high voltage limit for the combine. Refer to Table *3.12 Combine Voltage Limits, page 94*.
5. Repeat at the opposite side.

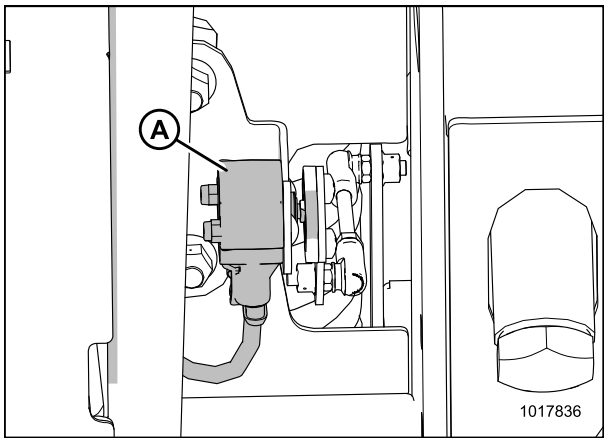


Figure 3.103: Optional Two-Sensor Kit – RH Sensor

6. 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.

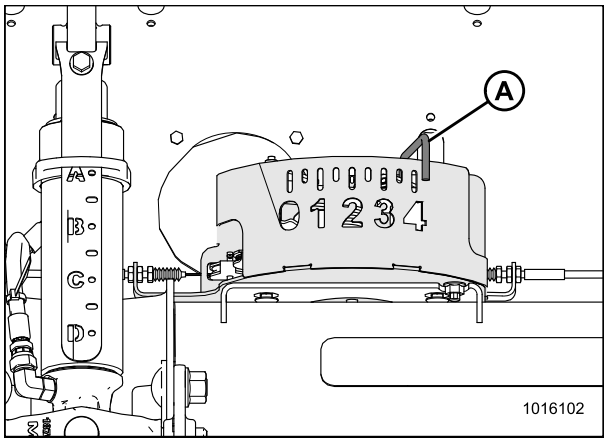


Figure 3.104: Float Indicator Box

7. Using a voltmeter, measure the voltage between the ground (Pin 2) and signal (Pin 3) wires of the AHHC sensor (A) at the back of the side frame. Ensure it is at the high voltage limit for the combine. Refer to Table *3.12 Combine Voltage Limits, page 94*.
8. 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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.
9. Repeat at the opposite side.

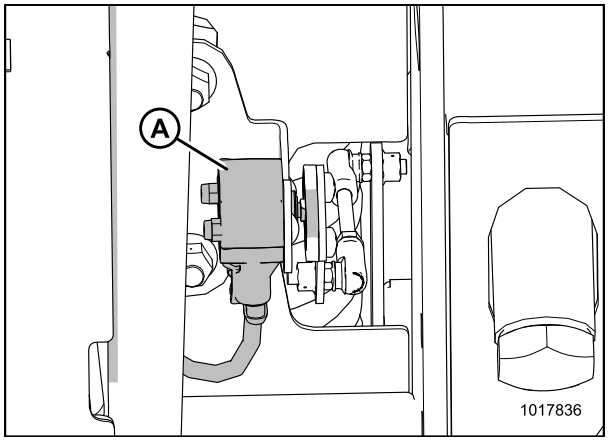


Figure 3.105: Optional Two-Sensor Kit – RH Sensor

Adjusting Voltage Limits (One-Sensor System)

DANGER

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

1. Complete the following steps to adjust the upper voltage limit:
   a. Extend guard angle fully; the header angle indicator should be at D.
   b. Position header 6–10 in. above the ground; the float indicator should be at the 0.
   c. Check the upper voltage limit using the combine display or voltmeter. Refer to Table *3.12 Combine Voltage Limits, page 94*.
   d. Loosen sensor mounting nuts (A).
   e. Rotate sensor (B) counterclockwise to increase high voltage limit and clockwise to decrease it.
   f. Tighten sensor mounting nuts (A).
2. Complete the following steps to adjust the lower voltage limit:
   a. Extend guard angle fully; the header angle indicator should be at D.
   b. Fully lower header on the ground; the float indicator should be at 4.
   c. Check the lower voltage limit using the combine display or voltmeter. Refer to Table *3.12 Combine Voltage Limits, page 94*.
   d. Loosen sensor mounting nuts (A).
   e. Rotate sensor counterclockwise to increase low voltage limit and clockwise to decrease it.
   f. 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 *3.12 Combine Voltage Limits, page 94*.
4. If unable to get the voltage within the required range, loosen mounting bolts (A) and shift sensor assembly (B) inboard (as shown in the illustration at right.

   NOTE:
   If sensor assembly is shifted right or left, it may be necessary to repeat Steps *1., page 100* and *2., page 100* to achieve the proper voltage limits.

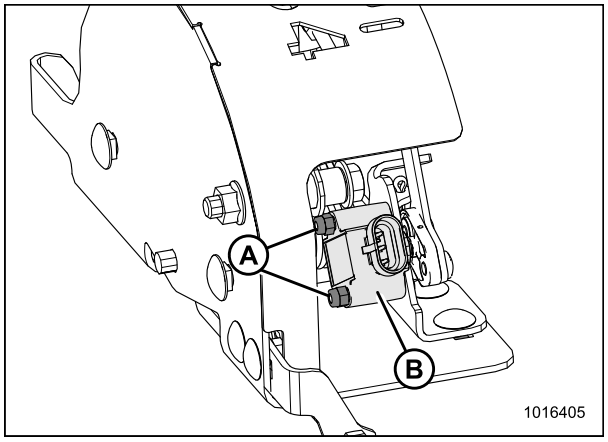


Figure 3.106: AHHC Sensor Assembly

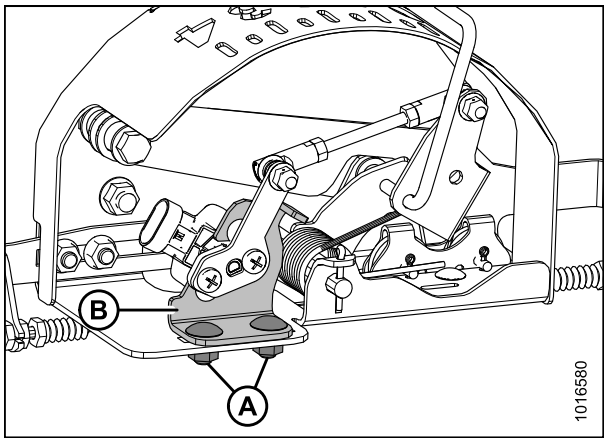


Figure 3.107: AHHC Sensor Assembly

Adjusting Voltage Limits (Two-Sensor System)

DANGER

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

1. Extend guard angle fully; the header angle indicator should be at D.
2. Position header 6–10 in. (150–254 mm) above the ground; the float indicator should be at 0.
3. Adjust left-hand sensor voltage:
   a. Loosen sensor mounting nuts (A).
   b. Rotate sensor counterclockwise to lower the voltage. Rotate sensor clockwise to raise the voltage.
   c. Check that the left-hand sensor is at the correct upper voltage limit according to Table *3.12 Combine Voltage Limits, page 94*.
   d. Tighten sensor mounting nuts.

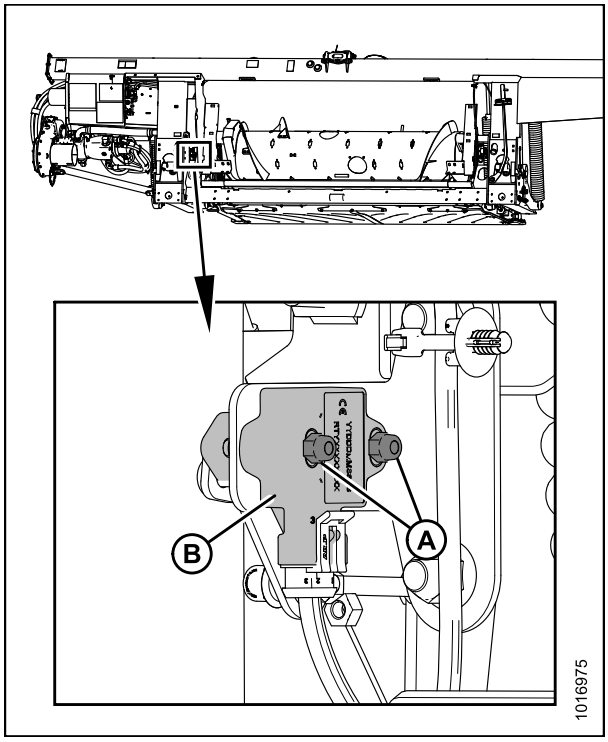


Figure 3.108: Optional Two Sensor Kit – LH Sensor

4. Adjust right-hand sensor voltage:
   a. Loosen sensor mounting nuts (A).
   b. Rotate sensor clockwise to lower the voltage. Rotate sensor counterclockwise to raise the voltage.
   c. Check that the right-hand sensor is at the correct upper voltage limit according to Table *3.12 Combine Voltage Limits, page 94*.
   d. Tighten sensor mounting nuts.

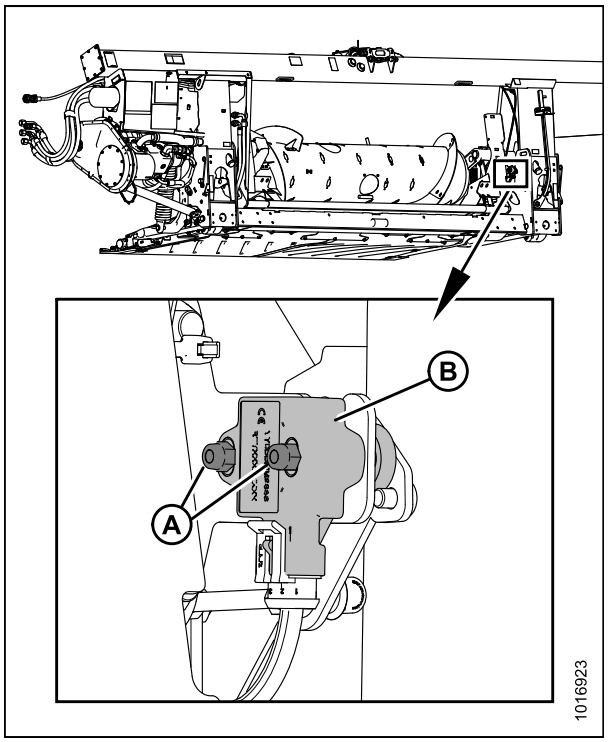


Figure 3.109: Optional Two Sensor Kit – RH Sensor

5. Fully lower the header; the float indicator should be at 4.
6. Check that both sensors are at the correct lower voltage limit according to Table *3.12 Combine Voltage Limits, page 94*.

3.8.2 Case IH 2500 and 5088/6088/7088 Combines

Calibrating the Auto Header Height Control (Case IH 2500 and 5088/6088/7088)

For best performance of the auto header height control (AHHC) system, perform ground calibration with center-link set to D. When calibration is complete, adjust the center-link back to desired header angle. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Set the flotation on the header. Refer to *3.7.2 Header Float, page 57*. Position fore-aft in mid span.
3. Start combine engine, but do NOT have separator or feeder house engaged.
4. Locate header control switch (A) on the right console, and set to "HT" (this is AHHC mode).

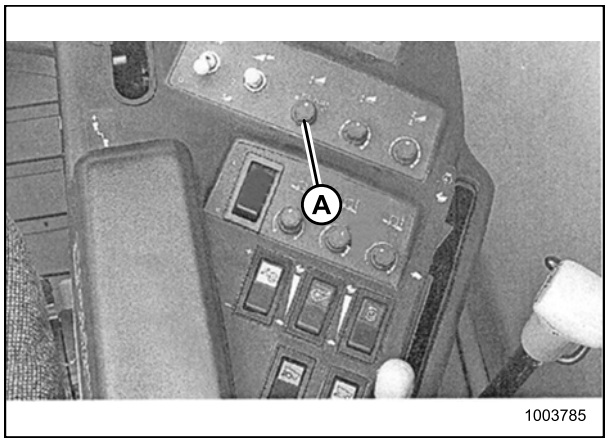


Figure 3.110: Right Console

5. Press the header lower switch (A) on the joystick lever until the float module and header are fully lowered. You may need to hold the switch for several seconds.
6. Press the header raise switch (A) on the joystick lever. 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 float was set heavier to complete the ground calibration procedure, adjust to recommended operating float after the calibration is complete.

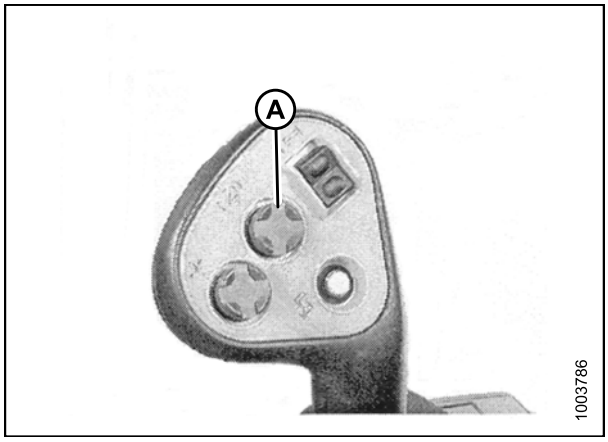


Figure 3.111: Joystick Lever (Case IH 2300/2500)

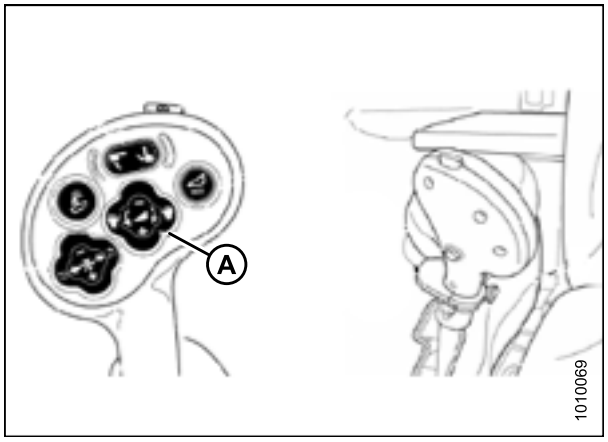


Figure 3.112: Joystick Lever (Case IH 5088/6088/7088)

Setting the Sensitivity of the Auto Header Height (Case IH 2500 and 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 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Use the HEADER SETTINGS key (M) to display the HEADER SENSITIVITY CHANGE page.
2. Use the UP or DOWN keys (E and H) 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 the HEADER SETTINGS key (M) to highlight the next changeable item.
4. Use the ENTER key (D) to save changes and return to the monitor page. If there are no changes, the screen will return to the monitor page after five seconds.

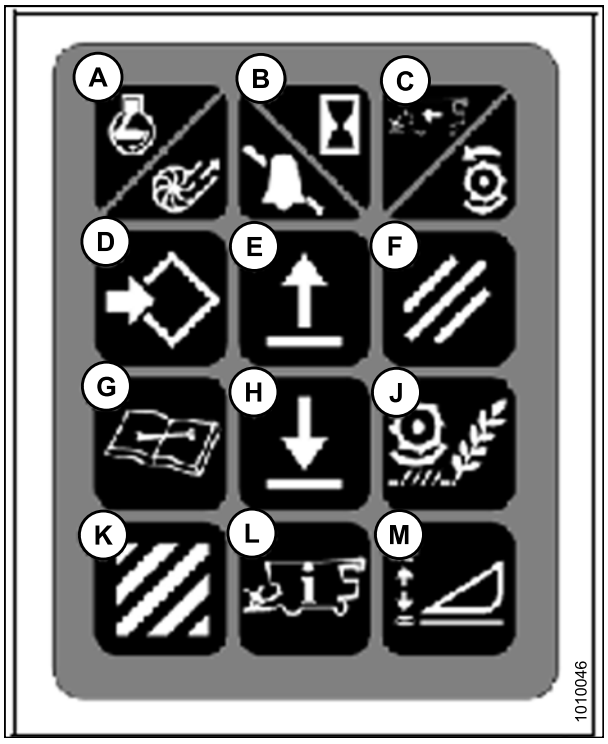


Figure 3.113: Combine Controls

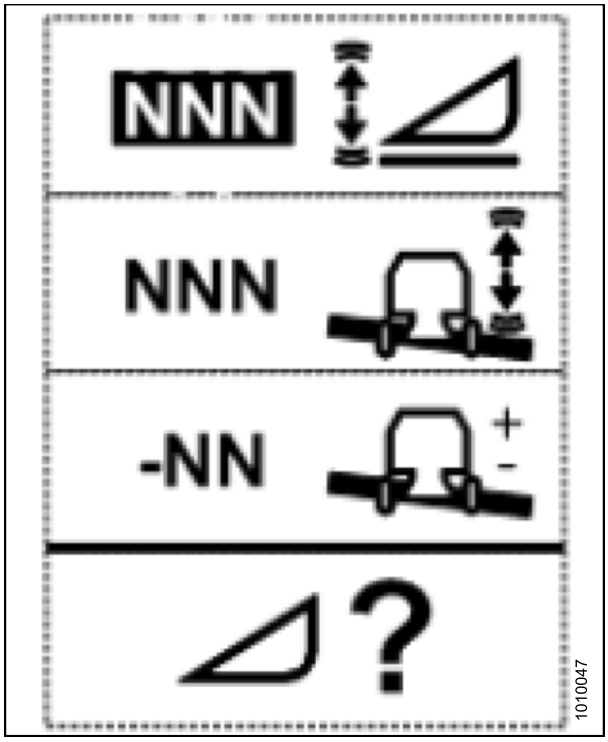


Figure 3.114: Height Sensitivity Change Page

3.8.3 Case IH 5130/6130/7130, 7010/8010, 7120/8120/9120, 7230/8230/9230 and 7240/8240/9240 Combines

Checking Voltage Range from the Combine Cab (Case 8010)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

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

2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

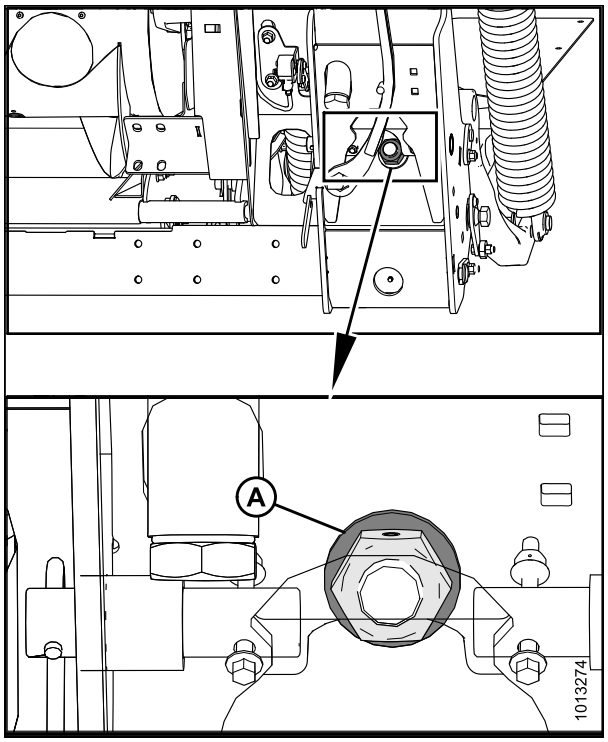


Figure 3.115: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

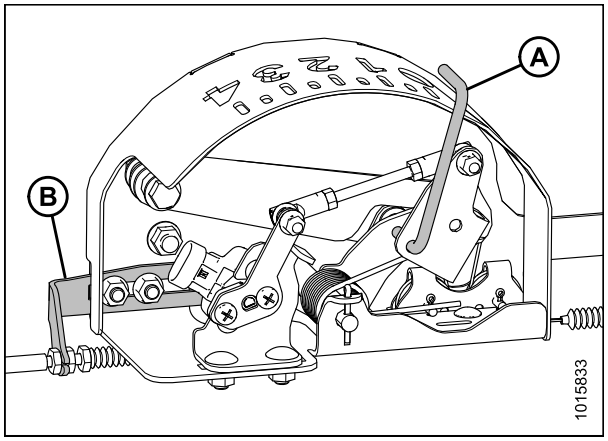


Figure 3.116: Float Indicator box

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

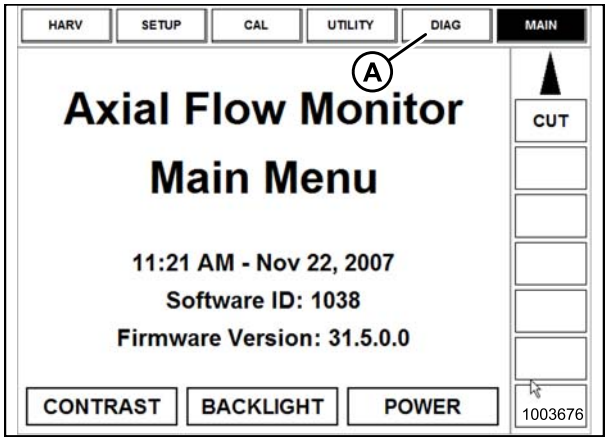


Figure 3.117: Case 8010 Combine Display

6. Select SUB SYSTEM (A). The SUB SYSTEM page displays.

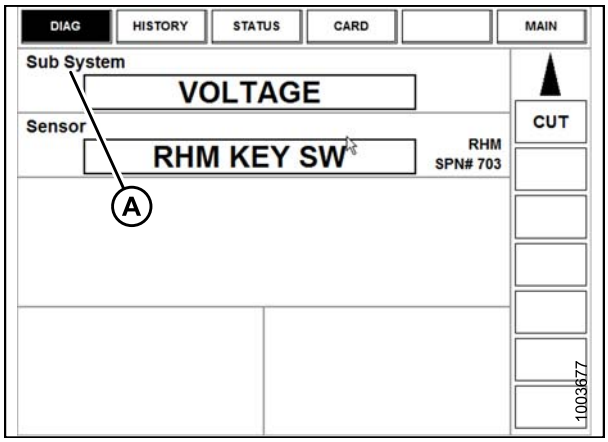


Figure 3.118: Case 8010 Combine Display

7. Select HDR HEIGHT/TILT (A). The SENSOR page displays.

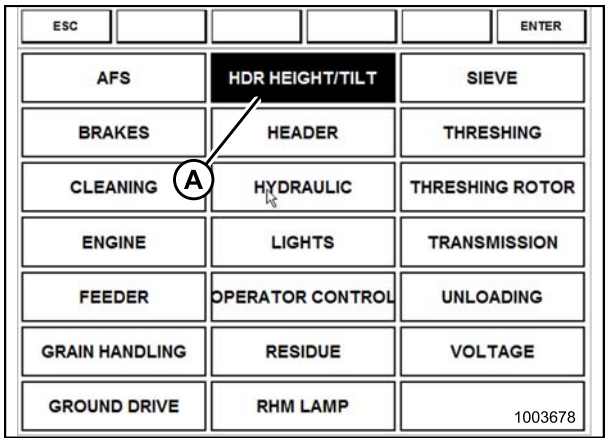


Figure 3.119: Case 8010 Combine Display

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

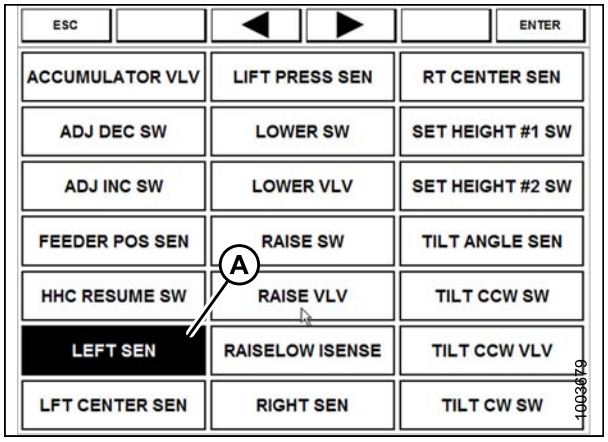


Figure 3.120: Case 8010 Combine Display

9. 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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

Figure 3.121: Case 8010 Combine Display

Checking Voltage Range from the Combine Cab (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

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

2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

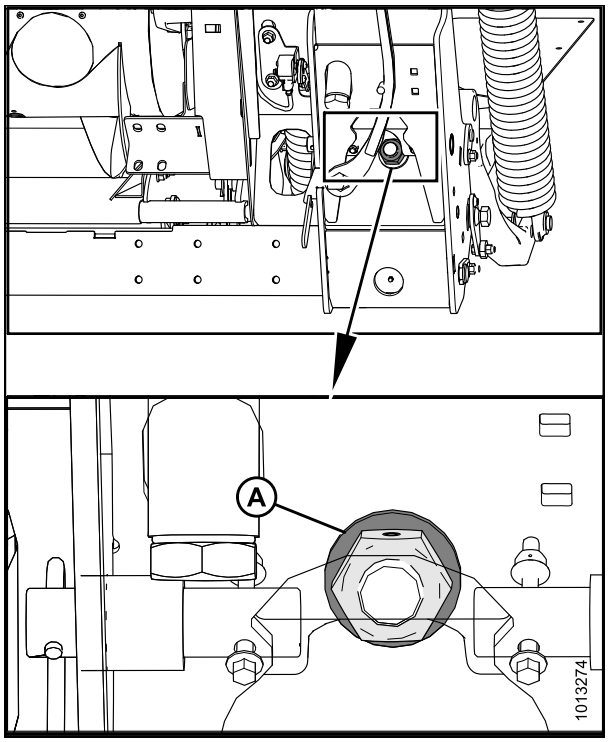


Figure 3.122: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

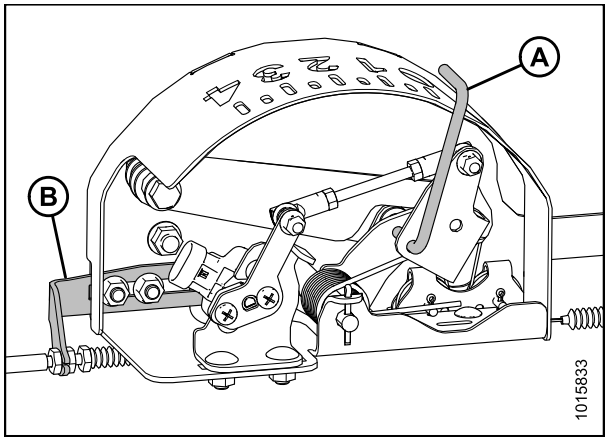


Figure 3.123: Float Indicator box

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

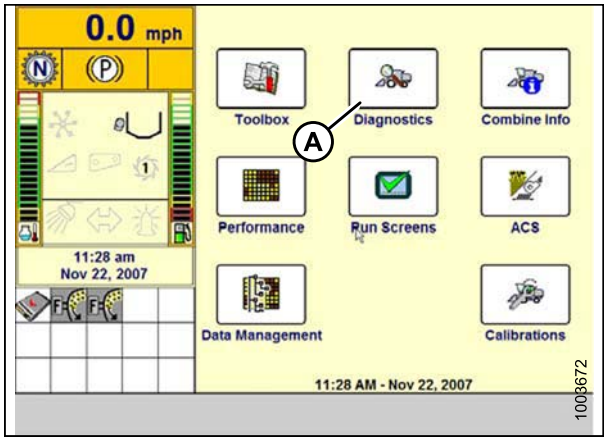


Figure 3.124: Case IH Combine Display

7. Select the GROUP arrow (A). The GROUP dialog box opens.

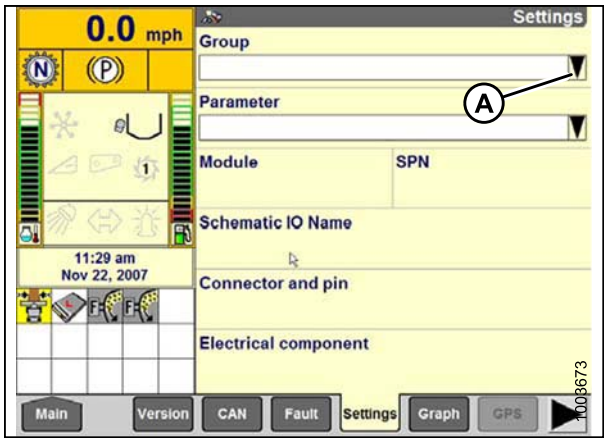


Figure 3.125: Case IH Combine Display

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

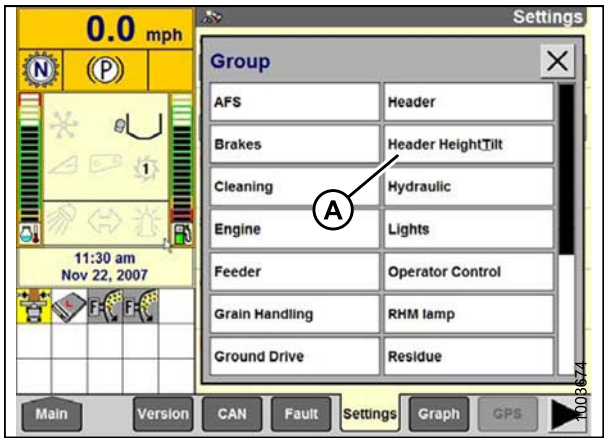


Figure 3.126: Case IH Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select the 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 low and high limits or, if the range between the low and high limits is insufficient, adjust the voltage limits. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

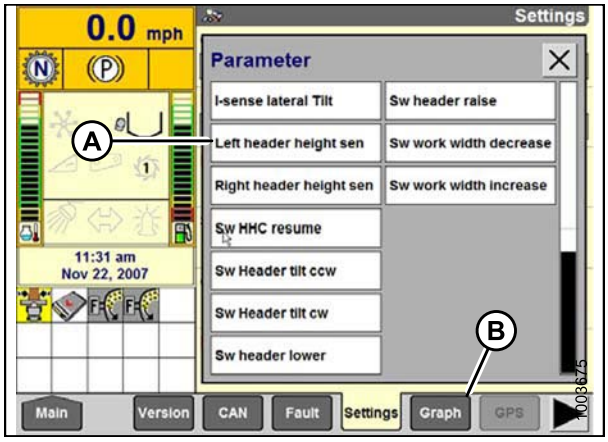


Figure 3.127: Case IH Combine Display

Calibrating the Auto Header Height Control (Case IH 5130/6130/7130, 7010/8010; 7120/8120/9120; 7230/8230/9230)

For best performance from 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. Refer to *3.7.3 Header Angle, page 63*.

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 the Auto Header Height Control (Case Combines with Version 28.00 or Higher Software), page 113*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Ensure all header and float module electrical and hydraulic connections are made.
3. Select TOOLBOX on the MAIN page, and then select HEADER.
4. Set appropriate HEADER STYLE.

Figure 3.128: Case IH Combine Display

5. Set AUTO REEL SPEED SLOPE.
6. Set HEADER PRESSURE FLOAT to NO if equipped, and ensure REEL DRIVE is HYDRAULIC.

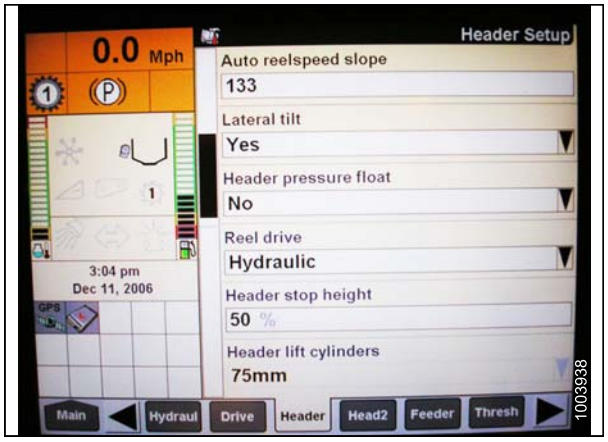


Figure 3.129: Case IH Combine Display

7. Install REEL FORE-BACK (if applicable).
8. Set HEIGHT SENSITIVITY to desired value. The recommended starting point is 180.

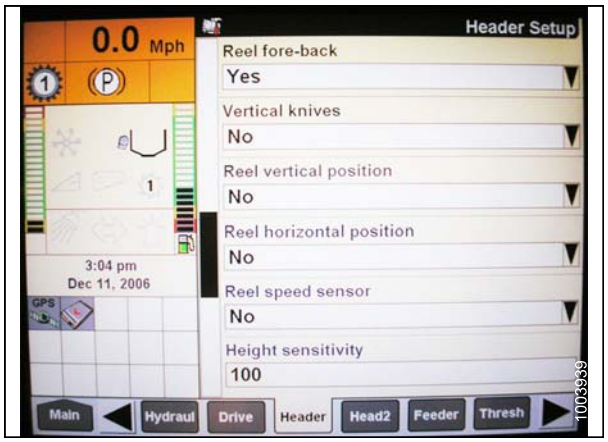


Figure 3.130: Case IH Combine Display

9. Install FORE-AFT CONTROL and HDR FORE-AFT TILT (if applicable).

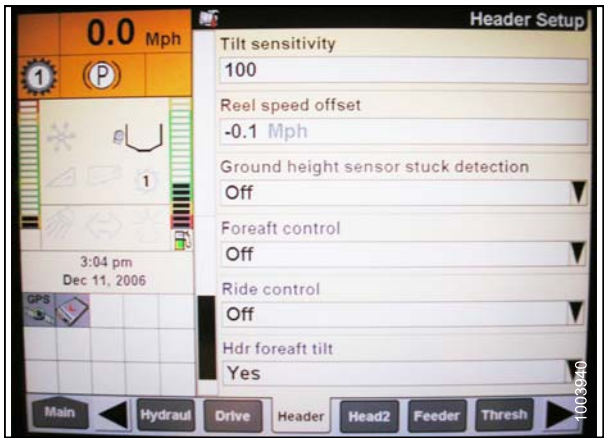


Figure 3.131: Case IH Combine Display

10. Press HEAD2 at bottom of page.
11. Ensure HEADER TYPE is DRAPER.

    NOTE:
    If recognition resistor is plugged in to header harness, you will not be able to change this.

12. Set cutting type to PLATFORM.
13. Set appropriate HEADER WIDTH and HEADER USAGE.

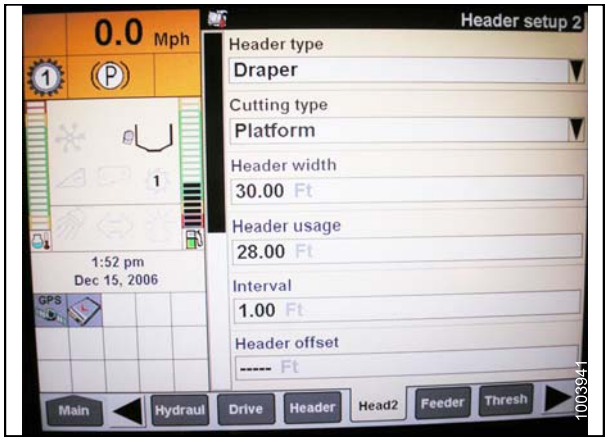


Figure 3.132: Case IH Combine Display

Calibrating the Auto Header Height Control (Case Combines with Version 28.00 or Higher Software)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Select TOOLBOX on the MAIN page, and then select HEADER SETUP.
3. Locate the HEADER SUB TYPE field. It will be located on either the HEAD 1 or the HEAD 2 tab.
4. Select 2000 (A).

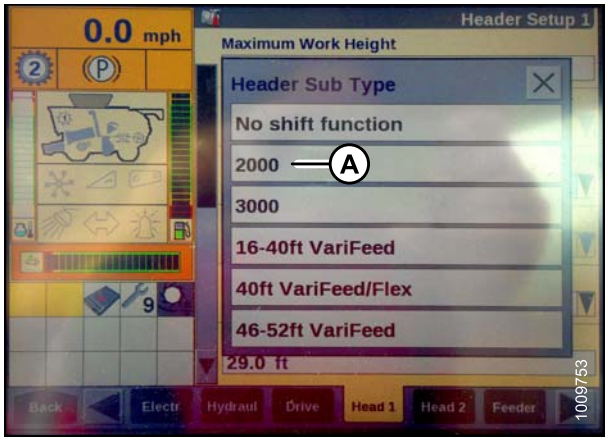


Figure 3.133: Case IH Combine Display

5. Locate the HEADER SENSORS and HEADER PRESSURE FLOAT fields. They will be located on either the HEAD 1 or the HEAD 2 tab.
6. Select ENABLE (A) in the HEADER SENSORS field.
7. Select NO (B) in the HEADER PRESSURE FLOAT field.

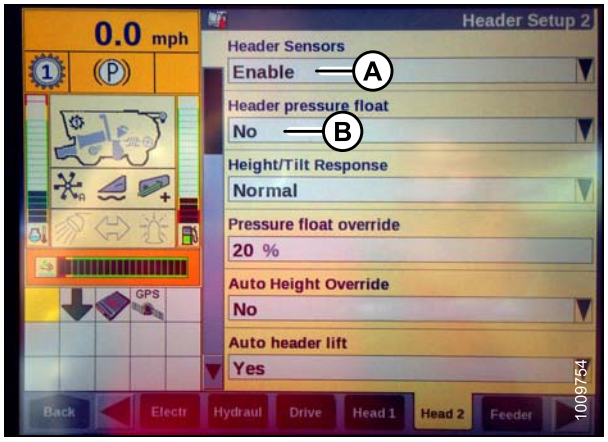


Figure 3.134: Case IH Combine Display

8. Ensure AUTO HEIGHT icon (A) appears on the monitor and is displayed as shown at (B). When the header is set for cutting on the ground, this verifies that the combine is correctly using the potentiometer on the header to sense ground pressure.

   NOTE:
   AUTO HEIGHT field (B) may appear on any of the RUN tabs and not necessarily on the RUN 1 tab.

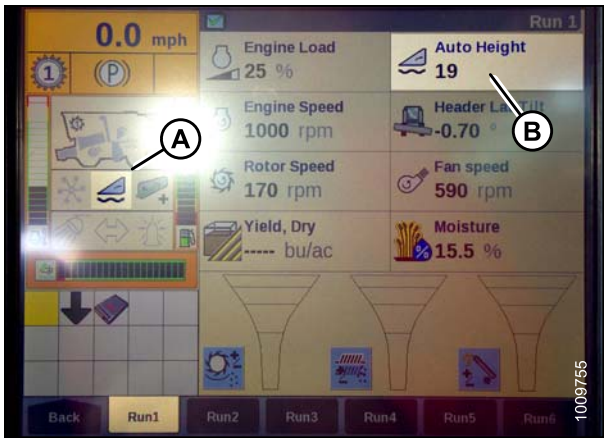


Figure 3.135: Case IH Combine Display

9. Select CALIBRATION on the combine display, and press the right arrow navigation key to enter the information box.
10. Select HEADER (A), and press ENTER. The CALIBRATION dialog box opens.

    NOTE:
    You can use the up and down navigation keys to move between options.

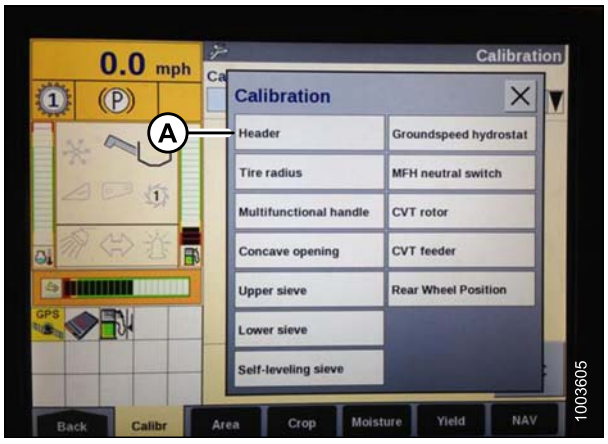


Figure 3.136: Case IH Combine Display

11. 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 three minutes will cause the calibration procedure to stop.

    NOTE:
    Refer to your combine operator's manual for an explanation of any error codes.

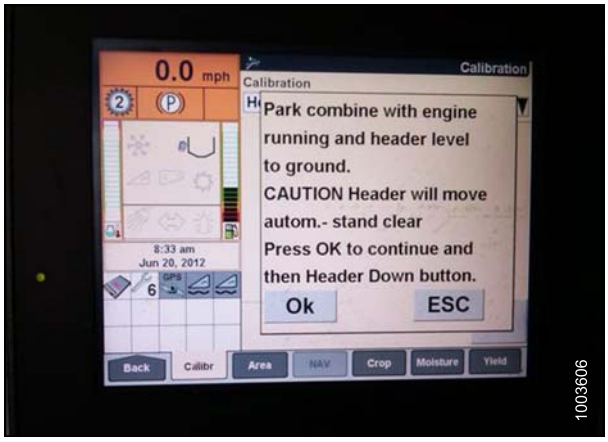


Figure 3.137: Case IH Combine Display

12. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on the page. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

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

13. If the unit does not function properly, conduct the maximum stubble height calibration.

Setting Preset Cutting Height (Case 7010/8010, 7120/8120/9120, 7230/8230/9230)

To set the preset cutting height, follow these steps:

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Engage separator and header.
2. Manually raise or lower the header to the desired cutting height.
3. Press the SET #1 switch (A). The HEADER HEIGHT MODE lamp (C), next to the SET #1 switch, turns on.
4. Manually raise or lower the header to a second desired cutting height.
5. Press the SET #2 switch (B). The HEADER HEIGHT MODE lamp (D), next to the SET #2 switch, turns on.

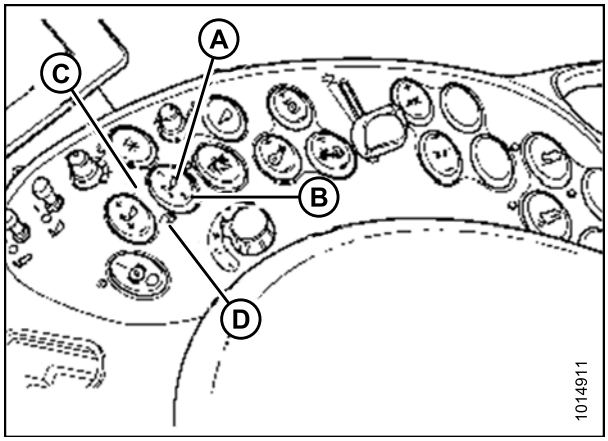


Figure 3.138: Case Combine Controls

6. To swap between set points, press HEADER RESUME (A).
7. To pick up header at headlands, press HEADER RESUME (A) twice. To lower, press HEADER RESUME (A).

NOTE:
You can fine adjust these set points by using the FINE ADJUST switch (A).

NOTE:
Pressing the HEADER RAISE/LOWER switch will disengage AUTO HEIGHT mode. Press HEADER RESUME to reengage.

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (B). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 (A) is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

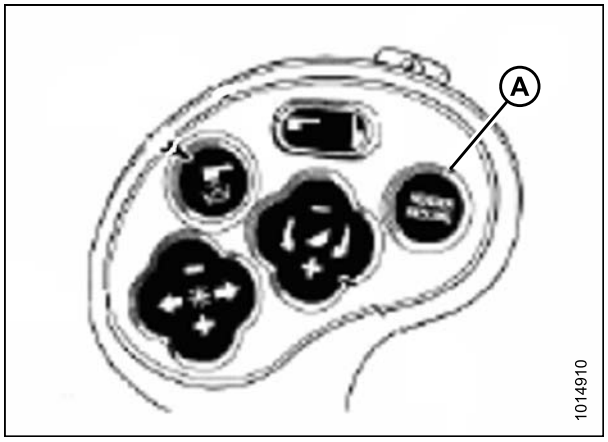


Figure 3.139: Case Combine Controls

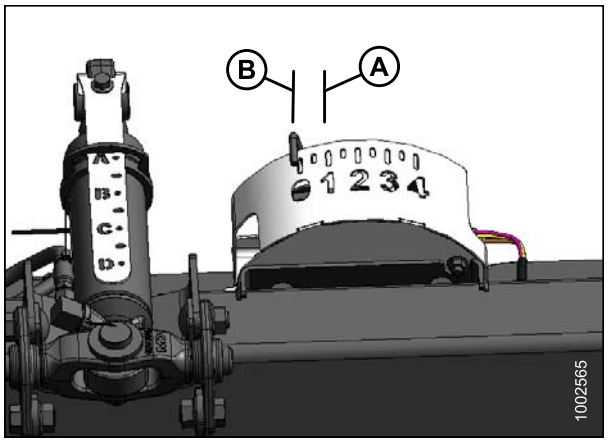


Figure 3.140: Float Indicator Box

3.8.4 Challenger and Massey Ferguson Combines

Checking Voltage Range from the Combine Cab (Challenger and Massey Ferguson)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on 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.

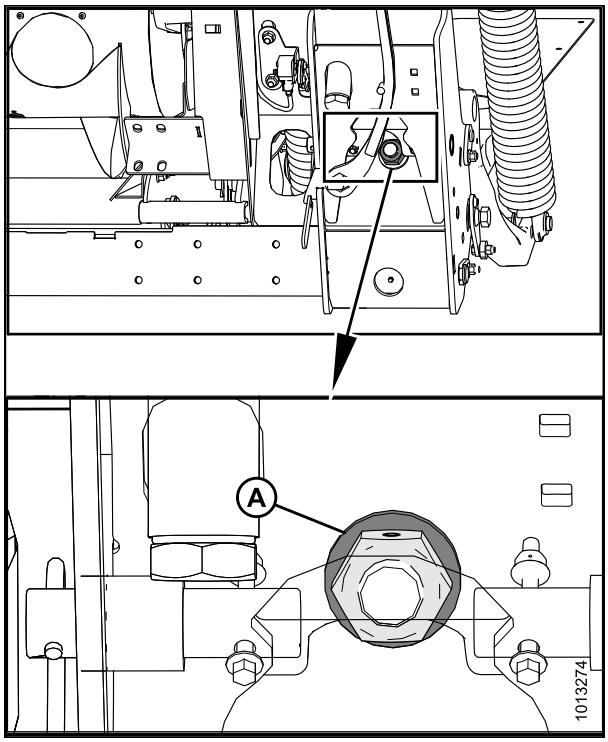


Figure 3.141: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

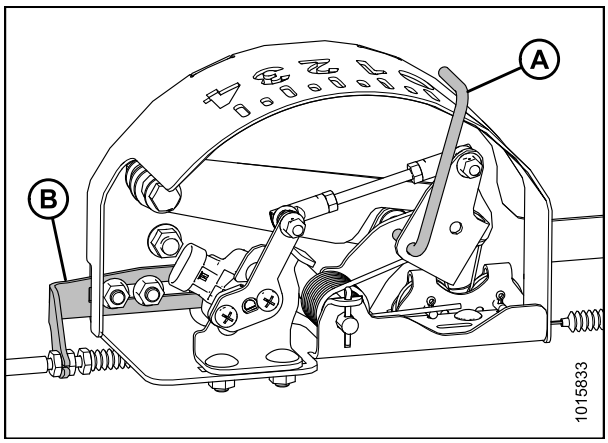


Figure 3.142: Float Indicator Box

4. Go to the FIELD page on the combine monitor, and then press the diagnostics icon. The MISCELLANEOUS page displays.
5. Press the VMM DIAGNOSTIC button (A). The VMM DIAGNOSTIC page displays.

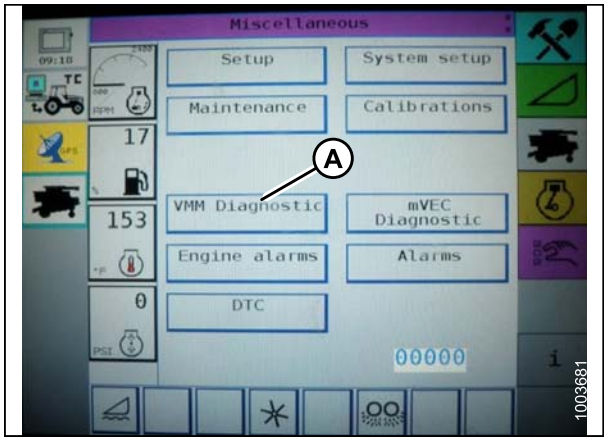


Figure 3.143: Challenger Combine Display

6. Go to the ANALOG IN tab, 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.

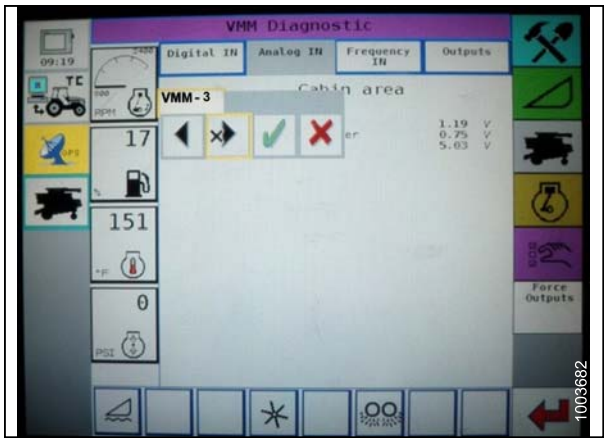


Figure 3.144: Challenger Combine Display

7. Fully lower the combine feeder house (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 voltage.
9. Raise header so cutterbar is 6 in. (150 mm) off the ground.
10. Read 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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

Figure 3.145: Challenger Combine Display

Engaging the Auto Header Height Control (Challenger and Massey Ferguson)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 card box in fuse panel module (FP)
- Multi-function control handle operator inputs
- Operator inputs mounted in the control console module (CC) panel

NOTE:
In addition to the above components, the electro hydraulic header lift control valve is an integral part of the system.

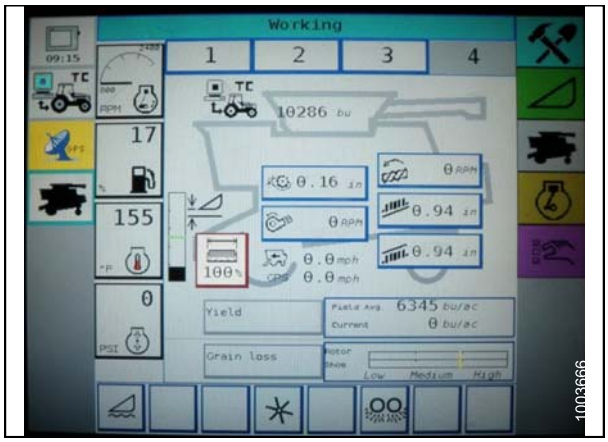


Figure 3.146: Challenger Combine Display

Engage the AHHC as follows:

1. Scroll through the header control options on the combine display using the header control switch until the AHHC icon 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.

Calibrating the Auto Header Height Control (Challenger and Massey Ferguson)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.

2. On the FIELD page, press the DIAGNOSTICS icon. The MISCELLANEOUS page appears.

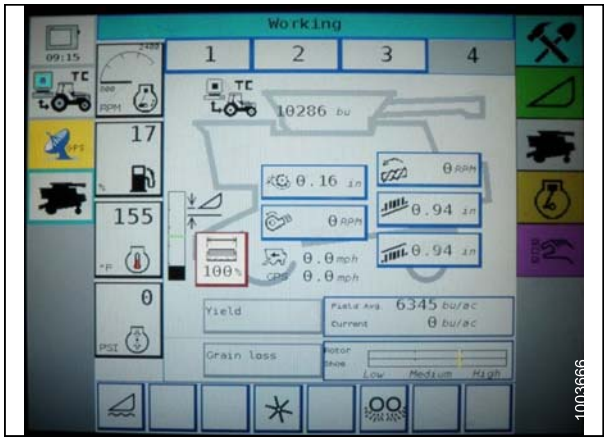


Figure 3.147: Challenger Combine Display

3. Press the CALIBRATIONS button. The CALIBRATIONS page appears.

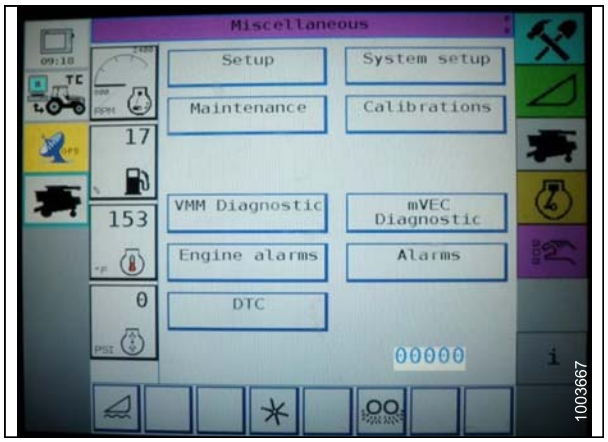


Figure 3.148: Challenger Combine Display

4. Press the HEADER button. The HEADER CALIBRATION page displays a warning.

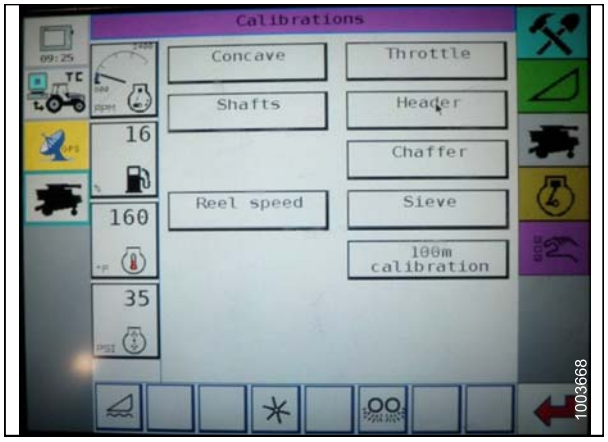


Figure 3.149: Challenger Combine Display

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

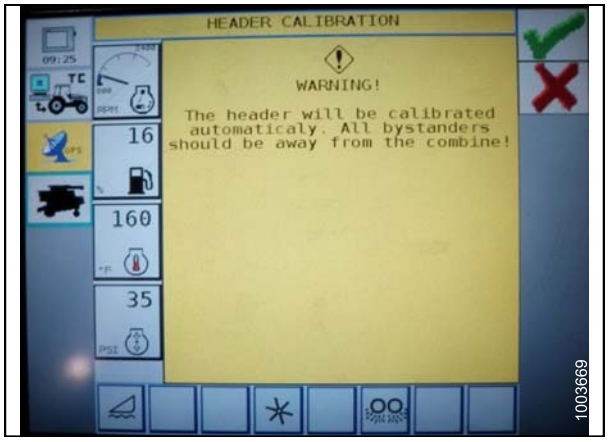


Figure 3.150: Challenger Combine Display

6. Follow the on-screen prompts to complete calibration.

   NOTE:
   The calibration procedure can be cancelled at anytime by pressing the cancel button in the bottom right corner of 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.

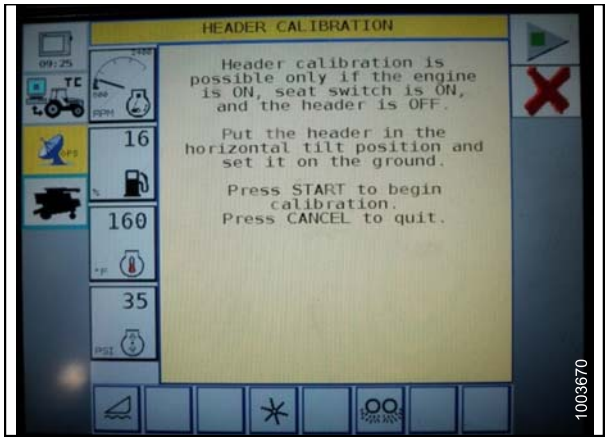


Figure 3.151: Challenger Combine Display

Adjusting the Header Height (Challenger and Massey Ferguson)

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.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The selected AHHC height is adjusted using the HEIGHT ADJUSTMENT knob on the control console. Turning the knob clockwise increases the selected height, and turning the knob counterclockwise decreases the selected height.

Figure 3.152: Height Adjustment Knob on the Combine Control Console

Adjusting the Header Raise/Lower Rate (Challenger and Massey Ferguson)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the Header icon on the FIELD page. The HEADER page displays.

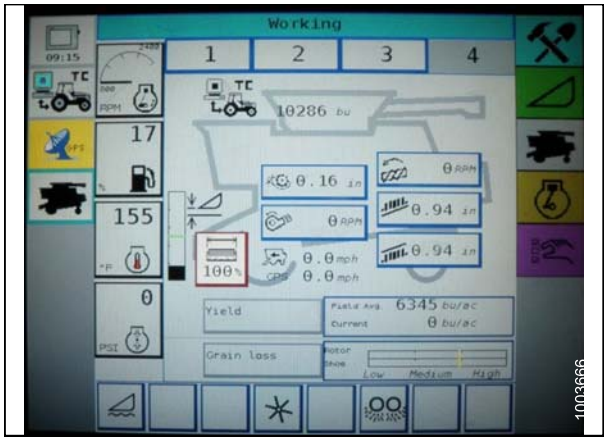


Figure 3.153: Challenger Combine Display

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

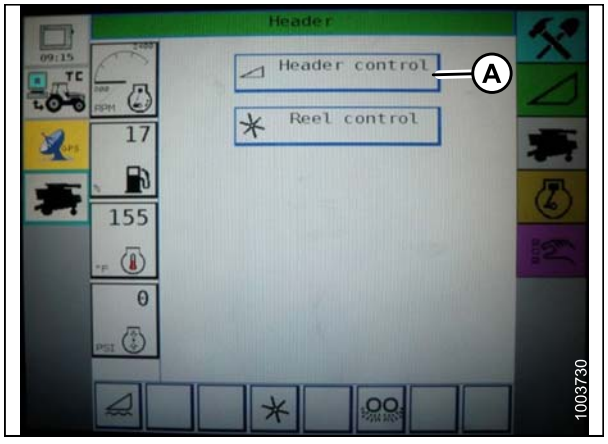


Figure 3.154: Challenger Combine Display

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

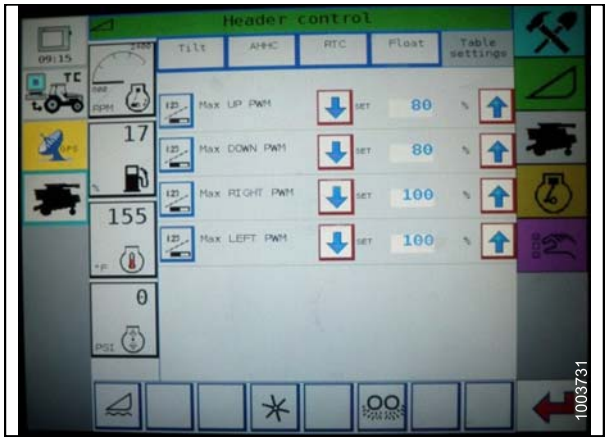


Figure 3.155: Challenger Combine Display

Setting the Sensitivity of the Auto Header Height Control (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 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 display since this document was published. Refer to the combine operator's manual for updates.

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

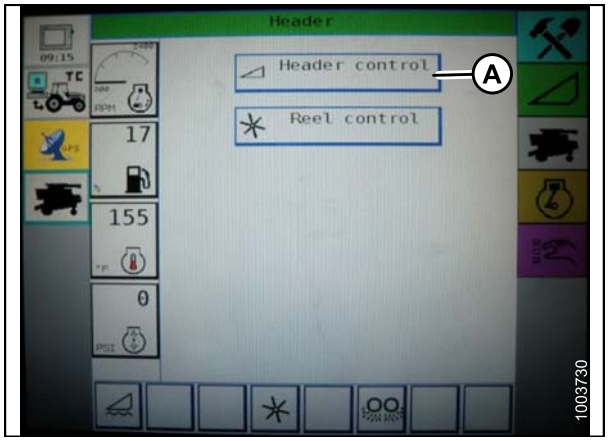


Figure 3.156: Challenger Combine Display

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.

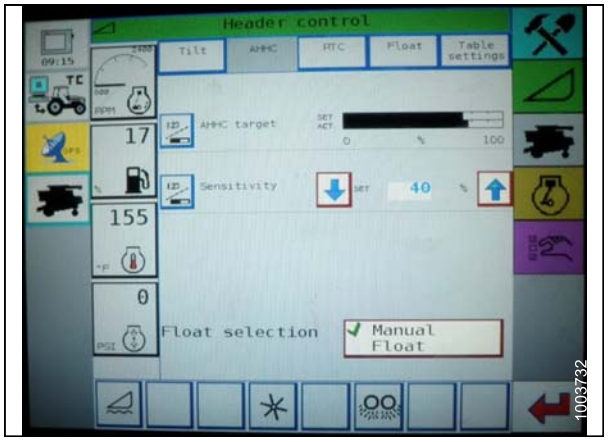


Figure 3.157: Challenger Combine Display

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

Checking Voltage Range from the Combine Cab (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

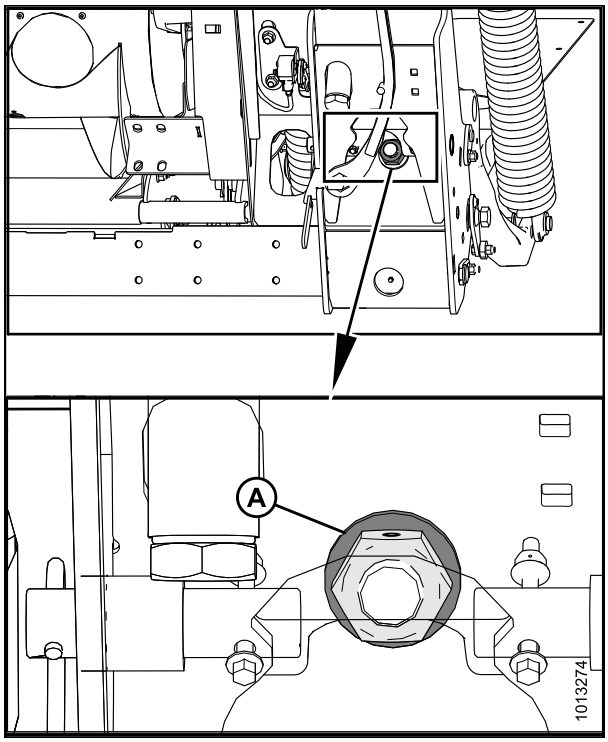


Figure 3.158: Float Lock

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

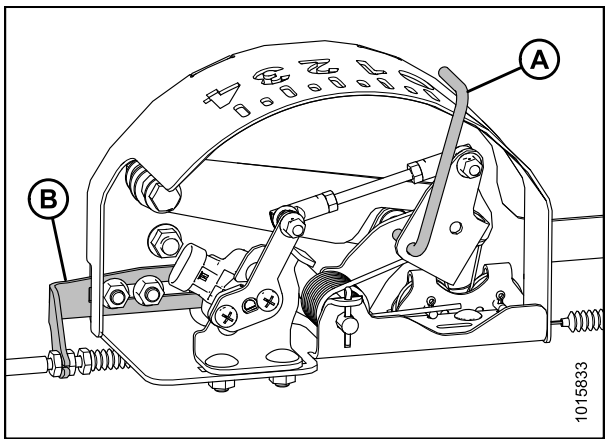


Figure 3.159: Float Indicator box

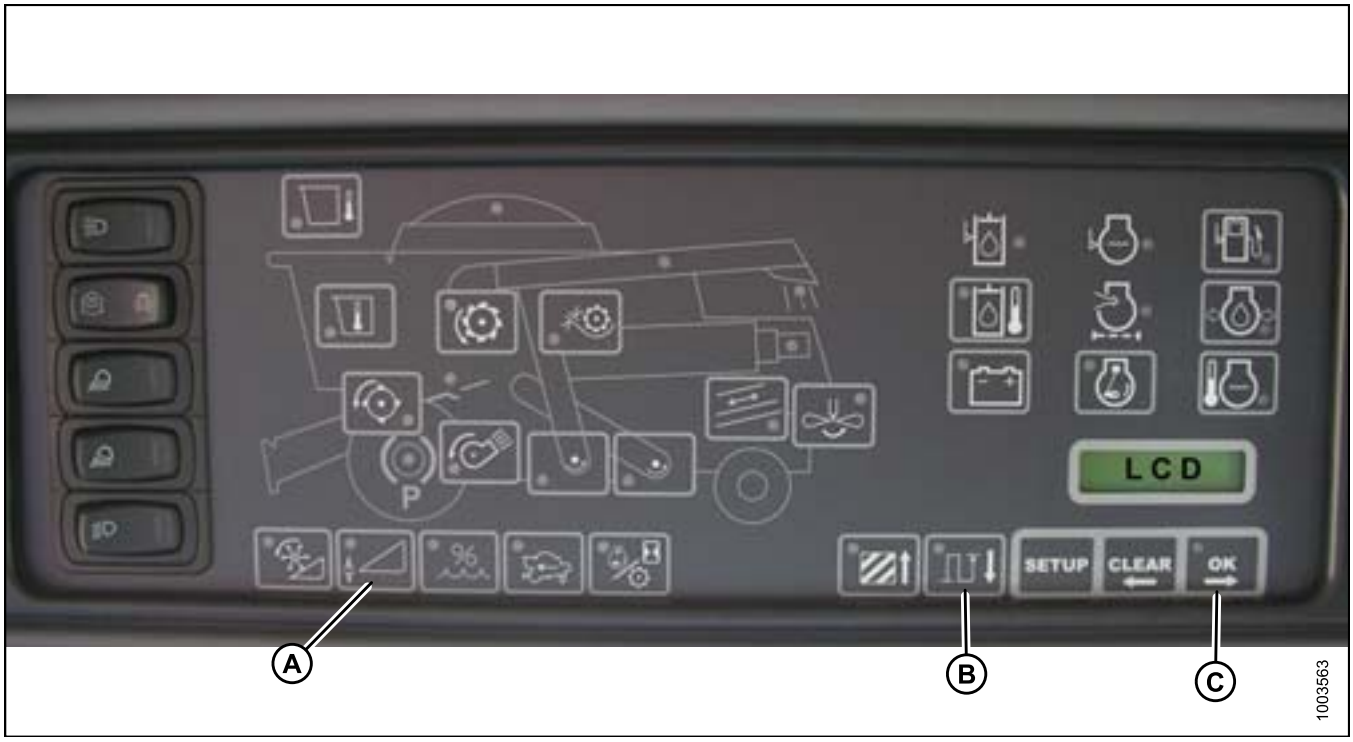


Figure 3.160: Combine Heads Up Display

4. Ensure header float is unlocked.
5. Press and hold button (A) on the heads-up display for three seconds to enter diagnostic mode.
6. Scroll down using button (B) until LEFT is displayed on the LCD screen.
7. Press the OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the AHHC. Raise and lower the header to see the full range of voltage readings.

Engaging the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 card box in fuse pane module (FP).
- Multi-Function Control Handle operator inputs.
- Operator inputs mounted in the control console module (CC) panel.

NOTE:
In addition to the above components, the electro hydraulic header lift control valve also is an integral part of the system.

Figure 3.161: Combine Auto Header Height Controls

1. Press the AUTO MODE (A) button until the AHHC LED light (B) begins flashing. If the RTC light is flashing, press the AUTO MODE (A) button again until it switches to AHHC.
2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header also should drop toward the ground. The AHHC is now engaged and can be adjusted for height and sensitivity.
3. Use controls to adjust height and sensitivity to changing ground conditions such as shallow gullies and field drainage trenches.

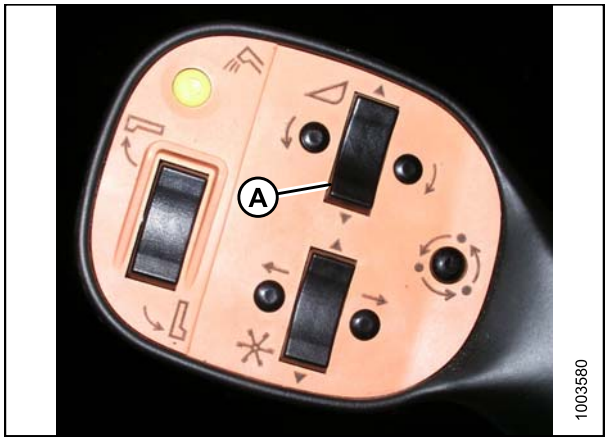


Figure 3.162: Control Handle

Calibrating the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

Calibration should be done on flat, level ground without the header clutches engaged. Header height and header tilt 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 auto header height control (AHHC). Refer to combine manual for instructions.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

Figure 3.163: Combine Auto Header Height Controls

A - AUTO MODE Button
B - AHHC Light
C - CAL1 Button
D - Raise Header
E - Lower Header
F - Auto Mode
G - CAL2 Button

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. Refer to *3.7.3 Header Angle, page 63*.

1. Ensure center-link is set to D.
2. Press AUTO MODE button (A) until the AHHC light (B) is illuminated.
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 float module has separated from header.

5. Press CAL2 button (G) until lower header light (E) stops flashing, and release it when the raise header light (D) begins flashing.
6. Raise header to its maximum height (ensure the header is resting on the down-stop pads).
7. Press CAL2 button (G) until the 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 header to the maximum left position.
9. Press CAL2 button (G) until the HEADER TILT LEFT light (not shown) stops flashing, and release 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 to the memory. All lights should stop flashing.

Turning off the Accumulator (Gleaner R65/R66/R75/R76 and S Series)

The accumulator will affect the combine's reaction time and greatly inhibit the auto header height control's performance.

Refer to the combine operator's manual for proper procedure when turning 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 3.164: Combine Accumulator On/Off Switch

A - Accumulator Lever (Off Position)

Adjusting the Header Raise/Lower Rate (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

The auto header height control (AHHC) system's stability is affected by hydraulic flow rates. Ensure that the header raise (A) and header lower (B) adjustable restrictors in the hydraulic valve block are adjusted so that it takes approximately six seconds to raise the header from ground level to maximum height (hydraulic cylinders fully extended), and approximately six seconds to lower the header from maximum height to ground level.

If there is too much header movement (for example, hunting) when the header is on the ground, adjust the lower rate to a slower rate of drop: seven or eight seconds.

NOTE:
Make this adjustment with the hydraulic system at normal operating temperature (54.4°C [130°F]) and the engine running at full throttle.

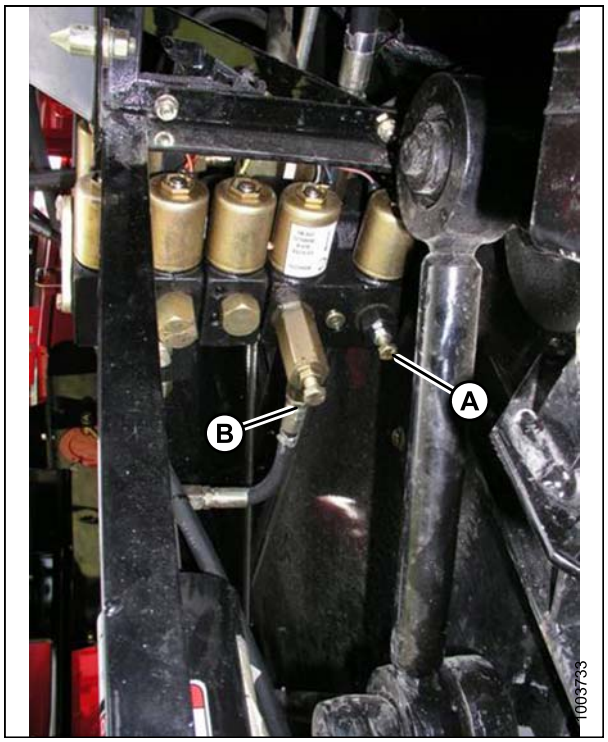


Figure 3.165: Header Raise and Lower Adjustable Restrictors

Adjusting Ground Pressure (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To adjust header height, ensure the header is in auto header height control (AHHC) mode. This is indicated by the AUTO MODE LED light (A) displaying a continuous, solid light. The header will lower to the height (ground pressure) corresponding to the position selected with the height control knob (B).

Turn the knob counterclockwise for minimum ground pressure, and clockwise for maximum ground pressure.

Figure 3.166: AHHC Console

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (B). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 (A) is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

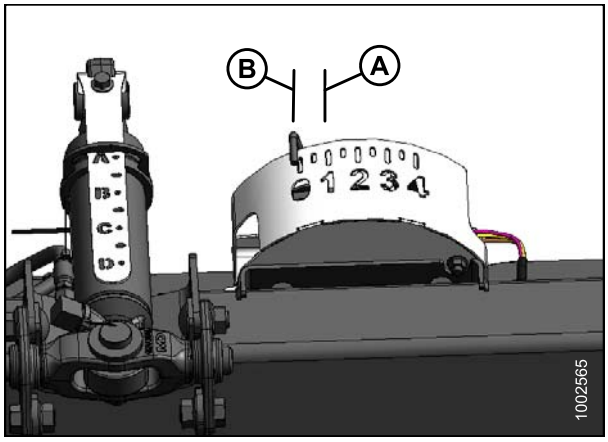


Figure 3.167: Float Indicator Box

Adjusting the Sensitivity of the Auto Header Height Control (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

Figure 3.168: Auto Header Height Control Console

The SENSITIVITY ADJUSTMENT dial (A) controls the distance the cutterbar must travel up or down before the AHHC reacts and raises or lowers the feeder house.

When the 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 3/4 in. (19 mm) before the control module signals the hydraulic control valve to raise or lower the header frame.

When the 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 2 in. (51 mm) 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 4 in. (102 mm) of vertical travel before correction is made.

Troubleshooting Alarms and Diagnostic Faults (Gleaner R65/R66/R75/R76 and S Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

Display type:

Displayed on tachometer (A) as XX or XXX.

Figure 3.169: Tachometer

Displayed on LCD (A) as XX in. or XXX cm.

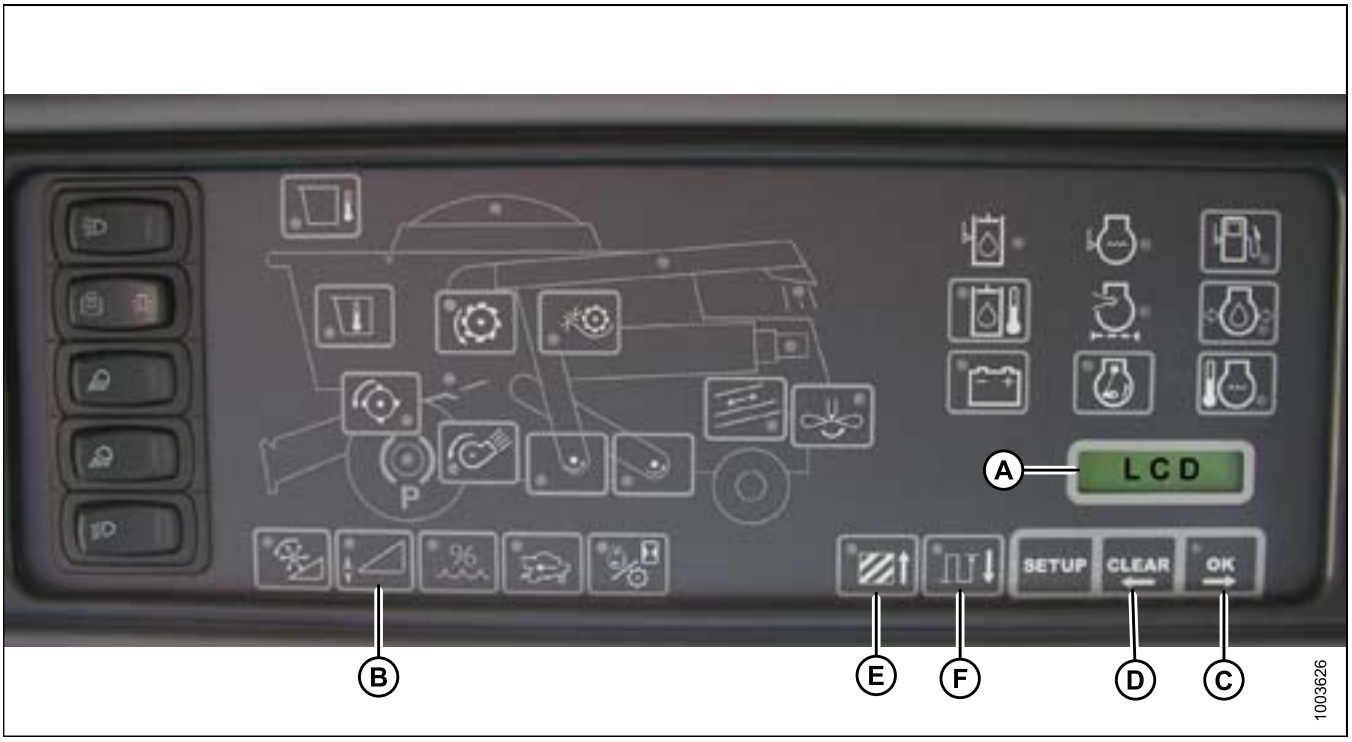


Figure 3.170: Combine Heads up Display

Alarm conditions:

If an error message is received from the fuse panel, an audible alarm sounds. The LCD 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.

The alarm also is noted by the buzzer sounding five times every ten seconds.

When an alarm condition occurs, a green LED flashes on and off (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 *3.170: Combine Heads up Display, page 133*.

Pressing the header height switch (B) for a minimum of five seconds will put the EIP in header diagnostic mode. The LCD (shown on previous page) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after three seconds, header fault parameter labels are displayed on the EIP LCD. All the information displayed is read-only.

The 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 three seconds, after which its value is automatically displayed.

Pressing the 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 the OK button (C) is pressed before three seconds, the parameter's value will be displayed.

Pressing AREA (E) will cycle through the options. When LEFT is displayed on the LCD, press the OK button (C), and the auto header height control (AHHC) voltage will be shown on the display.

Press the DIST button (F) to cycle back through the table.

Press the CLEAR button (D) to exit header diagnostics and return to normal mode.

Refer to *3.8.13 Sensor Operation, page 197*.

3.8.6 John Deere 60 Series Combines

Checking Voltage Range from the Combine Cab (John Deere 60 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

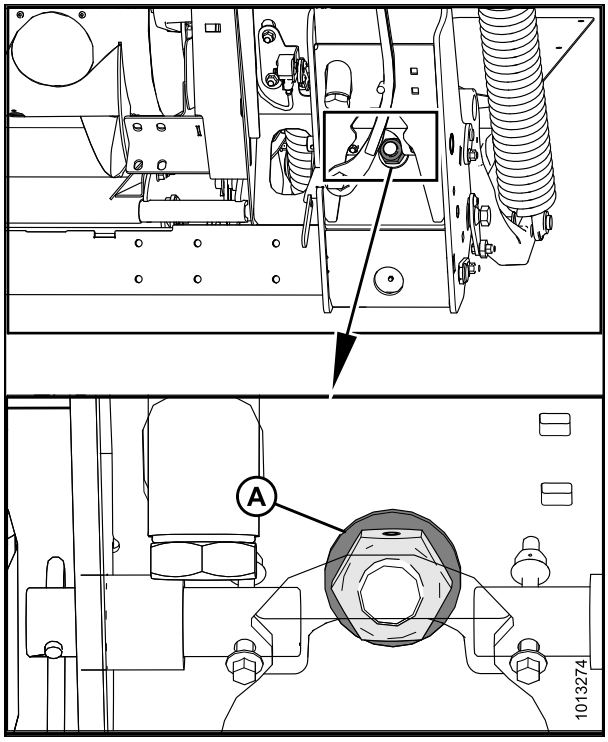


Figure 3.171: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

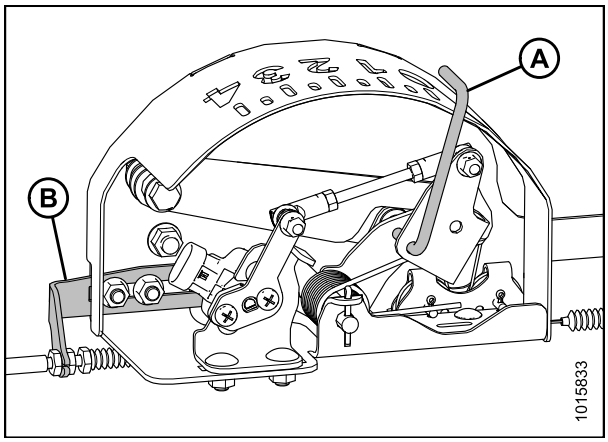


Figure 3.172: Float Indicator box

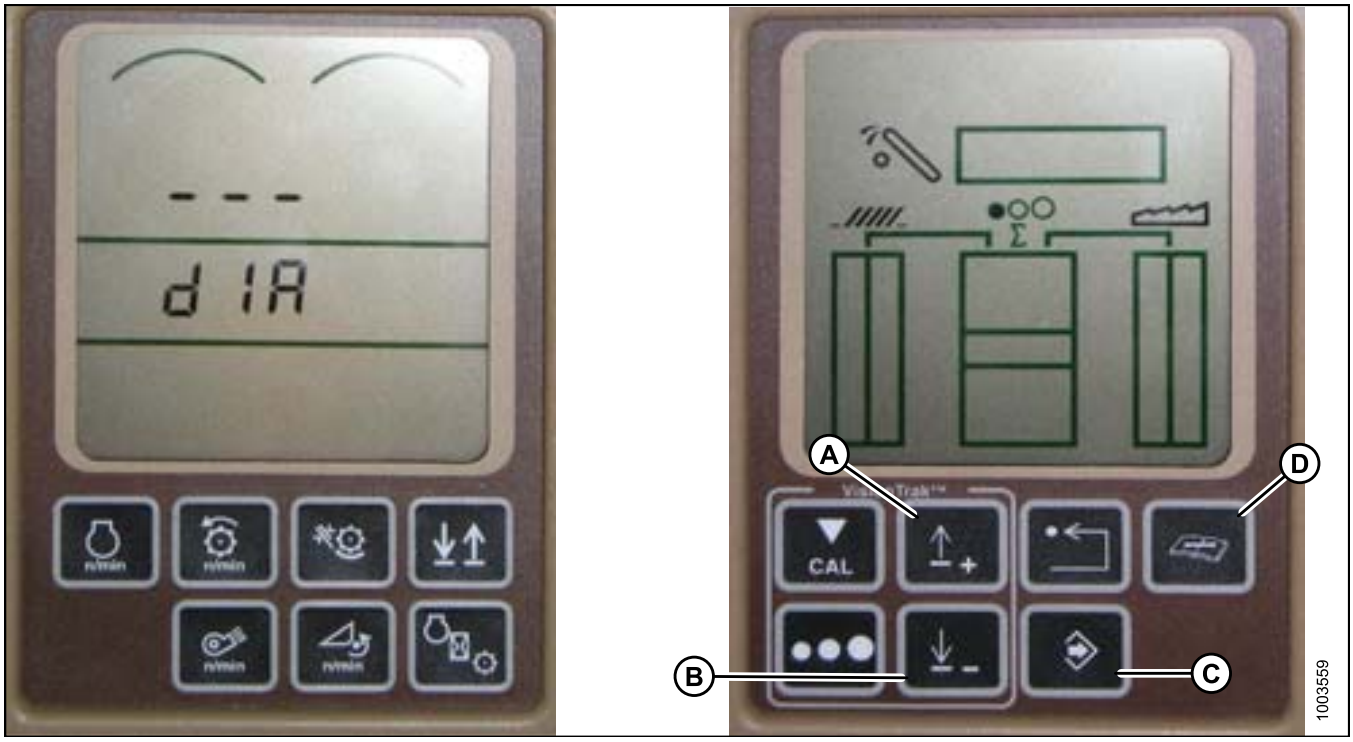


Figure 3.173: John Deere Combine Display

4. Press the DIAGNOSTIC button (D) on the monitor—DIA appears on the monitor.
5. Press the UP button (A) until EO1 appears on the monitor—this is the header adjustments.
6. Press the ENTER button (C).
7. Press the UP (A) or DOWN button (B) until 24 is displayed on the top portion of the monitor—this is the voltage reading for the sensor.
8. Ensure header float is unlocked.
9. Start the combine, and fully lower 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.

10. Check the sensor reading on the monitor. The reading should be above 0.5 volts.
11. Raise the header so it is just off the ground. The reading on the monitor should read below 4.5 volts.
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, refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

Calibrating the Auto Header Height Control (John Deere 60 Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Ensure center-link is set to D.
2. Rest header on down stops, and unlock float module float.
3. Start the combine.
4. Press the DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
5. Press the CAL button (B). DIA-CAL appears on the monitor.

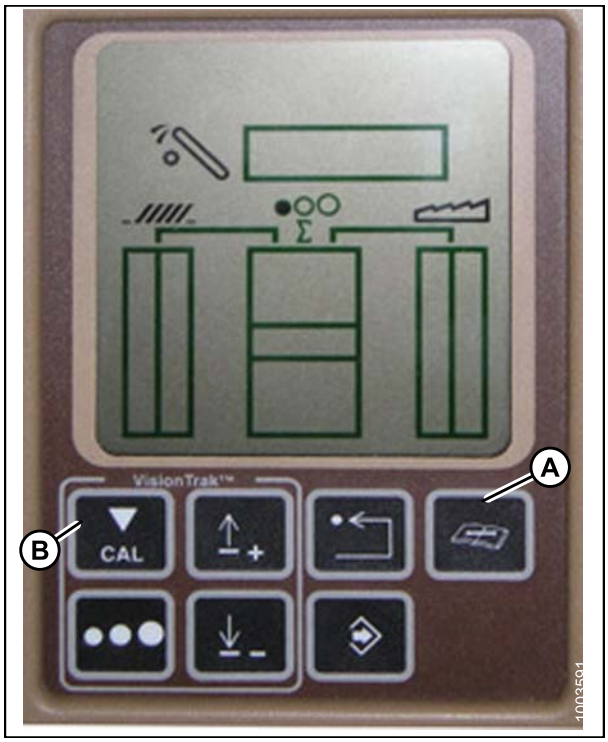


Figure 3.174: John Deere Combine Display

6. Press the UP or DOWN buttons until HDR appears on the monitor.
7. Press the ENTER button. HDR H-DN appears on the monitor.

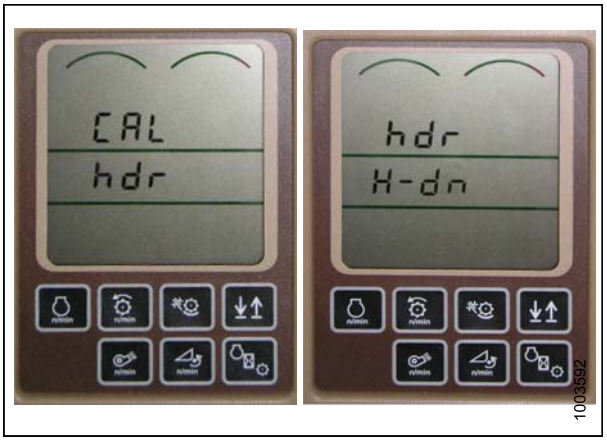


Figure 3.175: John Deere Combine Display

8. Fully lower 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.

9. Press the CAL button (A) to save the calibration of the header. HDR H-UP appears on the monitor.
10. Raise the header three feet off the ground and press the CAL (A) button. EOC appears on the monitor.
11. Press the ENTER button (B) to save the calibration of the header. Your AHHC is now calibrated.

    NOTE:
    If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. Refer to *Checking Voltage Range from the Combine Cab (John Deere 60 Series), page 135*.

    NOTE:
    After the calibration is complete, adjust combine operation settings to ensure proper field operation.

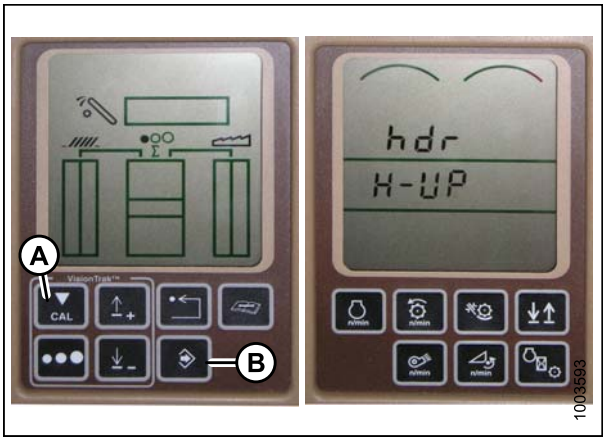


Figure 3.176: John Deere Combine Display

Turning the Accumulator Off (John Deere 60 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D). This is the header adjustment.
3. Press the UP (B) or DOWN (C) button until 132 is displayed on the top portion of the monitor. 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 the UP (B) or DOWN (C) button until the desired number is displayed, and press the CAL (E) button.
6. Press ENTER (D) to save the changes. The accumulator is now deactivated.

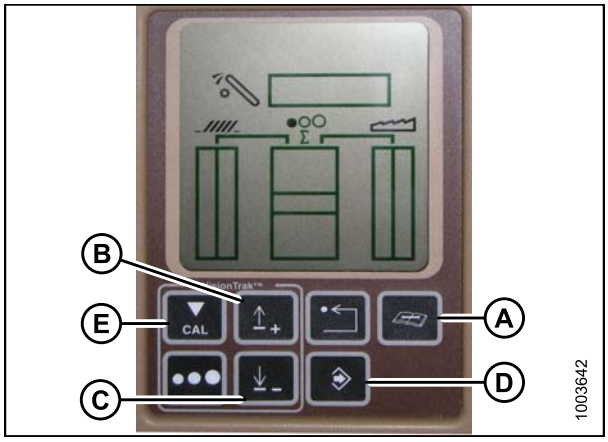


Figure 3.177: John Deere Combine Display

Setting the Sensing Grain Header Height to 50 (John Deere 60 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

To set the sensing grain header height, follow these steps:

1. Press the DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D). This is the header adjustment.
3. Press the UP (B) or DOWN (C) button until 128 is displayed on the top portion of the monitor. 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 the UP (B) or DOWN (C) button until the desired number is displayed, and press the CAL (E) button.
6. Press ENTER (D) to save the changes. The height is now set.

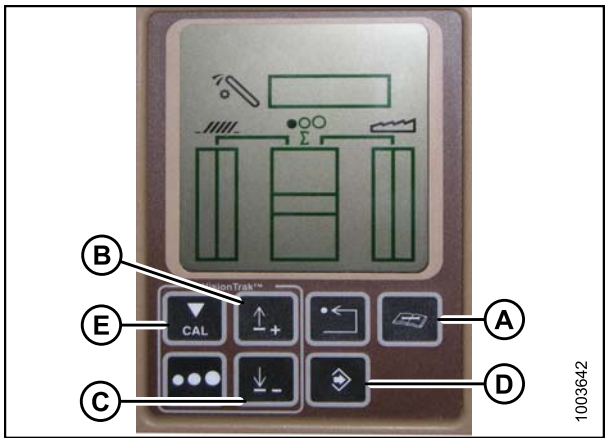


Figure 3.178: John Deere Combine Display

NOTE:
Do **NOT** use the active header float function (A) in combination with the MacDon auto header height control (AHHC)—the two systems will counteract one another. The 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 *3.179: John Deere Combine Display, page 140*.

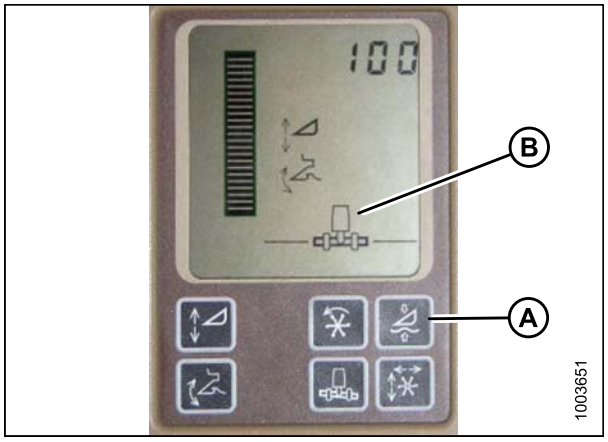


Figure 3.179: John Deere Combine Display

Setting the Sensitivity of the Auto Header Height Control (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 display since this document was published. Refer to the combine operator's manual for updates.

1. Press the DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor, and press ENTER (D). This is the header adjustment.
3. Press the UP (B) or DOWN (C) button until 112 is displayed on the monitor. 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 the CAL (E) button. This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (D) to save changes.

   NOTE:
   The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

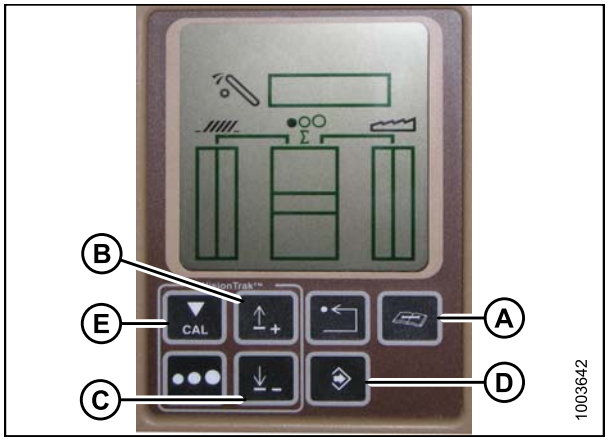


Figure 3.180: John Deere Combine Display

Adjusting the Threshold for the Drop Rate Valve (John Deere 60 Series)

This procedure explains how to adjust the point at which the restrictor valve opens allowing full flow to the lift cylinders.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the DIAGNOSTIC button (A) on the monitor. DIA appears on the monitor.
2. Press the UP button (B) until EO1 appears on the monitor and press ENTER (C). This is the header adjustment.
3. Press the UP (B) or DOWN button until 114 is displayed on the top portion of the monitor. This is the setting that adjusts when the fast drop rate starts with respect to the dead band.

   NOTE:
   The default setting is 100. 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 (B) or DOWN (E) until the desired number is displayed, then press the CAL button (D). This will bring you to the second digit. Repeat this procedure until the desired setting is achieved.
6. Press ENTER (C) to save changes.

   NOTE:
   The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

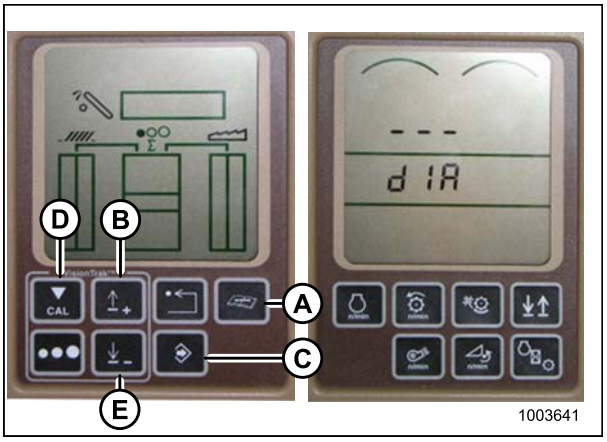


Figure 3.181: John Deere Combine Display

3.8.7 John Deere 70 Series Combines

Checking Voltage Range from the Combine Cab (John Deere 70 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

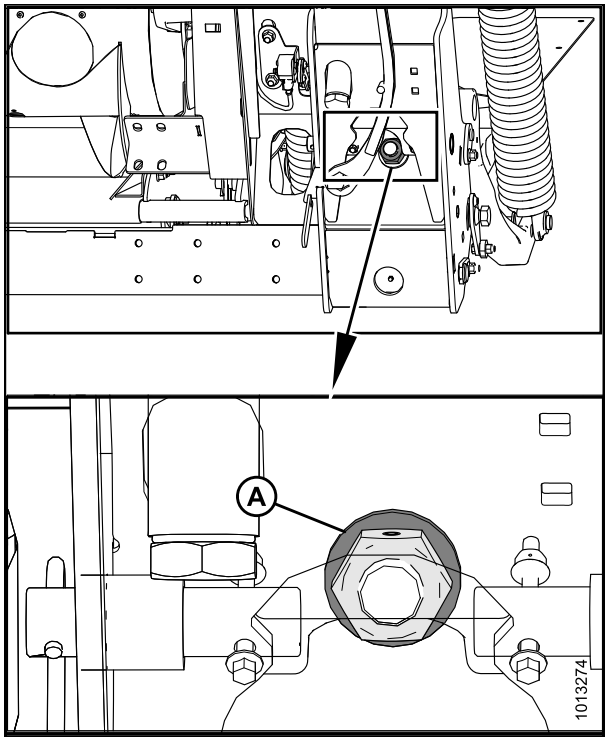


Figure 3.182: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

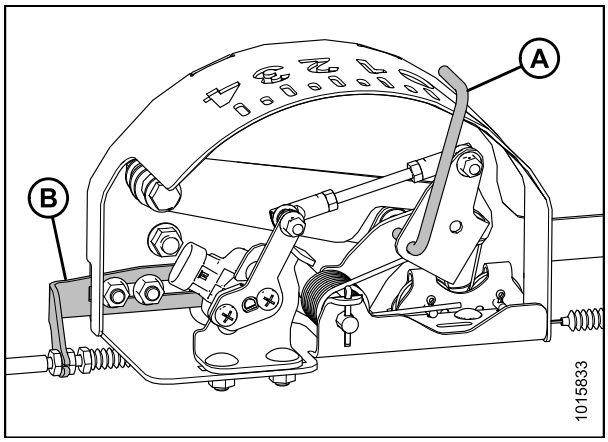


Figure 3.183: Float Indicator box

4. Press the HOME PAGE button (A) on the main page of the monitor.

Figure 3.184: John Deere Combine Display

5. Ensure the three icons (A) depicted in the illustration at right appear on the monitor.

Figure 3.185: John Deere Combine Display

6. Use scroll knob (A) to highlight the middle icon (the green i) and press the check mark button (B) to select it. This will bring up the Message Center.

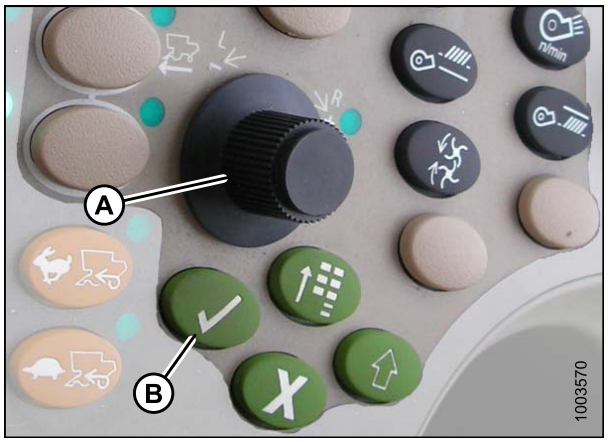


Figure 3.186: John Deere Combine Control Console

7. Use the scroll knob to highlight DIAGNOSTIC ADDRESSES (A) from the right column and select it by pressing the check mark button.
8. Use the scroll knob to highlight drop down box (B) and press the check mark button to select it.

Figure 3.187: John Deere Combine Display

9. Use the scroll knob to highlight LC 1.001 VEHICLE (A) is highlighted and press the check mark button to select it.

Figure 3.188: John Deere Combine Display

10. Use the scroll knob to highlight the down arrow (A) and press the check mark button to scroll through the list until 029 DATA (B) is displayed and voltage reading (C) appears on the monitor.

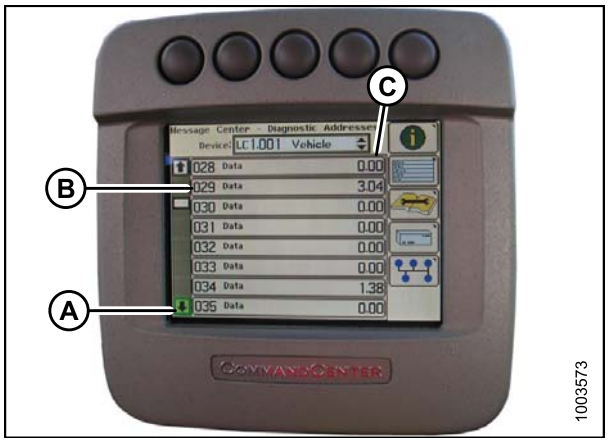


Figure 3.189: John Deere Combine Display

11. Ensure header float is unlocked.
12. Start the combine and fully lower 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 sensor reading on the monitor.
14. Raise the header so it is just off the ground and recheck the sensor reading.
15. 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 99*.

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. Refer to the combine operator's manual for instructions.

Calibrating the Auto Header Height Control (John Deere 70 Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock float module float.
3. Start the combine.
4. Press the button located fourth from the left along the top of the monitor (A) to select the icon that resembles an open book with a wrench on it (B).
5. Press the top button (A) a second time to enter diagnostics and calibration mode.

Figure 3.190: John Deere Combine Display

6. Select HEADER in box (A) by scrolling down to the box using the scroll knob, and then pressing the check mark button (knob and button are shown in Figure *3.192: John Deere Combine Control Console, page 147*).
7. Scroll down to the lower right icon that resembles an arrow in a diamond (B) and press the check mark button to select it.

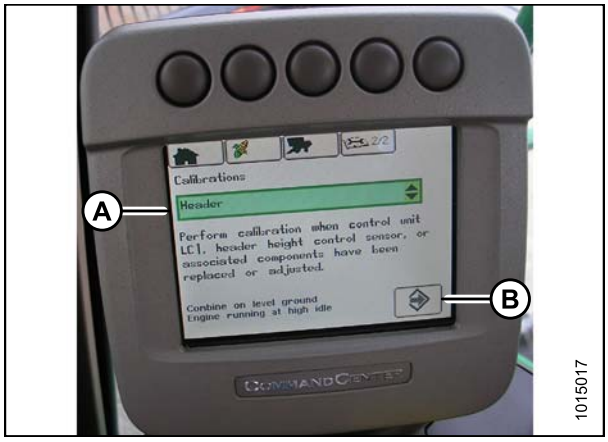


Figure 3.191: John Deere Combine Display

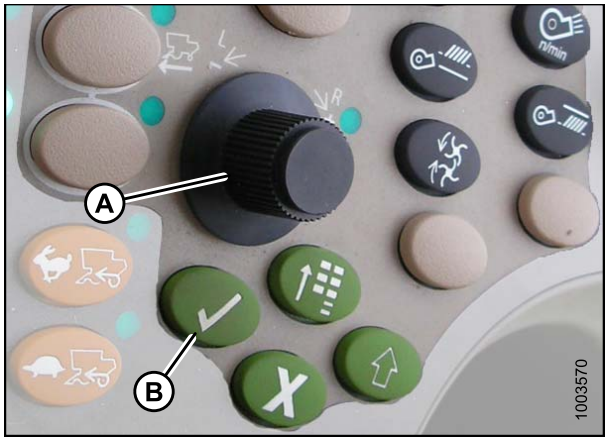


Figure 3.192: John Deere Combine Control Console

A - Scroll Knob **B - Check Mark Button**

8. Follow the steps listed on the monitor to perform the calibration.

   NOTE:
   If an error code appears on page, the sensor is not in the correct working range. Refer to *Checking Voltage Range from the Combine Cab (John Deere S and T Series), page 150* to check and adjust the range.

Setting the Sensitivity of the Auto Header Height Control (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 display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) twice and the current sensitivity setting will appear on the monitor (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 the check mark button (C) also will return the monitor to the previous page.

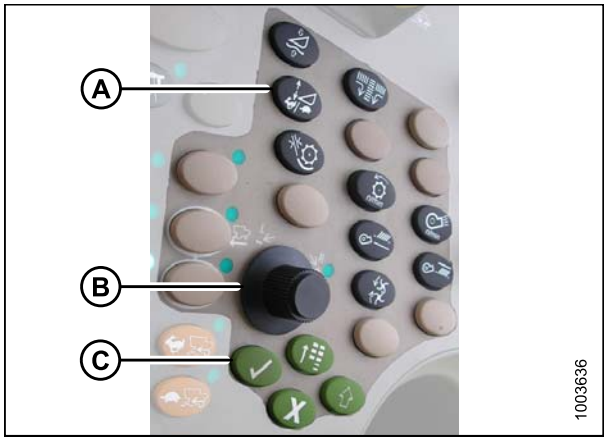


Figure 3.193: John Deere Combine Control Console

NOTE:
The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.194: John Deere Combine Display

Adjusting the Manual Header Raise/Lower Rate (John Deere 70 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) and the current raise/lower rate setting will appear on the monitor (the lower the reading, the slower the rate).
2. Use scroll knob (B) to adjust the rate. 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 the check mark button (C) will also return the monitor to the previous page.

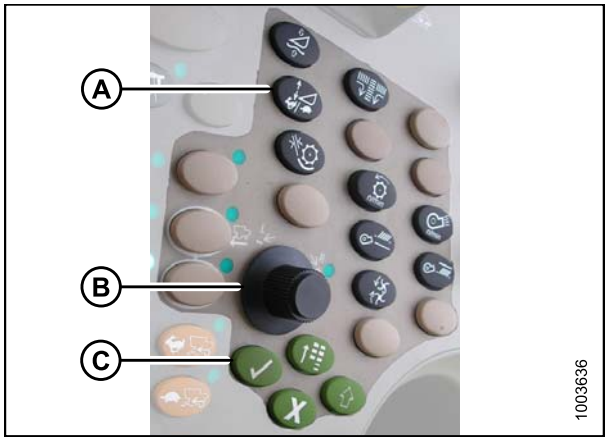


Figure 3.195: John Deere Combine Control Console

NOTE:
The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.196: John Deere Combine Display

3.8.8 John Deere S and T Series Combines

Checking Voltage Range from the Combine Cab (John Deere S and T Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

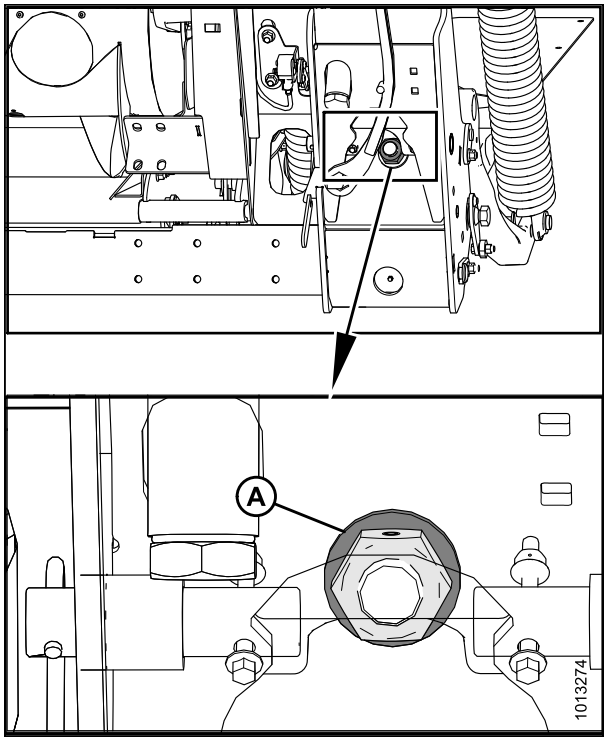


Figure 3.197: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

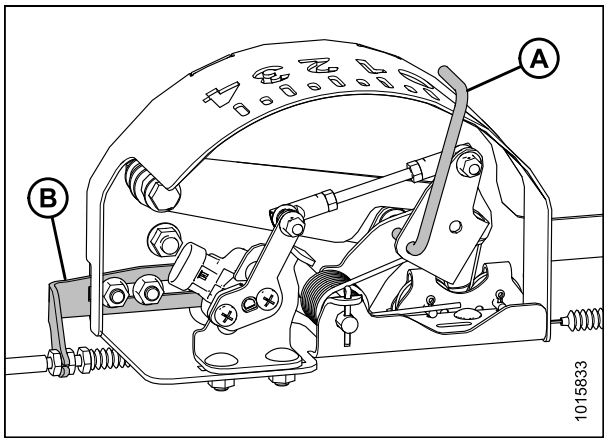


Figure 3.198: Float Indicator Box

4. Press the CALIBRATION icon (A) on the main page of the monitor. The CALIBRATION page appears.

Figure 3.199: John Deere Combine Display

5. Press the DIAGNOSTIC READINGS icon (A) on the CALIBRATION page. The DIAGNOSTIC READINGS page appears. This page provides access to calibrations, header options, and diagnostic information.

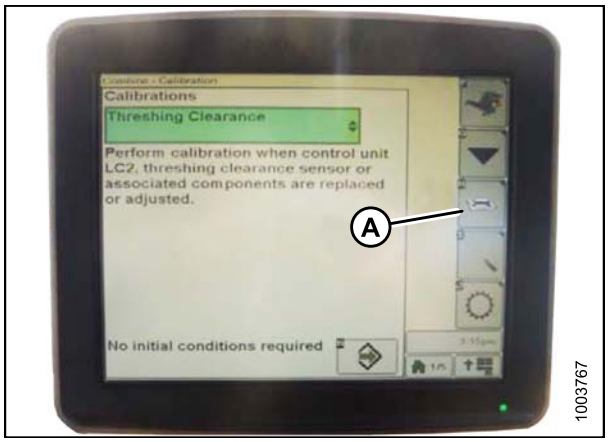


Figure 3.200: John Deere Combine Display

6. Select AHHC RESUME (A) and a list of calibration options appears.

Figure 3.201: John Deere Combine Display

7. Select the AHHC SENSING option.
8. Press the icon that resembles an arrow in a box (A). The AHHC SENSING menu appears and five pages of information are displayed.

Figure 3.202: John Deere Combine Display

9. 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 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 3.203: John Deere Combine Display

10. Ensure header float is unlocked.
11. Start the combine and fully lower 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.

12. Check the sensor reading on the monitor.
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 refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

Calibrating the Auto Header Height Control (John Deere S and T Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock float module float.
3. Press the DIAGNOSTIC icon (A) on the main page of the monitor. The CALIBRATION page appears.

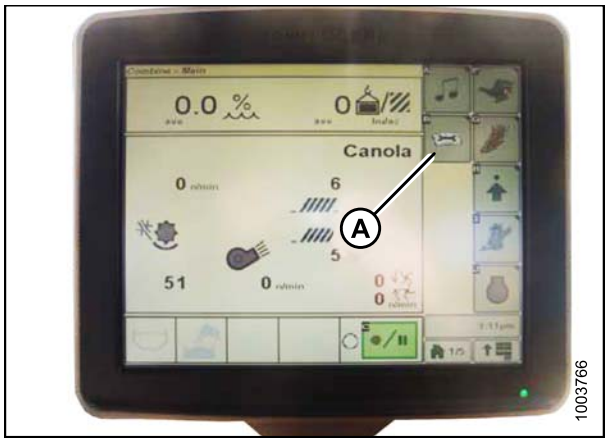


Figure 3.204: John Deere Combine Display

4. Select THRESHING CLEARANCE (A) and a list of calibration options appears.

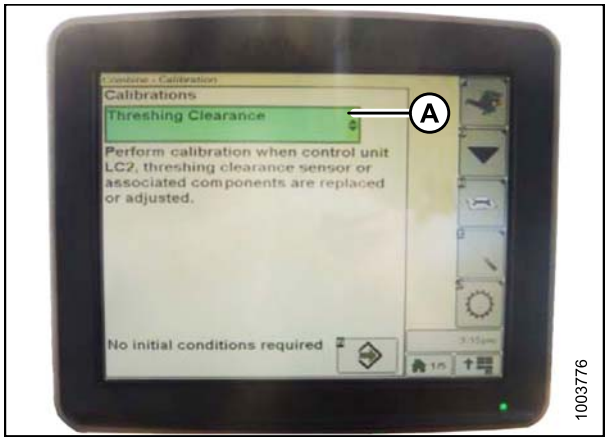


Figure 3.205: John Deere Combine Display

5. Select FEEDER HOUSE SPEED (A) and calibrate.
6. Select HEADER (B) and calibrate.

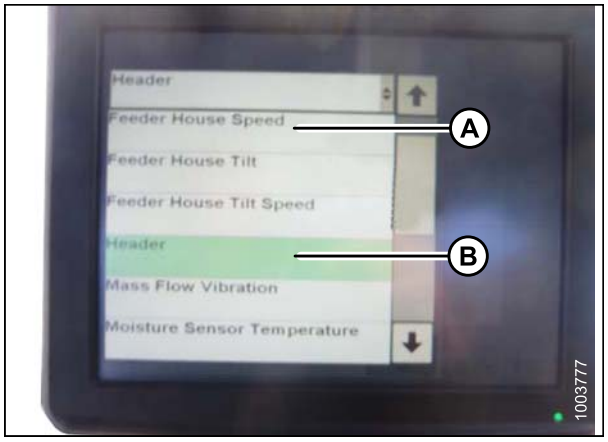


Figure 3.206: John Deere Combine Display

7. Press icon (A) with either FEEDER HOUSE SPEED or HEADER selected and the icon will turn green.

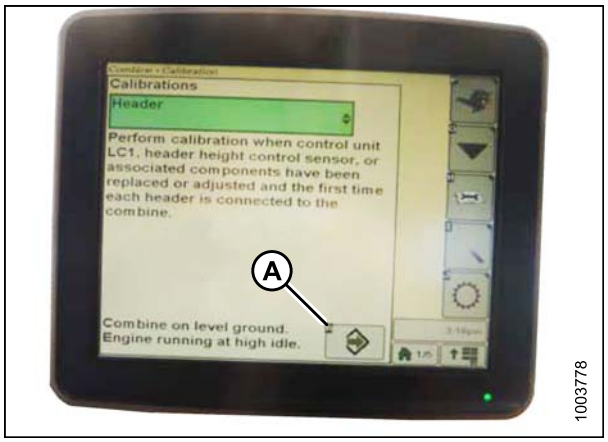


Figure 3.207: John Deere Combine Display

8. Click button (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. Refer to *Checking Voltage Range from the Combine Cab (John Deere S and T Series), page 150*.

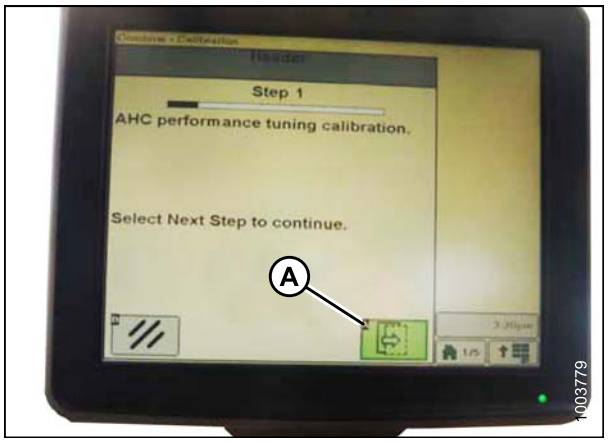


Figure 3.208: John Deere Combine Display

Setting the Sensitivity of the Auto Header Height Control (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 display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) twice and the current sensitivity setting will appear on the monitor.

Figure 3.209: John Deere Combine Command Center

2. Press the – or + icon (A) to adjust rates.

   NOTE:
   The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.210: John Deere Combine Display

Adjusting the Manual Header Raise/Lower Rate (John Deere S and T Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press button (A) and the current sensitivity setting will appear on the monitor.

Figure 3.211: John Deere Combine Command Center

2. Press the - or + icon (A) to adjust rates.

NOTE:
The numbers depicted on the displays in these illustrations are for reference purposes only; they are not intended to represent the specific settings for your equipment.

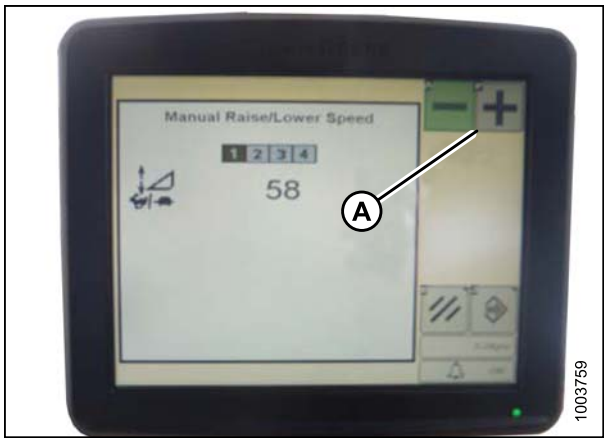


Figure 3.212: John Deere Combine Display

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (B). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 (A) is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

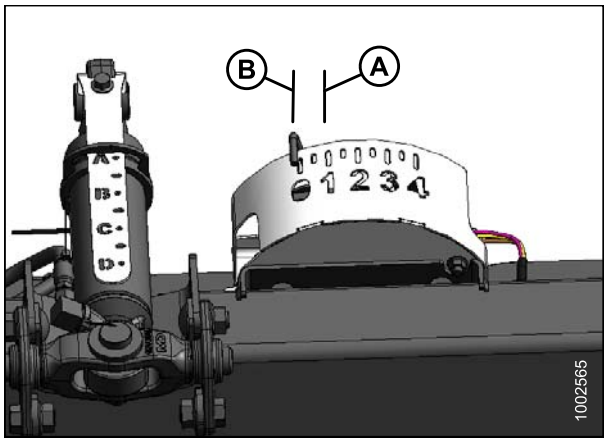


Figure 3.213: Float Indicator Box

Setting Preset Cutting Height (John Deere S-Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Press the 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 3.214: Combine Display

2. Select the COMBINE – HEADER SETUP AHC icon (A). The COMBINE – HEADER SETUP AHC screen appears.

Figure 3.215: Combine Display

3. Select the top-left and top-center icons for auto height sensing and return to cut.

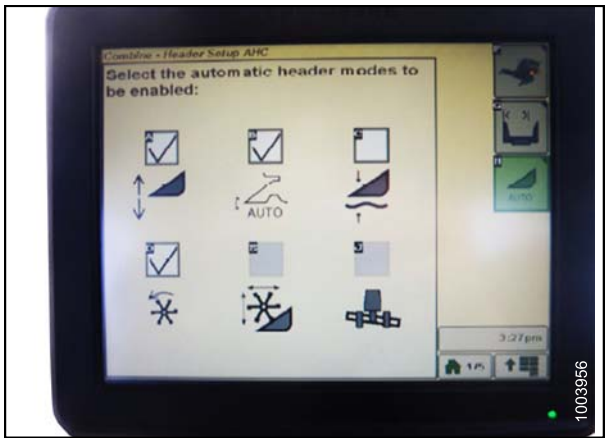


Figure 3.216: Combine Display

4. Select an appropriate ground pressure setting. Preset button 2 (B) on the joystick for a light ground pressure setting in muddy or soft soil conditions, or preset button 3 (C) for a heavy ground pressure setting in harder soil conditions and a faster ground speed.

   NOTE:
   Preset button 1 (A) is reserved for header lift on the headland and is not used for ground cutting.

Figure 3.217: Joystick Buttons

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (A). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

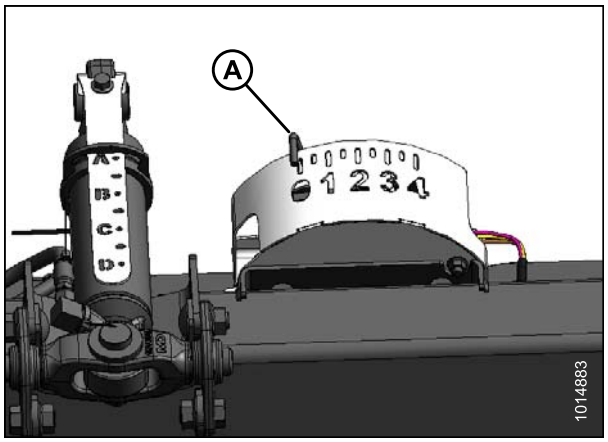


Figure 3.218: Float Indicator Box

5. Use control knob (A) to scroll through the different button options.

Figure 3.219: Combine Control Console

NOTE:
When the AHHC is engaged, the AHHC icon (A) appears on the monitor and the number indicating which button was pressed (B) is displayed on the screen.

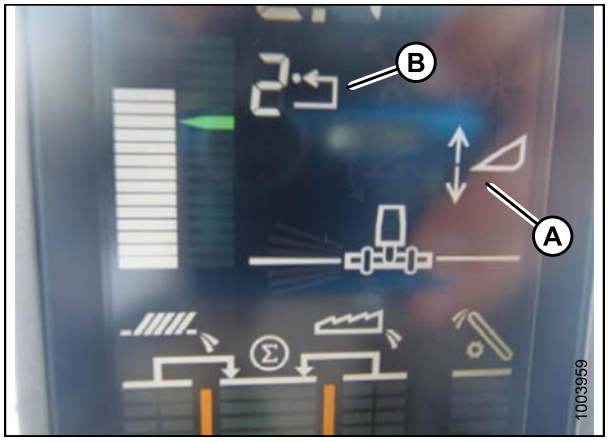


Figure 3.220: Combine Display

Calibrating Feeder House Fore/Aft Tilt Range (John Deere S and T Series)

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. Refer to *3.7.3 Header Angle, page 63*.

This 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 display since this document was published. Refer to the combine operator's manual for updates.

The feeder house fore/aft tilt is controlled by buttons (C) and (D) at the back of the hydro handle.

Figure 3.221: John Deere Hydro Handle

NOTE:
The feeder house fore/aft tilt controls can be changed to work with buttons E and F by pressing the hydro handle icon (A) and then selecting FEEDER HOUSE FORE/AFT TILT from the drop-down menu (B).

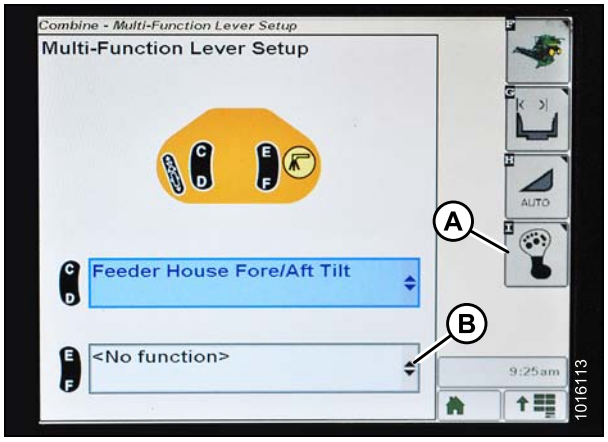


Figure 3.222: John Deere Combine Display

To calibrate the feeder house fore/aft tilt range, follow these steps:

1. Ensure center-link is set to D.
2. Rest header on down stops and unlock float module float.
3. Press the DIAGNOSTIC icon (A) on the main page of the monitor. The CALIBRATION page displays.

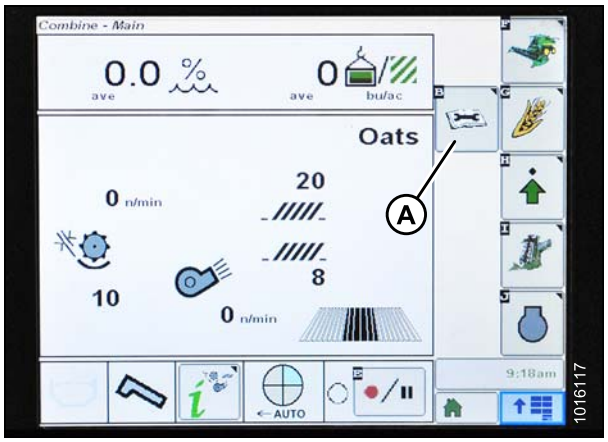


Figure 3.223: John Deere Combine Display

4. Select the CALIBRATIONS drop-down menu (A) to view the list of calibration options.

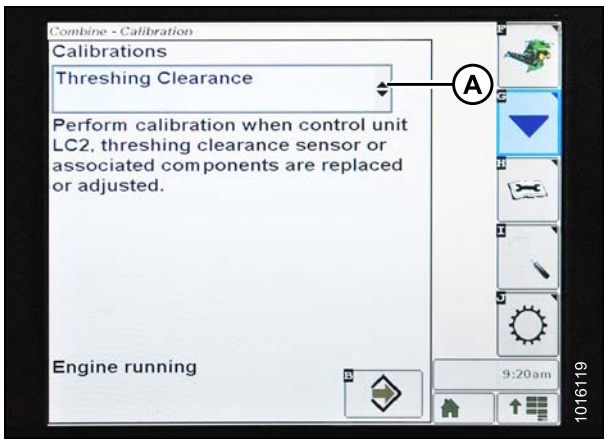


Figure 3.224: John Deere Combine Display

5. Press the arrow (A) to cycle up though the calibration options and select FEEDER HOUSE FORE/AFT TILT RANGE.

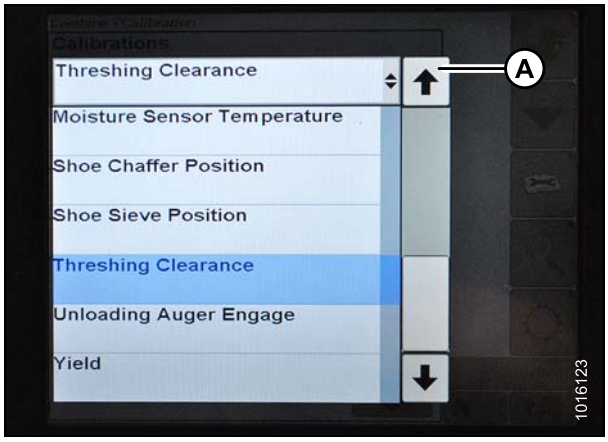


Figure 3.225: John Deere Combine Display

6. Press the ENTER icon (A).

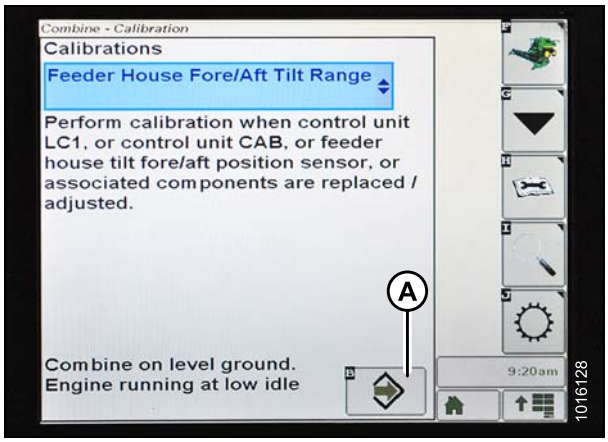


Figure 3.226: John Deere Combine Display

7. Follow the instructions that appear on the screen. 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. Refer to *Checking Voltage Range from the Combine Cab (John Deere S and T Series), page 150*.

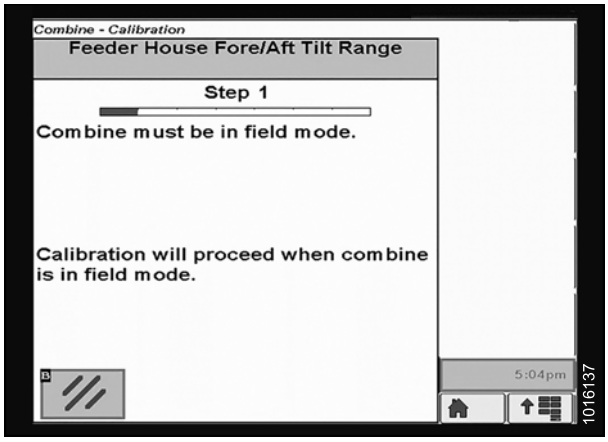


Figure 3.227: John Deere Combine Display

3.8.9 Lexion 500 Series Combines

Calibrating the Auto Header Height Control (Lexion 500 Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Use the < key (A) or > key (B) to select AUTO HEADER, and press the OK key (C). The E5 page displays whether the automatic header height is on or off.

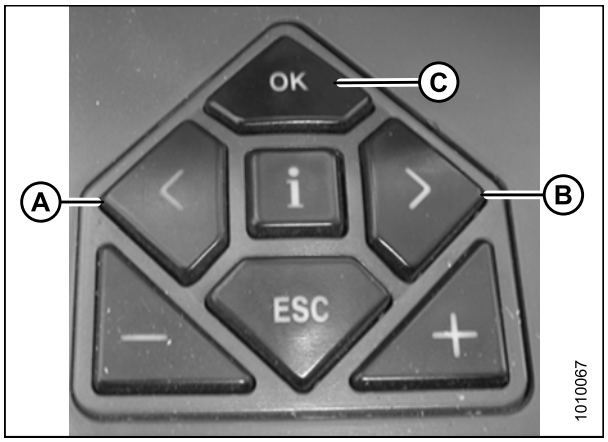


Figure 3.228: Lexion Combine Controls

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

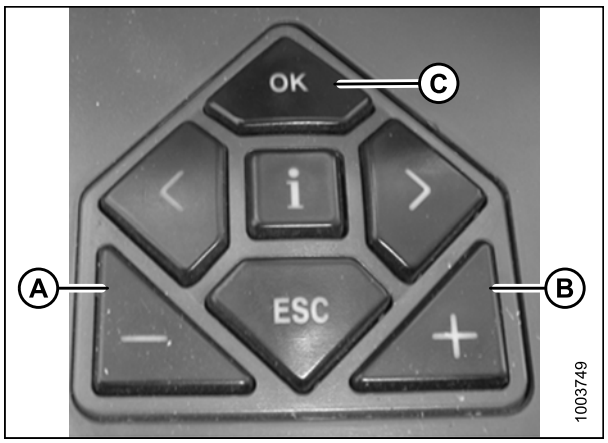


Figure 3.229: Lexion Combine Controls

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

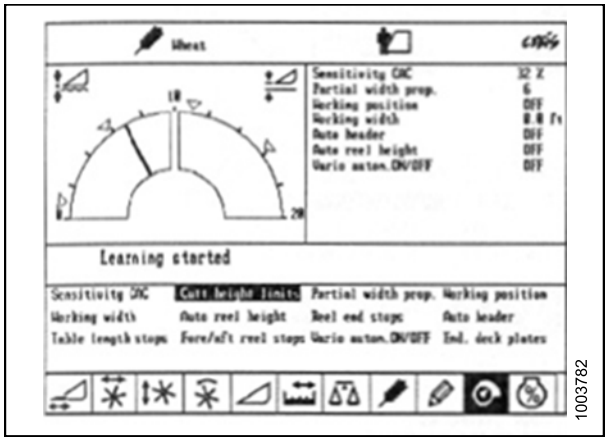


Figure 3.230: Lexion Combine Display

7. Use the < or > key to select SENSITIVITY CAC, and press the OK key (C).

   NOTE:
   Setting the sensitivity of the AHHC system impacts the reaction speed of the AHHC on the header.

8. Use the - key or the + key to change the setting of the reaction speed, and press the OK key (C).

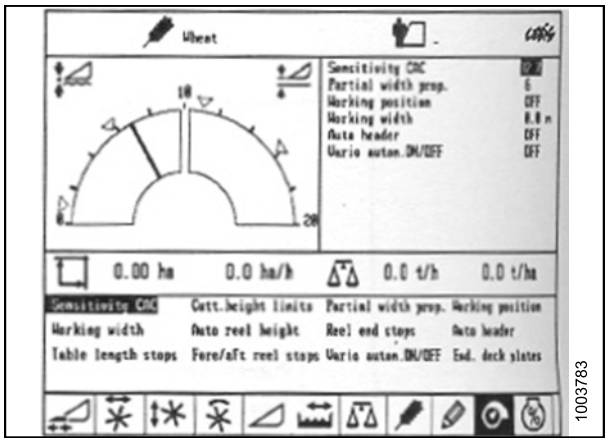


Figure 3.231: Lexion Combine Display

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%.

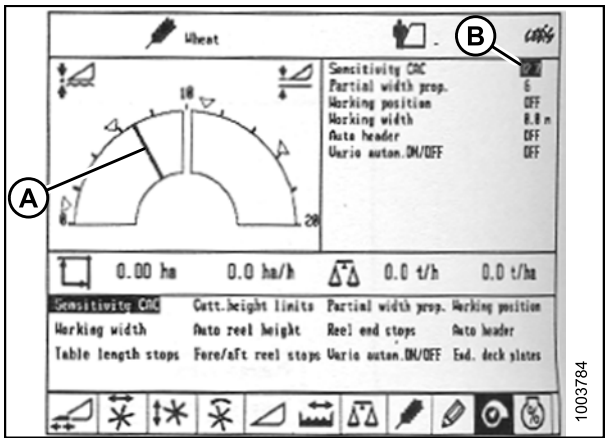


Figure 3.232: Lexion Combine Display

Setting Cutting Height (Lexion 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 5.9 in. (150 mm), and use the auto contour system for cutting heights below 5.9 in. (150 mm).

Setting Preset Cutting Height (Lexion 500 Series)

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 3.233: Joystick Buttons

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

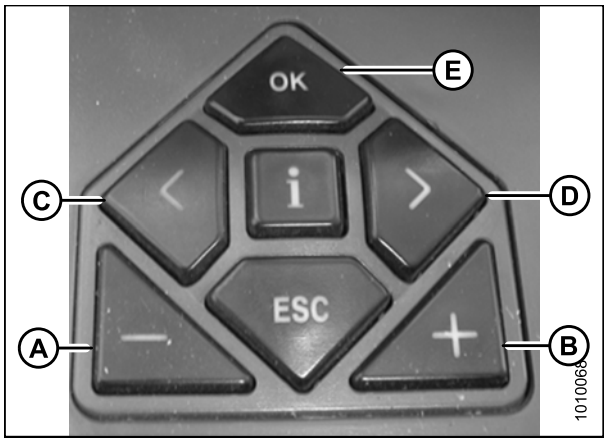


Figure 3.234: Lexion Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7., page 164* for the set point.

Figure 3.235: Joystick Buttons

Setting Cutting Height Manually (Lexion 500 Series)

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 three seconds to store the cutting height into the CEBIS (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 into the CEBIS (an alarm will sound when the new setting has been stored).

   NOTE:
   For above the ground cutting, repeat Step *1., page 165*, and use button (D) instead of button (C) while repeating Step *2., page 165*.

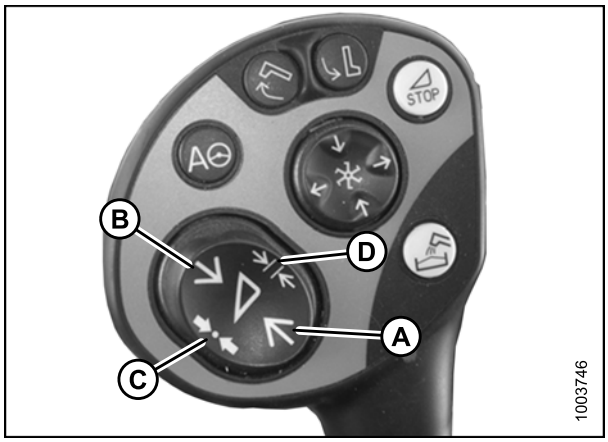


Figure 3.236: Joystick Buttons

Setting the Sensitivity of the Auto Header Height Control (Lexion 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 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:
The upper and lower limits of the header must be programmed into the CEBIS before adjusting the sensitivity of the AHHC system. 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:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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

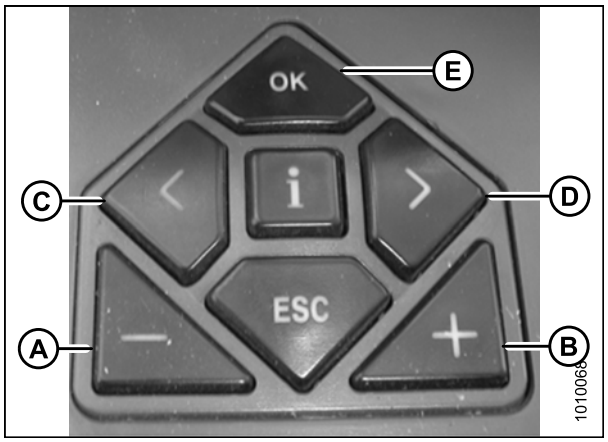


Figure 3.237: Lexion Combine Controls

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

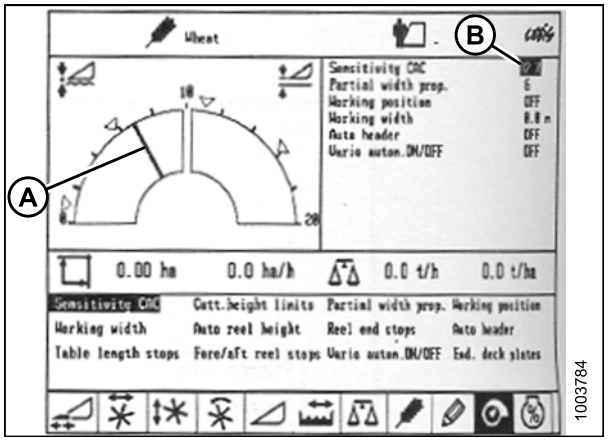


Figure 3.238: Lexion Combine Display

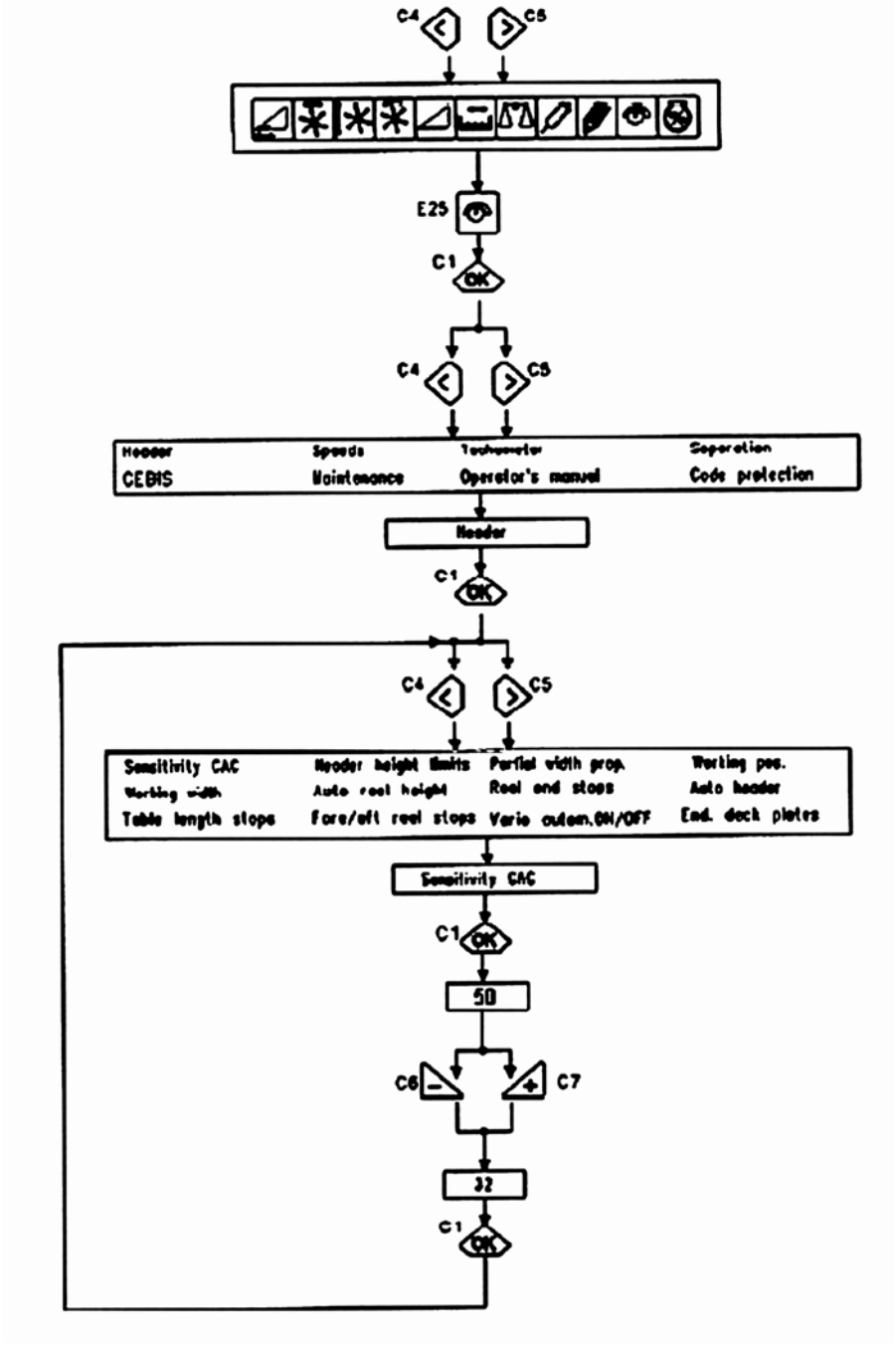


Figure 3.239: Flow Chart for Setting the Sensitivity of the Float Optimizer

Adjusting Auto Reel Speed (Lexion 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Use the < or > key to select REEL WINDOW. Window E15 will display the current advance or retard speed of the reel in relation to the ground speed.

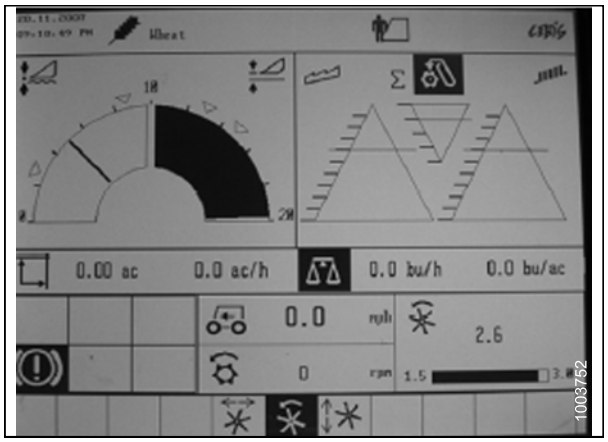


Figure 3.240: Lexion Combine Display

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

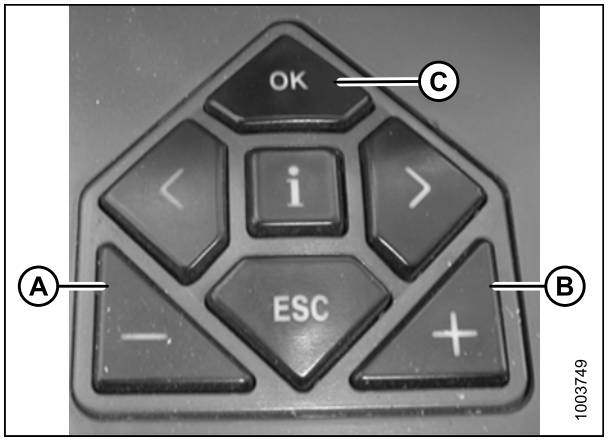


Figure 3.241: Lexion Combine Controls

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

Figure 3.242: Lexion Combine Rotary Switch

5. Press and hold button (A) or button (B) for three seconds to store the setting into the CEBIS (an alarm will sound when the new setting has been stored).

   NOTE:
   Whenever button (A) or button (B) is pressed for three seconds, the current positions for reel speed and cutting height are stored.

Figure 3.243: Lexion Joystick Buttons

6. Use the < or > key to select the REEL WINDOW. Window E15 will display the current advance or retard speed of the reel in relation to the ground speed.

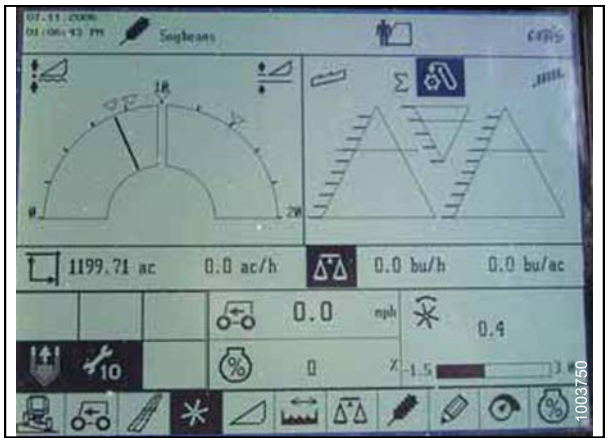


Figure 3.244: Lexion Combine Display

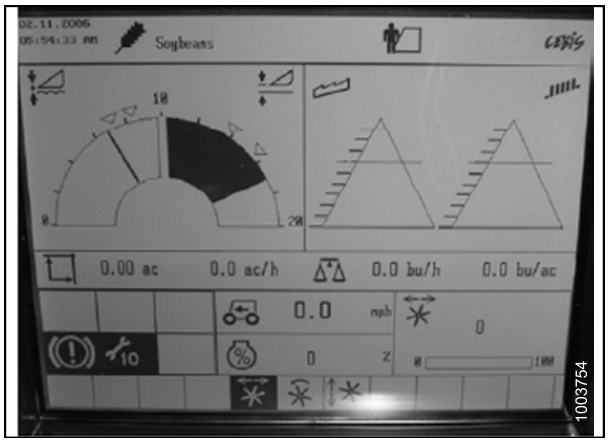


Figure 3.245: Lexion Combine Display

7. Press the OK key (E), and use the < key (C) or the > key (D) to select the REEL FORE AND AFT window.
8. Use the – key (A) or the + key (B) to set the reel fore-aft position.

   NOTE:
   Joystick button (A) or button (B) also can be used to set the reel fore-aft position.

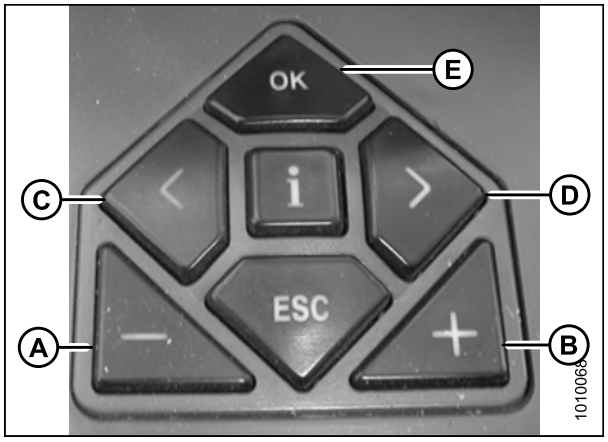


Figure 3.246: Lexion Combine Controls

9. Press and hold button (C) or button (D) for three seconds to store the setting into the CEBIS (an alarm will sound when the new setting has been stored).

   NOTE:
   Whenever button (C) or button (D) is pressed for three seconds, the current positions for reel speed and cutting height are stored.

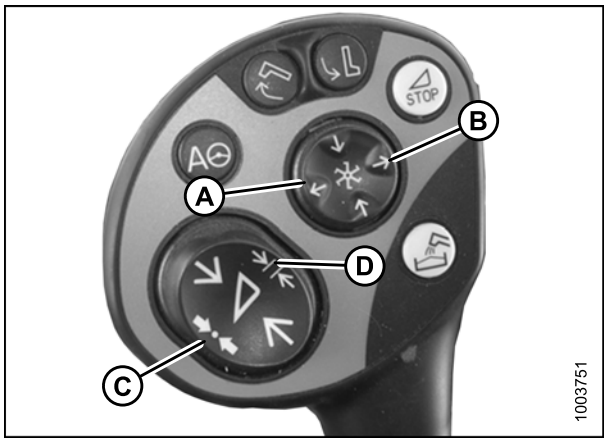


Figure 3.247: Lexion Joystick Buttons

3.8.10 Lexion 600 and 700 Series Combines

Calibrating the Auto Header Height Control (Lexion 600 and 700 Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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

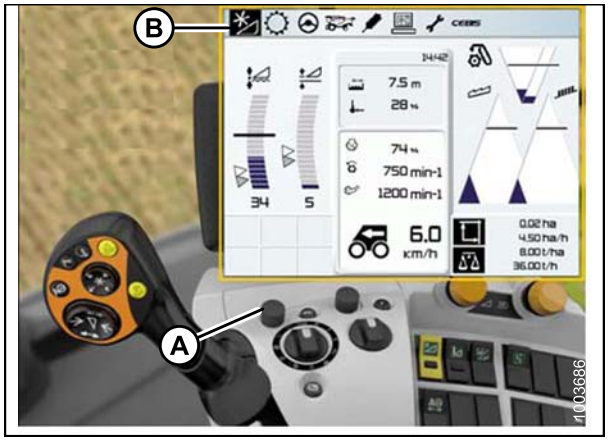


Figure 3.248: Lexion Combine Display, Console, and Joystick Lever

4. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (not shown), and press control knob (A) to select it. The highlighted header icon (B) will be displayed on the screen.

Figure 3.249: Lexion Combine Display, Console, and Joystick Lever

5. Use control knob (A) to highlight the icon that resembles a header with up and down arrows (C), and press control knob (A) to select it.

Figure 3.250: Lexion Combine Display, Console, and Joystick Lever

6. Use control knob (A) to highlight the icon that resembles a screwdriver (B).
7. Engage the combine separator and feeder house.
8. Press control knob (A) and a progress bar chart will appear.

Figure 3.251: Lexion Combine Display, Console, and Joystick Lever

9. Fully raise the feeder house and the progress bar chart will advance to 25% (A).
10. Fully lower the feeder house, and the progress bar chart will advance to 50%.
11. Fully raise the feeder house and the progress bar chart will advance to 75%.
12. Fully lower the feeder house, and the progress bar chart will advance to 100%.

Figure 3.252: Lexion Combine Display, Console, and Joystick Lever

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

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

    NOTE:
    If header float is set too light, an error message will appear. Back float off three full-turns of the adjuster bolts to adjust float to approximately 100–125 lb. (45–57 kg).

Figure 3.253: Lexion Combine Display, Console, and Joystick Lever

Setting Cutting Height (Lexion 600 and 700 Series)

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Lower the header to desired cutting height or ground pressure setting. The float indicator box should be set to 1.5.
2. Hold the left side of the header raise and lower switch (A) until you hear a ping.

    NOTE:
    You can set two different cutting heights.

Figure 3.254: Lexion Combine Display, Console, and Joystick Lever

Setting the Sensitivity of the Auto Header Height Control (Lexion 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 display since this document was published. Refer to the combine operator's manual for updates.

1. Use control knob (A) to highlight the HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog box opens.
2. Select HEADER icon.

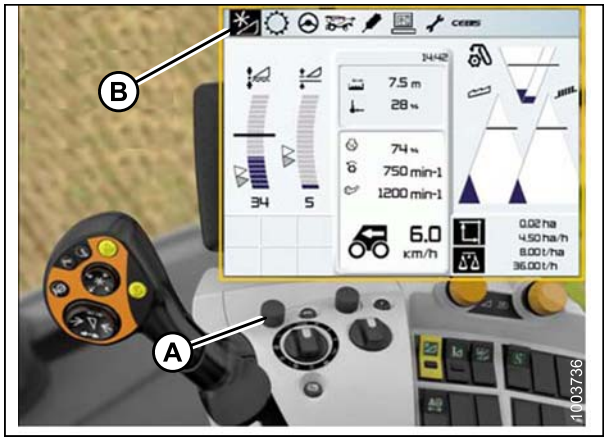


Figure 3.255: Lexion Combine Display, Console, and Joystick Lever

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

Figure 3.256: Lexion Combine Display, Console, and Joystick Lever

5. Select the SENSITIVITY CAC icon (A).

   NOTE:
   To set the sensitivity, you will have to change the CUTTING HEIGHT ADJUSTMENT 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 five.

6. Increase the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the float module is too slow while cutting on the ground, and decrease the CUTTING HEIGHT ADJUSTMENT setting if the reaction time between the header and the float module is too fast.
7. Increase the sensitivity if the header is lowered too slowly, and decrease the sensitivity if the header hits the ground too hard or is lowered too quickly.

Figure 3.257: Lexion Combine Display

Adjusting Auto Reel Speed (Lexion 600 and 700 Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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

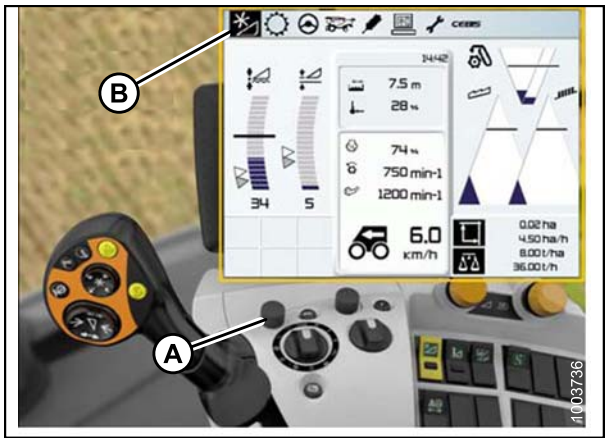


Figure 3.258: Lexion Combine Display, Console, and Joystick Lever

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 displays in the dialog box.

Figure 3.259: Lexion Combine Display, Console, and Joystick Lever

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 3.260: Lexion Combine Display, Console, and Joystick Lever

4. Use control knob (A) to raise or lower the reel speed.

   NOTE:
   This option is only available at full throttle.

Figure 3.261: Lexion Combine Display, Console, and Joystick Lever

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (B). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 (A) is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

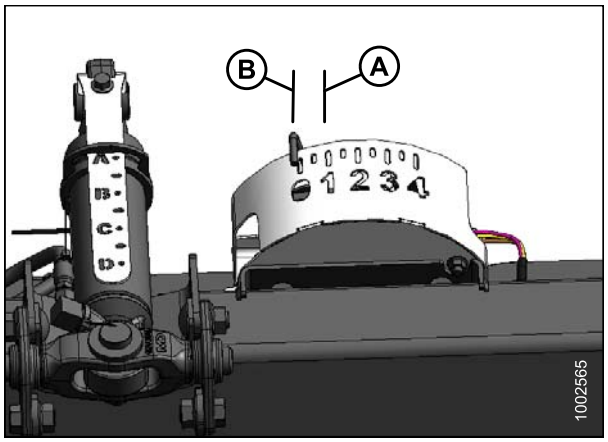


Figure 3.262: Float Indicator Box

3.8.11 New Holland Combines

NOTE:
For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.12 New Holland Combines (CR Series—Model Year 2015 and Later), page 187*.

Checking Voltage Range from the Combine Cab (New Holland)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 6 in. (150 mm) above the ground, and unlock the float module float.
2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

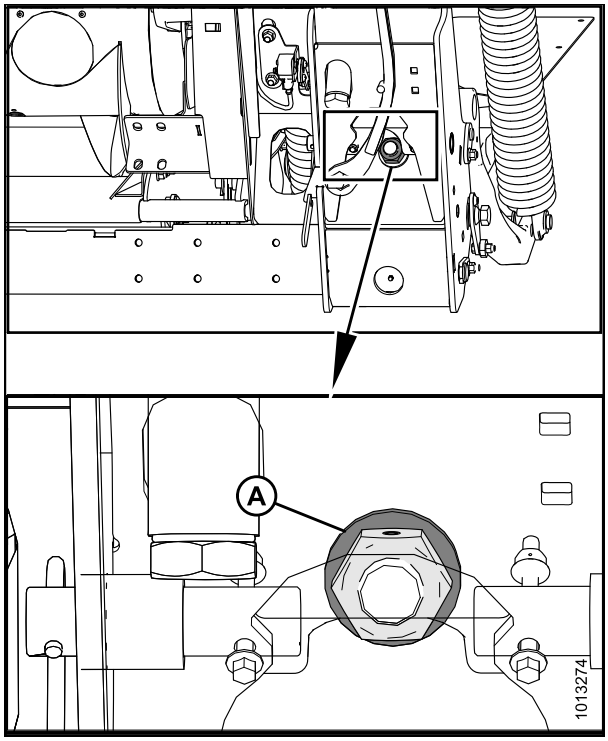


Figure 3.263: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

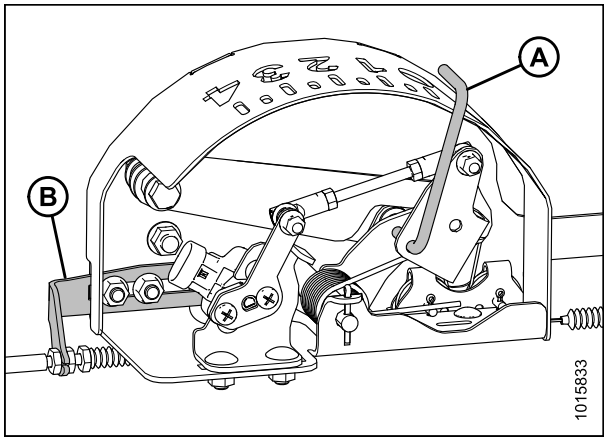


Figure 3.264: Float Indicator box

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

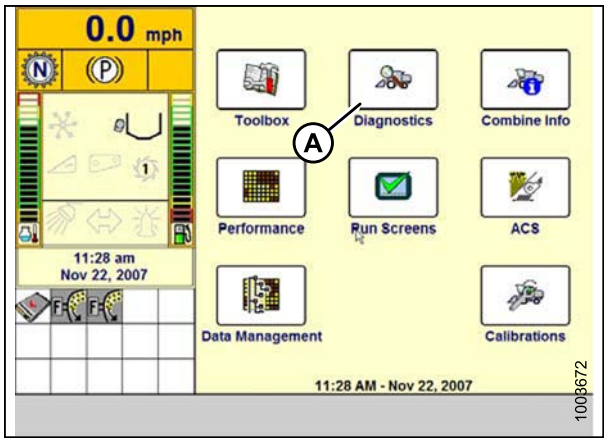


Figure 3.265: New Holland Combine Display

7. Select the GROUP drop-down arrow (A). The GROUP dialog box displays.

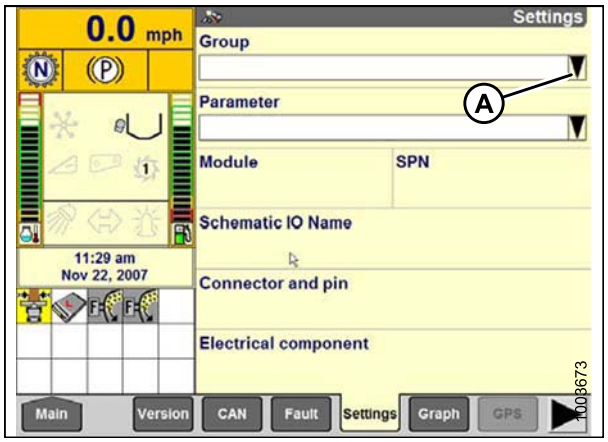


Figure 3.266: New Holland Combine Display

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

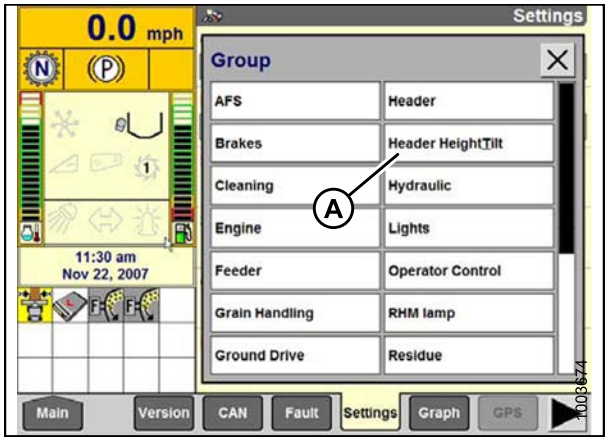


Figure 3.267: New Holland Combine Display

9. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at the top of the page.
10. Raise and lower the header to see the full range of voltage readings.
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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

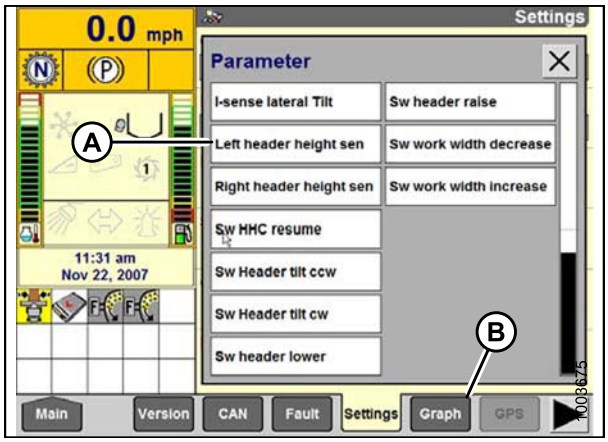


Figure 3.268: New Holland Combine Display

Engaging the Auto Header Height Control (New Holland CR/CX Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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.

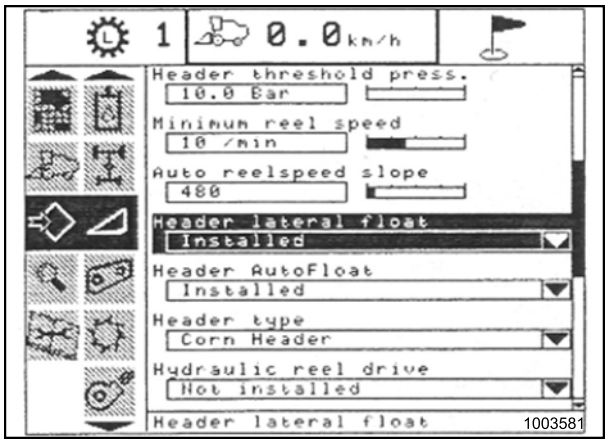


Figure 3.269: New Holland Combine Display

3. Select HEADER AUTOFLOAT, and press ENTER.
4. Use the up and down navigation keys to move between options, and select INSTALLED.

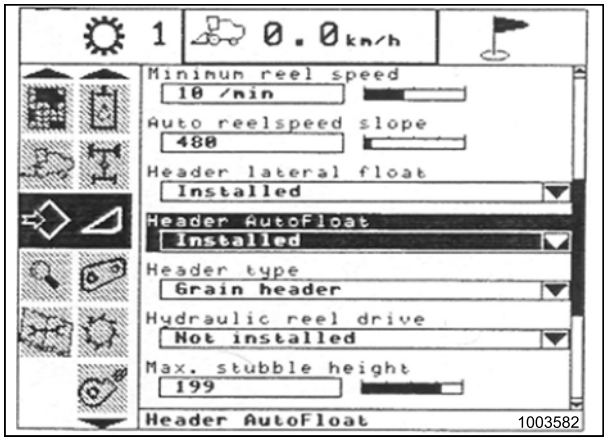


Figure 3.270: New Holland Combine Display

Calibrating the Auto Header Height Control (New Holland CR/CX Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

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.
- Header/feeder is disengaged.
- Lateral flotation buttons are NOT pressed.
- 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 options.

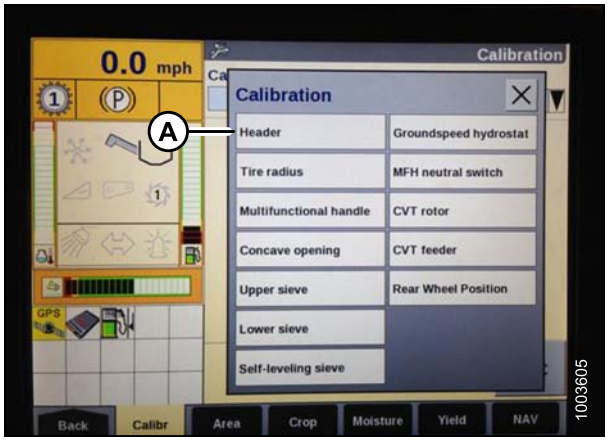


Figure 3.271: New Holland Combine Display

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 three minutes will cause the calibration procedure to stop.

   NOTE:
   Refer to your combine operator's manual for an explanation of any error codes.

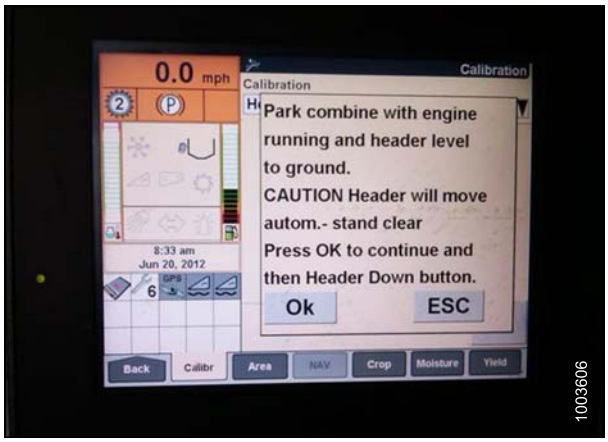


Figure 3.272: New Holland Combine Display

4. When all steps have been completed, CALIBRATION SUCCESSFUL message is displayed on the page. Exit the CALIBRATION menu by pressing the ENTER or ESC key.

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

5. If the unit does not function properly, conduct the maximum stubble height calibration.

Calibrating Maximum Stubble Height

This procedure describes how to calibrate the area counter to stop or start counting at the correct height. Program the header to a height that will never be reached while cutting. The area counter will stop counting when the header is above the programmed height, and will begin counting when the header is below the programmed height.

Select the height of the header that corresponds to the description above.

IMPORTANT:

- If the value is set too low, area may NOT be counted 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.

⚠ CAUTION

Check to be sure 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.

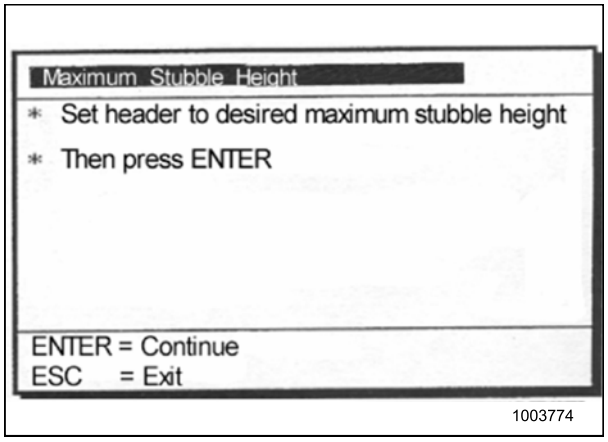


Figure 3.273: New Holland Calibration Dialog Box

2. Move header to the correct position using the header up or down control switch on the multifunction handle.
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 page. The calibration is now complete.

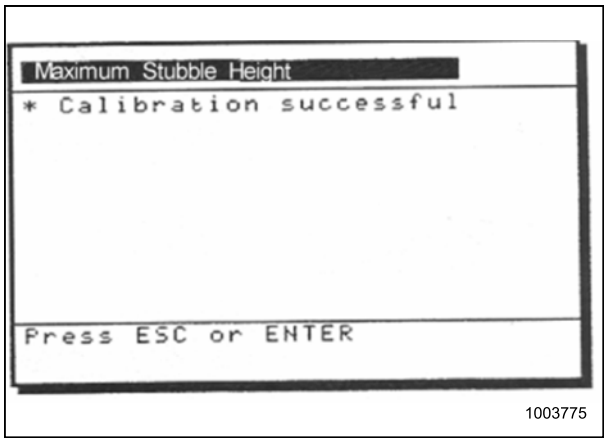


Figure 3.274: New Holland Calibration Dialog Box

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 display since this document was published. Refer to the combine operator's manual for updates.

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 steps of 34. The factory setting is 100.

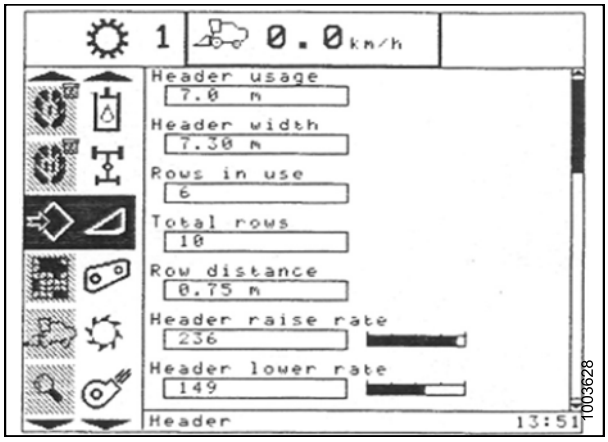


Figure 3.275: New Holland Combine Display

Setting the 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 multi-function handle) can be adjusted.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

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 lower rate can be changed from 2–247 in steps of 7. It is factory-set to 100.

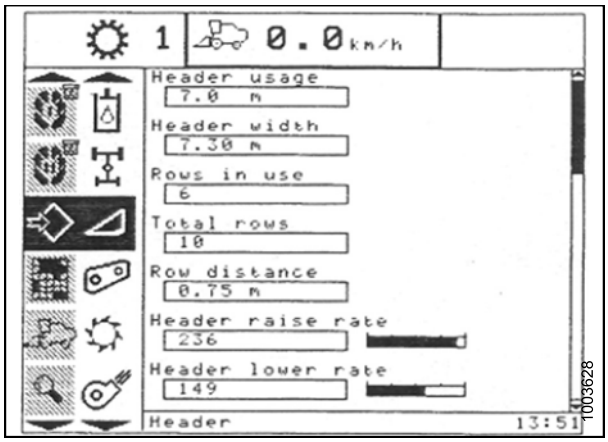


Figure 3.276: New Holland Combine Display

Setting the Sensitivity of the Auto Header Height Control (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 display since this document was published. Refer to the combine operator's manual for updates.

⚠ CAUTION

Check to be sure all bystanders have cleared the area.

1. Engage threshing and feeder house.
2. Select HEIGHT SENSITIVITY on the combine display screen.
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 steps of 10. It is factory-set to 100.

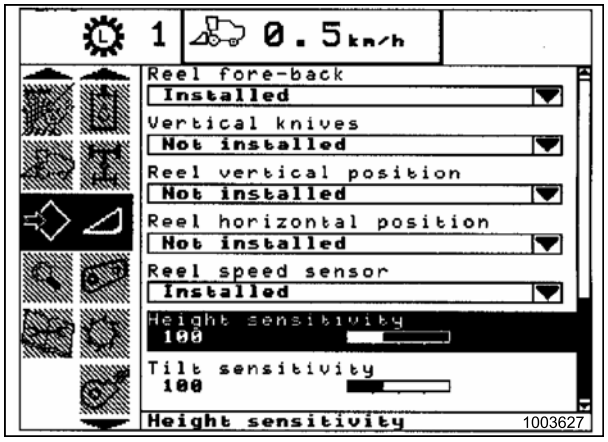


Figure 3.277: New Holland Combine Display

Setting Preset Cutting Height (New Holland CR/CX Series)

To set the preset cutting height, follow these steps:

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Engage the threshing mechanism and the feeder with switches (A) and (B).
2. Set HEADER MEMORY rocker switch (D) in STUBBLE HEIGHT/AUTOFLOAT MODE position (A) or (B).
3. Lower the header to the desired cutting height using the HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C).
4. Press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of two seconds to store the height position. A beep will confirm 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. To change one of the memorized header height set points while the combine is in use, use the HEADER HEIGHT AND HEADER LATERAL FLOTATION rocker switch (C) (slow up/down) to raise or lower header to the desired value. Press the AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the new height position. A beep will confirm setting.

   NOTE:
   Do not press too hard on AUTOMATIC HEADER HEIGHT CONTROL button (E), or float mode will be disengaged.

   NOTE:
   It is not necessary to press rocker switch (D) again after adjusting.

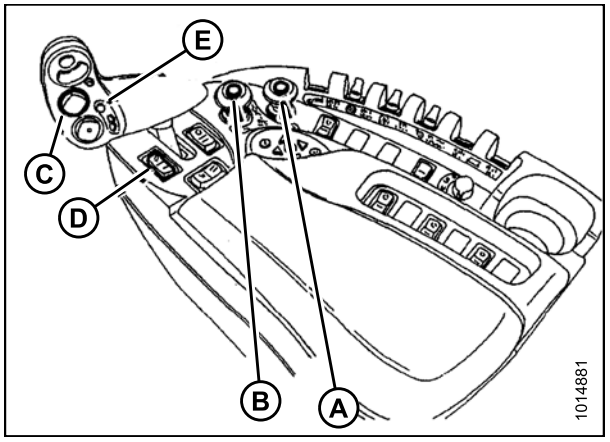


Figure 3.278: New Holland Combine Controls

NOTE:
The indicator reading with the header off the ground (6 in. [152 mm]) should be at 0 (B). If not, refer to Step *3., page 95*. Ground and crop conditions will dictate what number you will need to be set at. A reading at 1 (A) is set to light and 4 is set to heavy. The ideal setting is as light as possible without bouncing or missing crop. Operating with heavier pressures can wear the cutterbar wearplate prematurely.

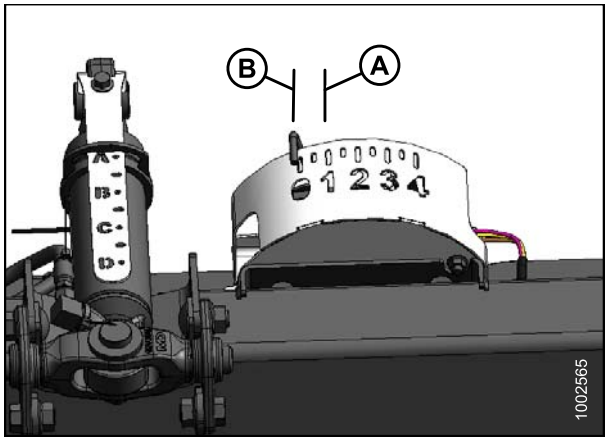


Figure 3.279: Float Indicator Box

Configuring Reel Fore-Aft, Header Tilt, and Header Type (New Holland CR Series)

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 display since this document was published. Refer to the combine operator's manual for updates.

1. Simultaneously press both the UNLOAD (A) and RESUME (B) buttons on the hydro handle.

Figure 3.280: New Holland Combine Controls

2. On the HEAD 1 page, change the CUTTING TYPE from FLEX to PLATFORM as shown at (A).

Figure 3.281: New Holland Combine Display

3. On the HEAD 2 page, change HEADER SUB TYPE from DEFAULT to 80/90 as shown at (A).

Figure 3.282: New Holland Combine Display

There are now two different buttons for ON GROUND presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require the first two buttons (A and B). The third button down (C) is not configured.

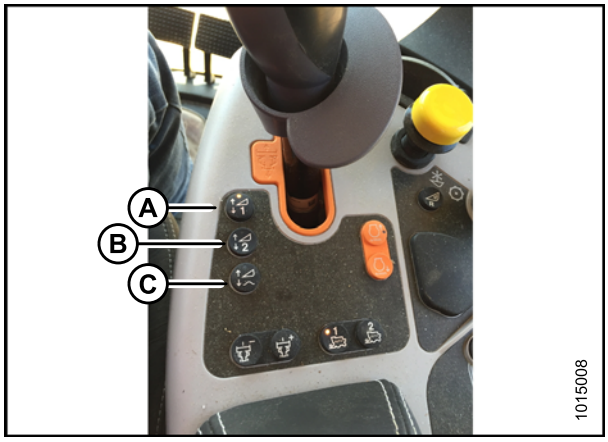


Figure 3.283: New Holland Combine Controls

3.8.12 New Holland Combines (CR Series—Model Year 2015 and Later)

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 New Holland combine models, refer to *3.8.11 New Holland Combines, page 177*.

Checking Voltage Range from the Combine Cab (New Holland CR Series)

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

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

2. Check that float lock linkage is on down stops (washer [A] cannot be moved) at both locations.

   NOTE:
   If the header is not on down stops during the next two steps, the voltage may go out of range during operation causing a malfunction of the AHHC system.

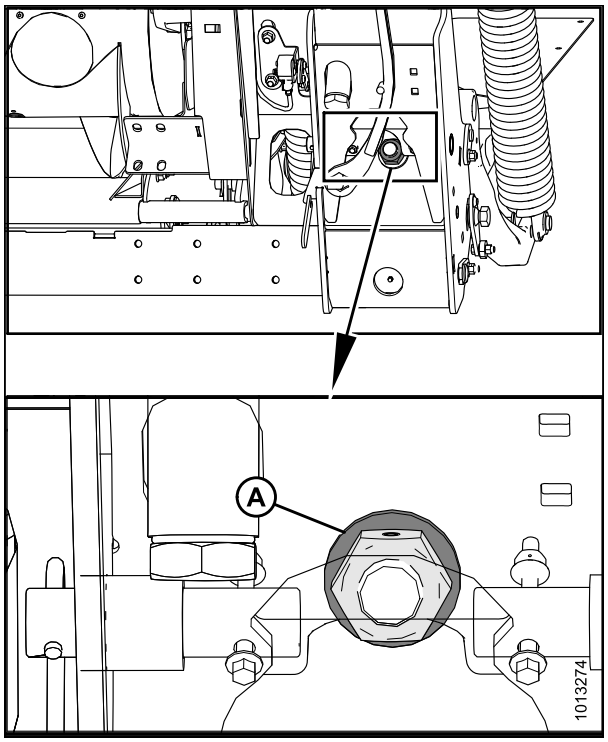


Figure 3.284: Float Lock

3. Adjust the cable take-up bracket (B) (if necessary) until the pointer (A) on the float indicator is on the 0.

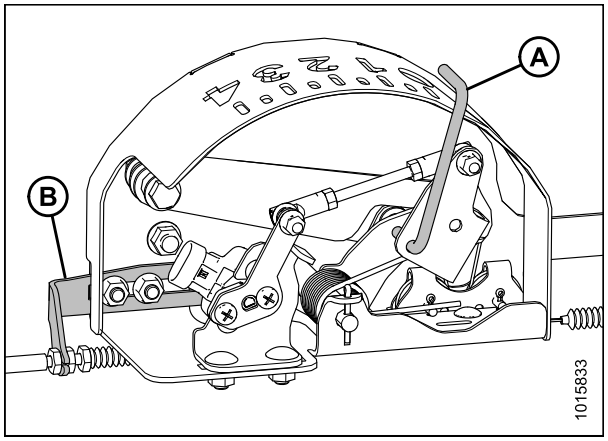


Figure 3.285: Float Indicator box

4. Ensure header float is unlocked.
5. Select DIAGNOSTICS (A) on the main page. The DIAGNOSTICS page displays.

Figure 3.286: New Holland Combine Display

6. Select SETTINGS (A). The SETTINGS page displays.

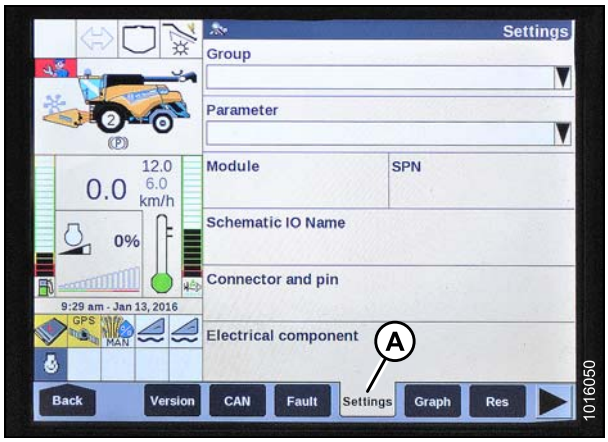


Figure 3.287: New Holland Combine Display

7. Select HEADER HEIGHT/TILT (A) from the GROUP drop-down menu.
8. Select HEADER HEIGHT SENS. L (B). from the PARAMETER drop-down menu.

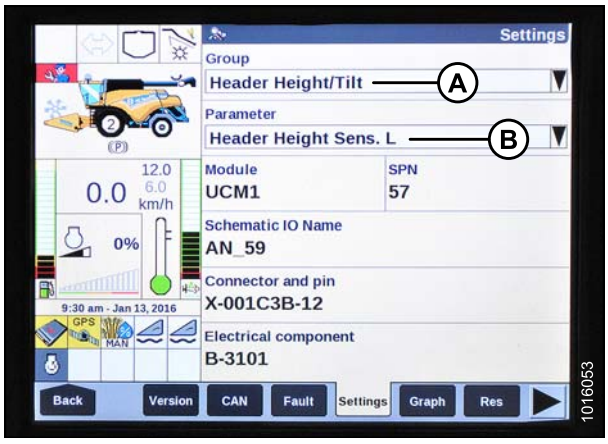


Figure 3.288: New Holland Combine Display

9. Select GRAPH (A). The exact voltage (B) is displayed at the top of the page.
10. Raise and lower the header to see the full range of voltage readings.
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. Refer to *Adjusting Voltage Limits (One-Sensor System), page 99*.

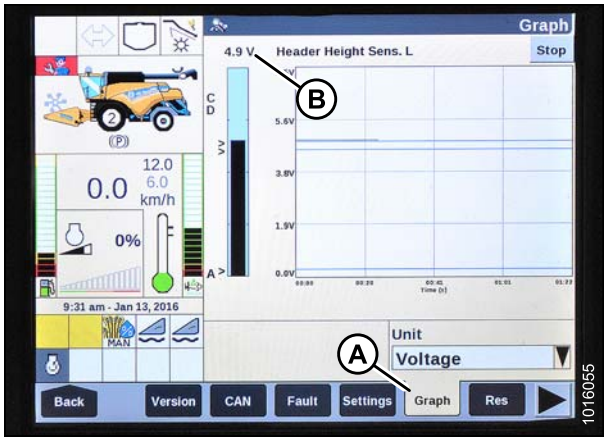


Figure 3.289: New Holland Combine Display

Engaging the Auto Header Height Control (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

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.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

1. Ensure center-link is set to D.
2. Select TOOLBOX (A) on the main page. The TOOLBOX page displays.

Figure 3.290: New Holland Combine Display

3. Simultaneously press both the UNLOAD (A) and RESUME (B) buttons on the hydro handle.

Figure 3.291: New Holland Combine Controls

4. Select HEAD 1 (A). The HEADER SETUP 1 page displays.
5. Select the CUTTING TYPE drop-down arrow (B) and change the CUTTING TYPE to PLATFORM (C).

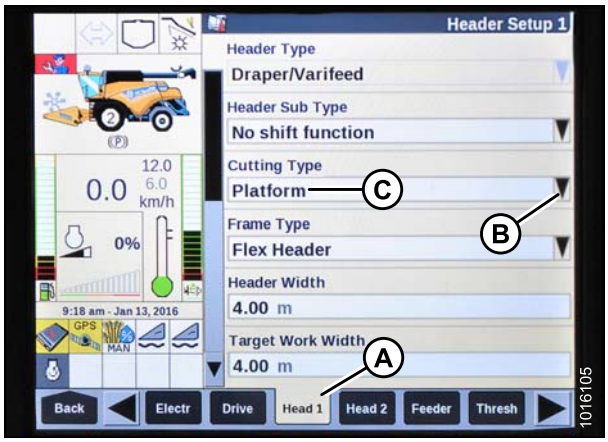


Figure 3.292: New Holland Combine Display

6. Select the HEADER SUB TYPE drop-down arrow (A). The HEADER SUB TYPE dialog box displays.

Figure 3.293: New Holland Combine Display

7. Select HEAD 2 (A). The HEADER SETUP 2 page displays.

Figure 3.294: New Holland Combine Display

8. Select the AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).
9. Select the AUTO HEADER LIFT drop-down arrow 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 ground speed lever (GSL).

10. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.
11. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

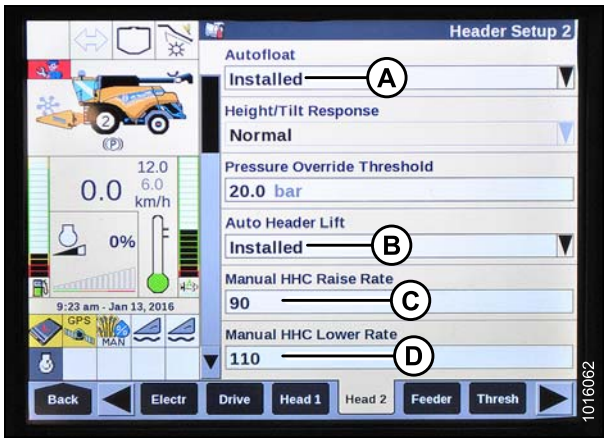


Figure 3.295: New Holland Combine Display

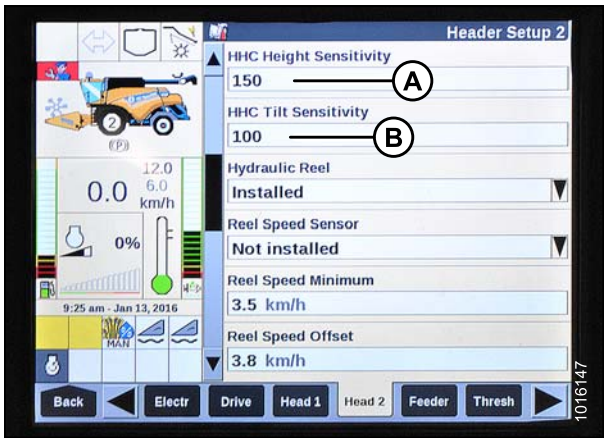


Figure 3.296: New Holland Combine Display

Calibrating the Auto Header Height Control (New Holland CR Series)

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. Refer to *3.7.3 Header Angle, page 63*.

NOTE:
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

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.
- Header/feeder is disengaged.
- Lateral flotation buttons are NOT pressed.
- ESC key is NOT pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main page. The CALIBRATION page displays.

Figure 3.297: New Holland Combine Display

2. Select the CALIBRATION drop-down arrow (A).

Figure 3.298: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

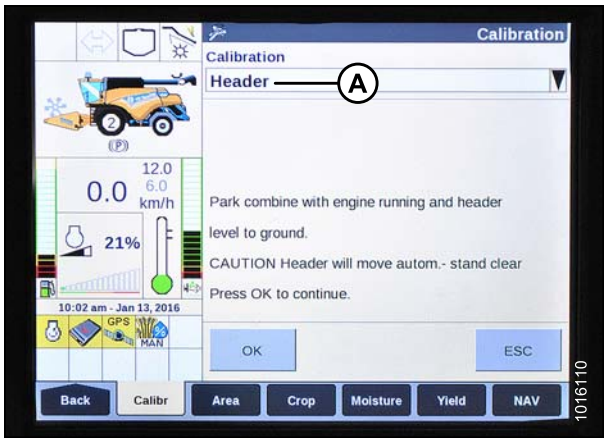


Figure 3.299: New Holland Combine Display

4. Follow the calibration steps in the order in which they appear on the screen. 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 three minutes will cause the calibration procedure to stop.

   NOTE:
   Refer to your combine operator's manual for an explanation of any error codes.

Figure 3.300: New Holland Combine Display

5. When all steps have been completed, CALIBRATION COMPLETED message is displayed on the screen.

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

Figure 3.301: New Holland Combine Display

Setting Auto Height (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

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 the first two buttons (A and B). The third button (C) is not configured.

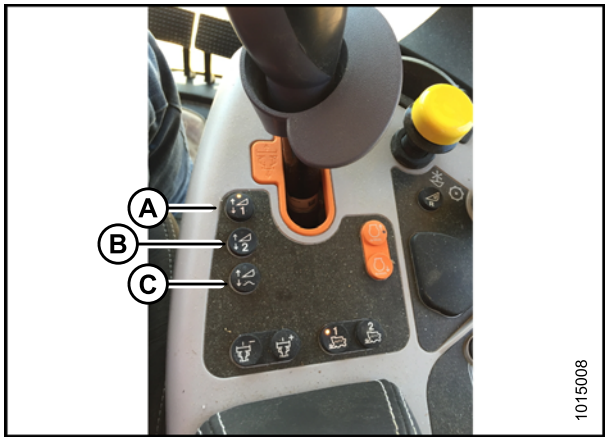


Figure 3.302: New Holland Combine Controls

CAUTION

Check to be sure all bystanders have cleared the area.

To set the auto height, follow these steps:

1. Engage separator and header.
2. Select RUN SCREENS (A) on the main page.

Figure 3.303: New Holland Combine Display

3. 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 set point button is pressed, the display will change to AUTO HEIGHT (A).

4. Lower the header to the ground.
5. Select one of the auto height set point buttons shown in Figure *3.302: New Holland Combine Controls, page 195*.
   - Press the SET 1 button for a light ground setting (1 on the float indicator box).
   - Press the SET 2 button for a heavier ground setting (2 on the float indicator box).

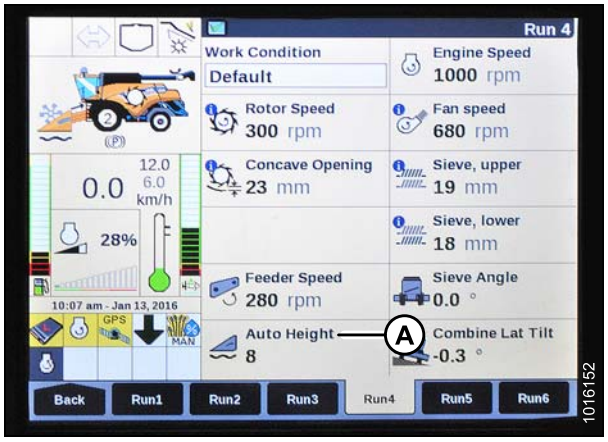


Figure 3.304: New Holland Combine Display

Setting Maximum Work Height (New Holland CR Series)

This procedure applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90).

1. Select TOOLBOX (A) on the main page. The TOOLBOX page displays.

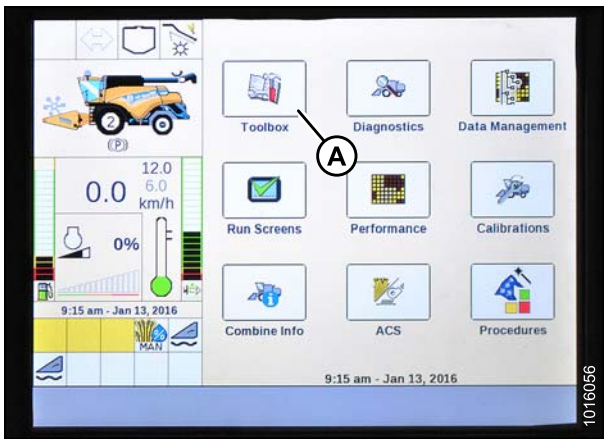


Figure 3.305: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP page displays.
3. Select the MAXIMUM WORK HEIGHT field (B).

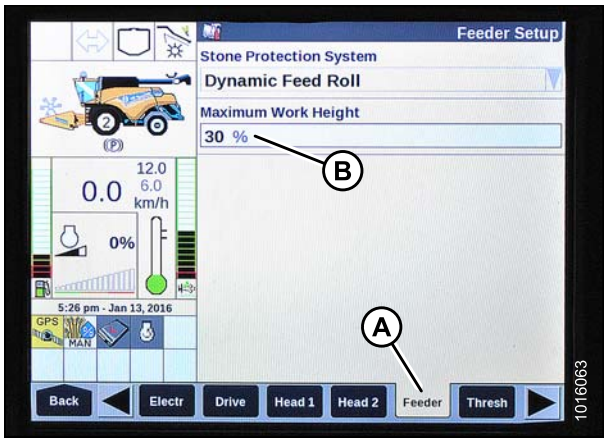


Figure 3.306: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to desired value.
5. Press SET and then press ENTER.

Figure 3.307: New Holland Combine Display

3.8.13 Sensor Operation

The position sensors supplied with the auto header height control (AHHC) system are hall-effect sensors containing sealed connectors. Normal operating signal voltages for the sensors fall between 10% (0.5VDC) and 90% (4.5VDC). An increase in sensor voltage correlates to an increase in header height.

Any sensor error results in a 0 V signal, which indicates either a faulty sensor or lack of supply voltage.

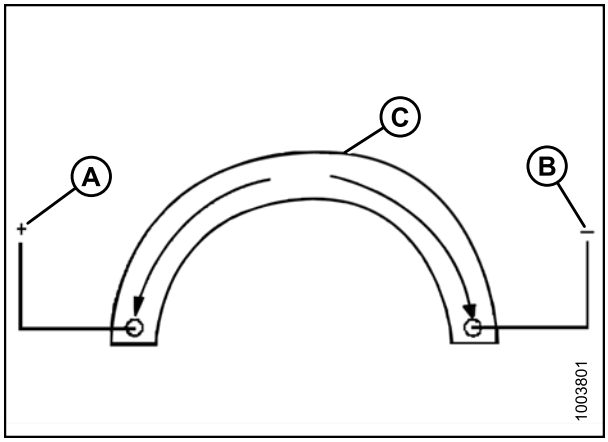


Figure 3.308: Power, Ground, and Signal Wires

A - Power **B - Ground**
C - High Resistance Filament Band Connecting Wires

3.9 Levelling the 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 levelling linkages:

- Check the combine tire pressures.
- Check that the combine feeder house is level. Refer to your combine operator's manual for instructions.
- Check that the top of the float module is level and parallel with the feeder house.

NOTE:
The float module float springs are **NOT** used to level the header.

1. Park the combine on level ground.
2. Set the header approximately 6 in. (150 mm) off the ground, and check that the float linkage is against the down stops. Note the high and low end of the header.
3. Check, and if necessary adjust the float. Refer to *Checking and Adjusting Header Float, page 58*.
4. 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:
   Setscrew (B) does not require loosening for adjustments up to one-half turn of nut (A).

   a. Turn low-side nut **clockwise** to raise header.

   b. Turn high-side nut **counterclockwise** to lower header.

   NOTE:
   Adjustment of more than two turns in either direction may adversely affect header float.

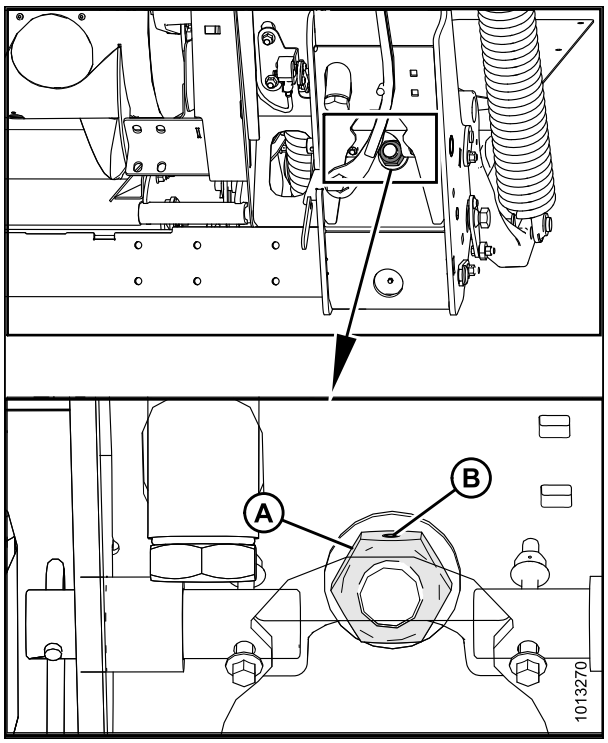


Figure 3.309: Float Lock

NOTE:
Ensure a minimum clearance of 1/8 in. (2–3 mm) (A) between the frame and the back of the bell crank lever.

NOTE:
Check the float after levelling header. Refer to *Checking and Adjusting Header Float, page 58*.

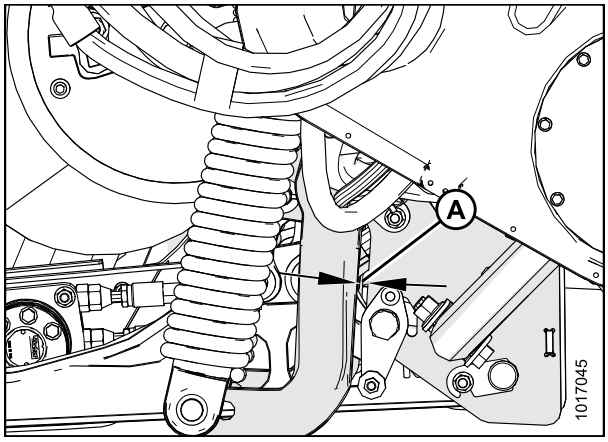


Figure 3.310: Bell Crank

3.10 Unplugging the Cutterbar

DANGER

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

CAUTION

Wear heavy gloves when working around or handling knives.

CAUTION

Lowering rotating reel on a plugged cutterbar will damage the reel components.

To unplug cutterbar, reverse the combine feeder house. If 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. Disengage the header drive clutch and fully raise the header if plug does **NOT** clear.
4. Shut off the engine, remove the key from the ignition, and engage the park brake.
5. Engage the header safety props.
6. Clean off the cutterbar by hand.

NOTE:
If cutterbar plugging persists, refer to *7 Troubleshooting, page 471*.

3.11 Unplugging the Float Module

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 manufacturers specifications (reverse feed varies among different combine models).
4. Engage the header drive.

3.12 Upper Cross Auger (UCA)

The UCA (A) improves delivery of very bulky crops across the header.

Beater bars (standard on 25- up to 45-foot headers) assist in delivering material through the header opening, but are removable if wrapping occurs.

IMPORTANT:
If the UCA is installed, a case drain line must be installed on the right-hand draper motor. See your MacDon Dealer for details.

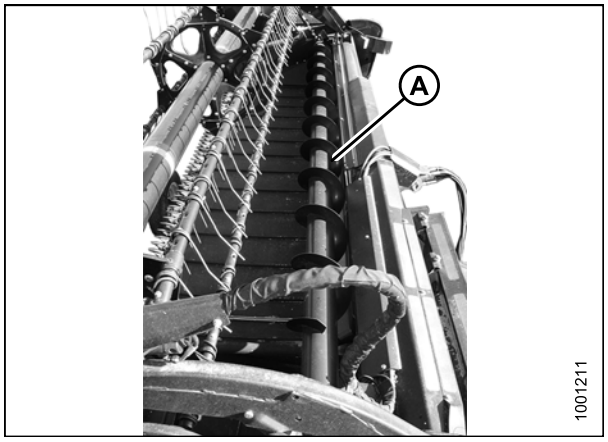


Figure 3.311: Upper Cross Auger

3.12.1 Removing Beater Bars

Beater bars are standard on 25- up to 45-foot header only.

DANGER

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

1. Lower the header to the ground, stop the engine, and remove the key from the ignition.
2. Remove bolts (A) securing the beater bars (B) and clamps (C) to the auger tubes, and remove the beater bars and clamps.

   IMPORTANT:
   Lift reel and engage safety props if working on double reel header.

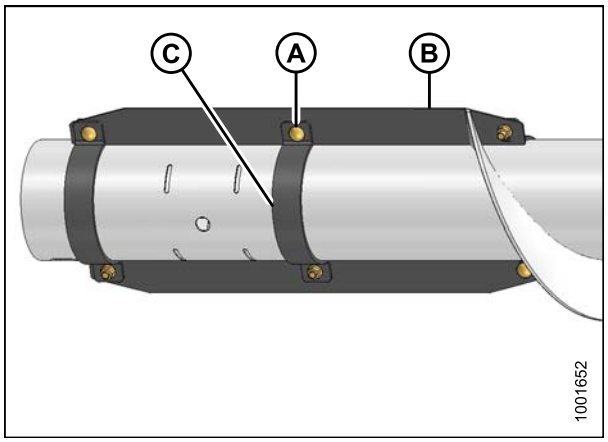


Figure 3.312: Beater Bars

3.12.2 Installing Beater Bars

Beater bars are standard on 15- up to and 45-foot header only.

DANGER

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

1. Lower the header to the ground, stop the engine, and remove the key from the ignition.

   IMPORTANT:
   Lift reel and engage safety props if working on double reel header.

2. Position one beater bar (B) and one clamp set (C) onto the auger tube and loosely secure with carriage bolt (A) and nut. Bolt head **MUST** face the direction of auger rotation.

   NOTE:
   To avoid contacting the reel, position beater bars outboard as far as possible.

   Position the remaining clamp sets (C) onto the auger tube and loosely attach to the beater bar (B) with carriage bolts (A) and nuts. Bolt heads **MUST** face the direction of auger rotation.

3. Position the second beater bar (D) in clamp sets (C) and secure with carriage bolts (D) and nuts.

4. Tighten bolts.

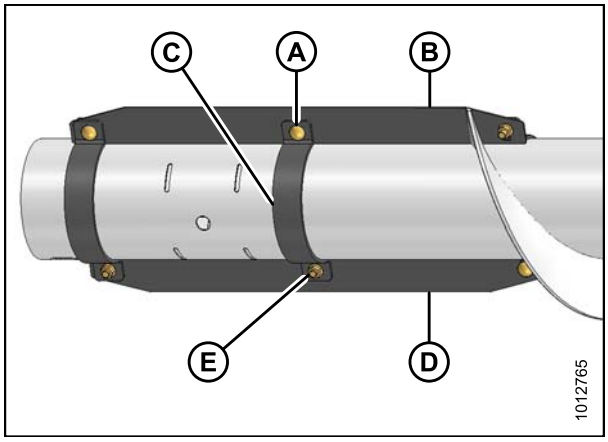


Figure 3.313: Beater Bars

3.13 Transporting Header

WARNING

Do NOT drive combine with header attached on a road or highway at night, or in conditions which reduce visibility, such as fog or rain. The width of the header may not be apparent under these conditions.

3.13.1 Transporting Header on Combine

CAUTION

- **Check local laws for width regulations and lighting or marking requirements before transporting on roads.**
- **Follow all recommended procedures in your combine operator's manual for transporting, towing, etc.**
- **Disengage header drive clutch when travelling to and from the field.**
- **Before driving combine on a roadway, be sure flashing amber lamps, red tail lamps, and head lamps are clean and working properly. Pivot amber lamps for best visibility by approaching traffic. Always use lamps when travelling on roads to provide adequate warning to other vehicles.**
- **Do NOT use field lamps on roads—they may confuse other drivers.**
- **Before driving on a roadway, clean slow moving vehicle signs and reflectors, adjust rear view mirrors, and clean windows.**
- **Lower the reel fully and raise the header unless transporting in hills.**
- **Maintain adequate visibility and be alert for roadside obstructions, oncoming traffic, and bridges.**
- **When travelling downhill, reduce speed and keep header at a minimum height to provide maximum stability if forward momentum is stopped for any reason. Raise header completely at bottom of grade to avoid contacting the ground.**
- **Travel at safe speeds to ensure complete machine control and stability at all times.**

3.13.2 Towing

Headers with the Slow Speed Transport/Stabilizer Wheel option can be towed behind a properly configured MacDon windrower or an agricultural tractor. Refer to the combine operator's manual for instructions.

Attaching Header to Towing Vehicle

CAUTION

Adhere to the following slow speed transport instructions to prevent loss of control leading to bodily injury and/or machine damage:

- **Weight of towing vehicle must exceed header weight to ensure adequate control and braking performance.**
- **Do NOT tow with any highway-capable vehicle. Use only an agricultural tractor, agricultural combine, or a properly configured MacDon windrower.**
- **Ensure reel is fully lowered and back on support arms to increase header stability during transport. For headers with hydraulic reel fore-aft, never connect the fore-aft couplers to each other or the circuit will be complete and the reel could creep forward during transport.**
- **Check that all pins are properly secured in transport position at wheel supports, cutterbar support, and hitch.**
- **Check tire condition and pressure prior to transporting.**
- **Connect hitch to towing vehicle using a proper hitch pin with a spring locking pin or other suitable fastener.**
- **Attach hitch safety chain to towing vehicle. Adjust safety chain length to provide only enough slack to permit turning.**
- **Connect header 7-pole plug wiring harness to mating receptacle on towing vehicle. (The 7-pole receptacle is available from your MacDon Dealer parts department).**
- **Ensure lights are functioning properly and clean the slow moving vehicle sign and other reflectors. Use flashing warning lights unless prohibited by law.**

Towing the Header

CAUTION

Adhere to the following slow speed transport instructions to prevent loss of control leading to bodily injury and/or machine damage:

- **Do NOT exceed 25 mph (40 km/h). Reduce transport speed to less than 5 mph (8 km/h) for corners and slippery or rough conditions.**
- **Turn corners at only very low speeds (5 mph [8km/h] or less). Header stability is reduced while cornering because front wheel moves to the left.**
- **Do NOT accelerate when making or coming out of a turn.**
- **Obey all highway traffic regulations in your area when transporting on public roads. Use flashing amber lights unless prohibited by law.**

3.13.3 Converting from Transport to Field Position

Removing Tow-Bar

1. Block the tires to prevent the header from rolling, and unhook the header from the towing vehicle.
2. Disconnect the electrical connector (A) on the tow-bar.
3. Remove pin (B) from the tow-bar, and disassemble the outer section (C) from the inner section (D).

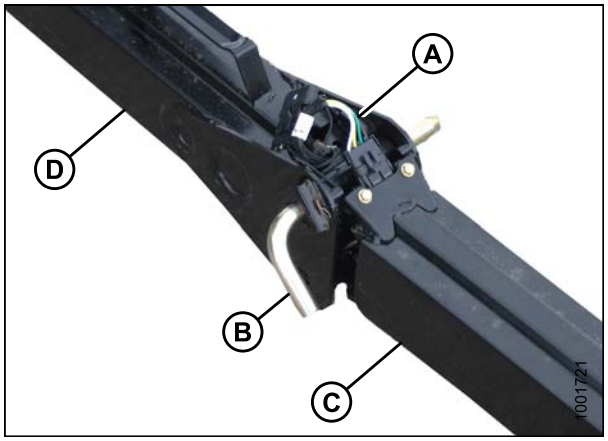


Figure 3.314: Tow-Bar Assembly

4. Disconnect the electrical connector (A) at the front wheel.

Figure 3.315: Wiring Connector

5. Remove clevis pin (A) and set aside for reinstallation.
6. Push latch (B) and lift the tow-bar (C) from the hook. Release latch.
7. Install clevis pin (A).

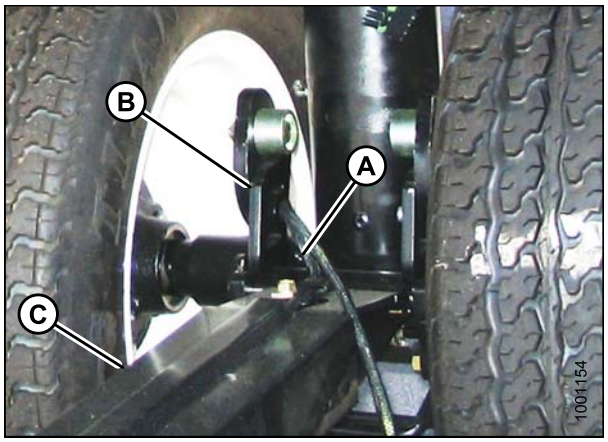


Figure 3.316: Tow-Bar Latch

Storing the Tow-Bar

1. Place the inner end of the outer half of the tow-bar into the cradle (A) on the left side of the header backtube.
2. Secure clevis/pintle end of the tow-bar in support (B) on the endsheet using hitch pin (C). Secure with lynch pin.
3. Install the rubber strap (D) on the cradle (A).

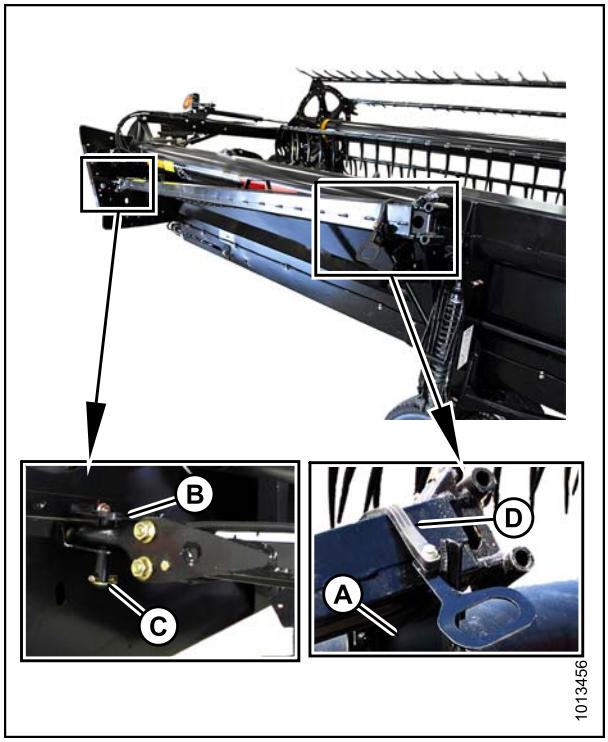


Figure 3.317: Tow-Bar Storage – Left Side

4. Place the inner end of the outer half of the tow-bar into the cradle (A) on the right side of the header backtube.
5. Secure the tube end of the tow-bar in support (B) on the endsheet using hitch pin (C). Secure with hairpin.
6. Install the rubber strap (D) on the cradle (A).

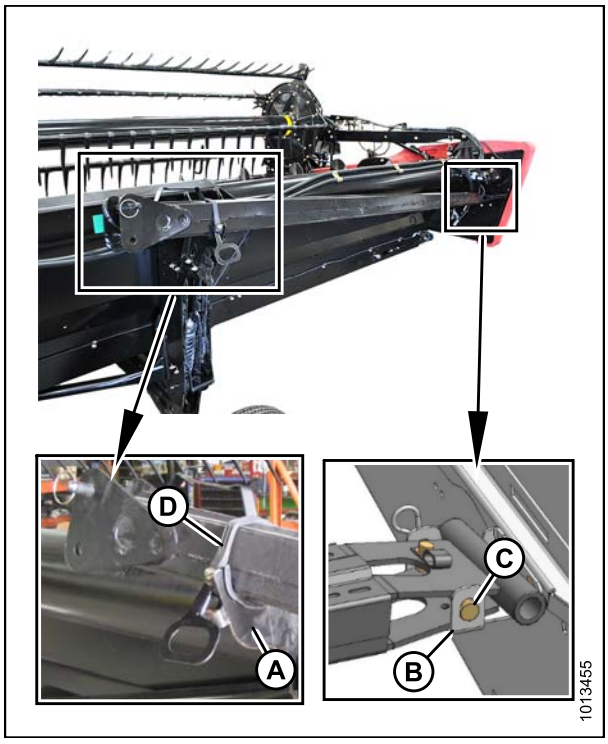


Figure 3.318: Tow-Bar Storage – Right Side

7. Place the inner end of the inner half of the tow-bar into the cradle (A) on the right side of the header backtube.
8. Secure the tube end of the tow-bar in support (B) on the endsheet using clevis pin (C). Secure with hairpin.
9. Install the rubber strap (D) on the cradle (A).

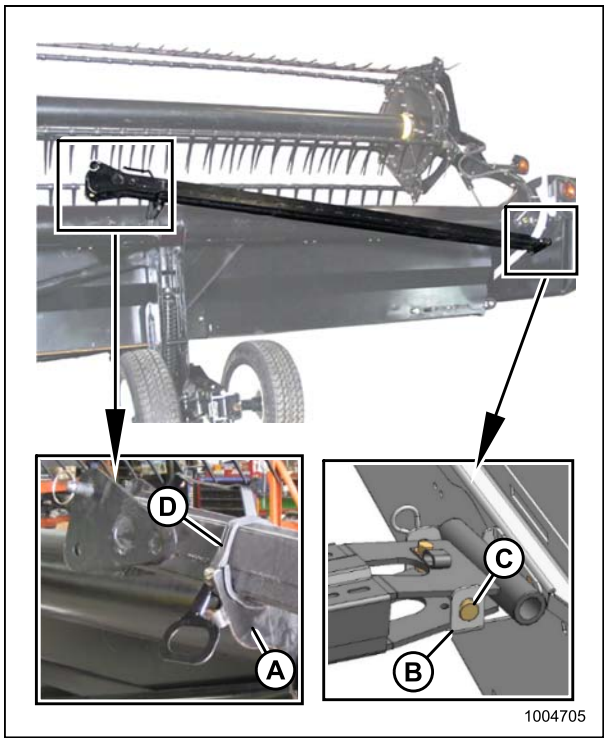


Figure 3.319: Tow-Bar Storage

10. Attach the header to the combine. Refer to the combine operator's manual for instructions.

    IMPORTANT:
    Carrying the tow-bar on the header will affect the main header float. Refer to your combine operator's manual for adjustment procedures.

11. Place the transport wheels into field position. Refer to the following:
    - *Moving Front (Left) Wheels into Field Position, page 208*
    - *Moving Rear (Right) Wheels into Field Position, page 210*

Moving Front (Left) Wheels into Field Position

DANGER

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

1. Raise the header fully and engage the header safety props.
2. Swivel the front wheel assembly (A) so the wheels are aligned with the lower frame.
3. Remove pin (B) and pull the wheel assembly towards the rear of header. Store the pin in hole (C) at the top of the leg.
4. Pull handle (D) upwards to release and lower the linkage into the vertical support.

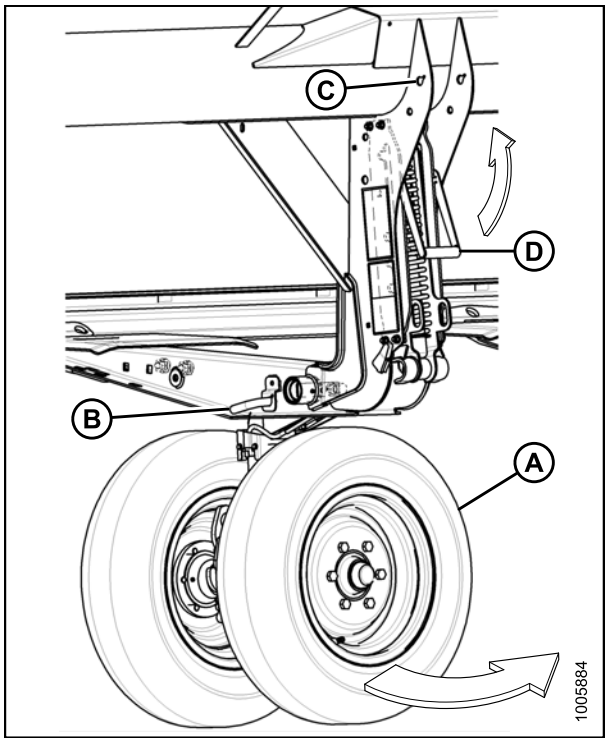


Figure 3.320: Front (Left) Wheels

5. Align lift hook (A) with lug (B) and lift the wheel assembly to engage the pin in the lift hook. Ensure latch (C) is engaged.
6. Install clevis pin (D) and secure to the center of the axle with hairpin.

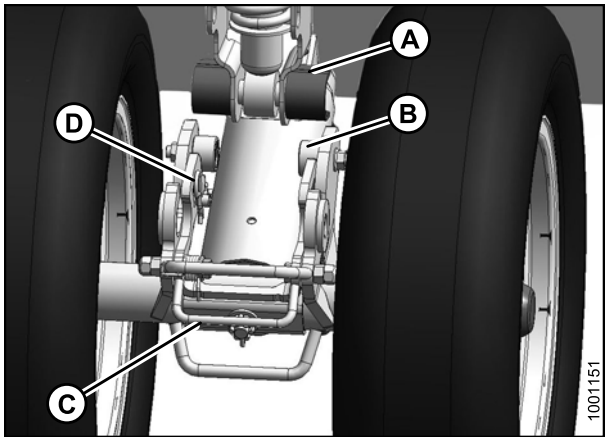


Figure 3.321: Front (Left) Wheels

7. Lift the wheel assembly to the desired height and slide the linkage (A) into the appropriate slot in the vertical support.
8. Push down on the handle (B) to lock.

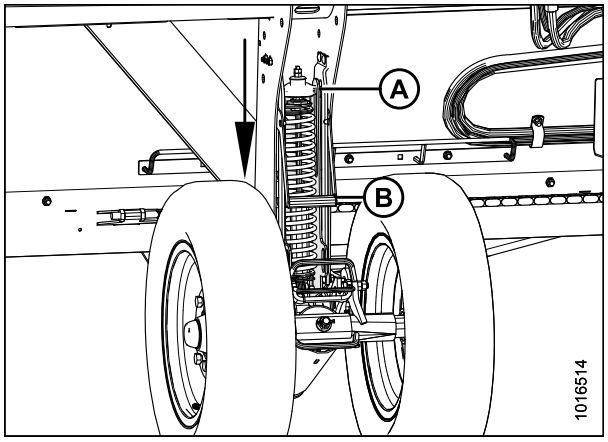


Figure 3.322: Front (Left) Wheels

Moving Rear (Right) Wheels into Field Position

1. Pull pin (A) on the left side rear wheel. Swivel the wheel clockwise and lock with pin.

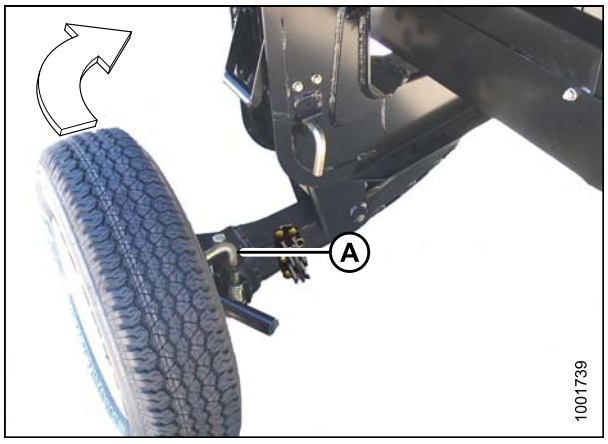


Figure 3.323: Rear Wheel – Left Side

2. Remove pin (A) and store at location (B).
3. Pull handle (C) upwards to release.
4. Lift the wheel to the desired height, and engage the support channel into slot (D) in the vertical support.
5. Push down on handle (C) to lock.

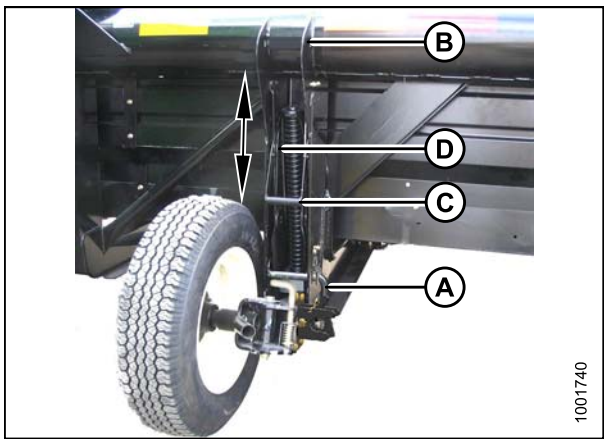


Figure 3.324: Rear Wheel – Left Side

6. Pull the pin (A) on brace (B) on the left-hand wheel in front of the cutterbar. Disengage the brace from the cutterbar, and lower the brace against the axle (C).
7. Remove pin (D), lower support (E) onto axle, and reinsert pin into support.
8. Swing the axle (C) clockwise towards the rear of the header.

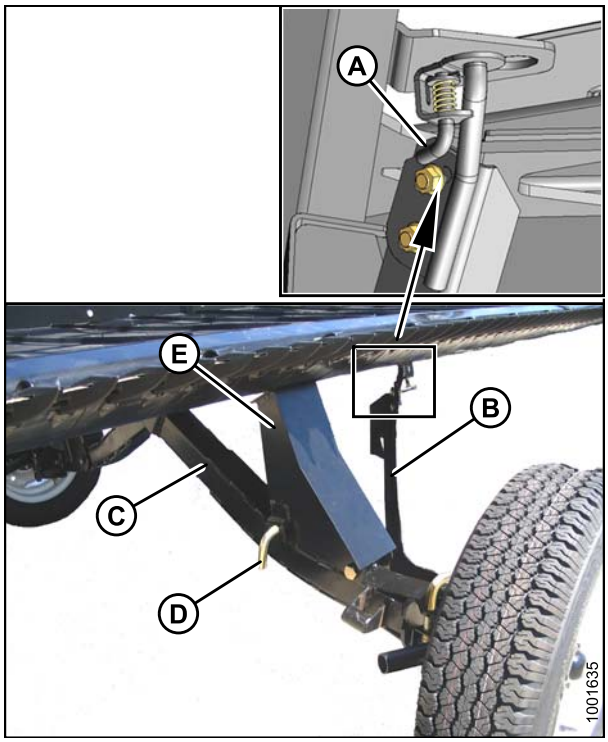


Figure 3.325: Right Rear Axle

9. Pull pin (A) on right-hand wheel, swivel the wheel counterclockwise to position shown, and lock with pin (A).
10. Remove the hairpin (B) from the latch (C).
11. Lift the wheel, lift latch (C), and engage lug (D) onto the left axle. Ensure the latch closes.
12. Secure the latch with hairpin (B), ensuring the open end of the pin faces the rear of the combine.

NOTE:
The hairpin can become dislodged by crop if installed with the open end facing the cutterbar.

IMPORTANT:
Check that wheels are locked and that handle is in locked position.

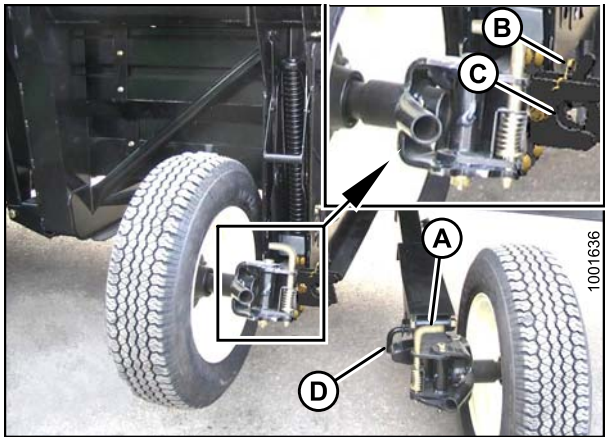


Figure 3.326: Rear Axles

13. Complete the conversion by ensuring the left side (A) and right side (B) wheels are in the position shown.

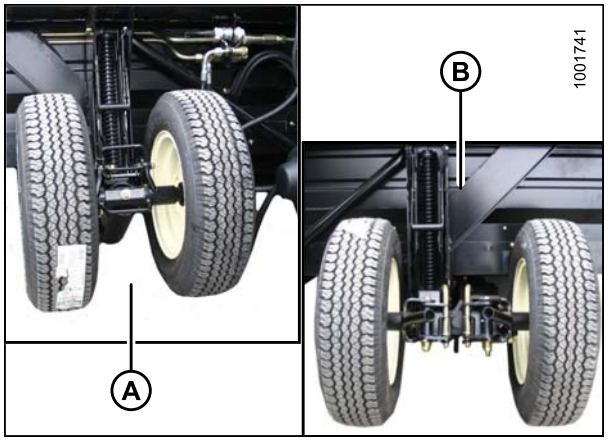


Figure 3.327: Field Position

3.13.4 Converting from Field to Transport Position

Moving Front (Left) Wheels into Transport Position

DANGER

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

CAUTION

Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.

1. Pull the handle (B) upwards to release and raise the linkage (A) fully upwards into the vertical support.
2. Raise the header fully, stop the engine, and remove the key from ignition. Engage the header safety props.

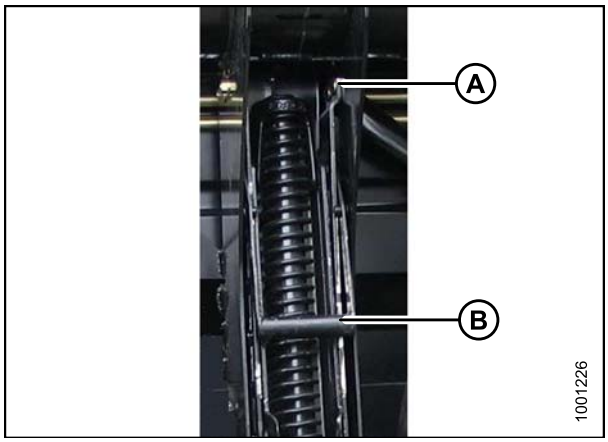


Figure 3.328: Suspension Linkage

3. Remove the hair pin and clevis pin (A).
4. Pull the latch handle (B) to release the suspension linkage (C), and pull the suspension linkage away from the spindle (D).
5. Lower the wheels slowly.

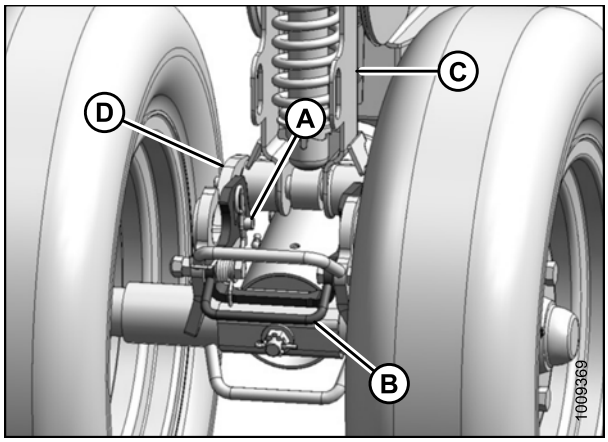


Figure 3.329: Left Front Wheels

6. Lower the handle (B) to lock.

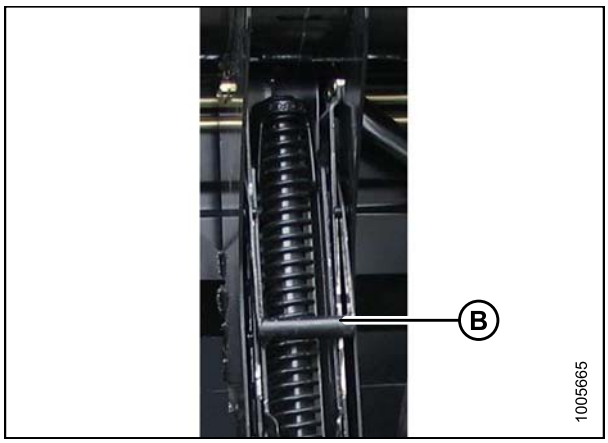


Figure 3.330: Suspension Linkage

7. Remove the pin (A) from storage at the top of the leg (B).
8. Move and swivel the wheels clockwise until the connector (C) is turned towards the front end of the header.
9. Insert pin (A) and turn to lock.
10. Lower the header until the left wheels are just touching the ground.

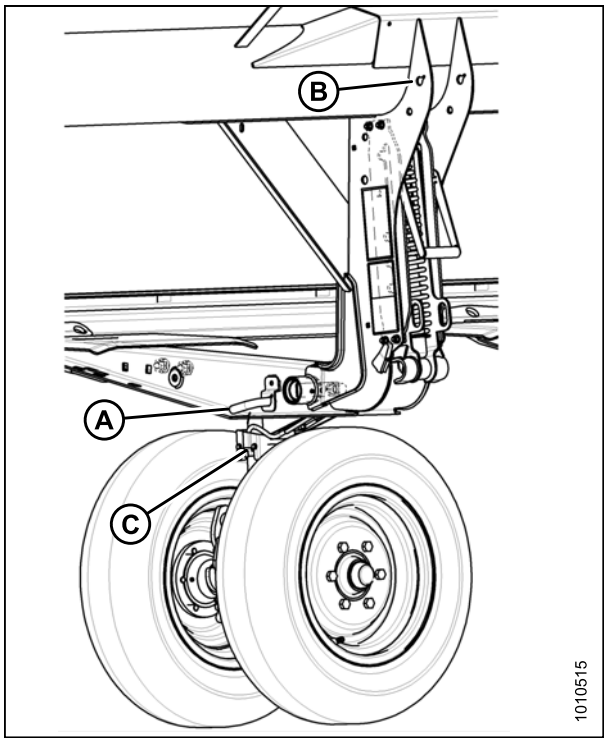


Figure 3.331: Left Front Wheels

Moving Rear (Right) Wheels into Transport Position

1. Remove the hairpin (A) from the latch (B).
2. Lift the latch (B), disengage the right axle (C), and lower to the ground.

CAUTION

Stand clear of wheels and release linkage carefully as wheels will drop once the mechanism is released.

3. Pull handle (D) carefully 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 the handle (C) to lock.

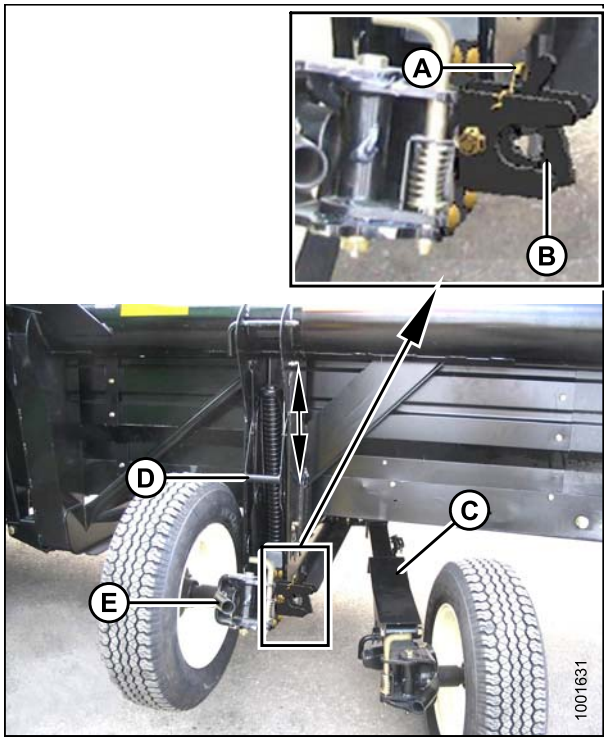


Figure 3.332: Separating Axles

6. Remove the pin (A) and install at location (B) to secure the linkage. Turn the pin to lock.
7. Pull the pin (D), swivel the wheel (C) counterclockwise 90°, and release the pin to lock.

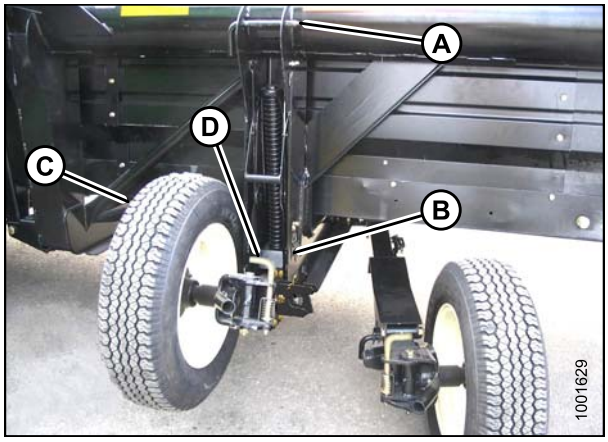


Figure 3.333: Wheel Position

8. Ensure the left wheel is in the transport position as shown.

Figure 3.334: Left Wheel in Transport Position

9. Pull the pin (A) and swivel the right rear wheel (B) clockwise 90°.

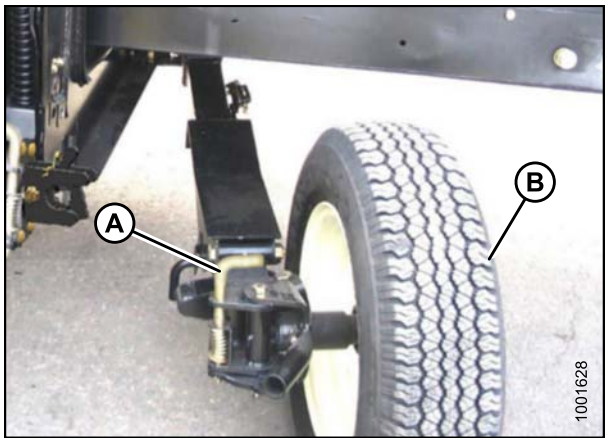


Figure 3.335: Right Rear Wheel

10. Lock the wheel (A) with pin (B). Move the right axle (C) to the front of the header.

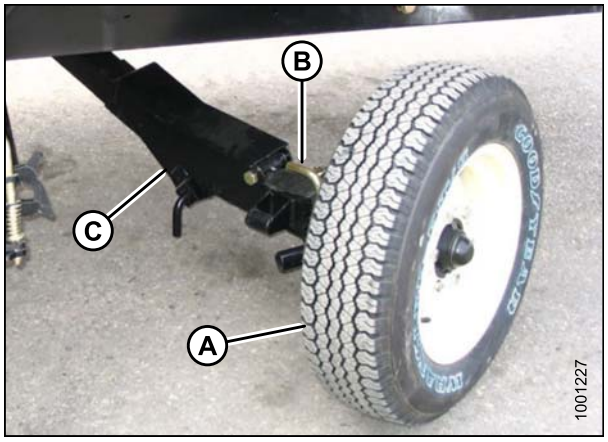


Figure 3.336: Right Rear Wheel

11. Remove the pin (A), raise support (B) to the position shown, and reinsert pin.

    IMPORTANT:
    Ensure the pin (A) engages the tube on the axle.

12. Swing the brace (C) into the position shown and insert the brace into the slot (D) behind the cutterbar. Position the brace so that pin (E) engages the hole in the bracket (F). The right hand wheel is now in transport position.
13. Disengage the header cylinder lift stops.
14. Detach the header's hydraulic and electrical connections from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
15. Start the combine and lower the header to the ground.

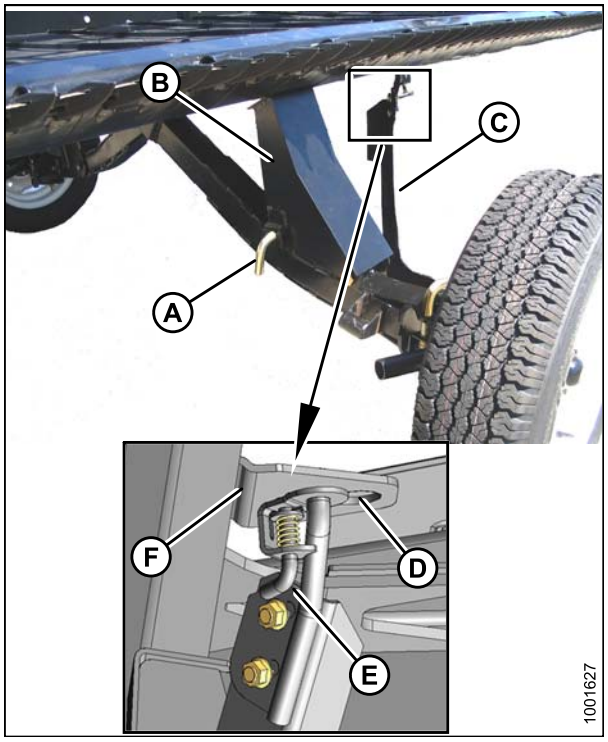


Figure 3.337: Right Rear Wheel Position

Attaching Tow-Bar

The tow-bar consists of two sections which make storage and handling easier.

1. Unhook the rubber strap (D) from the cradle (A) on the right side of the header.
2. Remove the clevis pin (C) and detach the tube end from the support (B).
3. Replace the 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.

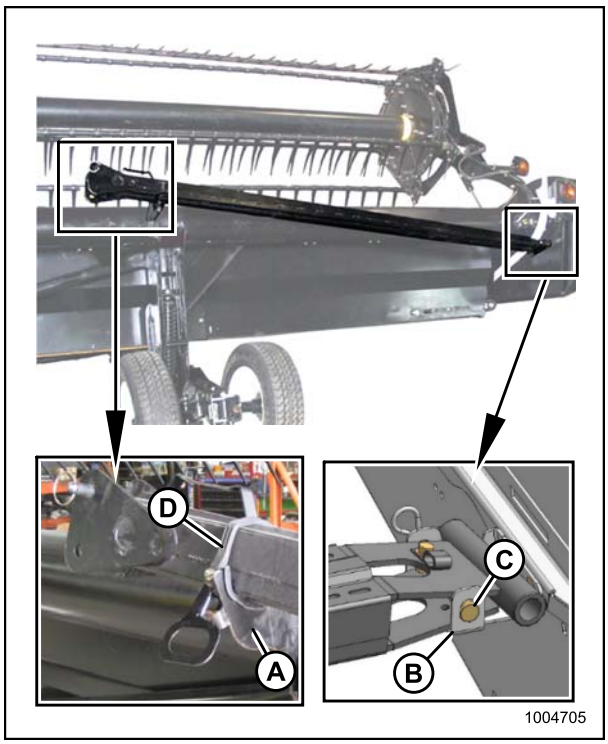


Figure 3.338: Tow-Bar Removal – Right Side

5. Unhook the rubber strap (D) from the cradle (A) on the left side of the header.
6. Remove the hitch pin (C) from the support (B), and remove the tow-bar.
7. Install the rubber strap (D) on the cradle (A).

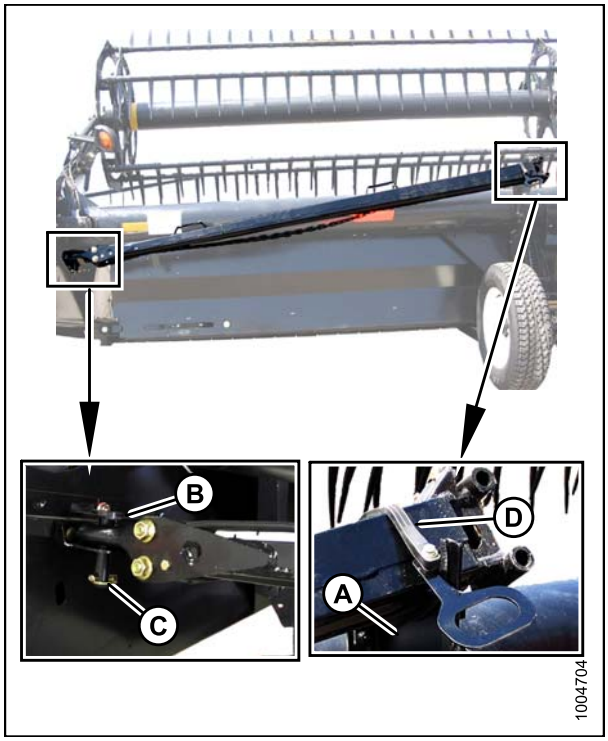


Figure 3.339: Tow-Bar Removal – Left Side

8. Connect the outer half (B) of the tow-bar to the inner half (A).

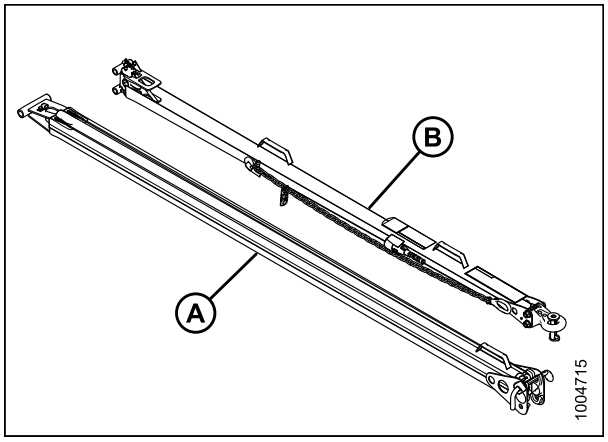


Figure 3.340: Tow-Bar Assembly

9. Lift the outer half (B) and insert it into the inner half (A).

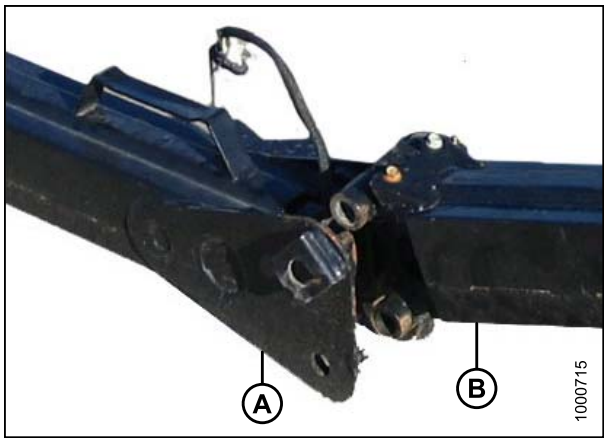


Figure 3.341: Tow-Bar Assembly

10. Secure the two halves together with the L-pin (A) and then turn to lock. Secure the L-pin with ring (B).
11. Connect the electrical harness to connector (C).

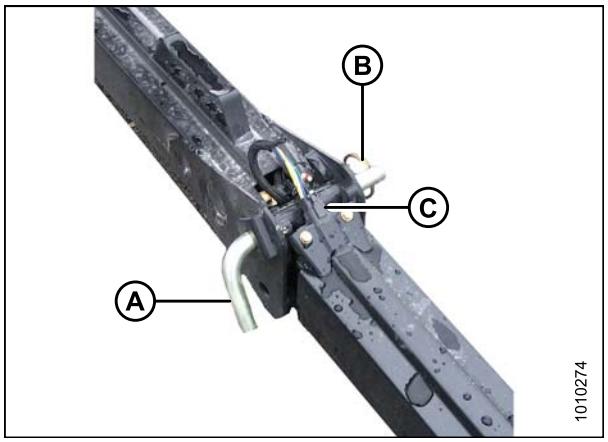


Figure 3.342: Tow-Bar Assembly

12. Position the tow-bar (A) onto the axle, and push against the latch (B) until the tow-bar pins drop into the hooks (C).
13. Check that latch (B) has engaged the tow-bar.
14. Install the clevis pin (D) and secure with hairpin.

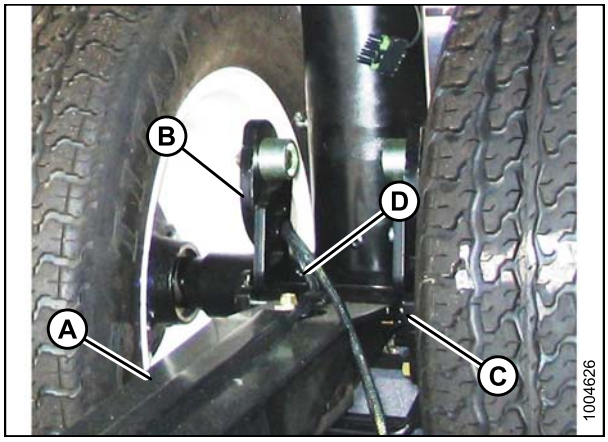


Figure 3.343: Attaching Tow-Bar

15. Connect the electrical harness (A) at the front wheel.

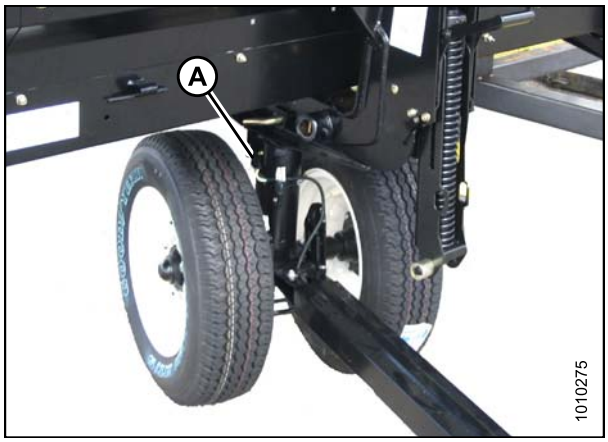


Figure 3.344: Harness Connection

3.14 Storing the Header

Perform the following procedures 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 cutterbar and knife guards to prevent injury from accidental contact.

1. Clean the header thoroughly.
2. Store the machine in a dry, protected place if possible. If storing outside, always cover with a waterproof canvas or other protective material.

   NOTE:
   If storing the machine outside, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so water and snow will not accumulate on the drapers. The weight of water and snow accumulation puts excessive stress on the drapers and header.

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, 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 to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.
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. Replace or tighten any missing or loose hardware. Refer to *8.1 Torque Specifications, page 485*.

4 Header Attachment/Detachment

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

Combine	Refer to
Case IH 7010, 8010, 7120, 8120, 9120, 5130, 6130, 7130, 7230, 8230, 9230	*4.3 Case IH Combines, page 243*
John Deere 60, 70, S, and T Series	*4.5 John Deere Combines, page 259*
Lexion 500, 700 (R Series)	*4.6 Lexion Combines, page 266*
New Holland CR, CX	*4.7 New Holland Combines, page 275*
Gleaner R and S Series, Challenger 660, 670, 680B, 540C, 560C, Massey Ferguson 9690, 9790, 9895, 9520, 9540, 9560	*4.4 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines, page 251*

NOTE:
Ensure the applicable functions (e.g., 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 Float Module Feed Auger Configurations

The FM100 Feed Auger can be configured to suit various needs; there are four configurations available. Check the conversion instructions to determine if additional auger flighting kits are required.

Configuration A is a standard configuration for the following:

- Case (2577/88, 5/6/7088, 7/8010, 7/8/9120, 5/6/7130, 7/8/9230, 5/6/7140, 7/8/9240)
- Challenger (66/67/680B, 54/560C, 54/560E)
- CLAAS Lexion (56/57/58/590R, 57/58/595R, 62/63/64/65/66/670, 73/74/75/76/77/780)
- John Deere (95/96/97/9860, 95/96/97/9870, S65/66/67/68/690, T670)
- Massey Ferguson (96/97/9895, 9520/40/60, 9545/65, 9380)
- New Holland CR (970/980, 9070/9080, 8090/9090, X.90, X.80)
- New Holland CX (8X0, 80X0, 8.X0, 8080/8090 Elevation)
- Versatile (RT490)

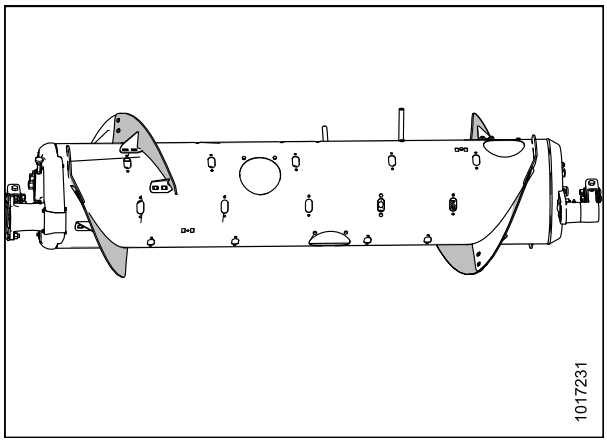


Figure 4.1: Configuration A (Rear View)

To convert to configuration A from configuration B or D, refer to *4.1.1 Converting from Configuration B or D to Configuration A, page 224*.

To convert to configuration A from configuration C, refer to *4.1.2 Converting from Configuration C to Configuration A, page 226*.

Configuration B is a standard configuration for the following:

- Gleaner (R6/75, R6/76, S6/77, S6/7/88, S96/7/8)
- New Holland CR (920/940/960, 9020/40/60/65, 6090/7090, 8060/8070/8080)

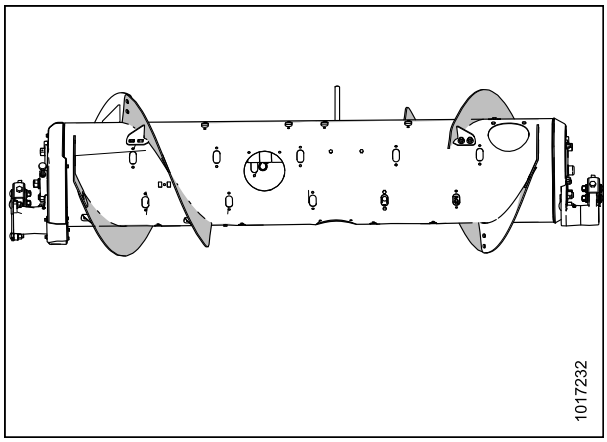


Figure 4.2: Configuration B (Rear View)

To convert to configuration B from configuration A or C, refer to *4.1.3 Converting from Configuration A or C to Configuration B, page 227*.

To convert to configuration B from configuration D, refer to *4.1.4 Converting from Configuration D to Configuration B, page 229*.

Configuration C is an optional configuration for the following combines:

- Challenger (670B/680B, 540C/560C, 540E/560E)
- CLAAS Lexion (590R/595R, 660/670, 760/770/780)
- John Deere (T670)
- Massey Ferguson (9895, 9540, 9560, 9545, 9565, 9380)
- New Holland CX (8X0, 80X0, 8.X0)

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

To convert to configuration C from configuration A, refer to *4.1.5 Converting from Configuration A to Configuration C, page 230*.

To convert to configuration C from configuration B or D, refer to *4.1.6 Converting from Configuration B or D to Configuration C, page 232*.

NOTE:
In some conditions, feeding may be further improved by removing all bolt-on flighting. Refer to *4.1.7 Optional Modification to Configuration C, page 233*.

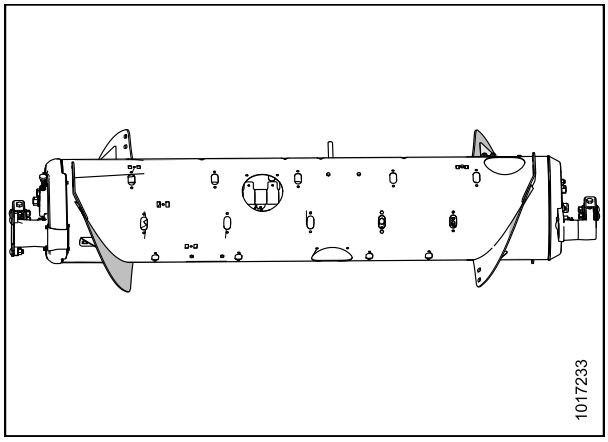


Figure 4.3: Configuration C (Rear View)

Configuration D is an optional configuration that may improve feeding performance on certain combines while harvesting rice.

To convert to configuration D from configuration A or C, refer to *4.1.8 Converting from Configuration A or C to Configuration D, page 234*.

To convert to configuration D from configuration B, refer to *4.1.9 Converting from Configuration B to Configuration D, page 239*.

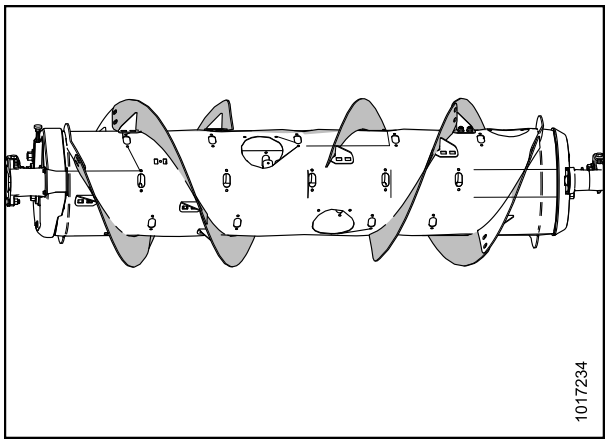


Figure 4.4: Configuration D (Rear View)

4.1.1 Converting from Configuration B or D to Configuration A

Two kits (MD #287031) are required to convert to this configuration.

Auger configurations B, D, and A are shown at right. Existing flightings (A) are removed and new flightings (B) are installed when converting to configuration A.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

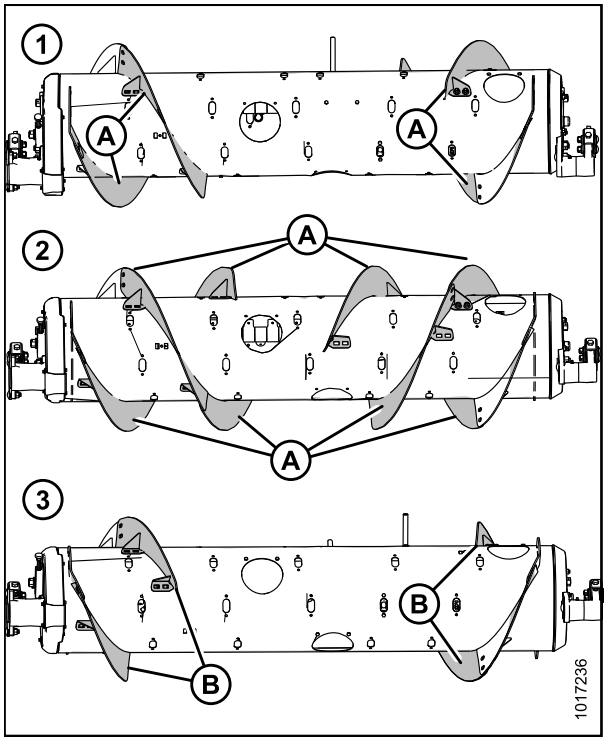


Figure 4.5: View from Rear of Feed Auger

1 - Configuration B 2 - Configuration D 3- Configuration A

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B). Retain for reassembly later.

   NOTE:
   It may be necessary to remove multiple access covers for ease of access.

3. Remove hardware (C) and bolt-on flighting (D) from the auger. Repeat for all the remaining hardware and bolt-on flighting.
4. Repeat Steps *2., page 224* and *3., page 224* at the left-hand side of the feed auger.

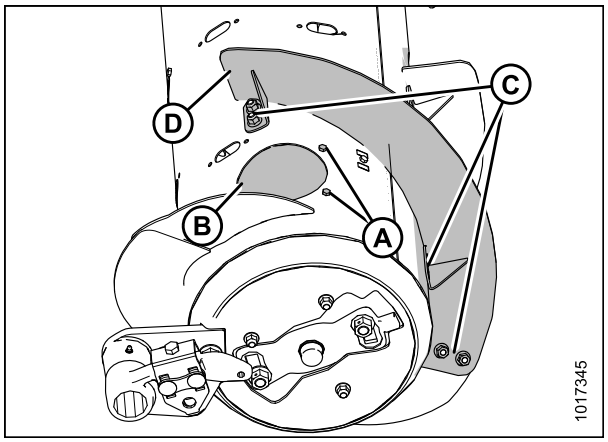


Figure 4.6: Configuration B (RH Side)

5. Install two bolt-on flightings (MD #213359) (A) on the right-hand side as shown, and secure each flighting with six carriage head bolts (MD #184657) and six nuts (MD #135799) at location (B).

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

6. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).

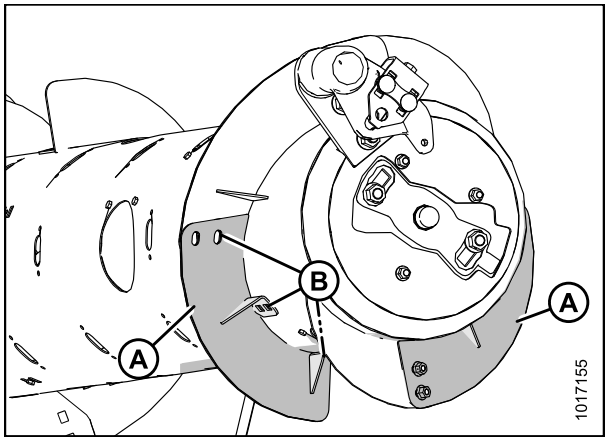


Figure 4.7: Configuration A (RH Side)

7. Install two bolt-on flightings (MD #213360) (A) on the left-hand side as shown, and secure each flighting with six carriage head bolts (MD #184657) and six nuts (MD #135799) at location (B).

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

8. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).

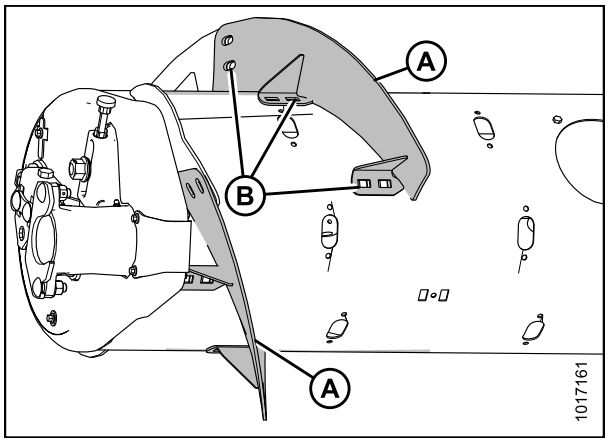


Figure 4.8: Configuration A (LH Side)

9. Use the access hole (A) to position the flighting slot plug (MD #213084) (B) from inside the feed auger (as shown) and secure with an M6 bolt (MD #252522) and tee nut (MD #197263) (C). Repeat for the remaining locations previously used to mount the flighting in Step *3., page 224* and Step *4., page 224*.

10. Install additional fingers. A total of 22 fingers are recommended for this configuration. Refer to *Installing Feed Auger Fingers, page 344*.

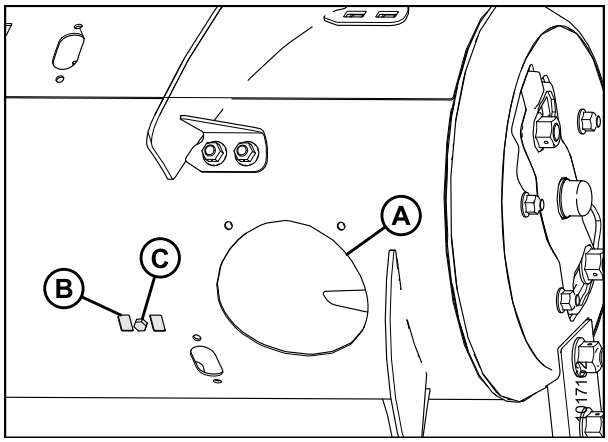


Figure 4.9: Configuration A Flighting Plug (RH Side)

4.1.2 Converting from Configuration C to Configuration A

One kit (MD #287031) is required to convert to this configuration.

Auger configurations C and A are shown at right. Additional flightings (A) are installed when converting from configuration C.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

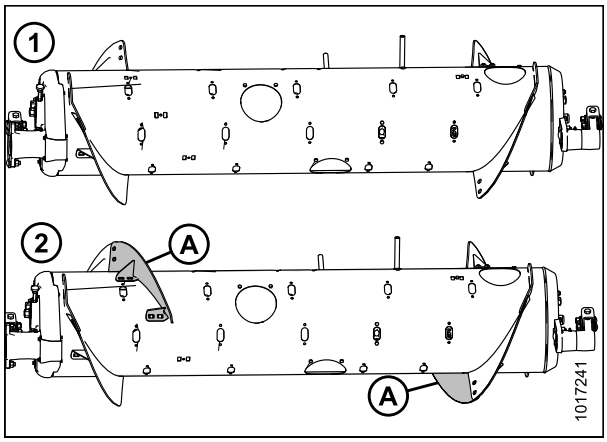


Figure 4.10: Auger Configurations (Rear View)

1 - Configuration C **2 - Configuration A**

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and remove the access cover (B). Retain for reassembly later.
3. Remove and discard the two flighting slot plugs (C).

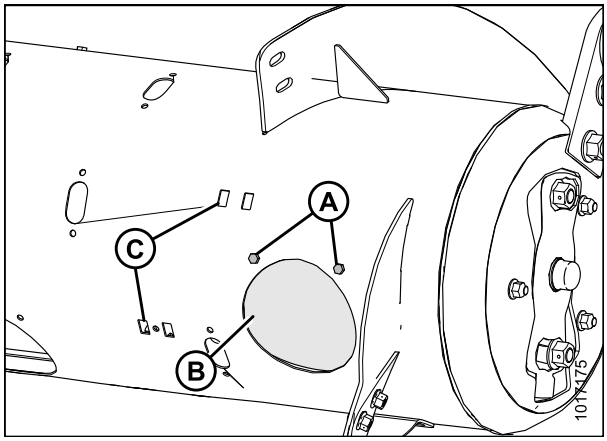


Figure 4.11: Configuration C (RH Side)

4. Install flighting (MD #213359) (A) on the right-hand side as shown, and secure with six carriage head bolts (MD #184657) and six nuts (MD #135799) at location (B).

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

5. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).

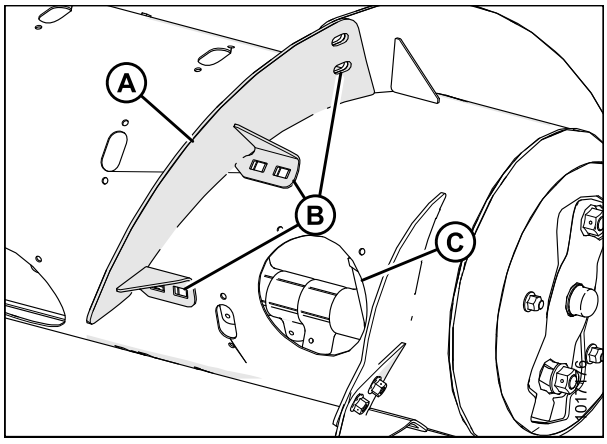


Figure 4.12: Configuration A (RH Side)

6. Repeat Steps *2., page 226* and *3., page 226* at the left-hand side of auger.
7. Install flighting (MD #213360) (A) on the left-hand side as shown, and secure with six carriage head bolts (MD #184657) and six nuts (MD #135799) at location (B).

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

8. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).
9. Remove extra fingers. A total of 22 fingers are recommended for this configuration. Refer to *Removing Feed Auger Fingers, page 343*.

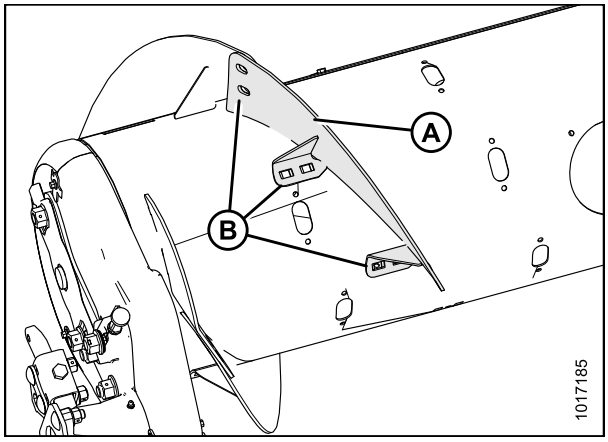


Figure 4.13: Configuration A (LH Side)

4.1.3 Converting from Configuration A or C to Configuration B

Two kits (MD #287032) are required to convert to this configuration. Extra hardware is included in these kits. Be sure to use the correct hardware in the correct location to prevent damage and to maximize performance.

Auger configurations A, C, and B are shown at right. Existing flightings (A) are removed and new flightings (B) are installed when converting to configuration B. All parts are included in this kit.

NOTE:
Ideally, the flighting should fit tightly against the auger tube; however, gaps are not uncommon. Crop material may collect in this gap, but generally, this will not affect performance. If desired, silicone sealant may be used to fill these gaps.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

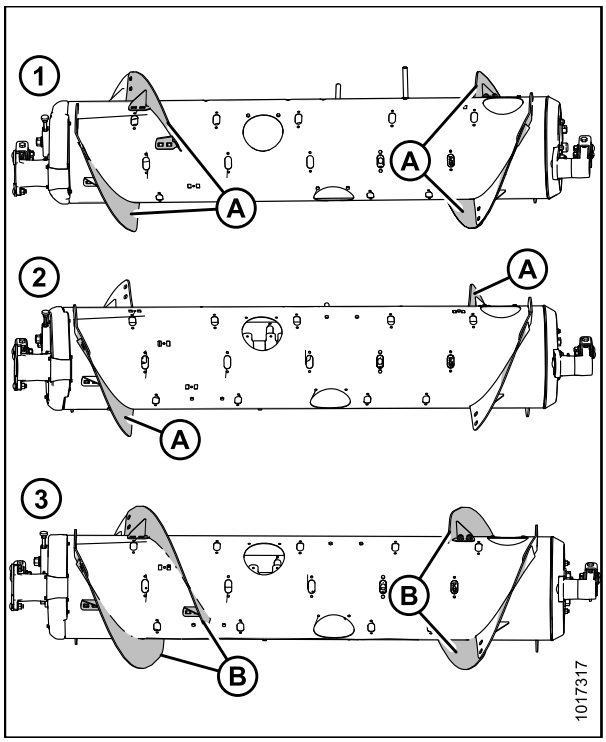


Figure 4.14: Auger Configurations (Rear View)

1 - Configuration A 2 - Configuration C 3 - Configuration B

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B) from the right-hand side of the auger. Retain for reassembly.
3. Remove hardware (C) and bolt-on flighting (D) from the auger.
4. Remove the discard the flighting slot plug (E) located close to the end of the flighting (D).
5. **Converting from Configuration A:** Repeat above steps for the other flighting on the right-hand side.

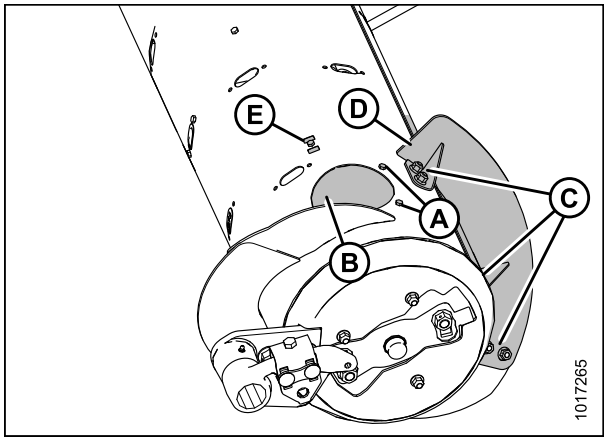


Figure 4.15: Configuration C (RH Side)

6. **Converting from Configuration C:** Remove bolts (A), access cover (B), and two flighting slot plugs (C) from the right-hand side of the auger.
7. Repeat Steps *2., page 228* to *6., page 228* at the left-hand side of the feed auger.

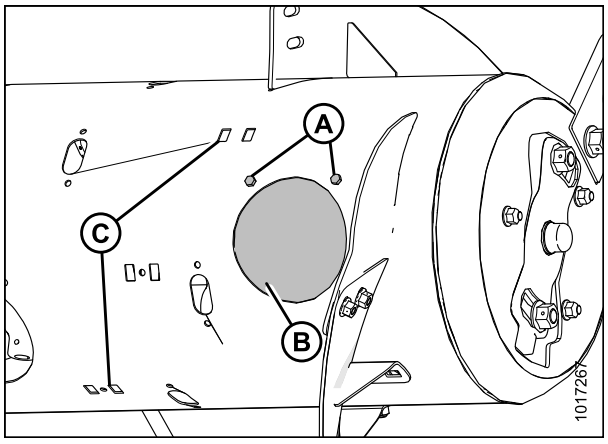


Figure 4.16: Configuration C (RH Side)

8. Install two bolt-on flightings (MD #213361) (A) on the right-hand side as shown, and secure each flighting with six carriage head bolts (MD #184657) and nuts (MD #135799) at location (B).

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

9. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).
10. Install flighting slot plug (MD #213084) at location (C) from inside the auger and secure with an M6 bolt (MD #252522) and tee nut (MD #197263). Repeat for the other flighting mounting locations.

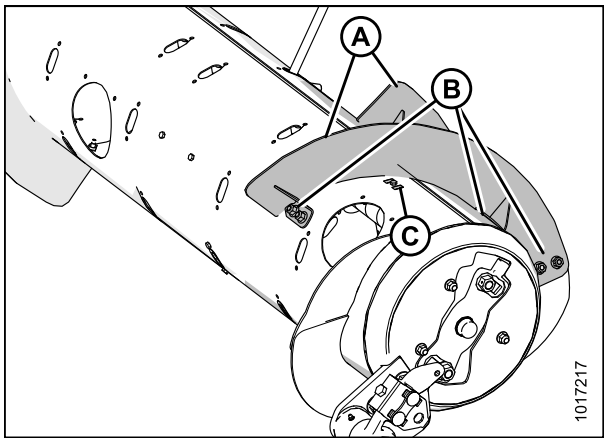


Figure 4.17: Configuration B (RH Side)

11. Install two bolt-on flightings (MD #213362) (A) on the left-hand side as shown, and secure each flighting with six carriage head bolts (MD #184657) and nuts (MD #135799) at location (B).

    IMPORTANT:
    Bolt heads at location (C) must be installed on inside of auger to prevent damage to internal components.

12. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).
13. Install flighting slot plug (MD #213084) (C) from inside the auger and secure with an M6 bolt (MD #252522) and tee nut (MD #197263). Repeat for the other flighting mounting location used to mount the previous flighting in Step *3., page 228*.
14. Remove extra fingers. A total of 18 fingers are recommended for this configuration. Refer to *Removing Feed Auger Fingers, page 343*.

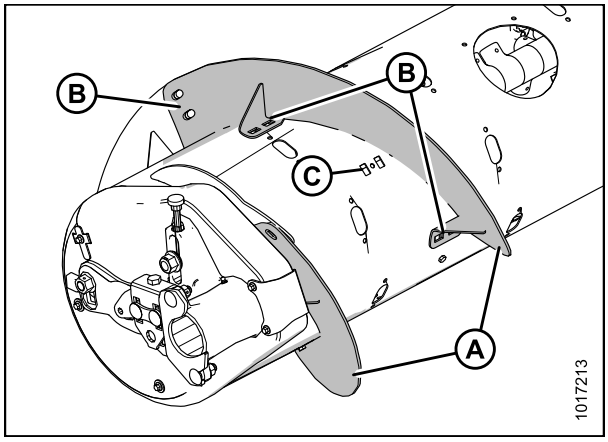


Figure 4.18: Configuration B (LH Side)

4.1.4 Converting from Configuration D to Configuration B

Auger configurations B and D are shown at right. Existing flightings (A) are removed when converting to configuration B.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

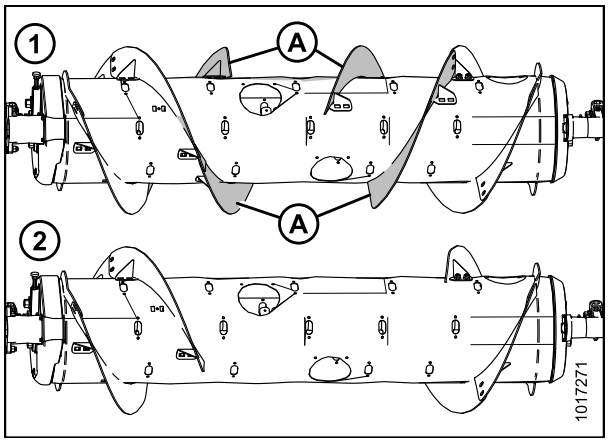


Figure 4.19: Auger Configurations (Rear View)

1 - Configuration D **2 - Configuration B**

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B). Retain for reassembly.
3. Remove hardware from this location (C), and bolt-on flighting (D).
4. Repeat procedure for the remaining three inboard flightings.
5. Install additional fingers. A total of 18 fingers are recommended for this configuration. Refer to *Installing Feed Auger Fingers, page 344* for instructions.

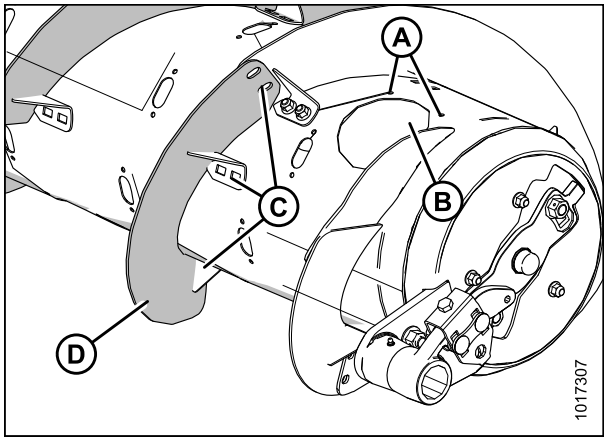


Figure 4.20: Configuration D (RH Side)

4.1.5 Converting from Configuration A to Configuration C

Four flighting plugs (MD #213084), M6 bolts (MD #252522), and M6 tee nuts (MD #197263) are recommended to cover the flighting mounting holes after the flightings are removed. These parts can be ordered from a MacDon Dealer.

Auger configurations A and C are shown at right. Existing flightings (A) are removed when converting to configuration C.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

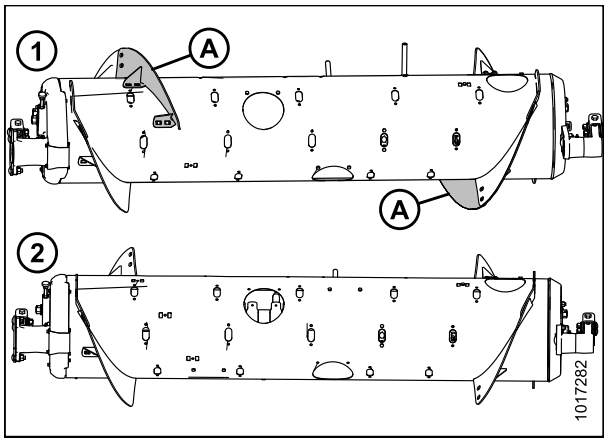


Figure 4.21: Auger Configurations (Rear View)

1 - Configuration A **2 - Configuration C**

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B). Retain for reassembly.
3. Remove hardware from location (C), and bolt-on flighting (D) from the auger.

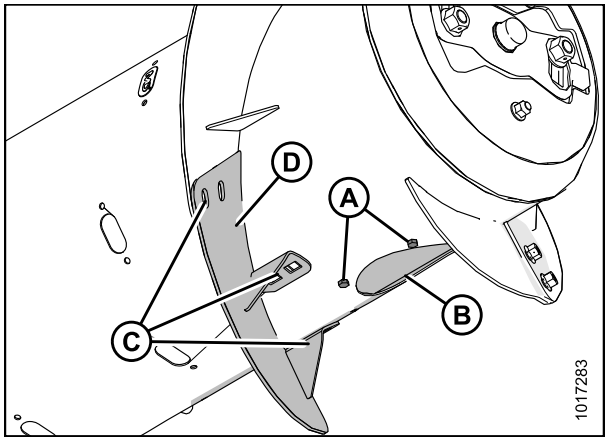


Figure 4.22: RH Side of Configuration A

4. Install flighting slot plug (MD #213084) (A) in the flighting slot from inside the auger and secure with M6 bolts (MD #252522) (B) and tee nuts (MD #197263).
5. Repeat above steps at the left-hand side of the auger.
6. Install additional fingers. A total of 30 fingers are recommended for this configuration. Refer to *Installing Feed Auger Fingers, page 344*.

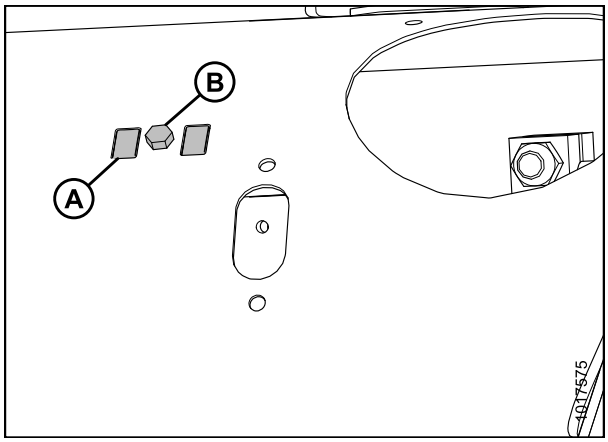


Figure 4.23: RH Side of Configuration C

4.1.6 Converting from Configuration B or D to Configuration C

One kit (MD #287031) is required to convert to this configuration. Two flighting plugs (MD #213084), two M6 bolts (MD #252522), and two M6 tee nuts (MD #197263) are recommended to close the flighting mounting locations. These parts can be ordered from a MacDon Dealer.

Auger configurations B, D, and C are shown at right. Flightings (A) are removed and different flightings are added when converting to configuration C.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

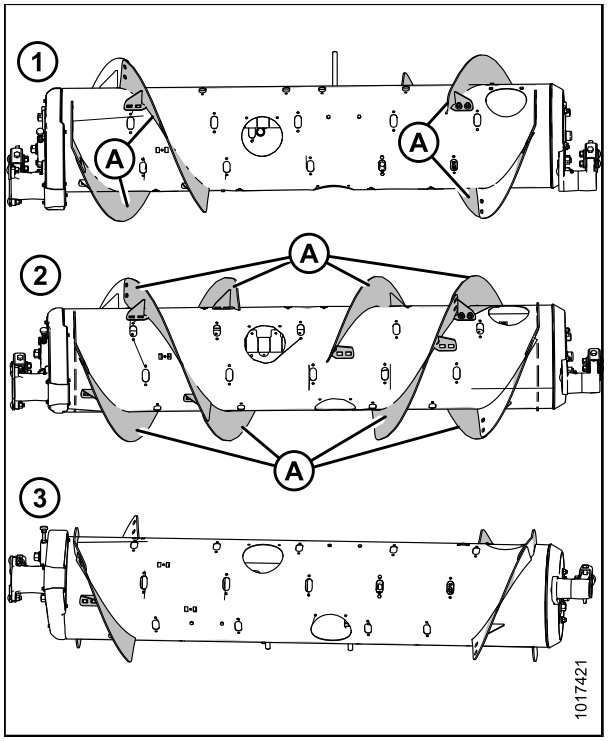


Figure 4.24: Auger Configurations (Rear View)

1 - Configuration B 2 - Configuration D 3 - Configuration C

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B). Retain for reassembly later.
3. Remove hardware (C) and bolt-on flighting (D) from the auger.
4. Remove flighting slot plug, bolt, and tee nut (E). Retain for reinstallation later.

NOTE:
Only two flighting slot plugs (E) should be removed. One from each outboard side of the auger.

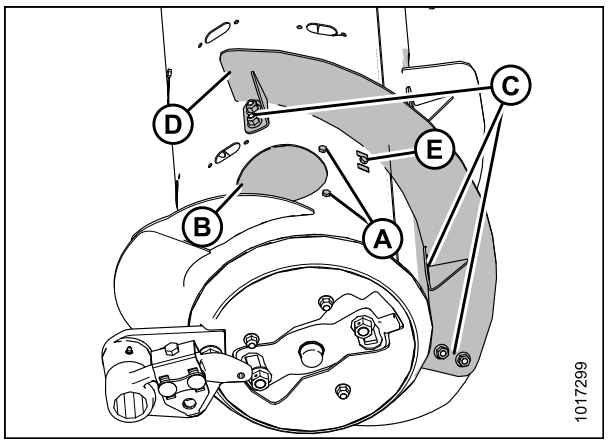


Figure 4.25: Configuration B (RH Side)

5. Repeat Steps *2., page 232* and *3., page 232* for the remaining bolt-on flighting(s).

6. Install the new bolt-on flighting (MD #213359) (A) using six carriage head bolts (MD #184657) and nuts (MD #135799) (B) on the right-hand side of the auger.

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

7. Reinstall flighting slot plug (C) removed in Step *4., page 232*.

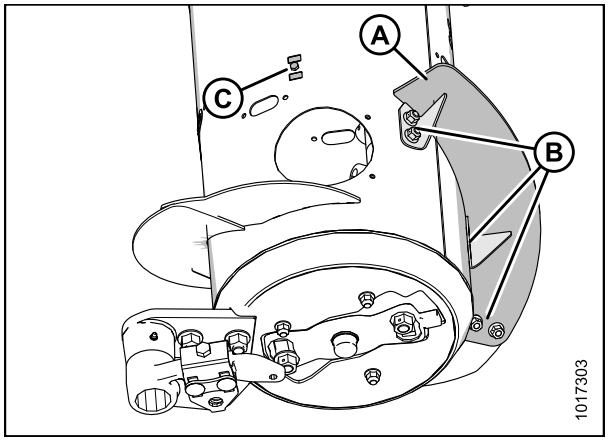


Figure 4.26: Configuration C (RH Side)

8. Install the new bolt-on flighting (MD #213360) (A) using six carriage head bolts (MD #184657) and nuts (MD #135799) (B) on the left-hand side of the auger.

   IMPORTANT:
   Bolt heads must be installed on inside of auger to prevent damage to internal components.

9. Reinstall flighting slot plug (C) removed in *4., page 232*.
10. Install the remaining flighting slot plugs (MD #213084) using the M6 bolts (MD #252522) and tee nuts (MD #197263) in the locations previously used to mount the flighting in Step *3., page 232* and Step *5., page 232*.
11. Install additional fingers. A total of 30 fingers are recommended for this configuration. Fingers and all required parts are included in this kit. Refer to *Installing Feed Auger Fingers, page 344* for instructions.

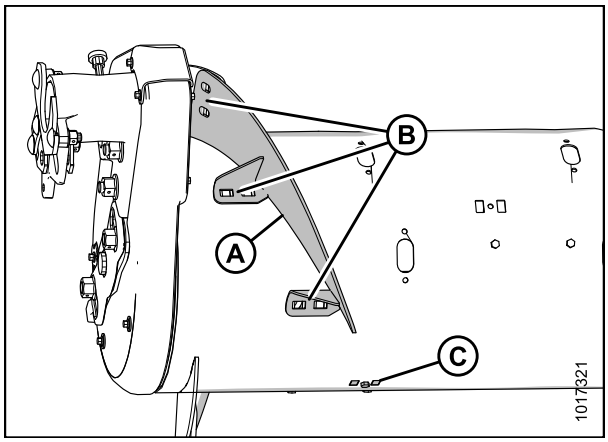


Figure 4.27: Configuration C (LH Side)

4.1.7 Optional Modification to Configuration C

In some conditions, feeding may be further improved by removing all bolt-on flightings (A). Four flighting plugs (MD #213084), M6 bolts (MD #252522), and M6 tee nuts (MD #197263) are recommended to cover the flighting mounting holes. These parts can be ordered from a MacDon Dealer.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

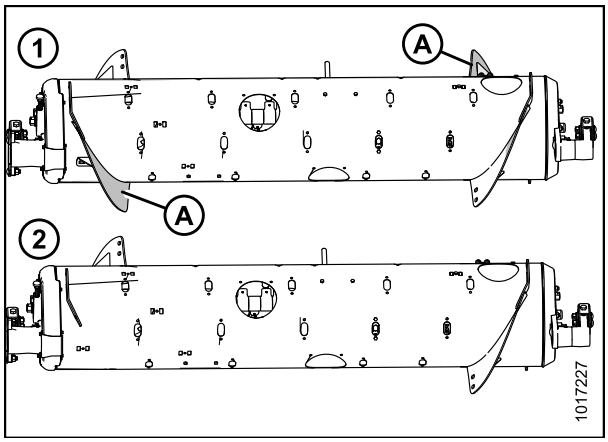


Figure 4.28: Auger Configurations (Rear View)

1 - Configuration C **2 - Modified Configuration C**

2. Remove two bolts and access cover (A).
3. Remove hardware (B), and bolt-on flighting (C).
4. Install flighting slot plugs (MD #213084) in the flighting mounting locations (D) and secure with M6 bolts (MD #252522) and tee nuts (MD #197263).
5. Repeat at the left-hand side of the auger.
6. Install additional fingers. A total of 30 fingers are recommended for this configuration. Refer to *Installing Feed Auger Fingers, page 344*.

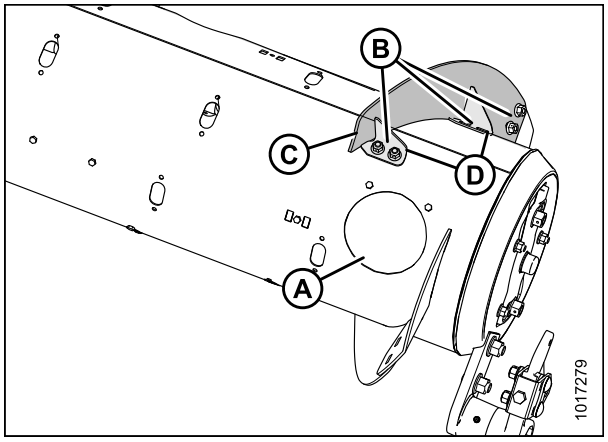


Figure 4.29: Configuration C (RH Side)

4.1.8 Converting from Configuration A or C to Configuration D

Four kits (MD #287032) and some hole-drilling are required to convert to configuration D. Extra hardware is included in these kits. Be sure to use the correct hardware in the correct location to prevent damage and to maximize performance.

Auger configurations A, C, and D are shown at right. Existing flightings (A) are removed and new flightings (B) are installed when converting to configuration D. To improve access and ease installation, remove float module from combine.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

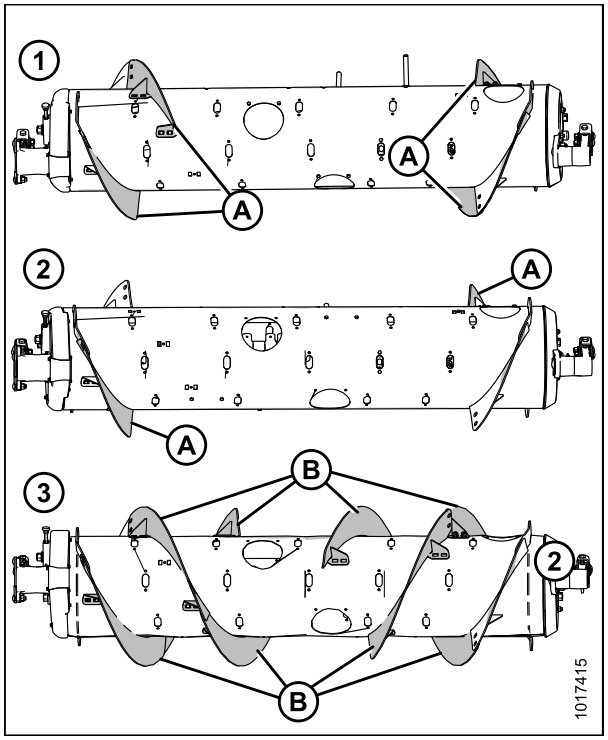


Figure 4.30: Auger Configurations (Rear View)

1 - Configuration A 2 - Configuration C 3 - Configuration D

NOTE:
Some parts are removed from the illustration for clarity.

2. Remove bolts (A) and access cover (B) from the right-hand side of the auger. Retain for reassembly.
3. Remove hardware (C) and bolt-on flighting (D) from the auger.
4. Remove the flighting slot plug (E) located close to the end of the flighting (D).
5. **Converting from Configuration A:** Repeat above steps for the other bolt-on flighting on the same side.

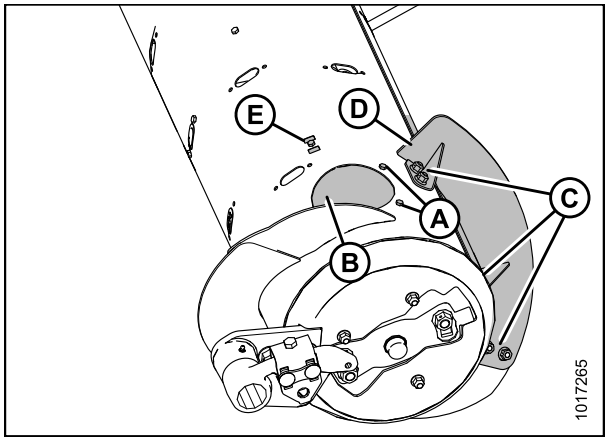


Figure 4.31: Configuration C (RH Side)

6. **Converting from Configuration C:** Remove bolts (A), access cover (B), and two flighting slot plugs (C) from the right-hand side of the auger.
7. Repeat Steps *2., page 235* to *6., page 235* at the left-hand side of the auger.

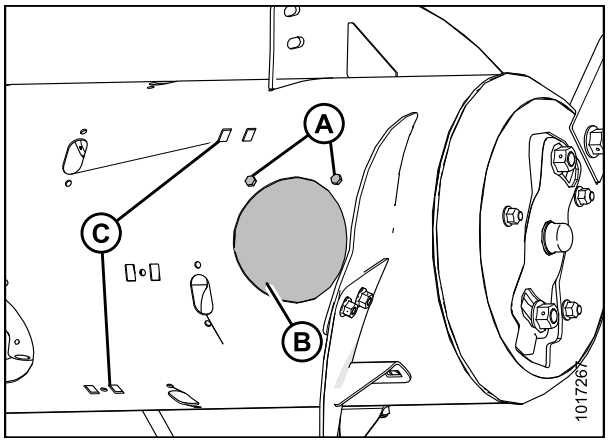


Figure 4.32: Configuration C (RH Side)

8. Position two bolt-on flightings (MD #213361) (A) on the right-hand side, as shown. Temporarily secure flightings with two carriage head bolts (MD #184657) and nuts (MD #135799) at each location (B).

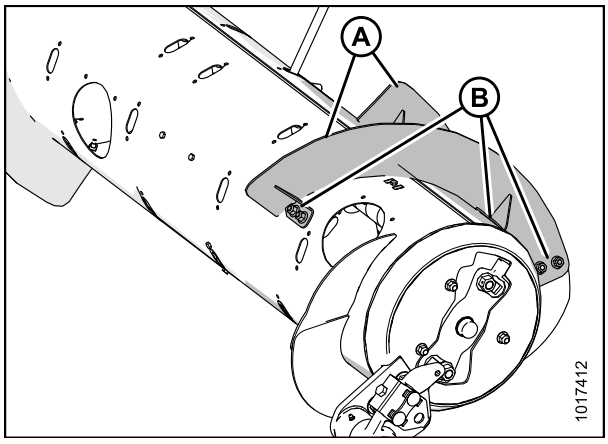


Figure 4.33: RH Side of Auger

9. Position another bolt-on flighting (MD #213361) (A) outboard of the temporarily installed flighting (B). Mark hole locations (C) of the bolt-on flighting onto the temporarily installed bolt-on flighting (B).
10. Remove temporarily installed bolt-on flighting (B) from the auger and drill two 7/16 in. (11 mm) holes at the marked locations.
11. Install the bolt-on flighting (B) with newly drilled holes using six carriage head bolts (MD #184657) and nuts (MD #135799).

    IMPORTANT:
    Carriage bolt heads must be installed on inside of auger to prevent damage to internal components.

12. Repeat Steps *9., page 236* to *11., page 236* to the remaining bolt-on flighting for the right-hand side of the auger.
13. Position two bolt-on flightings (MD #213362) (A) on the left-hand side, as shown. Temporarily secure flightings with two carriage head bolts (MD #184657) and nuts (MD #135799) at each location (B).

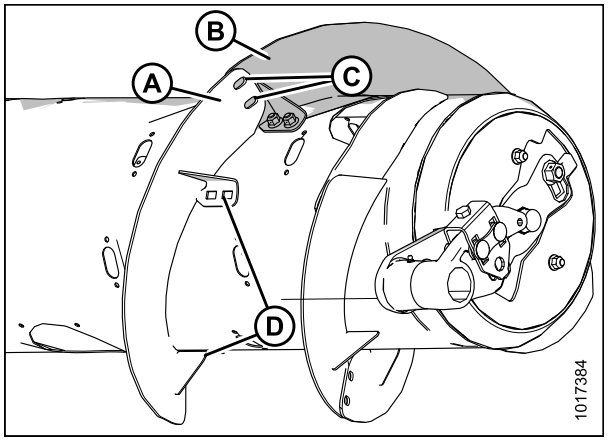


Figure 4.34: RH Side of Auger

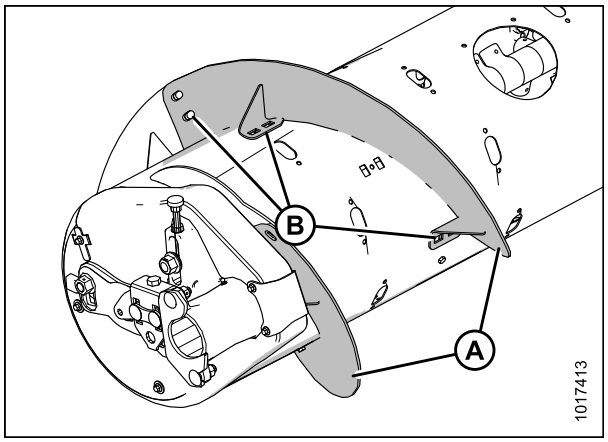


Figure 4.35: LH Side of Auger

14. Position another bolt-on flighting (MD #213362) (A) outboard of the temporarily installed flighting (B). Mark hole locations (C) of the bolt-on flighting onto the temporarily installed bolt-on flighting.
15. Remove temporarily installed bolt-on flighting (B) from the auger and drill two 7/16 in. (11 mm) holes at the marked locations.
16. Install the bolt-on flighting (B) with newly drilled holes using six carriage head bolts (MD #184657) and nuts (MD #135799).

    IMPORTANT:
    Carriage bolt heads must be installed on inside of auger to prevent damage to internal components.

17. Repeat Steps *14., page 236* to *16., page 236* to the remaining bolt-on flighting for the left-hand side of the auger.

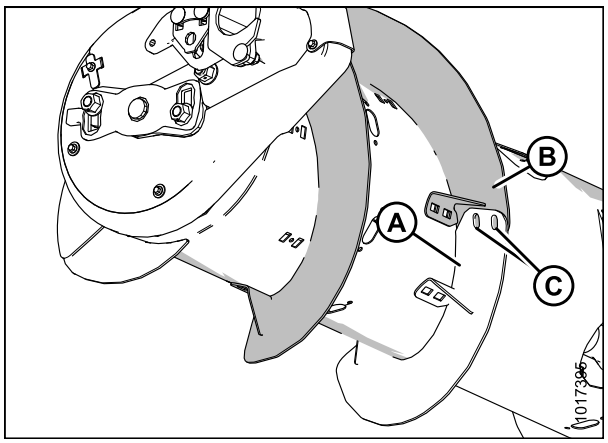


Figure 4.36: LH Side of Auger

18. Place bolt-on flighting (MD #213362) (A) outboard of the other flighting (B) on the left-hand side of the auger, as shown.
19. Temporarily secure bolt-on flighting (A) with two button head bolts (MD #135723) and nuts (MD #135799) at location (C).

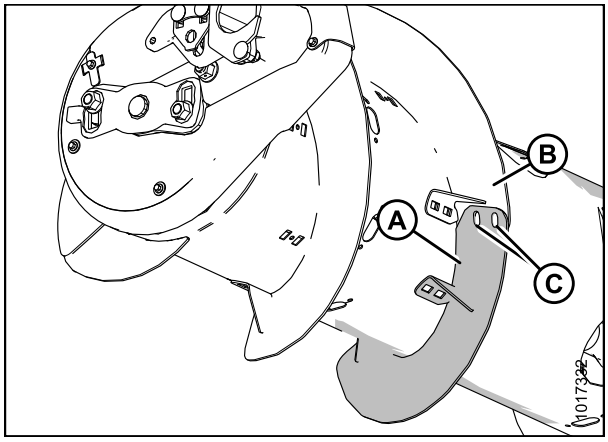


Figure 4.37: LH Side of Auger

20. Stretch flighting (A) to fit auger tube as shown. Use slotted holes on flighting to get the best fit around the auger tube.

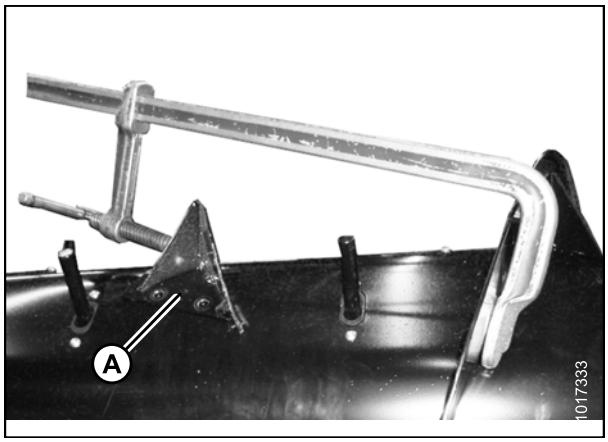


Figure 4.38: Flighting Stretched Axially

21. With flighting in the desired position, mark hole locations (A) on auger tube.
22. Remove the flighting (B) from auger, and drill 7/16 in. (11 mm) holes at the marked location on auger tube.
23. Remove nearest access cover(s). Retain for reinstallation.
24. Install the bolt-on flighting (B) using two button head bolts (MD #135723) and nuts (MD #135799) at location (C), and four flange head bolts (MD #152655) and nuts (MD #135799) at location (A).

    IMPORTANT:
    Ensure bolt heads at location (C) are on the crop side (inboard) and nuts are on the outboard side of the flighting.

25. Repeat Steps *18., page 237* to *24., page 237* for the remaining flighting on the left-hand side.

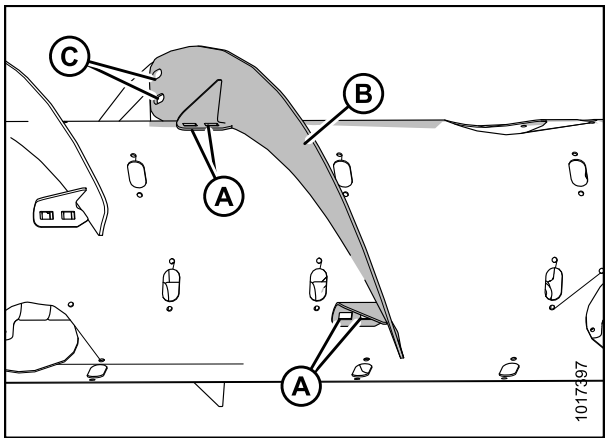


Figure 4.39: LH Side of Auger

26. Place bolt-on flighting (MD #213361) (A) outboard of the other flighting (B) on the right-hand side of the auger as shown.
27. Temporarily secure bolt-on flighting (A) with two button head bolts (MD #135723) and nuts (MD #135799) at location (C).
28. Repeat Steps *20., page 237* to *24., page 237* for both pieces of flighting at the right-hand side of the auger.
29. Install flighting slot plugs (MD #213084) in the flighting mounting locations and secure with M6 bolts (MD #252522) and tee nuts (MD #197263).

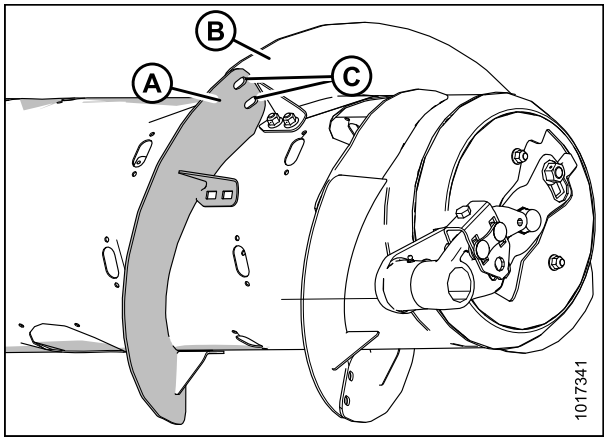


Figure 4.40: RH Side of Auger

30. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).

    NOTE:
    Ideally, the flighting should fit tightly against the auger tube; however, gaps are not uncommon. Crop material may collect in this gap, but generally, this will not affect performance. If desired, silicone sealant may be used to fill these gaps.

31. Add or remove fingers to optimize feeding for your combine and crop conditions. Refer to *Installing Feed Auger Fingers, page 344* or *Removing Feed Auger Fingers, page 343*
32. If not adding or removing fingers, reinstall all access covers and secure with bolts. Coat bolts with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

4.1.9 Converting from Configuration B to Configuration D

Two kits (MD #287032) and some hole-drilling are required to convert to this configuration. Extra hardware is included in these kits. Be sure to use the correct hardware at the correct location to prevent damage and to maximize performance.

NOTE:
Additional holes on the auger are needed before these flightings (A) can be installed.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 221*.

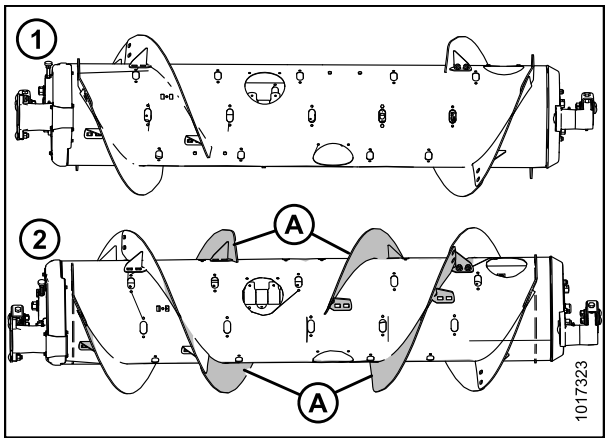


Figure 4.41: Auger Configurations (Rear View)

1 - Configuration B **2 - Configuration D**

2. Place new bolt-on flighting (MD #213362) (A) outboard of the existing flighting (B) on the left-hand side of the auger, as shown.
3. Mark hole locations (C) of the new bolt-on flighting (A) onto existing bolt-on flighting (B).
4. Remove nearest access cover to existing bolt-on flighting (B). Retain hardware for reassembly.
5. Remove existing bolt-on flighting (B) from the auger. Retain hardware for reassembly.
6. Drill two 7/16 in. (11 mm) holes at the marked locations of existing bolt-on flighting (B).
7. Reinstall existing bolt-on flighting (B) on the auger.

   NOTE:
   Ensure carriage bolt heads are on the inside of the auger to prevent damage to internal components.

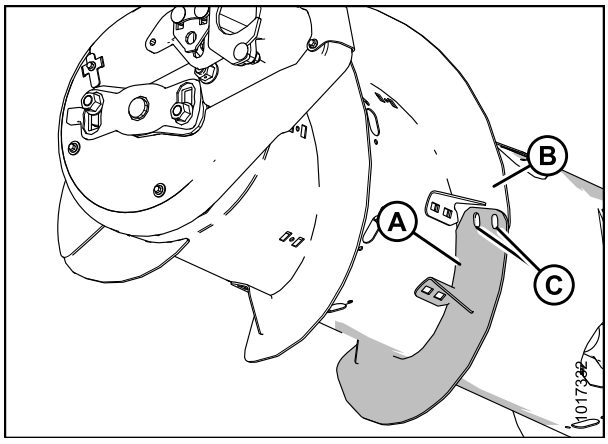


Figure 4.42: LH Side of Auger

8. Place new bolt-on flighting (A) outboard of the existing flighting (B) of the left-hand side of the auger, as shown.
9. Secure with two button head bolts (MD #135723) and nuts (MD #135799) at location (C).

   IMPORTANT:
   Ensure bolt heads are on the crop side (inboard) and nuts are on the outboard side of the flighting.

10. Stretch flighting (A) to fit auger tube as shown. Use slotted holes on flighting to get the best fit around the auger tube.

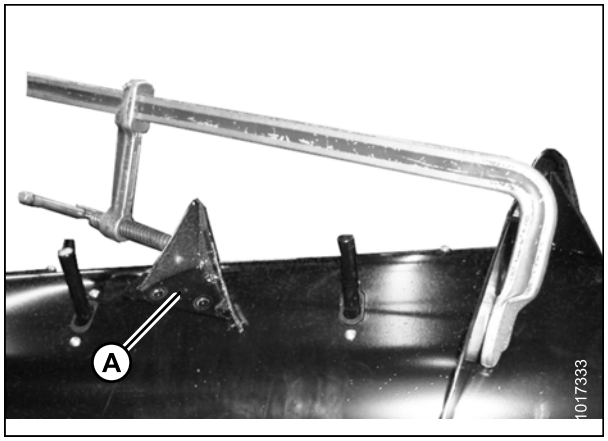


Figure 4.43: Flighting Stretched Axially

11. With flighting in desired position, mark holes (A) and drill 7/16 in. (11 mm) holes in auger tube.
12. Remove nearest access cover(s). Retain for reinstallation.
13. Secure bolt-on flighting on the newly drilled holes (A) using four flange head bolts (MD #152655) and nuts (MD #135799).
14. Repeat Steps *2., page 239* to *13., page 240* for the other flighting on the left-hand side.

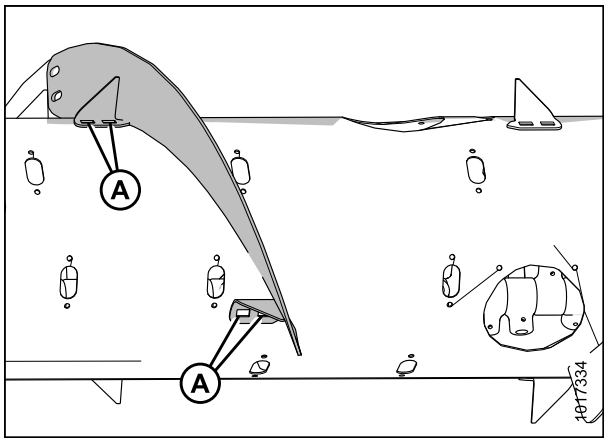


Figure 4.44: Flighting on LH Side of Auger

15. Place flighting (MD #213361) (A) outboard of the existing flighting (B) on the right-hand side of the auger, as shown.

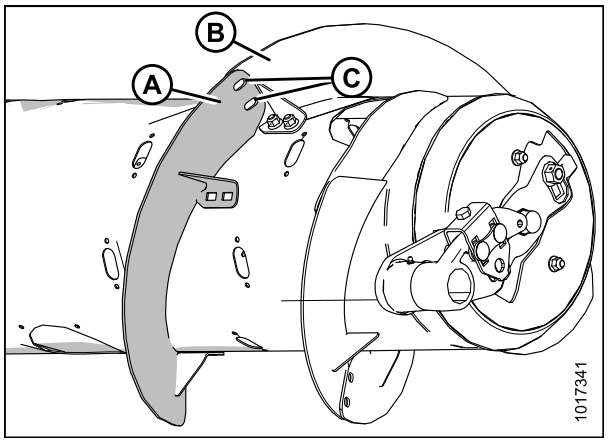


Figure 4.45: Flighting on RH Side of Auger

16. Repeat Steps *3., page 239* to *13., page 240* for both flightings on the right-side of the auger.
17. Install flighting slot plugs (MD #213084) in the flighting mounting locations and secure with M6 bolts (MD #252522) and tee nuts (MD #197263).
18. Torque all nuts to 35 ft·lbf (47 N·m) to eliminate deflection on flighting, then torque all nuts and bolts on flighting to 43–47 ft·lbf (58–64 N·m).

    NOTE:
    Ideally, the flighting should fit tightly against the auger tube; however, gaps are not uncommon. Crop material may collect in this gap, but generally, this will not affect performance. If desired, silicone sealant may be used to fill these gaps.

19. Add or remove fingers as necessary to optimize feeding for your combine and crop conditions. Refer to *Installing Feed Auger Fingers, page 344* or *Removing Feed Auger Fingers, page 343*.
20. If not adding or removing fingers, reinstall all access covers and secure with bolts. Coat bolts with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

4.2 Float Module Setup

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

If feeding problems develop with the float module, refer to *7 Troubleshooting, page 471*.

4.2.1 Using Auger Flighting

The auger flighting on the FM100 can be configured for specific combines and crop conditions. Refer to *4.1 Float Module Feed Auger Configurations, page 222* for combine/crop specific configurations.

4.2.2 Using Stripper Bars

Stripper bar kits may have been supplied with your header to improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

For servicing information, refer to *5.11 Float Module Stripper Bars and Feed Deflectors, page 399*.

4.2.3 Adjusting Auger Speed

The float module auger is chain driven by a sprocket that is mounted on the input shaft from the combine and is enclosed in the drive gearbox.

The auger speed is determined by the combine input shaft and is matched to each specific combine model; therefore, no adjustment is necessary. However, optional 20-, 24-, 31-, 33-, and 35-tooth drive sprockets are available to change the float module feed auger speed and optimize performance. See your MacDon Dealer.

Table 4.1 Drive Sprockets

Combine Model	Factory Installed	Optional Drive Sprocket		Chain Length
		Faster	Slower	
AGCO (Challenger, Gleaner, Massey Ferguson)	29-tooth	31-tooth	24-tooth	74P (24-tooth)
				78P (29- and 31-tooth)
Case	29-tooth	31-tooth	24-tooth	74P (24-tooth)
				78P (29- and 31-tooth)
CLAAS/Lexion	22-tooth	24-tooth	20-tooth	74P
John Deere	37-tooth	33- and 35-tooth	N/A	80P
New Holland	29-tooth	31-tooth	24-tooth	74P (24-tooth)
				78P (29- and 31-tooth)

4.3 Case IH Combines

4.3.1 Attaching Header to Case IH Combine

DANGER

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

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

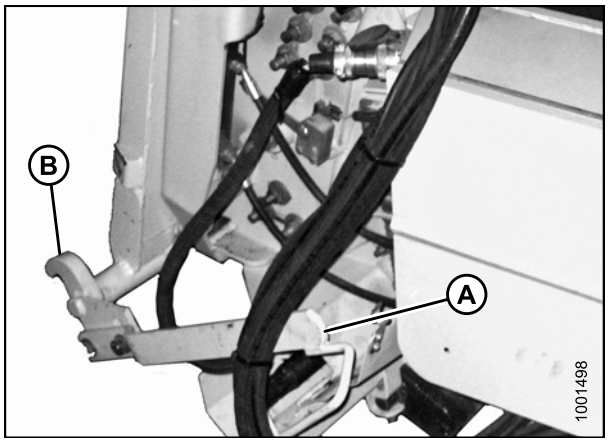


Figure 4.46: Feeder House Locks

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

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

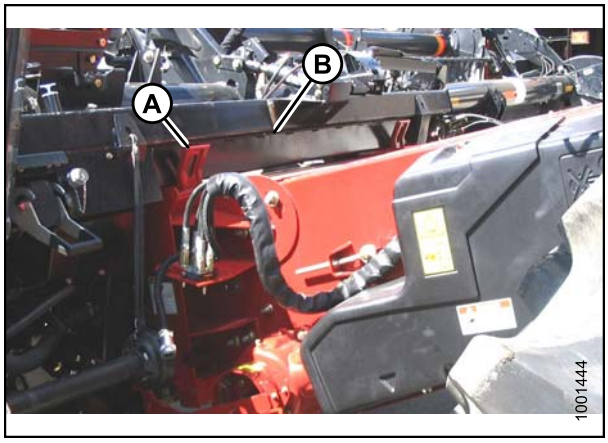


Figure 4.47: Combine and Float Module

5. 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.
6. Push down on the lever (A) so the slot in the lever engages the handle and locks the handle in place.
7. If lock (C) does not fully engage the pin on the float module, loosen bolts (D) and adjust lock. Retighten bolts.

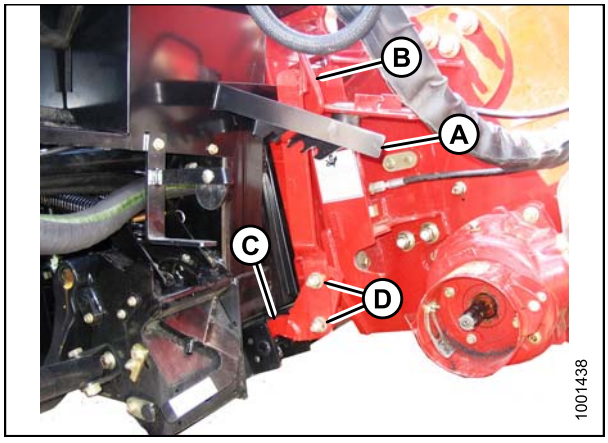


Figure 4.48: Combine and Float Module

8. Open the cover on the receptacle (A) located on the left side of the float module.
9. Press the lock button (B) and pull the handle (C) to the fully open position.
10. Clean the receptacle mating surfaces.

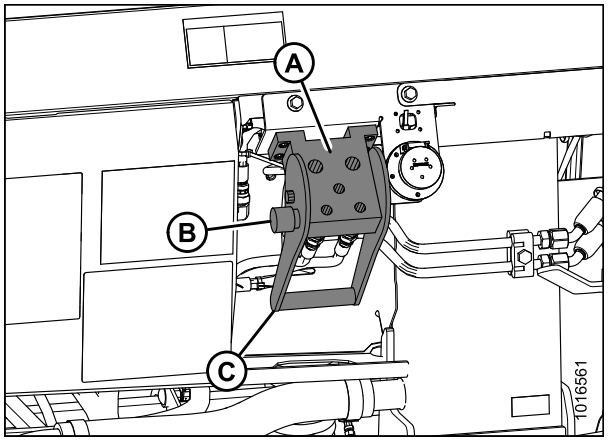


Figure 4.49: Float Module Receptacle

11. Remove the hydraulic quick coupler (A) from the combine and clean the mating surfaces.

Figure 4.50: Combine Connectors

12. Position the coupler onto the coupler receptacle (A) and push the handle (B) (not shown) to engage the multicoupler pins into the receptacle.
13. Push the handle (B) to the closed position until the lock button (C) snaps out.

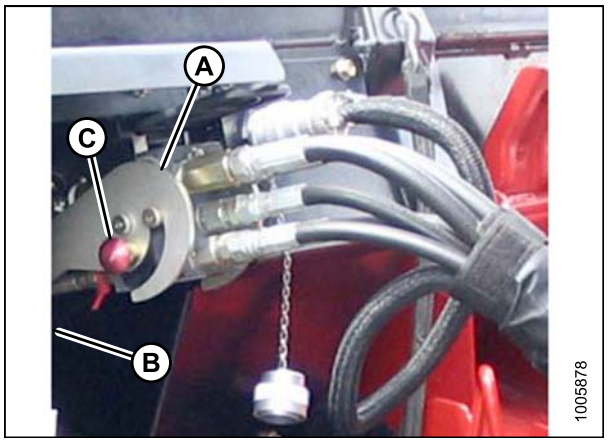


Figure 4.51: Hydraulic Connection

14. Remove the cover from the electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

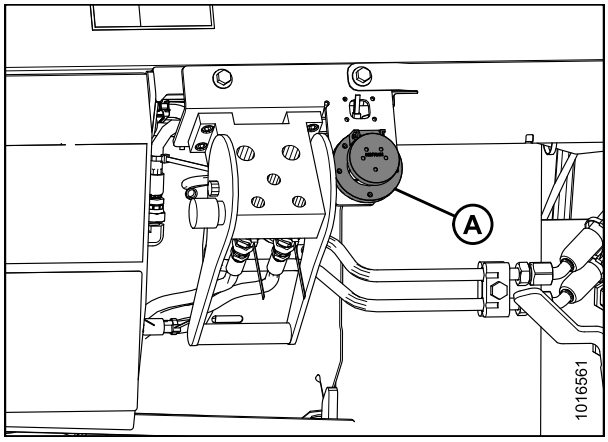


Figure 4.52: Electrical Receptacle

15. Remove the electrical connector (A) from the storage cup on the combine and route it to the float module receptacle.

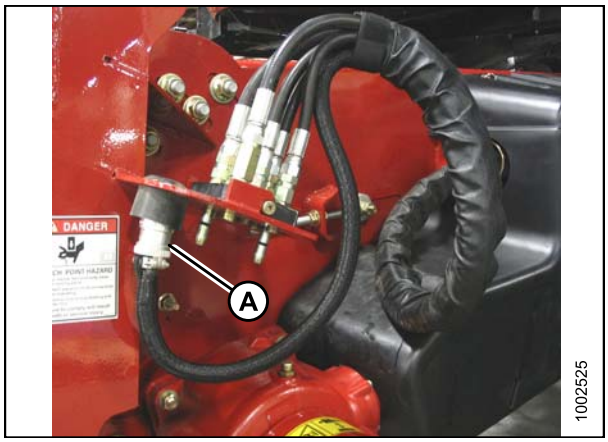


Figure 4.53: Combine Connectors

16. Align the lugs on the connector (A) with the slots in the receptacle (B), push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

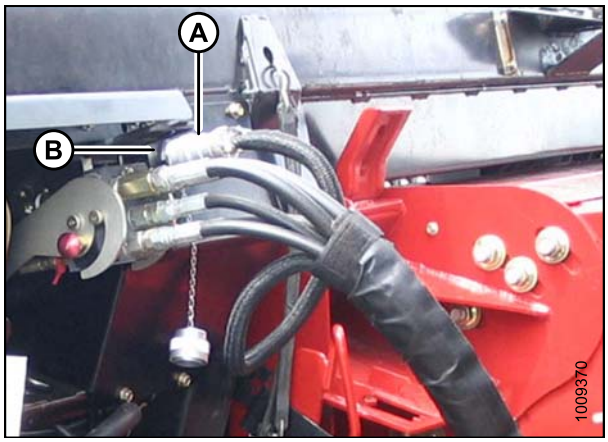


Figure 4.54: Electrical Connection

17. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

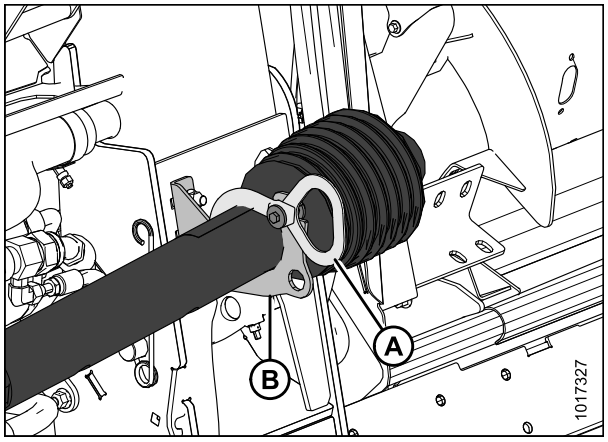


Figure 4.55: Float Module Driveline Storage Hook

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

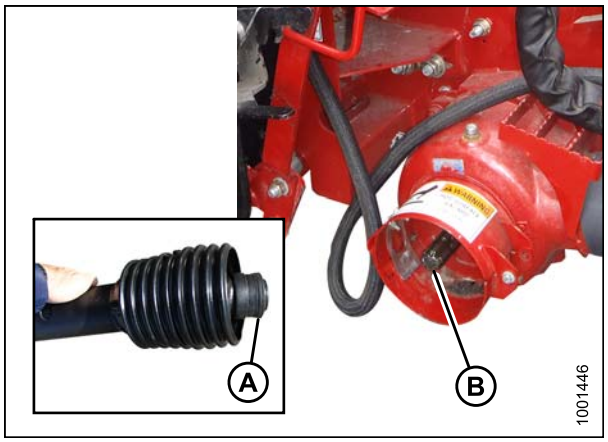


Figure 4.56: Combine Output Shaft

19. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (B) (UNLOCK).

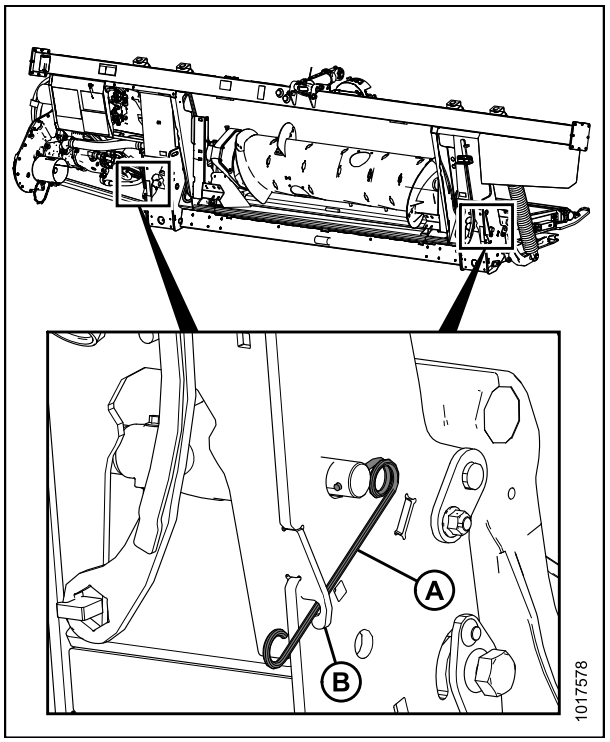


Figure 4.57: Float Lock in UNLOCK Position

4.3.2 Detaching Header from Case IH Combine

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header 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 slow speed 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. Refer to *3.7.1 Cutting Height, page 51*.

   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. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

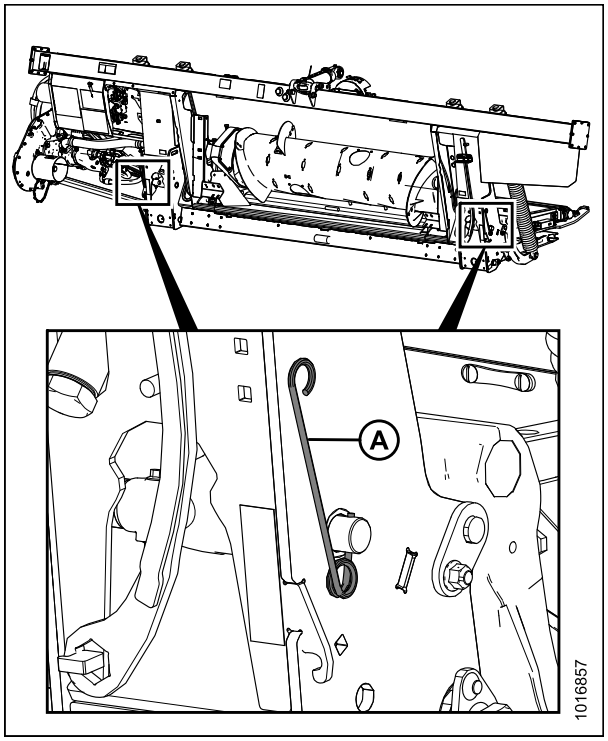


Figure 4.58: Float Locked

4. Disconnect the driveline (A) from the combine.

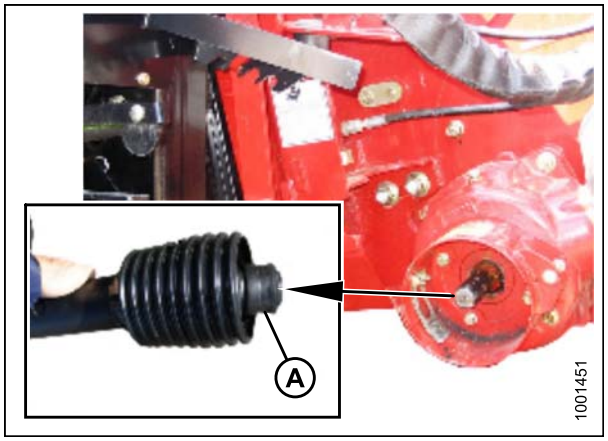


Figure 4.59: Driveline

5. Store the driveline in the support bracket (B) and secure with strap (A).

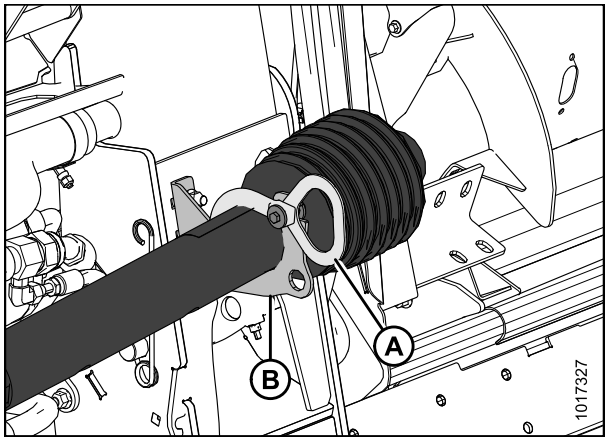


Figure 4.60: Driveline

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

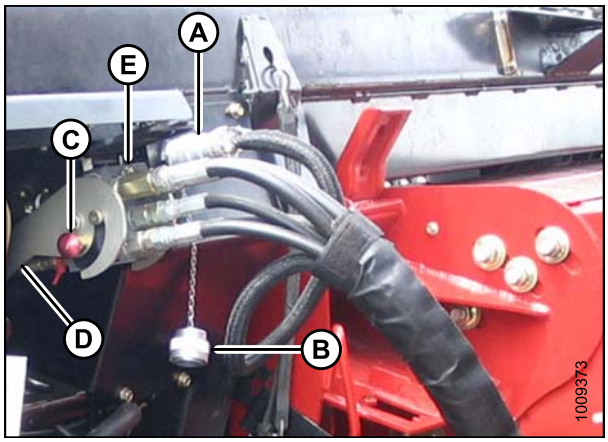


Figure 4.61: Multicoupler

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

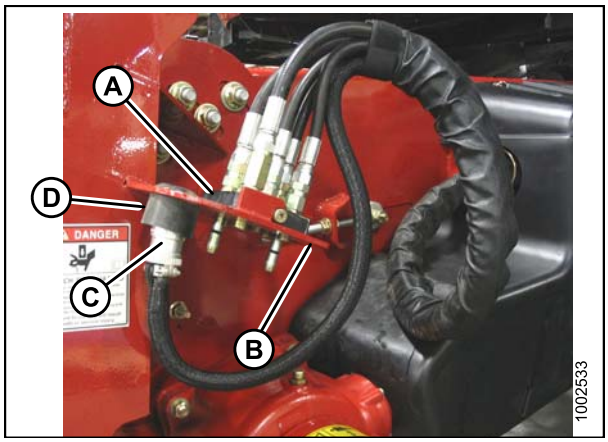


Figure 4.62: Multicoupler Storage

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

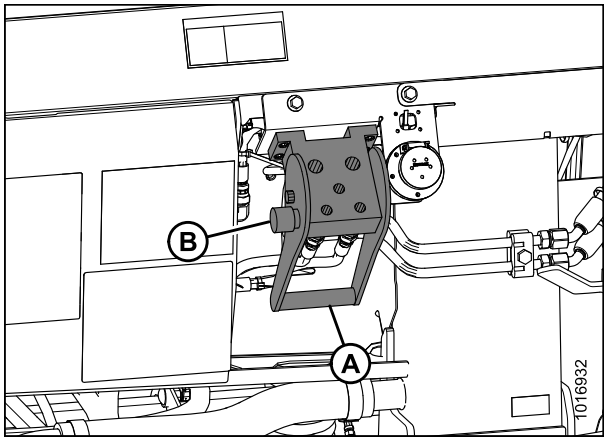


Figure 4.63: Float Module Receptacle

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

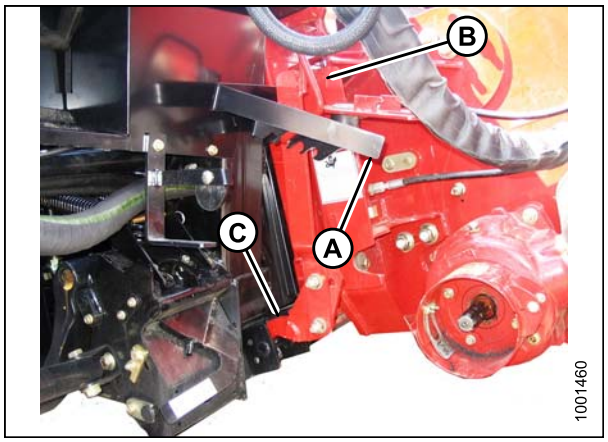


Figure 4.64: Feeder House Locks

4.4 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines

4.4.1 Attaching Header to a Challenger, Gleaner, or Massey Ferguson Combine

DANGER

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

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

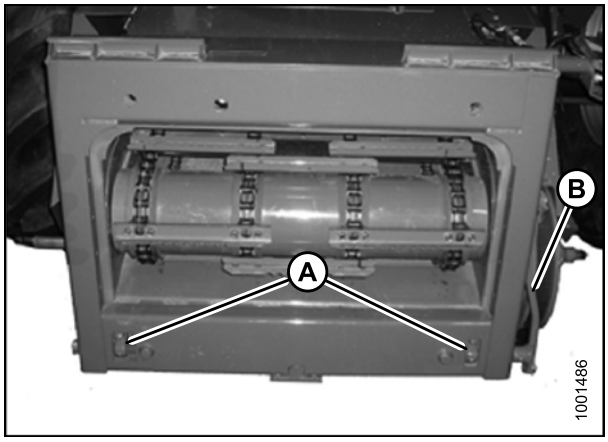


Figure 4.65: AGCO Group Feeder House

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

2. Start the engine and slowly approach the header until the feeder house is directly under the float module top cross member (A) and the alignment pins (C) on the feeder house (shown in the image below) are aligned with the holes (B) in the float module frame.

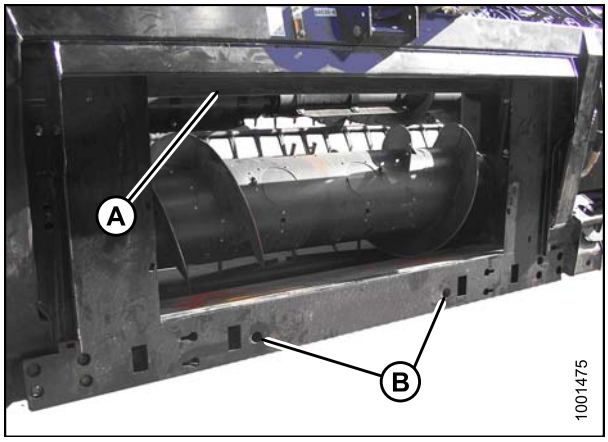


Figure 4.66: Float Module

NOTE:
Your combine feeder house may not be exactly as shown.

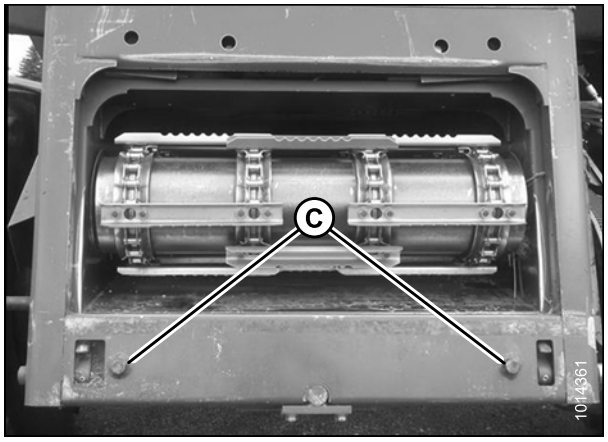


Figure 4.67: AGCO Group Alignment Pins

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

Figure 4.68: Feeder House and Float Module

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

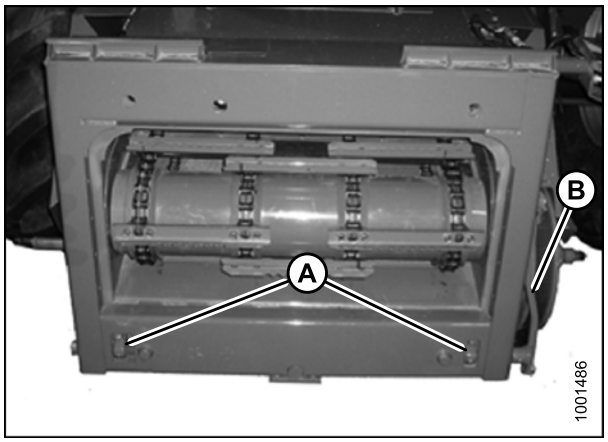


Figure 4.69: AGCO Group Feeder House

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

6. Start the engine and lower the header.
7. Stop the engine and remove the key from the ignition.

NOTE:
The FM100 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 *4.2 Multicoupler Kits, page 253* for a list of kits and installation instructions that are available through your combine Dealer.

Table 4.2 Multicoupler Kits

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

8. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (UNLOCK).

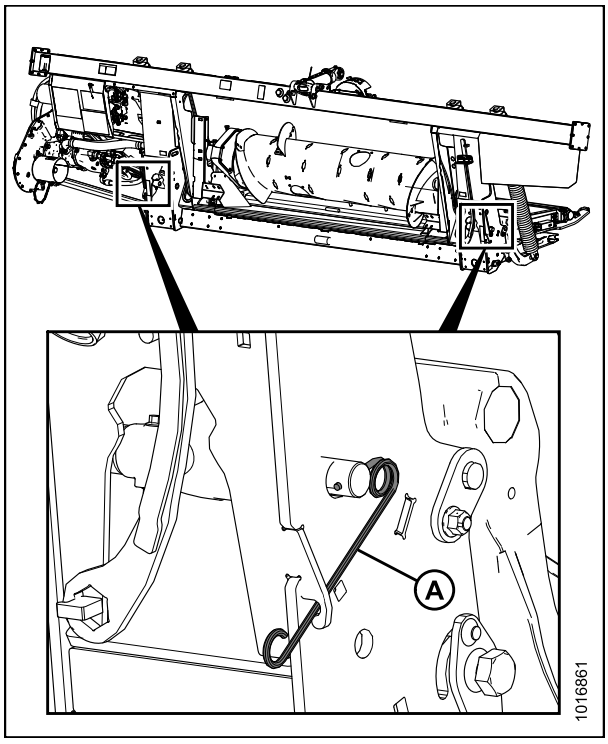


Figure 4.70: Float Lock in UNLOCK Position

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

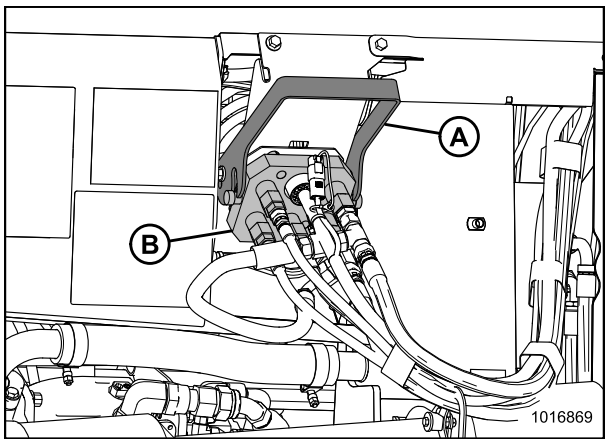


Figure 4.71: Float Module Multicoupler

10. Push the handle (A) on the combine to the fully open position.
11. Clean the mating surfaces of the multicoupler (B) and receptacle if necessary.

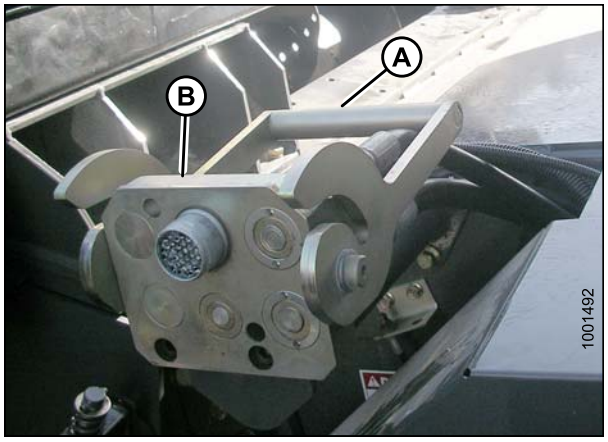


Figure 4.72: Combine Receptacle

12. Position the multicoupler (A) onto the combine receptacle, and pull the handle (B) to fully engage the multicoupler into the receptacle.
13. Connect the reel fore-aft/header tilt selector harness (C) to the combine harness (D).

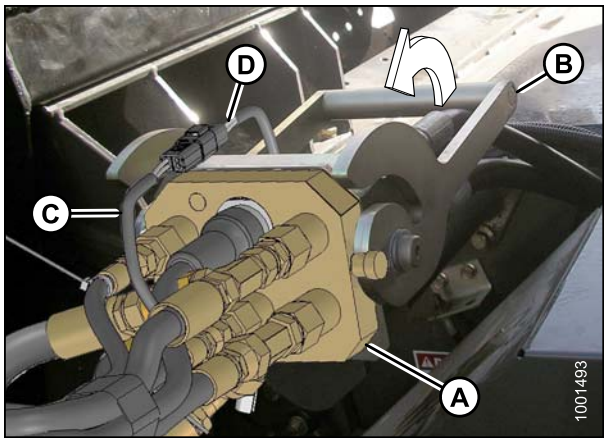


Figure 4.73: Multicoupler

14. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

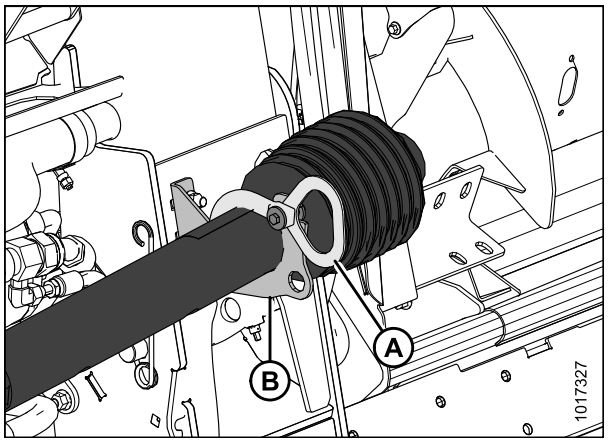


Figure 4.74: Driveline

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

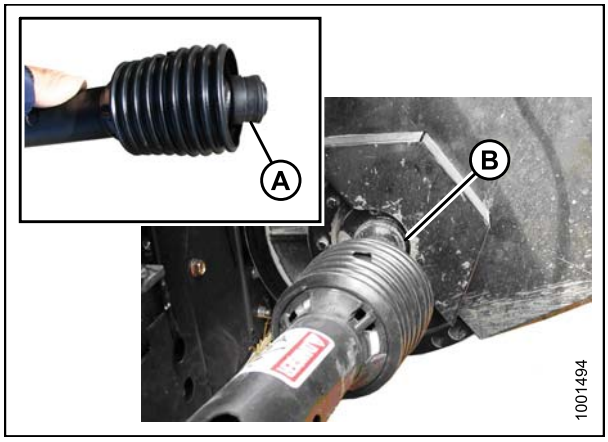


Figure 4.75: Driveline

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

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header 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 slow speed 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. Refer to *3.7.1 Cutting Height, page 51*.

   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. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

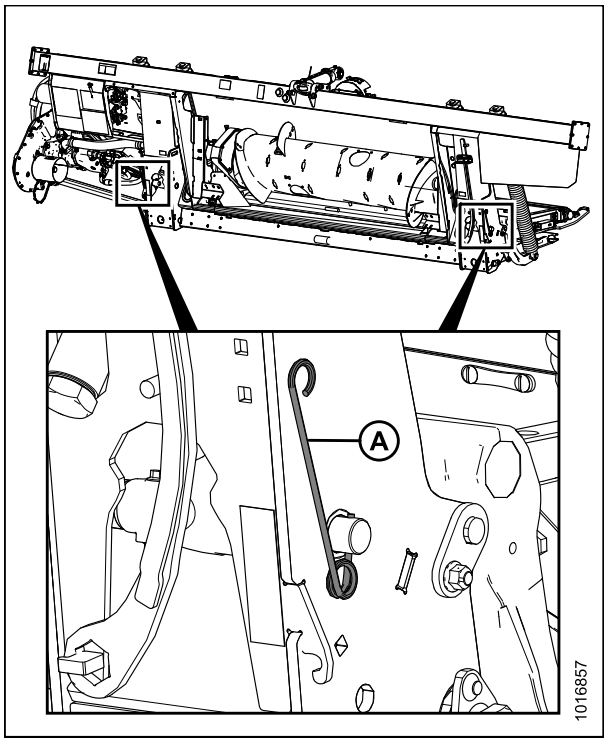


Figure 4.76: Float Locked

4. Disconnect the driveline from the combine output shaft (A).

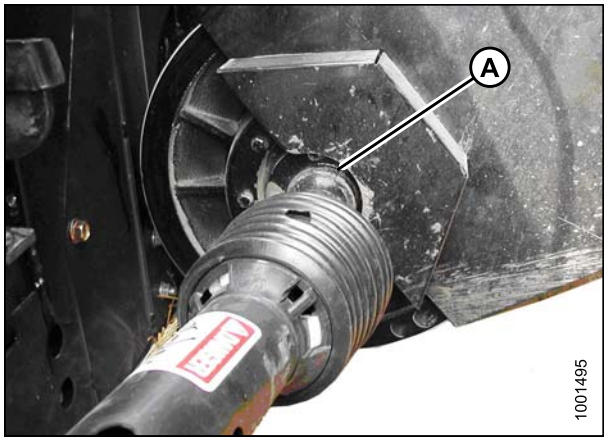


Figure 4.77: Disconnect Driveline

5. Store the driveline in the support bracket (B) and secure with strap (A).

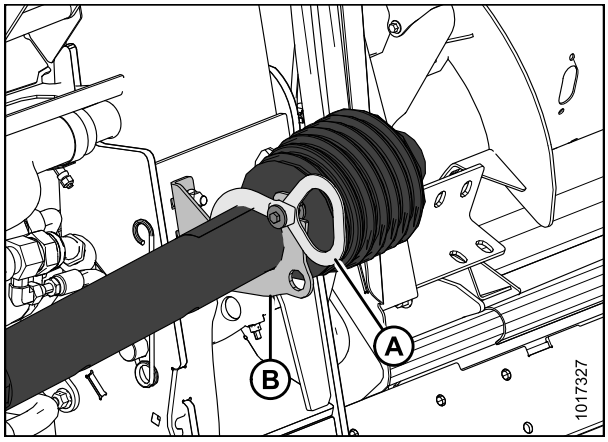


Figure 4.78: Driveline

6. Disconnect the harness at the connector (A).
7. Move the handle (B) on the combine multicoupler to the full open position to release the multicoupler (C) from the combine.

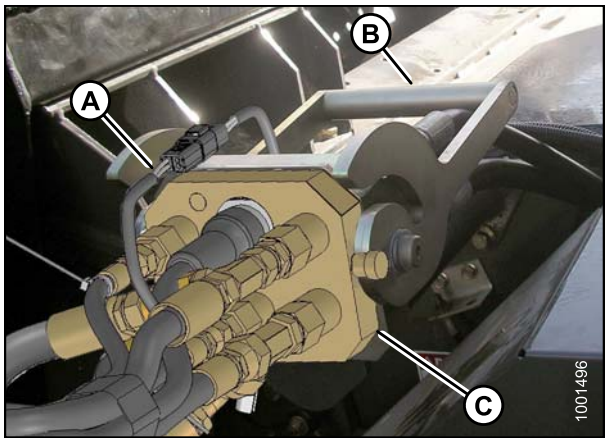


Figure 4.79: Multicoupler

8. Raise the handle (A) on the float module, and place the multicoupler (B) on the float module receptacle.
9. Lower the handle (A) to lock the multicoupler.

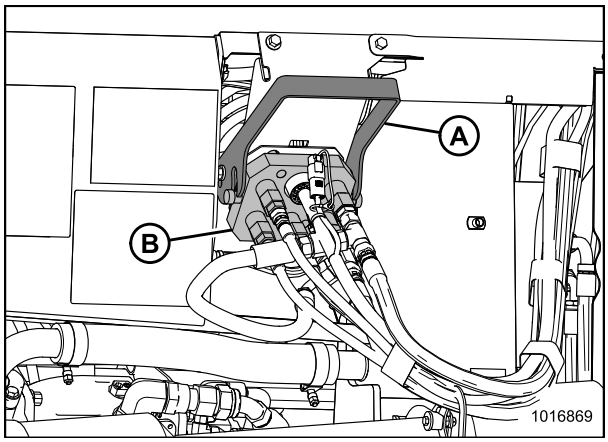


Figure 4.80: Float Module Multicoupler

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

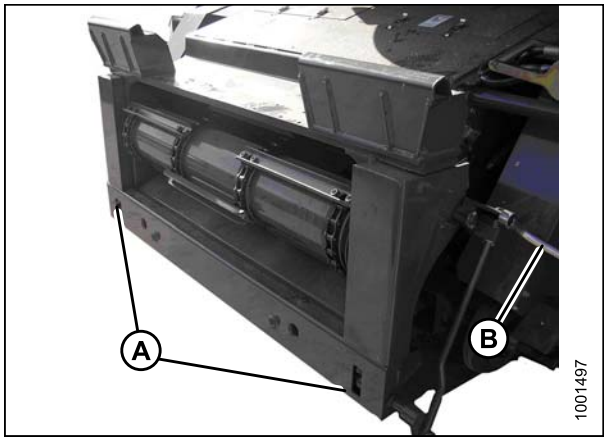


Figure 4.81: Challenger and Massey Ferguson

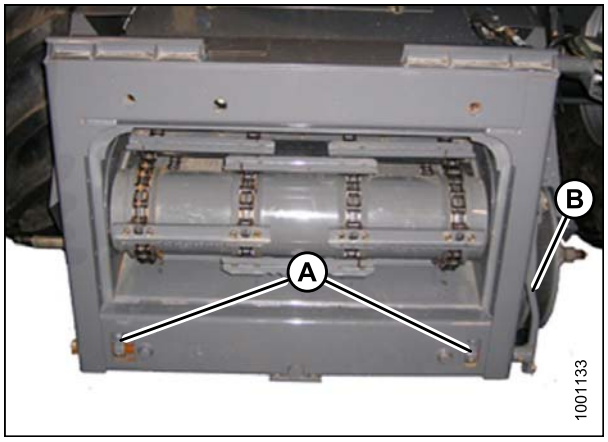


Figure 4.82: Gleaner R and S Series

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

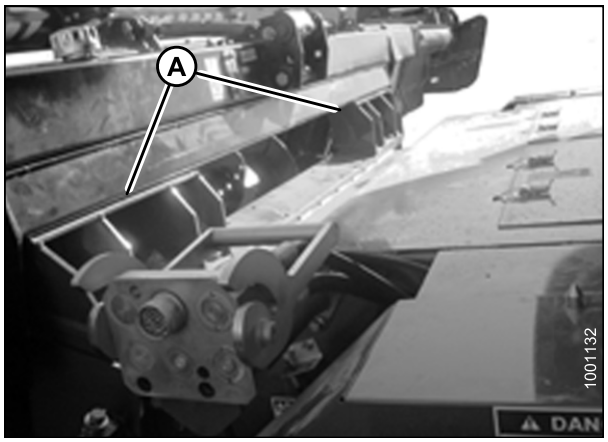


Figure 4.83: Float Module on Combine

4.5 John Deere Combines

The D1-Series Draper Header is compatible with John Deere 60, 70, S, and T Series combines.

4.5.1 Attaching Header to John Deere Combine

DANGER

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

1. Push the handle (A) on the combine multicoupler receptacle towards the feeder house to retract the pins (B) at the bottom corners of the feeder house. Clean the receptacle.

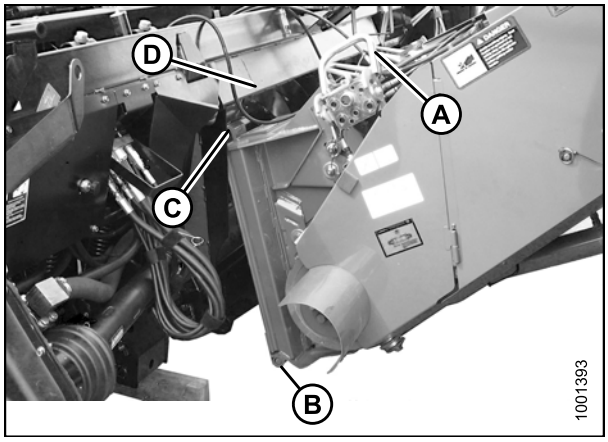


Figure 4.84: Combine and Float Module

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

2. Start the engine and slowly drive the combine up to the header until the feeder house saddle (C) is directly under the float module top cross member (D).
3. Raise the feeder house slightly to lift the header ensuring the feeder house saddle is properly engaged in the float module frame.
4. Stop the engine and remove the key from the ignition.
5. Pull the handle (A) on the float module to release the multicoupler (B) from the storage position. Remove the multicoupler, and push the handle back into the float module to store.

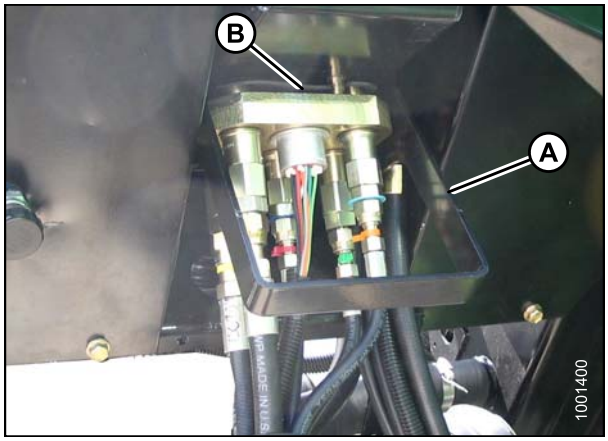


Figure 4.85: Multicoupler Storage

6. Position the multicoupler (A) onto the receptacle, and pull the handle (B) to engage the lugs on the multicoupler into the handle.
7. Pull the handle (B) to a horizontal position and ensure the multicoupler (A) is fully engaged into the receptacle.

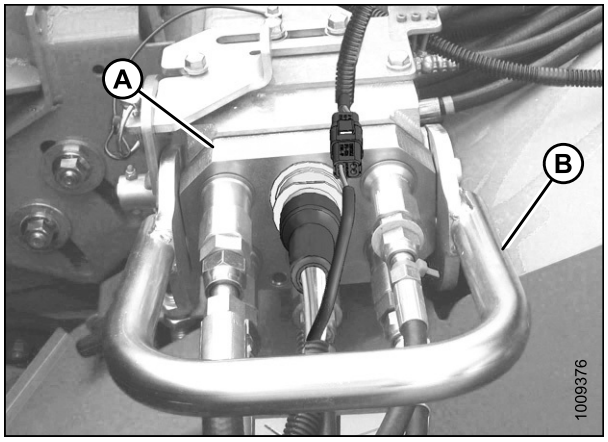


Figure 4.86: Multicoupler

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

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

9. Tighten bolts (D).

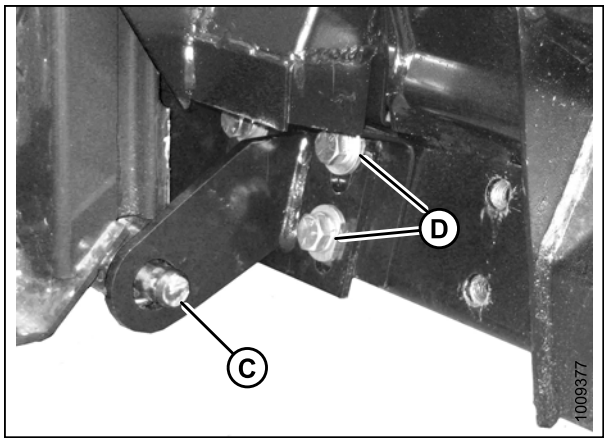


Figure 4.87: Feeder House Pin

10. Slide the latch (A) to lock the handle (B) in position and secure with the lynch pin (C).
11. If the float module is equipped with the reel fore-aft/header tilt selector, connect the harness (D) to the combine connector (E).

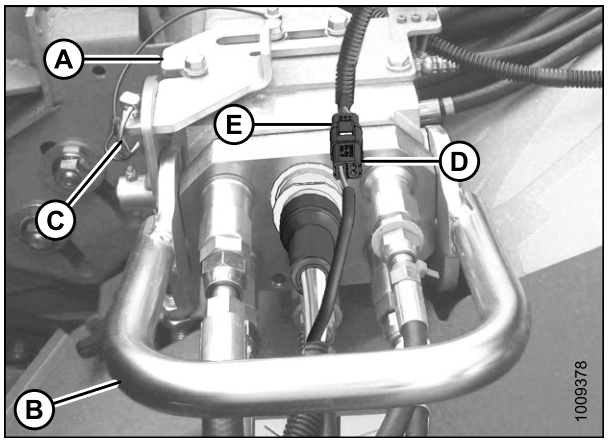


Figure 4.88: Multicoupler

12. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

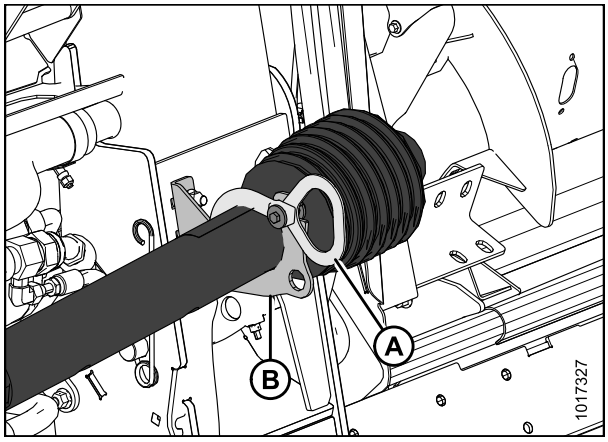


Figure 4.89: Driveline

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

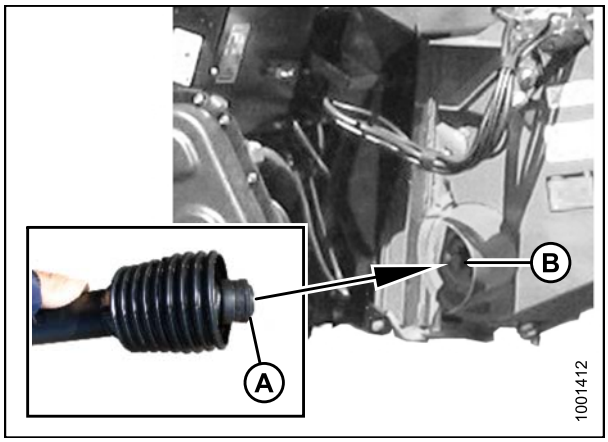


Figure 4.90: Driveline

14. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (B) (UNLOCK).

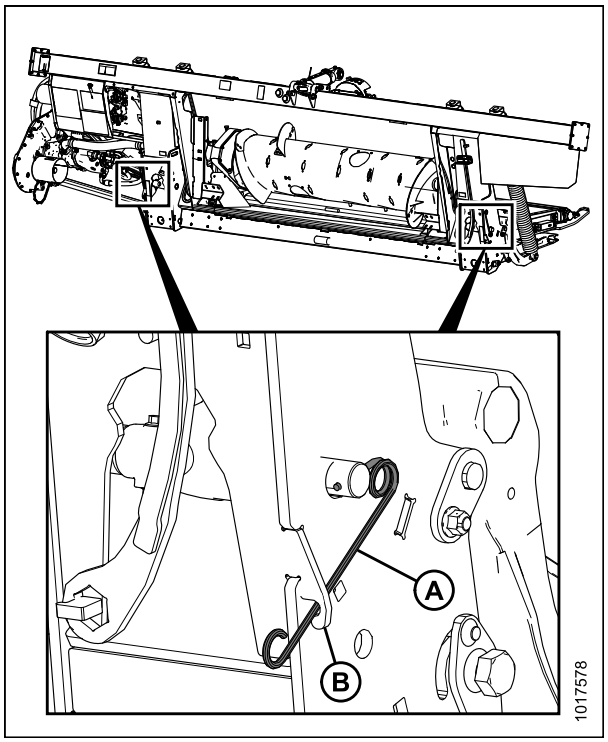


Figure 4.91: Float Lock in UNLOCK Position

4.5.2 Detaching Header from John Deere Combine

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header 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 slow speed 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. Refer to *3.7.1 Cutting Height, page 51*.

   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. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

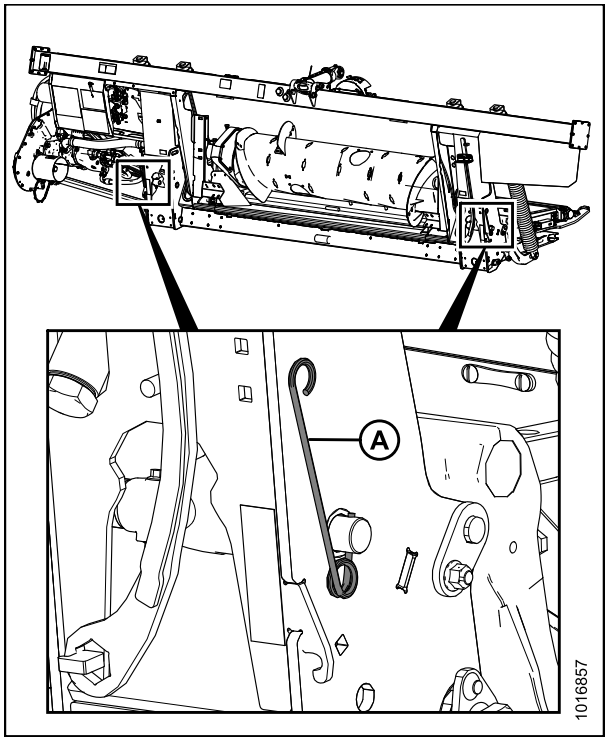


Figure 4.92: Float Locked

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

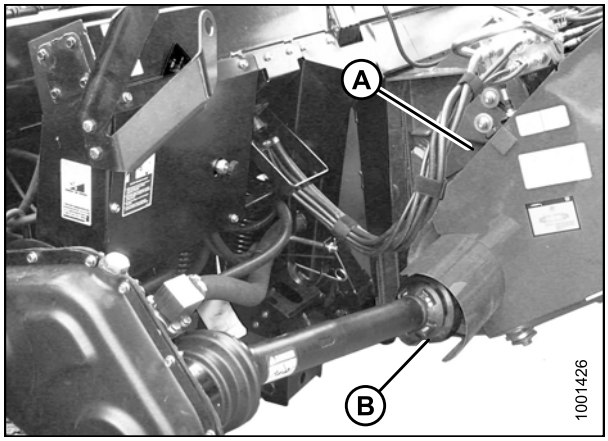


Figure 4.93: Driveline

5. Store the driveline in the support bracket (B) and secure with strap (A).

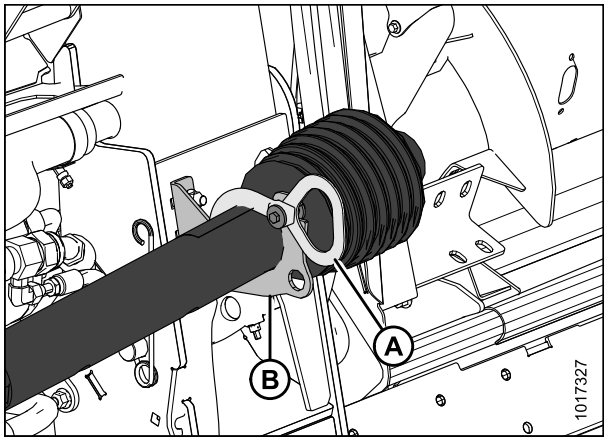


Figure 4.94: Driveline

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

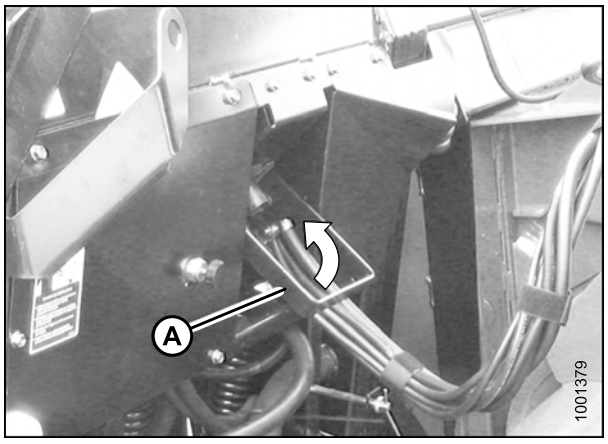


Figure 4.95: Multicoupler Storage

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

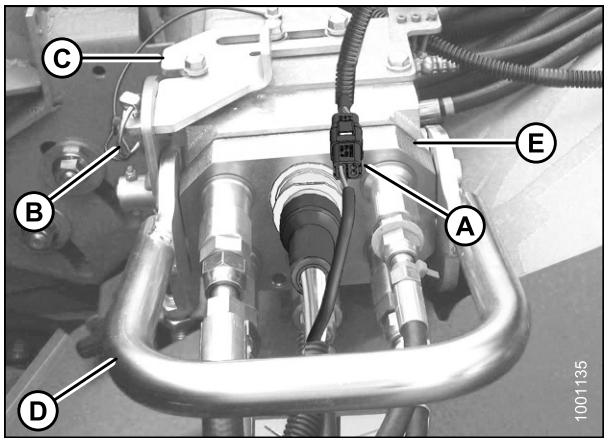


Figure 4.96: Multicoupler

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

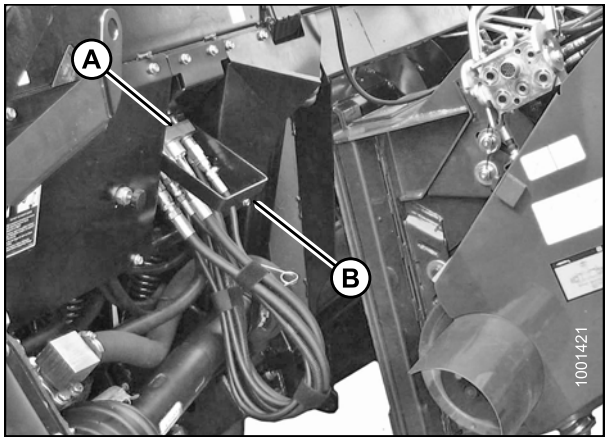


Figure 4.97: Multicoupler Storage

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

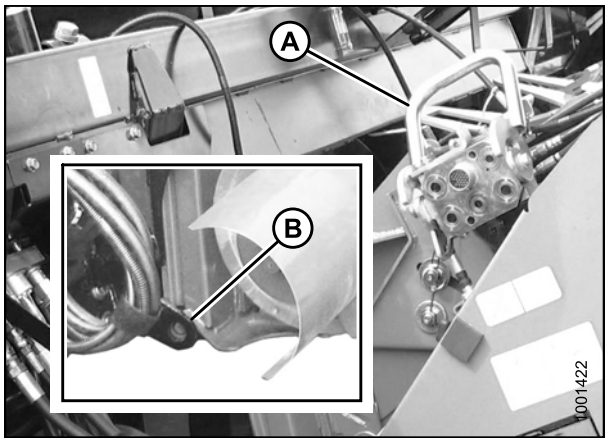


Figure 4.98: Feeder House Locks

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

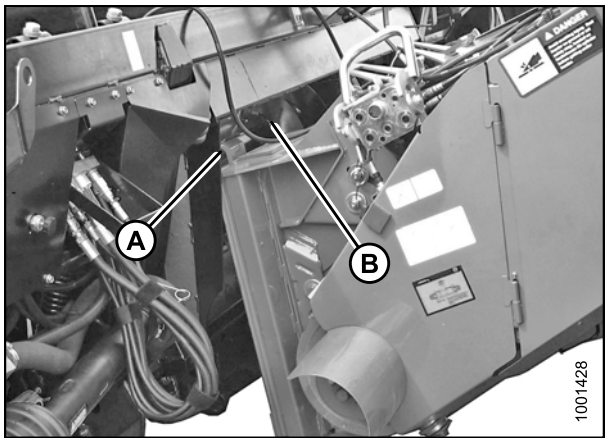


Figure 4.99: Header/Feeder House

4.6 Lexion Combines

The D1-Series Draper Header is compatible with Lexion 500, 600, and 700 Series combines.

4.6.1 Attaching Header to Lexion Combine

DANGER

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

1. Move the handle (A) on the FM100 Float Module into the raised position, and ensure the pins (B) at the bottom corners of the float module are retracted.

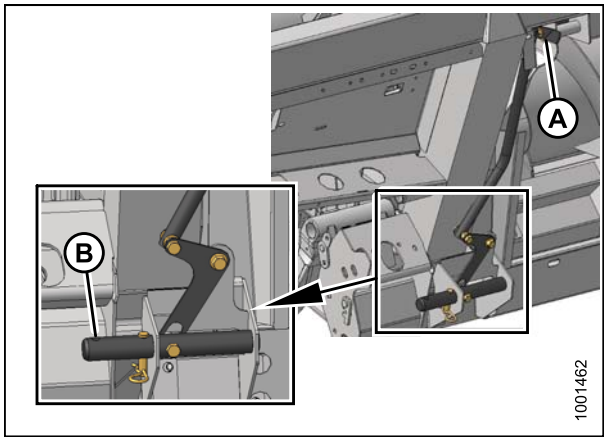


Figure 4.100: Pins Retracted

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

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

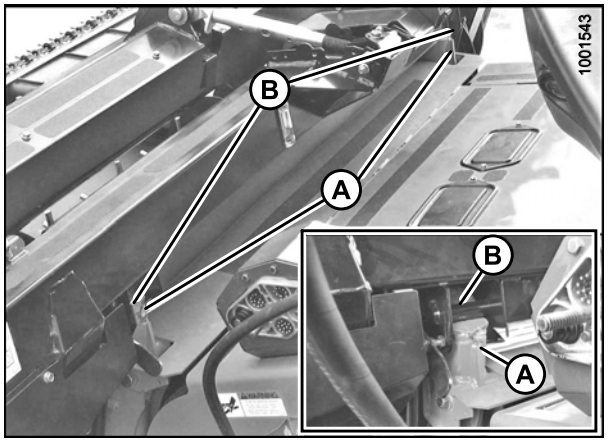


Figure 4.101: Header on Combine

5. Remove the locking pin (B) from the float module pin (A).

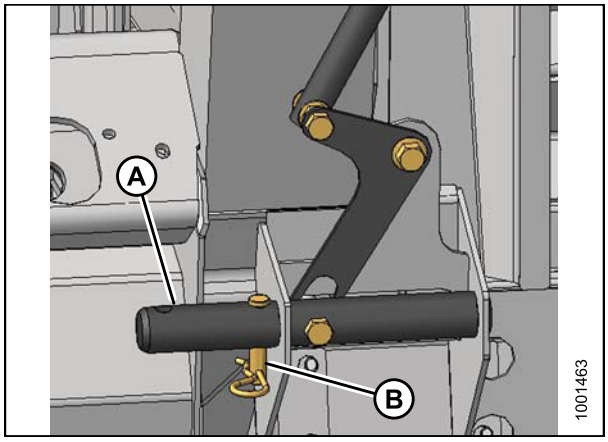


Figure 4.102: Locking Pins

6. Lower the handle (A) to engage the float module pins (B) into the feeder house. Reinsert the locking pin (C) and secure with the hairpin.
7. Stop the engine and remove the key from the ignition.

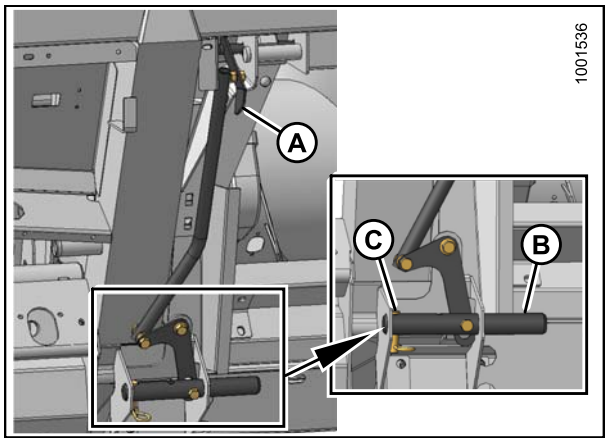


Figure 4.103: Engaging Pins

8. Unscrew the knob (A) on the combine coupler (B) to release the coupler from the combine receptacle and clean the coupler.

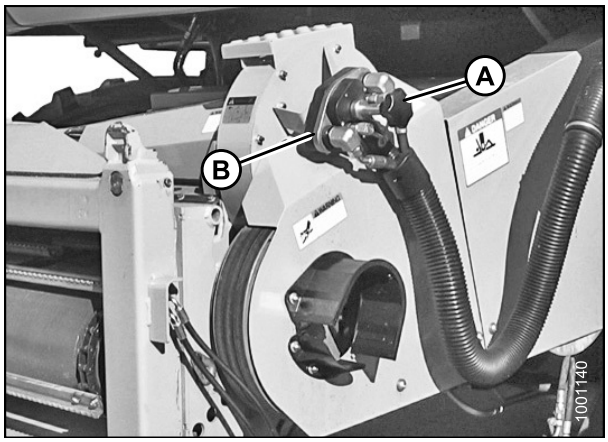


Figure 4.104: Combine Coupler

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

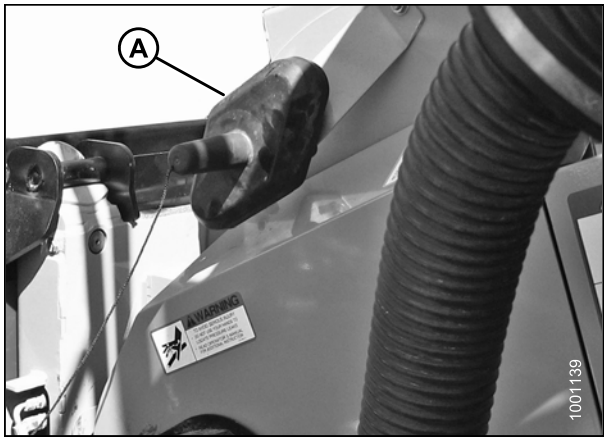


Figure 4.105: Receptacle Cover

10. Clean the mating surface of the coupler (A) and position onto the float module receptacle (B).
11. Turn the knob (C) to secure the coupler to the receptacle.

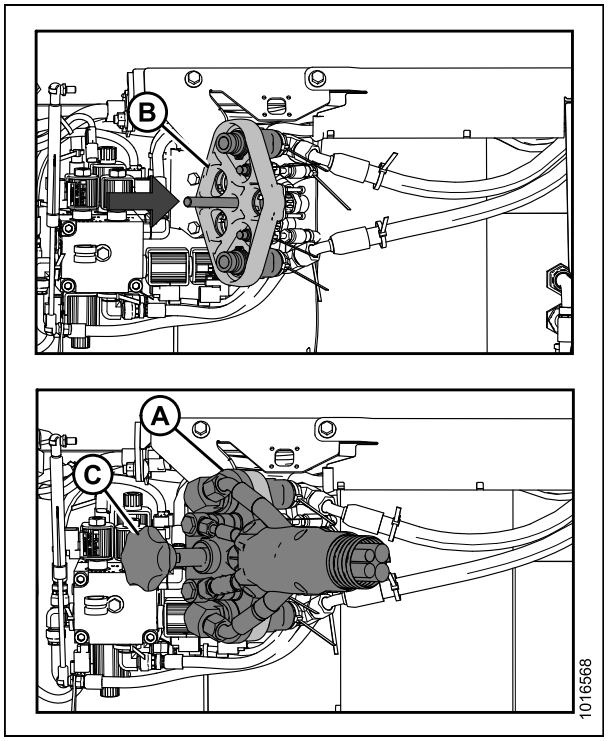


Figure 4.106: Coupler

12. Connect the combine harness to the reel fore-aft/header tilt receptacle (A).

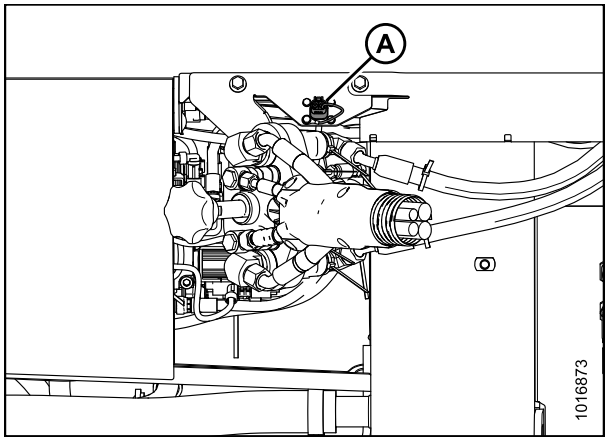


Figure 4.107: Coupler

13. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

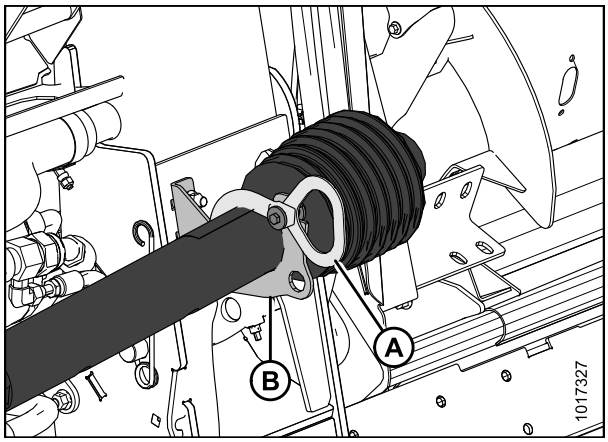


Figure 4.108: Driveline

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

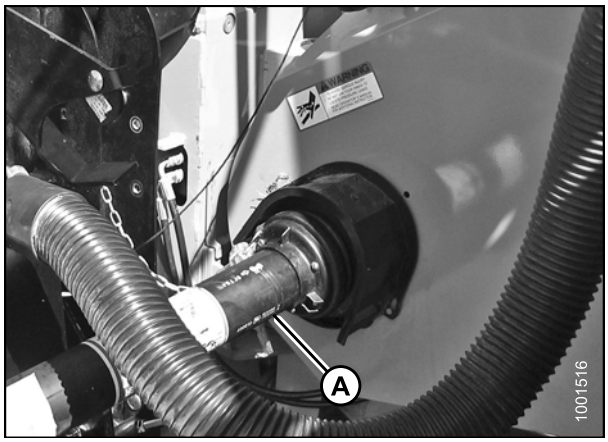


Figure 4.109: Driveline and Output Shaft

15. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (B) (UNLOCK).

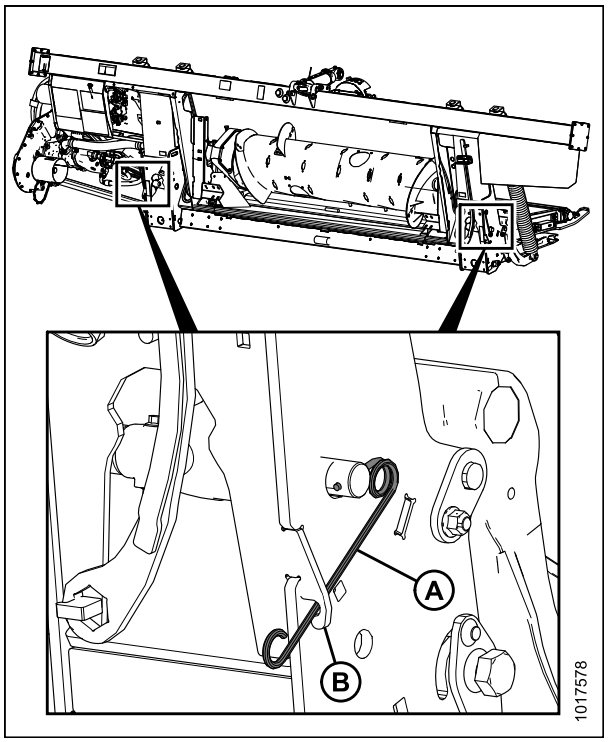


Figure 4.110: Float Lock in UNLOCK Position

4.6.2 Detaching Header from Lexion Combine

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header 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 slow speed 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. Refer to *3.7.1 Cutting Height, page 51*.

   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. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

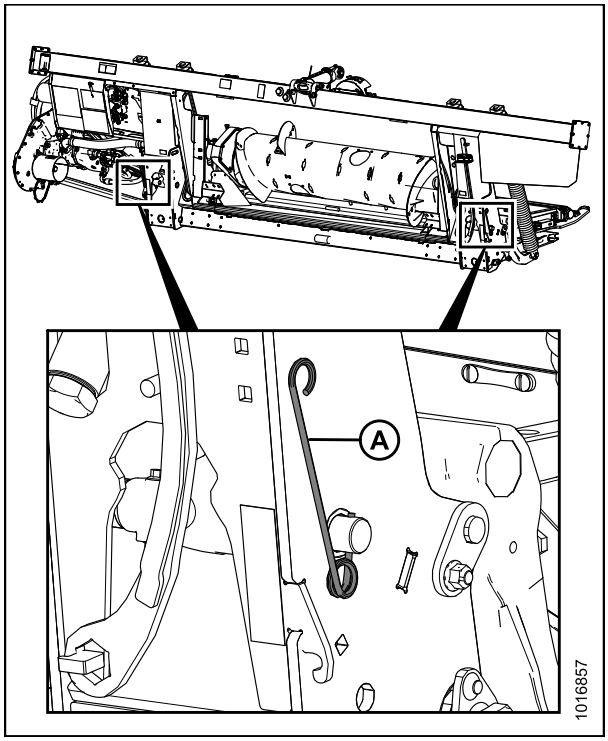


Figure 4.111: Float Locked

4. Disconnect the driveline (A) from the combine.

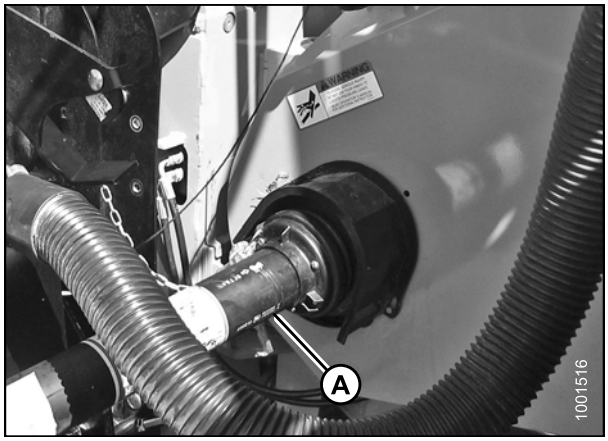


Figure 4.112: Driveline

5. Store the driveline in the support bracket (B) and secure with strap (A).

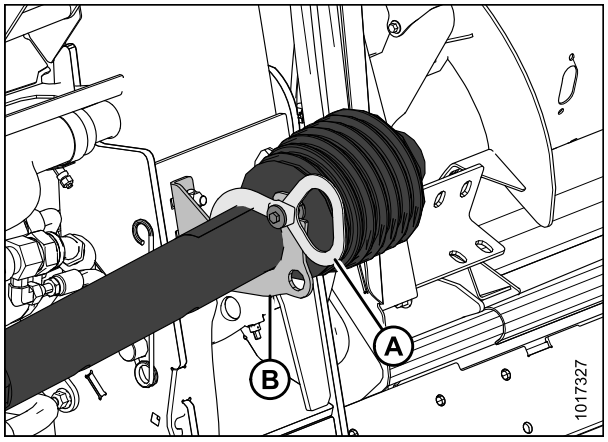


Figure 4.113: Driveline

6. Remove the electrical connector from the float module receptacle (A).
7. Unscrew the knob (B) on the coupler (C) to release the coupler from the float module.

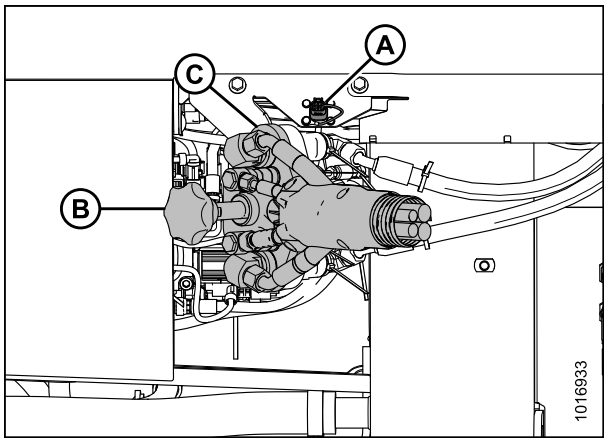


Figure 4.114: Coupler

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

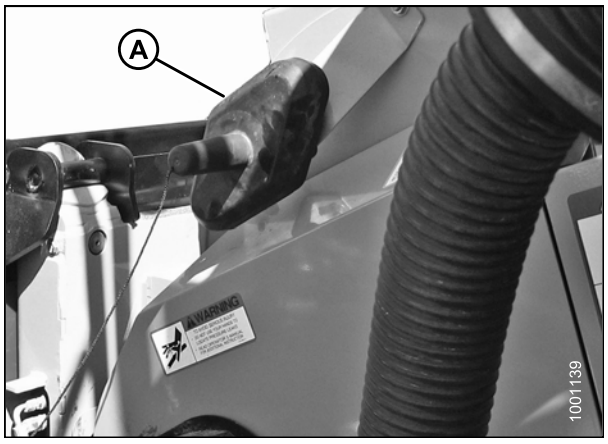


Figure 4.115: Cover

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

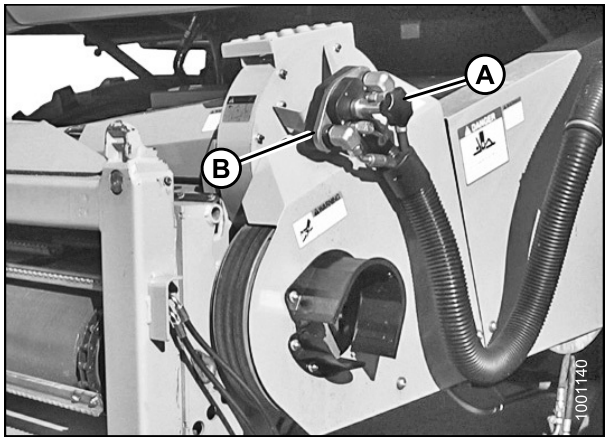


Figure 4.116: Combine Coupler

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

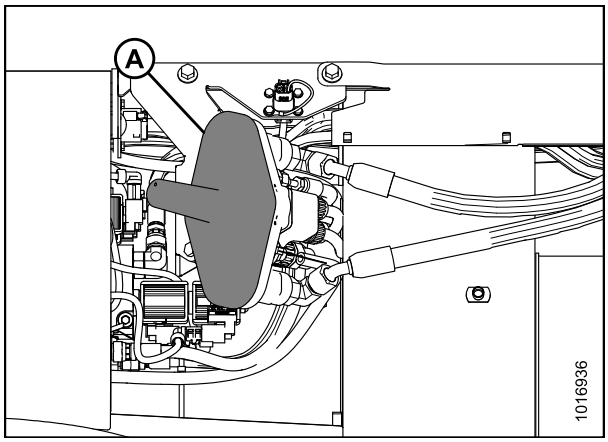


Figure 4.117: Float Module

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

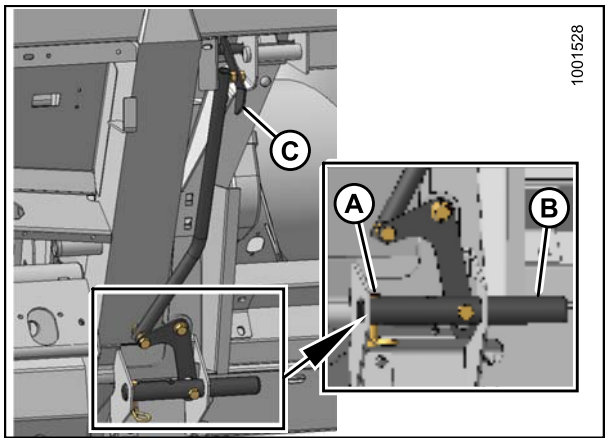


Figure 4.118: Feeder House Locks

14. Lower the feeder house until the feeder house posts (A) disengage the float module (B).
15. Back the combine away slowly from the float module.

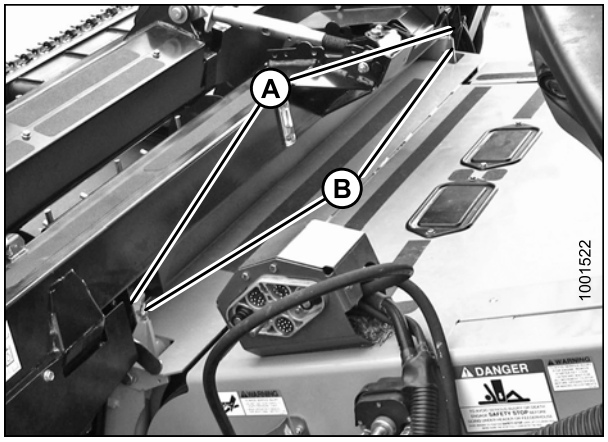


Figure 4.119: Header on Combine

4.7 New Holland Combines

The D1-Series Draper Header is compatible with the following New Holland combines:

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

4.7.1 Attaching Header to New Holland CR/CX Combine

DANGER

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

1. Ensure the handle (A) is positioned so the hooks (B) can engage the float module.

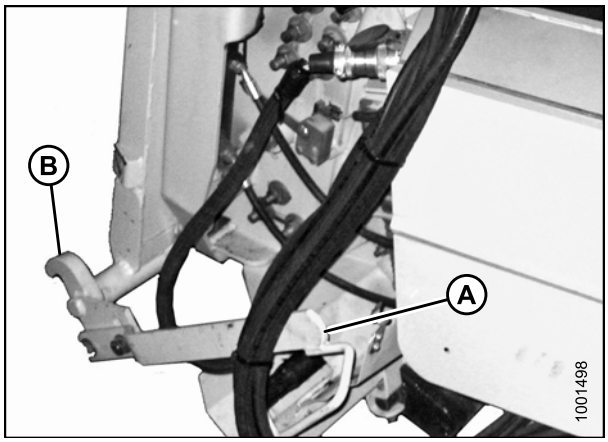


Figure 4.120: Feeder House Locks

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

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

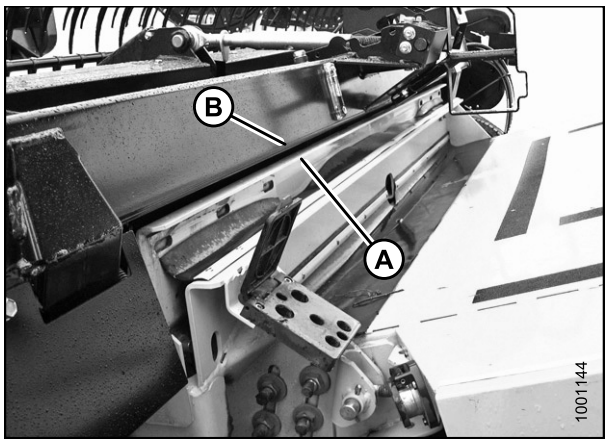


Figure 4.121: Header on Combine

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

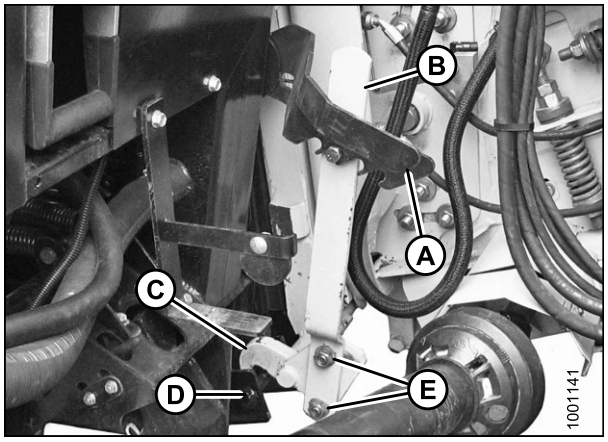


Figure 4.122: Feeder House Locks

8. Open the cover on the receptacle (A) located on the left side of the float module.
9. Push in the lock button (B) and pull the handle (C) to the full open position.
10. Clean the receptacle mating surfaces.

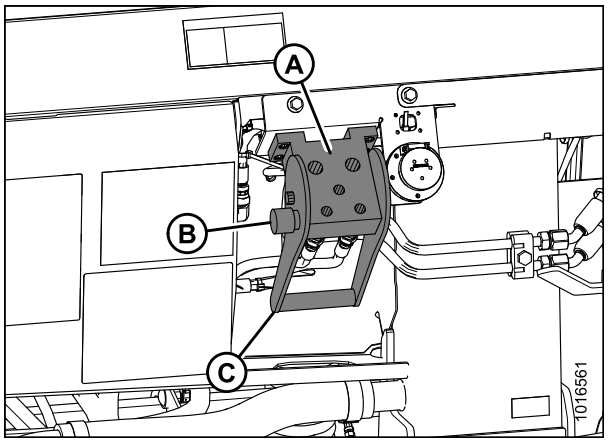


Figure 4.123: Float Module Receptacle

11. Remove the hydraulic quick coupler (A) from the storage plate on the combine, and clean the mating surface of the coupler.

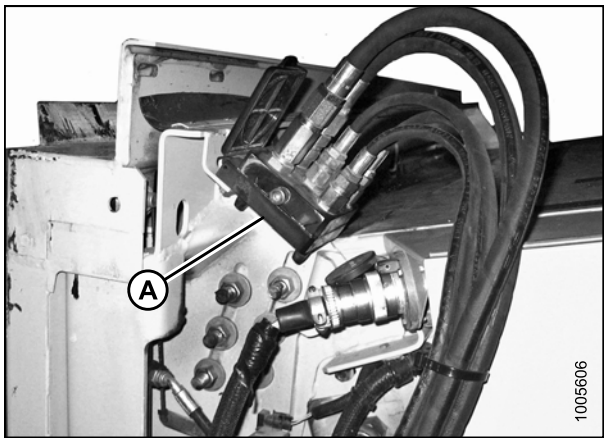


Figure 4.124: Combine Coupler

12. Position the coupler (A) onto the float module receptacle, and push the handle (B) to engage the pins into the receptacle.
13. Push the handle (B) to closed position until the lock button (C) snaps out.
14. Remove the cover on the float module electrical receptacle.
15. Remove the connector (D) from the combine.
16. Align the lugs on the 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.

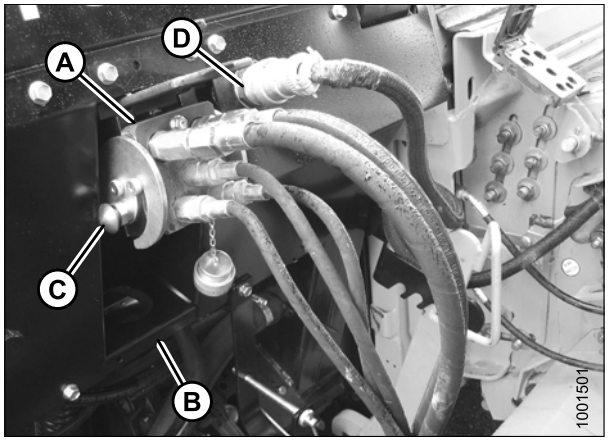


Figure 4.125: Connections

17. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

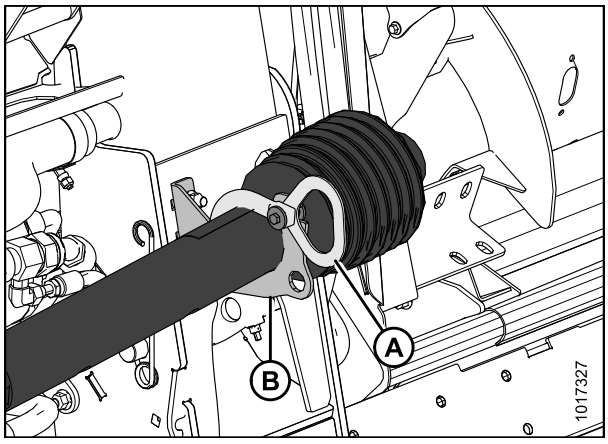


Figure 4.126: Driveline

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

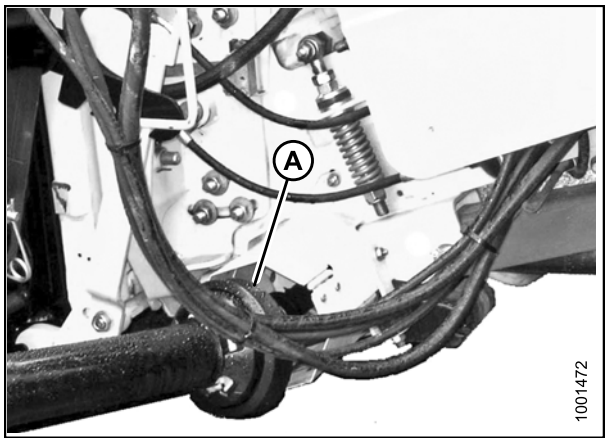


Figure 4.127: Driveline and Output Shaft

19. Disengage both header float locks by pushing down float lock handle (A) and placing it under the hook (B) (UNLOCK).

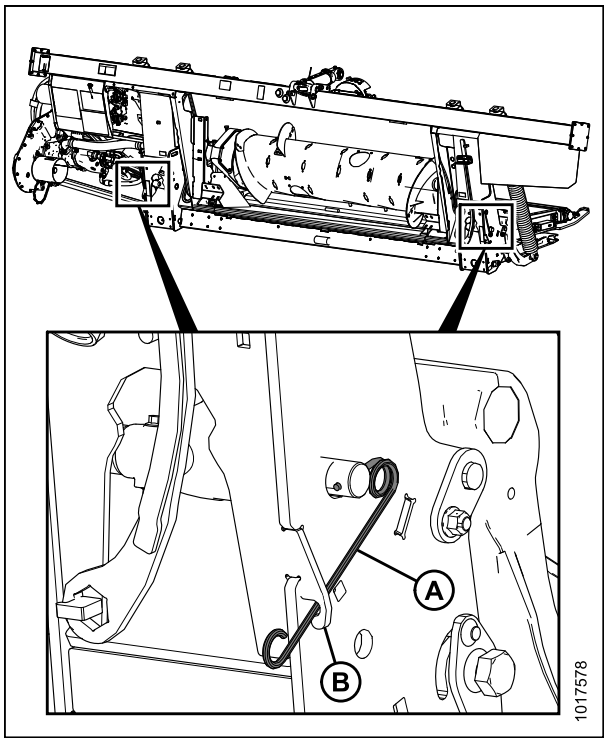


Figure 4.128: Float Lock in UNLOCK Position

4.7.2 Detaching Header from New Holland CR/CX Combine

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header 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 slow speed 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. Refer to *3.7.1 Cutting Height, page 51*.

   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. Refer to *3.7.1 Cutting Height, page 51*.

3. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

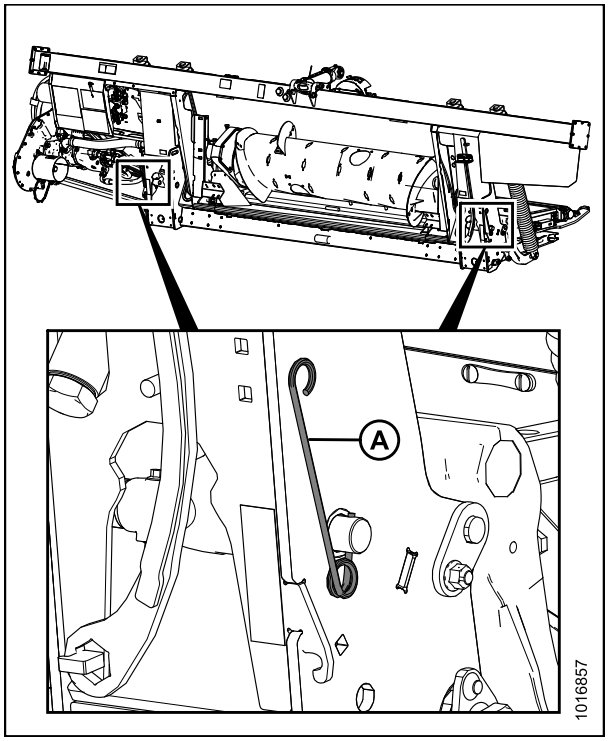


Figure 4.129: Float Locked

4. Disconnect the driveline (A) from the combine.

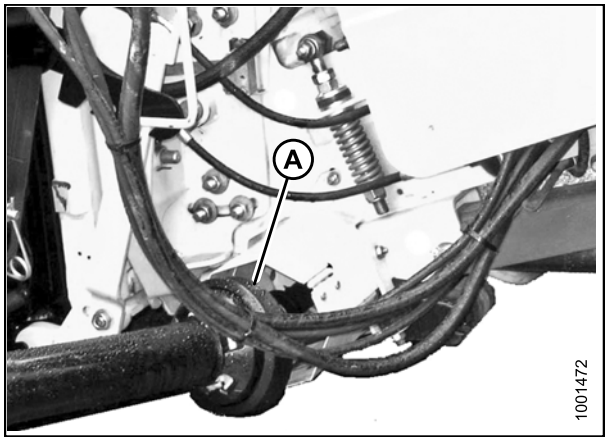


Figure 4.130: Driveline

5. Store the driveline in the support bracket (B) and secure with strap (A).

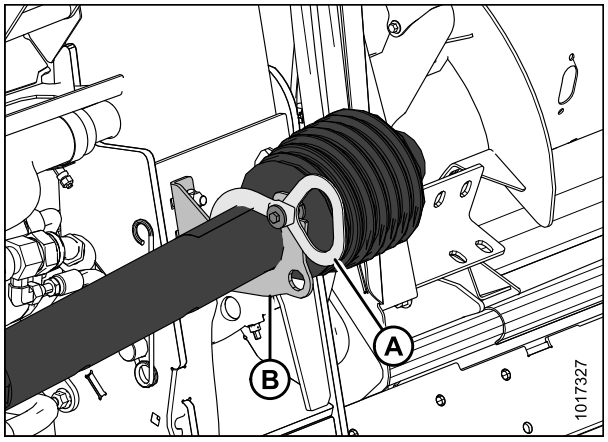


Figure 4.131: Driveline

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

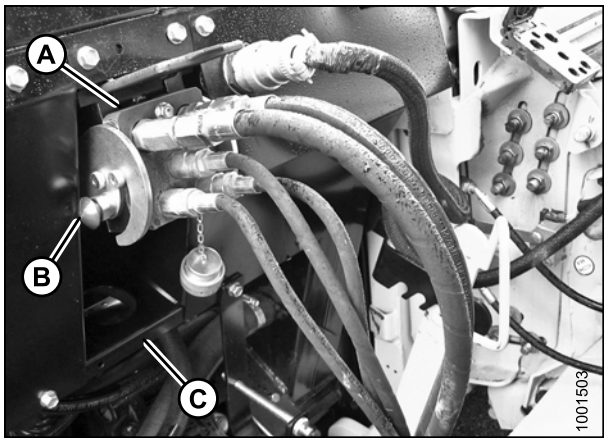


Figure 4.132: Float Module Connections

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

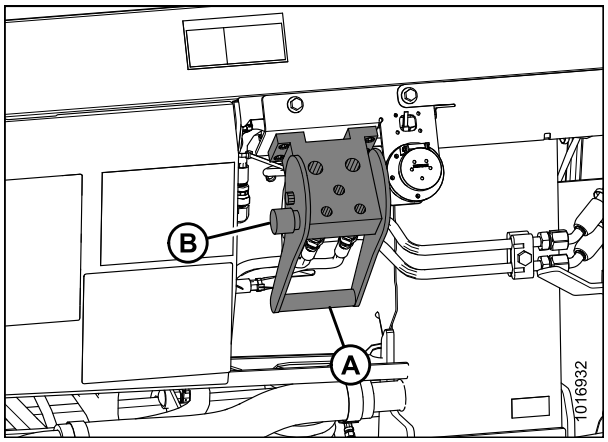


Figure 4.133: Float Module Receptacles

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

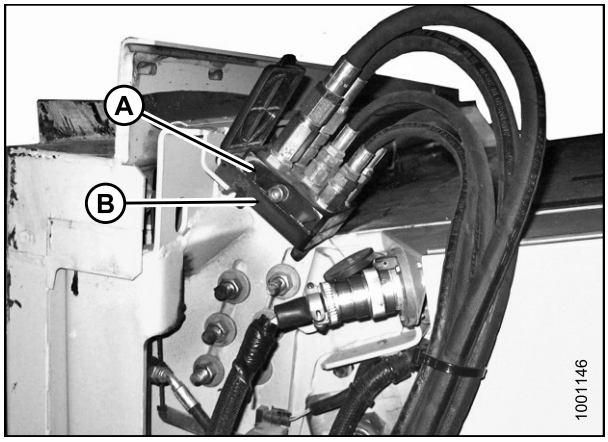


Figure 4.134: Combine Coupler

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

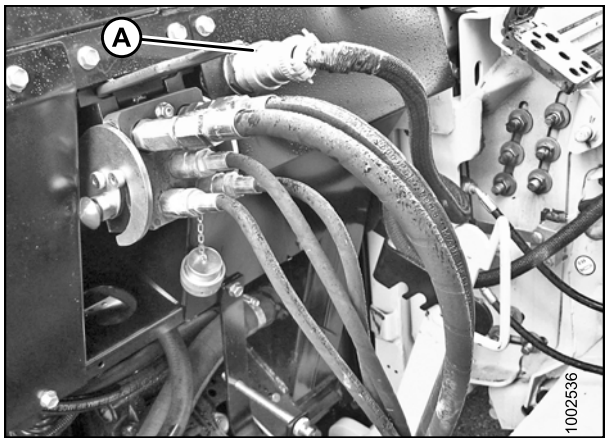


Figure 4.135: Float Module Connections

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

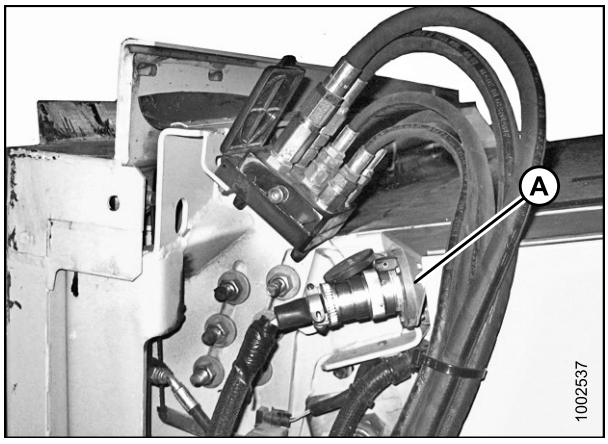


Figure 4.136: Combine Couplers

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

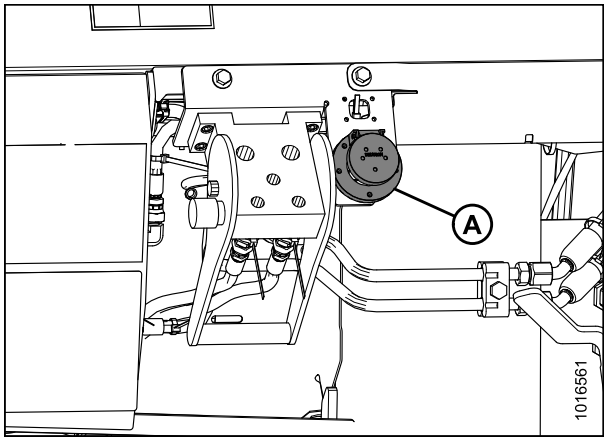


Figure 4.137: Float Module Receptacles

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

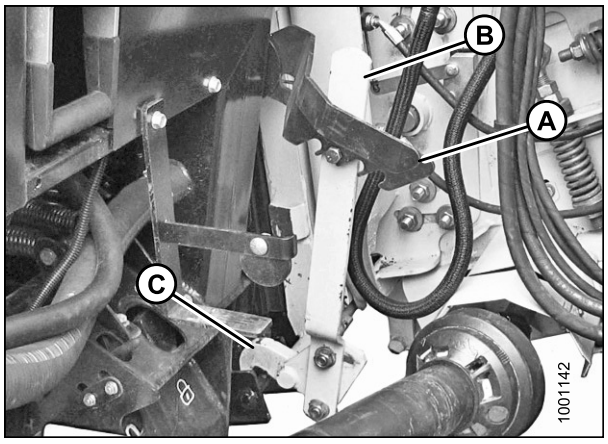


Figure 4.138: Feeder House Locks

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

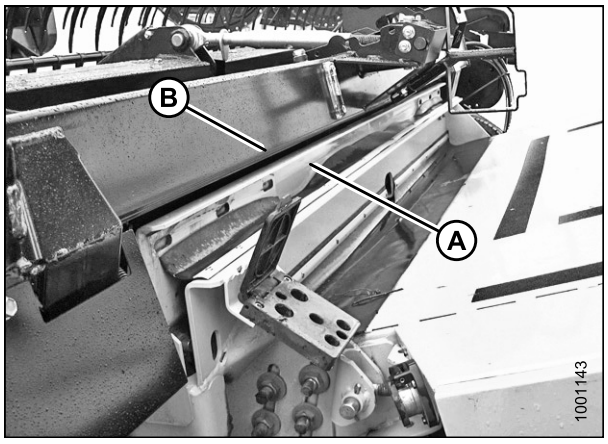


Figure 4.139: Header on Combine

4.7.3 CR Feeder Deflectors

For New Holland 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. Refer to *5.11.3 Replacing Feed Deflectors on New Holland CR Combines, page 401*.

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

Combine Model	Feeder House Size	Feeder Kit Size	MacDon Part Number
CR970, CR9070, CR9080, CR9090	Wide	Short: 7-7/8 in. (200 mm)	MD #213613, 213614
CR960, CR9060, CR940, CR9040	Narrow	Long: 12-13/16 in. (325 mm)	MD #213592, 213593

4.8 Attaching and Detaching Header from Float Module

Attaching/detaching procedures are the same for all makes and models of combines. Headers can be attached to the float module from either field or transport configurations.

The procedures in this manual require that the float module remains attached to the combine. Attach/detach the float module only if performing the following tasks:

- Detaching the header for use on a windrower
- Changing headers
- Performing certain maintenance tasks

4.8.1 Attaching Header to Float Module

The D1-Series header can be attached to the float module from either field or transport configuration.

DANGER

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

NOTE:
Stabilizer/Slow Speed Transport wheels can be used to support the header. Refer to *3.7.1 Cutting Height, page 51*.

1. Prop up the hydraulic center-link (A) with a pin (or equivalent tool) at location (B) as shown.

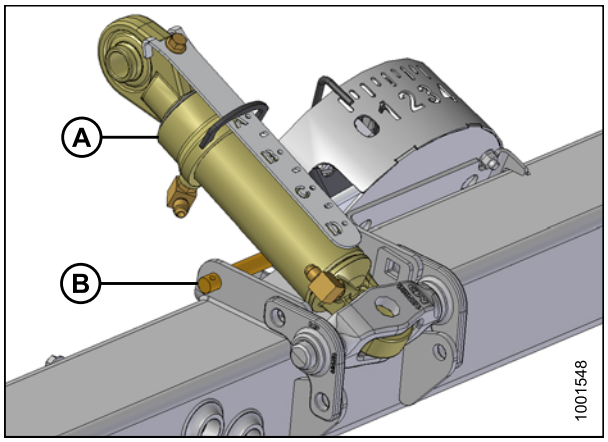


Figure 4.140: Center-Link

2. Remove ring (A) from pin (B), and remove the pins from the header legs at the delivery opening.

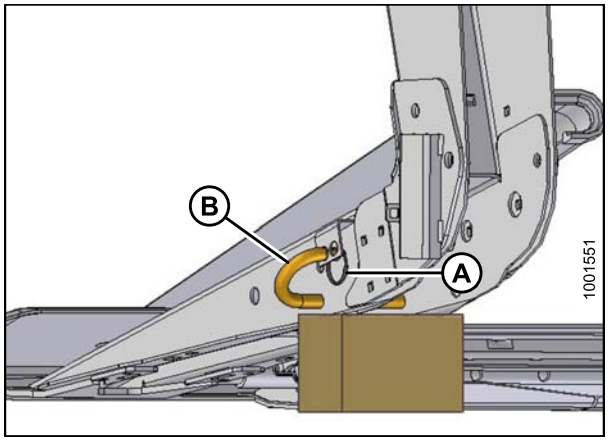


Figure 4.141: D1-Series Combine Header – Block under Leg

3. Ensure the latches (A) at the front corners of the float module are rotated towards the rear of the float module.

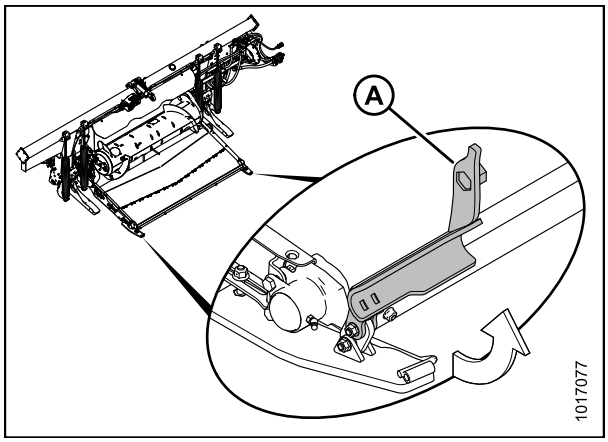


Figure 4.142: Latch

CAUTION

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

4. Start the engine, and lower the combine feeder house so the float module arms (A) are aligned with the header legs (B).
5. Drive slowly forward while maintaining alignment between the float module arms (A) and the header legs (B).
6. Keep the float module arms (A) just under the header legs (B) to ensure the float module legs seat properly in the header linkage supports at location (C).

   IMPORTANT:
   Keep the hydraulic hoses clear to prevent damaging then while driving into the header.

7. Drive slowly forward until the float module arms (A) contact the stops in the legs (C).

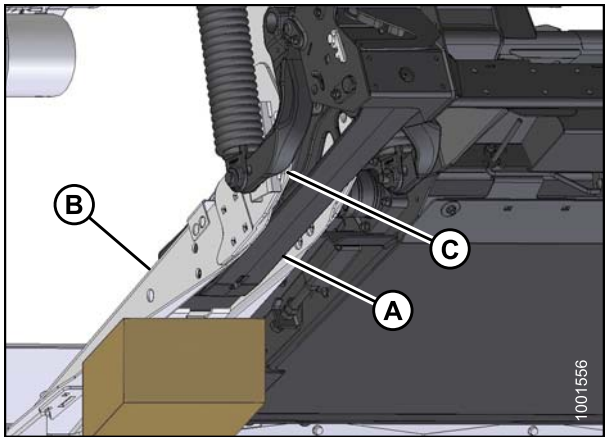


Figure 4.143: Float Module Underside

8. Adjust the length of the center-link (A) using the header angle hydraulics to approximately align the center-link eye (B) with the hole in the header bracket.
9. Shut down the engine and remove the key from the ignition.

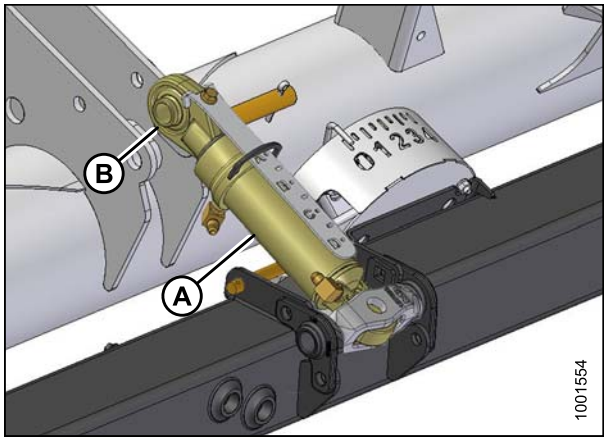


Figure 4.144: Center-Link

10. Connect the center-link as follows:
    a. Pull pin (B) part way out of the bracket (C), and remove the prop from under the center-link (A).
    b. Install the pin (B) through the center-link bracket (C), and secure with lynch pin.

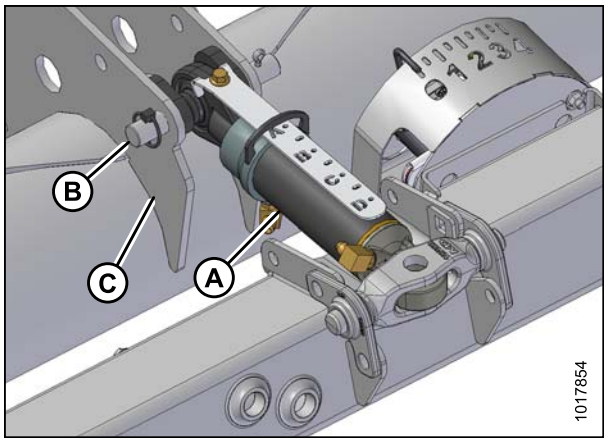


Figure 4.145: Center-Link

CAUTION

Always connect center-link before fully raising header.

11. Match the colored cable ties and connect the reel hydraulics (A) at the right end of the float module.

    NOTE:
    If optional multicoupler is installed for reel hydraulics. Raise handle on float module, and place coupler on float module receptacle. Lower handle to lock coupler.

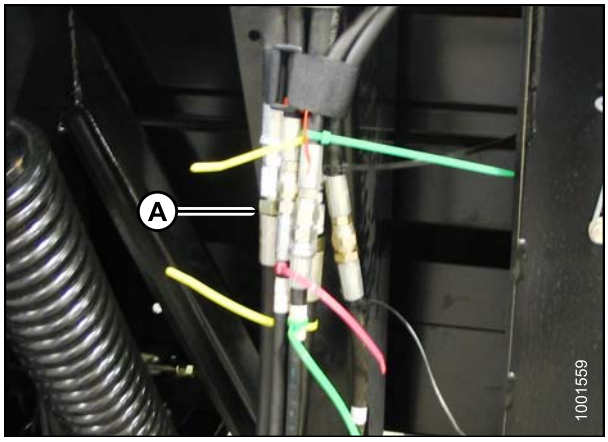


Figure 4.146: Reel Hydraulics

CAUTION

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

12. Start the engine and slowly raise the float module while making sure the float module legs engage the header legs.
13. Raise the header to its full height, stop the engine, and remove the key from the ignition.
14. Engage the header lift cylinder stops on the combine.
15. Replace the pin (B) in the header legs and secure with ring (A).

CAUTION

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

16. Remove the lift cylinder locks, start the engine, and lower the header to the ground. Adjust the header angle to the shallowest setting (shortest center-link).
17. Raise the reel to its full height.
18. Shut down the engine and remove the key from the ignition.
19. Engage the reel safety props.

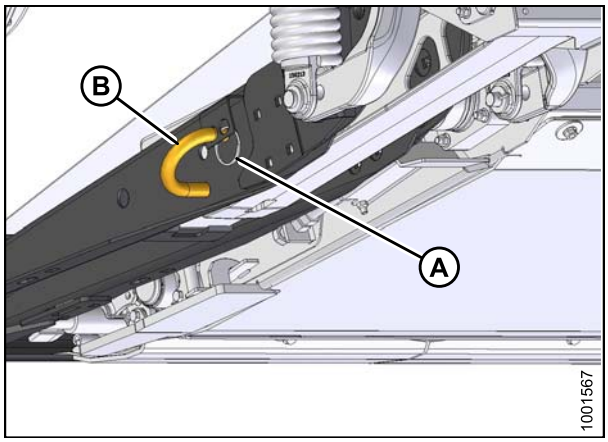


Figure 4.147: Header Leg

WARNING

Keep hands clear of the area between guards and knife at all times.

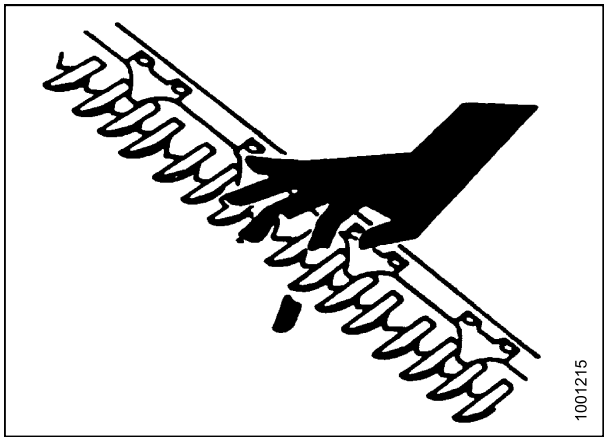


Figure 4.148: Cutterbar Hazard

20. Remove screw (A) and remove nut and bolt (B) from both sides of the opening to allow the attachment of the float module deck.
21. Rotate the latch (C) forward and down to engage the transition pan tube.

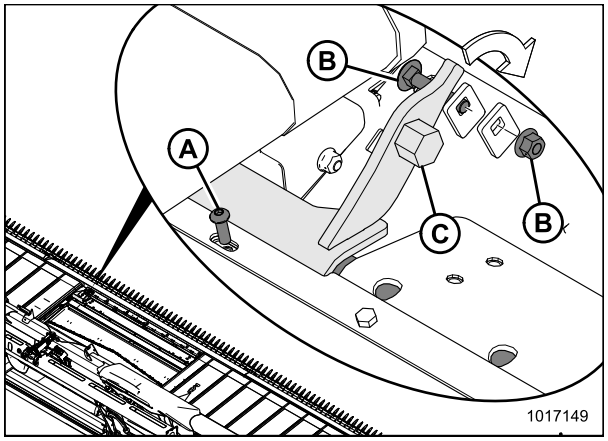


Figure 4.149: Float Module Latch

22. Use a 15/16 in. (24 mm) wrench on hex bolt (C) to rotate latch downwards and slightly raise the feed deck. Install nut and bolt (B) to lock the latch position.
23. Install screw (A).
24. Repeat for the opposite side of the feed draper deck.

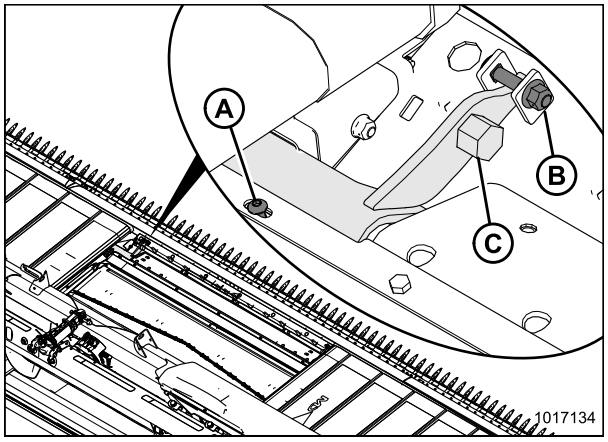


Figure 4.150: Float Module Latch

25. Install fillers (B) on the transition pan support angle (C) using two bolts (A).

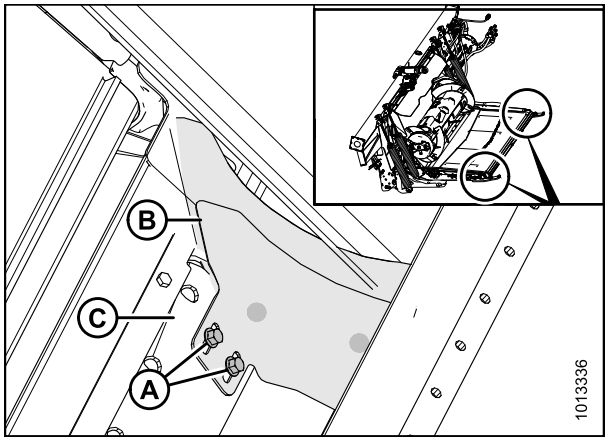


Figure 4.151: Fillers

26. Match the colored cable ties, and connect the knife and draper drive hydraulics (A).
27. Attach the electrical connector (B) as follows:
    a. Remove the cover on the receptacle. Ensure it is clean and damage free.
    b. Align the lugs on the connector with the slots in the receptacle, push the connector onto the receptacle, and turn the collar on the connector to lock it in place.
    c. Attach the cover to the mating cover on the combine wiring harness.

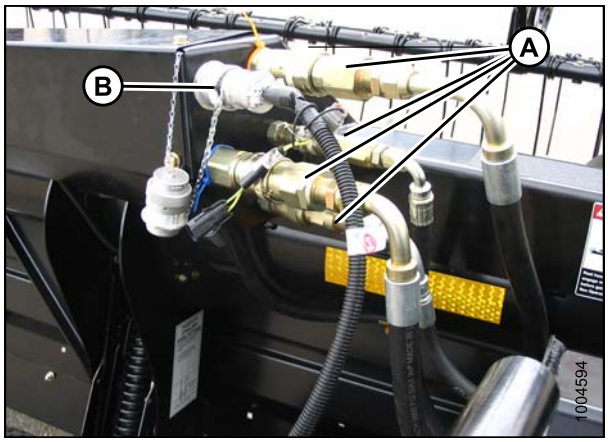


Figure 4.152: Header Connections

28. Connect the quick disconnects (if installed) as follows:
    a. Remove the covers (if installed) from the receptacles and hose ends.
    b. Check the connectors and clean if necessary.
    c. Push the hose connector (A) onto the mating receptacle (B) until the collar on the mating receptacle snaps into the lock position.

    NOTE:
    Ensure the hoses are clear of the driveline and adjacent structure.

    NOTE:
    It is not necessary to bleed the system by loosening fittings.

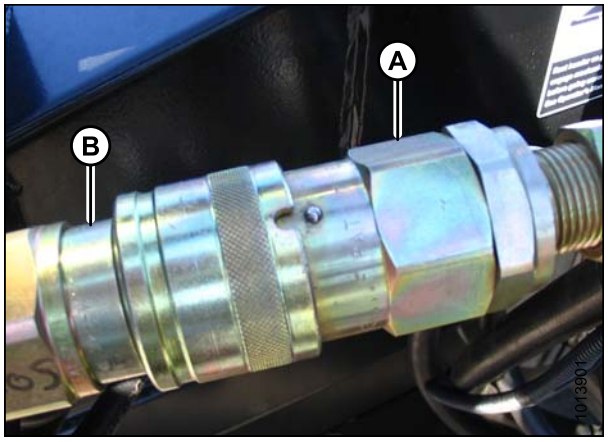


Figure 4.153: Quick Disconnect Coupling

29. Check the float and confirm the header is level. Refer to the following:
    - *Checking and Adjusting Header Float, page 58*
    - *3.9 Levelling the Header, page 198*

CAUTION

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

30. Start the combine and perform the following inspections:
    - Raise and lower the reel to ensure the hoses are properly connected.
    - Run the header to ensure the hoses are properly connected.
31. Check for leaks.

4.8.2 Detaching Header from Float Module

DANGER

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

WARNING

Keep hands clear of the area between guards and knife at all times.

CAUTION

Wear heavy gloves when working around or handling knives.

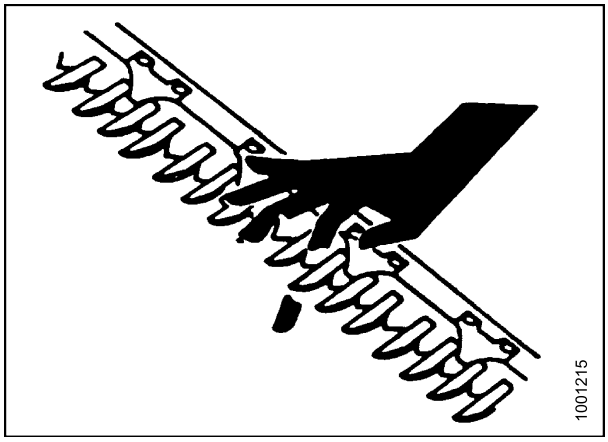


Figure 4.154: Cutterbar Hazard

1. Start the engine and the lower header.
2. Increase clearance under the float module feed draper by tilting the header until the cylinder (B) is fully extended and the indicator (A) is at position D.
3. Raise the reel to its full height.
4. Stop the engine and the remove key from the ignition.
5. Engage the reel safety props.

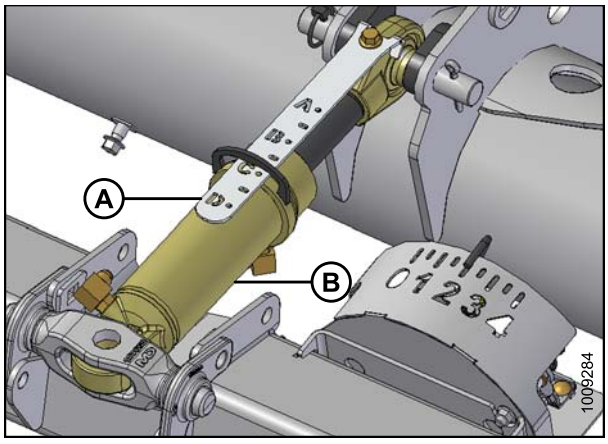


Figure 4.155: Center-Link

6. Engage both float locks by pushing each float lock handle (A) down, away, and out of the hook (LOCK).

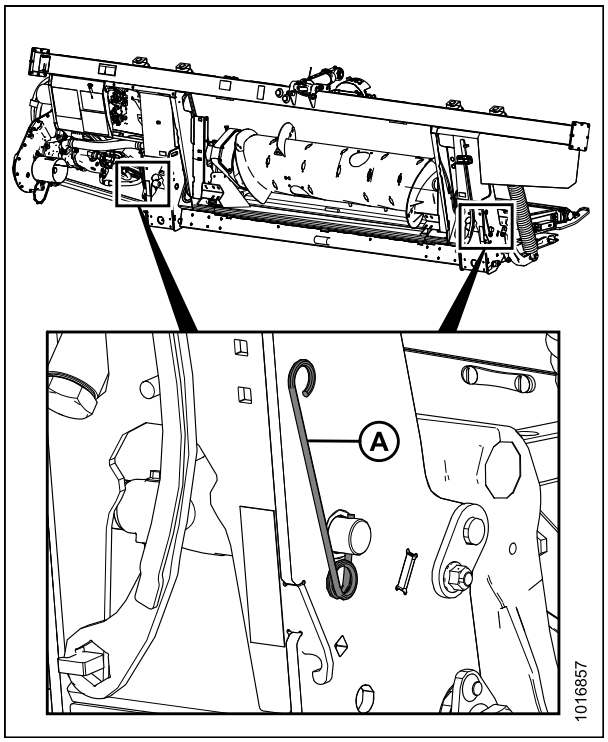


Figure 4.156: Float Locked

7. Remove two bolts (A) and fillers (B) from the transition pan support angle (C). Repeat on opposite side.

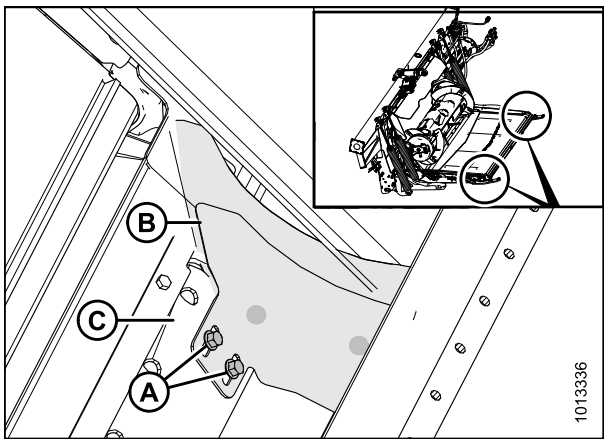


Figure 4.157: Fillers

8. Remove bolt (A).
9. Remove the 9/16 in. nut from bolt (B).
10. Use a 15/16 in. (24 mm) wrench on hex bolt (C) to rotate latch downwards and slightly raise the feed deck to remove bolt (B).
11. Rotate the latch (C) up and back to lower the float module deck and disengage the transition pan tube.
12. Reinstall bolt (A).
13. Repeat for opposite side of the feed draper deck.

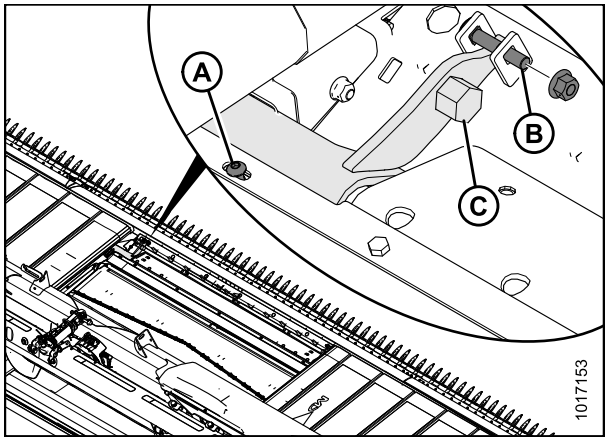


Figure 4.158: Float Module Latch

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

14. Disengage the reel safety props, start the engine, lower the reel, and fully raise the header.
15. Stop the engine, remove the key from the ignition, and engage the combine lift safety props.
16. Remove the ring (A) from the pin (B), and remove the pins from the header legs at the delivery opening.

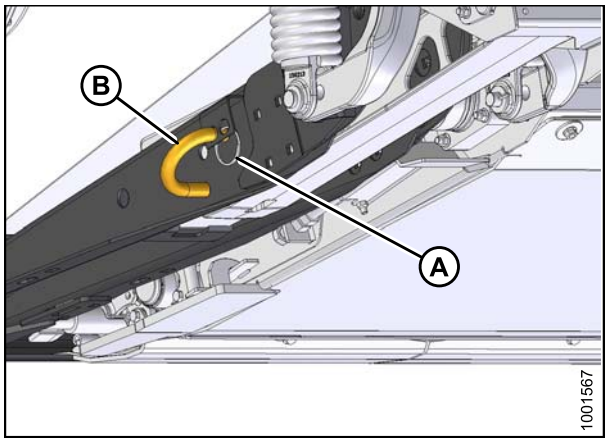


Figure 4.159: Header Leg

17. Place a 6 in. (150 mm) block under the jack stand (A) to assist with center-link disconnection.
18. Disengage the combine lift cylinder locks, start the engine, and lower the header until the jack stand rests on the block or until the stabilizer wheels are the ground.

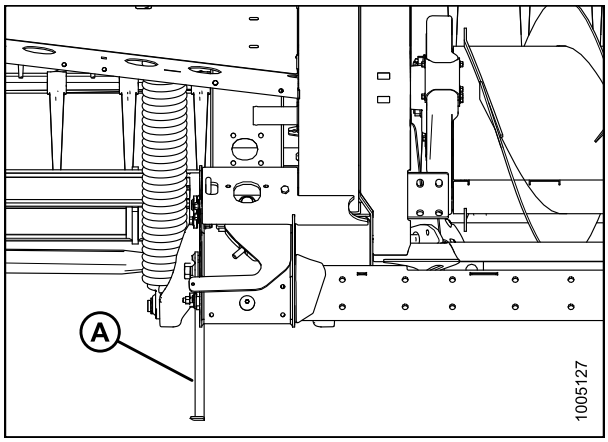


Figure 4.160: Jack Stand

19. Disconnect the hydraulic center-link as follows:
    a. Remove the lynch pin and clevis pin (A), and lift the center-link (B) clear of the bracket.
    b. Replace the clevis pin (A) and secure with lynch pin.

    NOTE:
    It may be necessary to raise or lower the feeder house to adjust the length of the center-link and relieve excess load on the center-link.

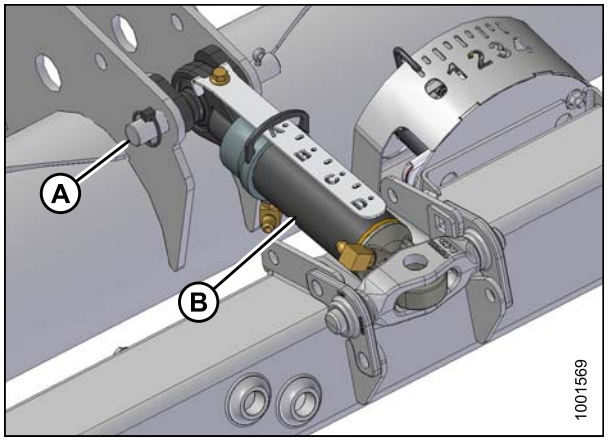


Figure 4.161: Hydraulic Center-Link

20. Disconnect the knife and draper drive hydraulic hoses (A). Immediately cap hoses to prevent oil loss.
21. Store and secure the hoses on the float module frame.
22. Disconnect the electrical connector (B) by turning the collar counterclockwise and pulling the connector to disengage.
23. Store and secure the hoses and electrical connector on the float module.

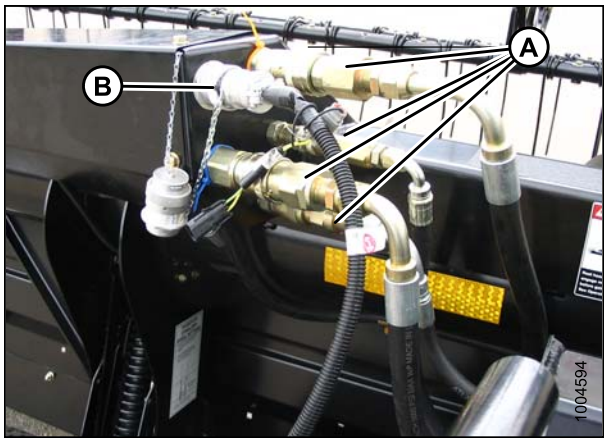


Figure 4.162: Header Connections

24. Disconnect the quick disconnects (if installed) as follows:
    a. Line up the slot (A) in the collar with the pin (B) on the connector.
    b. Push the collar towards the pin, and pull the connector to disengage.
    c. Install plugs or caps on the hose ends (if equipped).

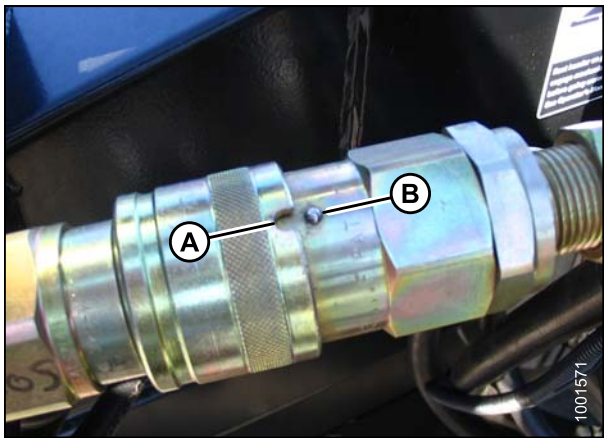


Figure 4.163: Quick Disconnect Coupling

25. Disconnect the reel hydraulics (A). Immediately cap hoses to prevent oil loss.

    NOTE:
    If the optional multicoupler is installed for the reel hydraulics, press the button on the side, raise the handle on the float module, and remove the coupler.

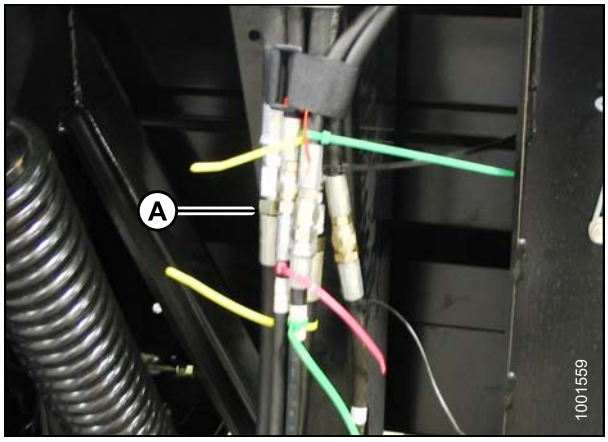


Figure 4.164: Reel Hydraulics

26. Store and secure the hoses and electrical connector on the float module at position (A) as shown.
27. Ensure the header is on the ground or is supported by the wheels in transport mode.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

28. Start the engine and slowly back the float module away from header.
29. Stop the engine and remove the key from the ignition.

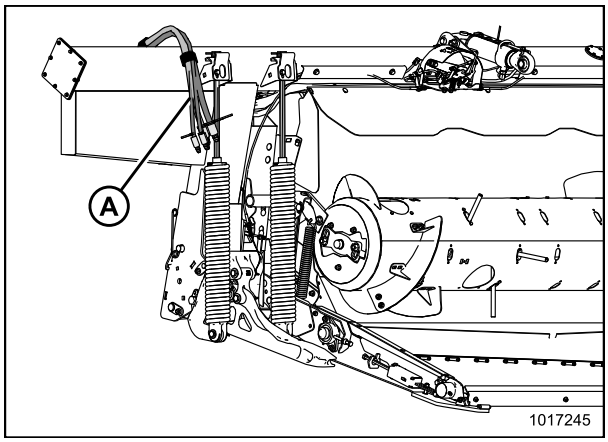


Figure 4.165: Hose Storage

30. Replace pins (B) in the header legs and secure with rings (A).

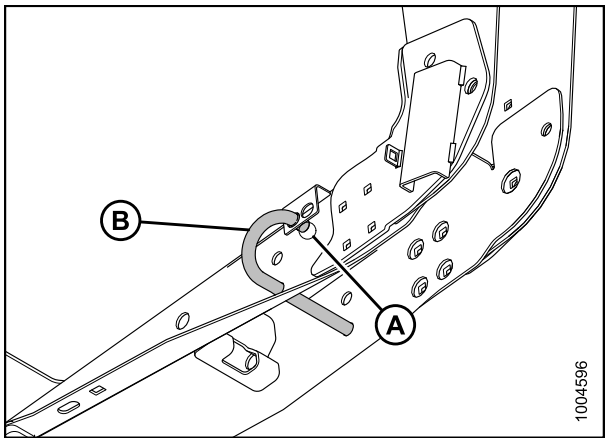


Figure 4.166: Header Leg

5 Maintenance and Servicing

The following instructions provide information about routine header service. Detailed maintenance and service information is available in the technical service manual that is available from your Dealer. A parts catalog is provided in the plastic manual case inside the left endshield.

Log hours of operation and use the maintenance record provided (refer to) to keep track of your scheduled maintenance.

5.1 Preparing Machine for Servicing

DANGER

To avoid bodily injury or death from unexpected start-up or fall of a raised machine, always stop engine and remove key before leaving the operator's seat, and always engage 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.

1. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
2. Stop 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 Specifications

5.2.1 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.

Table 5.1 Recommended Fluids and Lubricants

Lubricant	Specification	Description	Use	Capacities
Grease	SAE multi-purpose	High temperature extreme pressure (EP) performance with 1% max. Molybdenum Disulphide (NLGI Grade 2) lithium base	As required unless otherwise specified	—
		High temperature extreme pressure (EP) performance with 10% max. Molybdenum Disulphide (NLGI Grade 2) lithium base	Driveline slip-joints	—
Gear Lubricant	SAE 85W-140	API service class GL-5	Knife drive box	2.3 quarts (2.2 liters)
			Main drive gearbox	2.6 quarts (2.5 liters)
Hydraulic Oil	Single grade trans-hydraulic oil. Recommended brands: • Petro-Canada Duratran • John Deere Hy-Gard J20C • Case Hy-Tran Ultraction • AGCO Power Fluid 821 XL	Lubricant trans / hydraulic oil	Header drive systems reservoir	20 US gallons (75 liters)

5.2.2 Installing a Sealed Bearing

1. Clean the shaft and apply a rust preventive coating.
2. Install the flangette (A), bearing (B), second flangette (C), and lock the collar (D).

   NOTE:
   The locking cam is on only one side of the bearing.

3. Install, but do not tighten, the flangette bolts (E).
4. Position the shaft correctly, and lock the lock collar with a punch. Lock the collar in the same direction the shaft rotates, and tighten the setscrew in the collar.
5. Tighten the flangette bolts (E).
6. Loosen the flangette bolts on the mating bearing one turn and then retighten. This will enable the bearing to properly line up.

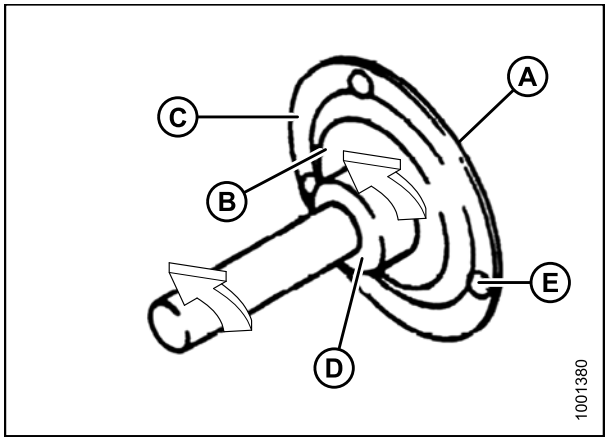


Figure 5.1: Sealed Bearing

5.3 Maintenance Requirements

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following the maintenance schedule will increase your machine's life. Log hours of operation, use the maintenance record, and keep copies of your maintenance records (refer to *5.3.1 Maintenance Schedule/Record, page 301*).

Periodic maintenance requirements are organized according to service intervals. If a service interval specifies more than one timeframe, e.g., 100 hours or annually, service the machine at whichever interval is reached first.

IMPORTANT:
Recommended intervals are for average conditions. Service the machine more often if operating under adverse conditions (severe dust, extra heavy loads, etc.).

When servicing the machine, refer to the appropriate section in this Maintenance and Servicing chapter and use only fluids and lubricants specified in *5.2.1 Recommended Fluids and Lubricants, page 298*.

CAUTION

Carefully follow safety messages. Refer to *5.1 Preparing Machine for Servicing, page 297* and *1 Safety, page 1*.

5.3.1 Maintenance Schedule/Record

Action:	✓ - Check	♦ - Lubricate	▲ - Change

✎	Hour meter reading																						
✎	Service date																						
✎	Serviced by																						
First Use		Refer to *5.3.2 Break-In Inspection, page 303*.																					
End of Season		Refer to *5.3.4 End-of-Season Service, page 304*.																					
10 Hours or Daily (Whichever Occurs First)																							
✓	Hydraulic hoses and lines; refer to *5.3.5 Checking Hydraulic Hoses and Lines, page 305*	**NOTE: 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 sections, guards, and hold-downs; refer to *5.8 Knives, page 350*																						
✓	Tire pressure; refer to *5.15.3 Checking Tire Pressure, page 461*																						
♦	Knife (except in sandy conditions); refer to *Every 10 Hours, page 306*																						
25 Hours																							
✓	Hydraulic oil level at reservoir; refer to *5.4.1 Checking Oil Level in Hydraulic Reservoir, page 323*	**NOTE: 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.**																					
♦	Knifeheads; refer to *Every 25 Hours, page 307*																						
50 Hours or Annually																							
♦	Draper roller bearings; refer to *5.12.6 Header Draper Roller Maintenance, page 410*																						
♦	Driveline and driveline universals; refer to *Every 50 Hours, page 308*																						
▲	Knife drive box lubricant (first 50 hours only); refer to *Changing Oil in Knife Drive Box, page 372*																						
100 Hours or Annually (Whichever Occurs First)																							
✓	Auger to pan and feed draper clearance; refer to *5.7.1 Adjusting Auger to Pan Clearance, page 334*																						
✓	Draper seal; refer to *5.12.5 Adjusting Deck Height, page 408*																						
✓	Gearbox lubricant level; refer to *Checking Oil Level in Header Drive Gearbox, page 321*																						
✓	Reel drive chain tension; refer to *5.14.2 Adjusting Reel Drive Chain Tension, page 445*																						

✓	Reel finger/cutterbar clearance; refer to *Adjusting Reel Clearance, page 423*																	
✓	Knife drive belt tension; refer to *5.9.2 Knife Drive Belts, page 372*																	
✓	Wheel bolt torque; refer to *5.15.1 Checking Wheel Bolt Torque, page 459*																	
✓	Knife drive box lubricant level; refer to *Checking Knife Drive Box, page 364*																	
✓	Knife drive box mounting bolts; refer to *Checking Mounting Bolts, page 365*																	
♦	Auger drive chain; refer to *Every 100 Hours, page 309*																	
♦	Float pivots; refer to *Every 100 Hours, page 309*																	
♦	Float spring tensioners; refer to *Every 100 Hours, page 309*																	
♦	Reel drive chain; refer to *Every 100 Hours, page 309*																	
♦	Upper cross auger right-hand bearing; refer to *Every 100 Hours, page 309*																	
250 Hours or Annually (Whichever Occurs First)																		
✓	Draper seal; refer to *5.12.5 Adjusting Deck Height, page 408*																	
♦	Float module auger pivots; refer to *Every 250 Hours, page 311*																	
♦	Upper cross auger center support and U-joint; refer to *Every 250 Hours, page 311*																	
♦	Reel drive U-joint; refer to *Every 250 Hours, page 311*																	
♦	Bell crank linkage; refer to *3.9 Levelling the Header, page 198*																	
♦	Transport axle pivot bushings; refer to *Every 250 Hours, page 311*																	
▲	Hydraulic oil filter; refer to *5.4.4 Changing Oil Filter, page 325*																	
500 Hours or Annually (Whichever Occurs First)																		
✓	Draper seal; refer to *5.12.5 Adjusting Deck Height, page 408*																	
♦	Reel shaft bearings; refer to *Every 500 Hours, page 314*																	
♦	Stabilizer/slow speed transport wheel bearings; refer to *Every 500 Hours, page 314*																	

✓	Header drive gearbox chain tension; refer to *5.7.2 Adjusting Auger Drive Chain Tension, page 336*																	
1000 Hours or 3 Years (Whichever Occurs First)																		
▲	Knife drive box lubricant; refer to *Changing Oil in Knife Drive Box, page 372*																	
▲	Header drive gearbox lubricant; refer to *Changing Oil in Header Drive Gearbox, page 322*																	
▲	Hydraulic oil; refer to *5.4.3 Changing Oil in Hydraulic Reservoir, page 324*																	

5.3.2 Break-In Inspection

Break-in inspection involves checking belts, fluids, and performing general machine inspections for loose hardware or other areas of concern. Break-in inspections ensure that all components can operate for an extended period without requiring service or replacement.

Inspection Interval	Item	Refer to
5 Minutes	Check hydraulic oil level in reservoir.	*5.4.1 Checking Oil Level in Hydraulic Reservoir, page 323*
5 Hours	Check for loose hardware and tighten to required torque.	*8.1 Torque Specifications, page 485*
	Check knife drive belts tension (check periodically for first 50 hours).	*Tensioning Non-Timed Knife Drive Belts, page 374*
10 Hours	Check auger drive chain tension	*5.7.2 Adjusting Auger Drive Chain Tension, page 336*
	Check knife drive box mounting bolts.	*Checking Mounting Bolts, page 365*
50 Hours	Change float module gearbox oil.	*Changing Oil in Header Drive Gearbox, page 322*
	Change float module hydraulic oil filter.	*5.4.4 Changing Oil Filter, page 325*
	Change knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 372*
	Check gearbox chain tension.	*5.6.5 Adjusting Tension on Gearbox Drive Chain, page 333*

5.3.3 Preseason Servicing

Perform the following procedures 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. Refer to *5.3.6 Lubrication and Servicing, page 305*.
2. Adjust the tension on the drive belts. Refer to *Tensioning Non-Timed Knife Drive Belts, page 374* or *Tensioning Timed Knife Drive Belts, page 379*.
3. Perform all annual maintenance tasks. Refer to *5.3.1 Maintenance Schedule/Record, page 301*.

5.3.4 End-of-Season Service

Perform the following procedures 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 cutterbar and knife guards to prevent injury from accidental contact.

1. Clean the header thoroughly.
2. Store the machine in a dry, protected place if possible. If storing outside, always cover with a waterproof canvas or other protective material.

   NOTE:
   If storing the machine outside, remove the drapers and store them in a dark, dry place. If not removing the drapers, store the header with the cutterbar lowered so water and snow will not accumulate on the drapers. The weight of water and snow accumulation puts excessive stress on the drapers and header.

3. Lower the header onto blocks to keep the cutterbar off the ground.
4. Lower the reel completely. If stored outside, 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 to keep moisture out of the bearings.
8. Apply grease to exposed threads, cylinder rods, and sliding surfaces of components.
9. Check for worn components and repair as necessary.

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. Replace or tighten any missing or loose hardware. Refer to *8.1 Torque Specifications, page 485*.

5.3.5 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 5.2: 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.

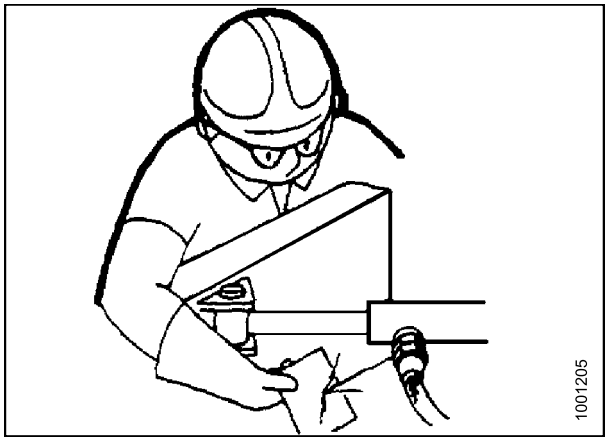


Figure 5.3: Testing for Hydraulic Leaks

5.3.6 Lubrication and Servicing

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in *5.1 Preparing Machine for Servicing, page 297*.

Refer to *5.2.1 Recommended Fluids and Lubricants, page 298* for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 301*.

Service Intervals

Every 10 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knife: Lubricate the knife every 10 hours or daily, except in sandy conditions.

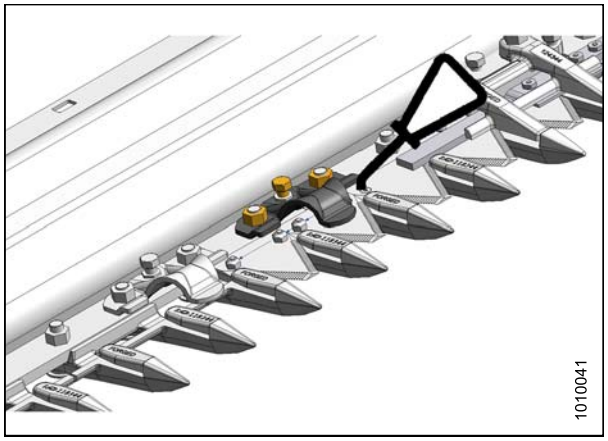


Figure 5.4: Every 10 Hours or Daily

Every 25 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Knifehead: Lubricate the 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:
Over-greasing the knifehead puts pressure on the knife causing it to rub against the guards, resulting in excessive wear from binding. Do **NOT** over-grease 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. Refer to *5.8.3 Removing Knifehead Bearing, page 352*.

Figure 5.5: Every 25 Hours

Every 50 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

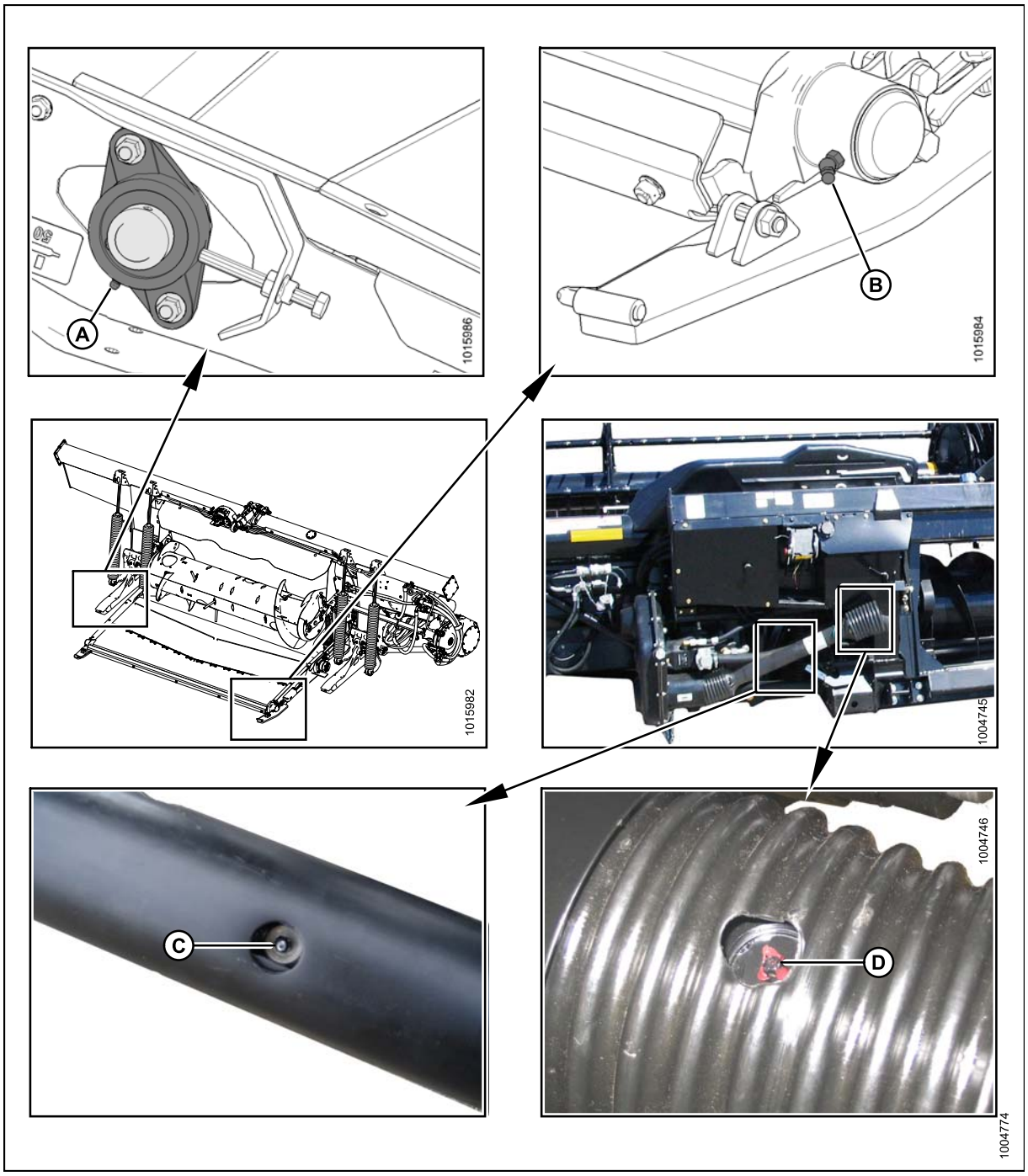


Figure 5.6: Every 50 Hours

A - Drive Roller Bearing **B - Idler Roller Bearing (Both Sides)** **C - Driveline Slip Joint**[11] **D - Driveline Universal (Two Places)**

11. Use high temperature extreme pressure (EP2) performance with 10% max molybdenum disulphide (NLGI Grade 2) lithium base.

Every 100 Hours

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

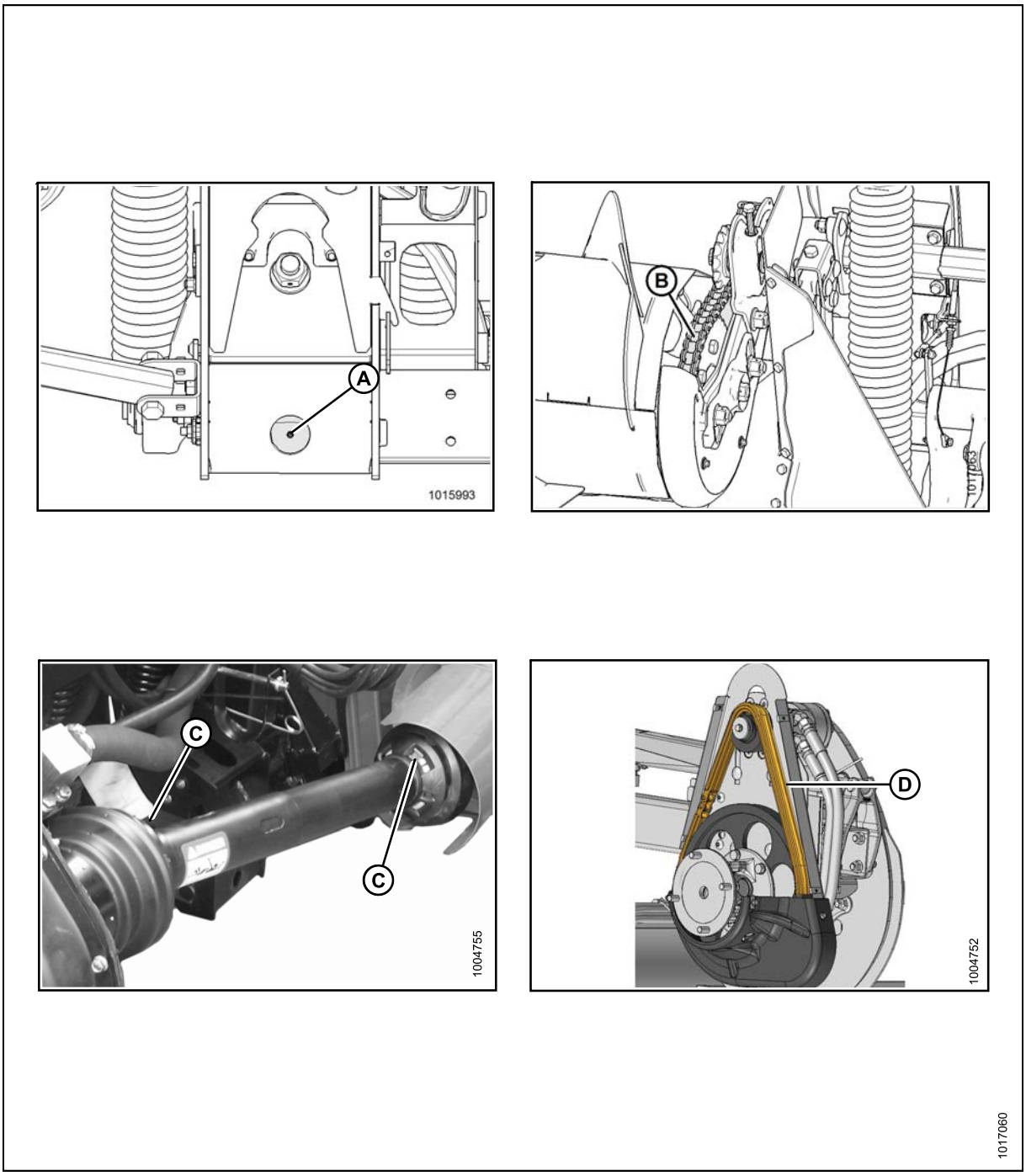
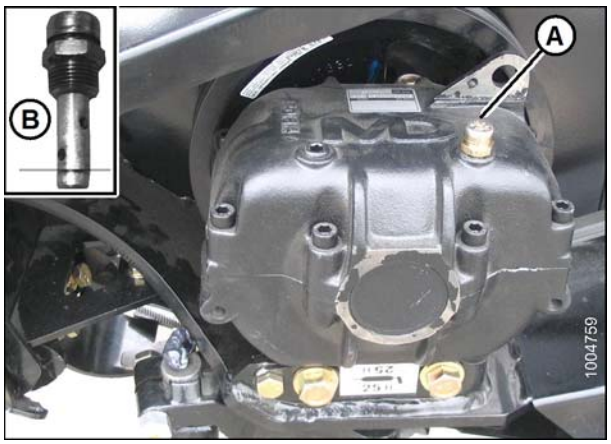
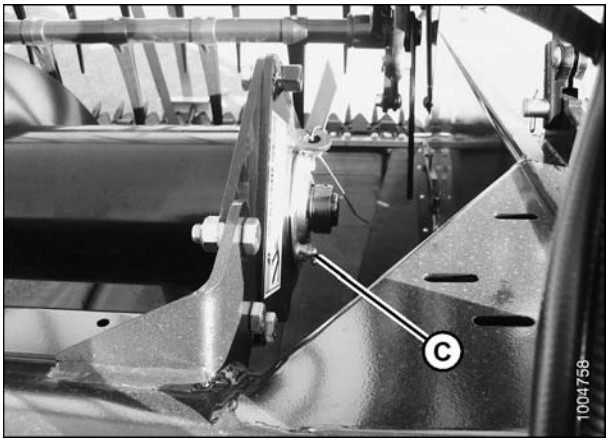


Figure 5.7: Every 100 Hours

A - Float Pivot - Right- and Left-Hand
B - Auger Drive Chain. Refer to *Lubricating Auger Drive Chain, page 318*
C - Driveline Guard - Two Places
D - Reel Drive Chain- One Place. Refer to *Lubricating Reel Drive Chain – Single Reel* or *Lubricating Reel Drive Chain – Double Reel, page 316*





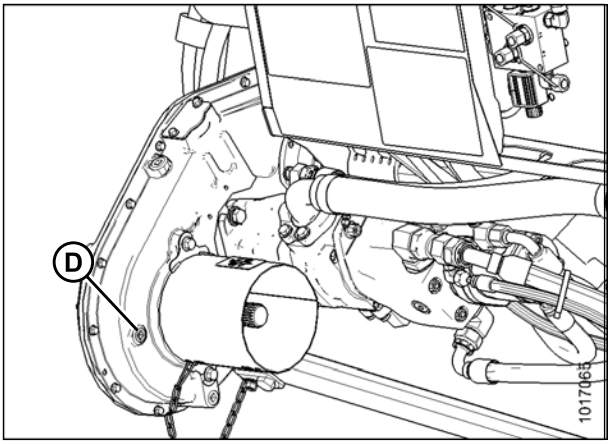


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Figure 5.8: Every 100 Hours

A - Knife Drive Box (Check Oil Level Between Lower Hole and End of Dipstick [B])
C - Upper Cross Auger Bearing (One Place)
D - Main Drive Gearbox Oil Level. Refer to *Lubricating Header Drive Gearbox, page 321*

Every 250 Hours

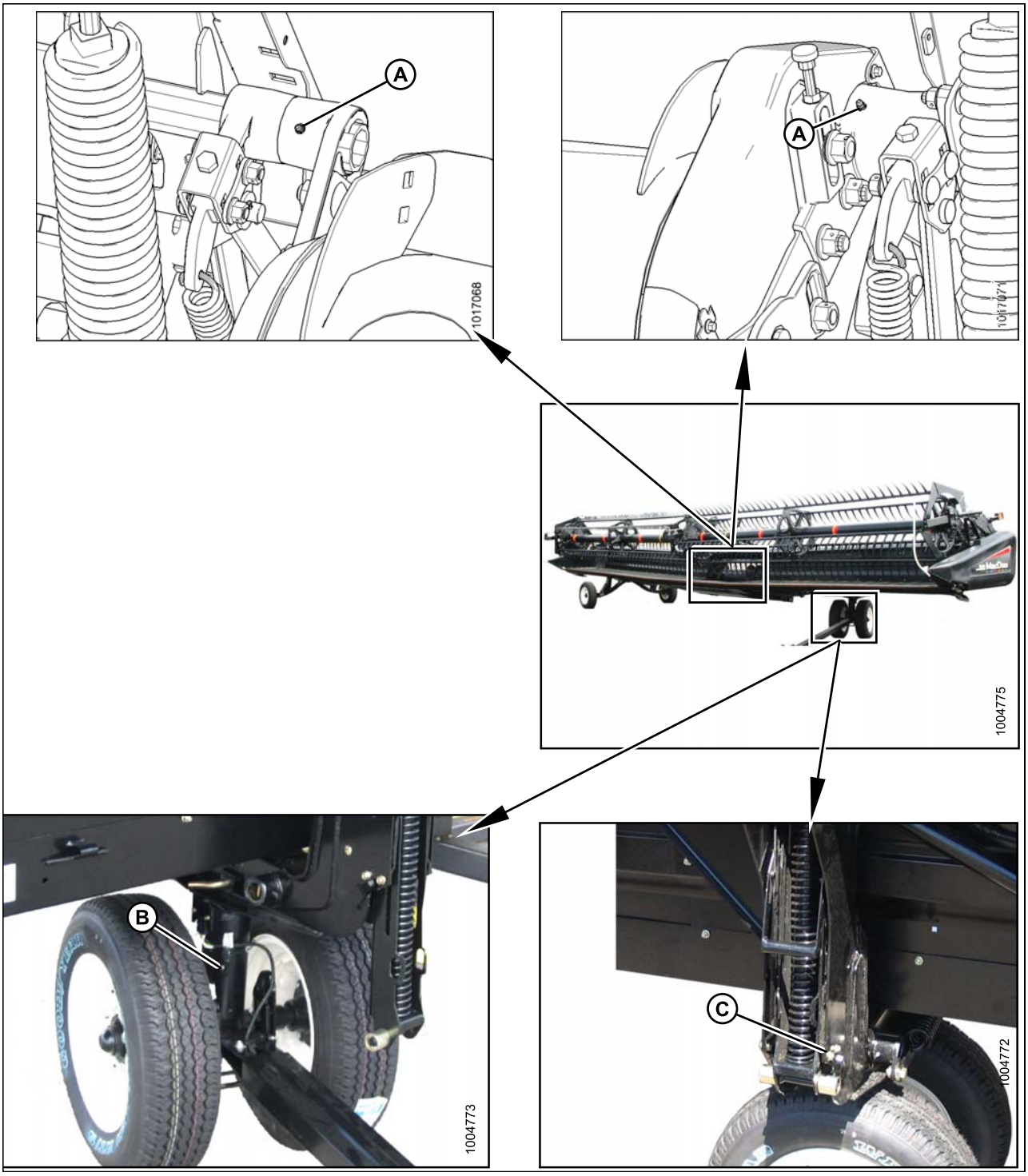


Figure 5.9: Every 250 Hours

A - Auger Pivots
B - Front Wheel Pivot (One Place)
C - Frame/Wheel Pivot (Front and Rear) - Both Sides

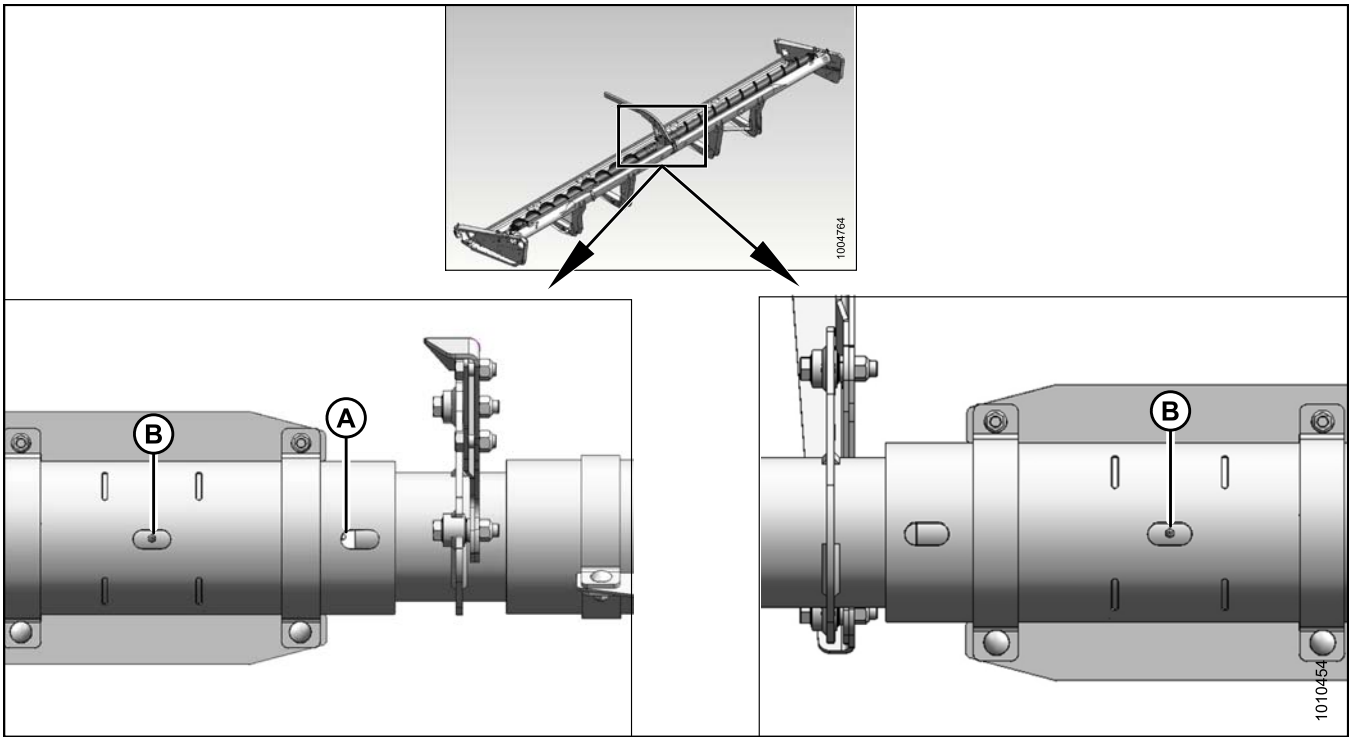


Figure 5.10: Every 250 Hours

A - Upper Cross Auger U-joint[12]

B - Upper Cross Auger Bearing (Two Places)[13]

12. 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.
13. Use high temperature extreme pressure (EP2) performance with 1.5–5.0% max molybdenum disulphide (NLGI Grade 2) lithium base.

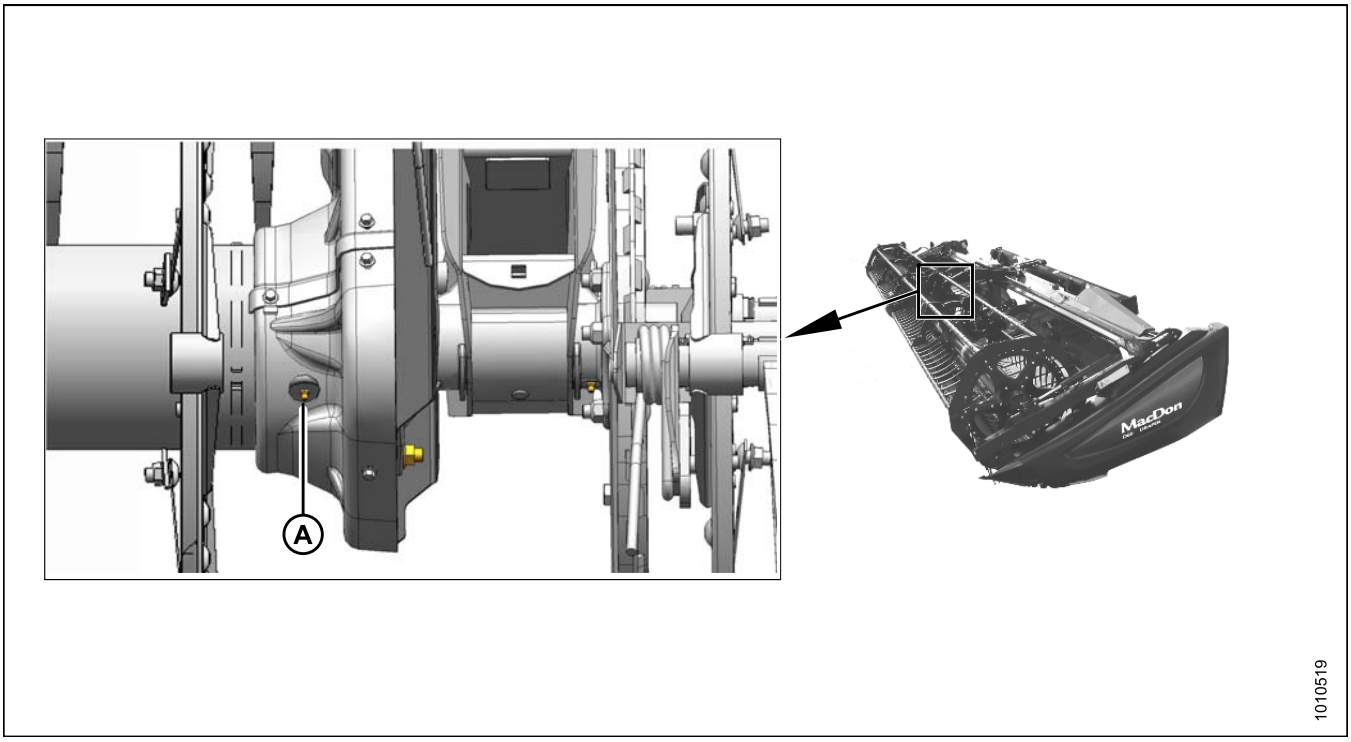


Figure 5.11: Every 250 Hours

A - Double Reel U-joint[14]

14. 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

Use high temperature extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

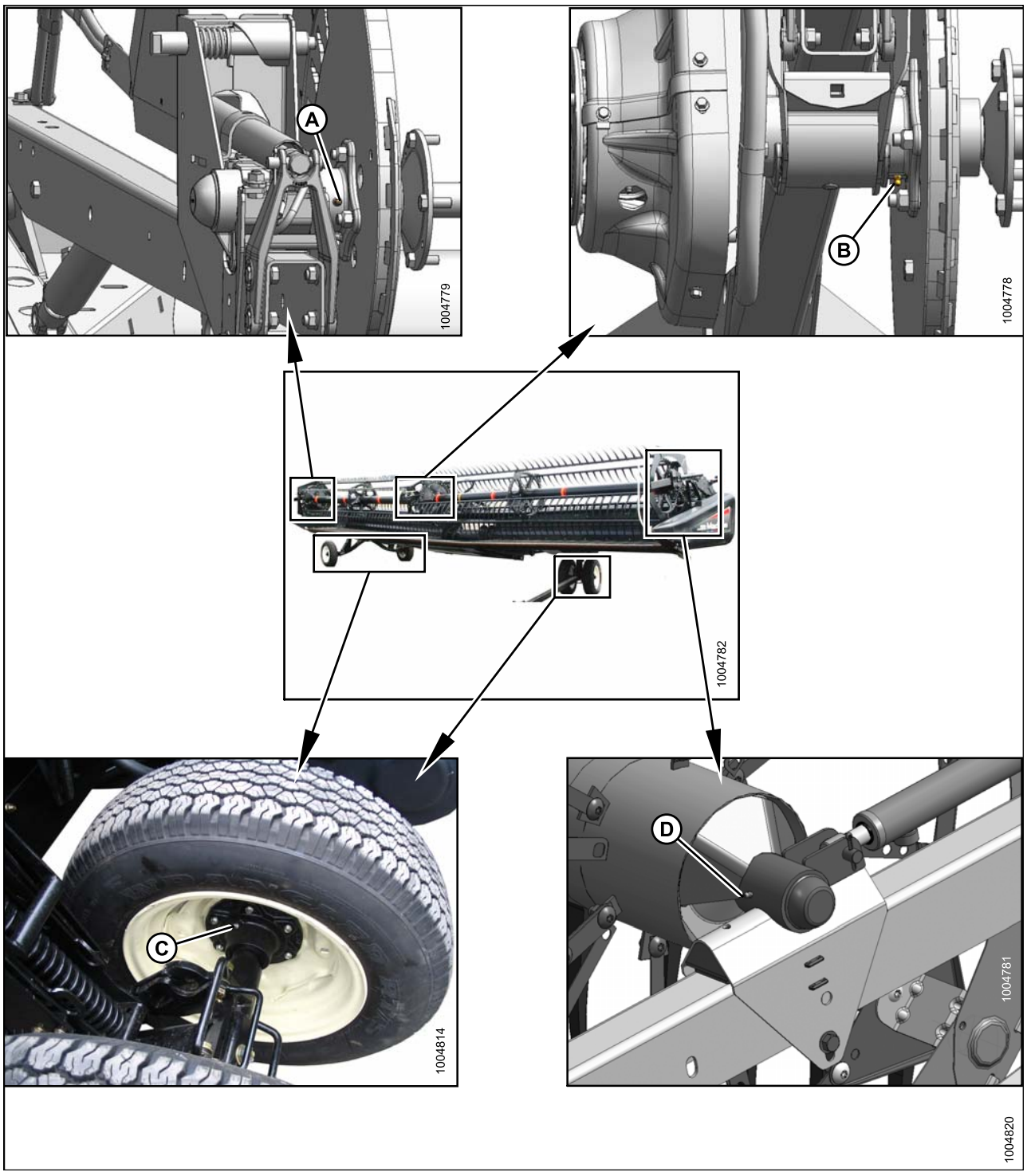


Figure 5.12: Every 500 Hours

A - Reel Right Bearing (One Place)
B - Reel Center Bearing (One Place)
C - Wheel Bearings (Four Places)
D - Reel Left Bearing (One Place)

Greasing Procedure

Greasing points are marked on the machine by decals showing a grease gun and grease interval in hours of operation. Master grease point location decals are provided on the header and the float module back frame.

DANGER

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

Refer to *5.2.1 Recommended Fluids and Lubricants, page 298* for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to *5.3.1 Maintenance Schedule/Record, page 301*.

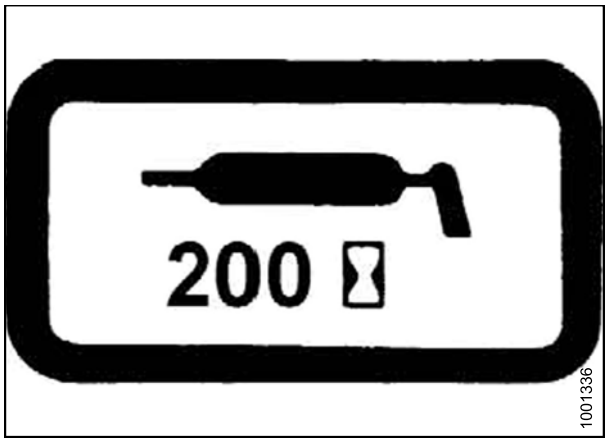


Figure 5.13: Greasing Interval Decal

1. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
2. Inject grease through fitting with grease gun until grease overflows fitting (except where noted).
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately.
5. Remove and thoroughly clean any fitting that will not take grease. Also clean lubricant passageway. Replace fitting if necessary.
6. Use clean, high-temperature, extreme-pressure grease only.

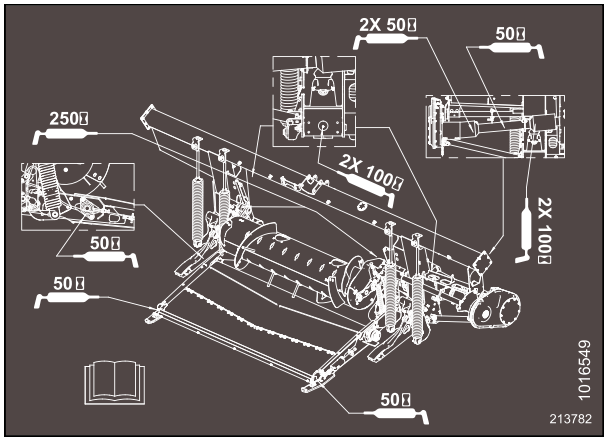


Figure 5.14: FM100 Master Grease Point Decal

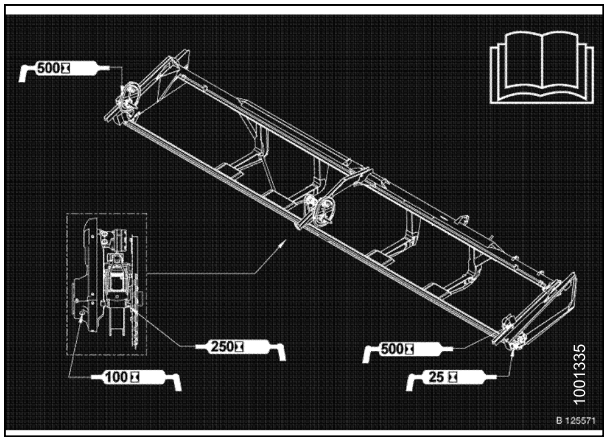


Figure 5.15: Single-Knife Header Master Grease Point Decal

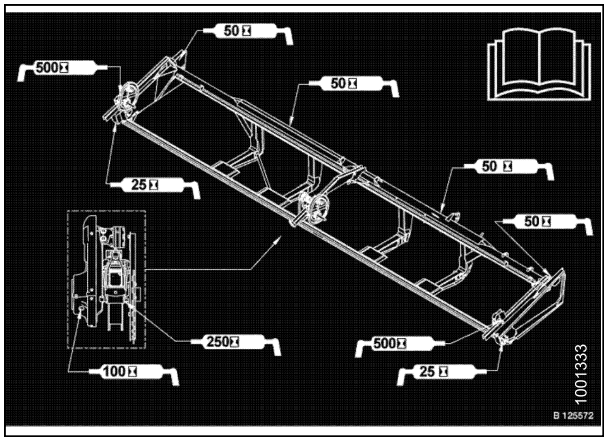


Figure 5.16: Double-Knife Header Master Grease Point Decal

Lubricating Reel Drive Chain – Double Reel

⚠ DANGER

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

1. Stop the engine and remove the key from the ignition.
2. Remove six bolts (A) securing the upper cover (B) to the reel drive and lower cover (C).

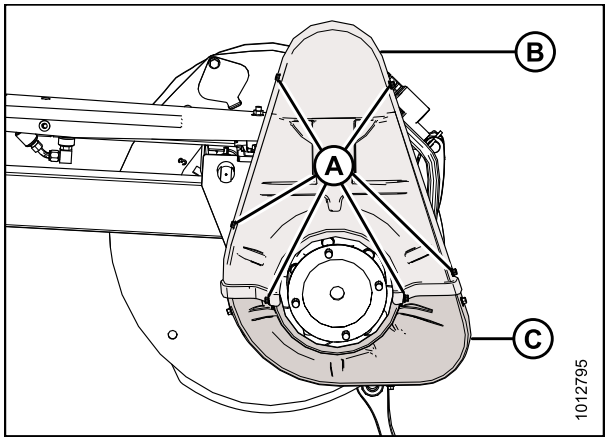


Figure 5.17: Drive Cover – Double Reel

3. Remove three bolts (A) and remove the lower cover (B), if necessary.

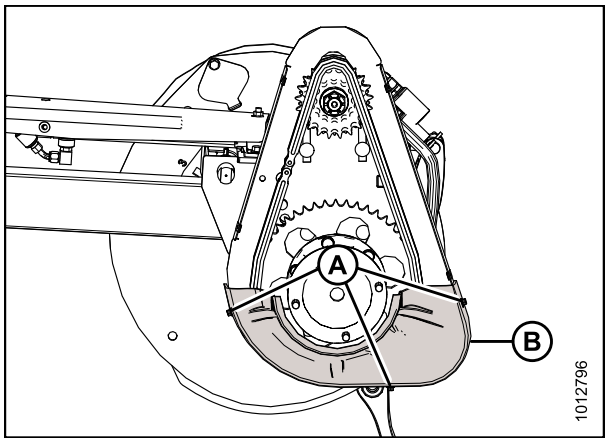


Figure 5.18: Lower Drive Cover (Upper Cover Removed)

4. Apply a liberal amount of grease to the chain (A).

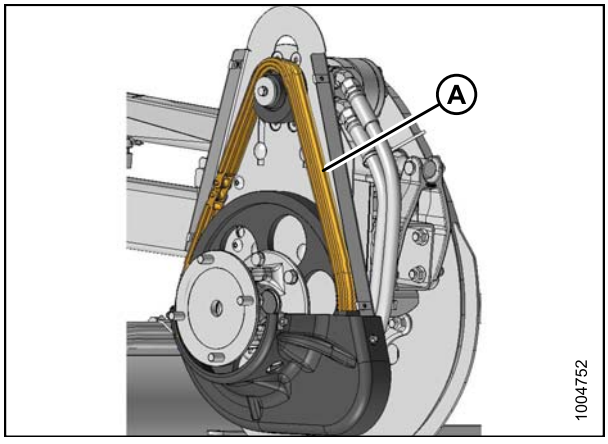


Figure 5.19: Drive Chain

5. Position the lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

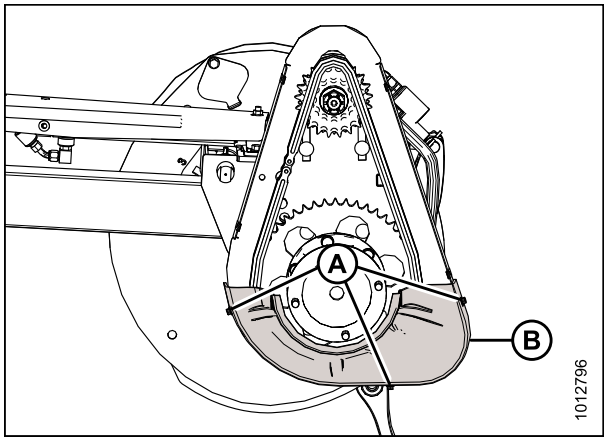


Figure 5.20: Lower Drive Cover – Double Reel

6. Position the upper drive cover (B) onto the reel drive and lower cover (C) and secure with six bolts (A).

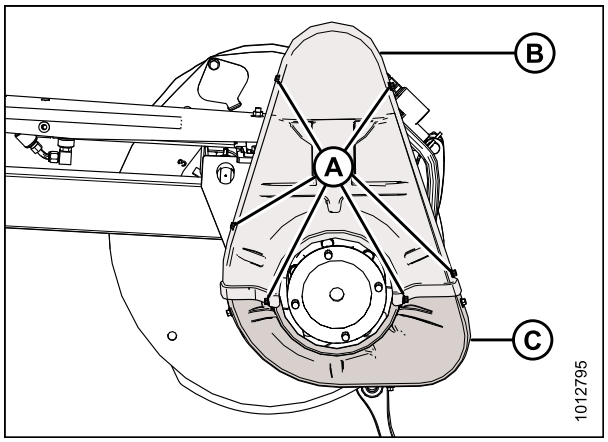


Figure 5.21: Drive Cover – Double Reel

Lubricating Auger Drive Chain

DANGER

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

Lubricate the auger drive chain every 100 hours. Lubrication can be done with the float module attached to the combine, but it is easier with the float module detached.

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 grease the chain.

1. Remove four bolts (A) and the metal inspection panel (B).

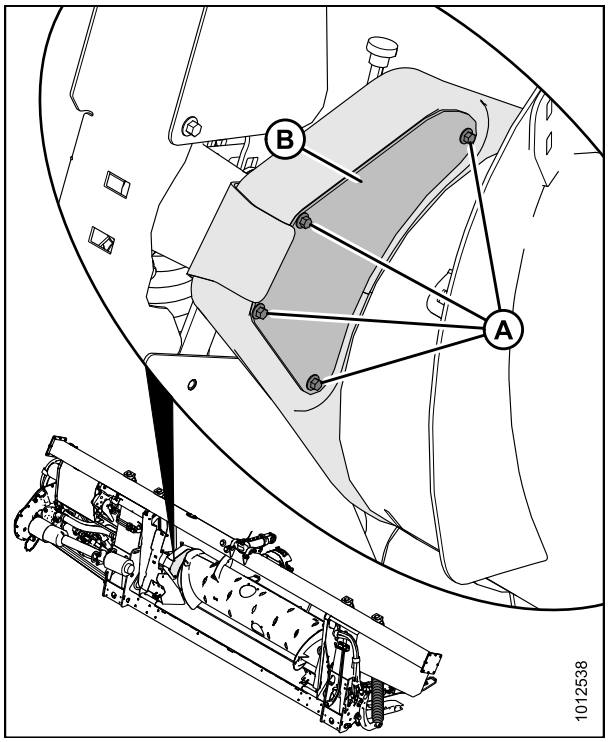


Figure 5.22: Auger Drive Inspection Panel

2. Apply a liberal amount of grease to the chain (A), drive sprocket (B), and idler sprocket (C).
3. Rotate the auger and apply grease to more areas of the chain, if practical.

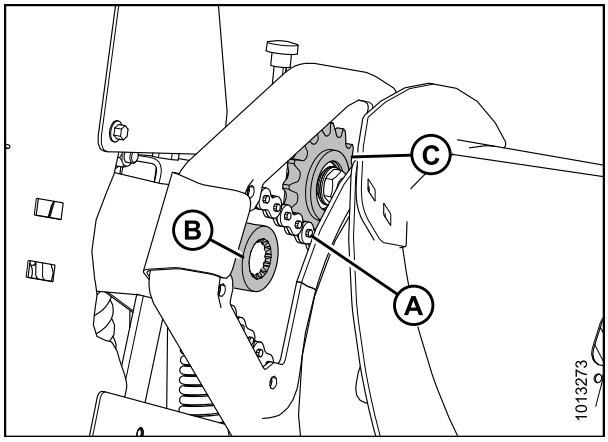


Figure 5.23: Auger Drive Chain

4. Reinstall metal inspection panel (B) and secure with four bolts (A).

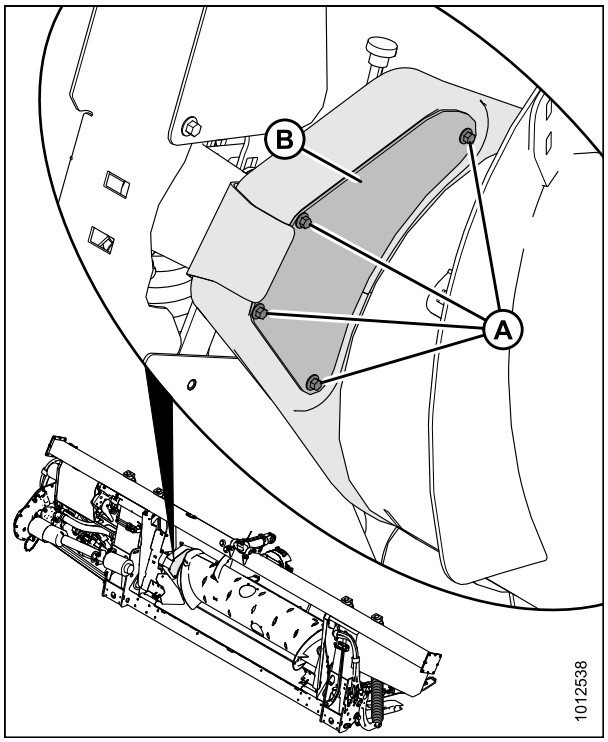


Figure 5.24: Auger Drive Inspection Panel

Lubricating Header Drive Gearbox

Checking Oil Level in Header Drive Gearbox

Check the header drive gearbox oil level every 100 hours.

DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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 combine and remove the key from the ignition.
3. Remove the oil level plug (A) and check that the oil level is up to the bottom of the hole.
4. Replace the oil level plug (A).
5. Add oil if required. Refer to *Adding Oil to Header Drive Gearbox, page 321*.

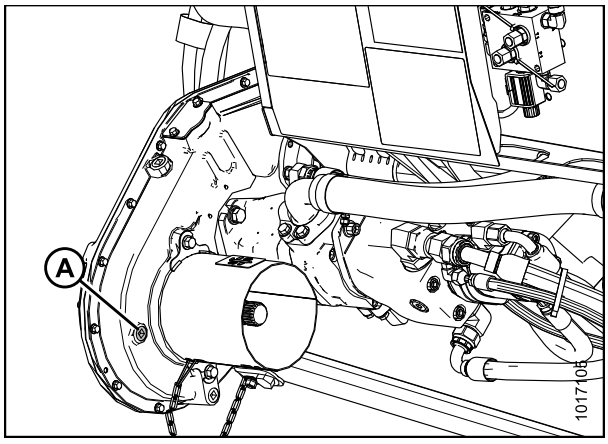


Figure 5.25: Header Drive Gearbox

Adding Oil to Header Drive Gearbox

DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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 combine, and remove the key from the ignition.
3. Remove the oil level plug (A) and the filler plug (B).
4. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (B) until it runs out of the oil level plug hole (A).
5. Replace the oil level plug (A) and the filler plug (B).

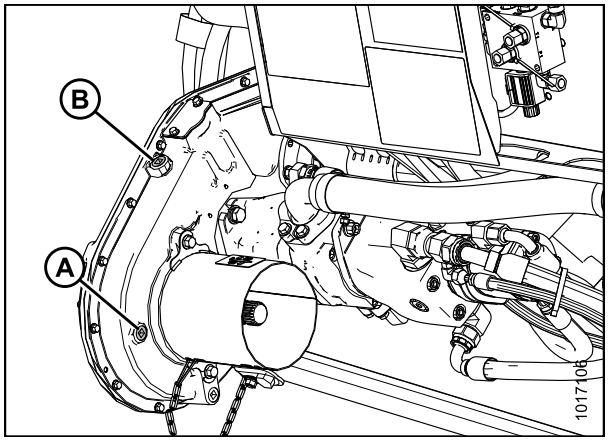


Figure 5.26: Header Drive Gearbox

Changing Oil in Header Drive Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

DANGER

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

1. Start engine to warm up oil.
2. Raise or lower the header to position the oil drain plug (A) at its lowest point.
3. Shut down the combine, and remove the key from the ignition.
4. Place a suitably sized container (approximately 1 US gallon [4 liters]) underneath the gearbox drain to collect the oil.
5. Remove the oil drain plug (A) and the filler plug (C), and allow the oil to drain.
6. Replace the oil drain plug (A) and remove the oil level plug (B).
7. Add SAE 85W-140 (API service class GL-5) oil into the filler plug (C) until it runs out of the oil level hole (B).

   NOTE:
   The header drive gearbox holds approximately 2.6 quarts (2.5 liters) of oil.

8. Replace the oil level plug (B) and the filler plug (C).

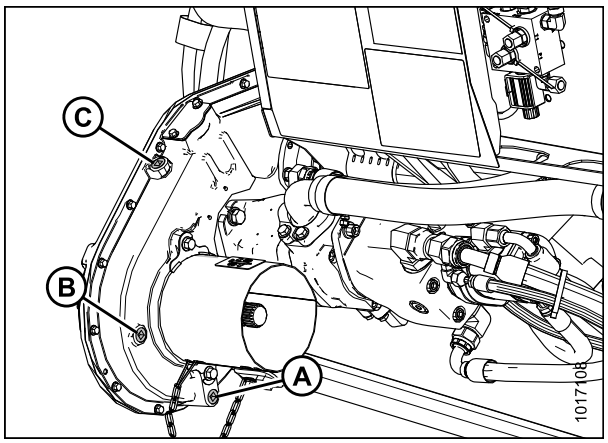


Figure 5.27: Header Drive Gearbox

5.4 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 *5.2.1 Recommended Fluids and Lubricants, page 298* for oil requirements.

5.4.1 Checking Oil Level in Hydraulic Reservoir

Check the hydraulic oil level in the reservoir every 25 hours.

1. Check the oil level using the lower sight (A) and the upper sight (B) with the cutterbar just touching the ground.

   NOTE:
   Check the level when the oil is cold and with center-link retracted.

2. Ensure the oil is at the appropriate level for the terrain as follows:

   - **Hilly terrain :** Maintain level so lower sight (A) is full, and upper sight (B) is up to one-half filled.
   - **Normal terrain :** Maintain level so lower sight (A) is full, and upper sight (B) is empty.
   - **Level ground :** For slopes of 6° or less, oil level may be kept slightly lower if desired. Maintain level so lower sight (A) is one-half filled or slightly higher.

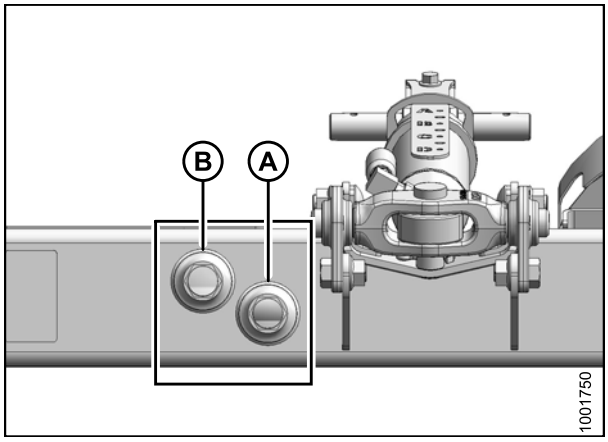


Figure 5.28: Oil Level Sight Glass

NOTE:
It may be necessary to slightly reduce the oil level when ambient temperatures are above 35°C (95°F) to prevent overflow at the breather when normal operating temperatures are reached.

5.4.2 Adding Oil to Hydraulic Reservoir

Follow this procedure to top up the oil in the hydraulic reservoir. To change the hydraulic oil, refer to *5.4.3 Changing Oil in Hydraulic Reservoir, page 324*.

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Clean any dirt or debris from the filler cap (A).
3. Loosen and remove the filler cap (A) by turning it counterclockwise.
4. Add warm oil (approximately 21°C [70°F]) and fill to the required level. Refer to *5.2.1 Recommended Fluids and Lubricants, page 298* for specifications.

   IMPORTANT:
   Warm oil will flow through the screen better than cold oil. Do **NOT** remove the screen.
5. Reinstall the filler cap (A).

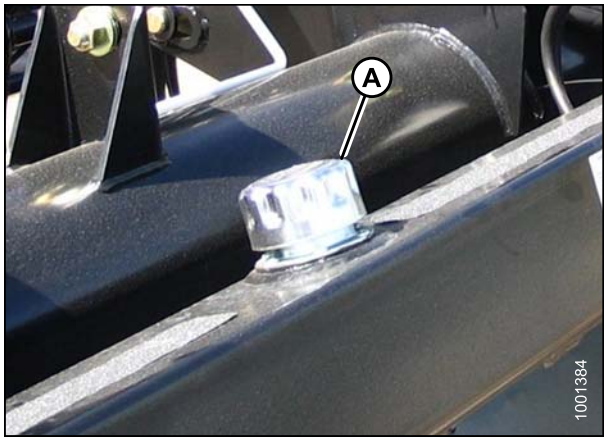


Figure 5.29: Oil Reservoir Filler Cap

5.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

DANGER

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

1. Start engine to warm up oil.
2. Shut down the combine, and remove the key from the ignition.
3. Place a suitably sized container (at least 10 US gallons [40 liters]) under each of the two oil drain plugs (A) located at the back on each side of the frame.
4. Remove the oil drain plugs (A) with a 1-1/2 in. hex socket and allow the oil to drain.
5. Replace the oil drain plugs (A) when reservoir is empty.
6. Change the oil filter if required. Refer to *5.4.4 Changing Oil Filter, page 325*.
7. Add approximately 20 US gallons (75 liters) of oil to the reservoir. Refer to *5.4.2 Adding Oil to Hydraulic Reservoir, page 323*.

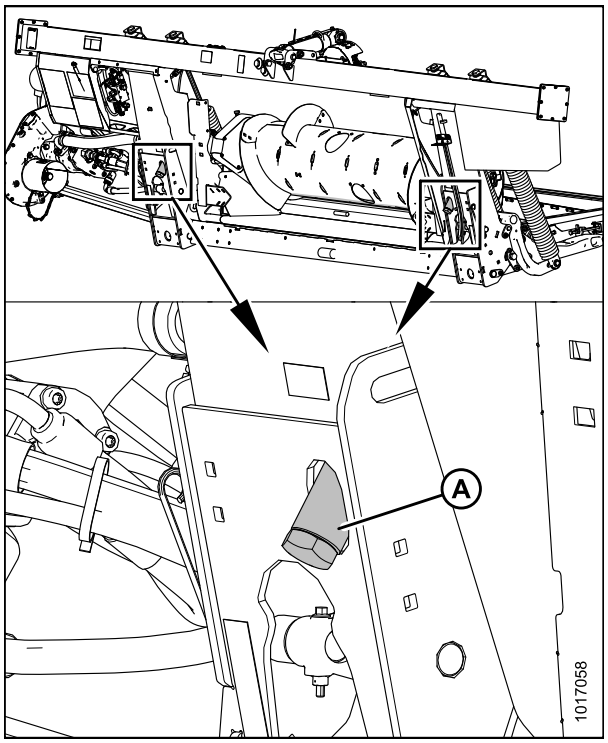


Figure 5.30: Reservoir Drain

5.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

Obtain filter part MD #202704 from your MacDon Dealer.

DANGER

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

1. Clean around the mating surfaces of the filter (B) and manifold (A).
2. Remove the spin-off filter (B) and clean the exposed filter port in the manifold (A).
3. Apply a thin film of clean oil to the O-ring provided with the new filter.
4. Turn the new filter into the manifold (A) until the O-ring contacts the mating surface. Tighten the filter an additional 1/2 to 3/4 turn by hand.

   IMPORTANT:
   Do **NOT** use a filter wrench to install the new filter. Overtightening can damage the O-ring and filter.

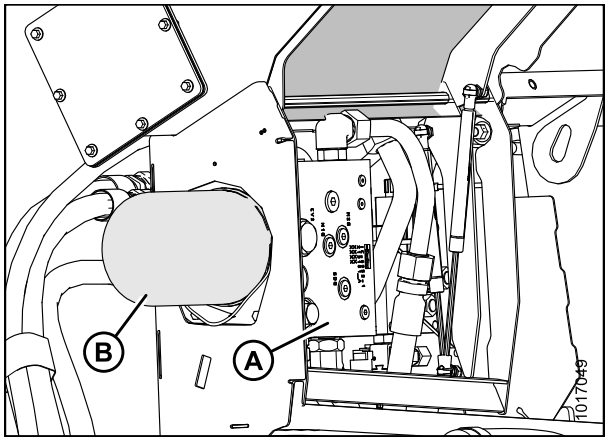


Figure 5.31: FM100 Hydraulics (Cover Opened to Show Manifold)

5.5 Electrical System

Use electrical tape and wire clips as required to prevent wires from dragging or rubbing.

Keep lights clean and replace defective bulbs.

5.5.1 Replacing Light Bulbs

1. Use a Phillips screwdriver to remove the screws (A) from the fixture and remove the plastic lens.
2. Replace the bulb and reinstall the plastic lens and screws.

   NOTE:
   Use bulb trade #1156 for amber transport lights and #1157 for red tail light (Slow Speed Transport option).

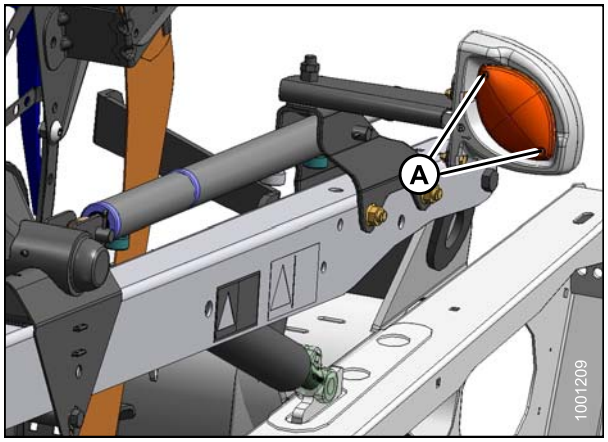


Figure 5.32: Transport Light

5.6 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 provides hydraulic power to the drapers, knives, and optional equipment.

5.6.1 Removing Driveline

DANGER

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

NOTE:
The driveline normally remains attached to the float module and is stored on the hook provided when not in use.

1. 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.
2. Remove the two nuts (A) securing the shield (B) to the gearbox.
3. Slide the shield (B) over the driveline shield to expose the quick disconnect on the gearbox. Do **NOT** disconnect the tether (C).
4. Pull the quick disconnect collar to release the driveline yoke, and pull the driveline off the shaft.
5. Slide the shield (B) off the driveline.

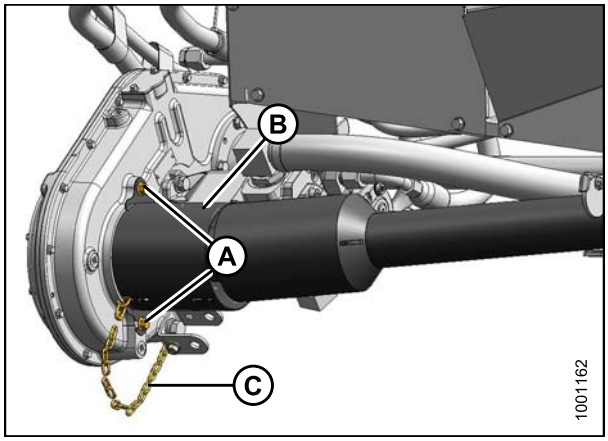


Figure 5.33: Float Module End of Driveline

6. Pull handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

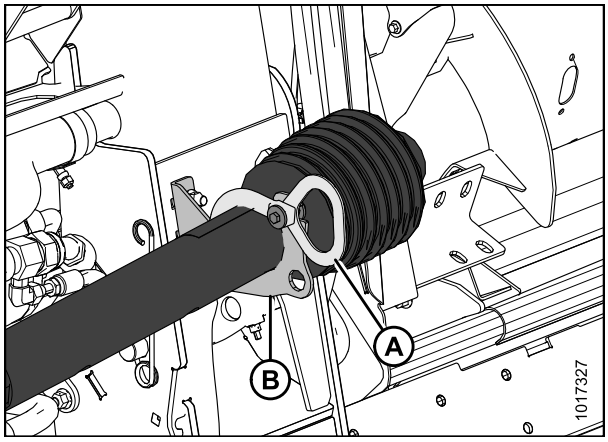


Figure 5.34: Combine End of Driveline

5.6.2 Installing Driveline

DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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. Refer to *2.2 Header Attachments, page 24*.

1. Store the driveline in the support bracket (B) and secure with strap (A).

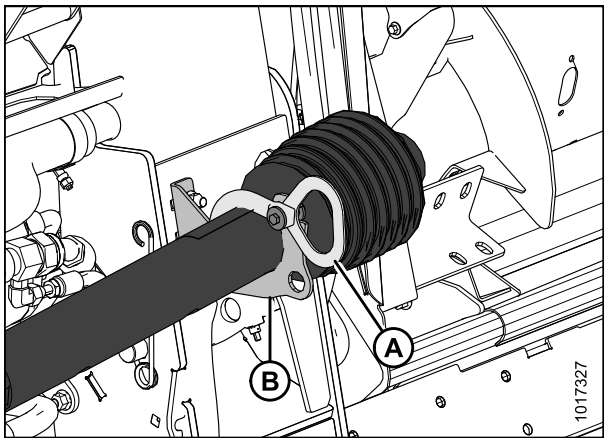


Figure 5.35: Combine End of Driveline

2. Slide the shield (B) over the driveline.
3. Position the driveline quick disconnect onto the float module gearbox shaft, pull back the collar, and slide onto the shaft until the yoke locks onto the shaft. Release the collar.
4. Position the shield (B) on the gearbox and secure with nuts (A).
5. Connect the opposite end to the combine if necessary.

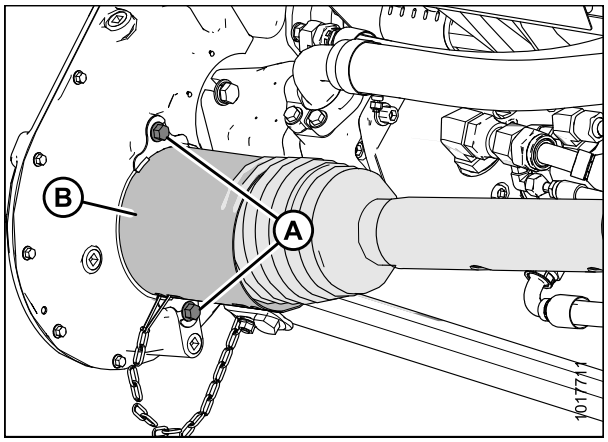


Figure 5.36: Float Module End of Driveline

5.6.3 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 avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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 handle (A) to release bolt from slot and remove the driveline from the support bracket (B).

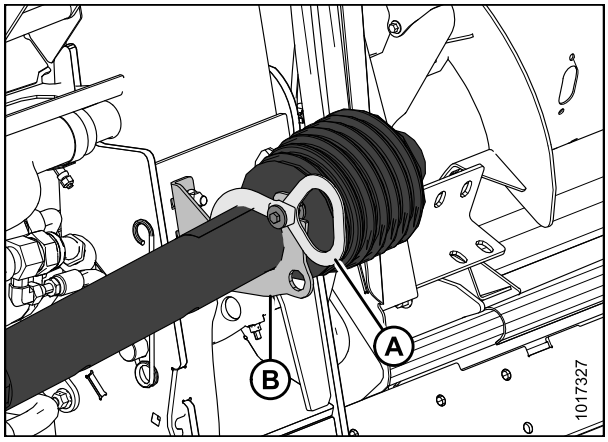


Figure 5.37: Combine End of Driveline

3. Lift the combine end of the driveline (A) from the hook, and extend the driveline until it separates. Hold the float module end of the driveline (B) to prevent it from dropping and hitting the ground.

Figure 5.38: Separated Driveline

4. Use a slotted screwdriver to release grease zerk/lock (A).

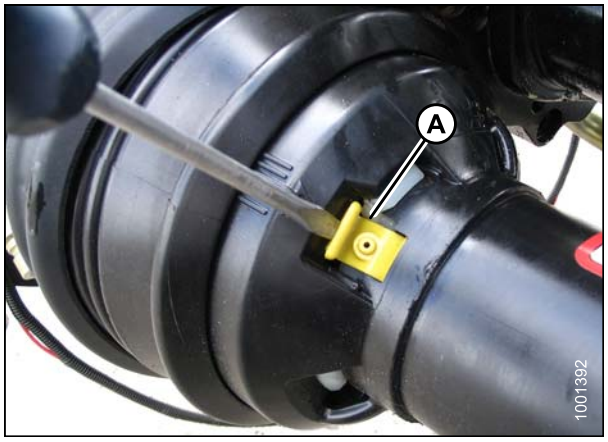


Figure 5.39: Driveline Guard

5. Rotate the driveline guard locking ring (A) counterclockwise using a screwdriver until the lugs (B) line up with the slots in the guard.
6. Pull the guard off the driveline.

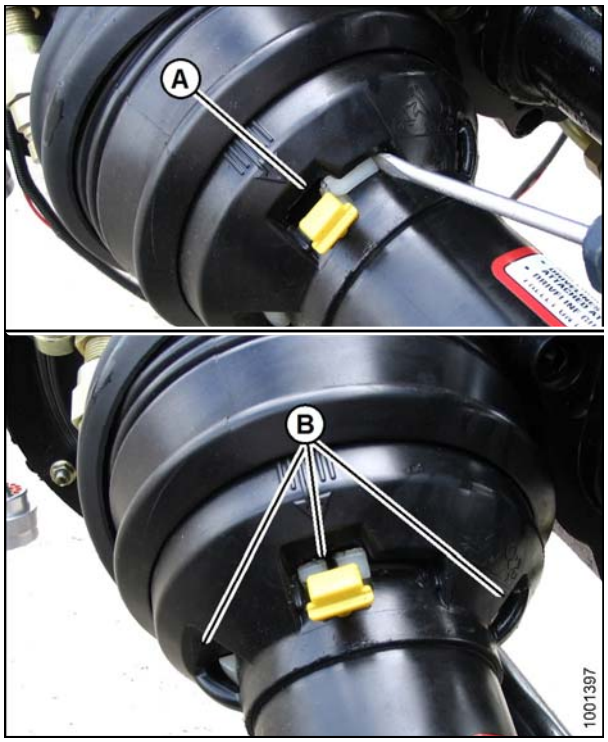


Figure 5.40: Driveline Guard

5.6.4 Installing Driveline Guard

1. Slide the guard onto the driveline, and line up the slotted lug on the locking ring (A) with the arrow (B) on the guard.

Figure 5.41: Driveline Guard

2. Push the guard onto the ring until the locking ring is visible in the slots (A).

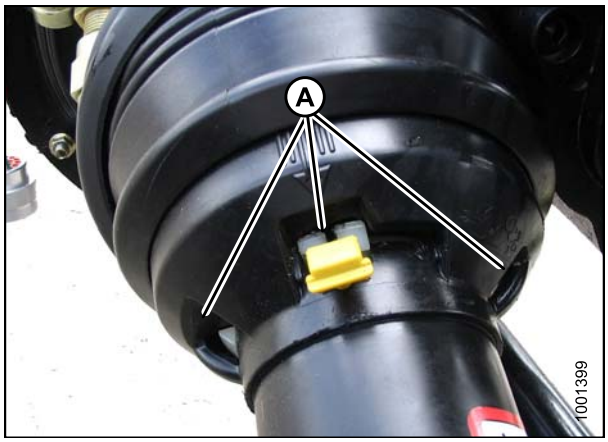


Figure 5.42: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise and lock ring in guard.

Figure 5.43: Driveline Guard

4. Push the grease zerk (A) back into the guard.

Figure 5.44: Driveline Guard

5. Assemble the driveline.

   NOTE:
   The splines are keyed to align the universals. Align weld (A) with the missing spline (B) when assembling.

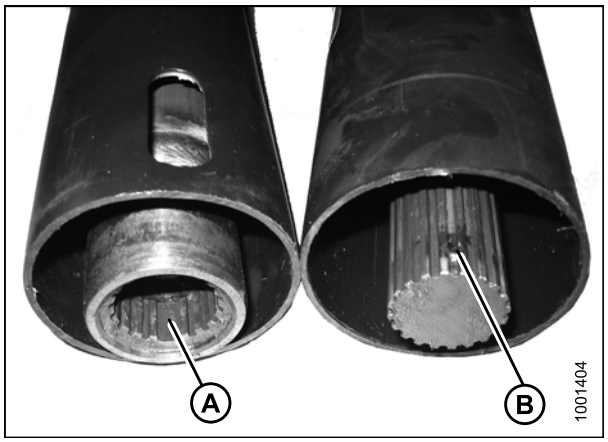


Figure 5.45: Driveline

6. Store the driveline in the support bracket (B) and secure with strap (A).

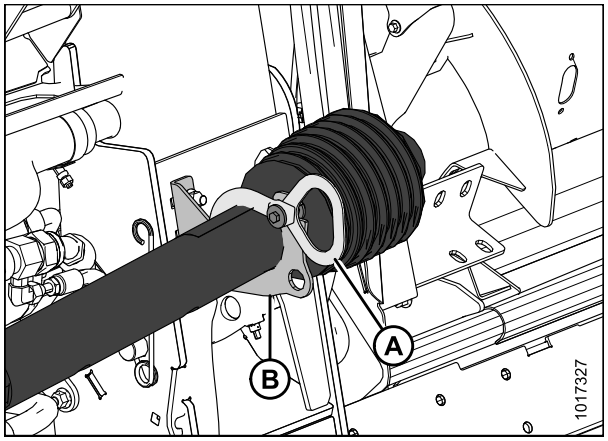


Figure 5.46: Combine End of Driveline

5.6.5 Adjusting Tension on Gearbox Drive Chain

The gearbox drive chain tension is factory-set, but tension adjustments are required every 500 hours or annually (whichever comes first). The gearbox drive chain, located inside the gearbox, requires no other regular maintenance.

DANGER

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

1. Lower the header.
2. Stop the engine, and remove the key from the ignition.
3. Remove two bolts and the chain adjusting cover (A). Ensure there is no gasket (B) damage.
4. Remove the retainer plate (C).
5. Tighten bolt (D) to 60 in·lbf (6.8 N·m), then back off the bolt 1-2/3 turns.
6. Reinstall the retainer plate (C).
7. Reinstall the chain adjusting cover (A) and gasket (B). Torque hardware to 84 in·lbf (9.5 N·m).

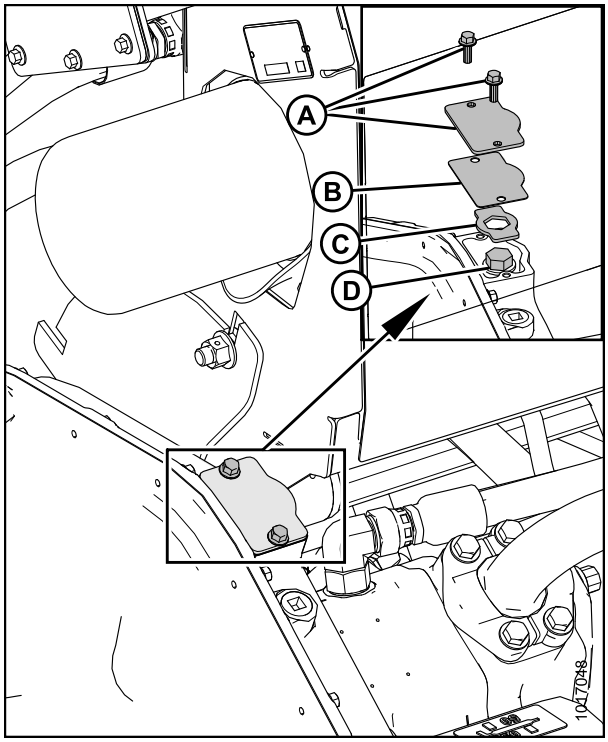


Figure 5.47: Chain Tensioner

5.7 Auger

The FM100 Float Module auger feeds the cut crop from the draper decks into the combine feeder house.

5.7.1 Adjusting Auger to Pan Clearance

DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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 6–10 in. (150–254 mm) off the ground.
2. Shut down the combine and remove the key from the ignition.
3. Ensure the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

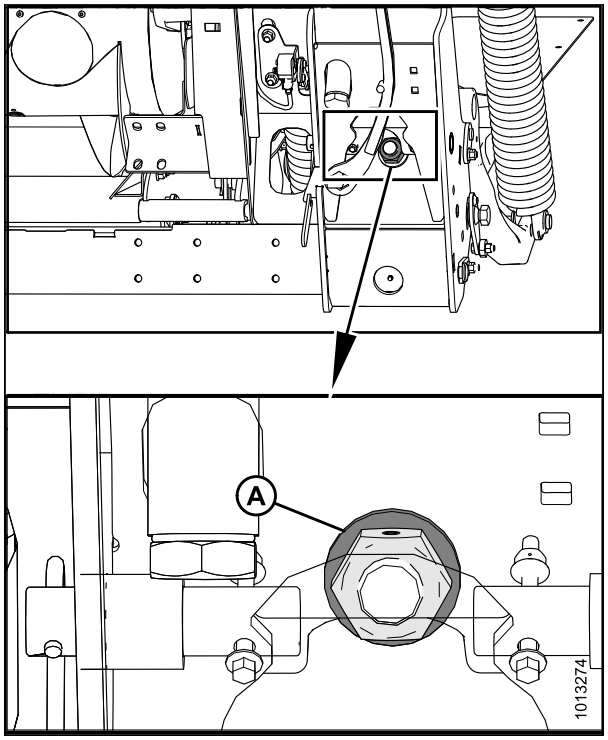


Figure 5.48: Float Lock

4. Before adjusting the auger to pan clearance, check the auger float position to determine how much clearance is required:

   • If the bolt head (A) is closest to the floating symbol (B), the auger is in the floating position.

⚠ CAUTION

Make sure the two bolts (A) are in the same location to prevent damage to the machine during operation.

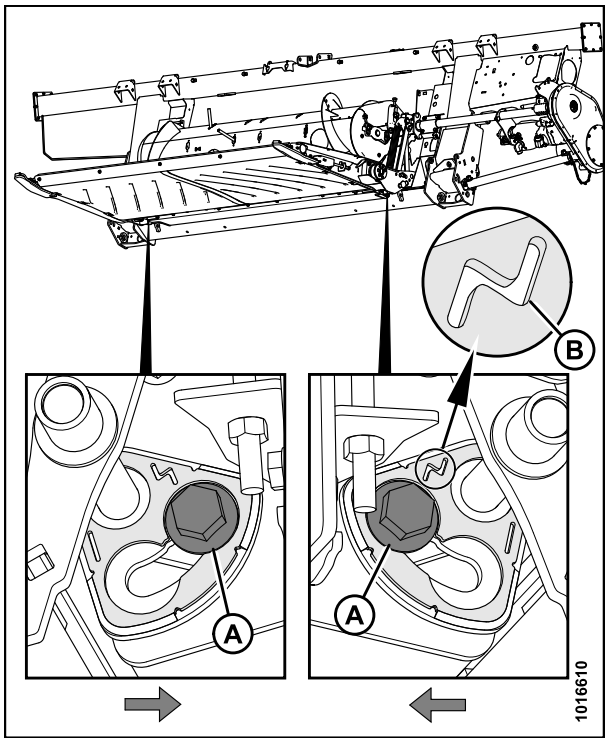


Figure 5.49: Floating Position

   • If the bolt head (A) is closest to the rigid symbol (B), the auger is in the rigid position.

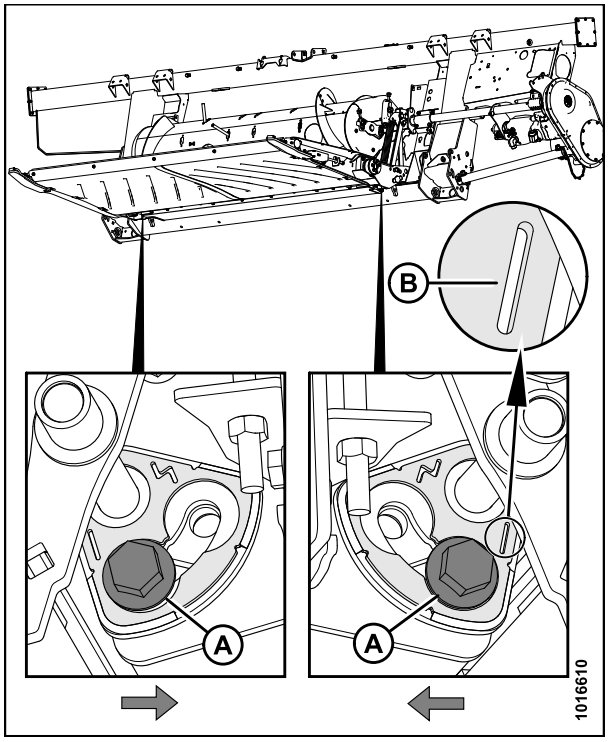


Figure 5.50: Rigid Position

5. Loosen two nuts (B).
6. Using the adjuster bolt (A), set clearance (C) to 13/16 to 1-1/16 in. (20.5 to 26.5 mm) if feed auger is in rigid position, and 3/8 to 5/8 in. (9 to 15 mm) if feed auger is in floating position. Turn bolt clockwise to increase clearance and counterclockwise to decrease clearance.

   NOTE:
   The clearance increases between 1 and 1-1/2 in. (25–40 mm) when the center-link is fully retracted.

7. Repeat Step *5., page 336* and Step *6., page 336* for the opposite end of the auger.

   IMPORTANT:
   Adjusting one side of the auger can affect the other side so recheck both sides after final adjustment is made.

8. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 68–73 ft·lbf (93–99 N·m).

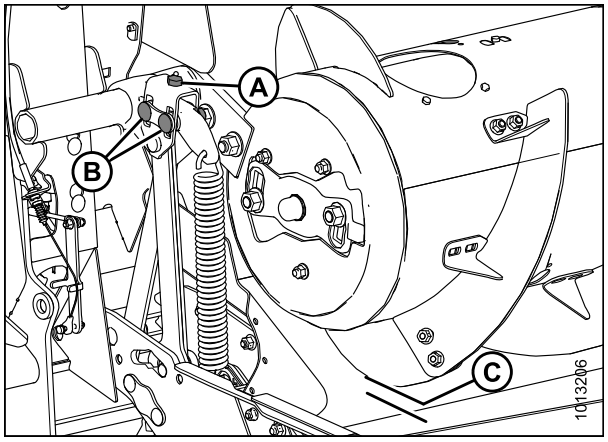


Figure 5.51: Auger Clearance

5.7.2 Adjusting Auger Drive Chain Tension

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger.

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
3. Remove the four bolts (A) and the inspection panel (B).

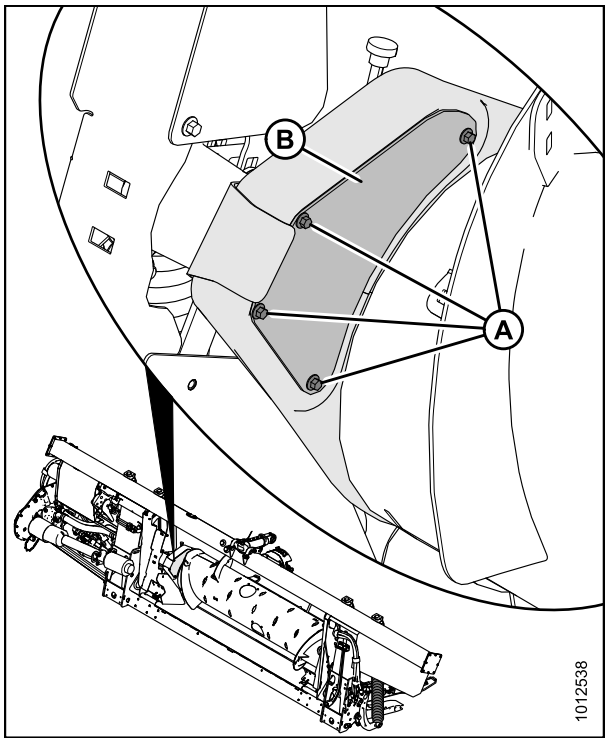


Figure 5.52: Auger Drive

4. Loosen the idler nut (A) and jam nut (C).

   IMPORTANT:
   Do NOT loosen the thin nut (E) on the inboard side of the idler sprocket spindle.

5. Rotate the auger in reverse to take up the slack in the lower strand of the chain (B).
6. Turn adjuster thumbscrew (D) clockwise to move the idler sprocket until it is finger tight only.

   NOTE:
   Do NOT overtighten.

7. Tighten the idler nut (A) and torque to 190–200 ft·lbf (258–271 N·m).
8. Tighten the jam nut (C).

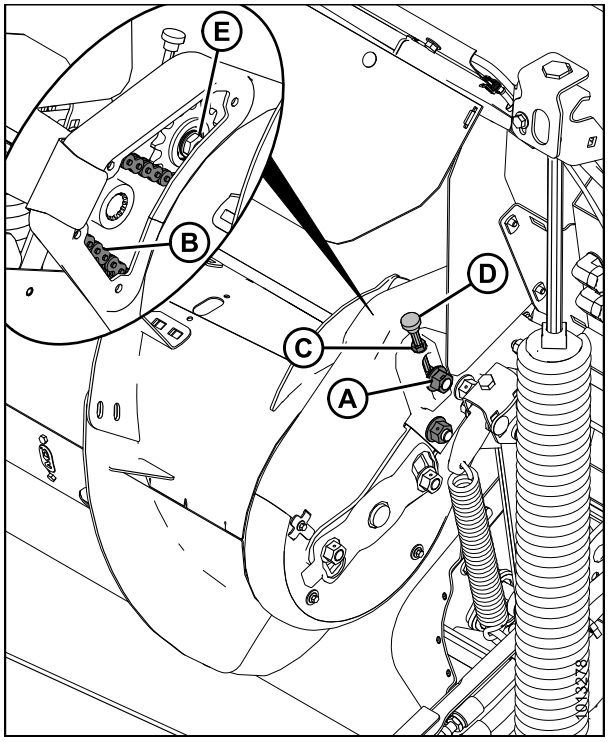


Figure 5.53: Auger Drive (Left and Right View)

9. Reinstall the inspection panel (B) and secure with four bolts (A).

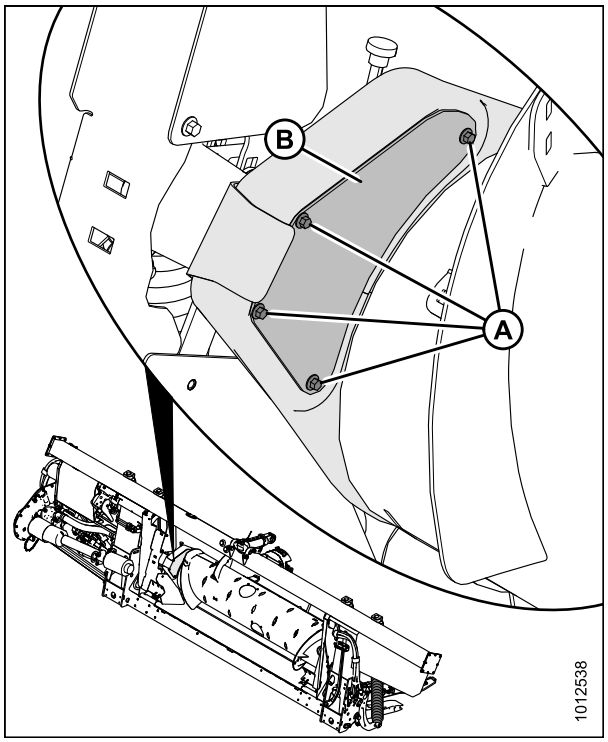


Figure 5.54: Auger Drive

5.7.3 Removing Auger Drive Chain

The chain tensioner can take up slack for only a single pitch. Replace the chain when the chain has worn or stretched beyond the limits of the tensioner.

DANGER

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

NOTE:
Factory-installed chain does not have a connector. Replace chain with endless chain, MD #220317.

NOTE:
To help with the removal of plastic drive covers, tilt the header all the way back (position 0) to maximize the space between the auger and the feed pan.

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
2. Shut down the combine, and remove the key from the ignition.

3. Remove the four bolts (A) and the inspection panel (B).
4. Remove the bolt and clamp (C) that holds the two covers (G and H) together.
5. Remove the two bolts (D) that secure the bottom cover.
6. Remove the two bolts (E) and remove cover retainer (F).
7. Rotate top (G) and bottom (H) cover forward to remove.

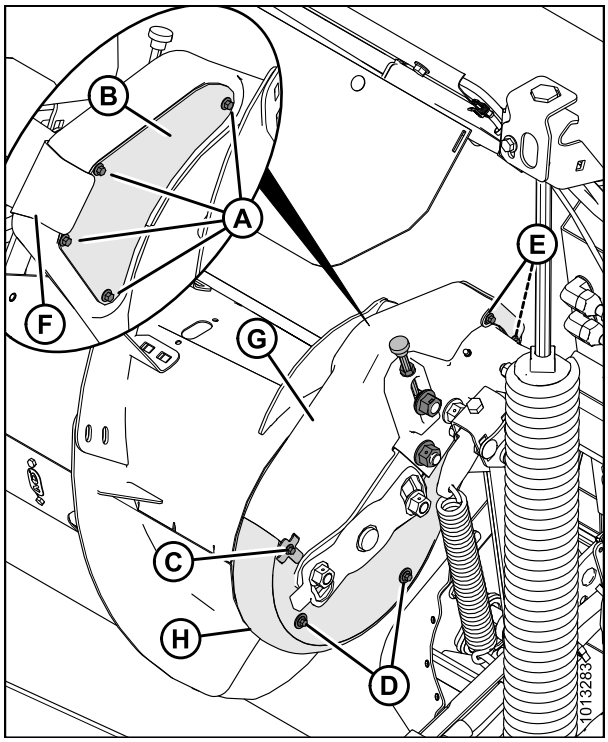


Figure 5.55: Auger Drive

8. Loosen jam nut (C) and turn thumbscrew (D) counterclockwise to release the bolt holding the sprocket (B) and to allow the sprocket to be raised up to release chain tension.

   IMPORTANT:
   Do NOT loosen the thin nut (E) on the inboard side of the idler sprocket spindle.

9. Loosen the idler sprocket nut (A), and raise the sprocket (B) to the uppermost position to release the tension on the chain. Tighten nut (A) to hold sprocket.

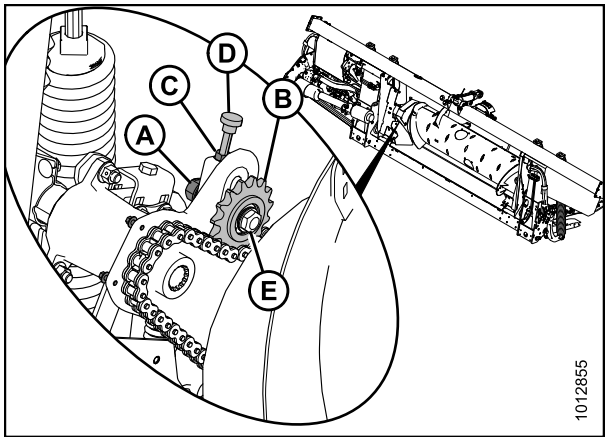


Figure 5.56: Auger Drive

10. Remove the two bolts and nuts (A), and separate the drum support arm from the casting.

    NOTE:
    You may need a second person to lift or support the drum to remove the bolts

    NOTE:
    The bolts on the left side of the drum are longer than the bolts on the right side.

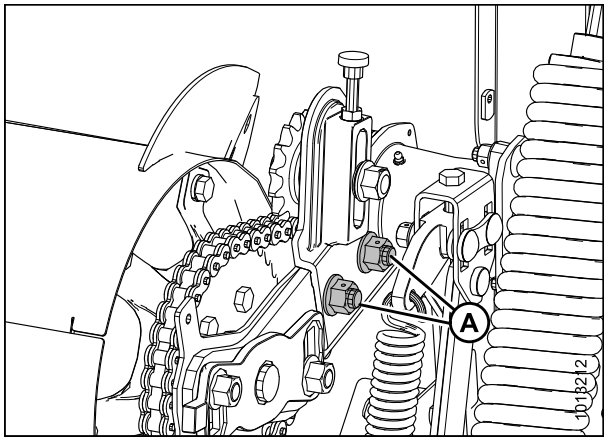


Figure 5.57: Auger Support Arm

11. Place a wooden block under the drive end of the auger (B) to prevent the auger from dropping and damaging the feed draper.
12. Use a pry bar (A) to slide the drum assembly to the right side of the FM100 until the drive sprocket slides off the end of the spline shaft.

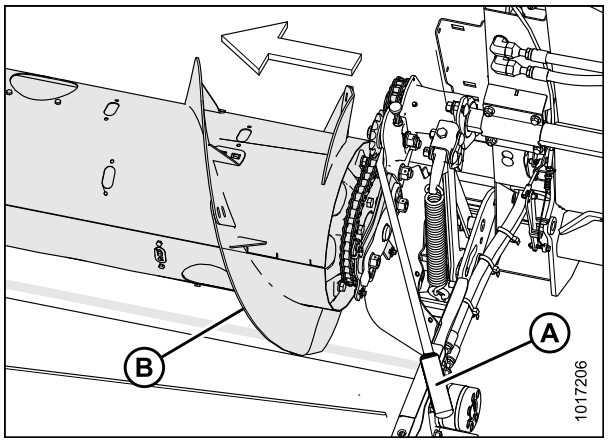


Figure 5.58: Auger Drive

13. Maneuver the drum assembly (A) sideways and forward so that the endless chain (B) can be removed.

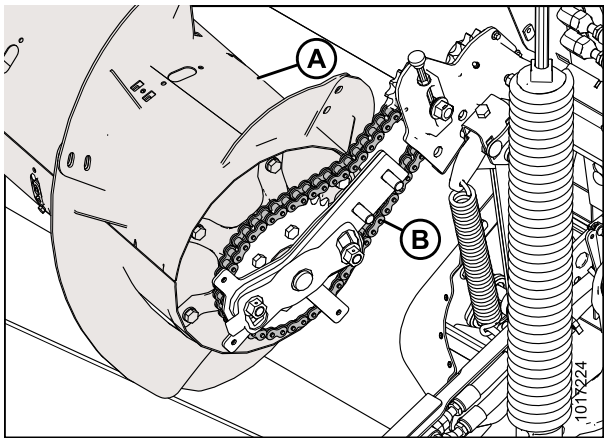


Figure 5.59: Auger Drive

5.7.4 Installing Auger Drive Chain

1. Place the drive chain (B) over the sprocket on the left side of the drum assembly (A).

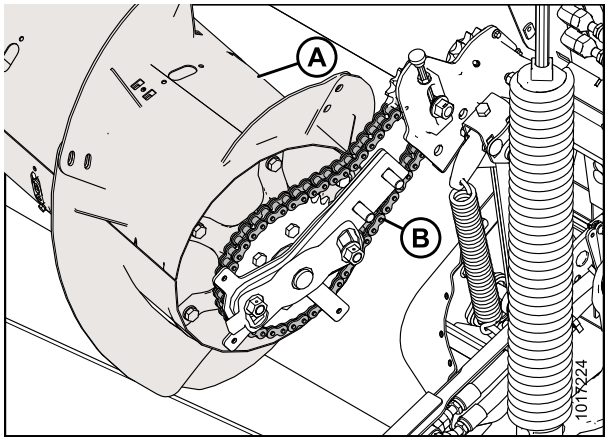


Figure 5.60: Auger Drive

2. Put the drive sprocket (A) into the chain (B) and align the sprocket onto the shaft.

   NOTE:
   The shoulder of the drive sprocket (A) faces the auger.

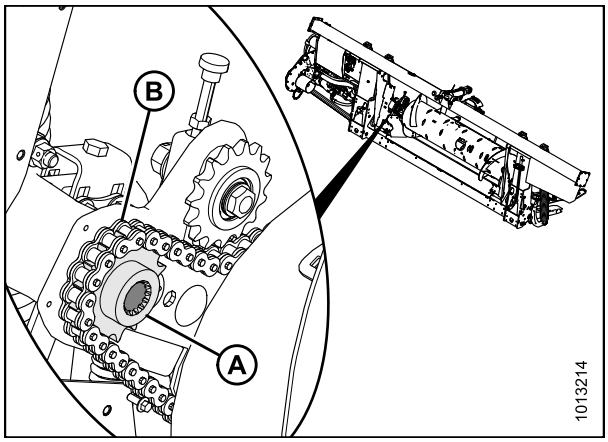


Figure 5.61: Auger Drive

3. Slide the drum assembly toward the casting and reinstall the two bolts and nuts (A).

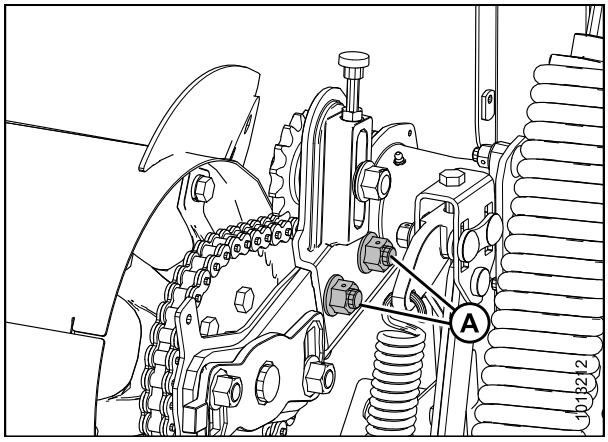


Figure 5.62: Auger Drive

4. Remove the block from under the auger.
5. Rotate the auger in reverse to take up the slack in the lower strand of the chain.

   IMPORTANT:
   Do NOT loosen the thin nut (E) on the inboard side of the idler sprocket spindle.

6. Turn the adjuster thumbscrew (D) clockwise to move the idler sprocket (B) until it is FINGER TIGHT ONLY.

   NOTE:
   Do NOT overtighten.

7. Tighten the idler nut (A) and torque to 190–200 ft·lbf (258–271 N·m).
8. Tighten the jam nut (C).
9. Position bottom cover (H) and secure with two bolts (D).
10. Position top cover (G). Secure top and bottom cover with the clamp and the bolt (C).
11. Install inspection panel (B) and secure with four bolts (A).
12. Install cover retainer (F) and secure with two bolts (E).

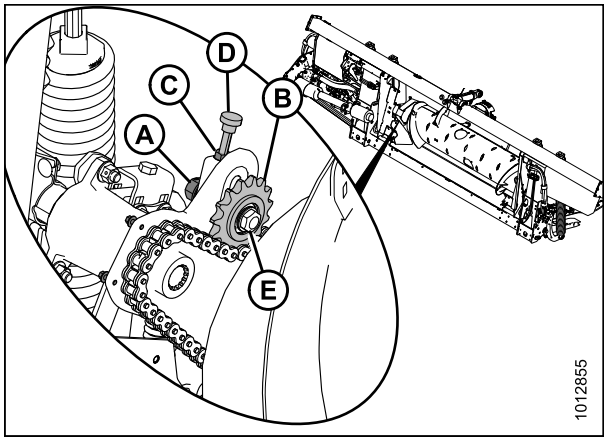


Figure 5.63: Auger Drive

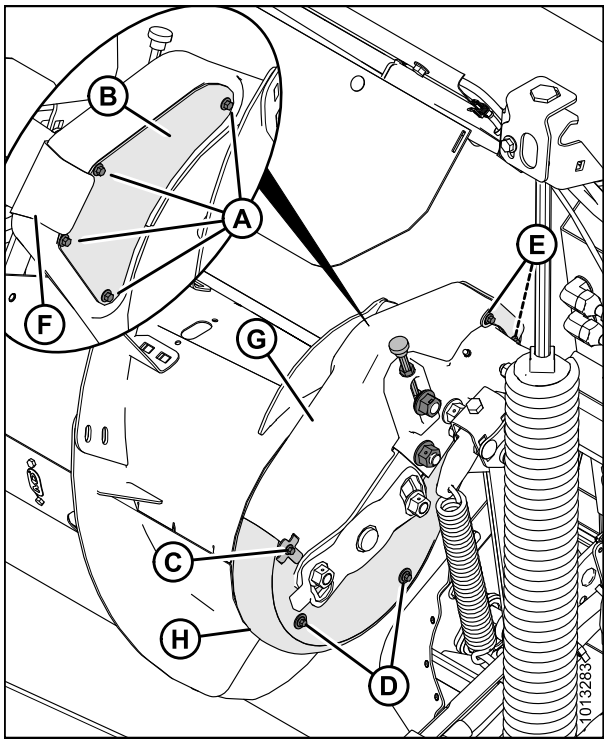


Figure 5.64: Auger Drive

5.7.5 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

DANGER

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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.
4. Remove bolts (A) and remove the access cover (B) closest to the finger you are removing.

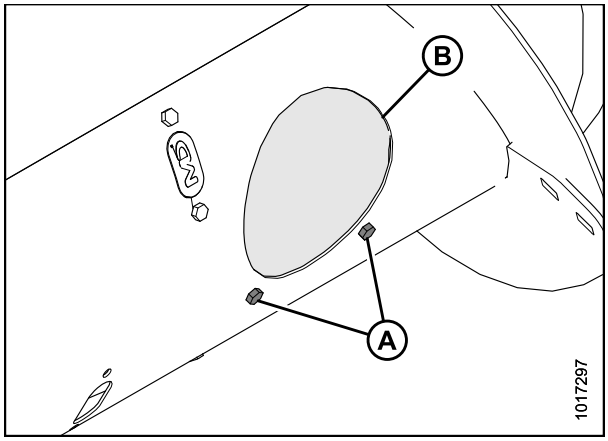


Figure 5.65: Auger

5. Remove the hairpin (A), pull the finger (B) out of the bushing (C) from inside the auger, and remove the finger from the auger by pulling it out through the plastic guide (D).

   NOTE:
   Note the orientation of the hairpin for reinstallation. The round part should face the direction of rotation.

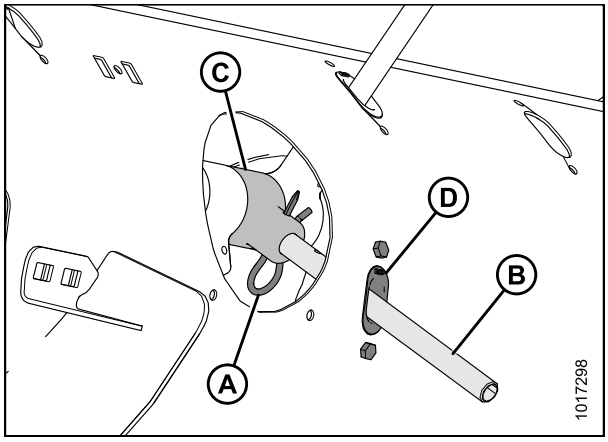


Figure 5.66: Auger

6. Remove the bolts (A) securing the plastic guide (B) to the auger, and remove the guide from inside the auger.

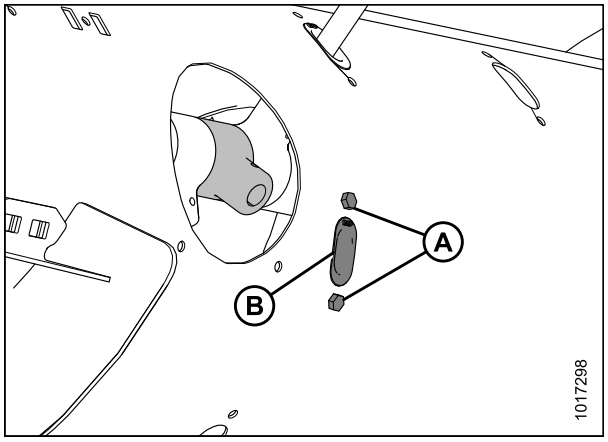


Figure 5.67: Auger

7. Position plug (A) (MD #187137 available from MacDon Parts) into the hole from inside the auger, and secure with two bolts (B). Coat the bolts with Loctite® #243 (or equivalent), and torque to 75 in·lbf (8.5 N·m).

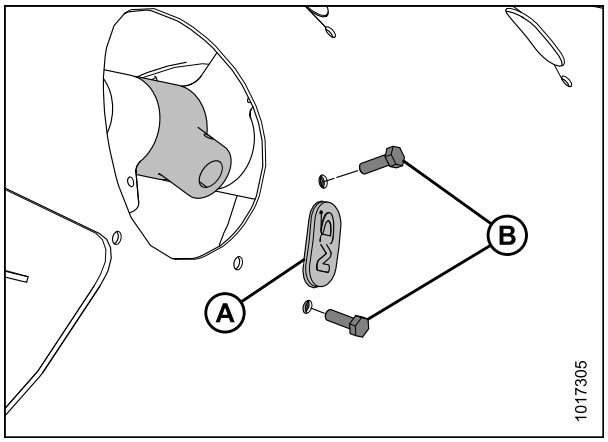


Figure 5.68: Plug

8. Replace the access cover (B) and secure with bolts (A). Coat bolts with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

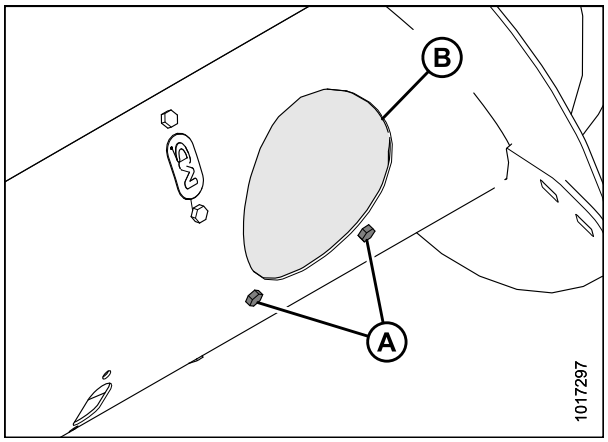


Figure 5.69: Auger

Installing Feed Auger Fingers

DANGER

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

1. Raise the reel.
2. Shut down the combine, and remove the key from the ignition.
3. Engage the reel safety props.
4. Remove bolts (A), and remove access cover (B).

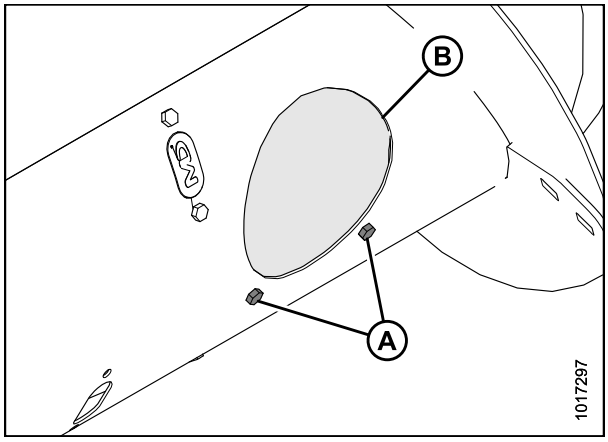


Figure 5.70: Auger

5. Remove the two bolts (B) and remove the plug (A).

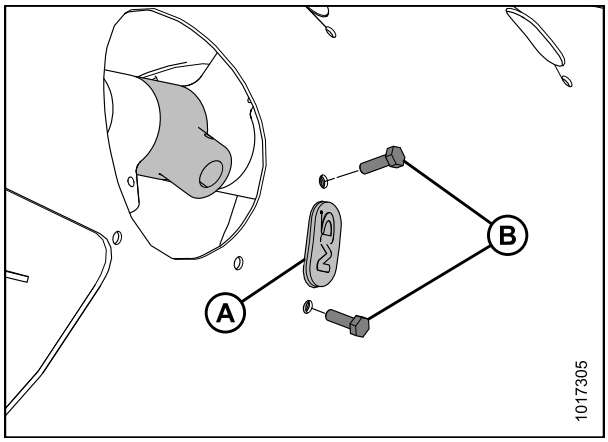


Figure 5.71: Auger

6. Insert the plastic finger guide (B) from inside the auger and secure it with bolts (A).

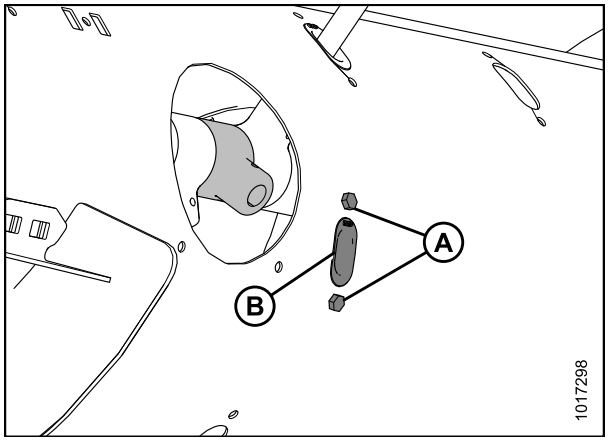


Figure 5.72: Auger

7. From inside the auger, insert the finger (B) through the plastic guide (D).
8. Insert the finger (B) into bushing (C) and secure with hairpin (A).

   NOTE:
   Note the orientation of the hairpin. The round part should face the direction of rotation.

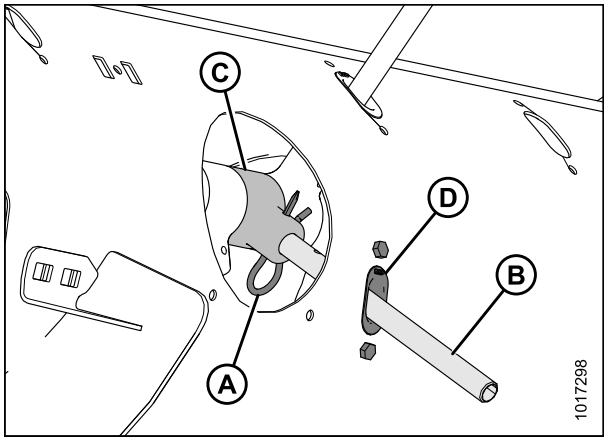


Figure 5.73: Auger

9. Replace the access cover (B) and secure with bolts (A). Coat bolts with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

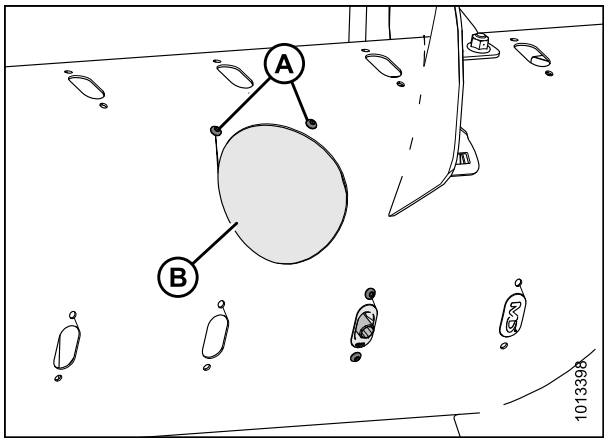


Figure 5.74: Auger

Replacing Feed Auger Finger Guides

1. Remove finger (A). Refer to *Removing Feed Auger Fingers, page 343*.

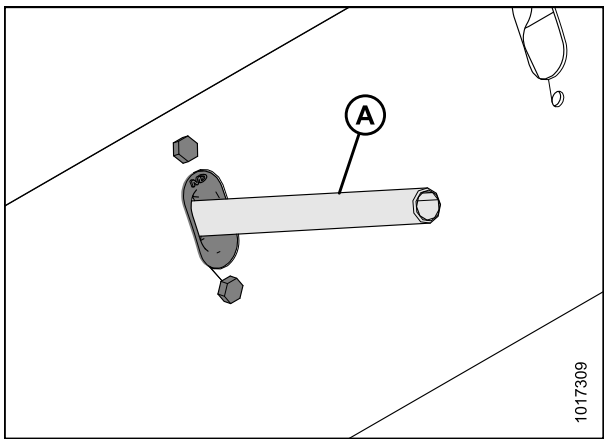


Figure 5.75: Auger

2. From inside the auger, position the plastic guide (B) from inside the auger and secure with bolts (A).
3. Replace the finger. Refer to *Installing Feed Auger Fingers, page 344*.

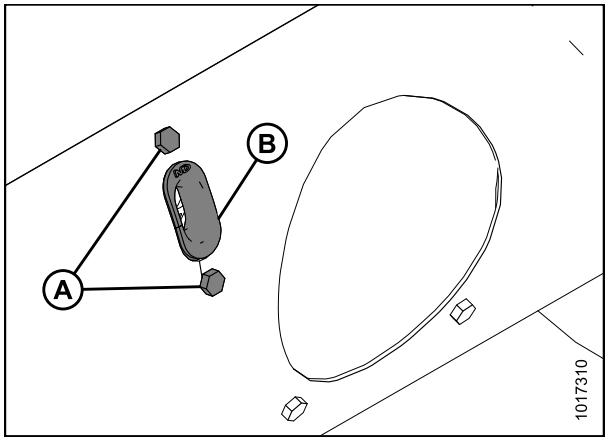


Figure 5.76: Auger

5.7.6 Using Auger Flighting

The auger flighting on the FM100 can be configured for specific combines and crop conditions. Refer to *4.1 Float Module Feed Auger Configurations, page 222* for combine/crop specific configurations.

Removing Flighting

1. Remove screws (A) and remove the access cover (B).

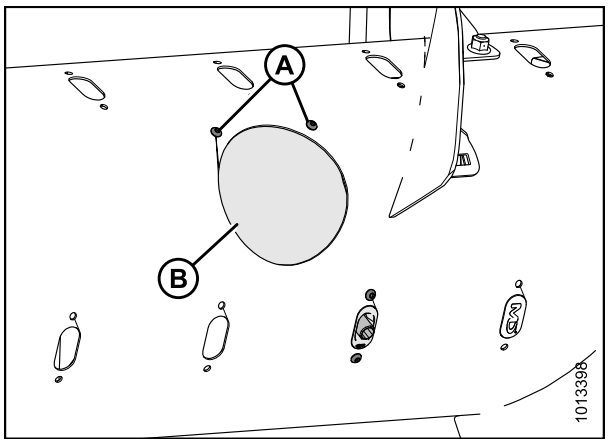


Figure 5.77: Auger

2. Remove eight bolts washers, and nuts from location (A), securing the flighting (B) to the auger.
3. Remove the flighting (B).
4. Repeat for opposite flighting.

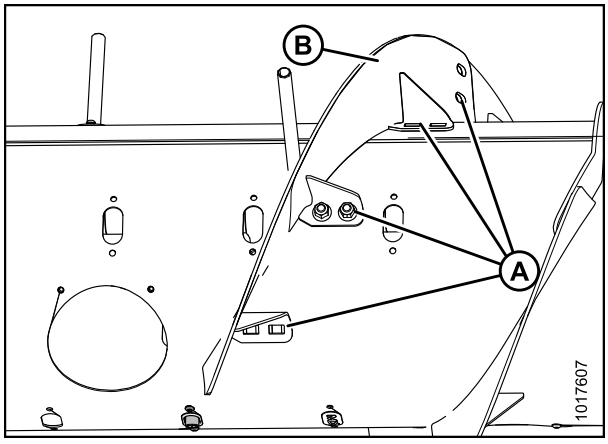


Figure 5.78: Auger Flighting

5. Replace the access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

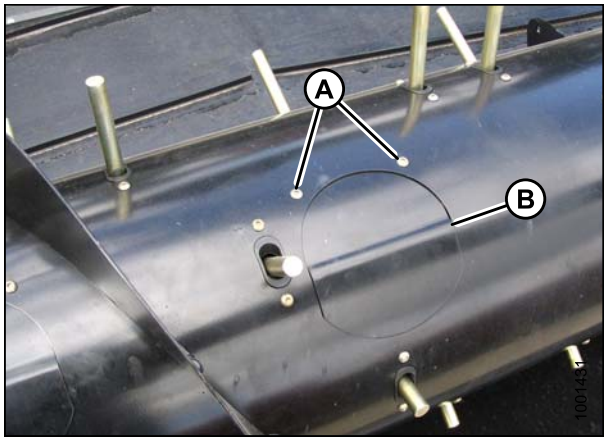


Figure 5.79: Auger

Installing Flighting

1. Place the flighting (A) on the outboard side of the auger flighting (B). Tighten the hardware finger tight making sure the carriage bolt heads are on the inboard side (crop side) and the nuts (C) are on the outboard side of the flighting.

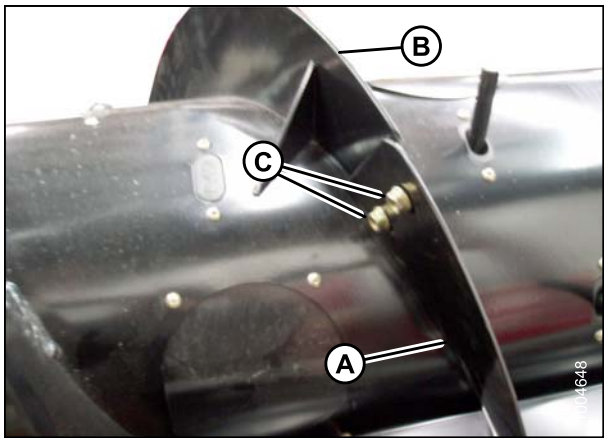


Figure 5.80: Flighting

2. Stretch the flighting (A) to fit the auger tube. Use the slotted holes on the flighting to achieve the best fit around the auger tube.

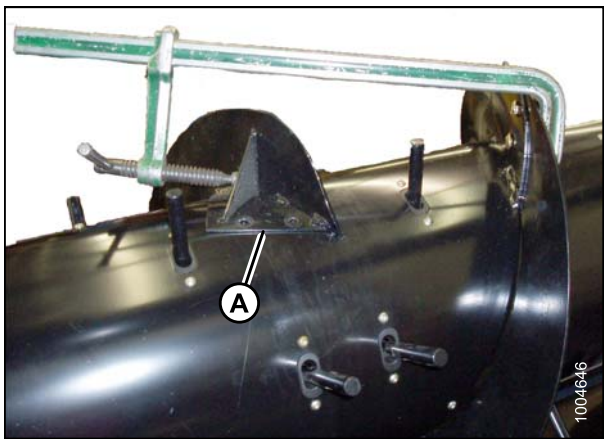


Figure 5.81: Flighting

3. Mark hole locations (A) (three per extension), and drill 3/8 in. (76 mm) holes into the auger tube.

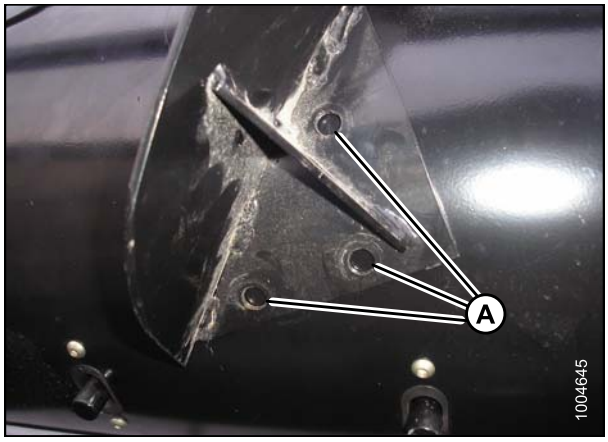


Figure 5.82: Flighting

4. Install bolts to secure the flighting in place.
5. Remove screws (A) and remove the nearest access cover (B).
6. Install nuts from inside the drum, and tighten all hardware.

NOTE:
The flighting will normally fit tight to the auger tube; however, it is not unusual for the right-hand flighting to overlap the cover panel creating a gap between the flighting and the auger tube. Gaps that appear over the cover panels or in other locations cause crop material to gather in the gap openings, but this will not generally affect performance. Use silicone sealant to fill the gaps if necessary.

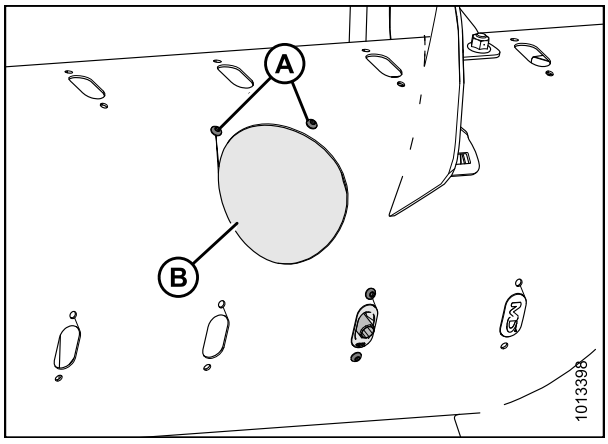


Figure 5.83: Auger

7. Replace the access cover (B) and secure with screws (A). Coat screws with Loctite® #243 (or equivalent) and torque to 75 in·lbf (8.5 N·m).

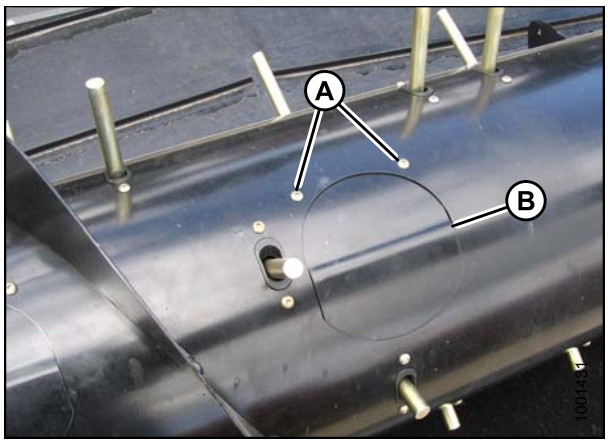


Figure 5.84: Auger

5.8 Knives

WARNING

Keep hands clear of the area between guards and knife at all times.

CAUTION

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 297*.

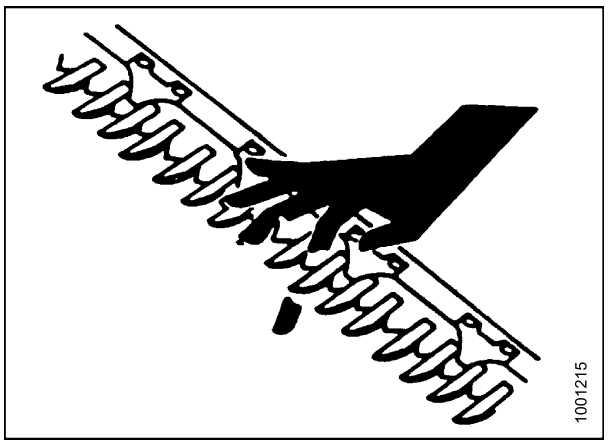


Figure 5.85: Cutterbar Hazard

5.8.1 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.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

NOTE:
For dirty, sandy conditions, coarse serrated sections last longer than fine serrated sections. Fine serrated sections perform best in thin stemmed grasses and plants with more fibrous stems.

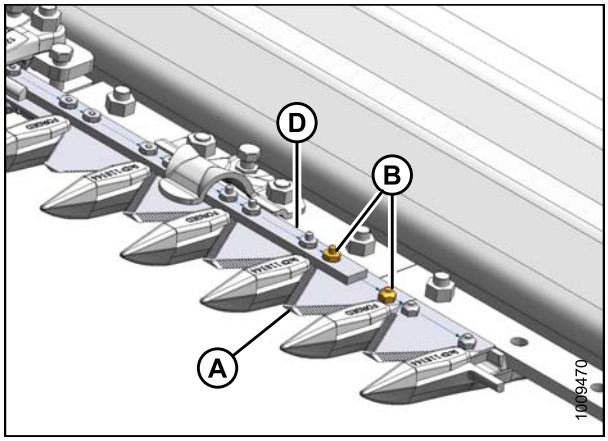
1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife as required to center the knife section (A) between the guards.
3. Remove nuts (B).
4. Remove bars (C) and lift the knife section off the knife bar.
5. Remove the splice bar (D) if knife section is under the bar.
6. Clean dirt off the knife back, and position the new knife section onto the knife back.

   IMPORTANT:
   Do NOT mix fine and coarse sections on the same knife.

7. Reposition bars (C) and/or (D) and install the nuts (B).

   NOTE:
   If replacing screws, ensure they are fully inserted. Do not use nuts to draw screws into the knife bar.

8. Torque nuts to 7 ft·lbf (9.5 N·m).



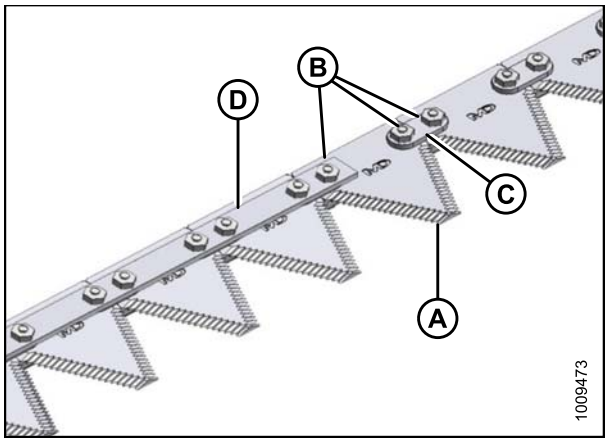


Figure 5.86: Cutterbar

5.8.2 Removing Knife

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

WARNING

Stand to rear of knife during removal to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually to its outer limit.
3. Clean the area around the knifehead.
4. Remove the grease zerk (B) from the pin.
5. Remove bolt (A).
6. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
7. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
8. Push the knife assembly inboard until it is clear of the output arm.
9. Seal the knifehead bearing with plastic or tape unless it is being replaced.
10. Wrap a chain around the knifehead and pull out the knife.

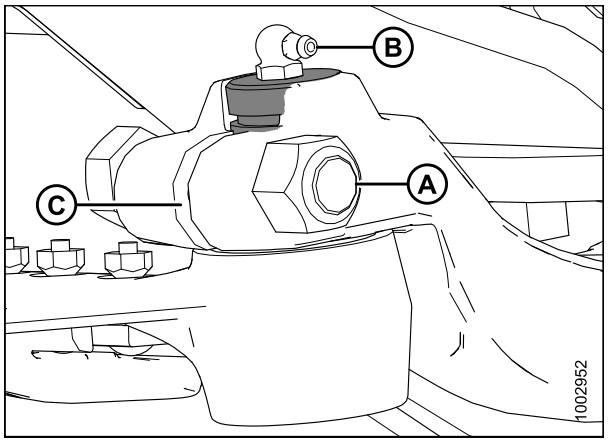


Figure 5.87: Knifehead

5.8.3 Removing Knifehead Bearing

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

WARNING

Stand to rear of knife during removal to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

IMPORTANT:
Repeat this procedure for each knife.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the knife. Refer to *5.8.2 Removing Knife, page 352*.

   NOTE:
   Because the bearing is being replaced, it is not necessary to wrap the knifehead to protect the bearing.

3. Use a flat-ended tool with the same approximate diameter as the pin (A). Tap the 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.

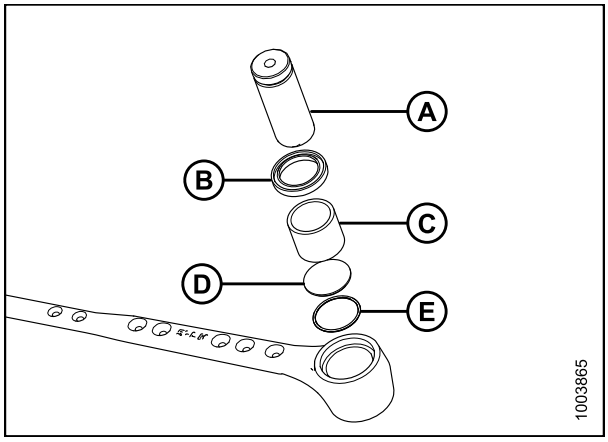


Figure 5.88: Knifehead Bearing Assembly

5.8.4 Installing Knifehead Bearing

1. Place O-ring (E) and plug (D) into knifehead.

   IMPORTANT:
   Install the bearing with the stamped end (the end with the identification markings) facing up.

2. Use a flat-ended tool (A) with the same approximate diameter as the bearing (C), and push the bearing into the knifehead until the top of the bearing is flush with the step in the knifehead.
3. Install seal (B) into knifehead with the lip facing outwards.

   IMPORTANT:
   To prevent premature knifehead or knife drive box failure, ensure there's a tight fit between the knifehead pin and the needle bearing, and also between the knifehead pin and the output arm.

4. Install the knife. Refer to *5.8.5 Installing Knife, page 353*.

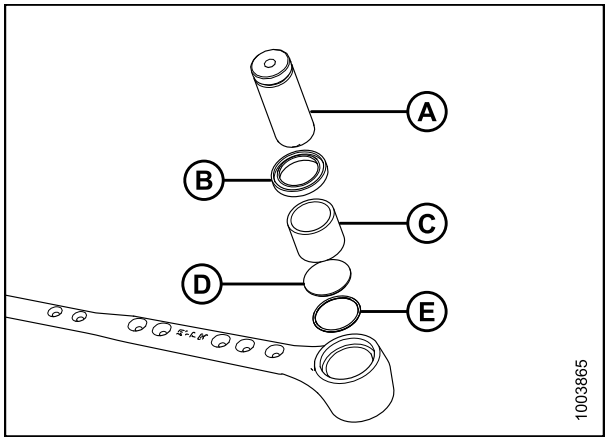


Figure 5.89: Knifehead Bearing Assembly

5.8.5 Installing Knife

WARNING

Stand to rear of knife during installation to reduce risk of injury from cutting edges. Wear heavy gloves when handling knife.

1. Slide the knife into place and align the knifehead with the output arm.

   NOTE:
   Remove the grease zerk from the knifehead pin for easier removal and installation of knifehead pin.

2. Install the knifehead pin (A) through the output arm (C) and into the knifehead.

3. Set the groove (B) in the knifehead pin 1/16 in. (1.5 mm) above the output arm (C). Secure with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 160 ft·lbf (217 N·m).

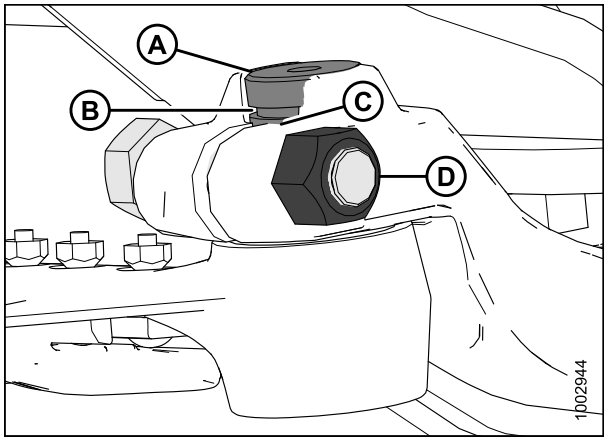


Figure 5.90: Knifehead

4. Install the grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

   IMPORTANT:
   Slowly apply grease to the knifehead until slight downward movement of the knifehead is observed. 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 zerk to release pressure.

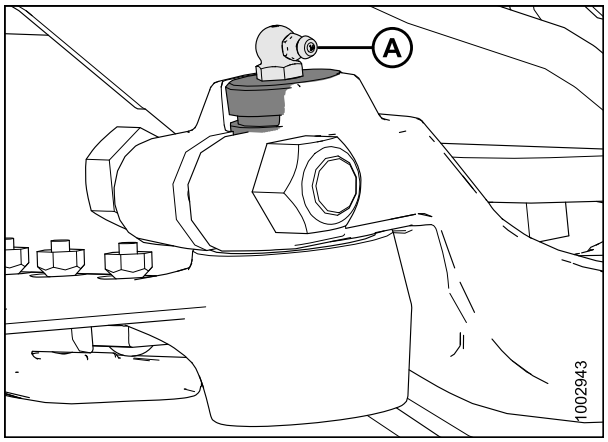


Figure 5.91: Knifehead

5.8.6 Spare Knife

A spare knife can be stored in the header frame tube (A) at the left end. Ensure the spare knife is secured in place.

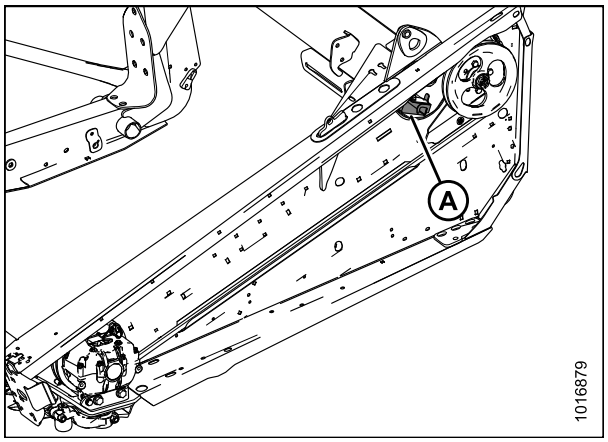


Figure 5.92: Spare Knife

5.8.7 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.

Adjusting Knife Guards

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

NOTE:
Use guard straightening tool (MD #140135) available from your MacDon Dealer.

1. Position the tool as shown, and pull up to adjust the guard tips upwards.

Figure 5.93: Upward Adjustment

2. Position the tool as shown, and push down to adjust the guard tips downwards.

   TIP:
   If material is tough to cut, install stub guards with top guard and adjuster plate. A kit is available from your MacDon Dealer. Refer to *6.2.3 Stub Guard Conversion Kit, page 466*.

Figure 5.94: Downward Adjustment

Replacing Pointed Guards

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Replacing Normal and Drive Side Guard

1. Shut down the combine, 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 the guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove the guard (A), hold-down (C), and plastic wearplate (if installed).

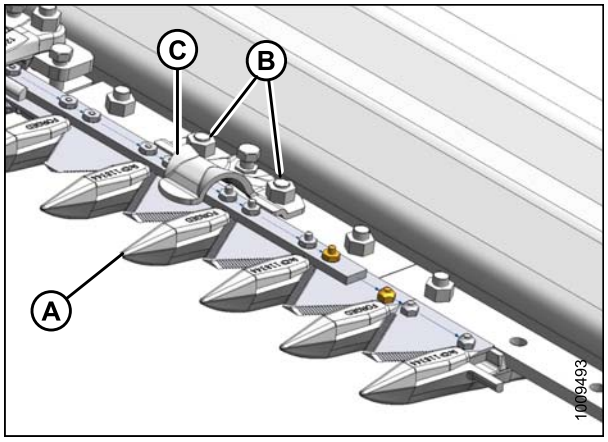


Figure 5.95: Pointed Guards

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.

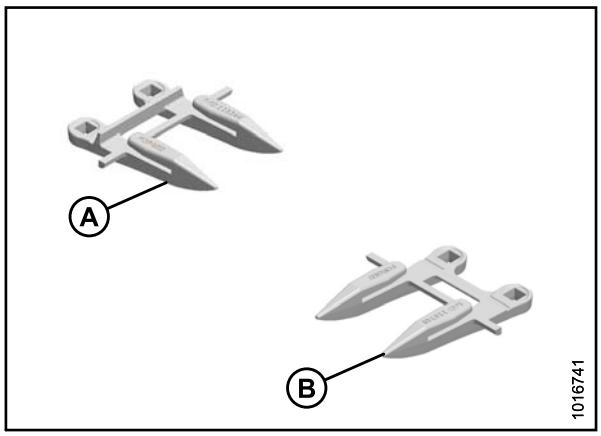


Figure 5.96: Pointed Guards

A - Normal **B - Drive Side**

5. Position the new guard (A), hold-down (C), and plastic wear plate (if applicable) onto the cutterbar. Secure with two nuts (B) and bolts, but do **NOT** tighten.
6. Check and adjust the clearance between the hold-downs and the knife. Refer to *Checking Knife Hold-Downs, page 359*.

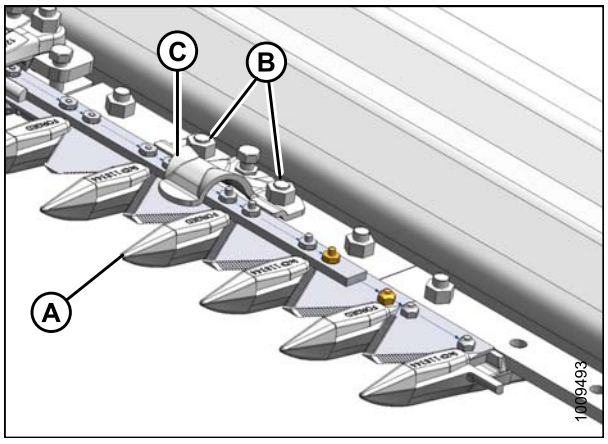


Figure 5.97: Pointed Guards

Replacing Center Guard

NOTE:
The guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure.

1. Shut down the combine, and remove the key from the ignition.
2. Remove the two nuts (B) and bolts attaching the guard (A) and top guide (C) to the cutterbar.
3. Remove the guard (A), plastic wear plate (if installed), top guide (C), and adjuster bar (D).

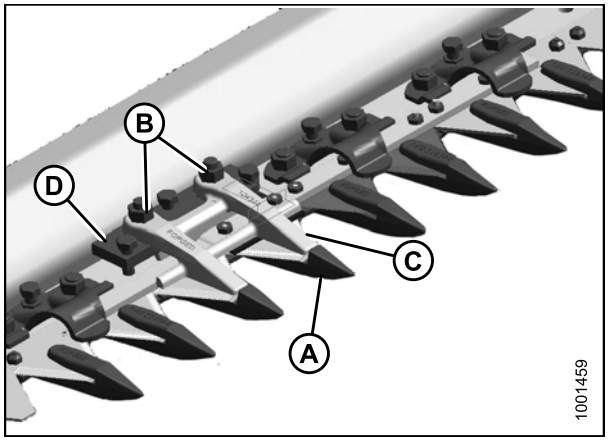


Figure 5.98: Center Guards

4. Position the plastic wear plate (if applicable), replacement center guard (A), adjuster bar, and top guide (B) onto the cutterbar. Install bolts, but do **NOT** tighten.

   IMPORTANT:
   Ensure the center guard (A) (right of the cutterbar split) has offset cutting surfaces.

   NOTE:
   The top guide (B) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.

5. Check and adjust the clearance between the hold-down and knife. Refer to *Checking Knife Hold-Downs, page 359*.

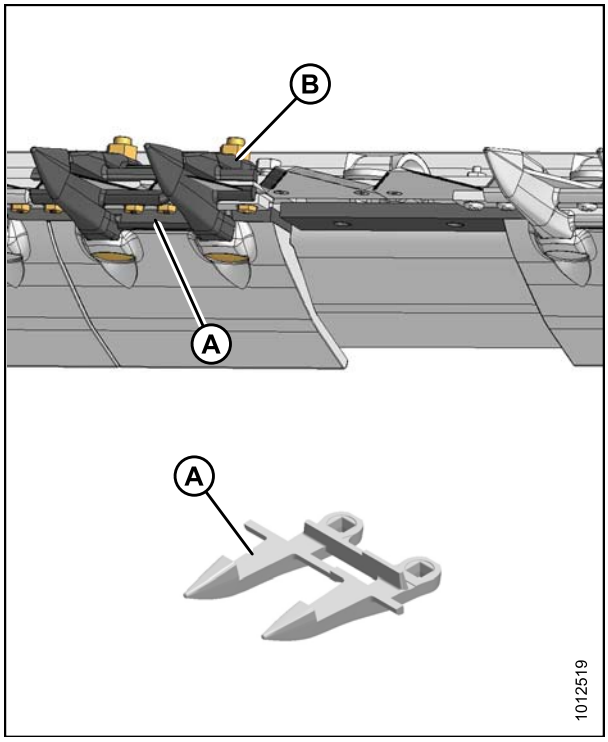


Figure 5.99: Center Guards

Replacing Stub Guards

Stub guards, complete with top guides and adjuster plates, are designed to cut tough crops and are factory-installed at the outer ends of specific headers.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Normal, Drive Side, and End Guard Replacement

1. Shut down the combine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove the two nuts (A) and bolts attaching the guard (B) and top guide (C) to the cutterbar.
4. Remove the guard (B), plastic wear plate (if installed), top guide (C), and adjuster bar (D).

IMPORTANT:
Note the position of the mitre on the adjuster bar (D), and reinstall the adjuster bar in the same position. Mitres should not be adjacent to each other.

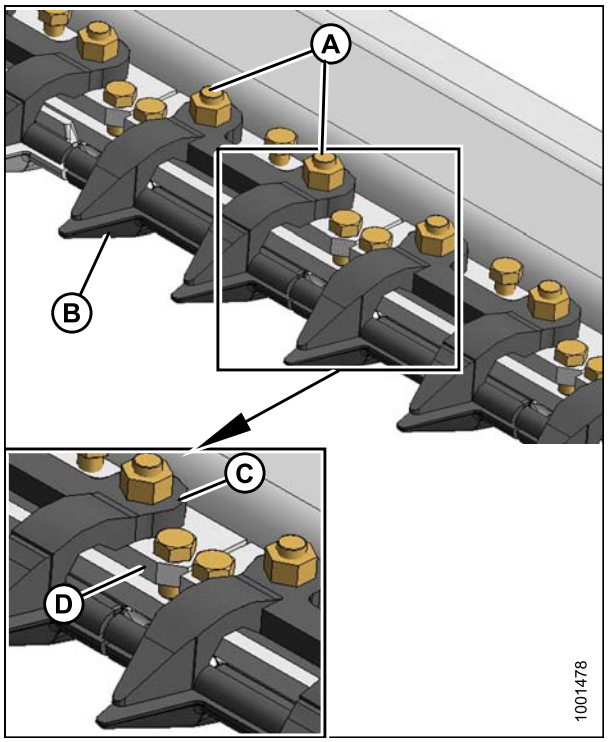


Figure 5.100: Stub Guards

IMPORTANT:
The first four outboard guards (B) on the drive sides of the header do not have ledger plates. Ensure the proper replacement guards are installed at these locations.

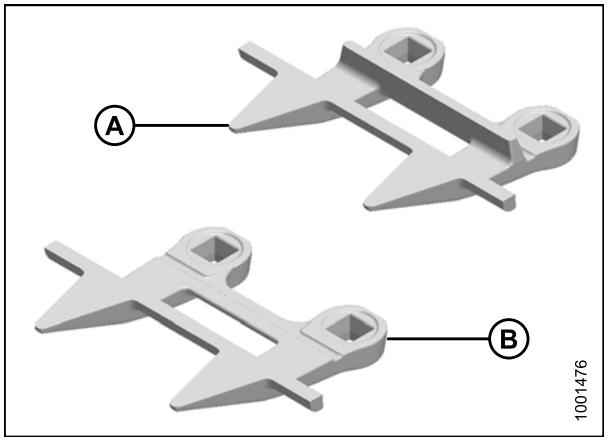


Figure 5.101: Stub Guards

A - Normal Guard **B - Drive Side Guard**

5. Position the plastic wear plate (if applicable), replacement guard (B), adjuster bar (D), top guide (C), and install bolts and nuts (A). Do **NOT** tighten.
6. Check and adjust the clearance between the hold-downs and the knife. Refer to *Checking Knife Hold-Downs, page 359*.

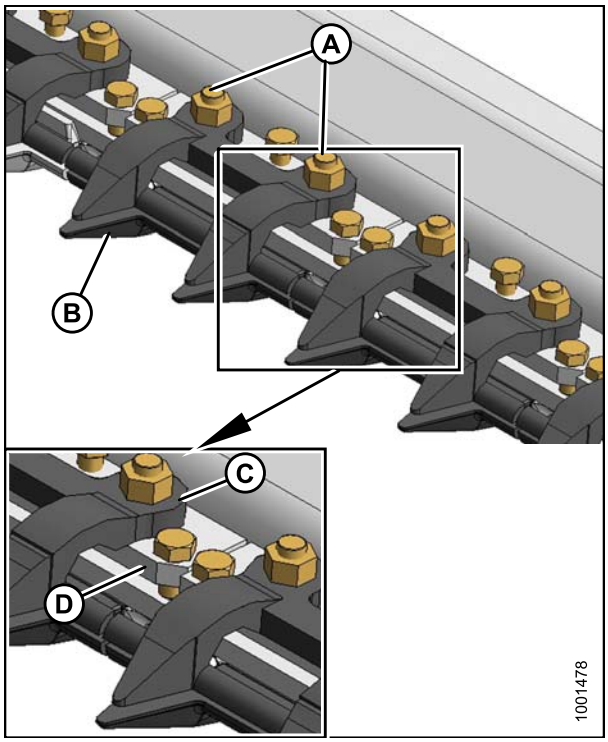


Figure 5.102: Stub Guards

Checking Knife Hold-Downs

Perform daily inspections to ensure the knife hold-downs are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding. Use a feeler gauge to measure the clearance between the hold-downs and knife sections and refer to the following for adjustment procedures:

- *Adjusting Hold-Downs with Pointed Guards, page 359*
- *Adjusting Hold-Downs with Stub Guards, page 360*

NOTE:
Align guards prior to adjusting the hold-downs. Refer to *Adjusting Knife Guards, page 355*.

Adjusting Hold-Downs with Pointed Guards

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down the combine, and remove the key from the ignition.
2. Use a feeler gauge to measure the clearance between the normal guard hold-down (A) and the knife section. Ensure the clearance is 0.004–0.024 in. (0.1–0.6 mm).
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.

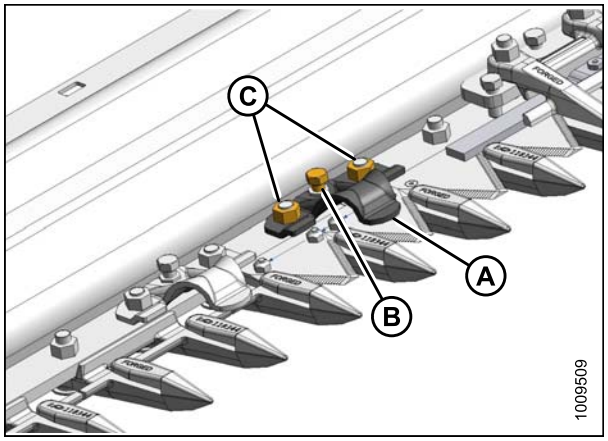


Figure 5.103: Normal Guard Hold-Down

4. Use a feeler gauge to measure the clearance between the center guard hold-down (A) and the knife section. Ensure the clearance is between the following measurements:
   - **At guide tip (B):** 0.004–0.016 in. (0.1–0.4 mm)
   - **At rear of guide (C):** 0.004–0.040 in. (0.1–1.0 mm)
5. Adjust the clearance as follows:
   a. Tighten nuts (D) until they are finger tight.
   b. Turn the three adjuster bolts (E) clockwise to raise the front of the hold-down and increase clearance, or counterclockwise to lower the front of the hold-down and decrease clearance.
   c. Torque the nuts (D) to 53 ft·lbf (72 N·m) after all the adjustments are complete and the specified clearances are achieved.

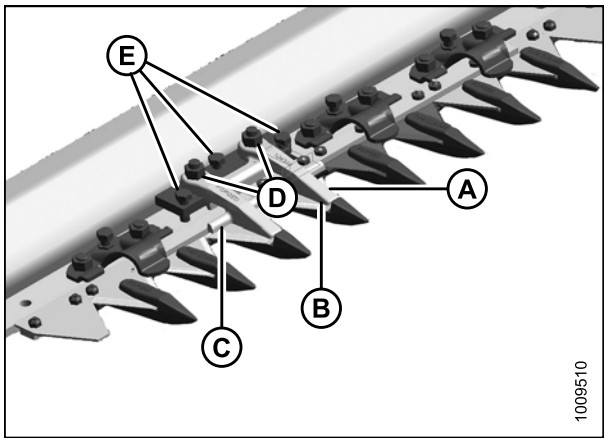


Figure 5.104: Center Guard Hold-Down

⚠ WARNING

Check to be sure 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.

   NOTE:
   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

Adjusting Hold-Downs with Stub Guards

⚠ WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down the combine, and remove the key from the ignition.
2. Use a feeler gauge to measure the clearance between the stub guard hold-down (A) and the knife section. Ensure the clearance is between the following measurements:
   - **At guide tip (B):** 0.004–0.016 in. (0.1–0.4 mm)
   - **At rear of guide (C):** 0.004–0.040 in. (0.1–1.0 mm)
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 the three adjuster bolts (E) clockwise; to raise the front of the hold-down and increase clearance, turn the adjuster bolts (E) counterclockwise.
   c. Torque the nuts (D) to 53 ft·lbf (72 N·m) after all the adjustments are complete and the specified clearances are achieved.

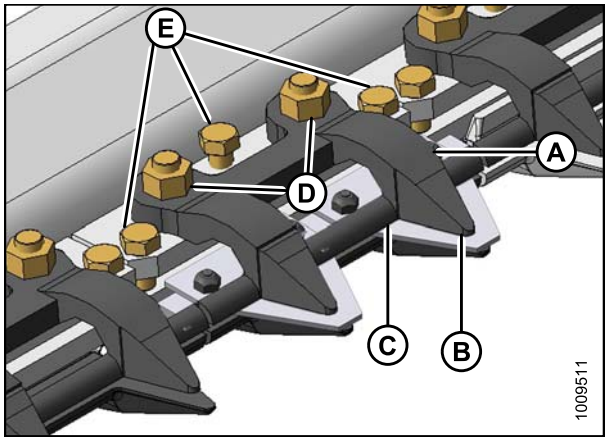


Figure 5.105: Stub Guards

⚠ WARNING

Check to be sure 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.

   NOTE:
   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

5.8.8 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cut-out.

The shields and mounting hardware are available from your MacDon Dealer.

IMPORTANT:
Remove the shields when cutting with 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 avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason.

CAUTION

Wear heavy gloves when working around or handling knives.

1. Raise the reel to its full height, lower the header to the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel arm locks.
4. Place the 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 the knifehead shield (A) along the slit to conform to the endsheet.
6. Align the mounting holes and secure with two 3/8 in. x 1/2 in. Torx® head bolts (B).
7. Tighten the bolts (B) just enough to hold the knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
8. Rotate the knife drive box pulley manually 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 the bolts (B).

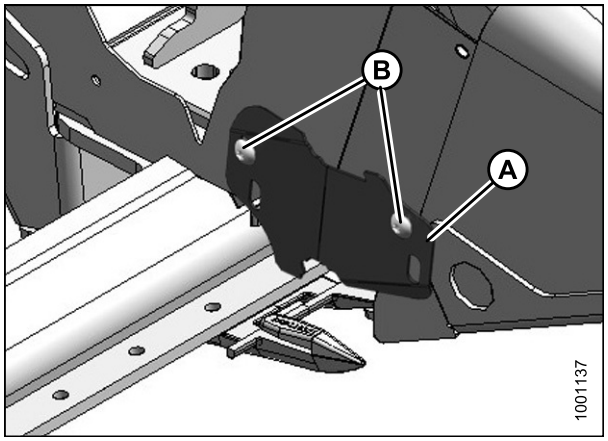


Figure 5.106: Knifehead Shield

5.9 Knife Drive

5.9.1 Knife Drive Box

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 297*.

Single knife headers have knife drive boxes located at the left end of the header; double knife headers have a knife drive box at each end. Knife drive boxes are belt driven by a hydraulic motor, and convert rotational motion into the reciprocating motion of the knife.

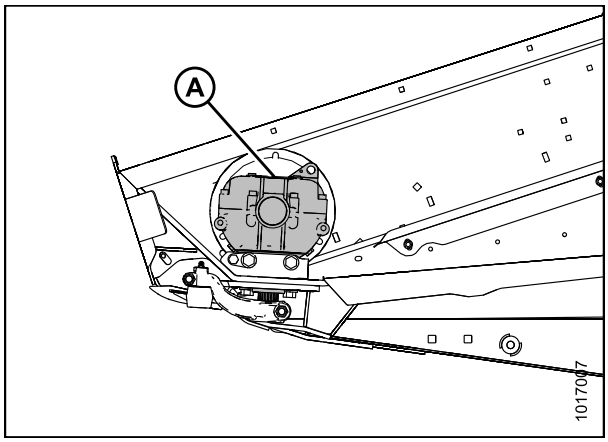


Figure 5.107: Left Side Knife Drive Box Shown – Right Side Similar

Checking Knife Drive Box

To access the knife drive box(es), endshield(s) must be fully opened.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Press down the latch in the opening (A) on the inboard side of the endsheet.
2. Pull endshield open using handle depression (B).

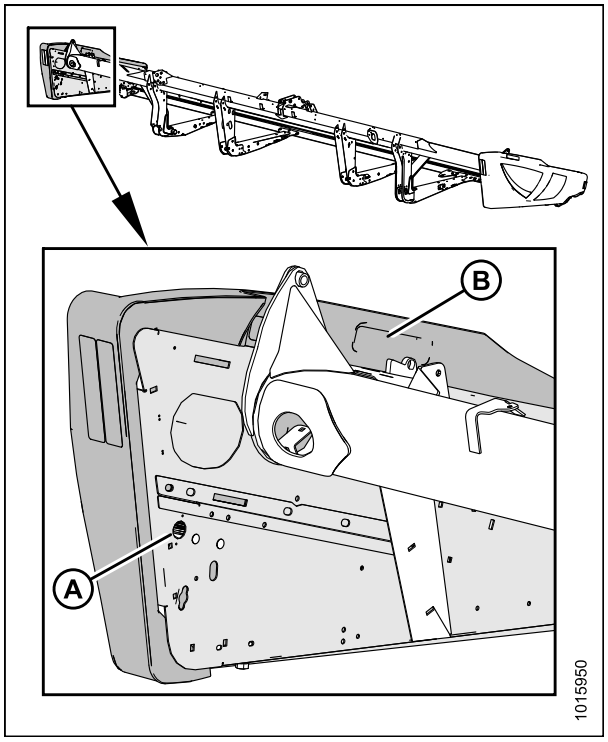


Figure 5.108: Endshield Latch Access

3. Swivel the endshield toward the back of the header and use the safety latch (B) to secure the endshield support tube (A) to the endsheet.

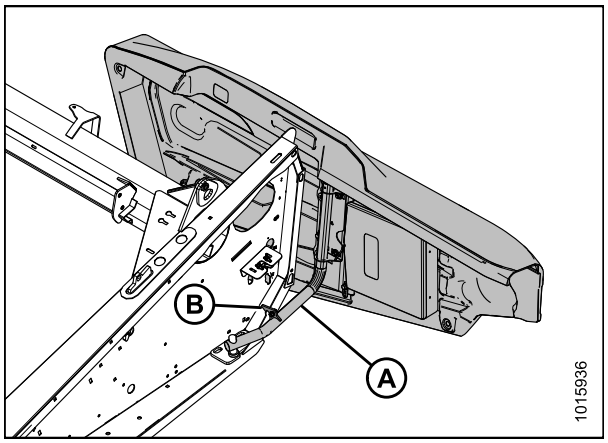


Figure 5.109: Left-Hand Endshield Support Tube

IMPORTANT:
The knife drive box breather is shipped in position (A) (forward) to prevent oil loss during transport. The breather plug MUST be repositioned to location (B) to prevent oil loss during normal operation. Failure to do so can result in damage to the knife drive box.

4. Check position of plug (A) and breather (B) at knife drive box. Position MUST be as shown.
5. Check oil level. It should be between the lower hole (C) on the dipstick and the bottom end of the dipstick.

NOTE:
Check oil level with top of knife drive box horizontal and with the dipstick screwed in.

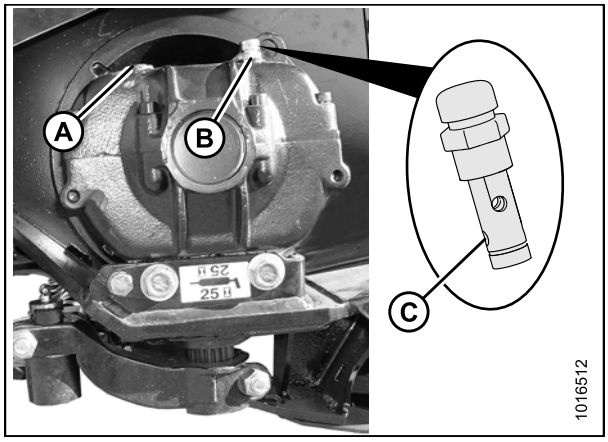


Figure 5.110: Knife Drive Box

Checking Mounting Bolts

Check the torque on the four knife drive box mounting bolts (A) and (B) after the first 10 hours operation and every 100 hours thereafter.

1. Torque the side bolts (A) first, then torque the bottom bolts (B). Torque all bolts to 200 ft·lbf (271 N·m).

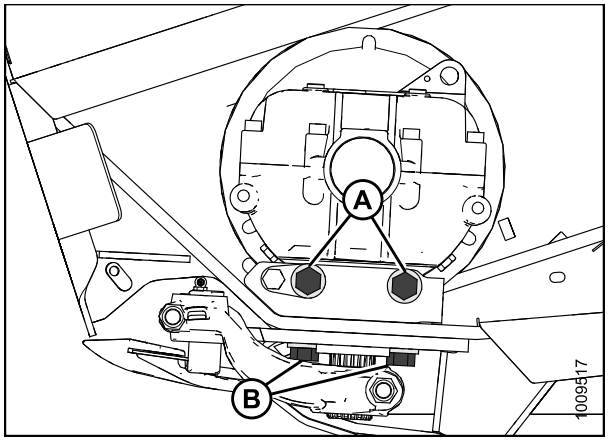


Figure 5.111: Knife Drive Box

Removing Knife Drive Box

⚠ WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

For Timed Double-Knife Headers:

NOTE:
The procedure is the same for both ends of a timed double-knife header. Images shown are for the left end—the right end is opposite.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.
3. Loosen the two nuts (A) on the idler bracket to relieve the belt tension.
4. Loosen the nut (B) on the idler pulley and slide the idler down to loosen the belt.
5. Proceed to Step *11., page 366*.

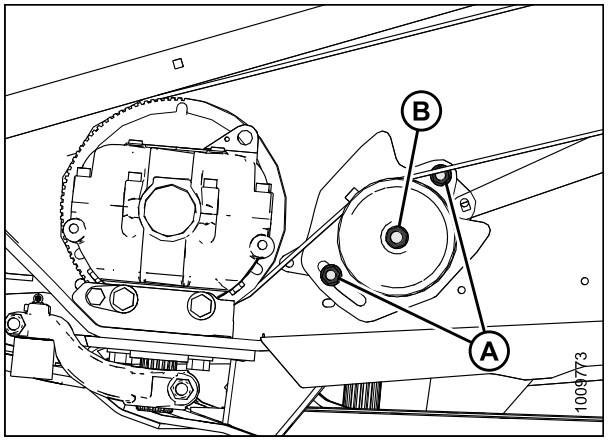


Figure 5.112: Timed Double-Knife Drive

For Single and Non-timed Double-Knife Headers:

6. Shut down the combine, and remove the key from the ignition.
7. Open the endshield. Refer to *Opening Endshields, page 33*.
8. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
9. Loosen the belt tension by turning the tensioning bolt (B) counterclockwise.
10. Proceed to Step *11., page 366*.

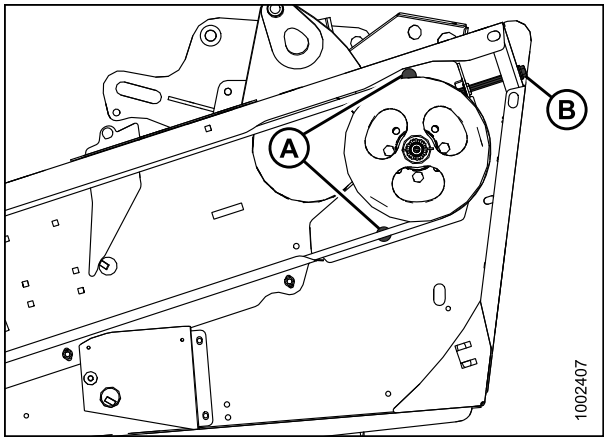


Figure 5.113: Single and Non-timed Double-Knife Drive

11. Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

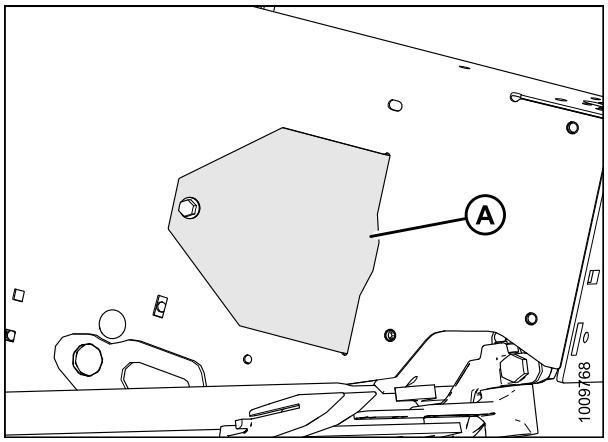


Figure 5.114: Access Cover

12. Remove the belt (A) from the drive pulley (B).
13. Slip the belt (A) over and behind the knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

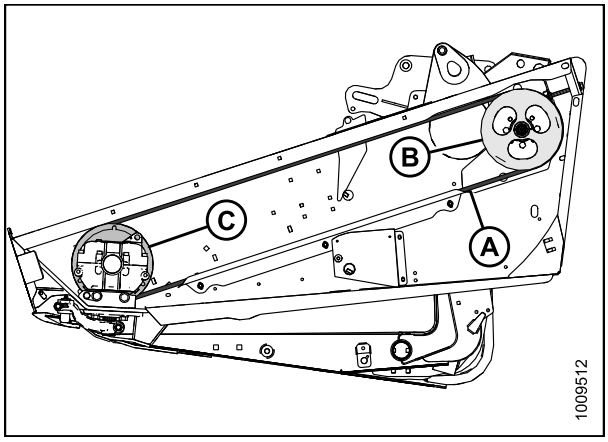


Figure 5.115: Knife Drive

14. Stroke the knife manually to its outer limit.
15. Clean the area around the knifehead.
16. Remove the grease zerk (B) from the pin.
17. Remove bolt (A).
18. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.
19. Use a screwdriver or chisel to pry the pin upwards in the pin groove until the pin is clear of the knifehead.
20. Push the knife assembly inboard until it is clear of the output arm.
21. Seal the knifehead bearing with plastic or tape unless it is being replaced.

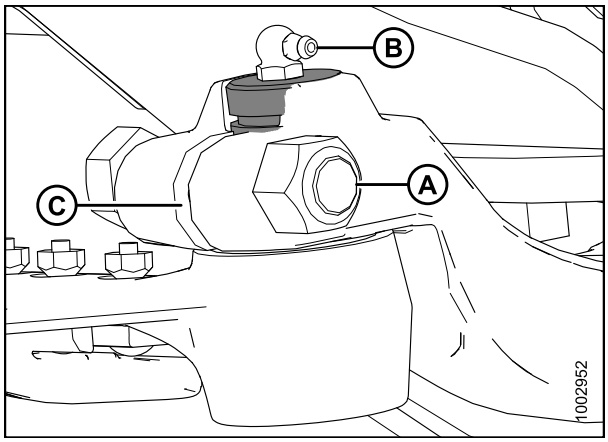


Figure 5.116: Knifehead

22. Remove the bolt (A) that clamps the knife drive arm to the knife drive box output shaft.
23. Remove the knife drive arm (B) from the knife drive box output shaft.
24. Remove the four knife drive box mounting bolts (C, D).

    NOTE:
    Do **NOT** remove bolt (E); it is factory-set to properly position the knife drive box in the correct fore-aft position.

CAUTION

Knife drive box with pulley weighs over 65 lb. (35 kg). Use care when removing or installing. Lug (L) can be used for lifting.

25. Remove the knife drive box and place it on a bench for disassembly.
26. Repeat procedure for the opposite end of the header.

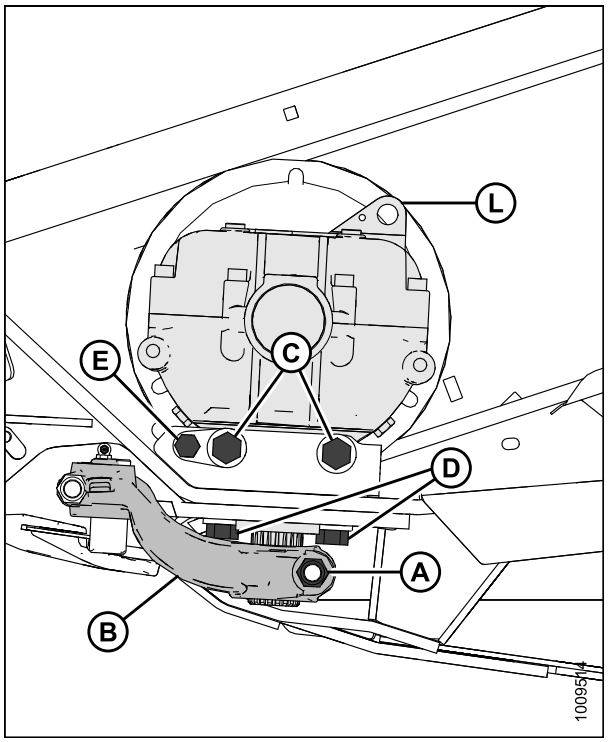


Figure 5.117: Knife Drive Box

Removing Knife Drive Box Pulley

Before removing the knife drive box pulley, remove the knife drive box from the header. Refer to *Removing Knife Drive Box, page 365*.

1. Loosen and remove the knife drive box pulley clamping bolt (A) and nut (B).
2. Remove the knife drive box pulley (C) using a three-jaw puller.

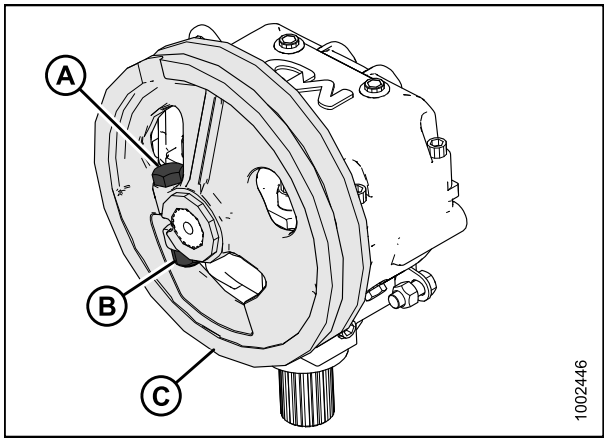


Figure 5.118: Knife Drive Box and Pulley

Installing Knife Drive Box Pulley

Before removing the knife drive box pulley, remove the knife drive box from the header. Refer to *Removing Knife Drive Box, page 365*.

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 Loctite® #243 adhesive (or equivalent) around the shaft as shown. Apply one band at the end of the spline and the second band at the approximate mid-point location.
3. Install the pulley (B) until flush with the end of the shaft.
4. Secure the pulley with 5/8 in. x 3 in. hex head bolt with distorted thread NC lock nut and torque to 160 ft·lbf (217 N·m).

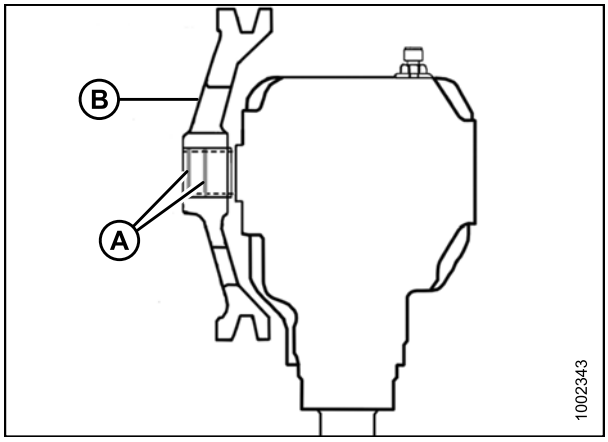


Figure 5.119: Knife Drive Box

Installing Knife Drive Box

The procedure for installing knife drive boxes is the same for single- and double-knife headers.

NOTE:
If the pulley was removed from the knife drive box, refer to *Installing Knife Drive Box Pulley, page 368*. If the pulley was not removed, proceed to Step *1., page 369*.

CAUTION

Knife drive box with pulley weighs over 65 lb. (35 kg). Use care when removing or installing. Lug (L) can be used for lifting.

1. Position the knife drive box onto the header mount and install the belt onto the pulley.
2. Secure the knife drive box to the frame using two 5/8 in. x 1-3/4 in. grade 8 hex head bolts (A) on the side and two 5/8 in. x 2-1/4 in. grade 8 hex head bolts (B) on the bottom.
3. Tighten the knife drive box side bolts (A) slightly, then tighten the bottom bolts (B) to ensure proper contact with the vertical and horizontal mounting surfaces. Do **NOT** torque the bolts at this time.

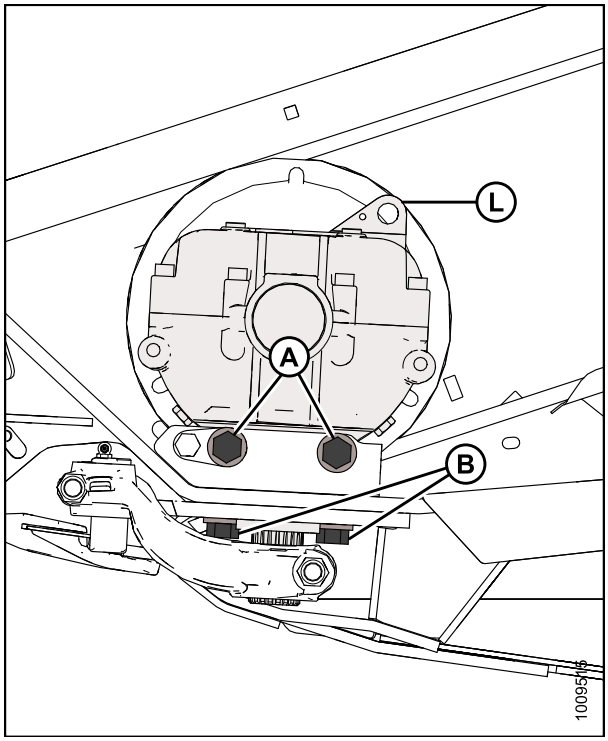


Figure 5.120: Knife Drive Box

4. Apply two bands (A) of Loctite® #243 (or equivalent) to the output shaft as shown. Apply one band at the end of the output shaft and the second band at the approximate mid-point location.
5. Slide the output arm (B) onto the output shaft. Rotate the pulley to ensure the splines are properly aligned and the drive arm clears the frame on the inboard stroke.

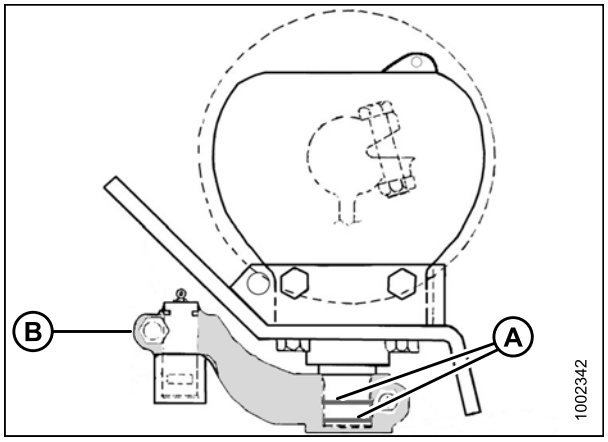


Figure 5.121: Knife Drive Box

6. Position the output arm (A) to the farthest outboard position. Move the output arm (A) up or down on the splined shaft until it is almost contacting the knifehead (B) (exact clearance [C] is set during the knifehead pin installation).

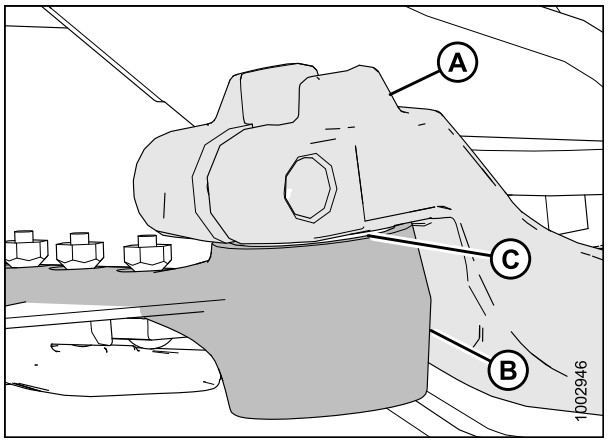


Figure 5.122: Knifehead

7. Torque the output arm bolt (B) to 160 ft·lbf (217 N·m).

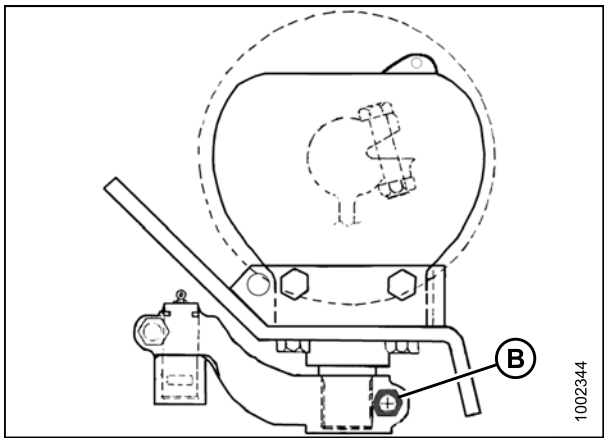


Figure 5.123: Knife Drive Box

8. Slide the knife into place and align the knifehead with the output arm.

   NOTE:
   Remove the grease zerk from the knifehead pin for easier removal and installation of knifehead pin.

9. Install the knifehead pin (A) through the output arm (C) and into the knifehead.

10. Set the groove (B) in the knifehead pin 1/16 in. (1.5 mm) above the output arm (C). Secure with 5/8 in. x 3 in. hex head bolt and nut (D), and torque to 160 ft·lbf (217 N·m).

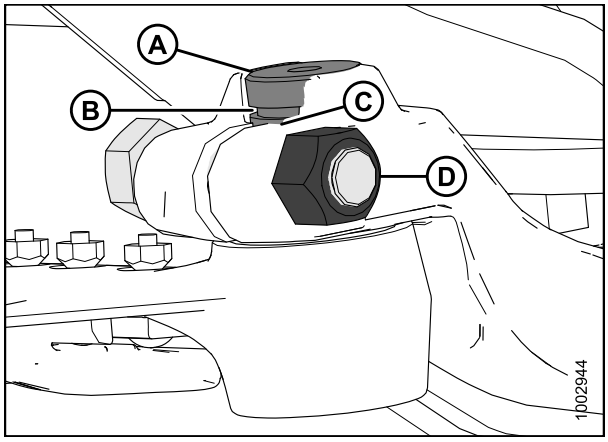


Figure 5.124: Knifehead

11. Install the grease zerk (A) into the knifehead pin, and turn the grease zerk for easy access.

    IMPORTANT:
    Slowly apply grease to the knifehead until slight downward movement of the knifehead is observed. 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 zerk to release pressure.

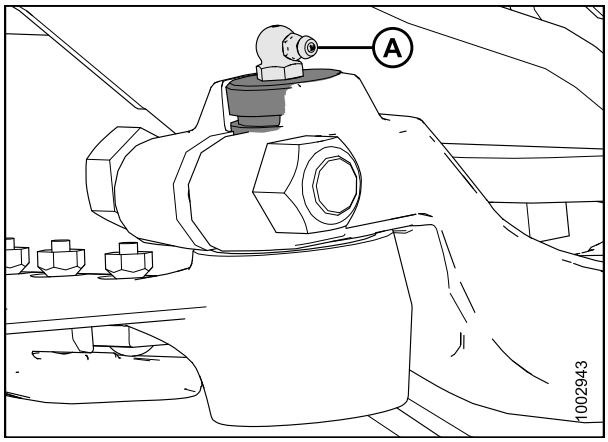


Figure 5.125: Knifehead

12. Tighten the knife drive box side bolts (A) first, then tighten the bottom bolts (B). Torque to 200 ft·lbf (271 N·m).

13. Move the output 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.

14. Install and tension the knife drive belts. For untimed belts refer to *Tensioning Non-Timed Knife Drive Belts, page 374*, for timed belts refer to *Tensioning Timed Knife Drive Belts, page 379*. For timed double-knife headers, also check the knife timing, refer to *Adjusting Double-Knife Timing, page 380*.

15. Close the endshield. Refer to *Closing Endshields, page 34*.

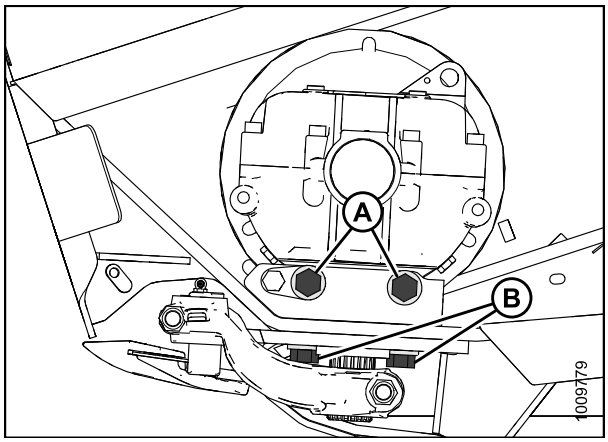


Figure 5.126: Knife Drive Box

Changing Oil in Knife Drive Box

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

Change the knife drive box lubricant after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

1. Start engine to warm up oil.
2. Shut down the combine, and remove the key from the ignition.
3. Raise the header and place a suitably sized container under the knife box to collect the oil.
4. Open the endshield. Refer to *Opening Endshields, page 33*.
5. Remove the breather/dipstick (A) and the drain plug (B).
6. Allow the oil to drain.
7. Reinstall the drain plug (B).
8. Add oil to the knife drive box. Refer to *5.2.1 Recommended Fluids and Lubricants, page 298*.
9. Close the endshield. Refer to *Closing Endshields, page 34*.

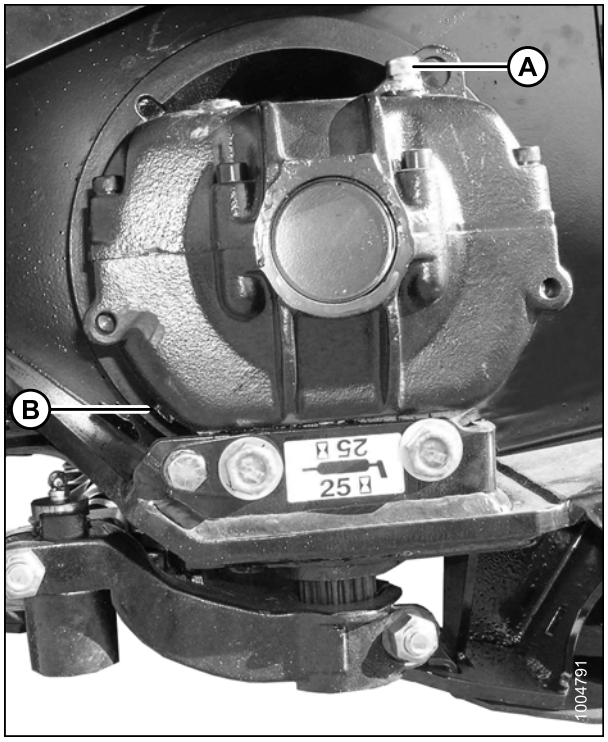


Figure 5.127: Knife Drive Box

5.9.2 Knife Drive Belts

Non-Timed Knife Drive Belts

The knife drive box is driven by a V-belt that is powered by a hydraulic motor on the header left endsheet. There is an identical drive system at the opposite end of 40- and 45-foot double-knife headers.

Removing Non-Timed Knife Drive Belt

The non-timed knife drive belt removal procedure is the same for both sides of a double-knife header.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Loosen the belt tension by turning the tensioning bolt (B) counterclockwise.

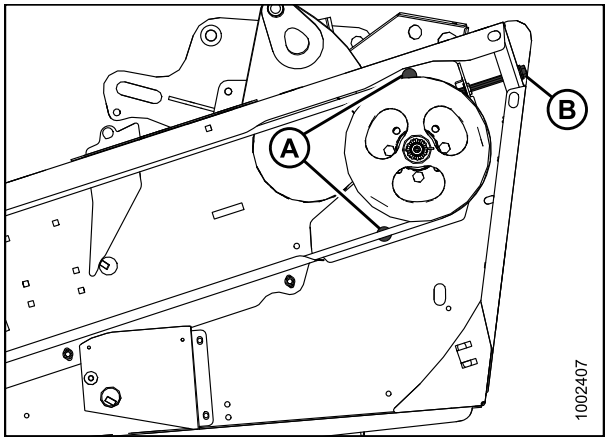


Figure 5.128: Single and Non-timed Double-Knife Drive

5. Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.

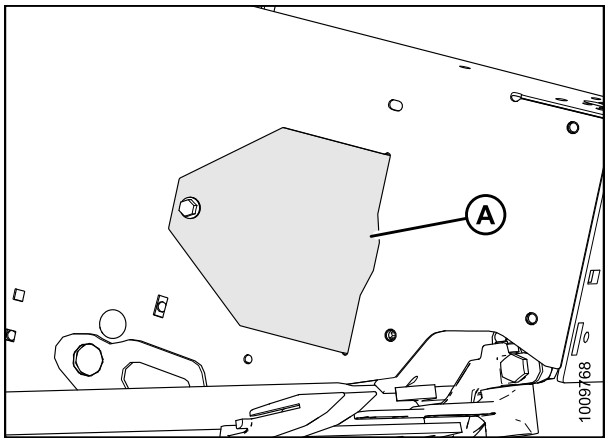


Figure 5.129: Access Cover

6. Remove the belt (A) from the drive pulley (B).
7. Slip the belt (A) over and behind the knife drive box pulley (C). Use the notch in the pulley to assist with belt removal.

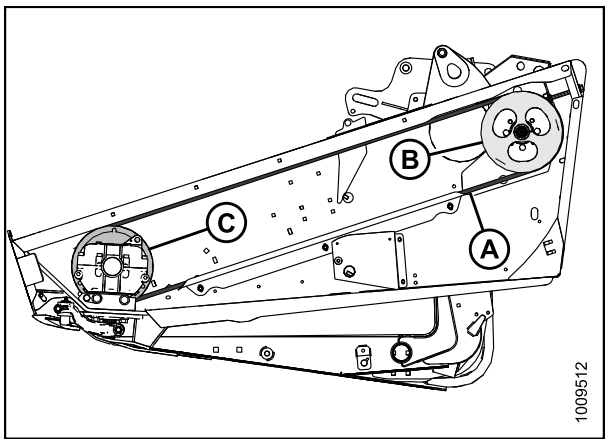


Figure 5.130: Knife Drive

Installing Non-Timed Knife Drive Belts

The procedure for installing non-timed knife drive belts is the same for both sides of the header.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Shut down the combine, and remove the key from the ignition.
2. Route the knife drive belt (A) around the 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.

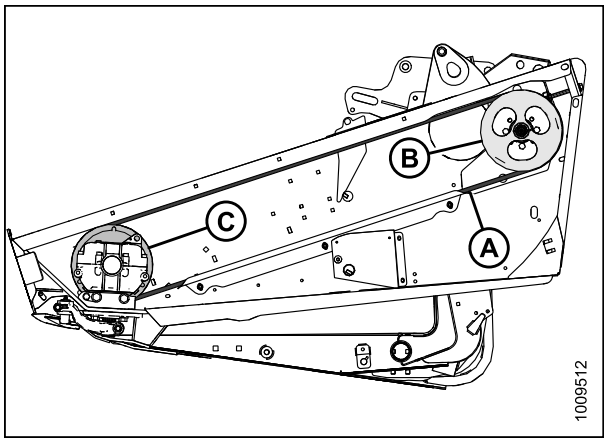


Figure 5.131: Knife Drive

3. Tension the knife drive belt. Refer to *Tensioning Non-Timed Knife Drive Belts, page 374*.
4. Install the access cover (A) and secure with bolt.
5. Close the endshield. Refer to *Closing Endshields, page 34*.

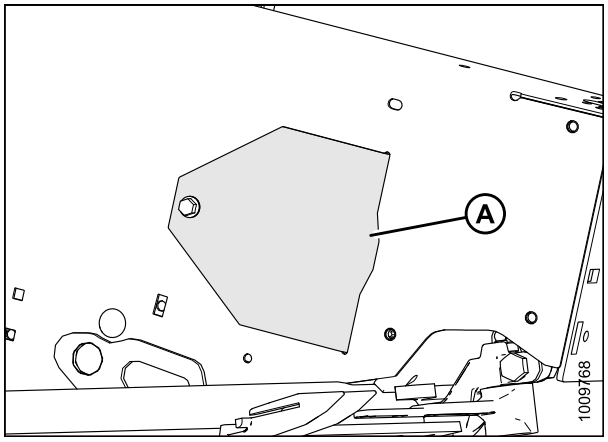


Figure 5.132: Access Cover

Tensioning Non-Timed Knife Drive Belts

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

IMPORTANT:
To prolong the belt and drive life, do **NOT** overtighten the belt.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.

3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Turn the adjuster bolt (B) clockwise to move the drive motor until a force of 30 lbf (133 N) deflects the belt (C) 15/16–1-1/8 in. (24–28 mm) at the mid-span.

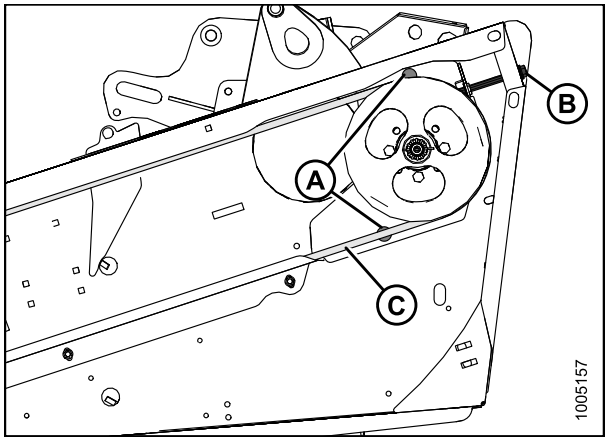


Figure 5.133: Left Side Shown – Right Side Opposite for Double-Knife Headers

5. Ensure the clearance between the belt (A) and the belt guide (B) is 1/16 in. (1 mm).
6. Loosen the three bolts (C), and adjust the position of the guide (B) as required.
7. Tighten the three bolts (C).
8. Close the endshield. Refer to *Closing Endshields, page 34*.

   NOTE:
   Readjust the tension of a new belt after a short run-in period (about five hours).

9. Repeat procedure on the other side of the header.

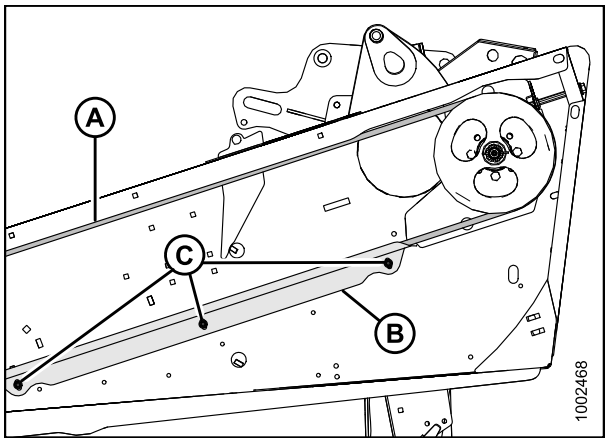


Figure 5.134: Knife Drive

Timed Double-Knife Drive Belts

Removing Timed Drive V-Belts

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.
3. Loosen the two bolts (A) securing the motor assembly to the header endsheet.
4. Turn the adjuster bolt (B) counterclockwise to loosen and remove the two V-belts (C).

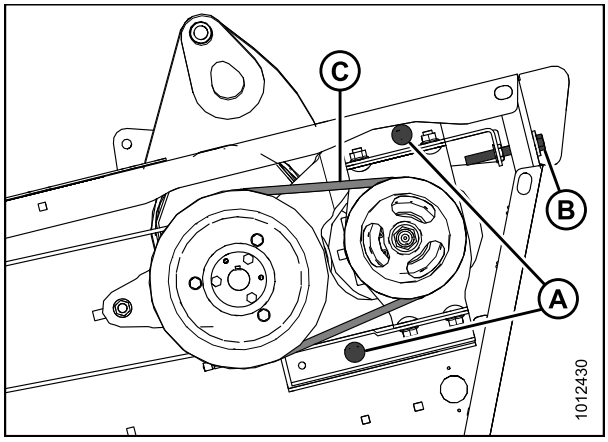


Figure 5.135: Knife Drive V-Belts

Installing Timed Drive V-Belts

NOTE:
Install new V-belts in matching pairs.

1. Shut down the combine, and remove the key from the ignition.
2. Install the V-belts (C) onto the pulleys.

   NOTE:
   Ensure the drive motor is fully forward, do **NOT** pry the belts over the pulley.

3. Turn the adjuster bolt (B) clockwise to tighten the V-belts. A properly tensioned V-belt should deflect 5/32 in. (4 mm) when 12–17 lbf (52–77 N) is applied at the mid-span.

   IMPORTANT:
   To prolong the life of V-belts and drives. Do **NOT** overtighten the V-belts.

4. Tighten the two bolts (A) on the endsheet.
5. Close the endshield. Refer to *Closing Endshields, page 34*.
6. Check the tension of the new V-belts after a short run-in period (about five hours).

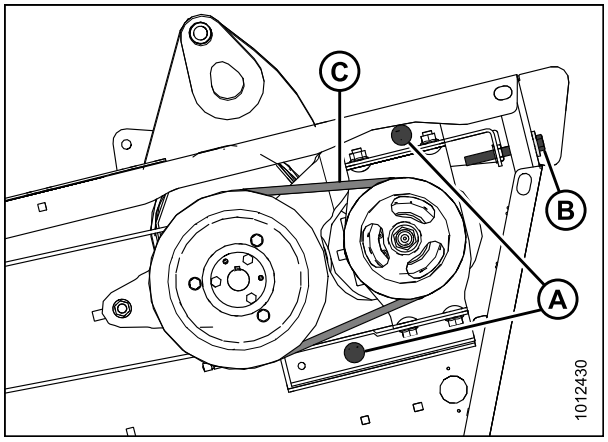


Figure 5.136: Knife Drive V-Belts

Removing Timed Knife Drive Belt

The timed knife drive belt removal procedure is the same for both sides of the header.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.
3. Loosen two nuts (A) on the belt idler bracket to relieve the belt tension.
4. Loosen nut (B) on the idler pulley and slide the idler downwards to loosen the belt.

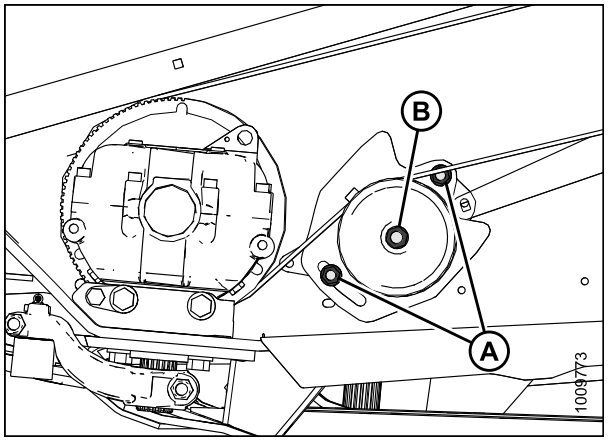


Figure 5.137: Knife Drive

NOTE:
The following two steps apply only to the left side drive.

5. Loosen two bolts (A) on the endsheet.
6. Turn the adjuster bolt (B) counterclockwise to loosen and remove the two V-belts (C).

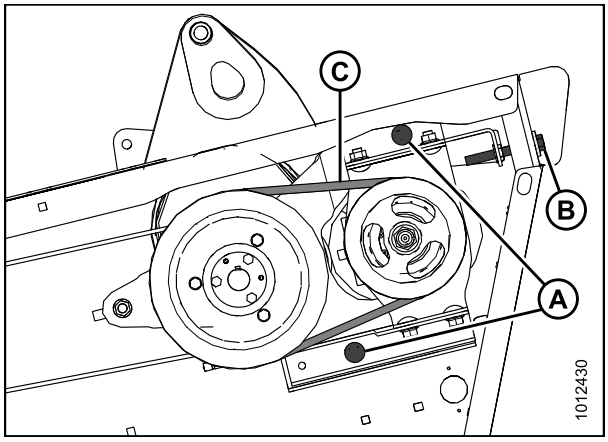


Figure 5.138: Knife Drive V-Belts

7. Open the access cover (A) on the endsheet behind the cutterbar to provide clearance between the knife drive box pulley and the endsheet.
8. Remove the knife drive belt.

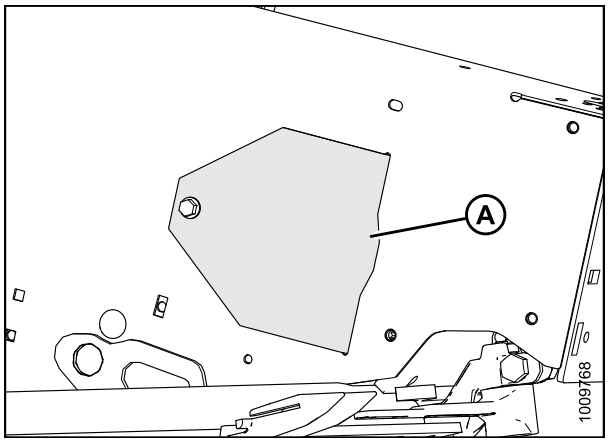


Figure 5.139: Access Cover

Installing Timed Knife Drive Belt

The procedure for installing timed knife drive belts is the same for both sides of the header.

If the belt is out of alignment, refer to *Adjusting Belt Tracking, page 383*.

1. Shut down the combine, and remove the key from the ignition.
2. Route the knife drive belt (A) around the pulley (B) and the knife drive box pulley (C).

   NOTE:
   Ensure the drive motor is fully forward. Do **NOT** pry the belt over the pulley.

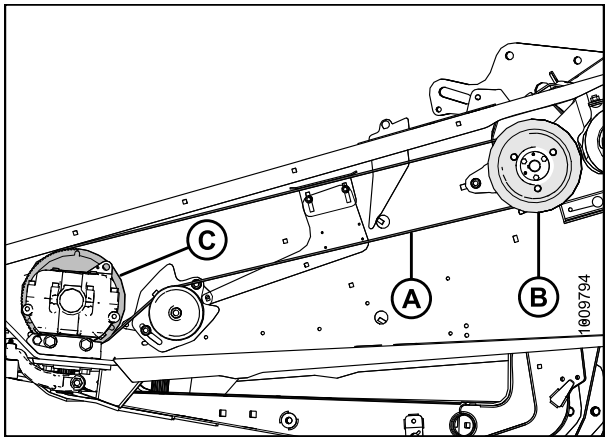


Figure 5.140: Left Side Shown – Right Side Similar

NOTE:
The following two steps apply only to the left side drive.

3. Install the V-belts (C) onto the pulleys.

NOTE:
Ensure the drive motor is fully forward, do **NOT** pry the belts over the pulley.

4. Turn the adjuster bolt (B) clockwise to tighten the V-belts. A properly tensioned V-belt should deflect 5/32 in. (4 mm) when 12–17 lbf (52–77 N) is applied at the mid-span.

IMPORTANT:
To prolong the life of V-belts and drives. Do **NOT** overtighten the V-belts.

5. Tighten the two bolts (A) on the endsheet.
6. Ensure the knives are timed before tightening the belt. Refer to *Adjusting Double-Knife Timing, page 380*.
7. Slide the idler pulley (A) into the slot on the support bracket (B) to take-up the slack in the timing belt.

NOTE:
Ensure the lower nut (C) is as high as possible in the support bracket (B) slot.

8. Tighten nut (D) to 157–173 ft·lbf (212–234 N·m).
9. Tension the knife drive belt. Refer to *Tensioning Timed Knife Drive Belts, page 379*.
10. Install the access cover (A) and secure with bolt.
11. Close the endshield. Refer to *Closing Endshields, page 34*.

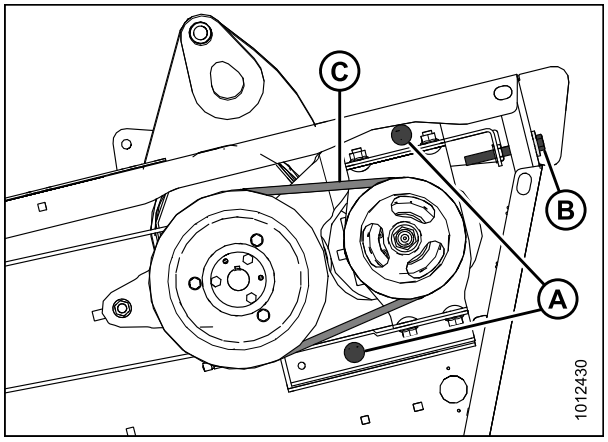


Figure 5.141: Knife Drive V-Belts

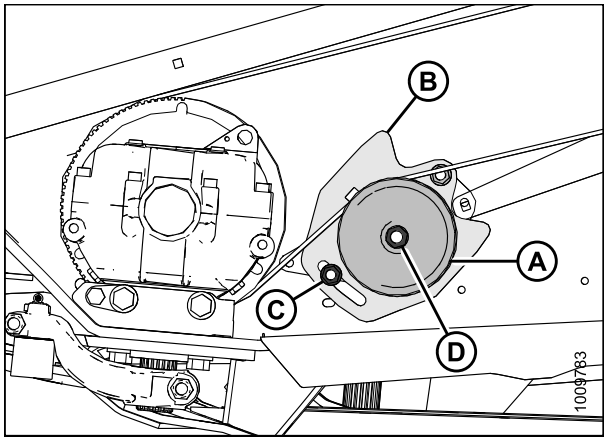


Figure 5.142: Knife Drive

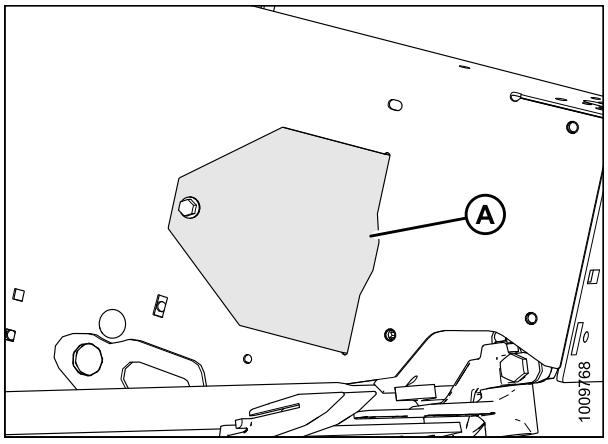


Figure 5.143: Access Cover

Tensioning Timed Knife Drive Belts

The procedure for tensioning timed knife drive belts is the same for both sides of the header. The illustrations shown are for the left side—the right side is opposite.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

IMPORTANT:
To prolong belt and drive life, do **NOT** over-tighten belt.

IMPORTANT:
Do **NOT** use the adjuster bolt at the drive pulley to adjust timing belt tension.

1. Shut down the combine, and remove the key from the ignition.
2. Open the endshield. Refer to *Opening Endshields, page 33*.
3. Loosen two nuts (A) on the knife drive belt idler bracket.

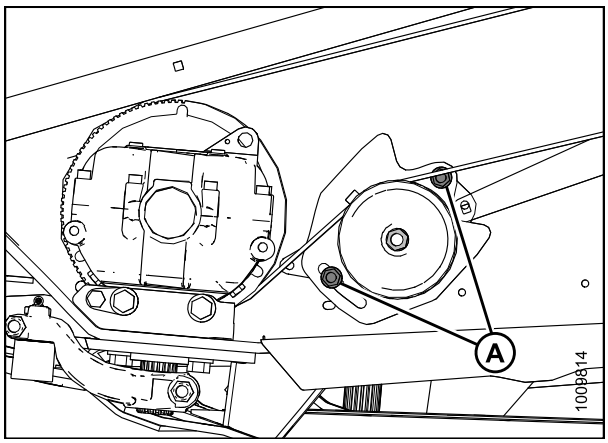


Figure 5.144: Left Side Knife Drive

4. Position the pry bar (A) under the idler bracket (C), and push the bracket upwards until a force of 6 lbf (27 N) deflects the belt 1/2 in. (13 mm) at the mid-point of the upper span.

   NOTE:
   Protect the paint by placing a piece of wood (B) under the pry bar (A).

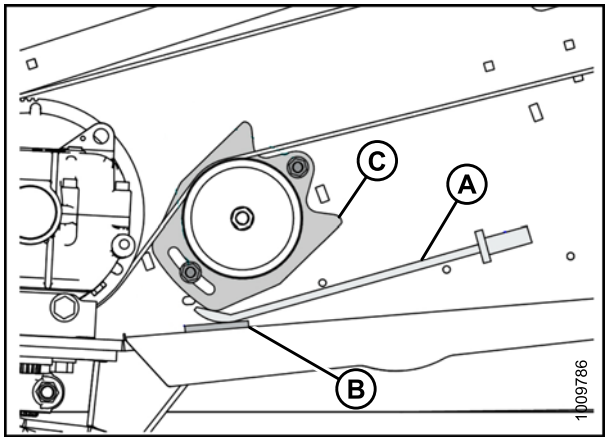


Figure 5.145: Left Side Knife Drive

5. Tighten the nuts (C) to 54–59 ft·lbf (73–80 N·m) after achieving the proper belt tension.
6. Remove the pry bar (A) and wood (B).

   NOTE:
   Readjust the tension of a new belt after a short run-in period (about five hours).

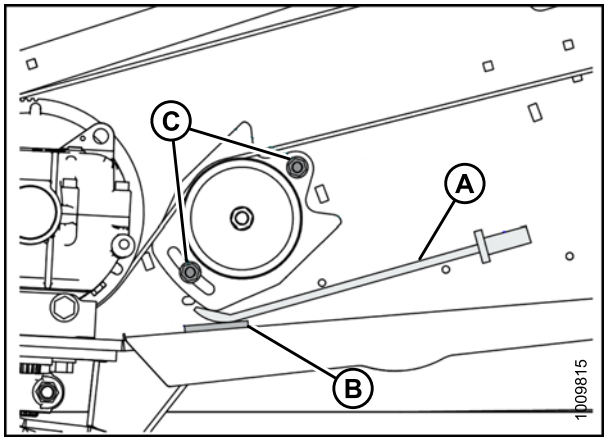


Figure 5.146: Left Side Knife Drive

7. Ensure the clearance (A) between the belt (B) and the guide (C) is 1/32–1/16 in. (0.5–1.5 mm).
8. Loosen bolts (D) and adjust the guide if necessary. Tighten bolts.
9. Close the endshield. Refer to *Closing Endshields, page 34*.
10. Repeat procedure for the opposite side of the header.

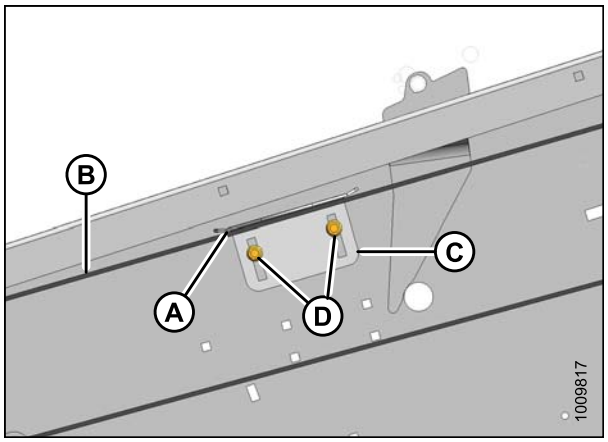


Figure 5.147: Left Side Belt Guide

Adjusting Double-Knife Timing

Timed double-knife drive headers (35-foot and smaller) require the knives to be properly timed to move in opposite directions.

1. Shut down the combine, and remove the key from the ignition.
2. Open both endshields. Refer to *Opening Endshields, page 33*.
3. Remove the right-hand belt. Refer to *Removing Timed Knife Drive Belt, page 376*.

4. Rotate the left knife drive box driven pulley clockwise until the left knife (A) is at the center of the inboard stroke (B) (moving towards the center of the header).

   NOTE:
   The center stroke is when the knife sections (C) are centered between the guard points.

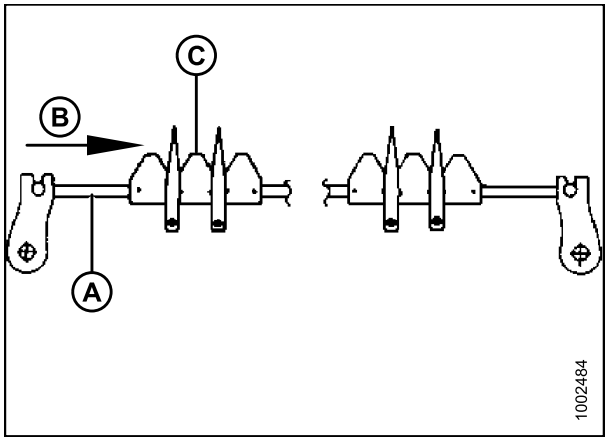


Figure 5.148: Adjusting Timing – Left Side

5. Rotate the right knife drive box pulley counterclockwise until the right knife (A) is at the center of the inboard stroke (B) (moving towards the center of the header).

   NOTE:
   The center stroke is when the knife sections (C) are centered between the guard points.

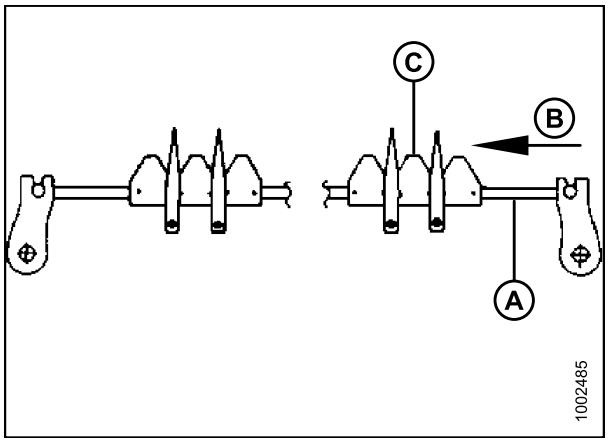


Figure 5.149: Adjusting Timing – Right Side

6. Install the right-hand belt (A).

   NOTE:
   Ensure the knife drive box driver and driven pulleys do **NOT** rotate during belt installation.

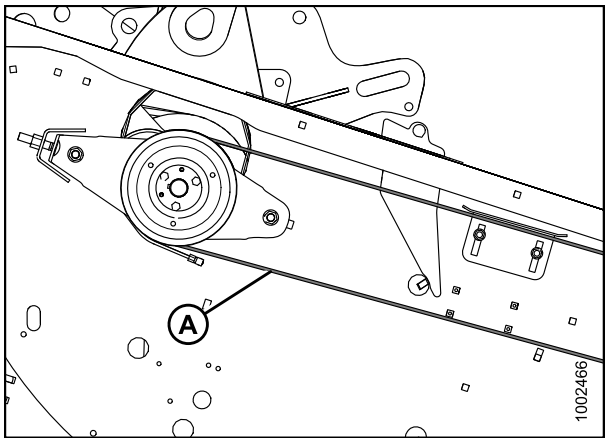


Figure 5.150: Right Side Knife Drive

7. Rotate the idler pulley bracket (A) downwards, and slide the idler pulley up by hand to remove most of the belt slack. Tighten the nut (B).

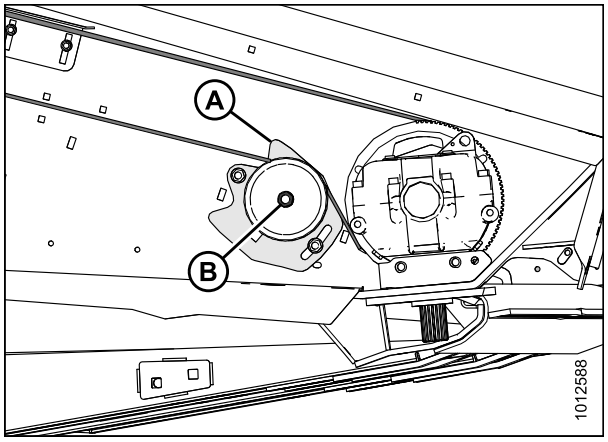


Figure 5.151: Right Side Knife Drive

8. Position the pry bar (A) under the idler bracket (C), and push the bracket upwards until a force of 6 lb (27 N) deflects the belt 1/2 in. (13 mm) at the mid-point of the upper span.

   NOTE:
   Protect the paint by placing a piece of wood (B) under the pry bar (A).

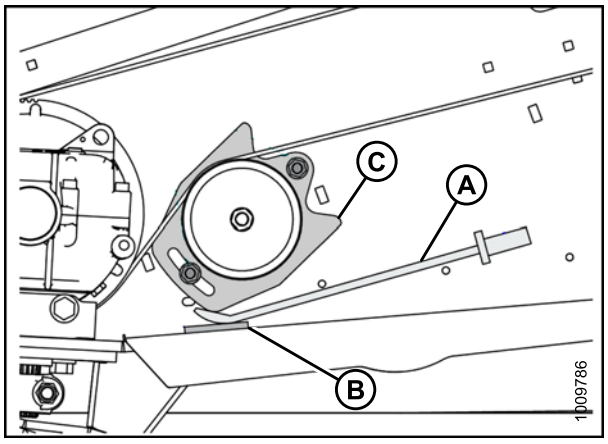


Figure 5.152: Left Side Shown – Right Side Opposite

9. Tighten the nuts (C) to 54–59 ft·lbf (73–80 N·m) after achieving the proper belt tension.
10. Ensure the timing belts are properly seated in the grooves on both driver and driven pulleys.
11. Rotate the drive slowly by hand and observe where the knives overlap at the center of the header to check for the correct knife timing.

    IMPORTANT:
    The knives must begin moving at the exact same time and must move in opposite directions.

12. Adjust the knife timing, if necessary, by loosening the right side drive belt (B) just enough to reposition it to the next cog(s) and proceed as follows:
    a. If the right knife leads the left knife, rotate the right side driven pulley (A) clockwise.
    b. If the right knife lags the left knife, rotate the right side driven pulley (A) counterclockwise.

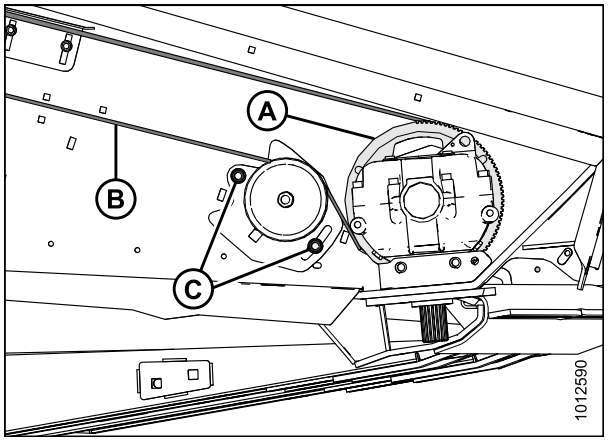


Figure 5.153: Right Side Knife Drive

13. Ensure the drive pulleys don't rotate, and tension the right side drive belts (refer to Step to Step *9., page 382*).

    IMPORTANT:
    Do **NOT** use the adjuster bolt at the drive pulley to adjust the timing belt tension.

14. Recheck the timing (refer to Step *11., page 382*) and readjust if necessary (refer to Step *12., page 382*).
15. Close both endshields. Refer to *Closing Endshields, page 34*.

Adjusting Belt Tracking

The procedure for adjusting belt tracking is the same for both sides of timed knife headers.

IMPORTANT:
Belts that are not tracking properly are subject to premature failure—ensure the pulleys are aligned and parallel. Follow the belt tensioning procedures in this manual to prevent misalignment.

Cogged timing belts should be centered on the knife drive box pulley and positioned at least 3/32 in. (2 mm) from either edge of the pulley when the header is running (a gap should be visible between the belt and the edge of the pulley).

NOTE:
The belt should not make continuous contact with the flanges of the drive pulley, but occasional contact is acceptable.

DANGER

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

1. Open both endshields. Refer to *Opening Endshields, page 33*.

CAUTION

Exercise extreme care when operating the header with the endshields open.

2. Operate the header and observe the belt tracking on both the drive pulley and the knife drive box pulley on both sides of the header. Shut down the combine and remove the key from the ignition before making any adjustments.
3. Proceed to Step *6., page 385* if the belt is tracking towards the inboard side of the drive pulley. The likely cause is a toe-out problem (A, B) (belt tends to move towards the low tension [inboard] side of the pulley).
4. Proceed to Step *6., page 385* if the belt is tracking towards the outboard side of the drive pulley. The likely cause is a toe-in problem (C, D) (belt tends to move towards the high tension [outboard] side of the pulley).
5. Proceed to Step *7., page 385* if the belt (A) is tracking to one side of the knife drive box pulley (B). The likely cause is an out of position idler pulley (C).

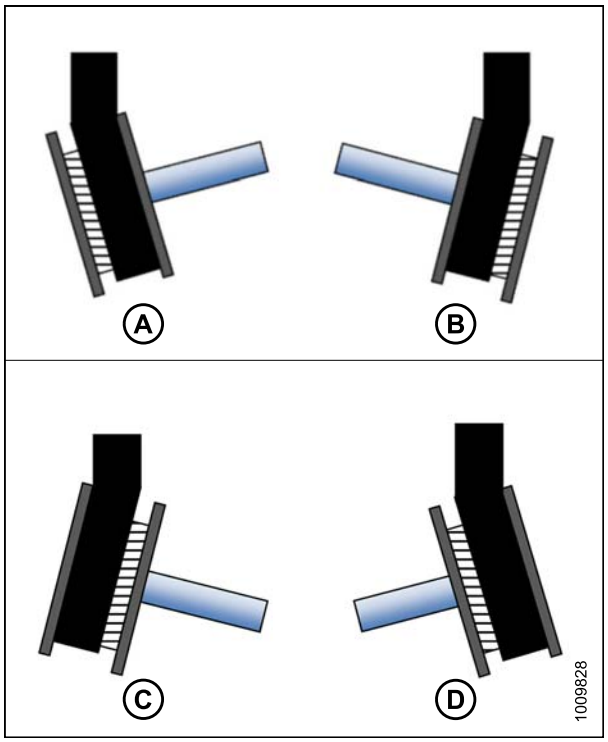


Figure 5.154: Knife Drive Pulley

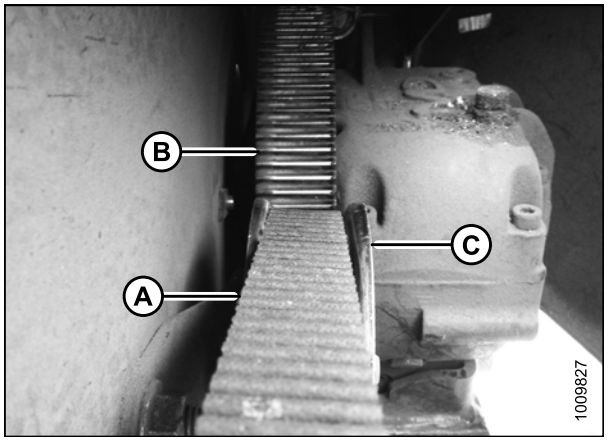


Figure 5.155: Knife Drive Belt

6. Correct the tracking problem on the drive pulley by adjusting the position of the cross shaft support tube as follows:
   a. Loosen nut (A) on the support assembly (B).
   b. Slide the support assembly (B) rearwards in slot (C) to correct the toe-out condition, or forward to correct the toe-in condition.
   c. Tighten nut (A).
   d. Operate the header and check the belt tracking. Adjust the support assembly as required.
   e. Proceed to Step *8., page 386* if the belt tracking problems continue.
7. Correct the tracking problem on the knife drive box pulley by adjusting the idler position as follows:
   a. Loosen nuts (A) and (B) and move the bracket and idler until the belt is loose.
   b. Remove the nut (B) securing the idler to the bracket and remove the lock washer, idler pulley, and flat washer.
   c. Install the idler pulley (C) using flat washer(s) as required to align the idler pulley with the knife drive box pulley.
   d. Install the lock washer (D) and nut (B).
   e. Tension the belt. Refer to *Tensioning Timed Knife Drive Belts, page 379*.
   f. Operate the header and check the belt tracking.

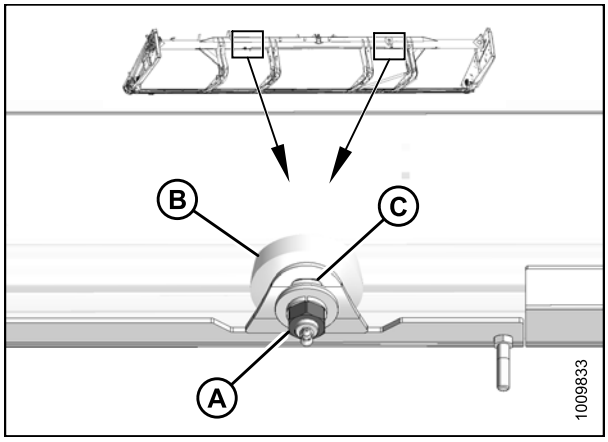


Figure 5.156: Cross-Shaft Support

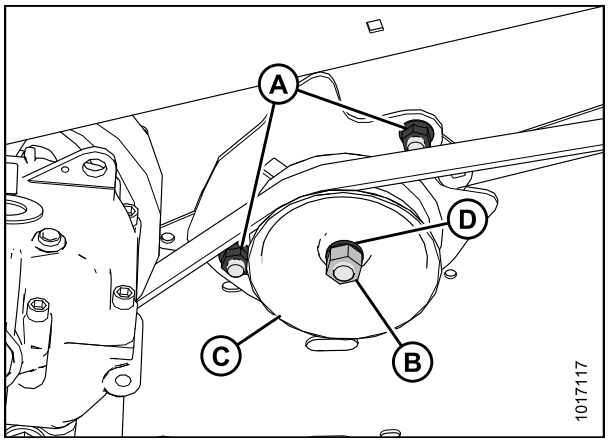


Figure 5.157: Knife Drive

8. If further adjustment is required to correct drive pulley tracking, proceed as follows:
   a. Loosen nut (A) on the idler and nuts (B) on the idler bracket.
   b. Loosen nuts (C) at the drive pulley location.
   c. Turn the adjuster bolt (D) clockwise to enable the belt to track inboard and correct the toe-in problems.
   d. Turn the adjuster bolt (D) counterclockwise to enable the belt to track outboard and correct the toe-out problems.
   e. Tighten the nuts (C) at the drive pulley location.
   f. Tension the belt. Refer to *Tensioning Timed Knife Drive Belts, page 379*.
   g. Operate the header, check the belt tracking, and readjust the drive pulley as necessary.

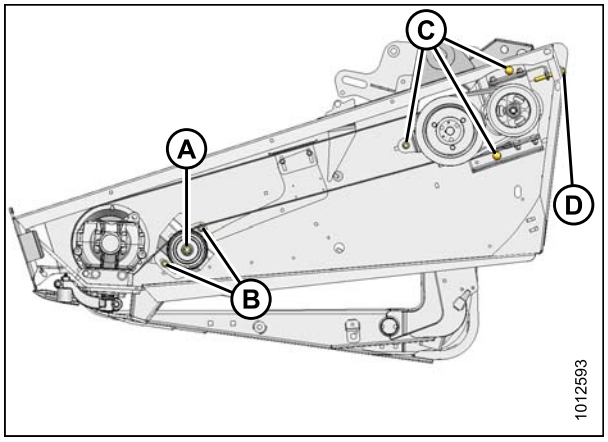


Figure 5.158: Knife Drive – Left Side

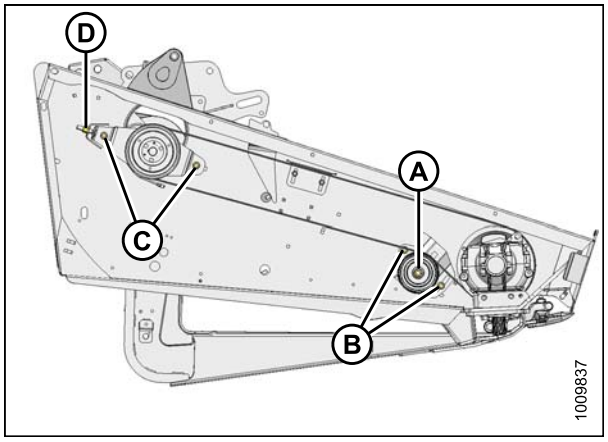


Figure 5.159: Knife Drive – Right Side

5.10 Feed Draper

The feed draper is located on the FM100 float module.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 297*.

5.10.1 Replacing Feed Draper

Replace draper if torn, cracked, or missing slats.

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.
3. Raise reel and engage safety stops.
4. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side.
5. Open feed deck pan to aid in feeding belt around rollers.

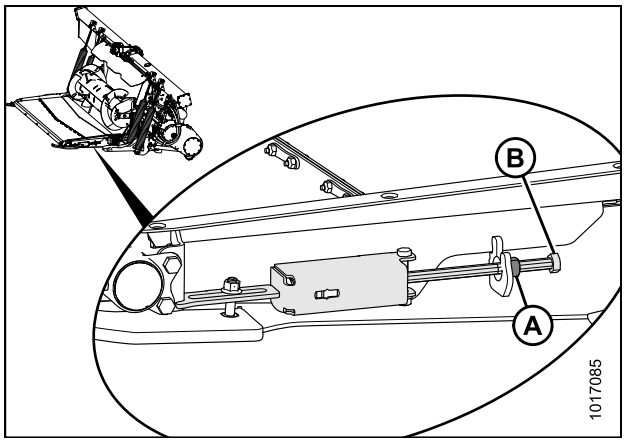


Figure 5.160: Feed Draper Tensioner

6. Remove screws (A) and nuts, and remove the draper connector straps (B).
7. Pull the draper from the deck.

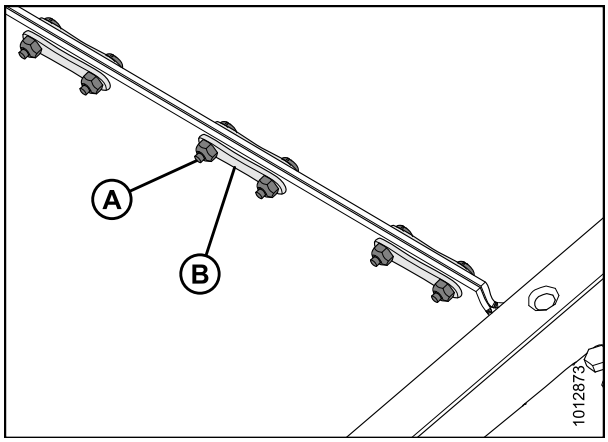


Figure 5.161: Draper Connector

8. Install new draper (A) over the drive roller (B). Make sure the draper guides fit into the drive roller grooves (C).
9. Pull draper along bottom of float module deck and over idler roller (D).

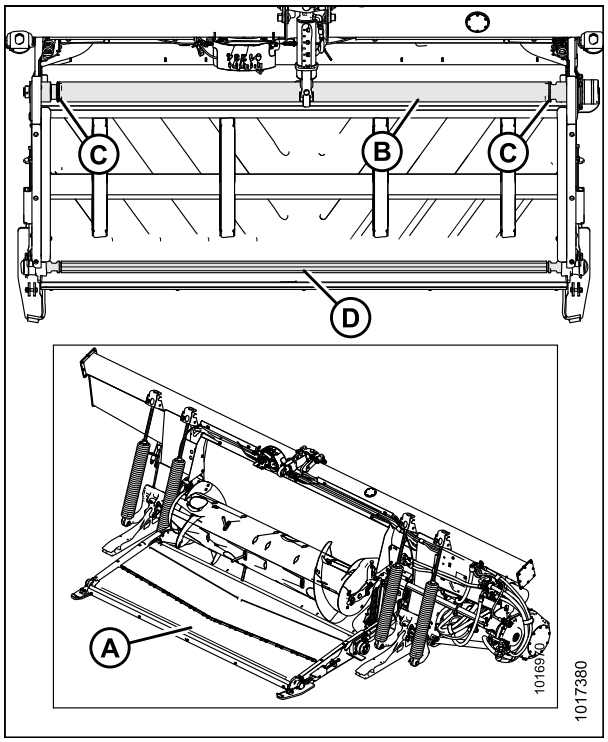


Figure 5.162: Float Module Feed Draper

10. Connect the draper joint with the connector straps (B) and secure with screws (A) and nuts. 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.
11. Adjust the draper tension. Refer to *5.10.2 Adjusting Feed Draper Tension, page 388*.
12. Close the feed deck pan.

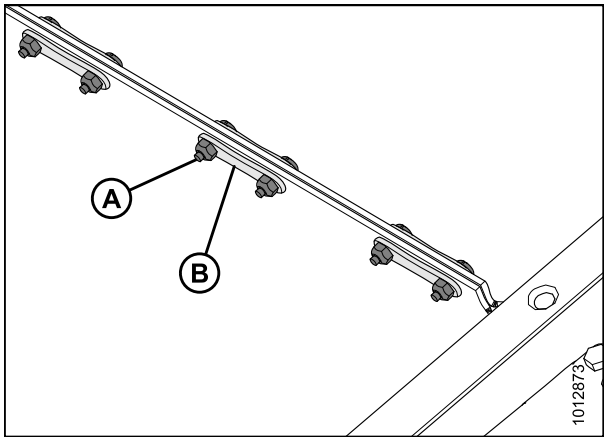


Figure 5.163: Draper Connector Straps

5.10.2 Adjusting Feed Draper Tension

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.
3. Ensure the draper guide (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.

4. Loosen jam nut (A) and turn bolt (C) clockwise to increase draper tension or counterclockwise to decrease draper tension.
5. Adjust the draper tension until the white indicator (C) is centered within the indicator window on the spring box.

   IMPORTANT:
   Adjust both sides equally.

6. Tighten jam nut (A).

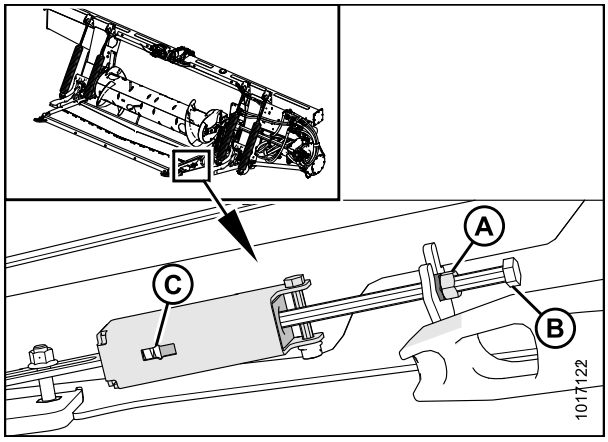


Figure 5.164: Tensioner

5.10.3 Feed Draper Drive Roller

Removing Feed Draper Drive Roller – FM100

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.
3. Raise reel and engage safety stops.
4. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side.

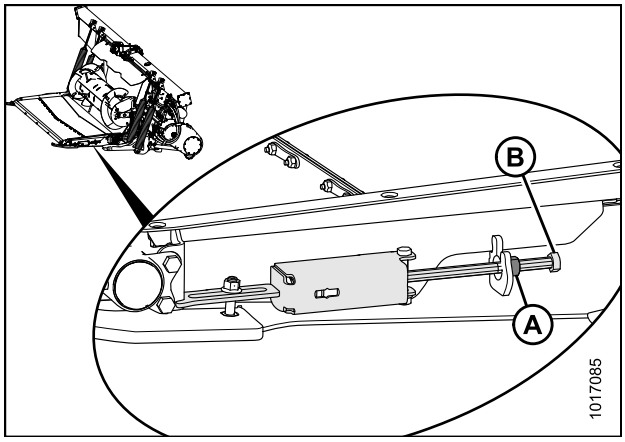


Figure 5.165: Feed Draper Tensioner

5. Remove the nuts (A) and connector straps (B) and open the feed draper.

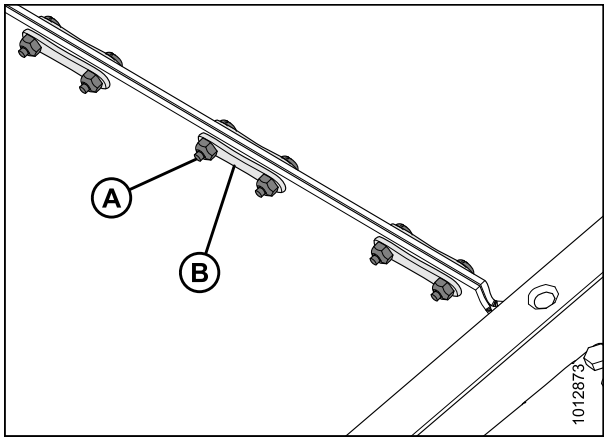


Figure 5.166: Draper Connector

6. Remove two bolts (D) from the drive roller cover (A).

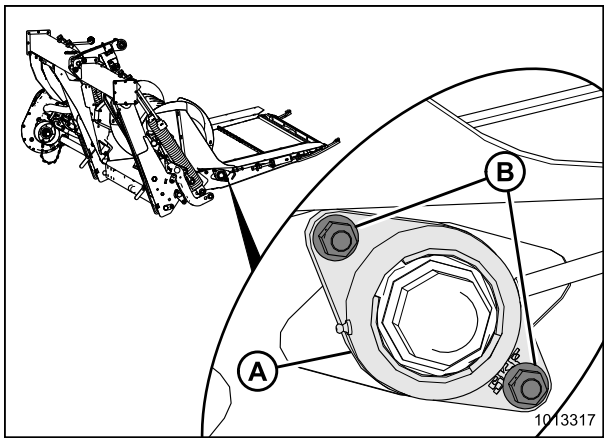


Figure 5.167: Drive Roller Bearing

7. Move the drive roller cover plate (A) to the left.

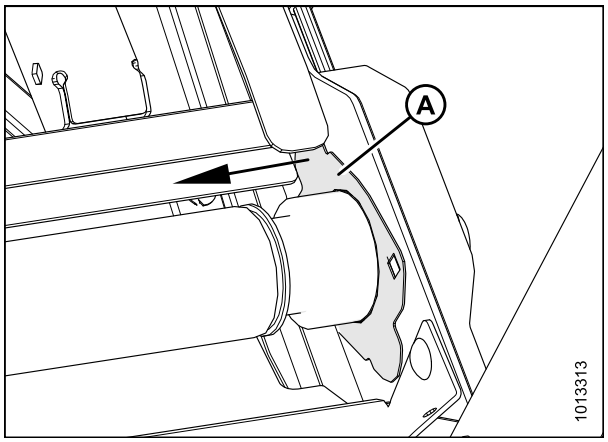


Figure 5.168: Drive Roller

8. Slide drive roller (A) with bearing assembly (B) to the right until left-hand comes off of spline.

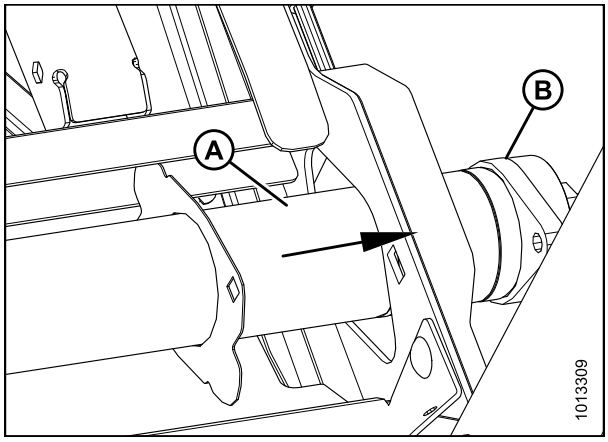


Figure 5.169: Drive Roller

9. Lift left-hand end out of the frame.
10. Slide assembly (A) to the left, guiding bearing housing (B) through frame opening (C).
11. Remove roller (A).

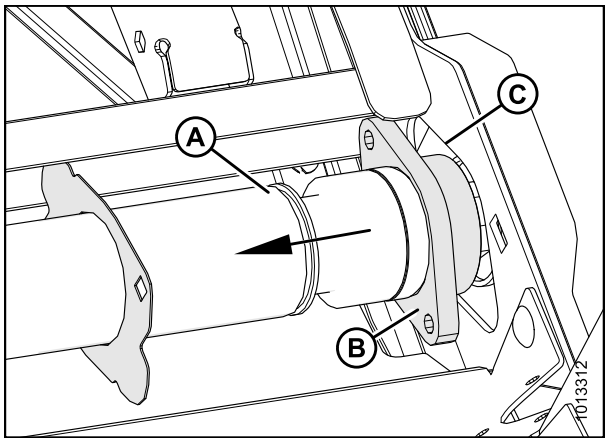


Figure 5.170: Drive Roller

Installing Feed Draper Drive Roller – FM100

1. Apply grease to the spline.
2. Slide drive roller cover plate (A) onto right-hand end of roller (B).
3. Guide bearing end (C) of drive roller through frame opening (D).

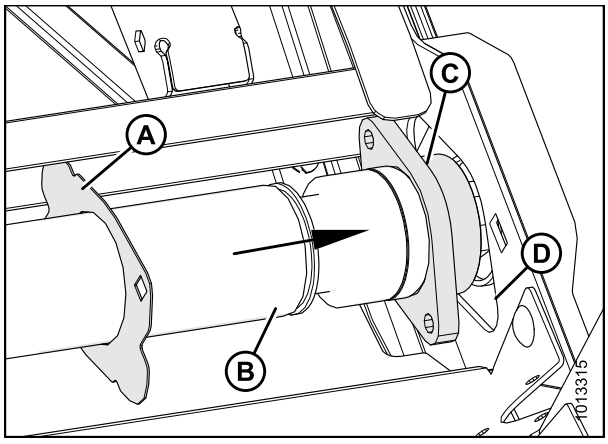


Figure 5.171: Drive Roller (Bearing End)

4. Slide left-hand end of drive roller (A) onto spline of motor (B).

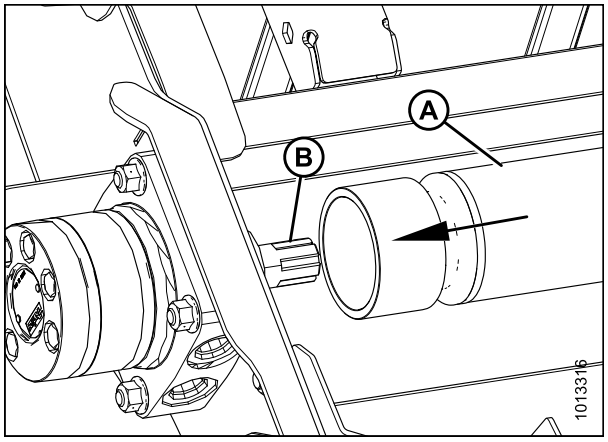


Figure 5.172: Motor

5. Secure the bearing and housing (A) with the drive roller cover plate on the frame using two bolts (B).
6. Install the feed deck draper. Refer to *5.10.1 Replacing Feed Draper, page 387*.
7. Tension the feed draper. Refer to *5.10.2 Adjusting Feed Draper Tension, page 388*.

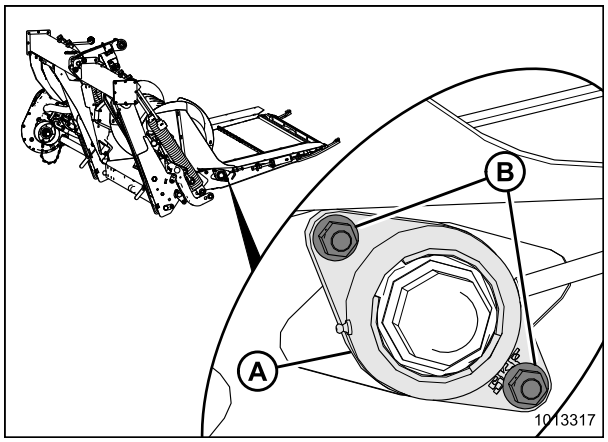


Figure 5.173: Drive Roller Bearing

Replacing Feed Draper Drive Roller Bearing – FM100

Removing Feed Draper Drive Roller Bearing – FM100

DANGER

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

1. Raise the header to its full height, stop the engine, and the remove key from the ignition.
2. Engage the header safety props.
3. Raise reel and engage safety stops.

4. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side.

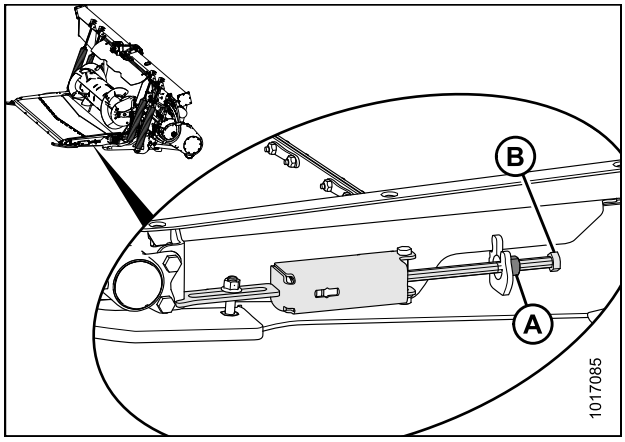


Figure 5.174: Feed Draper Tensioner

5. Loosen the setscrew (B) on the bearing lock (A).
6. Using a hammer and punch, tap the bearing lock in the direction opposite to the auger rotation to release the lock.

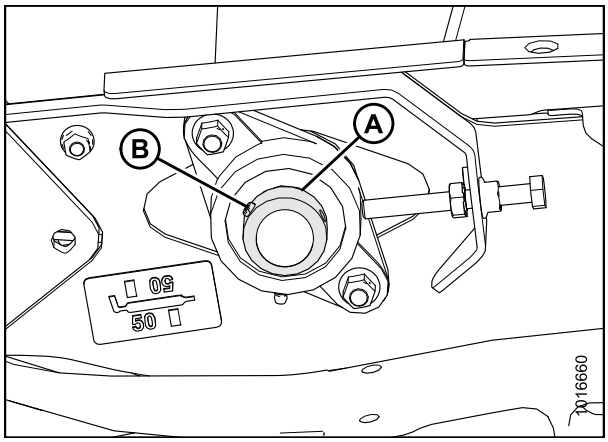


Figure 5.175: Feed Draper Drive Roller Bearing

7. Loosen jam nut (A) and turn adjustment bolt (B) counterclockwise to clear frame opening (C).
8. Remove two nuts (D).

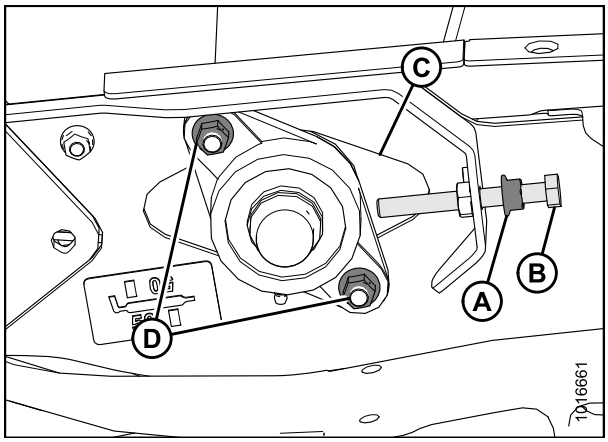


Figure 5.176: Feed Draper Drive Roller Bearing

9. Remove bearing housing (A).

   NOTE:
   If bearing is seized on shaft, it may be easier to remove the drive roller assembly. For instructions refer to *Removing Feed Draper Drive Roller – FM100, page 389*.

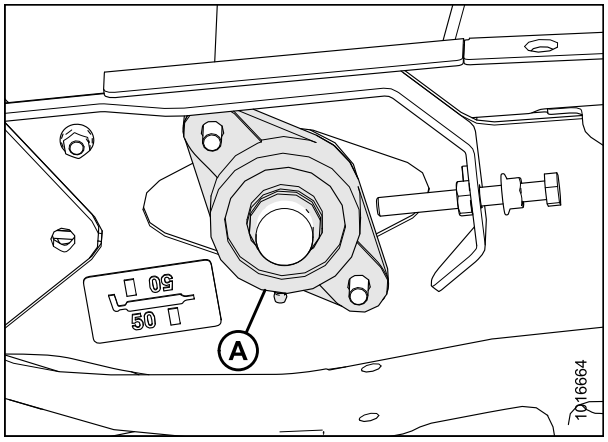


Figure 5.177: Feed Draper Drive Roller Bearing

Installing Feed Draper Drive Roller Bearing – FM100

1. Install the drive roller bearing housing (A) onto the shaft (B), and secure with two bolts and nuts (C).

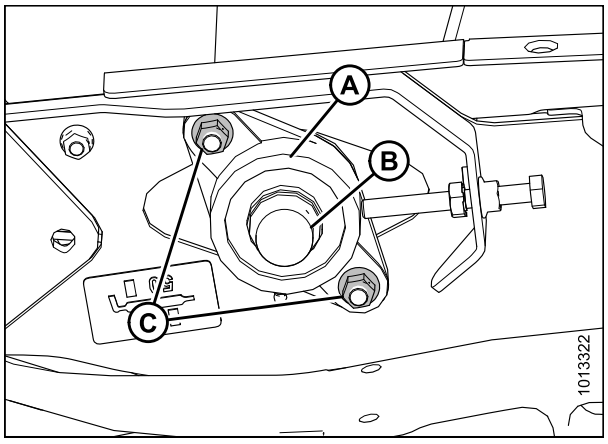


Figure 5.178: Feed Draper Drive Roller Bearing

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 setscrew (B).

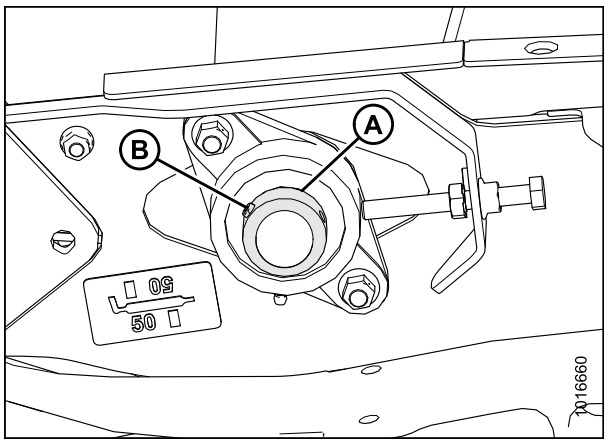


Figure 5.179: Feed Draper Drive Roller Bearing

5. Turn adjuster bolt (A) clockwise until it touches the bearing housing (B). Secure with the jam nut (C).
6. Tension the feed draper. Refer to *5.10.2 Adjusting Feed Draper Tension, page 388*.

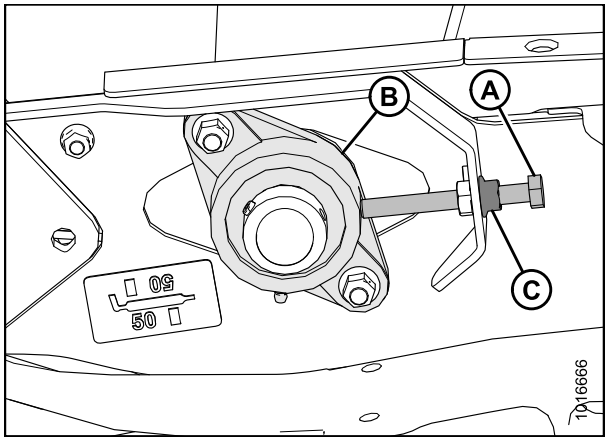


Figure 5.180: Feed Draper Drive Roller Bearing

5.10.4 Feed Draper Idler Roller

Removing Feed Draper Idler Roller – FM100

1. Engage the feeder house safety props.
2. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side.

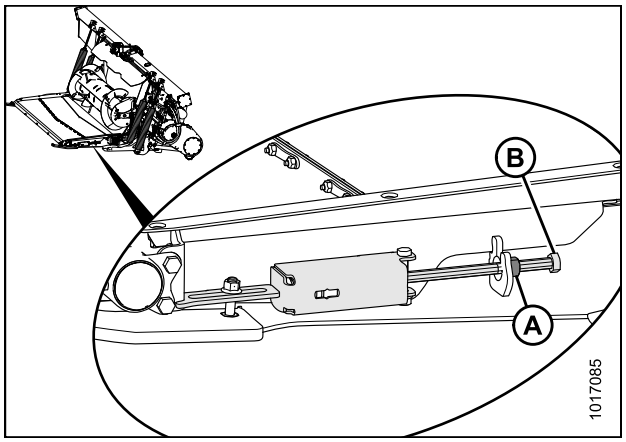


Figure 5.181: Feed Draper Tensioner

3. Remove screws (A) and nuts, and remove the draper connector straps (B).
4. Remove the nuts (A) and connector straps (B) and open the feed draper.
5. Open feed deck pan.

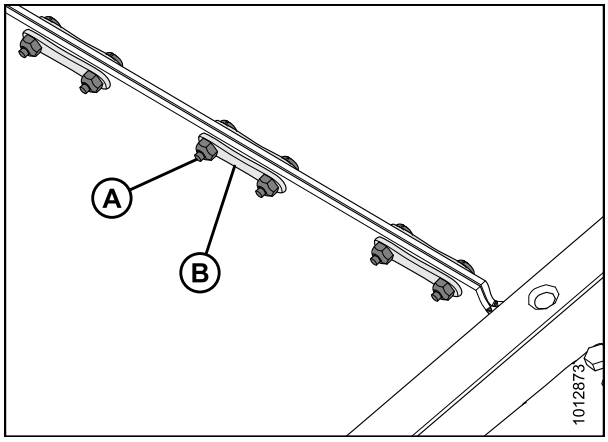


Figure 5.182: Draper Connector

6. Remove nut (D) to have better access to the other two nuts (C).
7. Remove two bolts (A) and nuts (C)from both ends of the idler roller.
8. Remove the idler roller assembly (B).

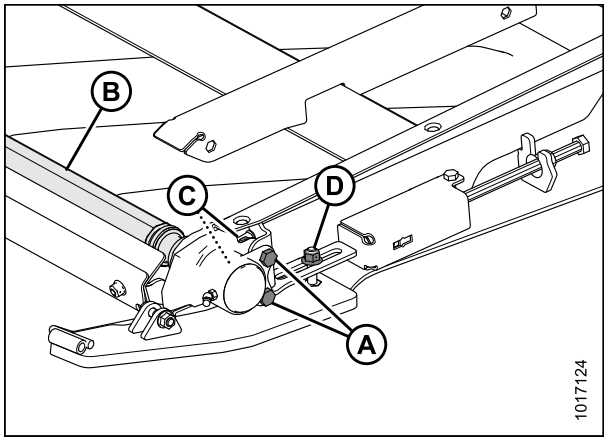


Figure 5.183: Idler Roller

Replacing Feed Draper Idler Roller Bearing – FM100

1. Remove the dust cap (A).

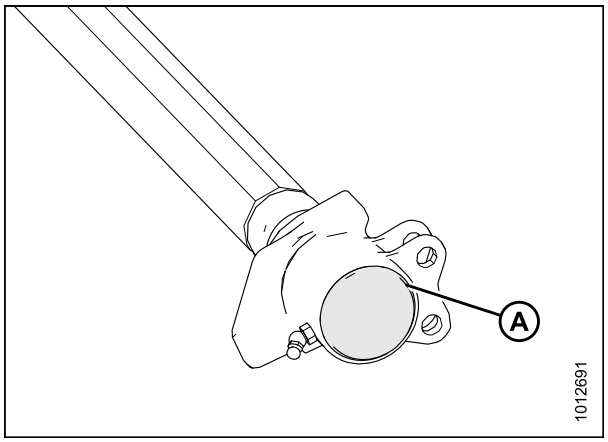


Figure 5.184: Idler Roller

2. Remove nut (A).
3. Use a hammer to tap the bearing assembly (B) until it slides off the shaft.

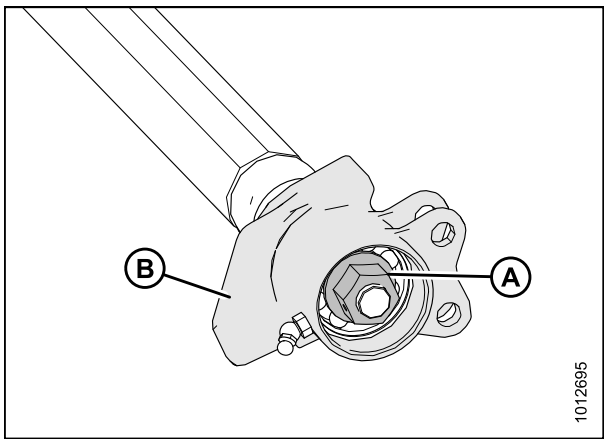


Figure 5.185: Idler Roller

4. Secure the housing (D) and remove the internal retaining ring (A), bearing (B), and two seals (C).
5. Apply oil to bore before assembly.
6. Install the seals (C) into the housing (D).

   NOTE:
   Ensure the flat side of the seal is facing inboard.

7. Install the bearing (B).
8. Install the retaining ring (A).
9. Brush shaft with oil. Carefully rotate the housing (D) with seals (C), bearing (B), and retaining ring (A) onto the shaft by hand to prevent seal damage.
10. Secure the bearing assembly to the shaft with nut (A).
11. Install the dust cap (B).
12. Pump grease into the bearing assembly.

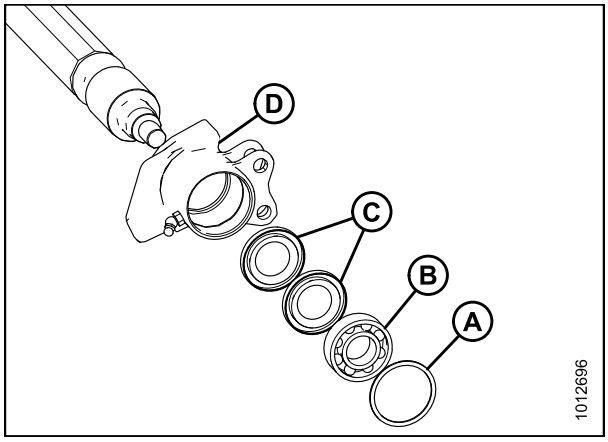


Figure 5.186: Bearing Assembly

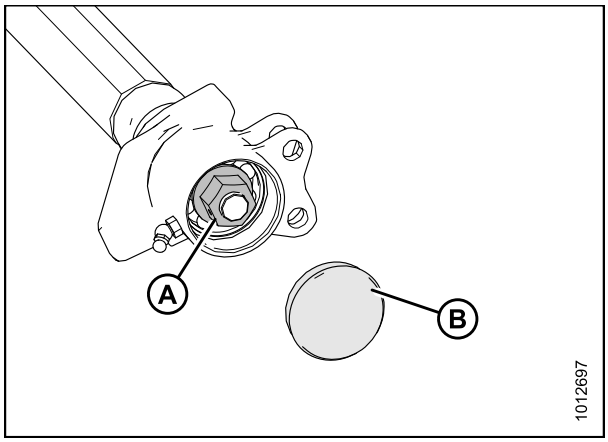


Figure 5.187: Idler Roller

Installing Feed Draper Idler Roller – FM100

1. Position the idler roller assembly (B) in the float module deck.
2. Install two bolts (A) and nuts (C) at both ends of the idler roller.

   NOTE:
   Do **NOT** overtighten the bolts (A).

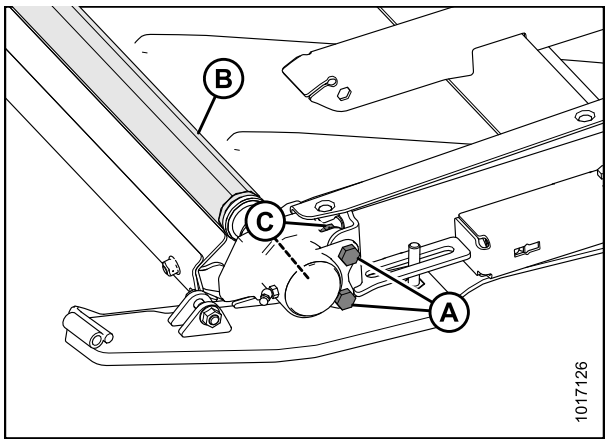


Figure 5.188: Idler Roller

3. Install nut (A).

   IMPORTANT:
   Maintain a 1/16–3/16 in. (2–4 mm) gap (C) between the plate (B) and nut (A) to allow the idler roller to float and to move when belt is tensioned or adjusted.

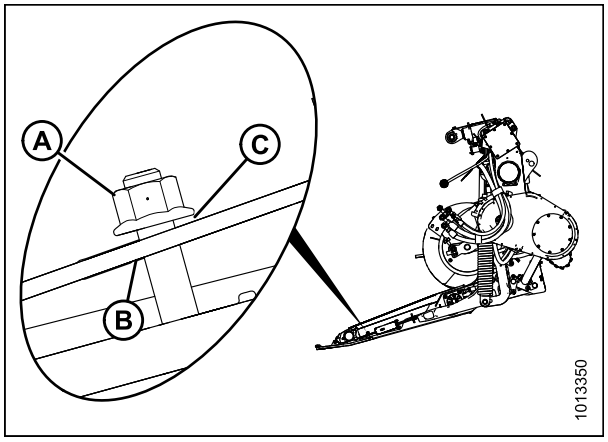


Figure 5.189: Idler Roller

4. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
5. Tension the feed draper. Refer to *5.10.2 Adjusting Feed Draper Tension, page 388*.

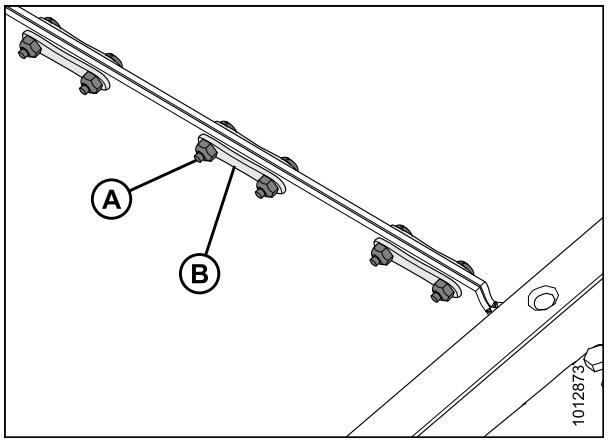


Figure 5.190: Draper Connector

5.11 Float Module Stripper Bars and Feed Deflectors

5.11.1 Removing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
2. Remove the four bolts and nuts (A) securing the stripper bar (B) to the float module frame, and remove the stripper bar.
3. Repeat at the opposite side.

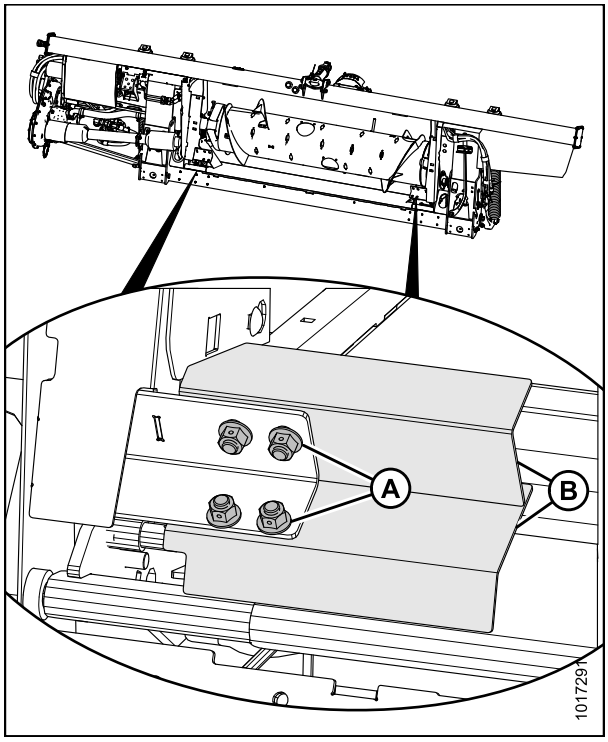


Figure 5.191: Stripper Bar

5.11.2 Installing Stripper Bars

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
2. Position the stripper bar (A) so the notch (B) is at the corner of the frame.
3. Secure the stripper bar (A) to the float module with four bolts and nuts (C). Ensure the nuts are facing the combine.
4. Repeat at the opposite side.

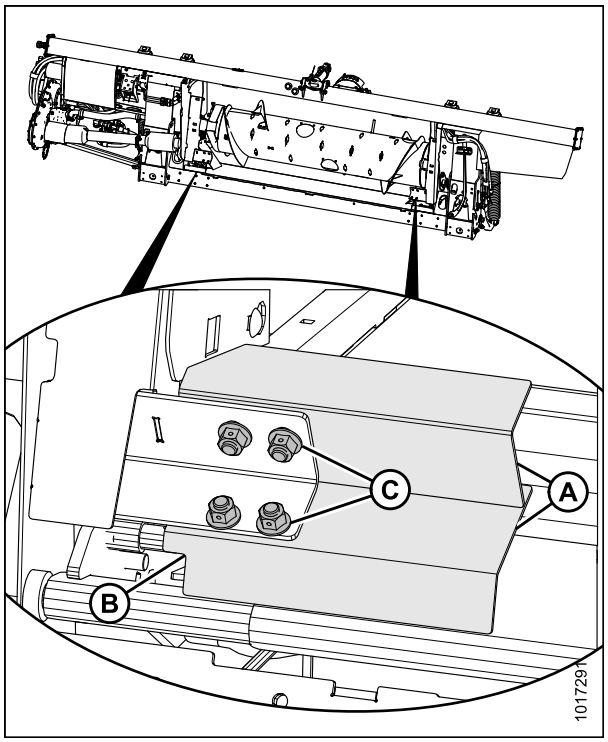


Figure 5.192: Stripper Bar

5.11.3 Replacing Feed Deflectors on New Holland CR Combines

1. Detach the header from the combine. Refer to *4 Header Attachment/Detachment, page 221*.
2. Remove the two bolts and nuts (B) securing the feed deflector (A) to the float module frame, and remove the feed deflector.
3. Position the replacement feed deflector (A), and secure with bolts and nuts (B) (ensure the nuts are facing the combine). Do NOT tighten nuts.

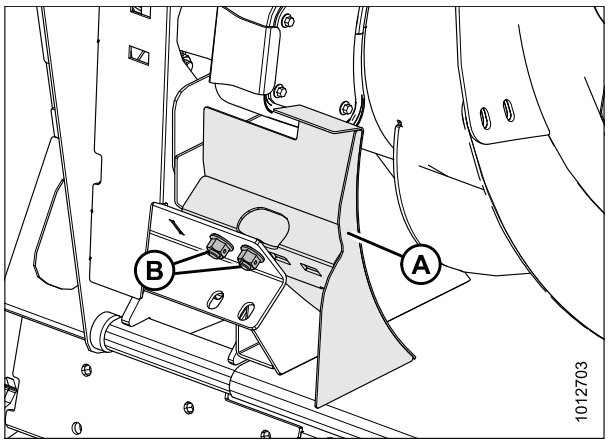


Figure 5.193: Feed Deflector

4. Adjust deflector (A) so that distance (C) between pan and deflector is 5/32–1/4 in. (4–6 mm).
5. Tighten nuts (B).
6. Repeat for opposite deflector.
7. Attach header onto the combine. Refer to *4 Header Attachment/Detachment, page 221*.
8. After attaching header to combine, extend center-link fully, and check gap between deflector and pan. Maintain the 5/32–1/4 in. (4–6 mm) gap.

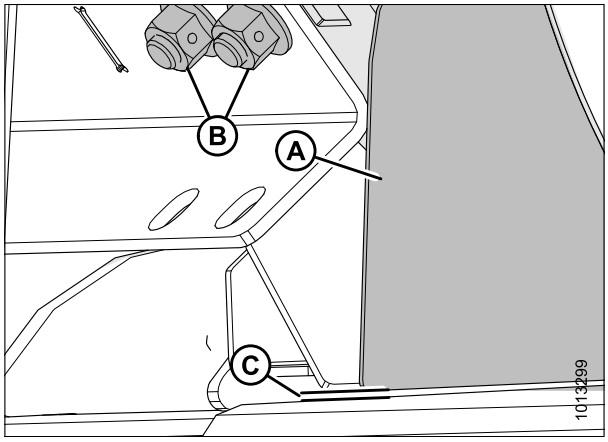


Figure 5.194: Pan and Deflector Distance

5.12 Header Drapers

There are two header drapers. They convey cut crop to the float module feed draper and auger. Replace the drapers if torn, cracked, or missing slats.

5.12.1 Removing Drapers

DANGER

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

1. Raise the reel and engage the reel safety props.
2. Raise the header and engage the safety props.
3. Move the draper until the draper joint is in the work area.

   NOTE:
   The deck also can be shifted towards the center to provide an opening at the endsheet.

4. Stop the engine and remove the key from the ignition.
5. Release the tension on the draper. Refer to *5.12.3 Adjusting Draper Tension, page 404*.
6. Remove the screws (A) and tube connectors (B) at the draper joint.
7. Pull the draper from deck.

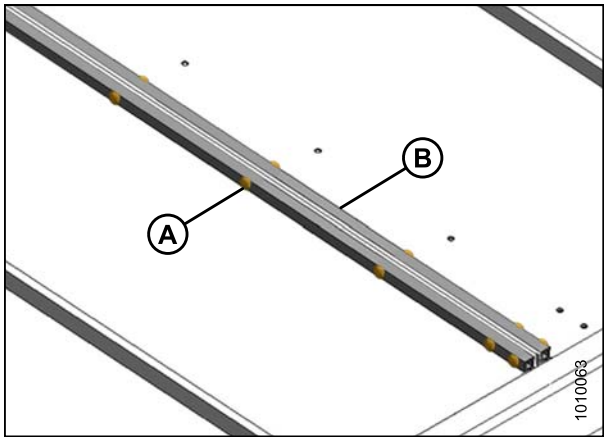


Figure 5.195: Draper Connector

5.12.2 Installing Header Drapers

WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

NOTE:
Check the deck height before installing the drapers. Refer to *5.12.5 Adjusting Deck Height, page 408*.

1. Apply talc, baby powder, or talc/graphite lubricant mix to the draper surface that forms the seal with the cutterbar and to the underside of the draper guides.
2. Insert the draper into the deck at the outboard end under the rollers. Pull the draper into the deck while feeding it at the end.
3. Feed in the draper until it can be wrapped around the drive roller.
4. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.

Figure 5.196: Installing Draper

5. Loosen the mounting bolts (B) on the rear deck deflector (A) (this may help with draper installation).

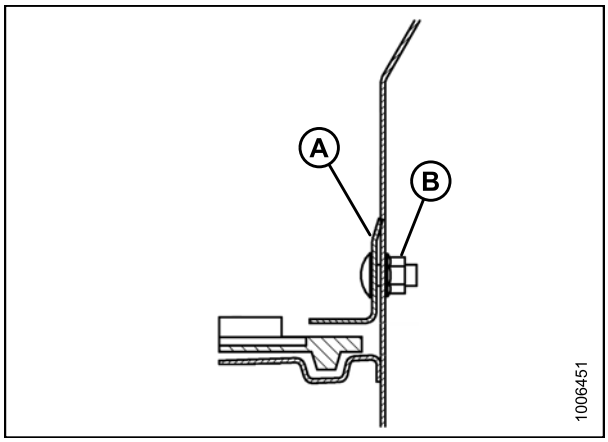


Figure 5.197: Draper Seal

6. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.
7. Adjust the draper tension. Refer to *5.12.3 Adjusting Draper Tension, page 404*.

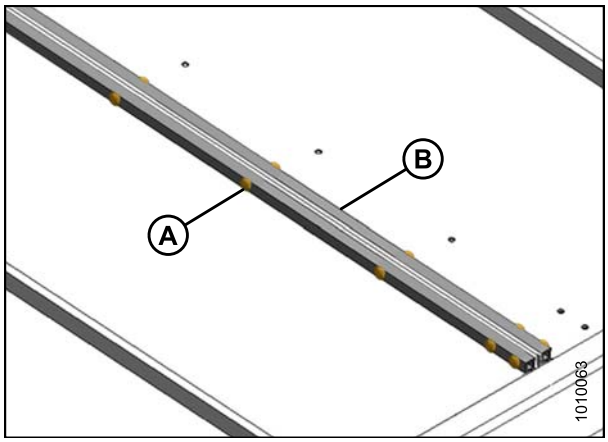


Figure 5.198: Draper Connector

8. Check the draper seal between the drapers and the cutterbar. Ensure there is a 0.04–0.08 in. (1–2 mm) gap (A) between the cutterbar (C) and the draper (B).
9. Refer to *5.12.5 Adjusting Deck Height, page 408* to achieve the proper gap.

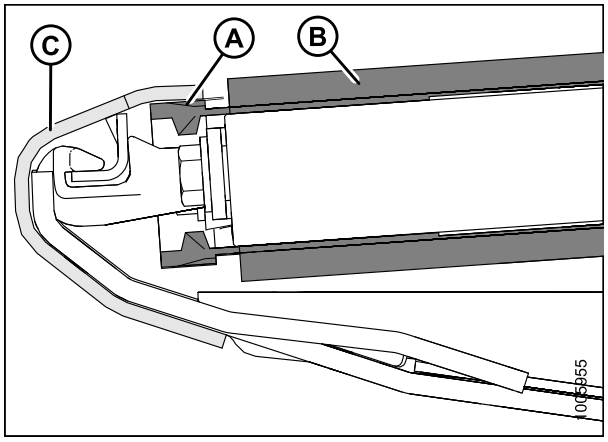


Figure 5.199: Draper Seal

10. Adjust the backsheet deflector (A) (if required) by loosening nut (D) and moving the deflector until there is a 1/32–5/16 in. (1–7 mm) gap (C) between the draper (B) and the deflector.
11. Operate the drapers with the engine at idle so the talc or talc/graphite lubricant makes contact and adheres to the draper seal surfaces.

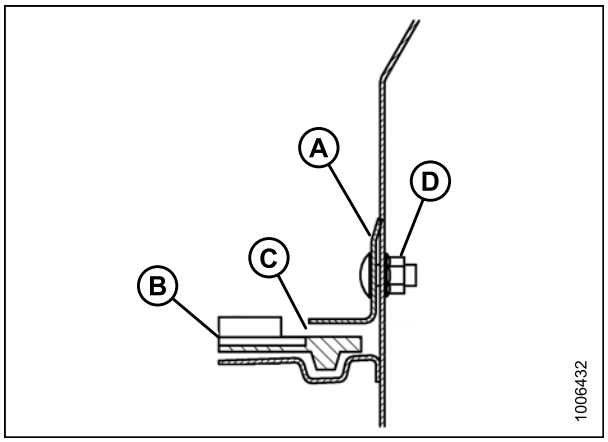


Figure 5.200: Draper Seal

5.12.3 Adjusting Draper Tension

WARNING

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

NOTE:
The drapers are tensioned at the factory and rarely need adjustment. If adjustment is required, tension the drapers just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure the white indicator bar (A) is at the halfway point in the window.

WARNING

Check to be sure all bystanders have cleared the area.

2. Start the engine and raise the header.
3. Stop the engine, remove the key from the ignition, and engage the header safety props.

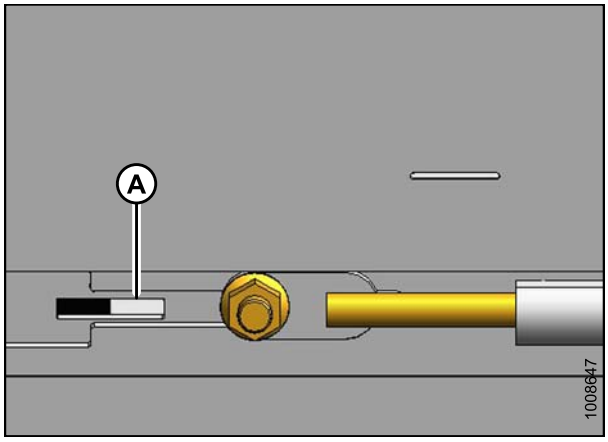


Figure 5.201: Left Tension Adjuster Shown – Right Opposite

4. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove (A) on the drive roller.

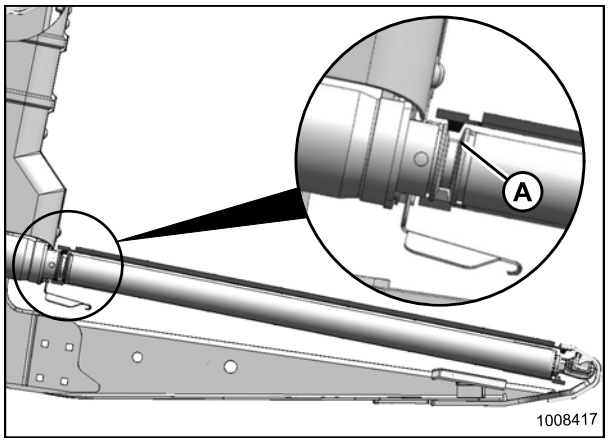


Figure 5.202: Drive Roller

5. Ensure the idler roller (A) is between the draper guides (B).

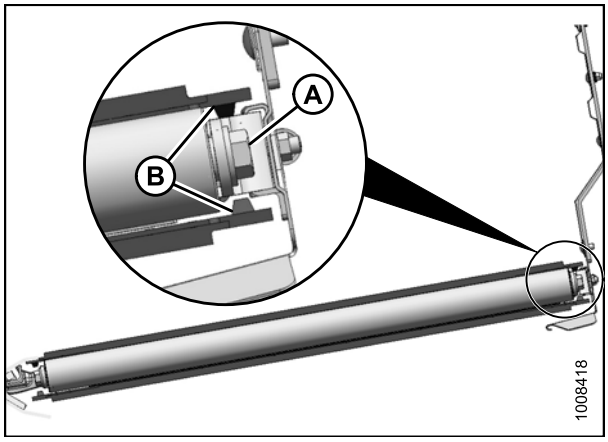


Figure 5.203: Idler Roller

IMPORTANT:
Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn the adjuster bolt (A) counterclockwise to loosen. The white indicator bar (B) will move outboard in the direction of arrow (D) to indicate that the draper is loosening. Loosen until the white indicator bar is at the halfway point in the window.
7. Turn the adjuster bolt (A) clockwise to tighten. The white indicator bar (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten until the white indicator bar is at the halfway point in the window.

IMPORTANT:

- To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tension set so the white bar is not visible.
- To prevent scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

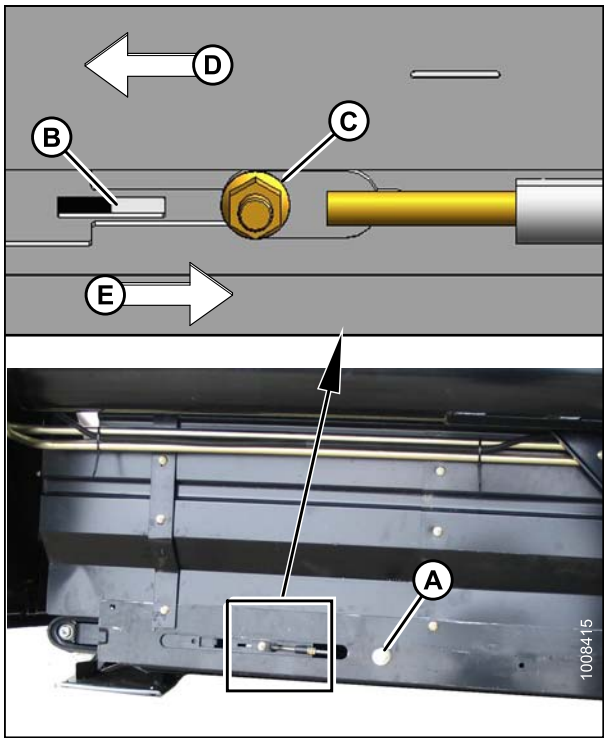


Figure 5.204: Left Tension Adjuster Shown – Right Opposite

5.12.4 Adjusting Header Draper Tracking

The draper tracking is adjusted by aligning the drive and idler draper rollers.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 297*.

The images shown in the following procedure are applicable to the left draper deck. Use opposite views for the right draper deck.

1. Refer to the following table to determine which roller requires adjustment and which adjustments are necessary.

Table 5.2 Header Draper Tracking

Tracking	At Location	Adjustment	Method
Backward	Drive Roller	Increase **X**	Tighten nut (C)
Forward		Decrease **X**	Loosen nut (C)
Backward	Idler Roller	Increase **Y**	Tighten nut (C)
Forward		Decrease **Y**	Loosen nut (C)

2. Adjust drive roller (A) to change **X** as follows:
   a. Loosen nuts (C) and jam nut (D).
   b. Turn the adjuster nut (E).
3. Adjust idler roller (B) to change **Y** as follows:
   a. Loosen nut (F) and jam nut (G).
   b. Turn the adjuster nut (H).

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.

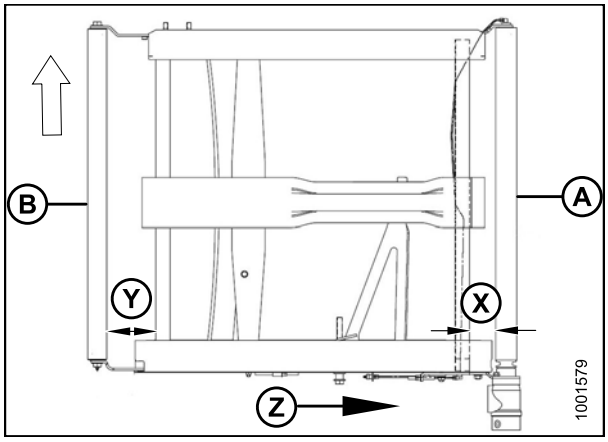


Figure 5.205: Draper Tracking Adjustments (Left Shown - Right Opposite)

A - Drive Roller B - Idler Roller
X - Drive Roller Adjust Y - Idler Roller Adjust Z - Draper Direction

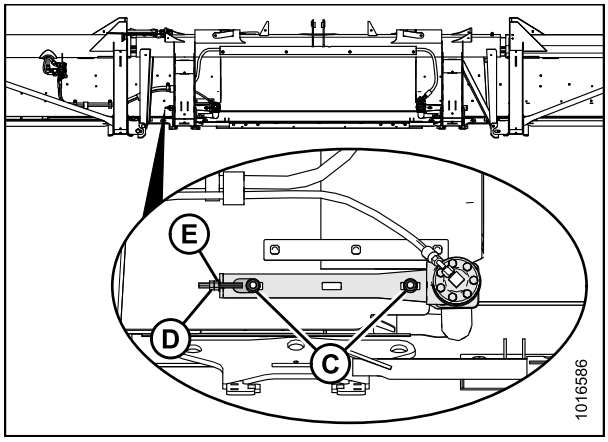


Figure 5.206: Left Deck Drive Roller (Leg Removed for Clarity) (Left Shown - Right Opposite)

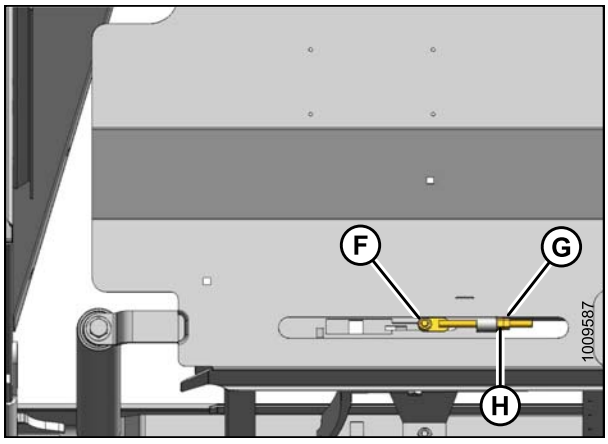


Figure 5.207: Left Deck Idler Roller (Left Shown - Right Opposite)

5.12.5 Adjusting Deck Height

Maintain the deck height so that the draper runs just below the cutterbar. With a new header or newly installed draper, set the initial gap to 1/8 in. (3 mm). To prevent material from entering the drapers and cutterbar, you may need to decrease the deck clearance to 0–1/32 in. (0–1 mm) after the initial break-in period of approximately 50 hours.

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Check the deck height and ensure the draper (B) runs just below the cutterbar (C) with a gap (A) of 1/8 in. (3 mm) between the top of the deck front track and the cutterbar.

   NOTE:
   Measurement is at the supports with the header in working position and the decks fully forward.

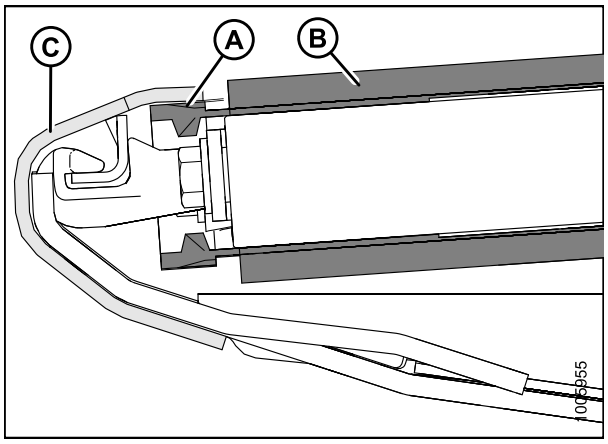


Figure 5.208: Draper Seal

3. Loosen the draper tension. Refer to *5.12.3 Adjusting Draper Tension, page 404*.
4. Lift the front edge of the draper (A) past the cutterbar (B) to expose the deck support.
5. Measure and note the thickness of the draper belt.

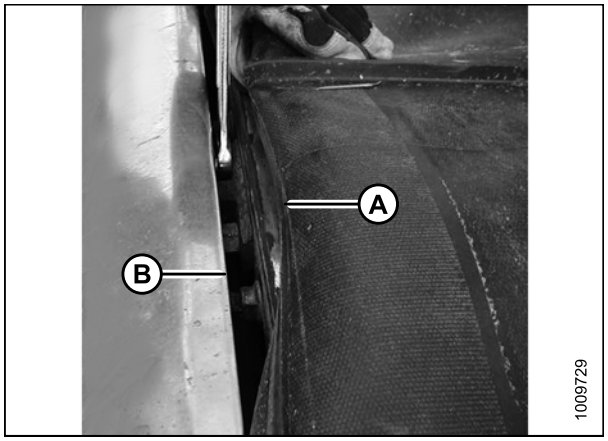


Figure 5.209: Draper Adjustment

6. Loosen the two lock nuts (A) on the deck support (B) **one-half turn only**.

   NOTE:
   The number of deck supports (B) is determined by the header size: four on single reels, and eight on double reels.

7. Tap the deck (C) to lower the deck relative to the deck supports. Tap the deck support (B) using a punch to raise the deck relative to the deck supports.

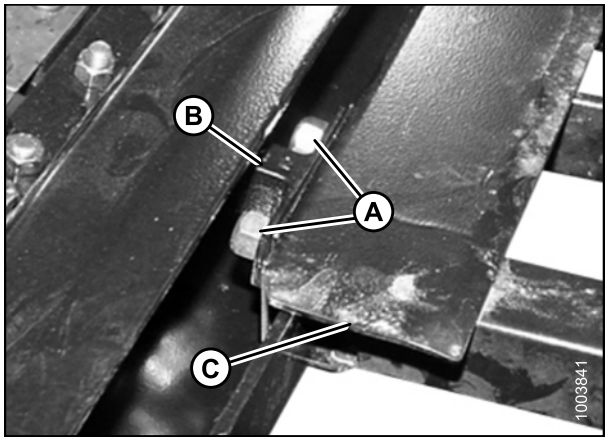


Figure 5.210: Deck Support

8. Set the deck (A) to a gap (B) of 1 mm + measurement noted in Step *5., page 408* below the cutterbar (C) to create a seal.
9. Tighten the deck support hardware (D).
10. Recheck the gap (B) to ensure it is properly set. Refer to Step *8., page 409*.
11. Tension the draper. Refer to *5.12.3 Adjusting Draper Tension, page 404*.

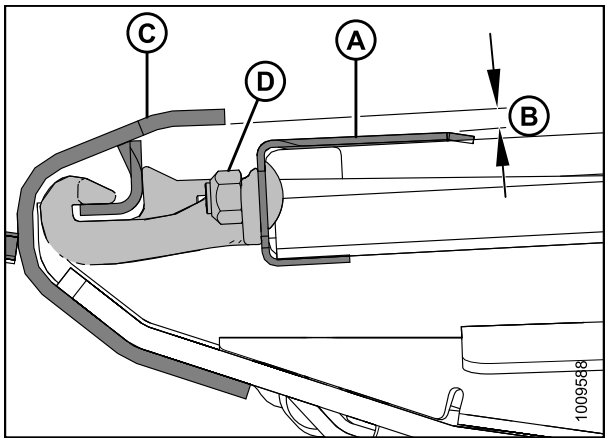


Figure 5.211: Deck Support

12. Adjust the backsheet deflector (A) (if required) by loosening nut (D) and moving the deflector until there is a 1/32–5/16 in. (1–7 mm) gap (C) between the draper (B) and the deflector.

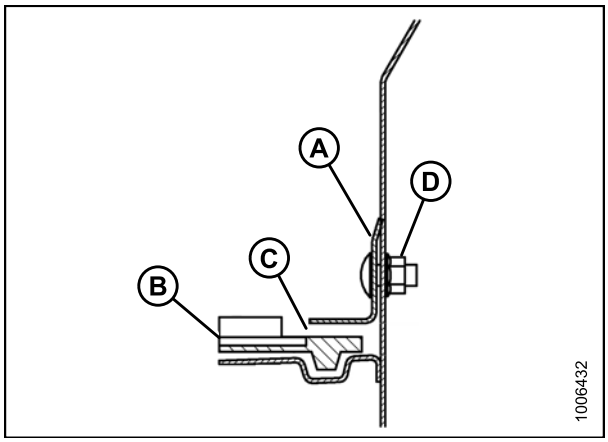


Figure 5.212: Backsheet Deflector

5.12.6 Header 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

Using an infrared thermometer, check for bad draper roller bearings as follows:

1. Engage the header and run the drapers for approximately three minutes.
2. Check the temperature of the draper roller bearings at each of the 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. Refer to
   - *Replacing Header Draper Idler Roller Bearing, page 411* and
   - *Replacing Header Draper Drive Roller Bearing, page 414*.

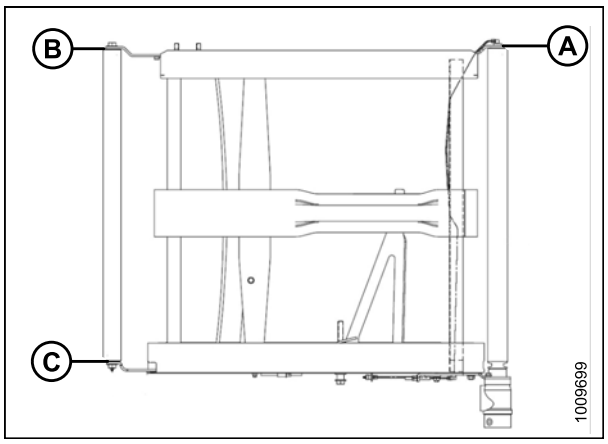


Figure 5.213: Roller Arms

Draper Deck Idler Roller

Removing Draper Idler Roller

DANGER

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

NOTE:
If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine, raise the header, and raise the reel.
2. Stop the engine, and remove the key from the ignition.
3. Engage the reel safety props, and engage the header safety props.
4. Loosen the draper by turning adjuster bolt (A) counterclockwise.

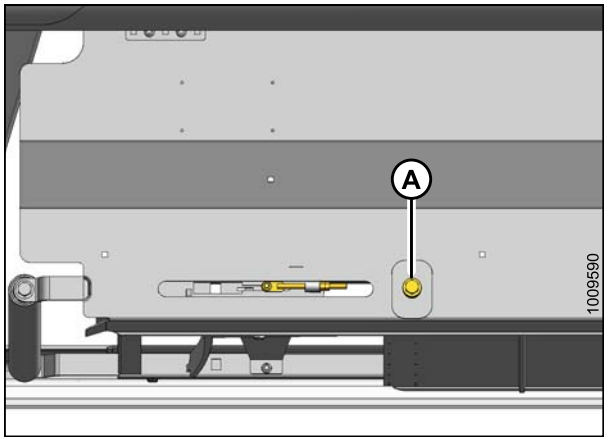


Figure 5.214: Tensioner

5. Remove the screws (A), tube connectors (B), and nuts from the draper joint to uncouple the draper.
6. Pull the draper off the idler roller.

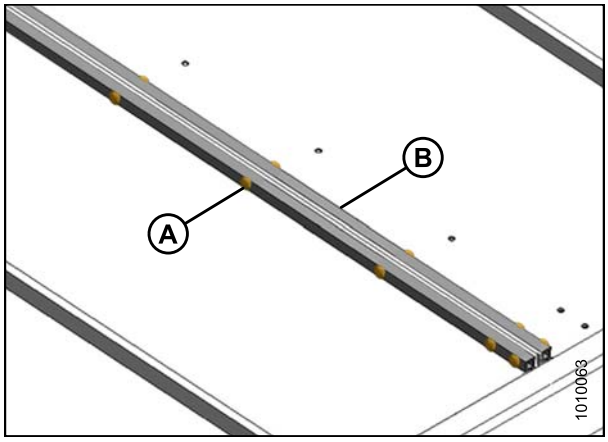


Figure 5.215: Draper Connector

7. Remove the bolts (A) and washer at the ends of the idler roller.
8. Spread the roller arms (B) and (C) and remove the idler roller.

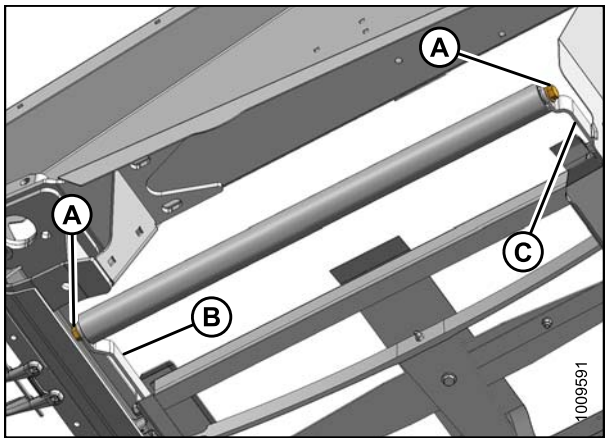


Figure 5.216: Idler Roller

Replacing Header Draper Idler Roller Bearing

1. Remove the draper idler roller assembly. Refer to *Removing Draper Idler Roller, page 410*.

2. Remove the bearing assembly (A) and seal (B) from the roller tube (C) as follows:
   a. Attach a slide hammer (D) to the threaded shaft (E) in the bearing assembly.
   b. Tap out the bearing assembly (A) and seal (B).
3. Clean the inside of the roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

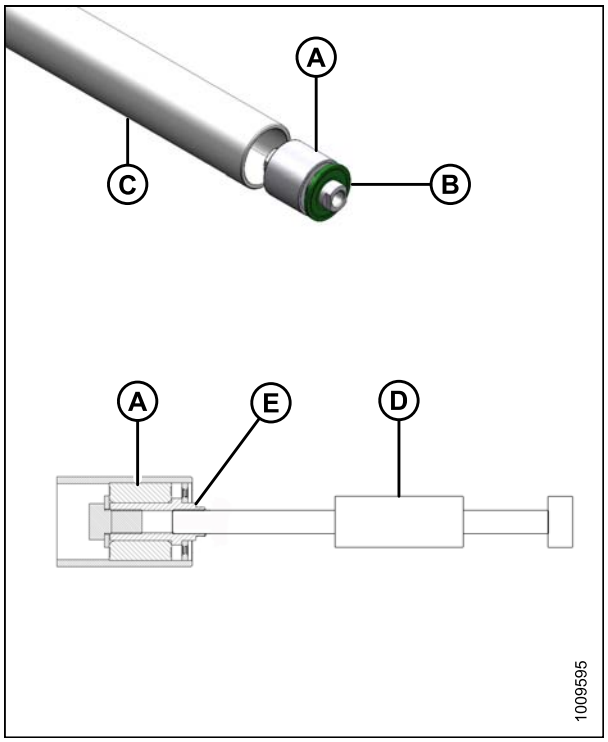


Figure 5.217: Idler Roller Bearing

4. Install the new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 9/16–19/32 in. (14–15 mm) (B) from the outside edge of the tube.
5. Apply the recommended grease in front of the bearing assembly (A). Refer to *5.2.1 Recommended Fluids and Lubricants, page 298*.
6. Install a 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 the seal (C) into the roller opening with a suitably sized socket. Tap the washer and the bearing assembly (A) until the seal is 1/8–3/16 in. (3–4 mm) (D) from the outside edge of the tube.

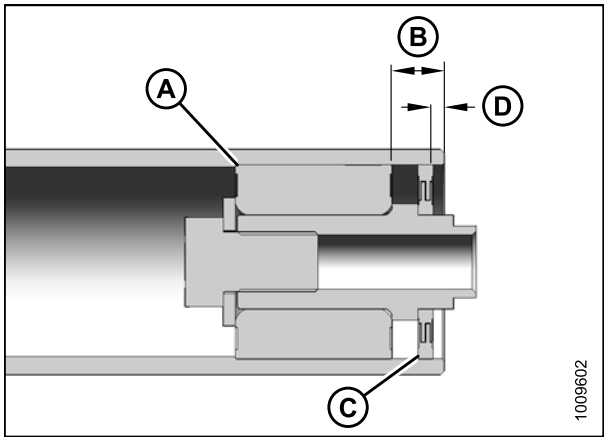


Figure 5.218: Idler Roller Bearing

Installing Header Draper Idler Roller

1. Position the stub shaft into the idler roller in the 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 the rear arm (C).
3. Install bolts (A) with washers, and torque to 70 ft·lbf (93 N·m).
4. Wrap the draper over the idler roller, close the draper, and set the tension. Refer to *5.12.2 Installing Header Drapers, page 402*.
5. Run the machine and verify the draper tracks correctly. Adjust the draper tracking if required. Refer to *5.12.4 Adjusting Header Draper Tracking, page 406*.

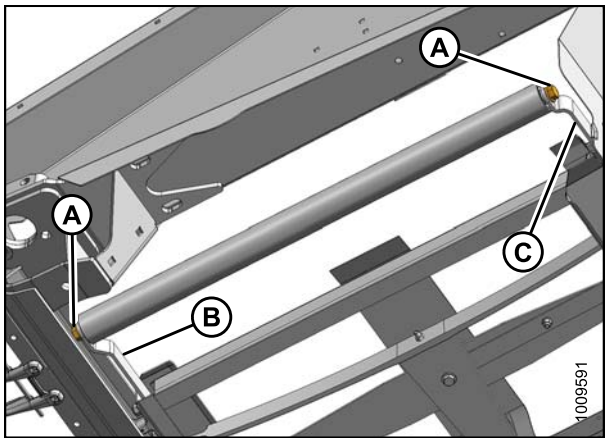


Figure 5.219: Idler Roller

Draper Deck Drive Roller

Removing Header Draper Drive Roller

DANGER

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

NOTE:
If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).

1. Start the engine, raise the header, and raise the reel.
2. Stop the engine, and remove the key from the ignition.
3. Loosen the draper by turning the adjuster bolt (A) counterclockwise.

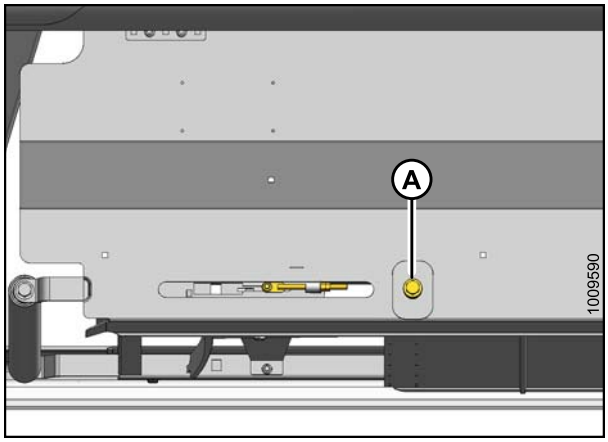


Figure 5.220: Tensioner

4. Remove the tube connectors (B), screws (A), and nuts from the draper joint to uncouple the draper.
5. Pull the draper off the drive roller.

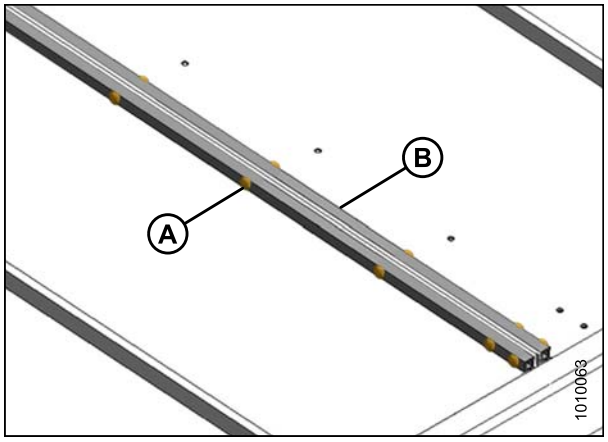


Figure 5.221: Draper Connector

6. Align the setscrews with the hole (A) in the guard. Remove the two setscrews holding the motor onto the drive roller.

   NOTE:
   The setscrews are 1/4 turn apart.
7. Remove the four bolts (B) securing the motor to the drive roller arm.

   NOTE:
   It may be necessary to remove the plastic shield (C) to gain access to the top bolt.

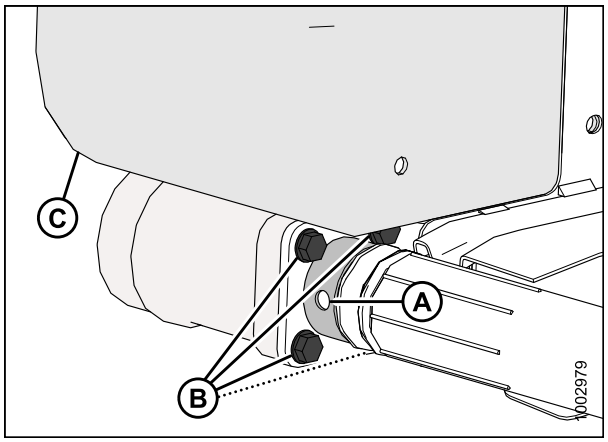


Figure 5.222: Drive Roller

8. Remove the bolt (A) securing the opposite end of the drive roller (B) to the support arm.
9. Remove the drive roller (B).

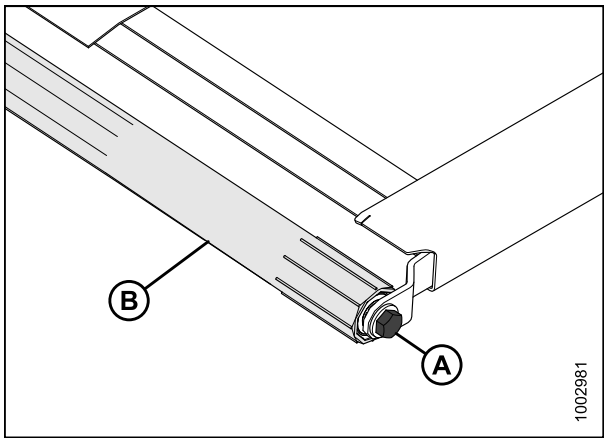


Figure 5.223: Drive Roller

Replacing Header Draper Drive Roller Bearing

1. Remove the draper idler roller assembly. Refer to *Removing Header Draper Drive Roller, page 413*.

2. Remove the bearing assembly (A) and seal (B) from the roller tube (C) as follows:
   a. Attach a slide hammer (D) to the threaded shaft (E) in the bearing assembly.
   b. Tap out the bearing assembly (A) and seal (B).
3. Clean the inside of the roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

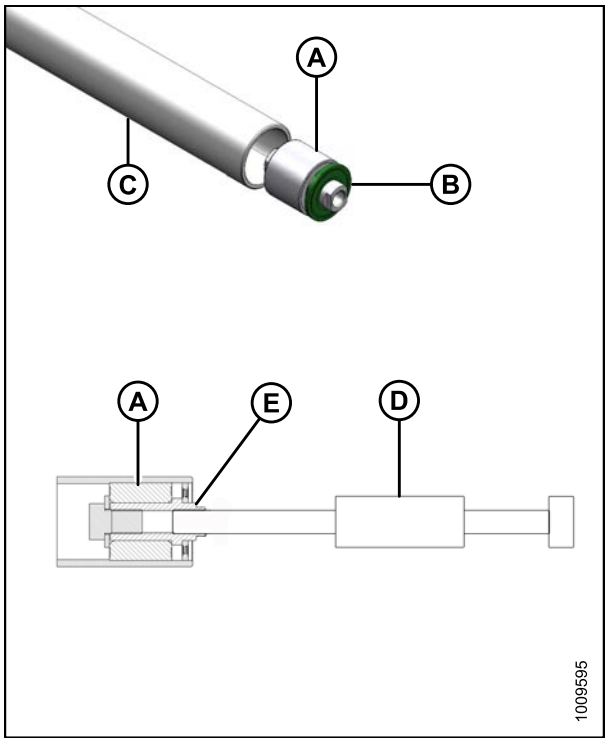


Figure 5.224: Idler Roller Bearing

4. Install the new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 9/16–19/32 in. (14–15 mm) (B) from the outside edge of the tube.
5. Apply the recommended grease in front of the bearing assembly (A). Refer to *5.2.1 Recommended Fluids and Lubricants, page 298*.
6. Install a 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 the seal (C) into the roller opening with a suitably sized socket. Tap the washer and the bearing assembly (A) until the seal is 1/8–3/16 in. (3–4 mm) (D) from the outside edge of the tube.

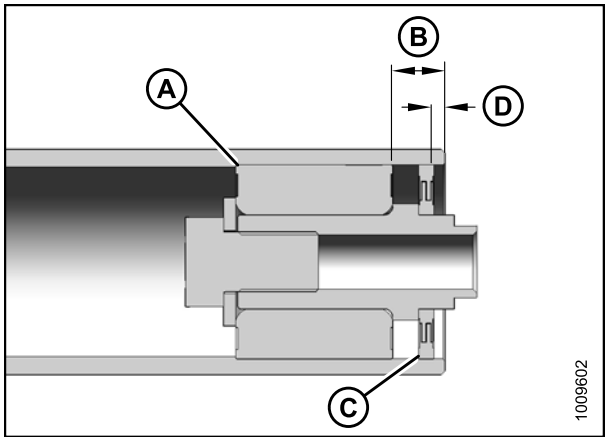


Figure 5.225: Idler Roller Bearing

Installing Draper Drive Roller

1. Position the drive roller (B) between the roller support arms.
2. Install the bolt (A) to secure the drive roller to the arm closest to the cutterbar. Torque bolt to 70 ft·lbf (95 N·m).
3. Grease the motor shaft and insert into the end of the drive roller (B).

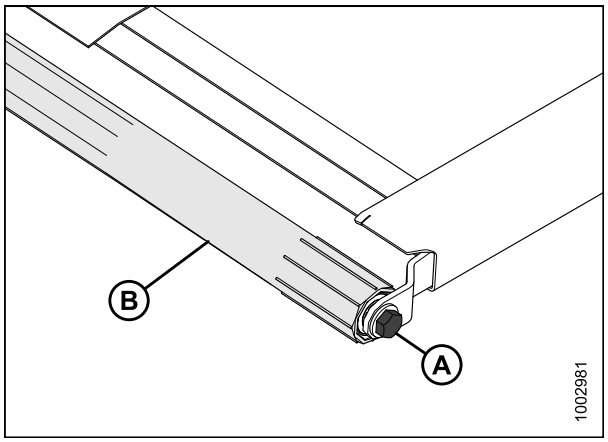


Figure 5.226: Drive Roller

4. Secure the motor to the roller support with four bolts (B). Torque to 20 ft·lbf (27 N·m).

   NOTE:
   Tighten any loosened bolts and reinstall the plastic shield (C) if previously removed.

5. Ensure the motor is all the way into the roller, and tighten the two setscrews (not shown) through the access hole (A).

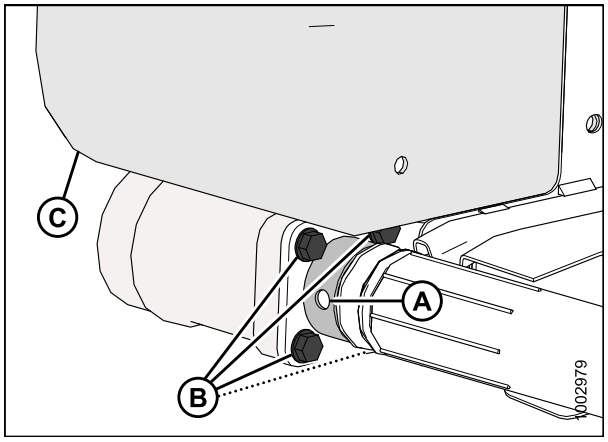


Figure 5.227: Drive Roller

6. Wrap the draper over the drive roller and attach the ends of the draper using the tube connectors (B), screws (A), and nuts.

   NOTE:
   The heads of the screws must face the center opening.

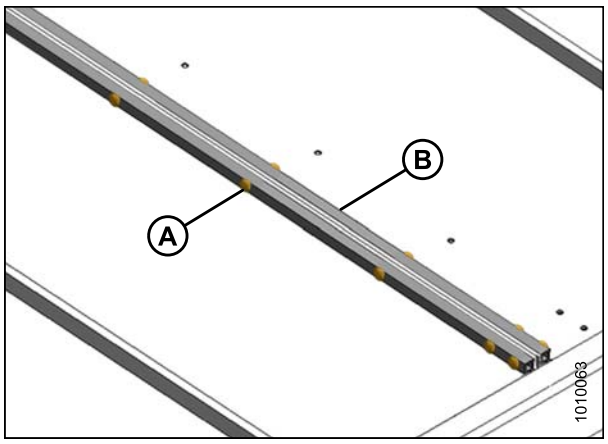


Figure 5.228: Draper Connector

7. Tension the draper. Locate adjuster bolt (A) and follow the directions on the decal for the proper draper tensioning or refer to *5.12.3 Adjusting Draper Tension, page 404*.
8. Disengage the reel and header safety props.
9. Start the engine and lower the header and reel.
10. Run the machine to verify the draper tracks correctly. Refer to *5.12.4 Adjusting Header Draper Tracking, page 406* if further adjustment is necessary.

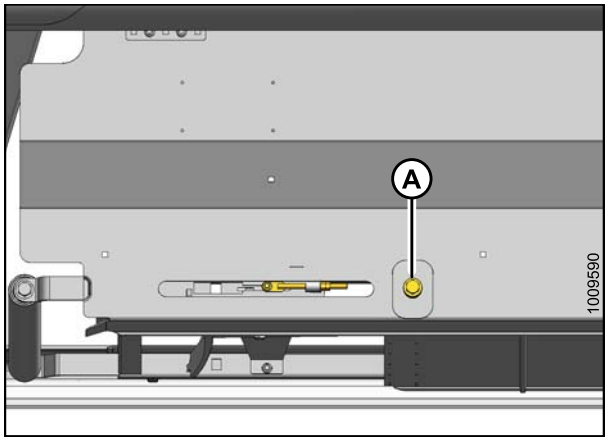


Figure 5.229: Draper Tensioner

5.12.7 Replacing Draper Deflectors

Removing Narrow Draper Deflectors

Narrow draper deflectors can replace wide deflectors if bunching occurs at the ends of the header when decks are set for center delivery.

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to *Opening Endshields, page 33*
5. Remove two Torx® head screws (A) and lock nuts.
6. Remove three carriage bolts (B) and lock nuts and remove the aft deflector (C).

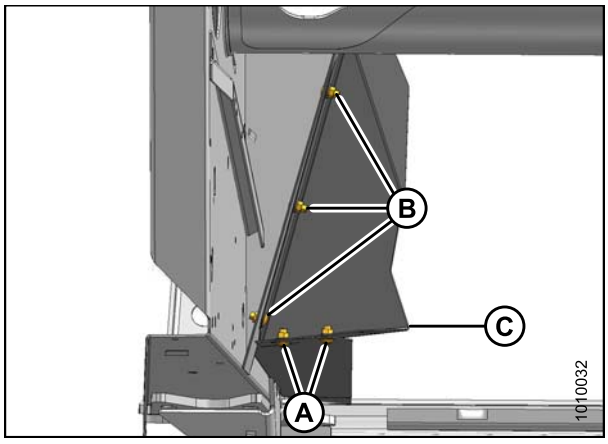


Figure 5.230: Aft Deflector

7. Remove four screws (A) and remove the deflector (B).
8. Repeat for the opposite end of the header.

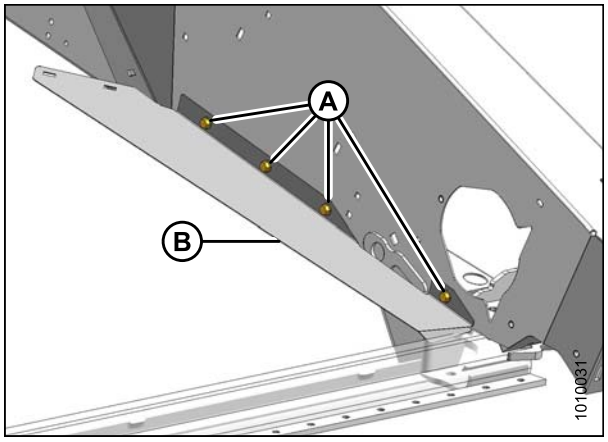


Figure 5.231: Forward Deflector

Installing Narrow Draper Deflectors

Narrow draper deflectors can replace wide deflectors if bunching occurs at the ends of the header when decks are set for center delivery.

DANGER

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

1. Raise the reel to its full height and lower the header to the ground.
2. Shift the decks to create a work space at one end of the header if hydraulic deck shift is installed; otherwise, move the decks manually after shutting down the combine.
3. Stop the engine, remove the key, and engage the reel safety props.
4. Open the endshield. Refer to *Opening Endshields, page 33*.
5. Position the forward deflector (B) onto the endsheet and temporarily install forward and aft 3/8 in. x 5/8 in. self tapping screws (A).
6. Check the fit of the forward end of the deflector (B) on the cutterbar and ensure there is no gap between the deflector and cutterbar. Remove and bend the deflector as required to obtain the best fit.
7. Install two 3/8 in. x 5/8 in. self tapping screws (A) and tighten all four screws.

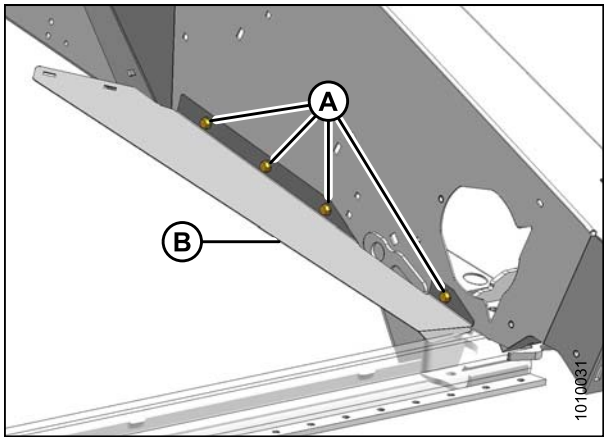


Figure 5.232: Forward Deflector

8. Position the aft deflector (C) as shown and install three 3/8 in. x 3/4 in. carriage bolts (B) and lock nuts.
9. Install two Torx® head screws (A) and lock nuts with the heads facing down.
10. Tighten all fasteners.
11. Repeat for the opposite end of the header.

NOTE:
Draper deflector may be damaged by reel tines if reel height is set incorrectly. Refer to *3.7.8 Reel Height, page 69*.

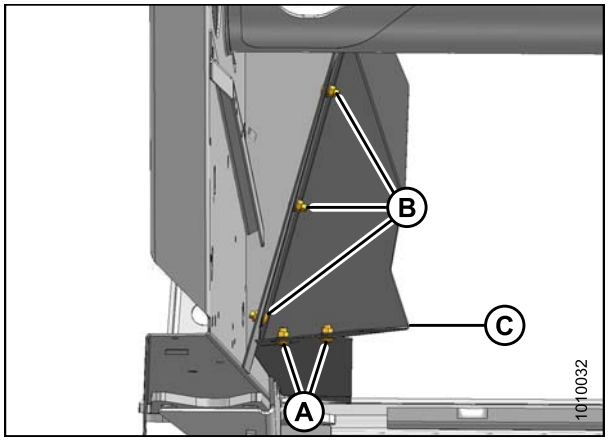


Figure 5.233: Aft Deflector

5.13 Reel

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 297*.

5.13.1 Reel Clearance to Cutterbar

The minimum clearance between the reel fingers and the cutterbar ensures that the reel fingers do not contact the cutterbar during operation. The clearance is adjusted at the factory, but some adjustment may be necessary before operation.

The finger to guard/cutterbar clearances with reels fully lowered are shown in Table *5.3 Finger to Guard/Cutterbar Clearance, page 420*.

Table 5.3 Finger to Guard/Cutterbar Clearance

Header Width	(X) +/- 1/8 in. (3 mm) at Reel Ends	
	Single Reel	Double Reel
20 ft.	3/4 in. (20 mm)	–
25 ft.	1 in. (25 mm)	
30 ft.	1-3/4 in. (45 mm)	3/4 in. (20 mm)
35 ft.	2-3/8 in. (60 mm)	
40 ft.	–	
45 ft.		

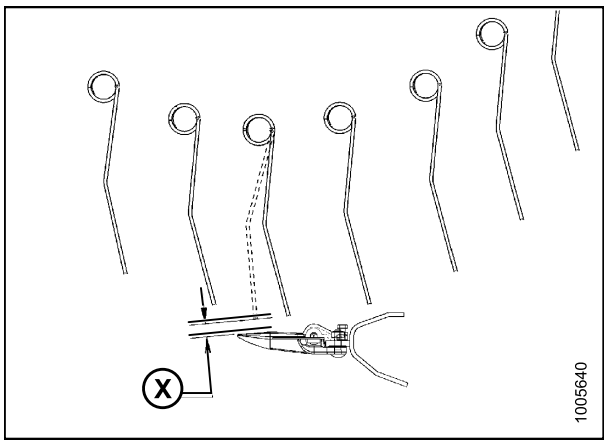


Figure 5.234: Finger Clearance

Measuring Reel Clearance

DANGER

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

1. Park the header on level ground.

2. Set the fore-aft position to the middle position 5 on the fore-aft position decal (A).
3. Lower the reel fully.
4. Shut down the engine, and remove the key from the ignition.

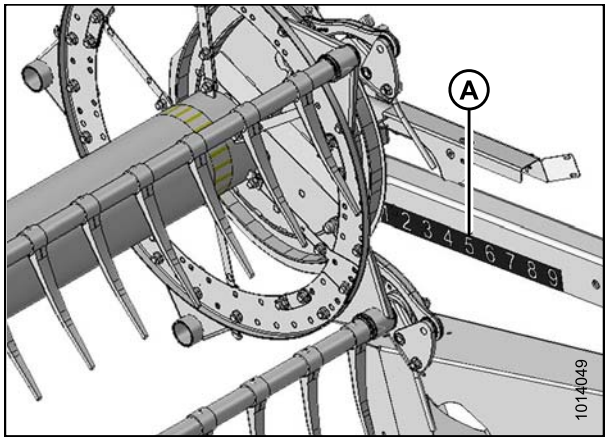


Figure 5.235: Fore-Aft Position

5. Measure the clearance (X) between points (B) and (C) at the ends of each reel (A).

   NOTE:
   The reel is factory-set to “frown” (provide more clearance at the center of the reel than at the ends) to compensate for reel flexing.

6. Check all possible points of contact between points (B) and (C). Depending on the reel fore-aft position, minimum clearance can result at the guard tine, hold-down, or cutterbar.
7. Adjust the reel if necessary. Refer to *Adjusting Reel Clearance, page 423*.

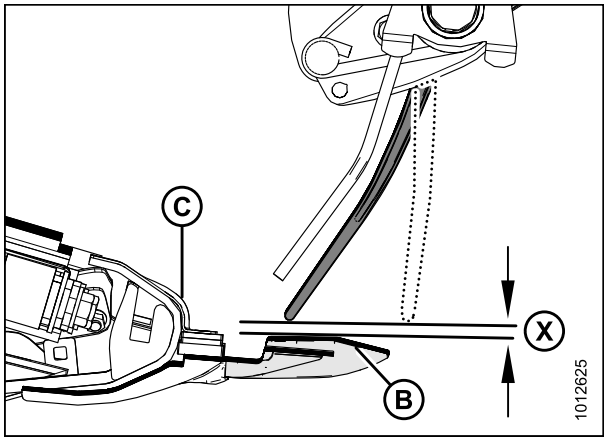


Figure 5.236: Clearance

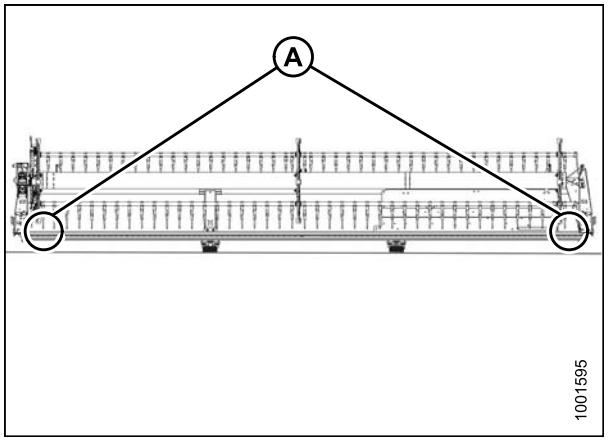


Figure 5.237: Single Reel Measurement Locations (Two Places)

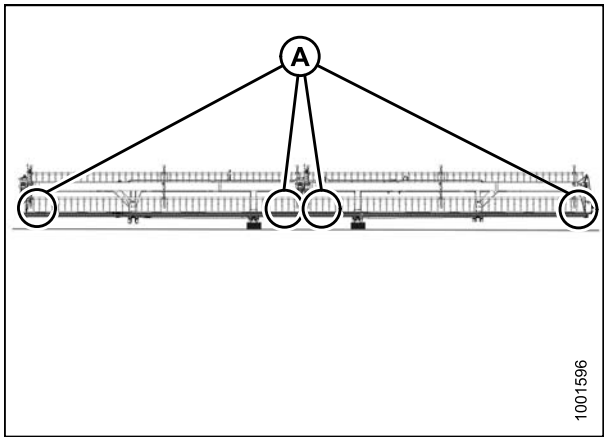


Figure 5.238: Double Reel Measurement Locations (Four Places)

Adjusting Reel Clearance

DANGER

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

1. Stop the engine and remove the key.
2. Adjust outboard reel arm lift cylinders to set clearance at outboard ends of reel as follows:
   a. Loosen bolt (A).
   b. Turn cylinder rod (B) out of clevis to raise reel and increase clearance to cutterbar, or turn cylinder rod into clevis to lower reel and decrease clearance.
   c. Tighten bolt (A).
   d. Repeat at opposite side.

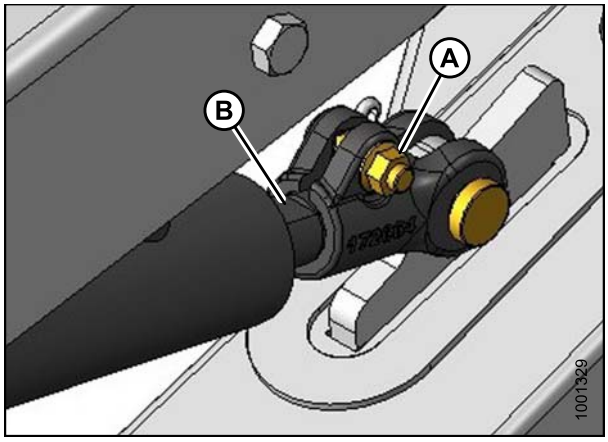


Figure 5.239: Outside Reel Arm

3. **For Double Reel Only:** Adjust center arm lift cylinder stop (A) to change clearance at inboard ends of reels as follows:

   NOTE:
   Instructions apply to double-reel headers only and are performed from the underside of the arm.

   a. Loosen nut (B).
   b. Turn nut (C) counterclockwise to raise reel and increase clearance to cutterbar, or clockwise to lower reel and decrease clearance.
   c. Tighten nut (B).
4. Check measurements and if necessary, repeat adjustment procedures.

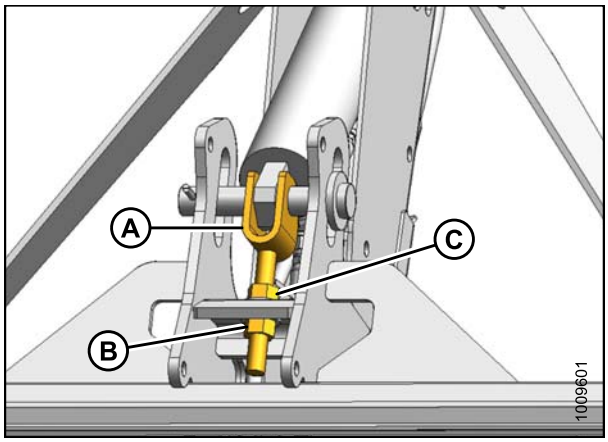


Figure 5.240: Underside of Center Arm

5.13.2 Reel Frown

The reel is factory-set to “frown” (provide more clearance at the center of the reel than at the ends) to compensate for reel flexing.

Adjusting Reel Frown

Adjust the frown by repositioning the hardware connecting the reel tube arms to the reel discs.

NOTE:
Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.

1. Position the reel over the cutterbar (between 4 and 5 on the 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.

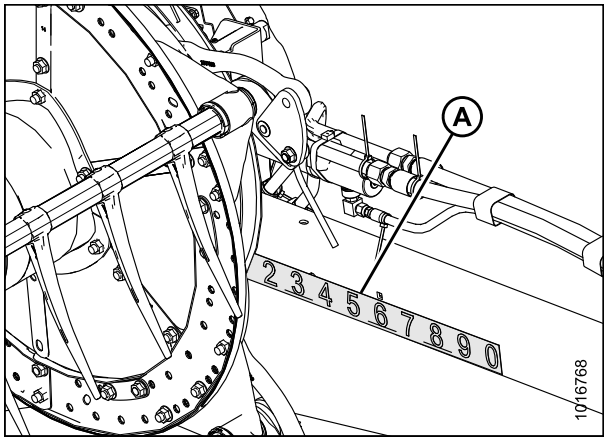


Figure 5.241: Fore-Aft Position Decal

3. 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 the 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 the bolts (A) in the aligned holes and tighten.

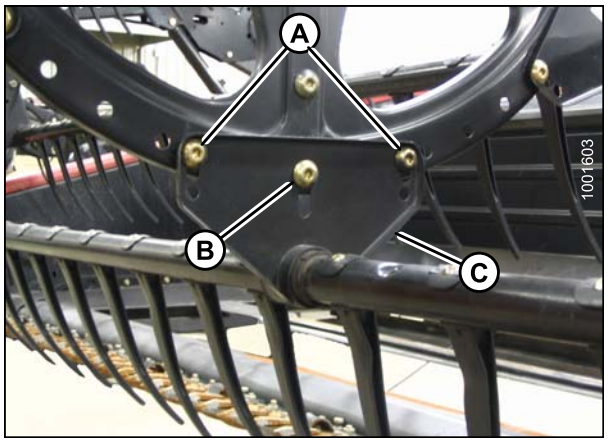


Figure 5.242: Reel Arm

5.13.3 Centering the Reel

To check and center the reel, follow these steps:

DANGER

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

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

Centering Double Reels

1. Loosen bolts (A) on each brace (B) located on both sides of the reel support arm (C).
2. Move the forward end of the reel center support arm (C) laterally as required, to center both reels.
3. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

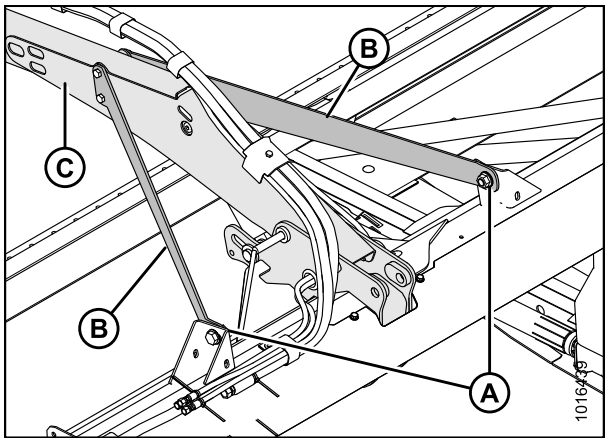


Figure 5.243: Reel Center Support Arm

Centering Single Reels

1. Loosen bolt (A) on the brace (B) at both ends of the reel.
2. Move the forward end of the reel support arm (C) laterally as required, to center the reel.
3. Tighten bolts (A) and torque to 265 ft·lbf (359 N·m).

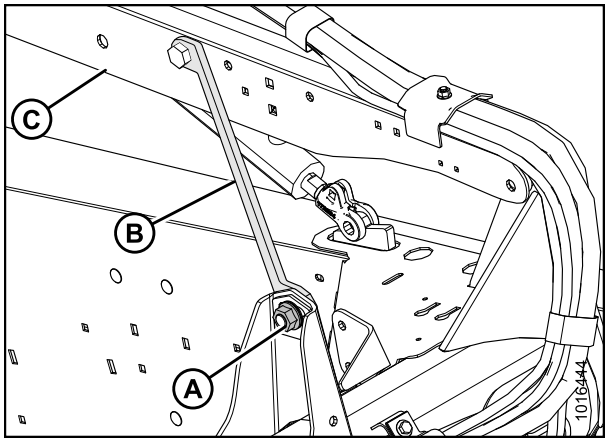


Figure 5.244: Reel Support Arm

5.13.4 Reel Fingers

IMPORTANT:
Keep the reel fingers in good condition and straighten or replace them as necessary.

Removing Steel Fingers

⚠ WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under 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, raise the reel, and engage the reel safety props.
2. Shut down the engine and remove the key from the ignition.
3. Remove the tine tube bushings from the applicable tine tube at the center and left reel discs. Refer to *Removing Bushings from Five-, Six-, or Nine-Bat Reels, page 428*.
4. Attach reel arms (B) (temporarily) to the reel disc at the original attachment locations (A).
5. Cut the damaged finger so it can be removed from the tine tube.
6. Remove bolts from the existing fingers and slide the fingers over to replace the finger that was cut off in Step *4., page 426* (remove the reel arms [B] from the tine tubes as necessary).

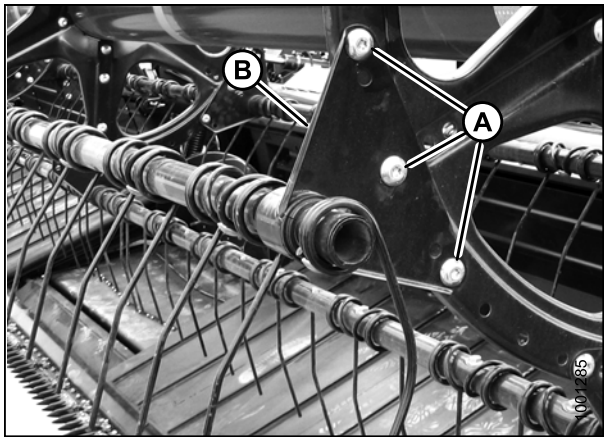


Figure 5.245: Reel Arm

Installing Steel Fingers

⚠ WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under 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. Remove the applicable finger. Refer to *Removing Steel Fingers, page 425*.
2. Slide the new fingers and reel arm (A) onto the end of the tube.
3. Install the tine tube bushings. Refer to *5.13.5 Tine Tube Bushings, page 428*.
4. Attach the fingers to the tine bar with bolts and nuts (B).

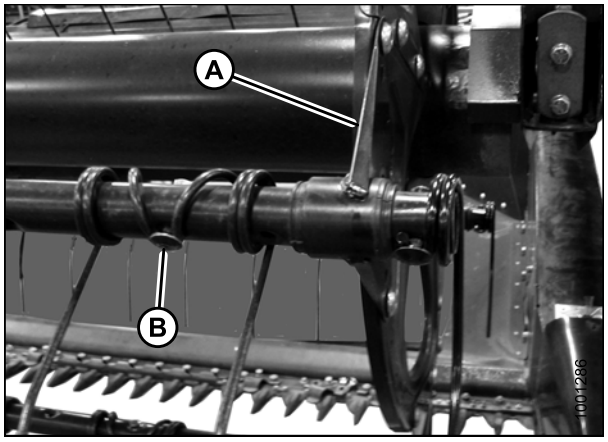


Figure 5.246: Tine Tube

Removing Plastic Fingers

⚠ WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

1. Remove screw (A) using a Torx® Plus 27 IP socket wrench.

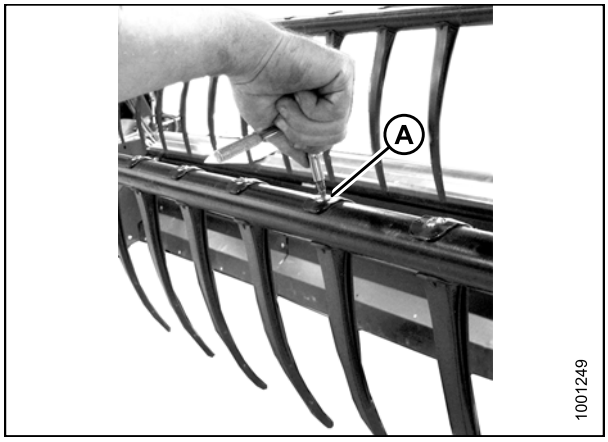


Figure 5.247: Removing Plastic Finger

2. Push the clip at the top of the finger back towards the reel tube and remove the finger from the tube.

Figure 5.248: Removing Plastic Finger

Installing Plastic Fingers

WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

1. Position the finger on the rear of the finger tube and engage the lug at the bottom of the finger in the lower hole in the finger tube.
2. Lift the top flange gently and rotate the finger until the lug in the top of the finger engages the upper hole in the finger tube.

Figure 5.249: Installing Finger

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.

3. Install the screw (A) using a Torx® Plus 27 IP socket wrench and torque to 75–80 in·lbf (8.5–9.0 N·m).

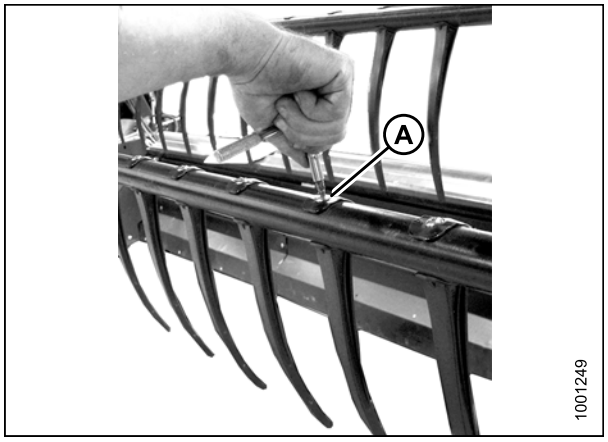


Figure 5.250: Installing Finger

5.13.5 Tine Tube Bushings

Removing Bushings from Five-, Six-, or Nine-Bat Reels

⚠ WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under 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, raise the reel, and engage the reel safety props.
2. Shut down the engine, and remove the key from the ignition.

NOTE:
If replacing only the cam end bushing, refer to Step *8., page 429*.

Center Disc and Tail-End Bushings

3. 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.

4. Remove bolts (A) securing arm (B) to the disc.

IMPORTANT:
Note the hole locations in the arm and disc and ensure the bolts (A) are reinstalled at the original locations.

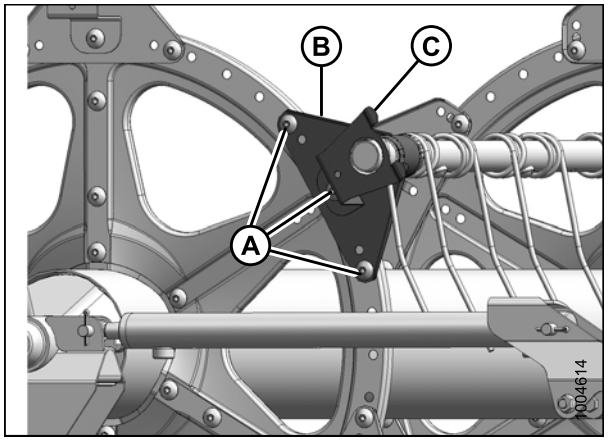


Figure 5.251: Tail End

5. Release the bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

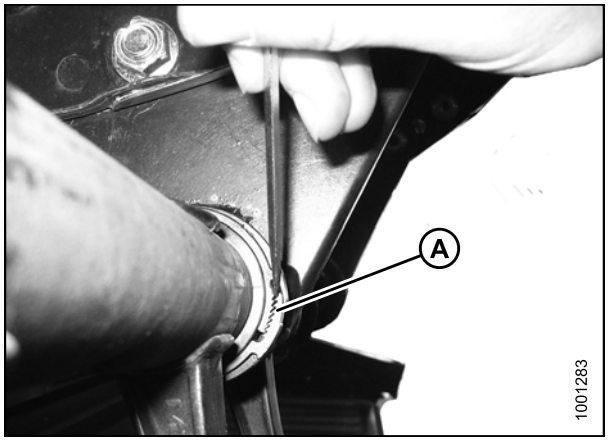


Figure 5.252: Bushing Clamp

6. Rotate the arm (A) until clear of the disc and slide the arm inboard off of bushing (B).
7. Remove the bushing halves (B). If required, remove the next tine or plastic finger so the arm can slide off the bushing. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 426*
   - *Removing Steel Fingers, page 425*

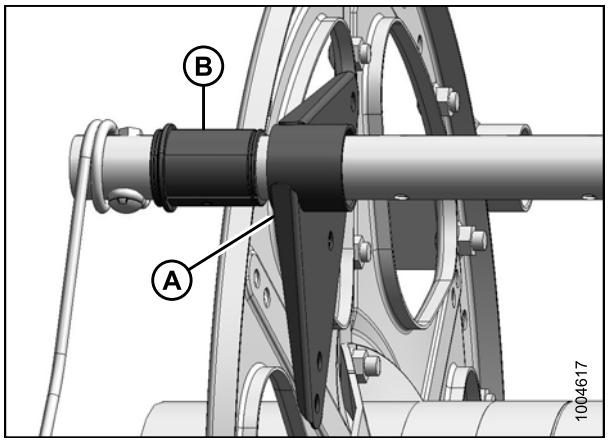


Figure 5.253: Bushing

Cam End Bushings

8. Remove the endshields and endshield support (A) at the applicable tine tube location on the cam end.

   NOTE:
   Removing cam end bushings requires the tine tube be moved through the disc arms to expose the bushing.

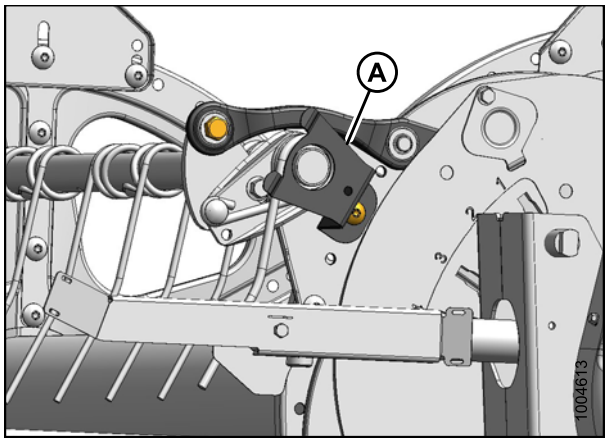


Figure 5.254: Cam End

9. 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.

10. Remove the bolts (A) securing the arms (B) to the tail and center discs.

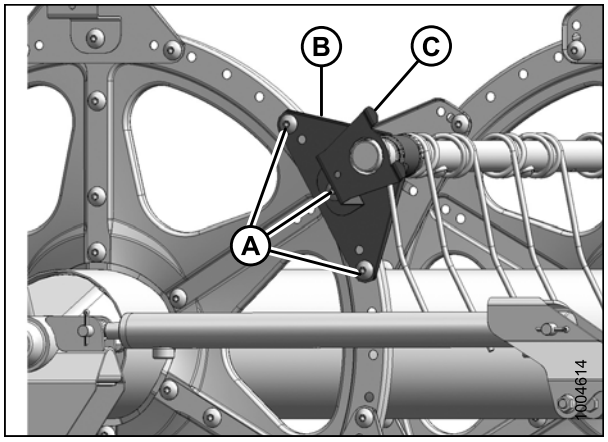


Figure 5.255: Tail End

11. 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 (B) require channel disconnection and two tine tubes (C) require only bushing clamp removal.

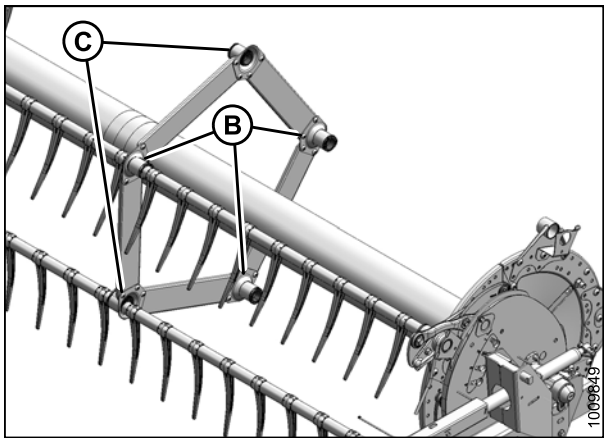


Figure 5.256: Tine Tube Supports

12. Remove bolt (A) from the cam linkage so the tine tube (B) is free to rotate.

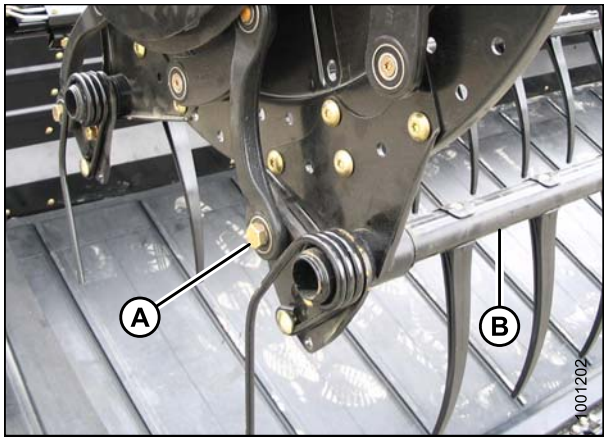


Figure 5.257: Cam End

13. Release the bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

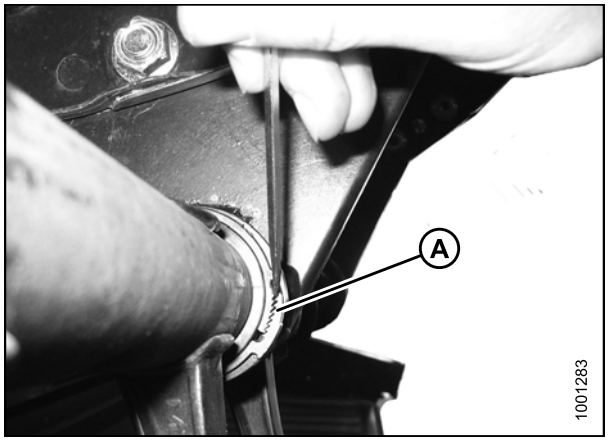


Figure 5.258: Bushing Clamp

14. Slide the tine tube (A) outboard to expose the bushing (B).
15. Remove the bushing halves (B). If required, remove the next tine or plastic finger so the arm can slide off the bushing. Refer to the following procedures if necessary:
    - *Removing Plastic Fingers, page 426*
    - *Removing Steel Fingers, page 425*

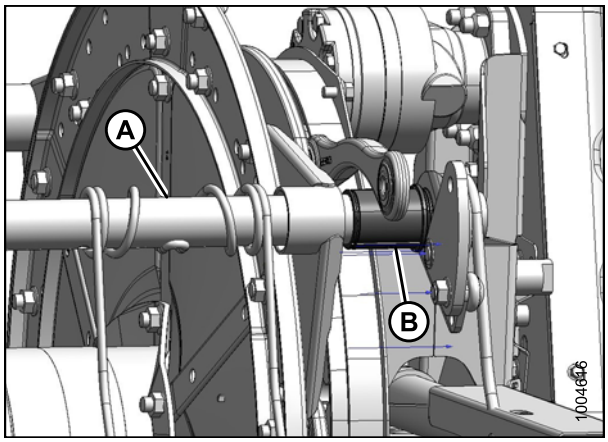


Figure 5.259: Cam End

Tine Tube Bushings (If Installed)

16. Locate the support (A) that requires a new bushing.
17. Remove the four bolts (B) securing channels (C) to the support (A).
18. Remove screw (E) and remove the finger (D) if it is too close to the support to allow access to the bushing. Refer to *Removing Plastic Fingers, page 426*.

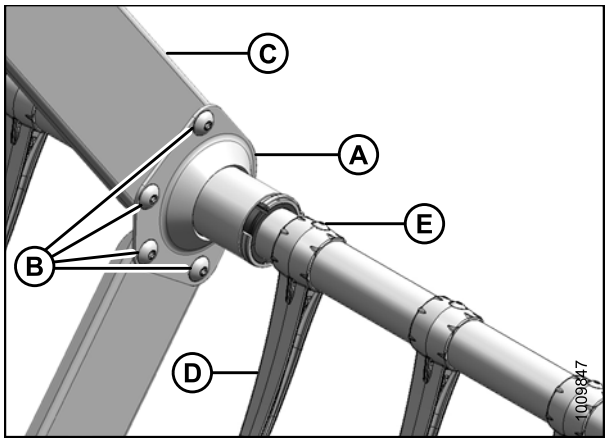


Figure 5.260: Tine Tube Support

19. Release the bushing clamps (A) using a small screwdriver to separate the serrations. Move the clamps off the bushings.

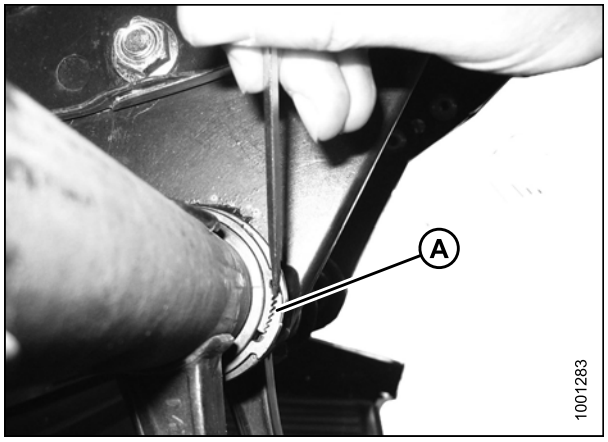


Figure 5.261: Bushing Clamp

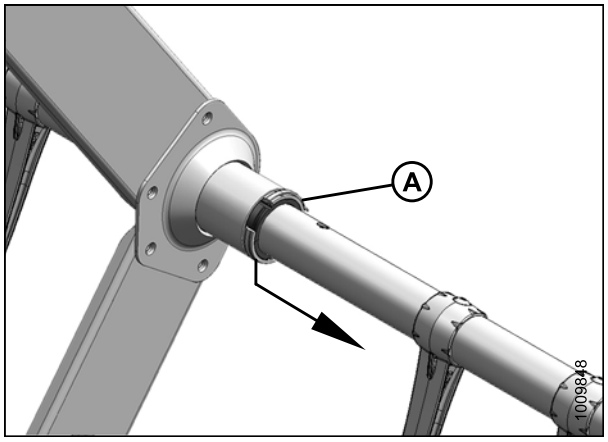


Figure 5.262: Bushing Clamp

20. Slide the support (A) off the bushing halves (B).

    NOTE:
    Two tine tubes have opposite supports (C). Rotate the supports until the flanges clear the channels before moving them off the bushing (B). Move the tine tube outwards slightly if necessary.

21. Remove the bushing halves (B).

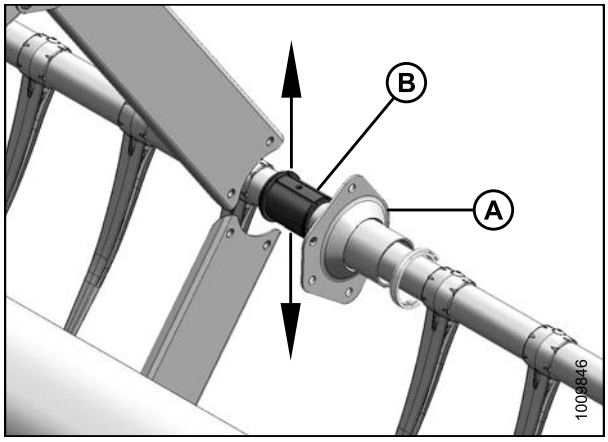


Figure 5.263: Support

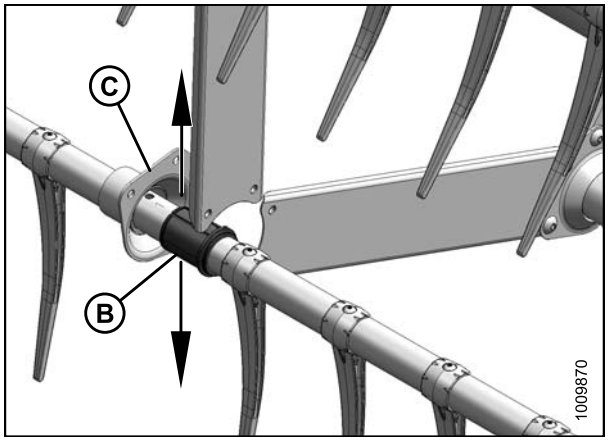


Figure 5.264: Opposite Support

Installing Bushings on Five-, Six-, or Nine-Bat Reels

⚠ WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

IMPORTANT:
Ensure tine tube is supported at all times to prevent damage to the tube or other components.

NOTE:
Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure pliers in a vice and grind a notch (B) into the end of each arm to fit the clamp as shown.

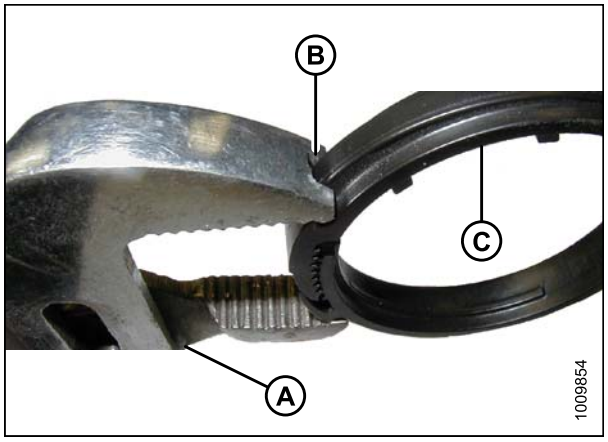


Figure 5.265: Modified Pliers

Cam End Bushings

1. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
2. Slide the tine tube (A) towards the tail end of the reel to insert the bushing (B) into the reel arm. If the tine tube supports are installed, ensure the bushings at those locations slide into the support.
3. Reinstall the previously removed fingers or tines. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 426*
   - *Removing Steel Fingers, page 425*
4. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
5. Position the clamp (A) on the 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.

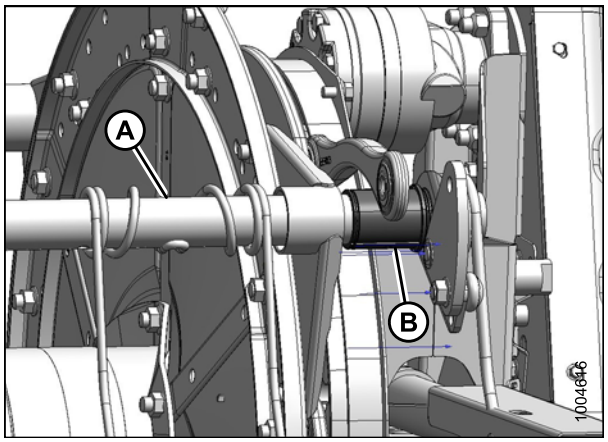


Figure 5.266: Cam End

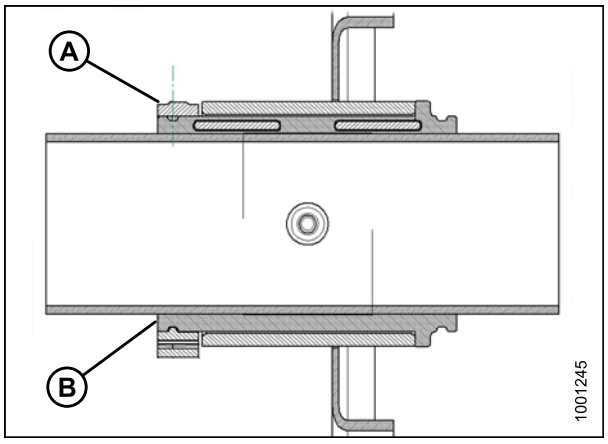


Figure 5.267: Bushing

6. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

   IMPORTANT:
   Over-tightening clamp may result in breakage.

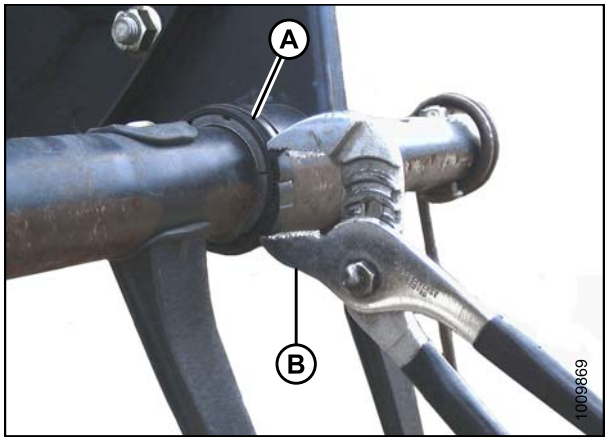


Figure 5.268: Installing Clamp

7. Line up the tine bar (B) with the cam arm and install bolt (A). Torque bolt to 120 ft·lbf (165 N·m).

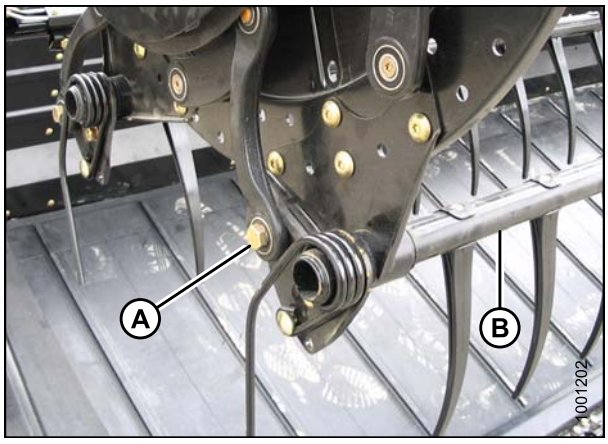


Figure 5.269: Cam End

8. Install the bolts (A) securing the arm (B) to the center disc.
9. Install the reel 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.

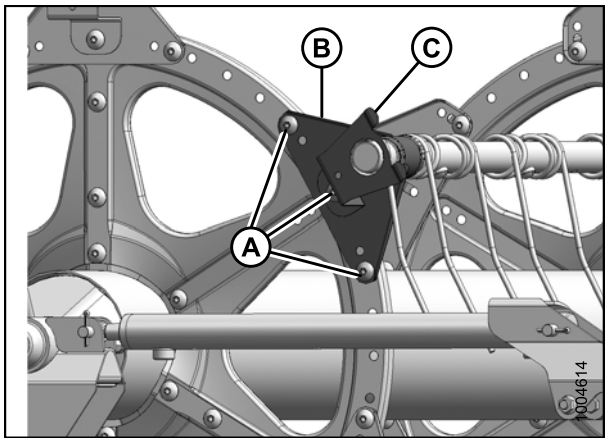


Figure 5.270: Tail End

10. Install the endshield support (A) at the applicable tine tube location at the cam end.
11. Reinstall the reel endshields. Refer to *5.13.6 Reel Endshields, page 440*.

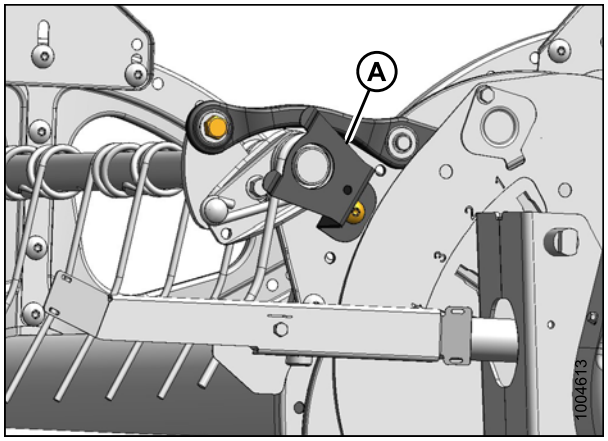


Figure 5.271: Cam End

Center Disc and Tail End Bushings

12. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
13. Slide the reel arm (A) onto the bushing (B) and position against the disc at the original location.
14. Reinstall the previously removed fingers or tines. Refer to the following procedures as necessary:
    - *Removing Plastic Fingers, page 426*
    - *Removing Steel Fingers, page 425*

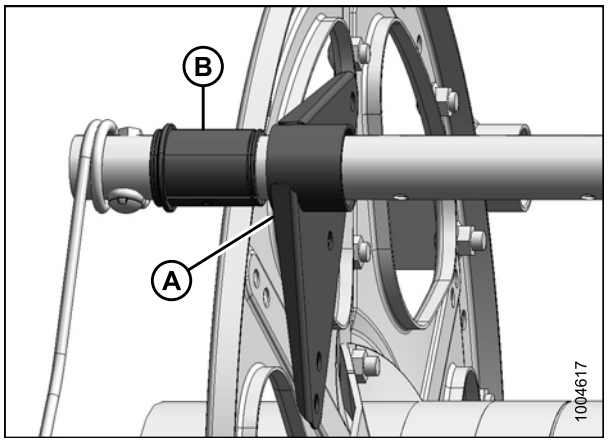


Figure 5.272: Tail End

15. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
16. Position the clamp (A) on the 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.

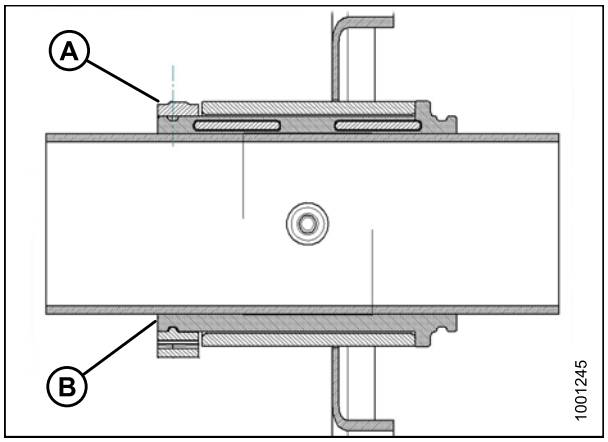


Figure 5.273: Bushing

17. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:
    Over-tightening clamp may result in breakage.

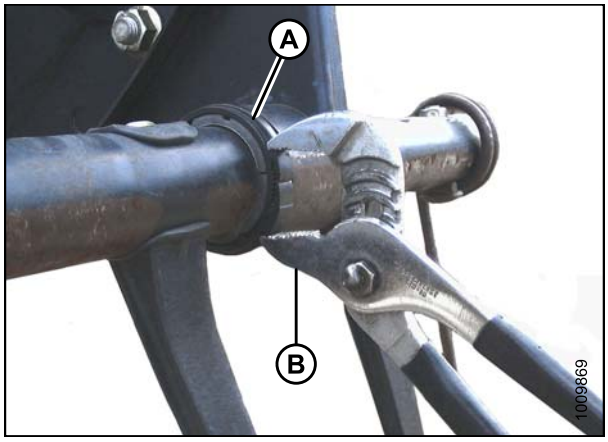


Figure 5.274: Installing Clamp

18. Install the bolts (A) securing the arm (B) to the center disc.
19. Install the reel 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.

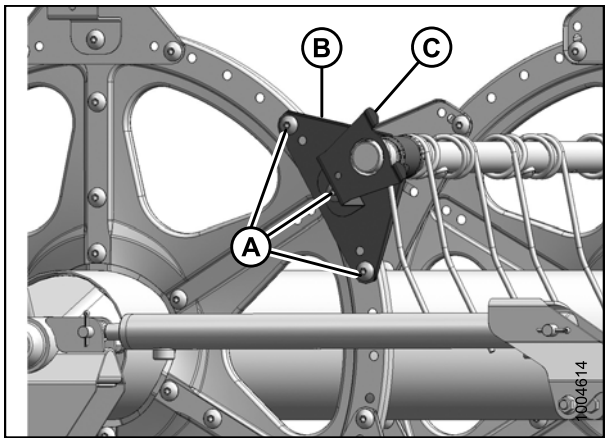


Figure 5.275: Tail End

Tine Tube Support (If installed) Bushings

20. Position the bushing halves (B) on the tine tube with the flangeless end adjacent to the reel arm, and position the lug in each bushing half into the hole in the tine tube.
21. Slide the support (C) onto the bushing (B). For the opposite tine tube, rotate the support (C) or slightly move the tine tube until it clears the channels (D).

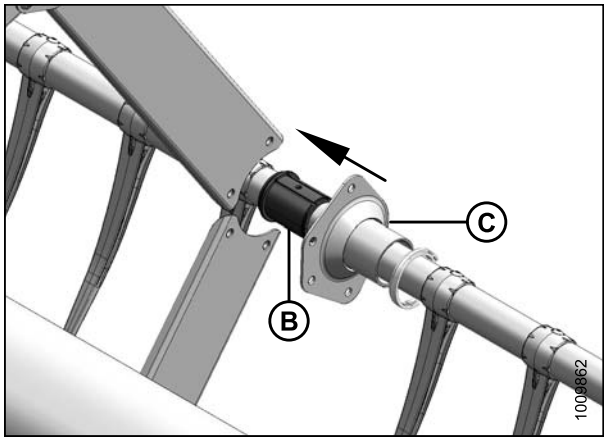


Figure 5.276: Support

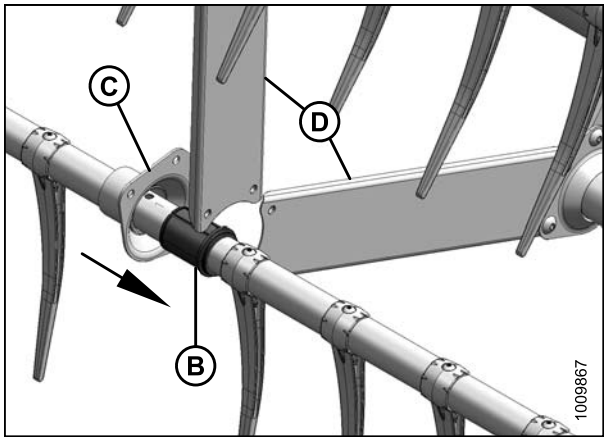


Figure 5.277: Opposite Support

22. Install the bushing clamp (A) onto the tine tube adjacent to the flangeless end of the bushing (B).
23. Position the clamp (A) on the 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.

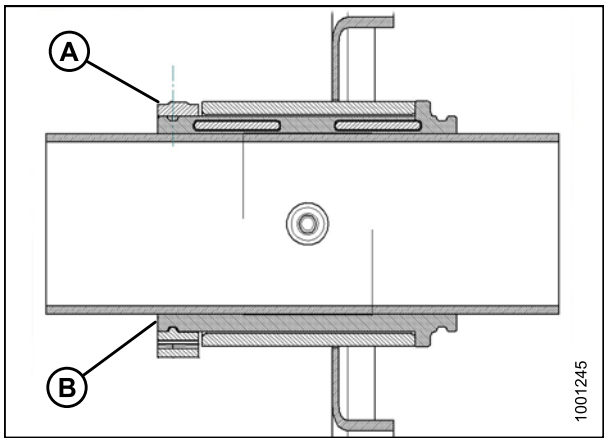


Figure 5.278: Bushing Clamp

24. Tighten the clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:
    Over-tightening clamp may result in breakage.

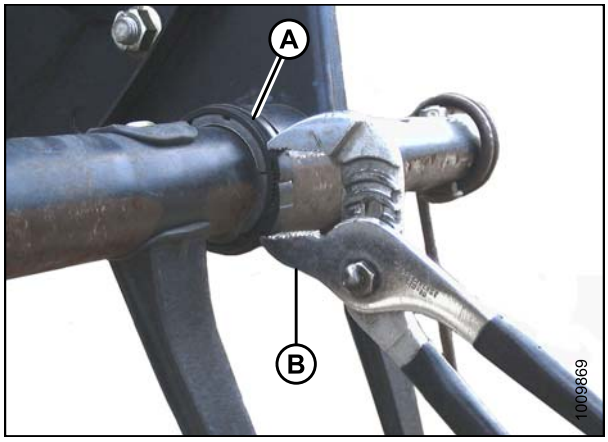


Figure 5.279: Installing Clamp

25. Reattach the channels (C) to the support (A) with screws (B) and nuts. Torque screws to 32 ft·lbf (43 N·m).
26. Reinstall any fingers (D) that were previously removed using screws (E). Refer to *Installing Plastic Fingers, page 427*.

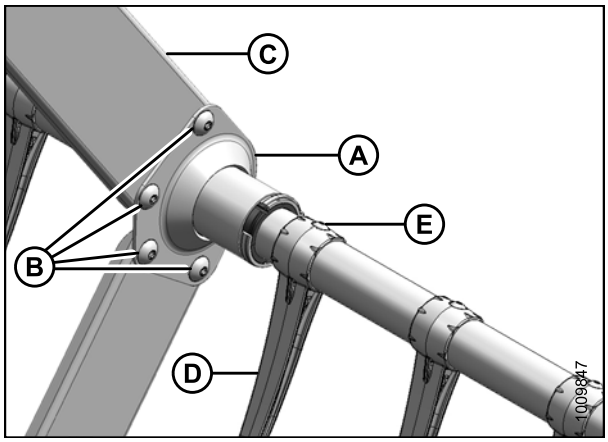


Figure 5.280: Support

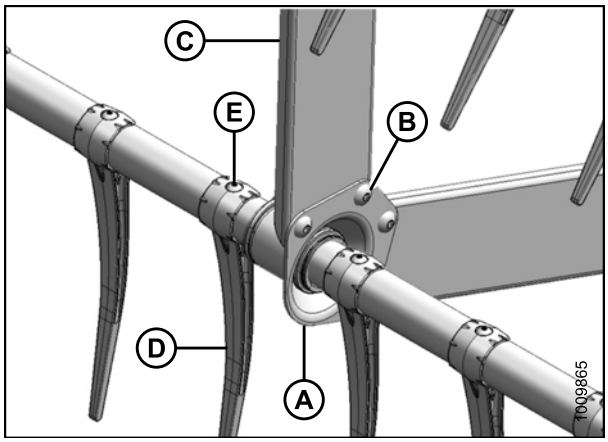


Figure 5.281: Opposite Support

5.13.6 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

DANGER

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

1. Lower the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until the reel endshield (A) requiring replacement is accessible.
3. Remove three bolts (B).

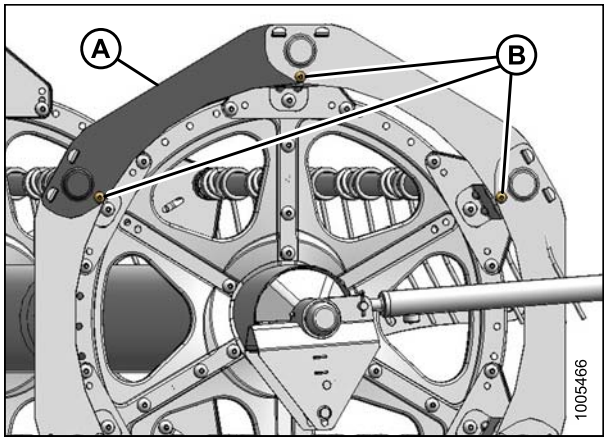


Figure 5.282: Reel Endshields

4. Lift end of reel endshield (A) off support (B).

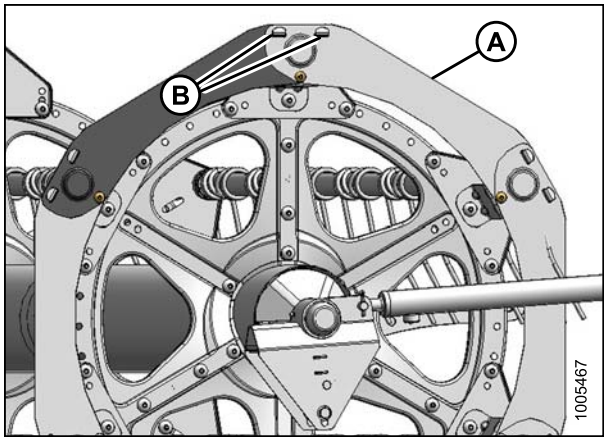


Figure 5.283: Reel Endshields

5. Remove the reel endshield from the supports.

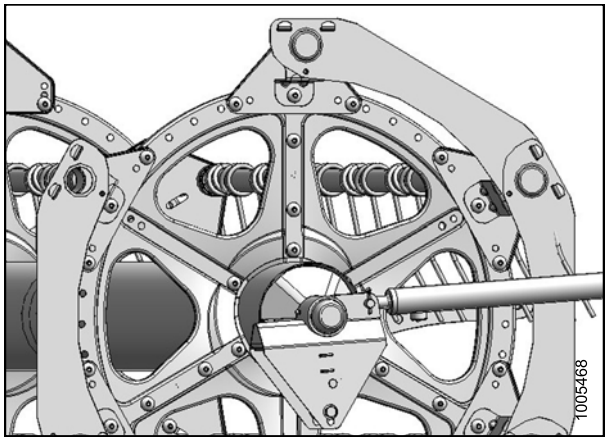


Figure 5.284: Reel Endshields

6. Remove the reel endshield (A) from support (B).
7. Install new reel endshield (C) onto support (B).
8. Reattach reel endshield (A) onto support (B) ensuring it is installed on top of the reel endshield (C).
9. Reinstall bolts (D).
10. Tighten all hardware.

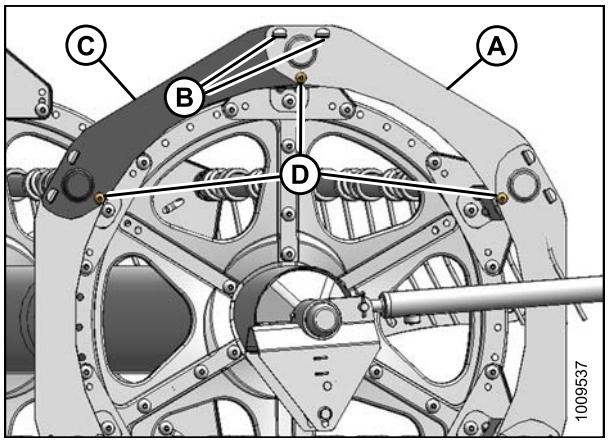


Figure 5.285: Reel Endshields

Replacing Reel Endshield Supports

DANGER

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

1. Lower the header and reel, shut down the engine, and remove the key from the ignition.
2. Rotate the reel manually until the reel endshield (A) requiring replacement is accessible.
3. Remove bolt (B) from support (A).
4. Remove bolts (C) from support (A) and two adjacent supports.

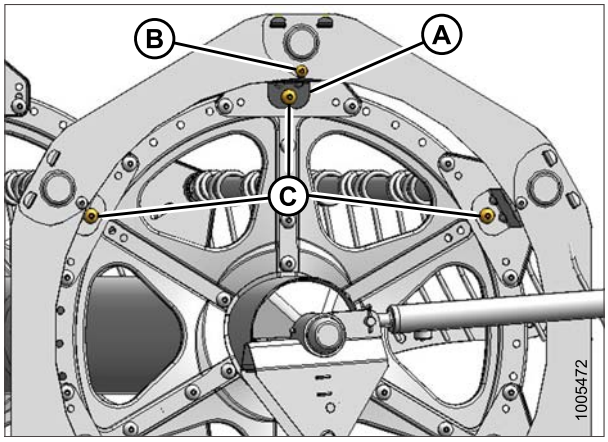


Figure 5.286: Reel Endshield Supports

5. Move the reel endshields (A) away from the tine tube and rotate the support (B) towards the reel to remove it.
6. Insert tabs of new support (B) into the slots in the reel endshields (A). Ensure the tabs engage both reel endshields.
7. Secure support (B) to the disc with bolt (C) and nut. Do not tighten.
8. Secure the reel endshields (A) to support (B) with bolt (C) and nut. Do not tighten.
9. Reattach the supports with bolts (C) and nuts.
10. Check the clearance between the tine tube and reel endshield support and adjust if necessary.
11. Torque nuts to 20 ft·lbf (27 N·m).

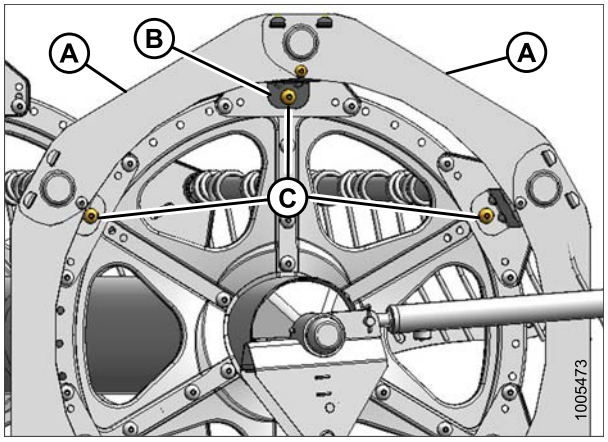


Figure 5.287: Reel Endshield Supports

5.14 Reel Drive

The reel is hydraulically driven through a chain case that is attached to the right end of the reel on a single-reel header, and between the reels on a double-reel header.

5.14.1 Replacing Reel Drive Cover

Removing Reel Drive Cover

DANGER

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

Single Reel Drive:

1. Stop the engine and remove the key from the ignition.
2. Remove four bolts (A) securing the cover (B) to the reel drive.

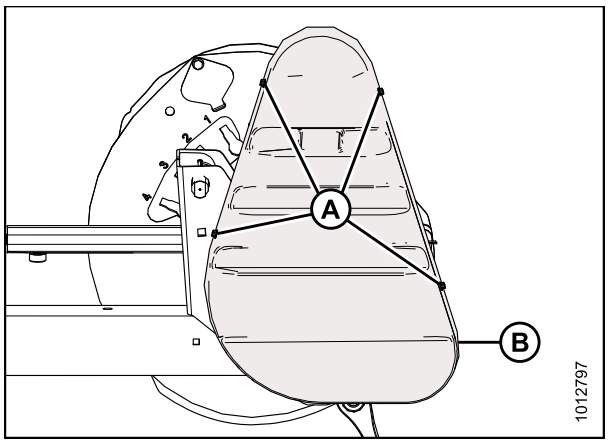


Figure 5.288: Drive Cover – Single Reel

Double Reel Drive:

3. Stop the engine and remove the key from the ignition.
4. Remove six bolts (A) securing the upper cover (B) to the reel drive and lower cover (C).

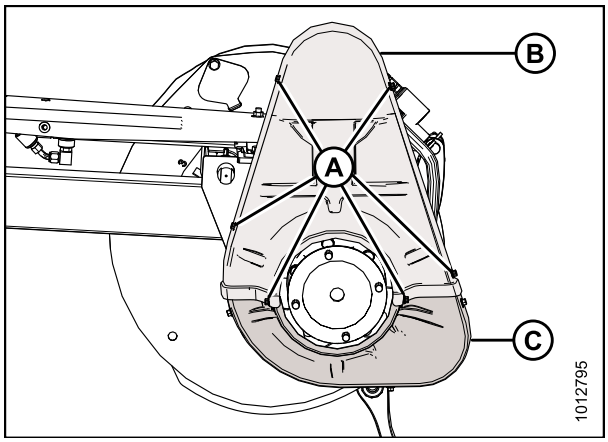


Figure 5.289: Drive Cover – Double Reel

5. Remove three bolts (A) and remove the lower cover (B), if necessary.

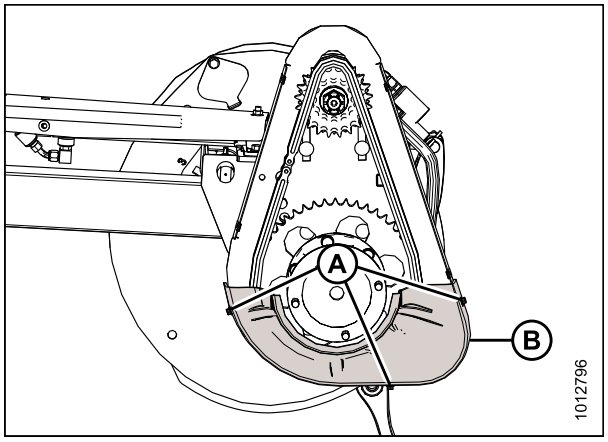


Figure 5.290: Lower Drive Cover (Upper Cover Removed)

Installing Reel Drive Cover

DANGER

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

Single Reel Drive:

1. Position the drive cover (B) onto the reel drive and secure with four bolts (A).

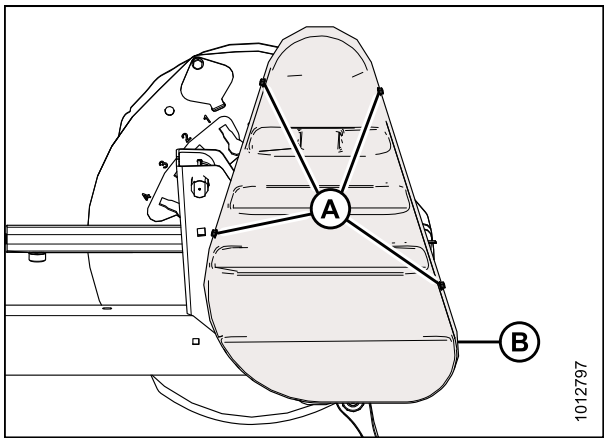


Figure 5.291: Drive Cover – Single Reel

Double Reel Drive:

2. Position the lower drive cover (B) onto the reel drive (if previously removed) and secure with three bolts (A).

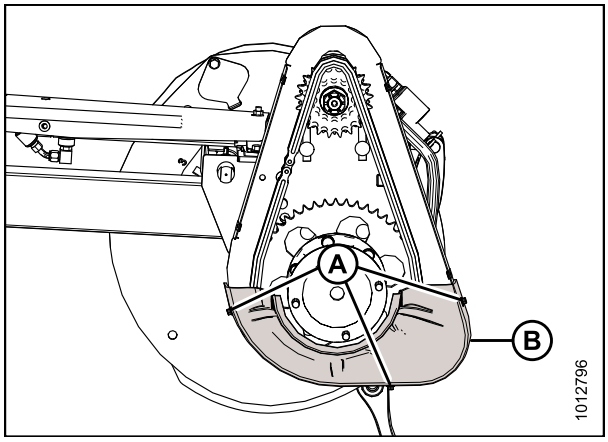


Figure 5.292: Lower Drive Cover – Double Reel

3. Position the upper drive cover (B) onto the reel drive and lower cover (C) and secure with six bolts (A).

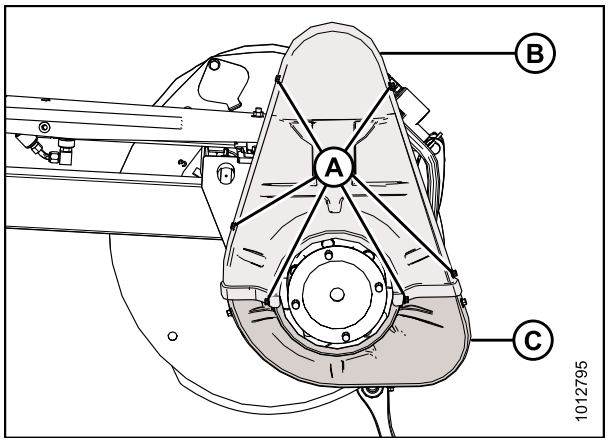


Figure 5.293: Drive Cover – Double Reel

5.14.2 Adjusting Reel Drive Chain Tension

Loosening Reel Drive Chain

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.
3. Loosen six nuts (A). Slide the motor (B) and motor mount (C) down towards the reel shaft.

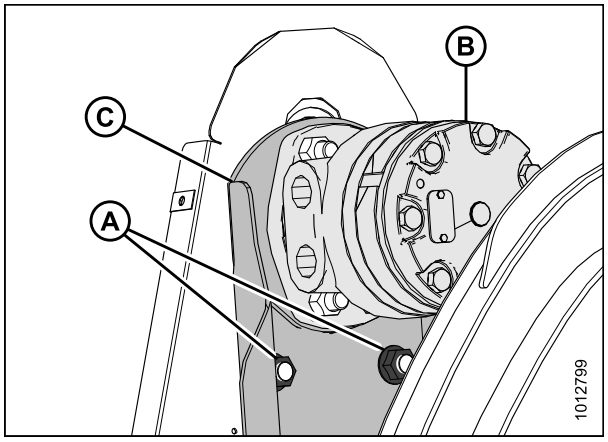


Figure 5.294: Single-Reel Drive

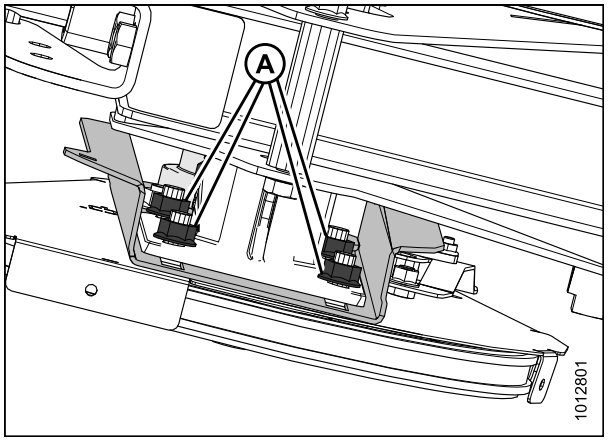


Figure 5.295: Single-Reel Drive – Viewed from Underside of Reel

Tightening Reel Drive Chain

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Ensure the six bolts (A) securing the motor mount to the chain case are loose.

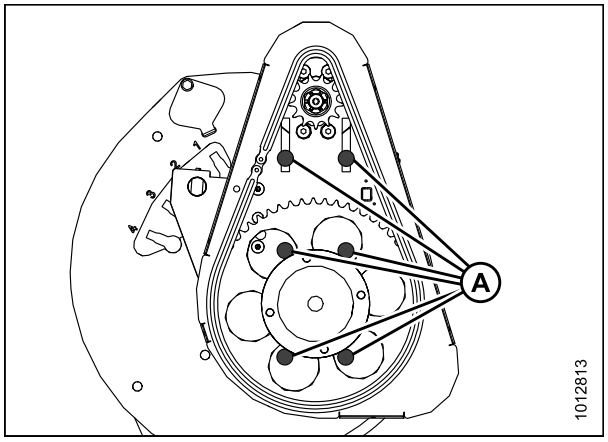


Figure 5.296: Single-Reel Drive Shown – Double Reel Similar

3. Slide the motor (A) and motor mount (B) upwards until the chain (C) is tight.

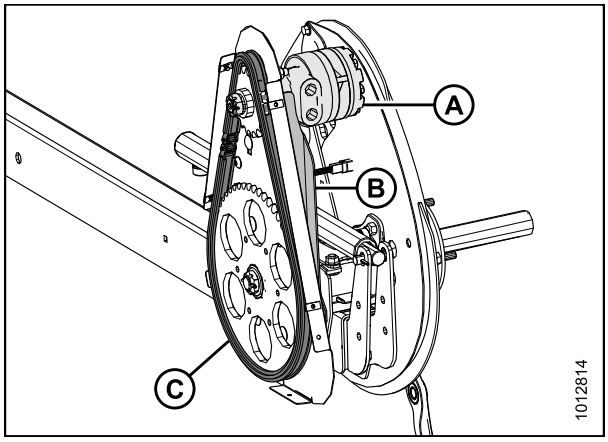


Figure 5.297: Single-Reel Drive Shown – Double Reel Similar

4. Tighten six nuts (A).
5. Ensure there is 1/8 in. (3 mm) of slack at the chain midspan. Adjust if necessary.
6. Torque nuts (A) to 54 ft·lbf (73 N·m).
7. Install the drive cover. Refer to *Installing Reel Drive Cover, page 444*.

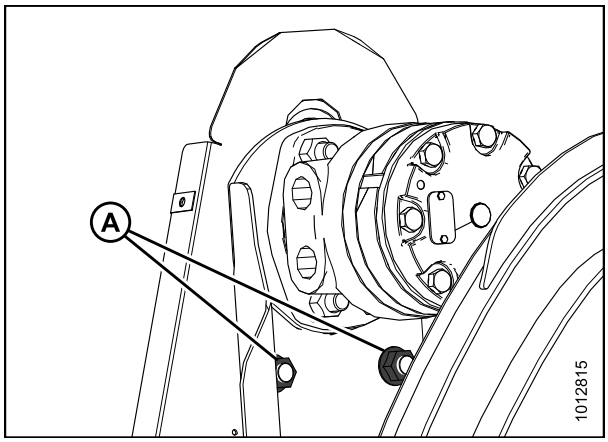


Figure 5.298: Single-Reel Drive Shown – Double Reel Similar

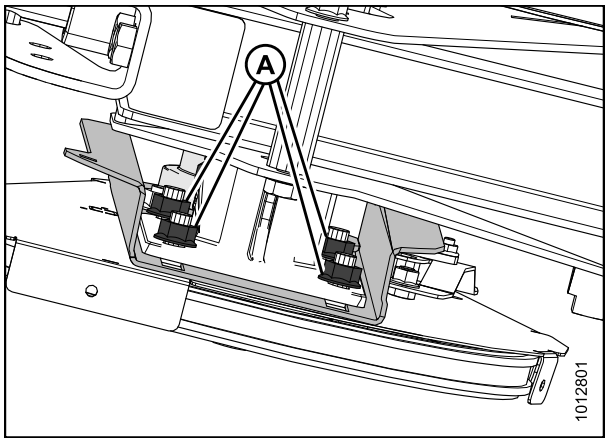


Figure 5.299: Single-Reel Drive – Viewed from Underside of Reel

5.14.3 Replacing Reel Drive Sprocket

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

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 445*.
3. Remove the drive chain (A) from the drive sprocket (B).

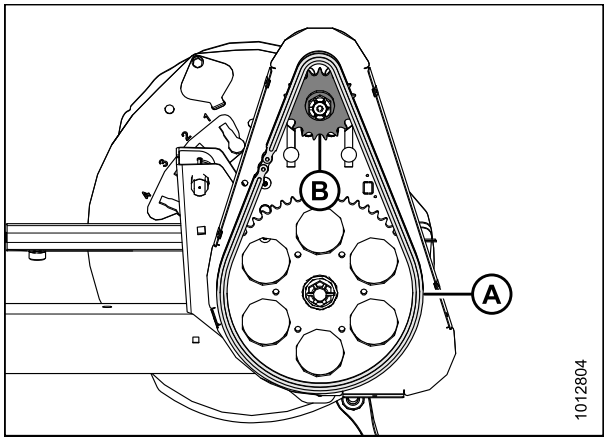


Figure 5.300: Reel Drive

4. Remove the cotter pin (A), slotted nut (B), and flat washer (C) from the motor shaft.
5. Remove the drive sprocket (D). Ensure the key remains in the shaft.

   IMPORTANT:
   To avoid damaging the motor, use a puller if the drive sprocket does not come off by hand. Do **NOT** use a pry bar and/or hammer to remove the drive sprocket (D).

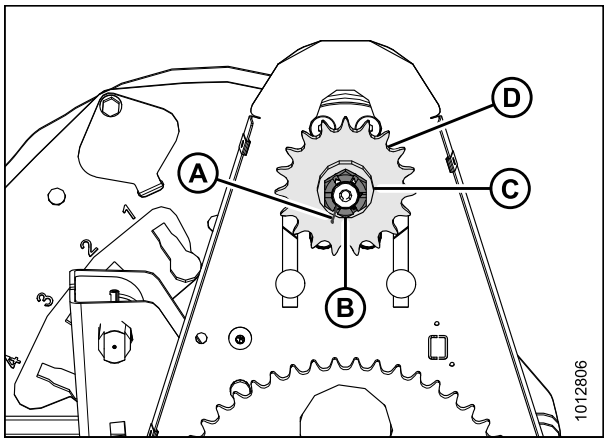


Figure 5.301: Reel Drive

Installing Reel Drive Sprocket

DANGER

To avoid bodily injury or death from unexpected start-up of machine, always stop engine and remove key from ignition before leaving 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 40 ft·lbf (54 N·m).
3. Install cotter pin (A). If necessary, tighten the slotted nut (B) to the next slot to install the cotter pin.

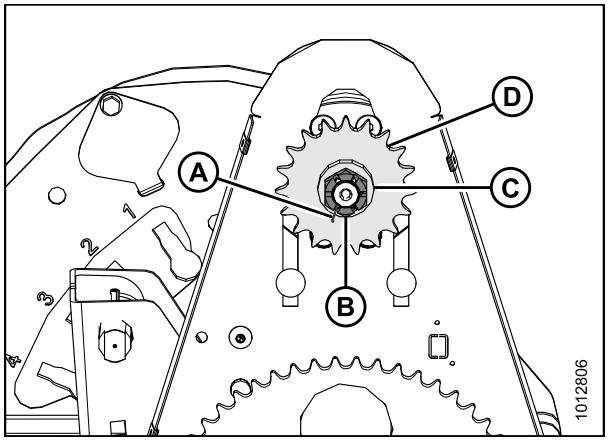


Figure 5.302: Reel Drive

4. Install the drive chain (A) onto the drive sprocket (B).
5. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 446*.

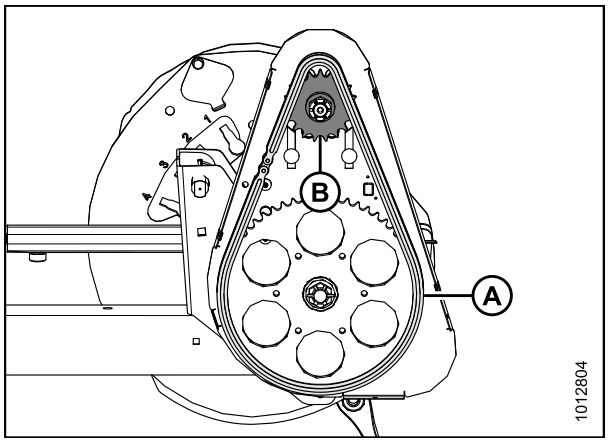


Figure 5.303: Reel Drive

5.14.4 Replacing Double-Reel U-Joint

The double-reel drive U-joint allows each reel to move independently from the other.

Lubricate the U-joint according to the specifications. Refer to *5.3.6 Lubrication and Servicing, page 305*.

Replace the U-joint if severely worn or damaged. Refer to *Removing Double-Reel U-Joint, page 449*.

Removing Double-Reel U-Joint

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.

3. Support the inboard end of the right reel with a front end loader and nylon slings (A) (or equivalent lifting device).

   IMPORTANT:
   Avoid damaging or denting the center tube by supporting the reel as close to the end disc as possible.

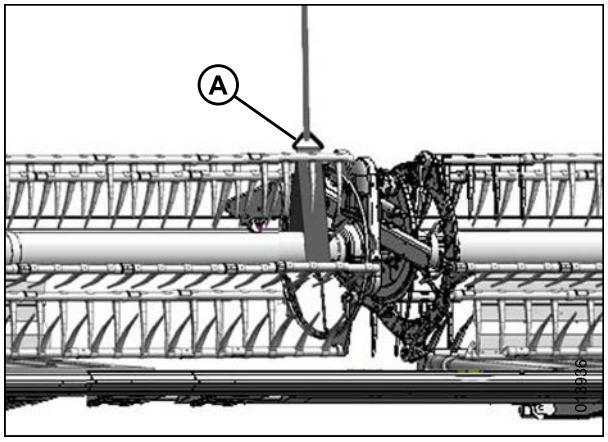


Figure 5.304: Supporting Reel

4. Remove the six bolts (A) attaching the U-joint flange (B) to the driven sprocket (C).
5. Remove the U-joint.

   NOTE:
   It may be necessary to move the right-hand reel sideways for the U-joint to clear the tube.

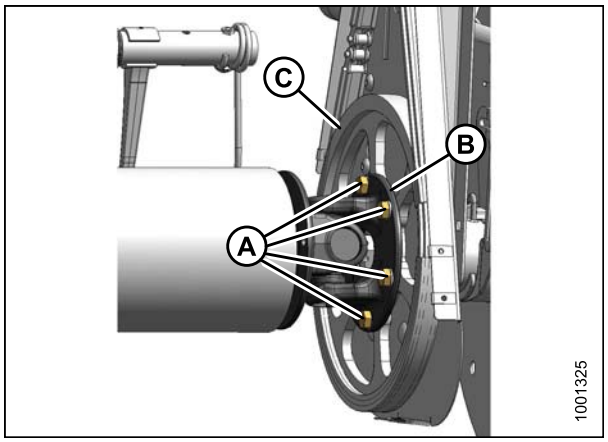


Figure 5.305: U-Joint

Installing Double-Reel U-Joint

NOTE:
It may be necessary to move the right-hand reel sideways for the U-joint to clear the reel tube.

1. Position the U-joint flange (B) onto the driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque the bolts.

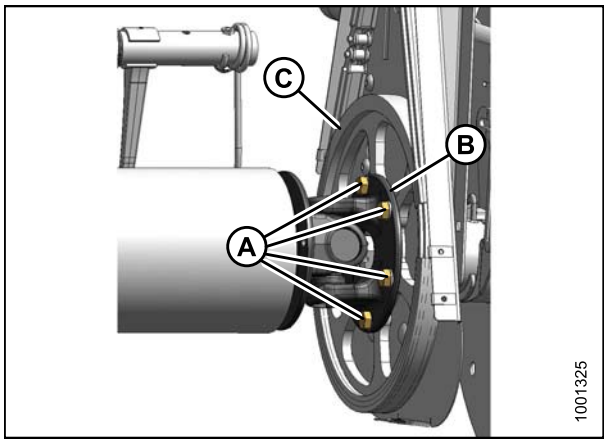


Figure 5.306: U-Joint

2. Position the right-hand reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
3. Rotate the reel until the holes in the end of the reel tube and U-joint flange (B) line up.
4. Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and secure with lock washers.
5. Torque to 75–85 ft·lbf (102–115 N·m).

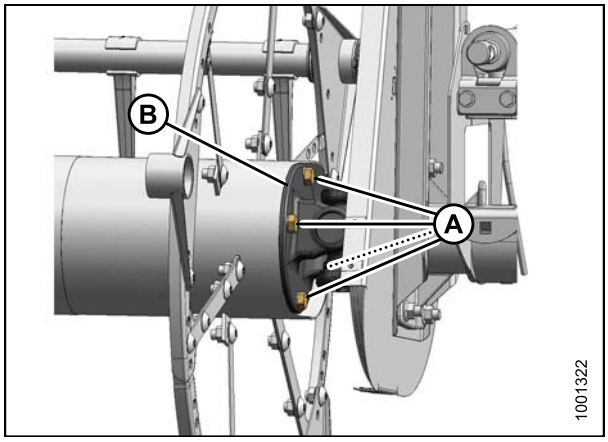


Figure 5.307: U-Joint

6. Remove the temporary reel support (A).
7. Install the drive cover. Refer to *Installing Reel Drive Cover, page 444*.

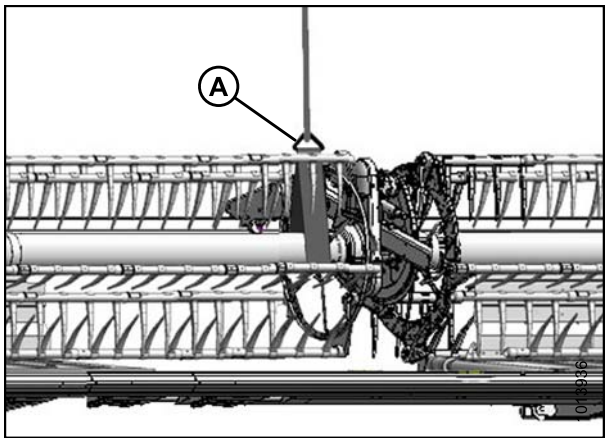


Figure 5.308: Supporting Reel

5.14.5 Replacing Reel Drive Motor

The reel drive motor does not require regular maintenance or servicing. If problems occur with the motor, remove it and have it serviced at your MacDon Dealer.

Removing Reel Drive Motor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 445*.
3. Remove the drive sprocket. Refer to *Removing Reel Drive Sprocket, page 448*.

4. Disconnect the hydraulic lines (A) at the motor (B). Cap or plug open ports and lines.

   NOTE:
   Mark the hydraulic lines (A) and their locations in the motor (B) to ensure correct reinstallation.

5. Remove four nuts and bolts (C) and remove the motor (A). Retrieve the spacer (not shown) from between the motor (B) and the motor mount (if installed).

6. If motor is being replaced ,remove hydraulic fittings from old motor and install in new motor using the same orientation. Refer to *8 Reference, page 485* for fitting installation guidelines.

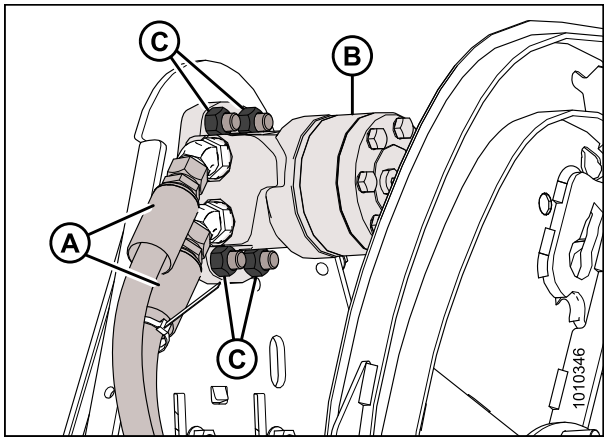


Figure 5.309: Reel Motor and Hoses

Installing Reel Drive Motor

1. Slide the motor mount (A) up or down so the motor mounting holes (B) are accessible through the openings in the chain case.

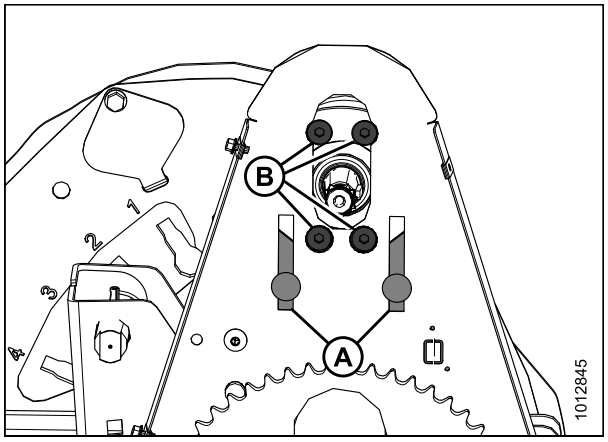


Figure 5.310: Reel Drive Motor Mounting Holes

2. Attach the motor (A) (and spacer if previously removed) to the motor mount (B) with four 1/2 in. x 1-3/4 in. countersunk bolts and nuts (C).

3. Torque nuts (C) to 54 ft·lbf (73 N·m).

4. If installing a new motor, install the hydraulic fittings (not shown) from the original motor and torque to 81–89 ft·lbf (110–120 N·m).

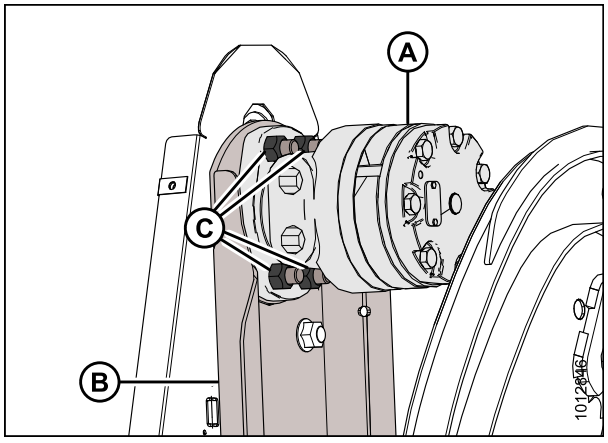


Figure 5.311: Reel Drive Motor

5. Remove the caps or plugs from the ports and lines and connect the hydraulic lines (A) to the hydraulic fittings (B) on the motor (C).

   NOTE:
   Ensure the hydraulic lines (A) are installed at their original locations.

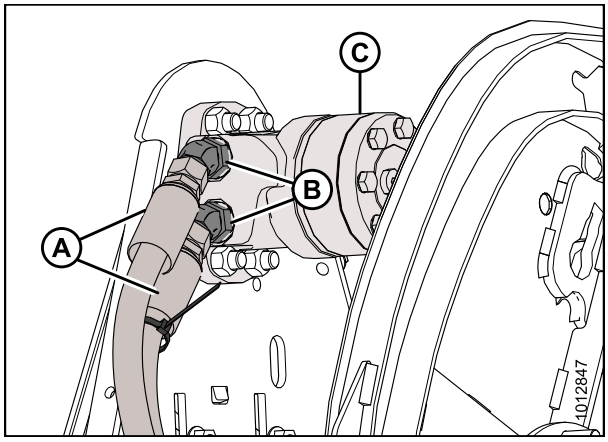


Figure 5.312: Reel Motor and Hoses

6. Install the drive sprocket. Refer to *Installing Reel Drive Sprocket, page 448*.
7. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 446*.

5.14.6 Replacing Drive Chain on Double Reel

1. Shut down the combine, and remove the key from the ignition.
2. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 445*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) (or equivalent lifting device).

   IMPORTANT:
   Avoid damaging or denting the center tube by supporting the reel as close to the end disc as possible.

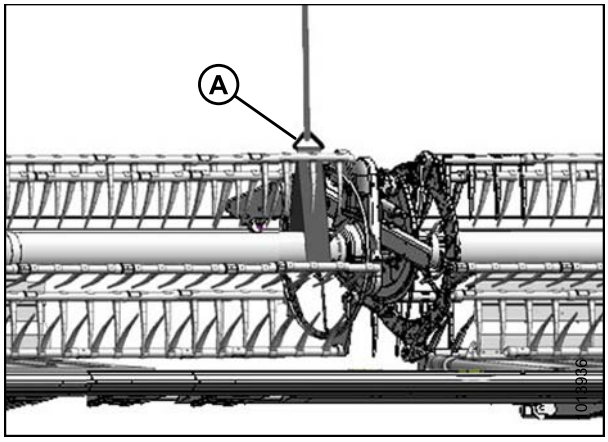


Figure 5.313: Supporting Reel

4. Remove the four bolts (A) securing the reel tube to the U-joint flange (B).

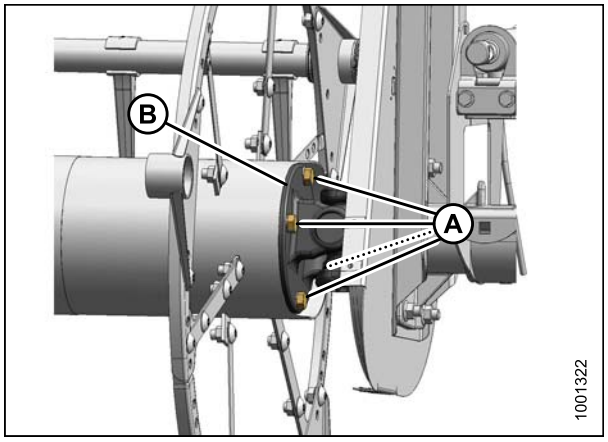


Figure 5.314: U-Joint

5. Move the right-hand reel sideways to separate the reel tube (A) from the U-joint (B).
6. Remove the drive chain (C).
7. Route the new chain (C) over the U-joint (B) and position onto the sprockets.

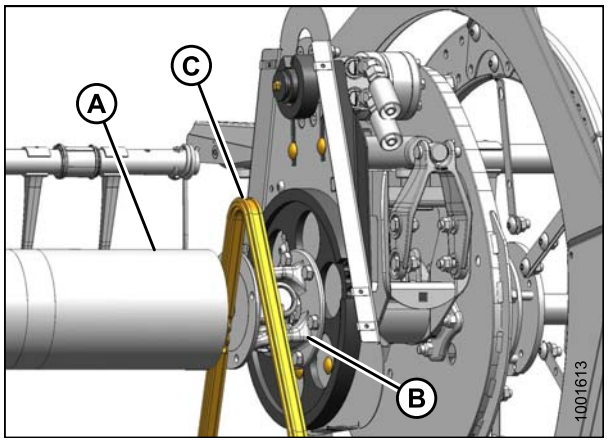


Figure 5.315: Replacing Chain

8. Position the right-hand reel tube (A) against the reel drive and engage the stub shaft into the U-joint pilot hole.
9. Rotate the reel until the holes in end of the reel tube and U-joint flange (B) line up.
10. Apply Loctite® #243 (or equivalent) to four 1/2 in. bolts (A) and secure with lock washers.
11. Torque to 75–85 ft·lbf (102–115 N·m).

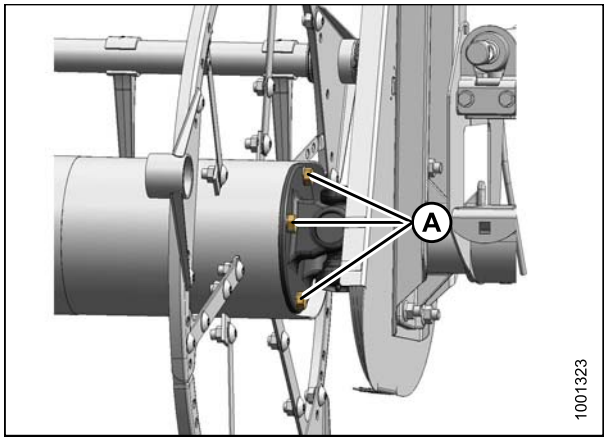


Figure 5.316: U-Joint

12. Remove the temporary reel support (A).

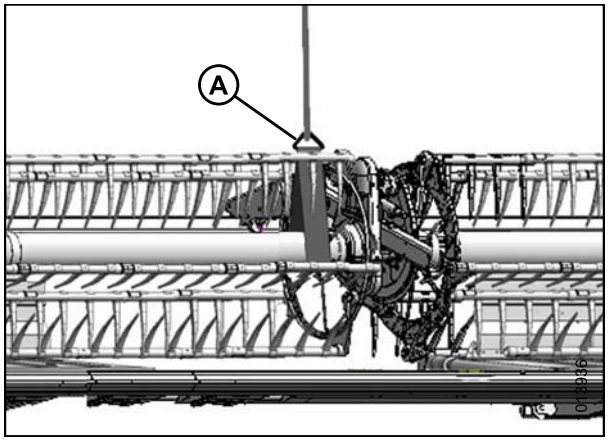


Figure 5.317: Supporting Reel

5.14.7 Replacing Drive Chain on Single Reel

1. Loosen the drive chain. Refer to *Loosening Reel Drive Chain, page 445*.
2. Lift the chain (A) off the drive sprocket (B).
3. Lower the chain until free of the lower sprocket (C) and remove the chain from the drive.
4. Position the new chain (A) around the bottom teeth on the lower sprocket (C).
5. Lift the chain onto the drive sprocket (B) ensuring all the links are properly engaged in the teeth.
6. Tighten the drive chain. Refer to *Tightening Reel Drive Chain, page 446*.

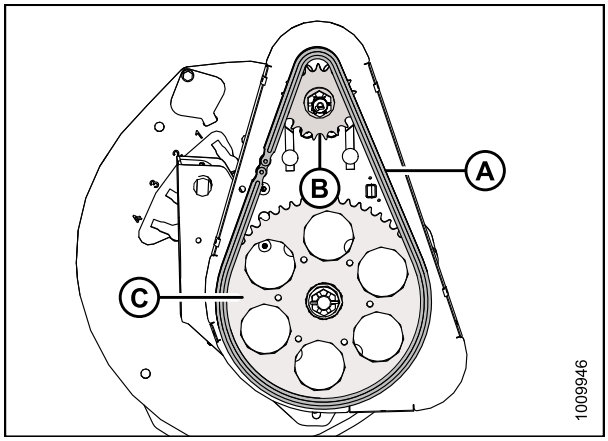


Figure 5.318: Reel Drive

5.14.8 Replacing Reel Speed Sensor

The reel speed sensors, and the procedures for replacing them, vary with the combine model.

Replacing AGCO Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.

3. Disconnect the electrical connector (A).

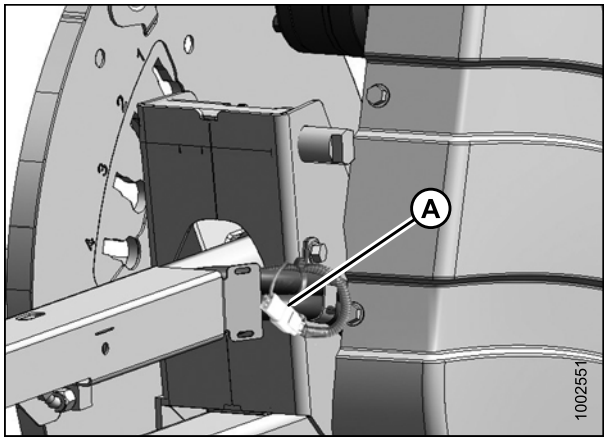


Figure 5.319: Electrical Harness

4. Cut the cable tie (A) securing the harness to the cover.
5. Remove two screws (B) and remove the sensor (C) and harness. Bend the cover (D) (if necessary) to remove the harness.
6. Feed the wire of the new sensor behind the cover (D) and through the chain case.
7. Locate the new sensor in support (E) and attach with two screws (B).
8. Adjust the gap between the sensor disc (F) and the sensor (C) to 0.02 in. (0.5 mm).

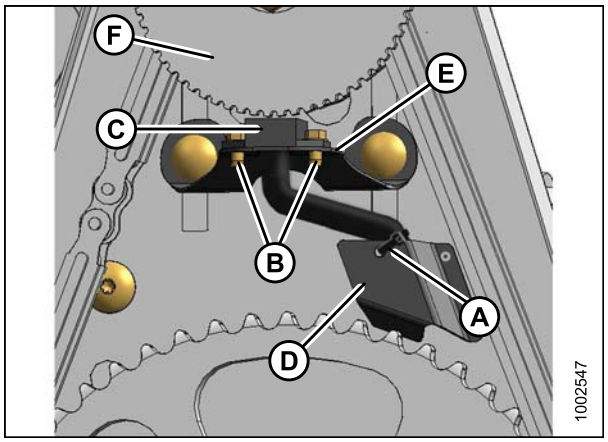


Figure 5.320: Speed Sensor

9. Connect the electrical harness (A).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

10. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 444*.

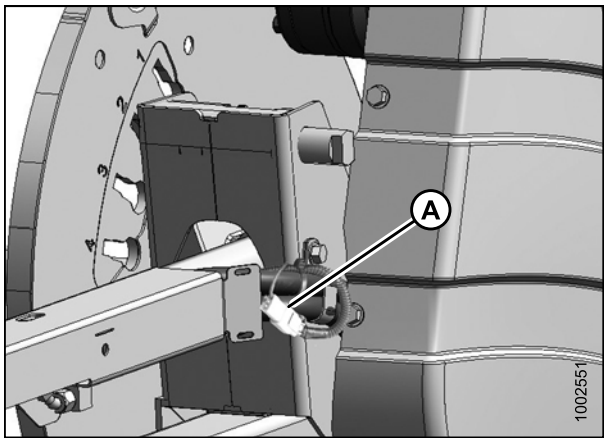


Figure 5.321: Electrical Harness

Replacing John Deere Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.
3. Disconnect the electrical connector (D).
4. Remove the top nut (C) and remove the sensor (B).
5. Remove the top nut from the new sensor and position the sensor into the support. Secure with top nut (C).
6. Adjust the gap between the sensor disc (A) and the sensor (B) to 1/8 in. (3 mm) using nut (C).
7. Connect to harness at (D).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

8. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 444*.

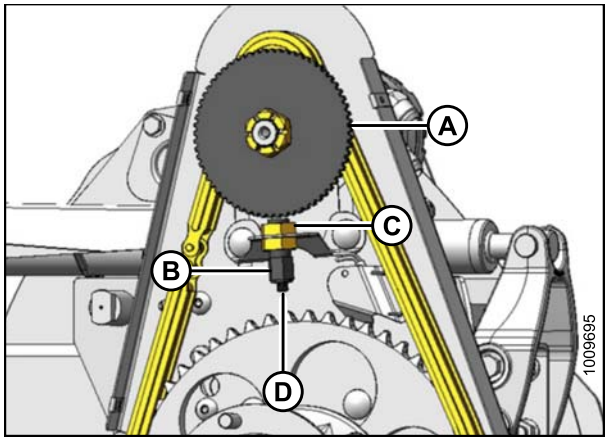


Figure 5.322: Speed Sensor

Replacing Lexion 400 Series Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.
3. Disconnect the electrical connector (C).
4. Remove the top nuts (D) and remove the sensor (B).
5. Remove the top nut from the new sensor and position the sensor into the support. Secure with top nut (D).
6. Adjust the gap between the sensor disc (A) and the sensor (B) to 1/8 in. (3 mm) using nuts (D).
7. Connect to harness at (C).

   IMPORTANT:
   Ensure the sensor electrical harness does NOT contact the chain or sprocket.

8. Reinstall the drive cover. Refer to *Installing Reel Drive Cover, page 444*.

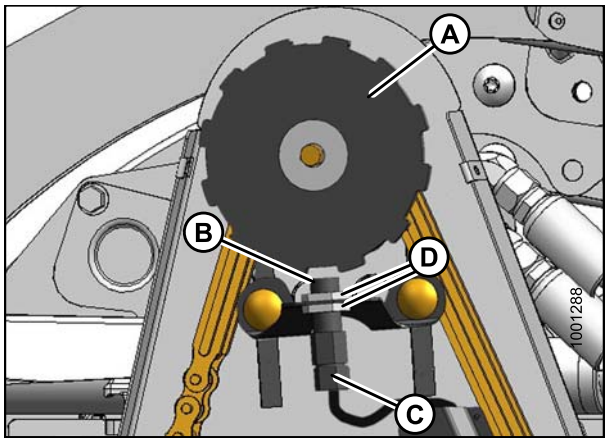


Figure 5.323: Speed Sensor

Replacing Lexion 500/700 Series Sensor

DANGER

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

1. Shut down the combine, and remove the key from the ignition.
2. Remove the drive cover. Refer to *Removing Reel Drive Cover, page 443*.
3. Disconnect the sensor's (A) electrical connector located behind chain case.
4. Remove cable ties (B).
5. Remove shield (C) and rivets (D)
6. Remove nut (E) and remove the sensor (A).
7. Position the new sensor (A) into the support (F). Secure with nut (E).
8. Adjust speed sensor to achieve a gap of 1–3 mm from the sensor disc (G).
9. Route harness as shown and secure with shield (C) and rivets (D).
10. Secure harness to 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. Refer to *Installing Reel Drive Cover, page 444*.

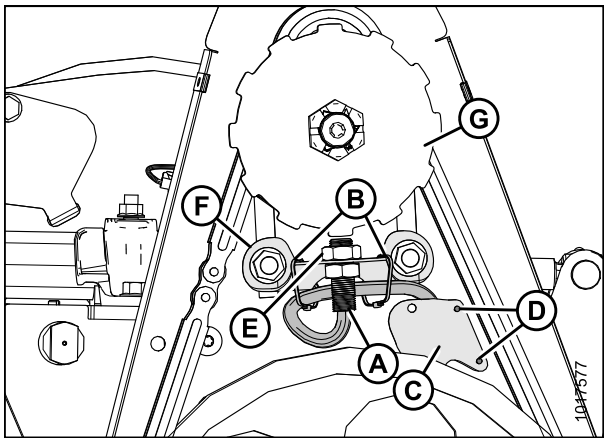


Figure 5.324: Speed Sensor

5.15 Transport System (Optional)

Refer to *6.3.3 Stabilizer/Slow Speed Transport Wheels, page 467* for more information.

5.15.1 Checking Wheel Bolt Torque

If a transport system is installed, adhere to the following procedure for torquing the wheel bolts:

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before making adjustments to machine.

1. Turn off the engine and remove key.
2. Follow the bolt tightening sequence shown, and torque the wheel bolts to 80–90 ft·lbf (110–120 N·m).

   IMPORTANT:
   Whenever a wheel is removed and reinstalled, check the wheel bolt torque after one hour of operation and every 100 hours thereafter.

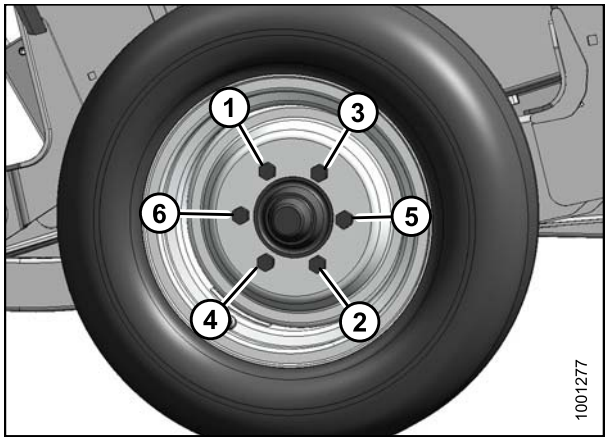


Figure 5.325: Bolt Tightening Sequence

5.15.2 Checking Axle Bolt Torque

If a transport system is installed, adhere to the following procedure for torquing the axle bolts:

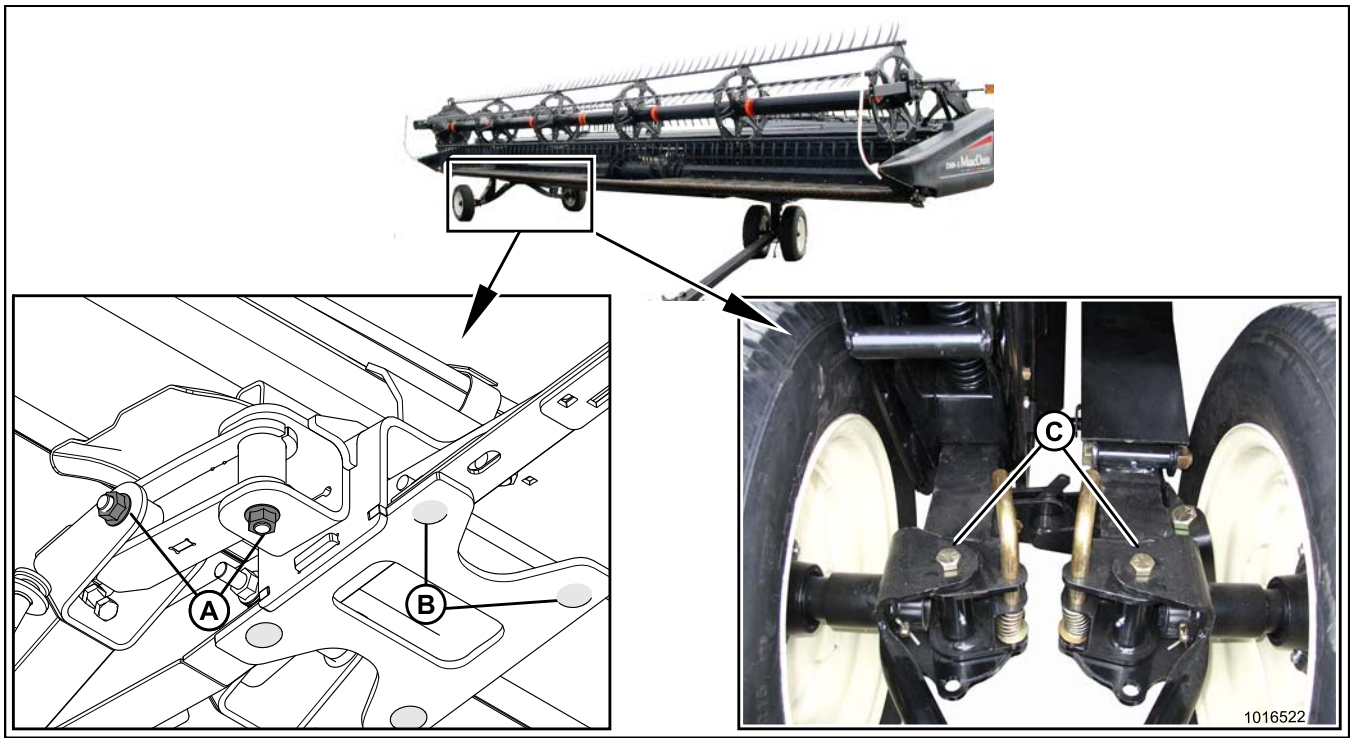


Figure 5.326: Axle Bolts

1. Check and tighten axle bolts **DAILY** until torque is maintained as follows:
   - (A): 180 ft·lbf (244 N·m)
   - (B): 150 ft·lbf (203 N·m)
   - (C): 180 ft·lbf (244 N·m)

5.15.3 Checking Tire Pressure

Check the tire inflation pressure and inflate according to the information provided in Table *5.4 Tire Pressure, page 461*.

Table 5.4 Tire Pressure

Size	Load Range	Pressure
ST205/75 R15	D	65 psi (448 kPa)
	E	80 psi (552 kPa)

WARNING

- **Service tires safely.**
- **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.**

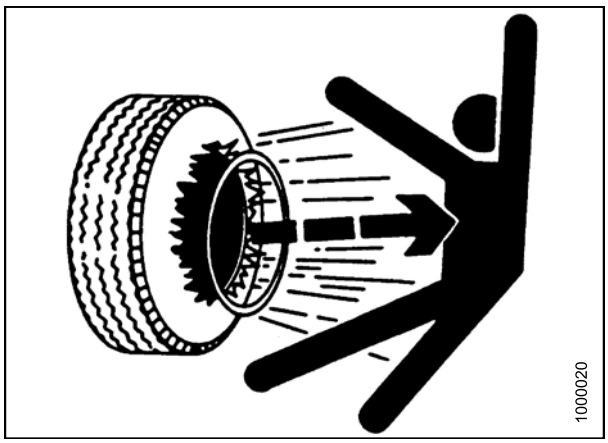


Figure 5.327: Inflation Warning

- **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.**

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 Reel

6.1.1 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 enables the reel fore-aft cylinders to also be quickly relocated to the normal operating location.

MD #B5943

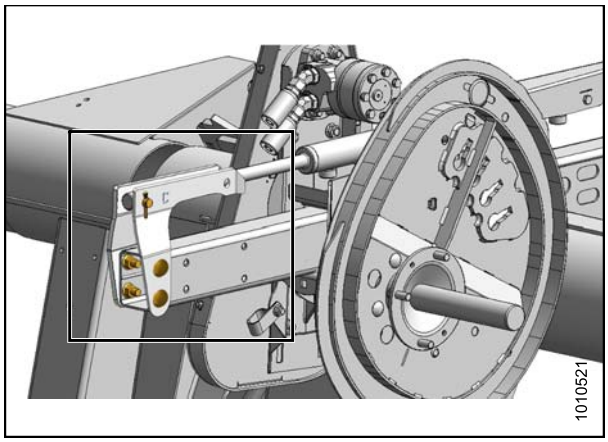


Figure 6.1: Center Arm – Left and Right Similar

6.1.2 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 fingers 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

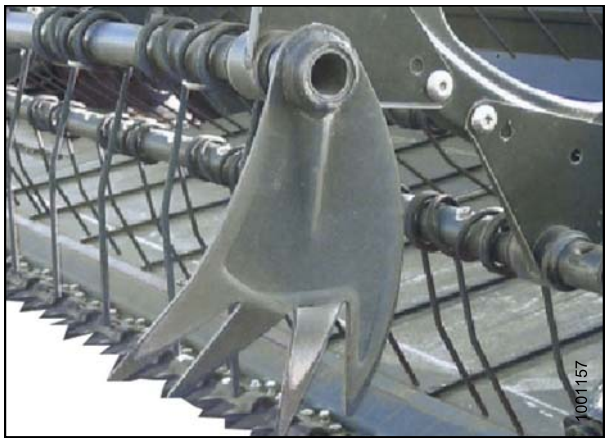


Figure 6.2: Lodged Crop Finger

6.1.3 PR15 Tine Tube Reel Conversion Kit

This kit allows conversion from a six-bat reel to a nine-bat reel.

Order the following bundles according to your header size and type:

- 30 foot – Plastic Fingers MD #B5278[15]
- 30 foot – Steel Fingers MD #B5657
- 35 foot – Plastic Fingers MD #B5674

NOTE:
You must also order additional endshields when converting the reel.

6.1.4 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 nine-bat reels). Hardware and installation instructions are included in the kit.

See your MacDon Dealer for more information.

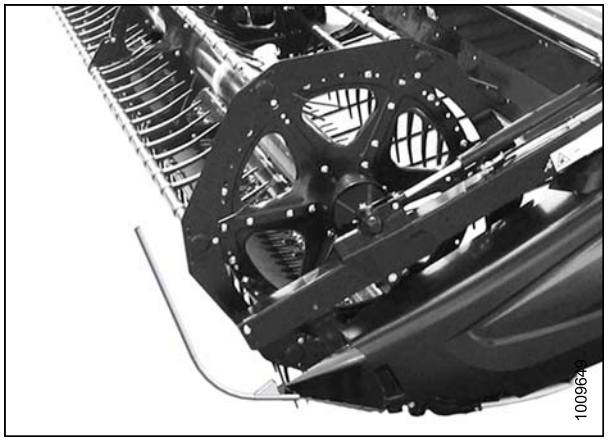


Figure 6.3: Reel Endshields

6.1.5 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.

- Five-Bat Reels – MD #B5825
- Six-Bat Reels – MD #B5826

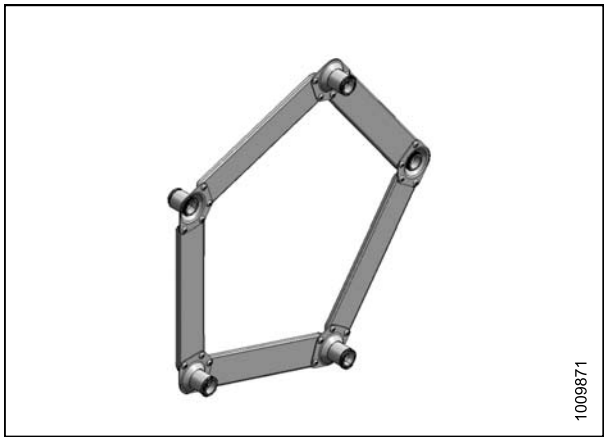


Figure 6.4: Five-Bat Reinforcing Kit Shown – Six-Bat Reinforcing Kit Similar

15. Double-reel units only

6.2 Cutterbar

6.2.1 Cutterbar Wearplate

Cutterbar wearplates are recommended for cutting on the ground when the soil is adhering to the steel.

Order one of the following bundles according to your header size:

- 30 foot – MD #B4839
- 35 foot – MD #B4840
- 40 foot – MD #B4841

Figure 6.5: Cutterbar Wearplates

6.2.2 Knifehead Shield

Knifehead shields attach to the endsheets and reduce the knifehead opening to prevent cut crop, particularly severely lodged crop, from accumulating over the knifehead and damaging the knife drive box and endsheet.

Order the following bundles according to your header size and guard type:

Regular Guards

- 30 foot and larger – MD #220101

Stub Guards

- 30 foot and larger – MD #220103

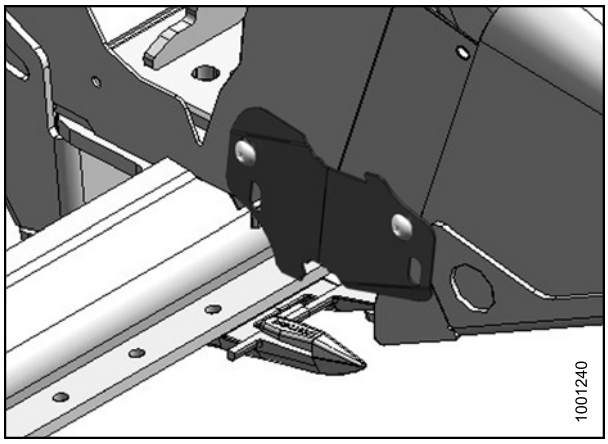


Figure 6.6: Knifehead Shield

6.2.3 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 kit.

Order one of the following bundles according to your header size:

- 30 foot – MD #B5012
- 35 foot – MD #B5013

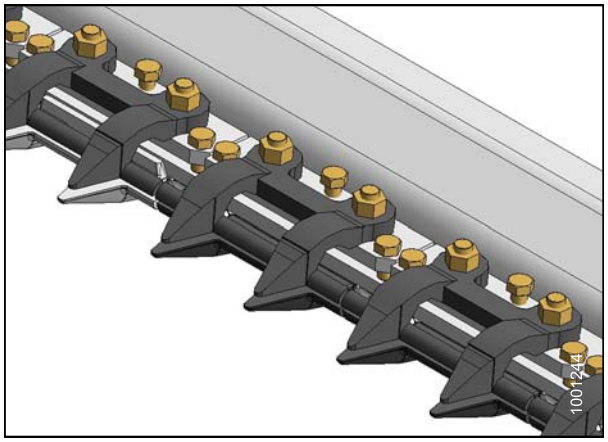


Figure 6.7: Stub Guards

6.2.4 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 bundle.

Order the following bundles according to left or right side:

- Left Side – MD #B5757
- Right Side – MD #B5758

NOTE:
If mounting onto multiple headers, you will also require the auxiliary vertical knife plumbing kit MD #B5406.

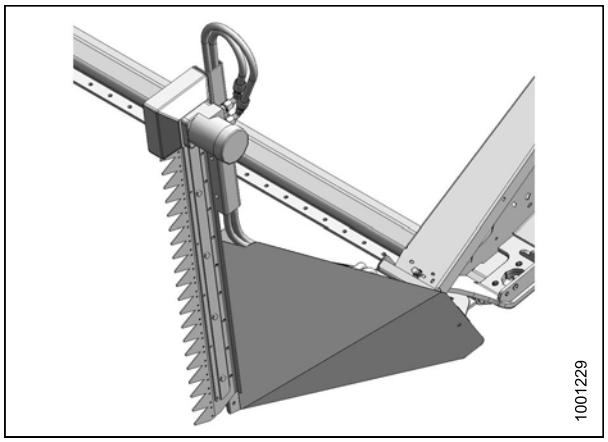


Figure 6.8: Vertical Knife Mount

6.3 Header

6.3.1 Divider Latch Kit

Divider 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 #B5607

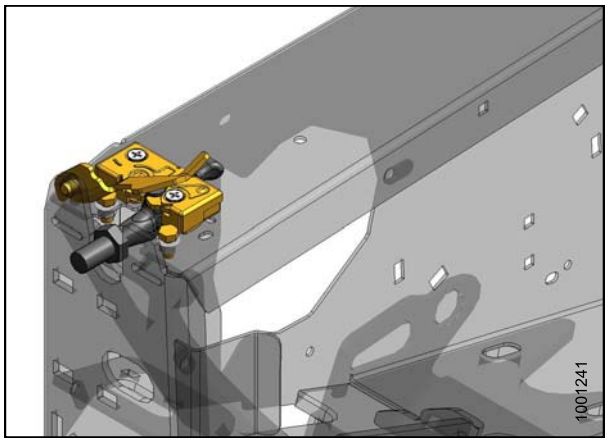


Figure 6.9: Divider Latch

6.3.2 Stabilizer Wheels

Stabilizer wheels help to 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.

MD #C1986

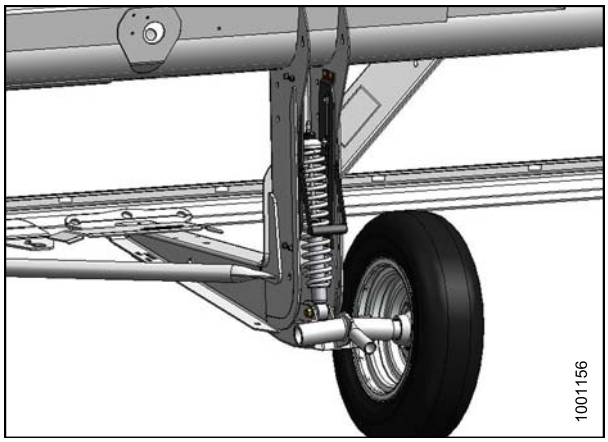


Figure 6.10: Stabilizer Wheel

6.3.3 Stabilizer/Slow Speed Transport Wheels

Stabilizer/slow speed 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. Refer to *6.3.2 Stabilizer Wheels, page 467*.

Stabilizer/slow speed 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

6.4 Crop Delivery

6.4.1 FM100 Feed Auger Flighting

Auger flighting (A) on the FM100 can be configured to specific combines and crop conditions. Refer to *4.1 Float Module Feed Auger Configurations, page 222* for combine/crop specific configurations.

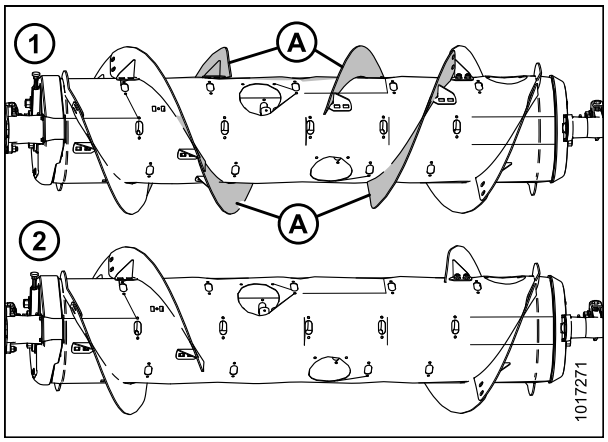


Figure 6.11: FM100 Feed Auger Flighting

6.4.2 European Float Module Seal Kit

The European Float Module Seal kit encloses the transition area between the feed draper and side draper near the front of the header. It also includes side rubber flaps to close off the areas between the float module and header.

This kit is **NOT RECOMMENDED** for use if rocks are present.

Installation instructions are included in the kit.

MD #B5612

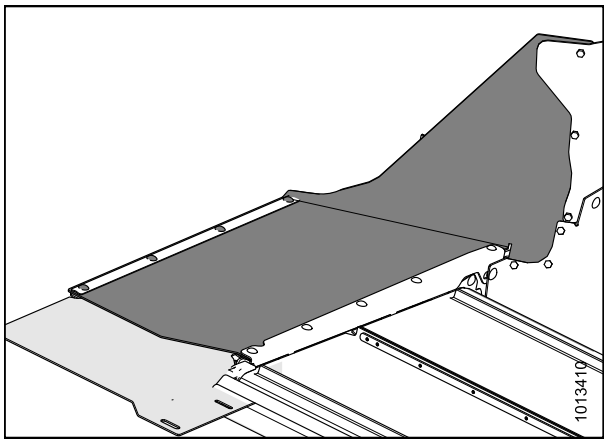


Figure 6.12: European Float Module Seal Kit

6.4.3 Draper Deflector (Narrow)

Narrow 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 while minimizing reel carryover in bushy crops.

Refer to your header Parts Catalog for the necessary parts.

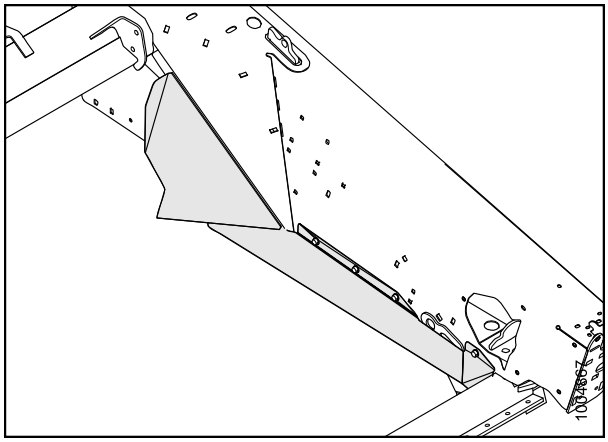


Figure 6.13: Draper Deflector (Narrow)

6.4.4 Draper Deflector (Wide)

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.

Refer to your header Parts Catalog for the necessary parts.

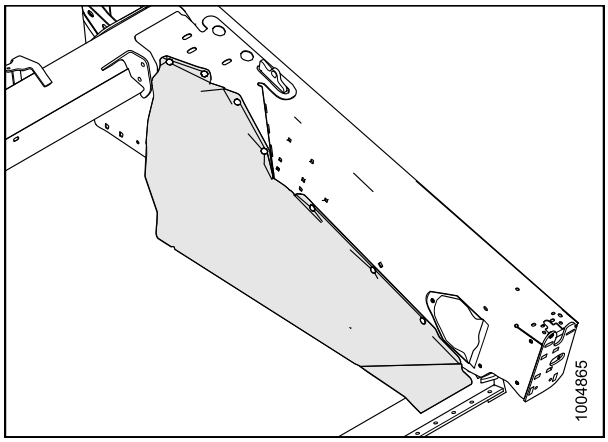


Figure 6.14: Draper Deflector (Wide)

6.4.5 Stripper Bars

Stripper bars improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

Select the stripper bar kit designed for your combine model:

- Lexion (Narrow Body) – MD #B6042
- Lexion (Wide Body) – MD #B6043
- CIH 2377/88 and 2577/2588 – MD #B6042
- JD CTS/STS – MD #B6044
- CIH 7010/8010 – MD #B6045
- NH CR 970/980/9070/9080 – MD #B6045
- NH CX/TX CIH 2366 – MD #B6043
- NH CR 940/960/9040/9060 – MD #B6046

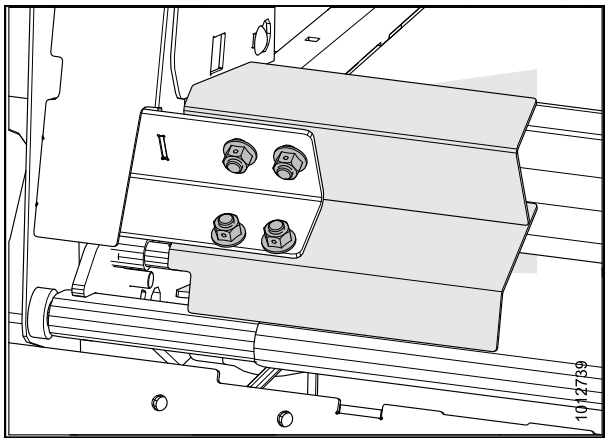


Figure 6.15: Stripper Bar

6.4.6 Upper Cross Auger (UCA)

The upper cross auger attaches 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.

Order from the following bundles according to your header size:

- 25 foot – MD #B4846
- 30 foot – MD #B5965
- 35 foot – MD #B5966
- 40 and 45 foot – MD #B5967

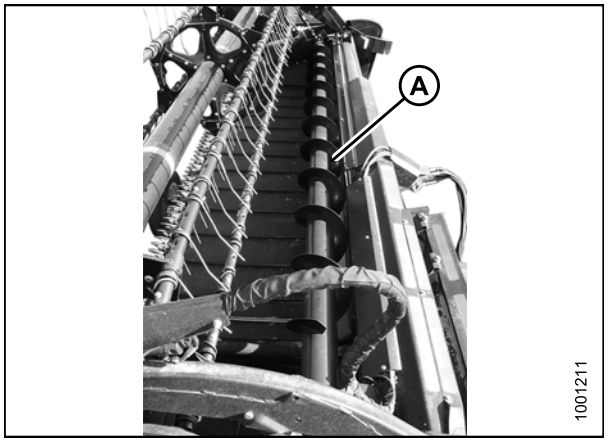


Figure 6.16: Upper Cross Auger

6.4.7 Rice Divider Rods

Rice divider rods attach to the left- and right-hand 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

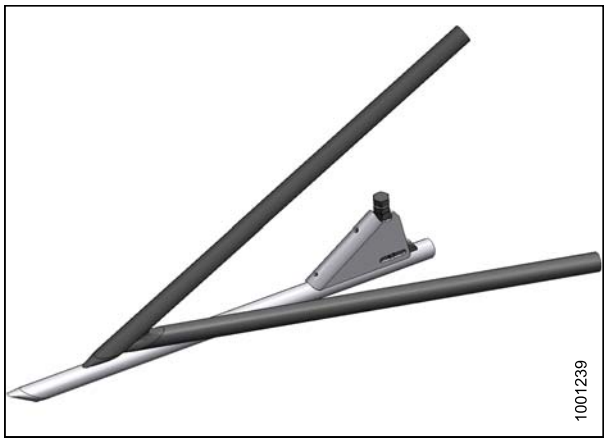


Figure 6.17: Rice Divider Rod

7 Troubleshooting

7.1 Crop Loss at Cutterbar

Symptom	Problem	Solution	Refer to
Does not pick up down crop	Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 51*
	Header angle too low	Increase header angle	*3.7.3 Header Angle, page 63*
	Reel too high	Lower reel	*3.7.8 Reel Height, page 69*
	Reel too far back	Move reel forward	*3.7.9 Reel Fore-Aft Position, page 73*
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.7.4 Reel Speed, page 64* • *3.7.5 Ground Speed, page 65*
	Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	*3.7.10 Reel Tine Pitch, page 82*
		Install lifter guards	See your MacDon Dealer
Heads shattering or breaking off	Reel speed too fast	Reduce reel speed	*3.7.4 Reel Speed, page 64*
	Reel too low	Raise reel	*3.7.8 Reel Height, page 69*
	Ground speed too fast	Reduce ground speed	*3.7.5 Ground Speed, page 65*
	Crop too ripe	Operate at night when humidity is higher	—
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)	*5.8.8 Knifehead Shield, page 361*
Strips of uncut material	Crowding uncut crop	Allow enough room for crop to be fed to cutterbar	—
	Broken knife sections	Replace broken sections	*5.8.1 Replacing Knife Section, page 350*
Excessive bouncing at normal field speed	Float set too light	Adjust header float	*3.7.2 Header Float, page 57*
Divider rod running down standing crop	Divider rods too long	Remove divider rod	*3.7.11 Crop Dividers, page 85*

Symptom	Problem	Solution	Refer to
Crop not being cut at ends	Reel not frowning or not centered in header	Adjust reel frown or reel horizontal position	• *3.7.9 Reel Fore-Aft Position, page 73* • *5.13.2 Reel Frown, page 423*
	Knife hold-downs not adjusted properly	Adjust hold-downs so knife works freely but still keep sections from lifting off guards	*Checking Knife Hold-Downs, page 359*
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.8 Knives, page 350*
	Header is not level	Level header	*3.9 Levelling the Header, page 198*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position and/or finger pitch	• *3.7.9 Reel Fore-Aft Position, page 73* • *3.7.10 Reel Tine Pitch, page 82*
	Divider runs down thick crop at ends preventing proper feeding due to material bridging the cutter guards	Replace 3–4 end guards with stub guards	• *5.8.7 Knife Guards, page 354* • *6.2.3 Stub Guard Conversion Kit, page 466* • See your MacDon Dealer
Bushy or tangled crop flows over divider rod, builds up on endsheets	Divider rods providing insufficient separation	Install long divider rods	*3.7.11 Crop Dividers, page 85*
Cut grain falling ahead of cutterbar	Ground speed too slow	Increase ground speed	*3.7.5 Ground Speed, page 65*
	Reel speed too slow	Increase reel speed	*3.7.4 Reel Speed, page 64*
	Reel too high	Lower reel	*3.7.8 Reel Height, page 69*
	Cutterbar too high	Lower cutterbar	*3.7.1 Cutting Height, page 51*
	Reel too far forward	Move reel back on arms	*3.7.9 Reel Fore-Aft Position, page 73*
	Cutting at speeds over 6 mph (10 km/h) with 10-tooth reel drive sprocket	Replace with 19-tooth reel drive sprocket	*5.14.3 Replacing Reel Drive Sprocket, page 447*
	Worn or broken knife components	Replace components	*5.8 Knives, page 350*

7.2 Cutting Action and Knife Components

Symptom	Problem	Solution	Section
Ragged or uneven cutting of crop	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking Knife Hold-Downs, page 359*
	Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.8 Knives, page 350*
	Knife is not operating at recommended speed	Check engine speed of combine	Refer to the combine operator's manual
	Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.7.4 Reel Speed, page 64* • *3.7.5 Ground Speed, page 65*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	• *3.7.9 Reel Fore-Aft Position, page 73* • *3.7.10 Reel Tine Pitch, page 82*
	Cutterbar too high	Lower cutting height	*3.7.1 Cutting Height, page 51*
	Header angle too flat	Steepen header angle	*3.7.3 Header Angle, page 63*
	Bent knife causing binding of cutting parts	Straighten bent knife and align guards	*5.8.7 Knife Guards, page 354*
	Cutting edge of guards not close enough or parallel to knife sections	Align guards	
	Tangled/tough-to-cut crop	Install stub guards	• See your MacDon Dealer • *5.8.7 Knife Guards, page 354* • *Checking Knife Hold-Downs, page 359* • *6.2.3 Stub Guard Conversion Kit, page 466*
	Reel too far back	Move reel forward	*3.7.9 Reel Fore-Aft Position, page 73*
	Loose knife drive belt	Adjust drive belt tension	*Tensioning Non-Timed Knife Drive Belts, page 374*

Symptom	Problem	Solution	Section
Knife plugging	Reel too high or too far forward	Lower reel or move reel rearward	• *3.7.8 Reel Height, page 69* • *3.7.9 Reel Fore-Aft Position, page 73*
	Ground speed to slow	Increase ground speed	*3.7.5 Ground Speed, page 65*
	Loose knife drive belt	Adjust drive belt tension	*Tensioning Non-Timed Knife Drive Belts, page 374*
	Improper knife hold-down adjustment	Adjust hold-down	*Checking Knife Hold-Downs, page 359*
	Dull or broken knife section	Replace knife section	*5.8.1 Replacing Knife Section, page 350*
	Bent or broken guards	Align or replace guards	*5.8.7 Knife Guards, page 354*
	Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.7.9 Reel Fore-Aft Position, page 73* • *3.7.10 Reel Tine Pitch, page 82*
	Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	• *5.13.1 Reel Clearance to Cutterbar, page 420* • *5.13.2 Reel Frown, page 423*
	Float too heavy	Adjust springs for lighter float	*3.7.2 Header Float, page 57*
	Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	*Cutting on the Ground, page 55*
		Install cut-out sections	*Installing Knifehead Shield, page 362*
		Flatten header angle	*3.7.3 Header Angle, page 63*
	Knife is not operating at recommended speed	Check engine speed of combine	Refer to combine operator’s manual

Symptom	Problem	Solution	Section
Excessive header vibration	Knife on double-knife drive not timed[16]	Adjust knife timing[16]	*Adjusting Double-Knife Timing, page 380*
	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking Knife Hold-Downs, page 359*
	Knife not operating at recommended speed	Check engine speed of combine	Refer to combine operator's manual
	Excessive knife wear	Replace knife	• *5.8.2 Removing Knife, page 352* • *5.8.5 Installing Knife, page 353*
	Loose or worn knifehead pin or drive arm	Tighten or replace parts	*5.8.1 Replacing Knife Section, page 350*
Excessive vibration of float module and header	Incorrect knife speed	Adjust knife speed	*3.7.7 Knife Speed, page 68*
	Driveline U-joints worn	Replace U-joints	See your MacDon Dealer
	Bent cutterbar	Straighten cutterbar	See your MacDon Dealer
Excessive breakage of knife sections or guards	Knife hold-downs not adjusted properly	Adjust hold-downs	*Checking Knife Hold-Downs, page 359*
	Cutterbar operating too low in stony conditions	Raise cutterbar, using skid shoes	*Cutting on the Ground, page 55*
	Float is set too heavy	Adjust float springs for lighter float	*3.7.2 Header Float, page 57*
	Bent or broken guard	Straighten or replace guard	*5.8.7 Knife Guards, page 354*
	Header angle too steep	Flatten header angle	*3.7.3 Header Angle, page 63*
Knife back breakage	Bent or broken guard	Straighten or replace guard	*5.8.7 Knife Guards, page 354*
	Worn knifehead pin	Replace knifehead pin	• *5.8.3 Removing Knifehead Bearing, page 352* • *5.8.4 Installing Knifehead Bearing, page 353*
	Dull knife	Replace knife	• *5.8.2 Removing Knife, page 352* • *5.8.5 Installing Knife, page 353*

16. Applies to timed double-knife drive headers only.

7.3 Reel Delivery

Symptom	Problem	Solution	Section
Reel not releasing material in normal standing crop	Reel speed too fast	Reduce reel speed	*3.7.4 Reel Speed, page 64*
	Reel too low	Raise reel	*3.7.8 Reel Height, page 69*
	Reel tines too aggressive	Reduce cam setting	*3.7.10 Reel Tine Pitch, page 82*
	Reel too far back	Move reel forward	*3.7.9 Reel Fore-Aft Position, page 73*
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)	*3.7.10 Reel Tine Pitch, page 82*
Wrapping on reel end	Reel tines too aggressive	Reduce cam setting	*3.7.10 Reel Tine Pitch, page 82*
	Reel too low	Raise reel	*3.7.8 Reel Height, page 69*
	Reel speed too fast	Reduce reel speed	*3.7.4 Reel Speed, page 64*
	Crop conditions	Install optional endshields	See your MacDon Dealer
	Reel not centered in header	Center reel in header	*5.13.3 Centering the Reel, page 424*
Reel releases crop too quickly	Reel tines not aggressive enough	Increase cam setting	*3.7.10 Reel Tine Pitch, page 82*
	Reel too far forward	Move reel back	*3.7.9 Reel Fore-Aft Position, page 73*
Reel will not lift	Reel lift couplers are incompatible or defective	Change quick coupler	—
Reel will not turn	Quick couplers not properly connected	Connect couplers	Refer to the combine operator's manual
	Reel drive chain disconnected	Connect chain	• *5.14.6 Replacing Drive Chain on Double Reel, page 453* • *5.14.7 Replacing Drive Chain on Single Reel, page 455*
Reel motion uneven under no load	Excessive slack in reel drive chain	Tighten chain	*5.14.2 Adjusting Reel Drive Chain Tension, page 445*

Symptom	Problem	Solution	Section
Reel motion is uneven or stalls In heavy crops	Reel speed too fast	Reduce reel speed	*3.7.4 Reel Speed, page 64*
	Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	*3.7.10 Reel Tine Pitch, page 82*
	Reel too low	Raise reel	*3.7.8 Reel Height, page 69*
	Relief valve on combine (not on combine float module) has low relief pressure setting	Increase relief pressure to manufacturer's recommendations	Refer to the combine operator's manual
	Low oil reservoir level on combine **NOTE:** Sometimes there is more than one reservoir	Fill to proper level	
	Relief valve malfunction	Replace relief valve	
	Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace with high torque (10-tooth or 14-tooth) reel drive sprocket	*5.14.3 Replacing Reel Drive Sprocket, page 447*
Plastic fingers cut at tip	Insufficient reel to cutterbar clearance	Increase clearance	*5.13.1 Reel Clearance to Cutterbar, page 420*
Plastic fingers bent rearward at tip	Reel digging into ground with reel speed slower than ground speed	Raise header	*3.7.1 Cutting Height, page 51*
		Decrease header tilt	*3.7.3 Header Angle, page 63*
		Move reel aft	*3.7.9 Reel Fore-Aft Position, page 73*
Plastic fingers bent forward at tip (opposite of above)	Reel digging into ground with reel speed faster than ground speed	Raise header	*3.7.1 Cutting Height, page 51*
		Decrease header tilt	*3.7.3 Header Angle, page 63*
		Move reel aft	*3.7.9 Reel Fore-Aft Position, page 73*
Plastic fingers bent close to tine tube	Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Correct plugging/cutting issues	*3.10 Unplugging the Cutterbar, page 200*
		Stop reel before plugging becomes excessive	

7.4 Header and Drapers

Symptom	Problem	Solution	Refer to
Header lift insufficient	Low relief pressure	Increase relief pressure	See your MacDon Dealer
Insufficient draper speed	Speed control set too low	Increase speed control setting	*3.7.6 Draper Speed, page 66*
	Relief pressure too low	Increase relief pressure to recommended setting	See your MacDon Dealer
	combine header drive too slow	Adjust to correct speed for combine model	Refer to the combine operator's manual
	Worn out gear pump	Replace gear pump	See your MacDon Dealer
	Pressure compensator (V7) set too low	Adjust to increase setting	Refer to the windrower operator's manual
Draper will not move	Drapers are loose	Tighten drapers	*5.12.3 Adjusting Draper Tension, page 404*
	Drive or idler roller wrapped with material	Loosen draper and clean rollers	
	Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	
	Roller bearing seized	Replace roller bearing	*5.12.6 Header Draper Roller Maintenance, page 410*
	Low hydraulic oil	Fill combine hydraulic oil reservoir to full level	Refer to the combine operator's manual
	Incorrect relief setting at flow control valve	Adjust relief setting	See your MacDon Dealer
Draper stalling	Material not feeding evenly off knife	Lower reel	*3.7.8 Reel Height, page 69*
		Install stub guards	• *5.8.7 Knife Guards, page 354* • *6.2.3 Stub Guard Conversion Kit, page 466* • See your MacDon Dealer
Hesitation in flow of bulky crop	Header angle too low	Increase header angle	*3.7.3 Header Angle, page 63*
	Material overload on drapers	Increase side draper speed	*3.7.6 Draper Speed, page 66*
		Install upper cross auger	*3.12 Upper Cross Auger (UCA), page 202*
		Add flighting extensions	See your MacDon Dealer

Symptom	Problem	Solution	Refer to
Drapers back-feed	Drapers running too slow in heavy crop	Increase draper speed	*3.7.6 Draper Speed, page 66*
Crop is thrown across opening and under opposite side draper	Drapers running too fast in light crop	Reduce draper speed	
Material accumulates inside or under front edge of draper	Deck height improperly adjusted	Adjust deck height	*5.12.5 Adjusting Deck Height, page 408*
Material wrapping at upper cross auger beater bars	Crop conditions do not require beater bars	Remove beater bars	*3.12.1 Removing Beater Bars, page 202*
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)	*3.10 Unplugging the Cutterbar, page 200*

7.5 Cutting Edible Beans

Symptom	Problem	Solution	Refer to
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	*Cutting on the Ground, page 55*
	Float set too light—rides on high spots and does not lower soon enough	Set float for the following conditions: - Dry ground: 100–150 lbf - Wet ground: 50–100 lbf	*3.7.2 Header Float, page 57*
	Reel too high	Fully retract reel cylinders	*3.7.8 Reel Height, page 69*
	Reel too high with cylinders fully retracted	Adjust reel height	*3.7.8 Reel Height, page 69*
	Finger pitch not aggressive enough	Adjust finger pitch	*3.7.10 Reel Tine Pitch, page 82*
	Reel too far aft	Move reel forward until the fingertips skim the soil surface with header on the ground and the center-link properly adjusted	*3.7.9 Reel Fore-Aft Position, page 73*
	Header angle too shallow	Lengthen center-link	*Adjusting Header Angle, page 64*
		Increase header angle can by fully retracting lift cylinders (if cutting on ground)	
	Reel too slow	Adjust reel speed to be marginally faster than ground speed	*3.7.4 Reel Speed, page 64*
	Ground speed too fast	Lower ground speed	*3.7.5 Ground Speed, page 65*
	Skid shoes too low	Raise skid shoes to highest setting	*Cutting on the Ground, page 55*
	Dirt packs on bottom of cutterbar and raises cutterbar off the ground	Install plastic wear strips on bottom of cutterbar and skid shoes	See your MacDon Dealer
	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	—
		Manually clean the bottom of cutterbar when excessive accumulation occurs	

Symptom	Problem	Solution	Refer to
Plants being stripped and complete or partial plants left behind.	Plastic wear strip for cutterbar has been installed over top of steel wear plates	Remove steel cutterbar wear plates when installing the plastic wear strips for cutterbar	—
	Header not level	Level header	*3.9 Levelling the Header, page 198*
	Worn or damaged knife sections	Replace sections or replace knife	*5.8 Knives, page 350*
	Parts of vines get caught in pointed guard tip. (Occurs more in row-cropped beans that are hilled from cultivating.)	Install stub guard conversion kit	*6.2.3 Stub Guard Conversion Kit, page 466*
Excessive losses at dividers	Divider rod running down crop and shattering pods	Remove divider rod	*3.7.11 Crop Dividers, page 85*
	Vines and plants build up on endsheet	Install divider rod	
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	
Crop accumulating at guards and not moving rearward onto drapers	Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.7.10 Reel Tine Pitch, page 82*
	Reel too high	Lower reel	*3.7.8 Reel Height, page 69*
	Minimum reel clearance to cutterbar setting too high	Adjust minimum reel height with cylinders fully retracted	*5.13.1 Reel Clearance to Cutterbar, page 420*
	Reel too far forward	Reposition reel	*3.7.9 Reel Fore-Aft Position, page 73*
Crop wrapping around reel	Reel too low	Raise reel	*3.7.8 Reel Height, page 69*

Symptom	Problem	Solution	Refer to
Reel shattering pods	Reel too far forward	Reposition reel	*3.7.9 Reel Fore-Aft Position, page 73*
	Reel speed too high	Reduce reel speed	*3.7.4 Reel Speed, page 64*
	Bean pods are 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)	*3.7.10 Reel Tine Pitch, page 82*
Cutterbar guards breaking	Float insufficient	Increase float	*3.7.2 Header Float, page 57*
	Excessive number of rocks in field	Consider installing optional stub guards	• *5.8.7 Knife Guards, page 354* • *6.2.3 Stub Guard Conversion Kit, page 466*
		Tip: Install a few guards on one section of the cutterbar and compare the performance of the two different guard styles	
Cutterbar pushing too much debris and dirt	Header too heavy	Readjust float to make header lighter	*3.7.2 Header Float, page 57*
	Header angle too steep	Decrease header angle with lift cylinders	*3.7.3 Header Angle, page 63*
		Shorten the center-link	
	Regular guards push dirt and plug with debris or plug with debris and then push dirt	Install stub guard kit	*6.2.3 Stub Guard Conversion Kit, page 466*
	Insufficient support for header	Install center skid shoes on header	*Cutting on the Ground, page 55*
Crop wrapping around reel ends	Uncut crop interfering on reel ends	Add reel endshields	Refer to the header Parts Catalog.
Cutterbar fills up with dirt	Excessive gap between top of front of draper and cutterbar	Adjust front deck supports to achieve proper clearance between cutterbar and draper	*5.12.5 Adjusting Deck Height, page 408*
		Raise header fully at each end of field (or as required) and shift decks back and forth to help clean out cutterbar	—

Symptom	Problem	Solution	Refer to
Reel occasionally carries over plants in same location	Reel fingers (steel) bent and hooking plants from crop flow on drapers	Straighten fingers (steel)	—
	Dirt accumulation on end of fingers preventing plants from dropping off fingers onto drapers	Raise reel	*3.7.8 Reel Height, page 69*
		Adjust reel fore-aft position to move fingers out of the ground	*3.7.9 Reel Fore-Aft Position, page 73*
Cutterbar pushing too much dirt in certain locations for length of field	Tire tracks or row crop ridges	Cut at angle to crop rows or ridges to allow knife and guards to clean out more effectively	—
	Rolling land along length of field	Cut at 90° to undulations (provided knife floats across without digging in)	
Reel carries over an excessive amount of plants or wads	Excessive accumulation of crop on drapers (up to height of reel center tube)	Increase draper speed	*3.7.6 Draper Speed, page 66*
	Finger pitch too retarded	Increase finger pitch	*3.7.10 Reel Tine Pitch, page 82*

8 Reference

8.1 Torque Specifications

The following tables provide the correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to the torque values specified in the charts (unless otherwise noted throughout this manual).
- Replace hardware with the same strength and grade of bolt.
- Use the torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

8.1.1 Metric Bolt Specifications

Table 8.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*13	*14	1.4	1.6
3.5-0.6	*20	*22	2.2	2.5
4-0.7	*29	*32	3.3	3.7
5-0.8	*59	*66	6.7	7.4
6-1.0	*101	*112	11.4	12.6
8-1.25	20	23	28	30
10-1.5	40	45	55	60
12-1.75	70	78	95	105
14-2.0	113	124	152	168
16-2.0	175	193	236	261
20-2.5	341	377	460	509
24-3.0	589	651	796	879

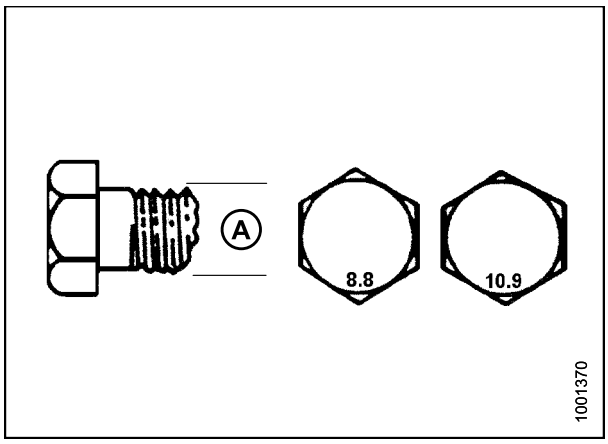


Figure 8.1: Bolt Grades

Table 8.2 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*9	*10	1	1.1
3.5-0.6	*14	*15	1.5	1.7
4-0.7	*20	*22	2.3	2.5
5-0.8	*40	*45	4.5	5
6-1.0	*69	*76	7.7	8.6
8-1.25	*167	*185	18.8	20.8
10-1.5	28	30	37	41
12-1.75	48	53	65	72
14-2.0	77	85	104	115
16-2.0	119	132	161	178
20-2.5	233	257	314	347
24-3.0	402	444	543	600

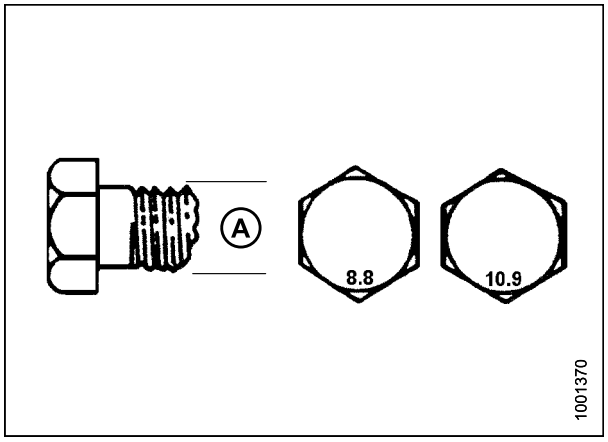


Figure 8.2: Bolt Grades

Table 8.3 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*18	*19	1.8	2
3.5-0.6	*27	*30	2.8	3.1
4-0.7	*41	*45	4.2	4.6
5-0.8	*82	*91	8.4	9.3
6-1.0	*140	*154	14.3	15.8
8-1.25	28	31	38	42
10-1.5	56	62	75	83
12-1.75	97	108	132	145
14-2.0	156	172	210	232
16-2.0	242	267	326	360
20-2.5	472	521	637	704
24-3.0	815	901	1101	1217

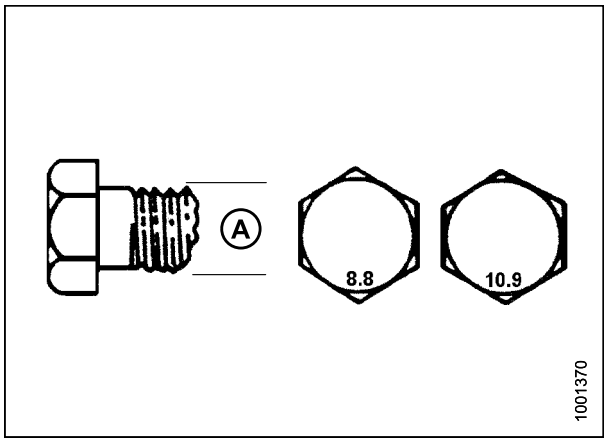


Figure 8.3: Bolt Grades

Table 8.4 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (ft·lbf) (*in·lbf)		Torque (N·m)	
	Min.	Max.	Min.	Max.
3-0.5	*12	*13	1.3	1.5
3.5-0.6	*19	*21	2.1	2.3
4-0.7	*28	*31	3.1	3.4
5-0.8	*56	*62	6.3	7
6-1.0	*95	*105	10.7	11.8
8-1.25	19	21	26	29
10-1.5	38	42	51	57
12-1.75	66	73	90	99
14-2.0	106	117	143	158
16-2.0	165	182	222	246
20-2.5	322	356	434	480
24-3.0	556	614	750	829

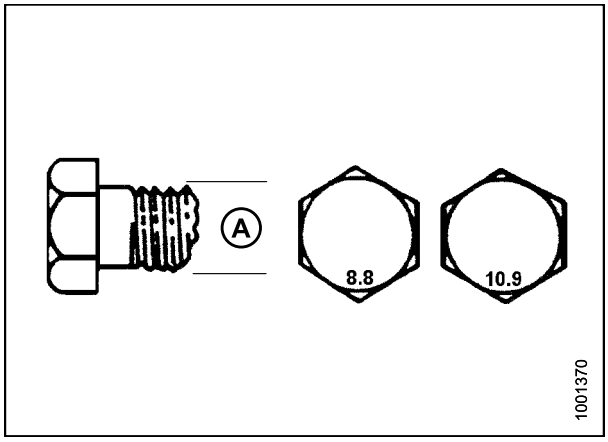


Figure 8.4: Bolt Grades

8.1.2 Metric Bolt Specifications Bolting into Cast Aluminum

Table 8.5 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	ft·lbf	N·m	ft·lbf	N·m
M3	–	–	1	–
M4	–	–	2.6	4
M5	–	–	5.5	8
M6	6	9	9	12
M8	14	20	20	28
M10	28	40	40	55
M12	52	70	73	100
M14	–	–	–	–
M16	–	–	–	–

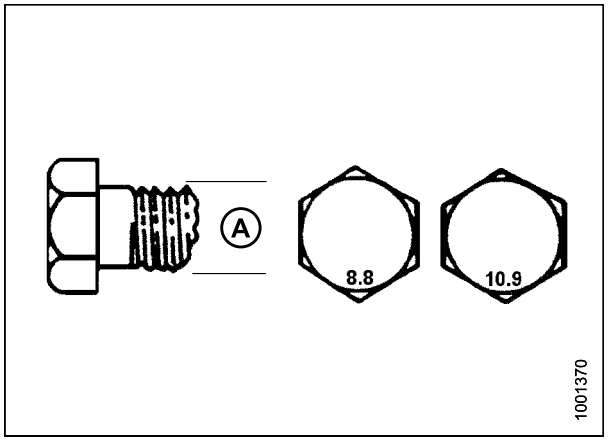


Figure 8.5: Bolt Grades

8.1.3 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between the flared surfaces.
3. Torque the fitting nut (E) to the specified number of flats from finger tight (FFFT) or to a given torque value in Table *8.6 Flare-Type Hydraulic Tube Fittings, page 489*.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on the fitting body (D) and tighten nut (E) with the other wrench to the torque shown.
5. Assess the final condition of the connection.

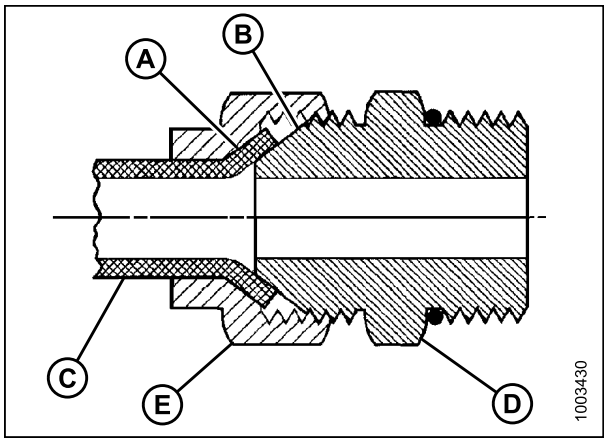


Figure 8.6: Hydraulic Fitting

Table 8.6 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[17]		Flats from Finger Tight (FFFT)	
		ft·lbf	N·m	Tube	Swivel Nut or Hose
-2	5/16–24	3–4	4–5	—	—
-3	3/8–24	5–6	7–8	—	—
-4	7/16–20	13–14	18–19	2-1/2	2
-5	1/2–20	14–15	19–21	2	2
-6	9/16–18	22–24	30–33	2	1-1/2
-8	3/4–16	42–46	57–63	2	1-1/2
-10	7/8–14	60–66	81–89	1-1/2	1-1/2
-12	1-1/16–12	83–91	113–124	1-1/2	1-1/4
-14	1-3/16–12	100–110	136–149	1-1/2	1-1/4
-16	1-5/16–12	118–130	160–176	1-1/2	1
-20	1-5/8–12	168–184	228–250	1	1
-24	1-7/8–12	195–215	264–291	1	1
-32	2-1/2–12	265–291	359–395	1	1
-40	3–12	—	—	1	1

17. Torque values shown are based on lubricated connections as in reassembly.

8.1.4 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off the lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward the lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
4. Apply hydraulic system oil to the O-ring (A).

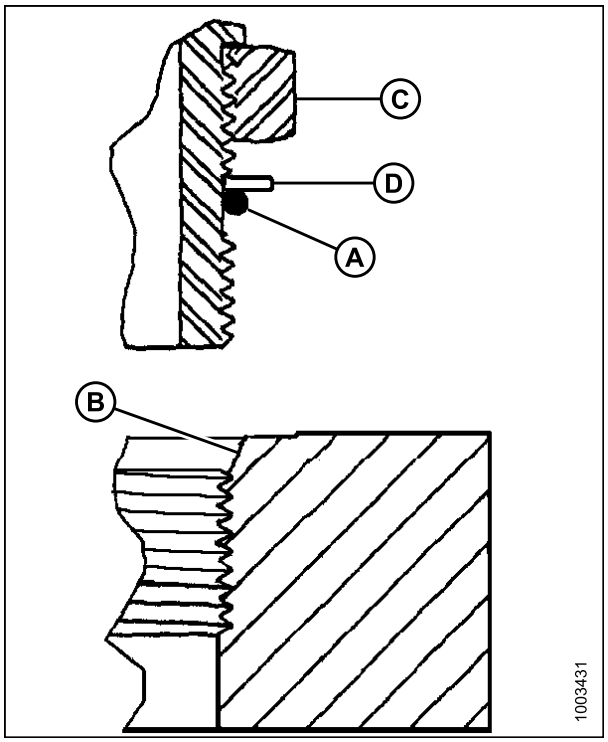


Figure 8.7: Hydraulic Fitting

5. Install fitting (B) into port until back up washer (D) and O-ring (A) contact the part face (E).
6. Position angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten to torque shown. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Check the final condition of the fitting.

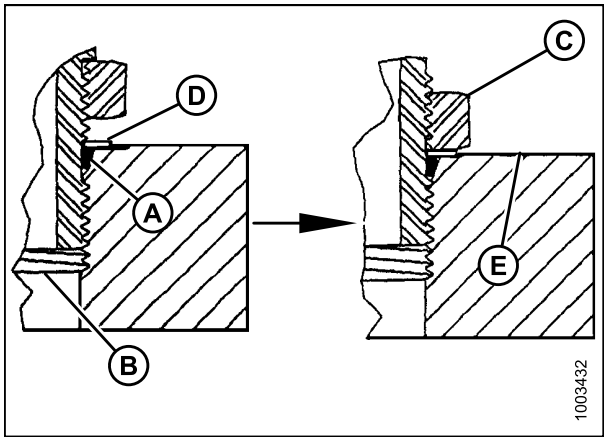


Figure 8.8: Hydraulic Fitting

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings (Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value[18]	
		ft·lbf (*in·lbf)	N·m
-2	5/16–24	*53–62	6–7
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298
-32	2-1/2–12	245–269	332–365

18. Torque values shown are based on lubricated connections as in reassembly.

8.1.5 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until fitting is hand tight.
5. Torque fitting (C) according to the values in Table *8.8 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable), page 492*.
6. Check the final condition of the fitting.

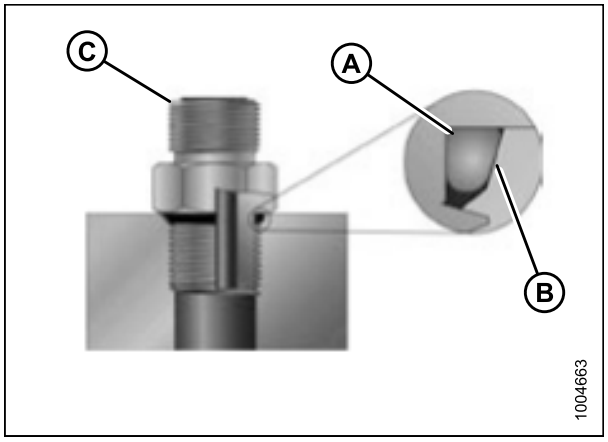


Figure 8.9: Hydraulic Fitting

Table 8.8 O-Ring Boss (ORB) Hydraulic Fittings (Non-Adjustable)

SAE Dash Size	Thread Size (in.)	Torque Value[19]	
		ft·lbf (*in·lbf)	N·m
-2	5/16–24	*53–62	6–7
-3	3/8–24	*106–115	12–13
-4	7/16–20	14–15	19–21
-5	1/2–20	15–24	21–33
-6	9/16–18	19–21	26–29
-8	3/4–16	34–37	46–50
-10	7/8–14	55–60	75–82
-12	1-1/16–12	88–97	120–132
-14	1-3/8–12	113–124	153–168
-16	1-5/16–12	130–142	176–193
-20	1-5/8–12	163–179	221–243
-24	1-7/8–12	199–220	270–298
-32	2-1/2–12	245–269	332–365

19. Torque values shown are based on lubricated connections as in reassembly.

8.1.6 O-Ring Face Seal (ORFS) Hydraulic Fittings

1. Check components to ensure that the sealing surfaces and fitting threads are free of burrs, nicks, scratches, or any foreign material.

Figure 8.10: Hydraulic Fitting

2. Apply hydraulic system oil to the O-ring (B).
3. Align the tube or hose assembly so that the flat face of the sleeve (A) or (C) comes in full contact with O-ring (B).
4. Thread tube or hose nut (D) until hand-tight. The nut should turn freely until it is bottomed out.
5. Torque fittings according to the values in Table *8.9 O-Ring Face Seal (ORFS) Hydraulic Fittings, page 494*.

   NOTE:
   If applicable, hold the hex on the fitting body (E) to prevent rotation of fitting body and hose when tightening the fitting nut (D).

6. Use three wrenches when assembling unions or joining two hoses together.
7. Check the final condition of the fitting.

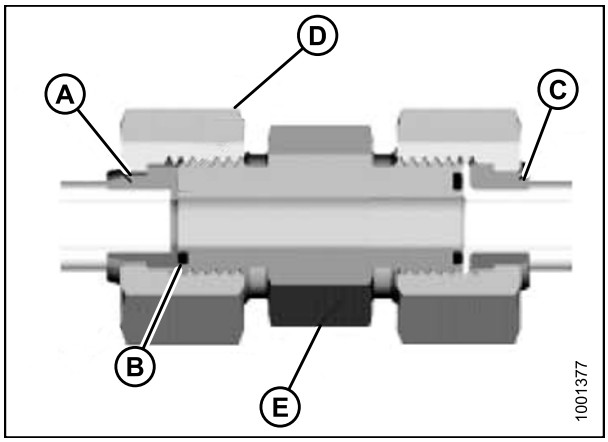


Figure 8.11: Hydraulic Fitting

Table 8.9 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[20]	
			ft·lbf	N·m
-3	Note[21]	3/16	–	–
-4	9/16	1/4	18–21	25–28
-5	Note[21]	5/16	–	–
-6	11/16	3/8	29–32	40–44
-8	13/16	1/2	41–45	55–61
-10	1	5/8	59–65	80–88
-12	1-3/16	3/4	85–94	115–127
-14	Note[21]	7/8	–	–
-16	1-7/16	1	111–122	150–165
-20	1-11/16	1-1/4	151–167	205–226
-24	1–2	1-1/2	232–256	315–347
-32	2-1/2	2	376–414	510–561

20. Torque values and angles shown are based on lubricated connection as in reassembly.
21. O-ring face seal type end not defined for this tube size.

8.1.7 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks and scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to the external pipe threads.
3. Thread the fitting into the port until hand-tight.
4. Torque the connector to the appropriate torque angle. The Turns From Finger Tight (TFFT) values are shown in Table *8.10 Hydraulic Fitting Pipe Thread, page 495*. Make sure that the tube end of a shaped connector (typically 45º or 90º) is aligned to receive the incoming tube or hose assembly. Always finish alignment of fitting in the tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment
5. Clean all residue and any excess thread conditioner with the appropriate cleaner.
6. Assess the final condition of the fitting. Pay special attention to the possibility of cracks to the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check for damage.

NOTE:
*Over-torque failure of fittings may not be evident until the fittings are disassembled.

Table 8.10 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended T.F.F.T	Recommended F.F.F.T
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

8.2 Conversion Chart

Table 8.11 Conversion Chart

Quantity	Inch-Pound Units		Factor	SI Units (Metric)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	acres	acres	x 0.4047 =	hectares	ha
Flow	US gallons per minute	gpm	x 3.7854 =	liters per minute	L/min
Force	pounds force	lbf	x 4.4482 =	Newtons	N
Length	inch	in.	x 25.4 =	millimeters	mm
	foot	ft.	x 0.305 =	meters	m
Power	horsepower	hp	x 0.7457 =	kilowatts	kW
Pressure	pounds per square inch	psi	x 6.8948 =	kilopascals	kPa
			x .00689 =	megapascals	MPa
			÷ 14.5038 =	bar (Non-SI)	bar
Torque	pound feet or foot pounds	ft·lbf	x 1.3558 =	Newton meters	N·m
	pound inches or inch pounds	in·lbf	x 0.1129 =	Newton meters	N·m
Temperature	degrees Fahrenheit	˚F	(˚F-32) x 0.56 =	Celsius	˚C
Velocity	feet per minute	ft/min	x 0.3048 =	meters per minute	m/min
	feet per second	ft/s	x 0.3048 =	meters per second	m/s
	miles per hour	mph	x 1.6063 =	kilometers per hour	km/h
Volume	US gallons	US gal	x 3.7854 =	liters	L
	ounces	oz.	x 29.5735 =	milliliters	ml
	cubic inches	in^3	x 16.3871 =	cubic centimeters	cm^3 or cc
Weight	pounds	lb.	x 0.4536 =	kilograms	kg

8.3 Unloading and Assembly

Refer to the instructions for your specific header for unloading, assembly, and setup procedures that are included with your shipment.

Shipping Destination	Header Description
North America	D1-Series Draper Header and FM100 Combine Float Module
Export (anywhere other than North America)	D1-Series Draper Header and FM100 Combine Float Module

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