FFT FLEX-FLOAT TECHNOLOGY®

MacDon®

FD2 Series
FlexDraper® Combine Header with FM200 Float Module

Operator's Manual

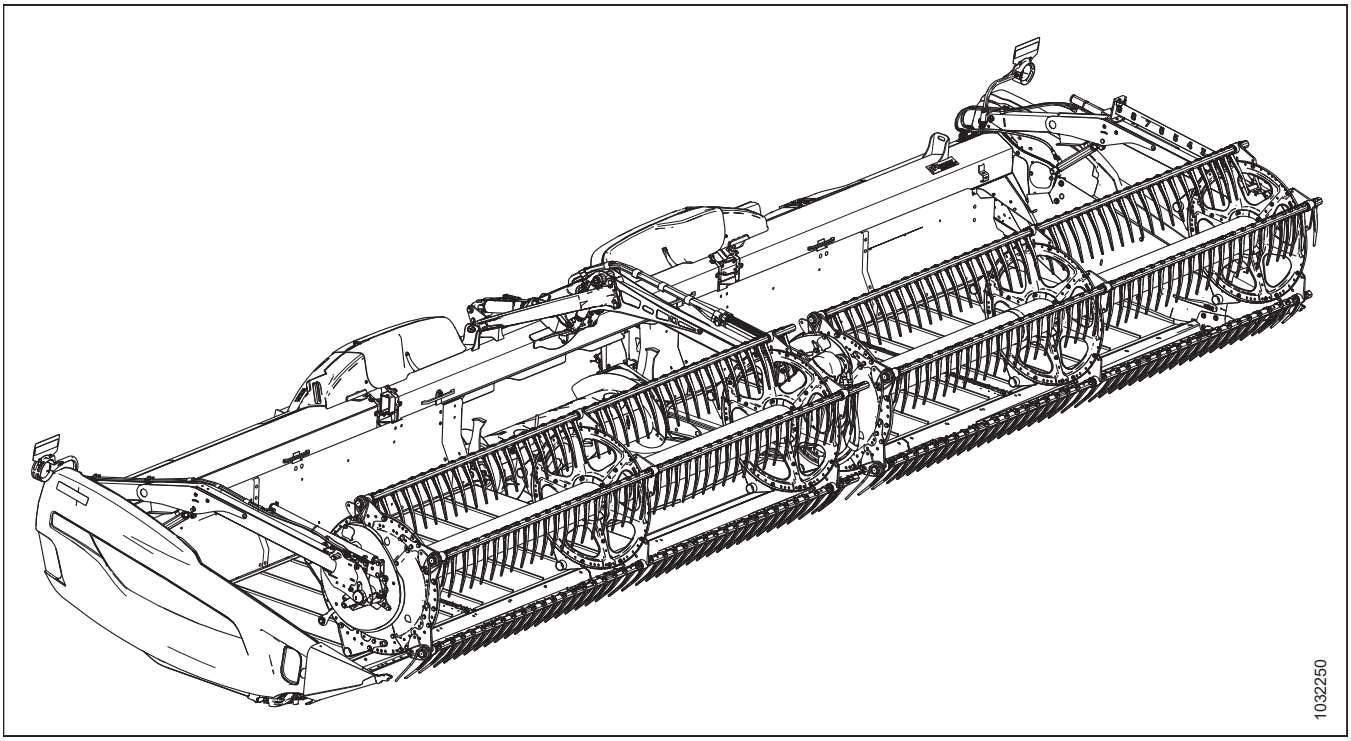
214834 Revision B

Original Instruction

Featuring MacDon FLEX-FLOAT Technology™

The Harvesting Specialists.

FD2 Series FlexDraper® Header



Published: February 2020

Declaration of Conformity

EC Declaration of Conformity

[1] MacDon

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

[2] Combine Header

[3] MacDon FD2 Series

[4] As Per Shipping Document

[5] January 15, 2020

[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:

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

BG

Ние, [1]

декларираме, че следният продукт:

Тип машина: [2]

Наименование и модел: [3]

Сериен номер(а) [4]

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

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

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

Място и дата на декларацията: [5]

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

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

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

CZ

My, [1]

Prohlašujeme, že produkt:

Typ zařízení: [2]

Název a model: [3]

Sériové(á) číslo)a): [4]

splňuje všechna relevantní ustanovení směrnice 2006/42/EC.

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

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

Místo a datum prohlášení: [5]

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

Jméno a adresa osoby oprávněné k vyplnění technického souboru:

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

DA

Vi, [1]

erklærer, at prduktet:

Maskintype [2]

Navn og model: [3]

Serienummer (-numre): [4]

Opfylder alle bestemmelser i direktiv 2006/42/EF.

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

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

Sted og dato for erklæringen: [5]

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

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

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

DE

Wir, [1]

Erklären hiermit, dass das Produkt:

Maschinentyp: [2]

Name & Modell: [3]

Seriennummer (n): [4]

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

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

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

Ort und Datum der Erklärung: [5]

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

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

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

ES

Nosotros [1]

declaramos que el producto:

Tipo de máquina: [2]

Nombre y modelo: [3]

Números de serie: [4]

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

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

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

Lugar y fecha de la declaración: [5]

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

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

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

ET

Meie, [1]

deklareerime, et toode

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumbrid: [4]

vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele.

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

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

Deklaratsiooni koht ja kuupäev: [5]

Deklaratsiooni koostamiseks volitatud isiku nimi ja allkiri: [6]

Tehnilise dokumendi koostamiseks volitatud isiku nimi ja aadress:

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

FR

Nous soussignés, [1]

Déclarons que le produit :

Type de machine : [2]

Nom et modèle : [3]

Numéro(s) de série : [4]

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

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

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

Lieu et date de la déclaration : [5]

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

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

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

The Harvesting Specialists MacDon

1031881

EC Declaration of Conformity

IT

Noi, [1]

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero(i) di serie: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Luogo e data della dichiarazione: [5]

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

Nome e persona autorizzata a compilare il file tecnico:

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

HU

Mi, [1]

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Név és modell: [3]

Sériaszám(ok): [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

A nyilatkozattétel ideje és helye: [5]

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

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

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

LT

Mes, [1]

Pareiškiame, kad šis produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklaracijos vieta ir data: [5]

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

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

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

LV

Mēs, [1]

Deklarējam, ka produkts:

Mašīnas tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklarācijas parakstīšanas vieta un datums: [5]

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

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

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

NL

Wij, [1]

Verklaren dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plaats en datum van verklaring: [5]

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

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

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

PO

My niżej podpisani, [1]

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

spełnia wszystkie odpowiednie przepisy dyrektywy 2006/42/WE.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data i miejsce oświadczenia: [5]

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

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

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

PT

Nós, [1]

Declaramos, que o produto:

Tipo de máquina: [2]

Nome e Modelo: [3]

Número(s) de Série: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Local e data da declaração: [5]

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

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

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

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul mașinii: [2]

Denumirea și modelul: [3]

Număr (numere) serie: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data și locul declarației: [5]

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

Numele și semnătura persoanei autorizate pentru întocmirea cărții tehnice:

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

SR

Mi, [1]

Izjavljujemo da proizvod

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Ispunjava sve relevantne odredbe direktive 2006/42/EC.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Datum i mesto izdavanja deklaracije: [5]

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

Ime i adresa osobe ovlašæene za sastavljanje tehnièke datoteke:

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

SV

Vi, [1]

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plats och datum för intyget: [5]

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

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

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

SL

Mi, [1]

izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska/-e številka/-e: [4]

ustreza vsem zadevnim določbam Direktive 2006/42/ES.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Kraj in datum izjave: [5]

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

Ime in naslov osebe, pooblaščene za pripravo tehnične datoteke:

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

SK

My, [1]

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Miesto a dátum prehlásenia: [5]

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

Meno a adresa osoby oprávnenej zostaviť technický súbor:

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

1031883

EC Declaration of Conformity

[1] MacDon

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

[2] Float Module

[3] MacDon FM200

[4] As Per Shipping Document

[5] January 15, 2020

[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:

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

BG

Ние, [1]

декларираме, че следният продукт:

Тип машина: [2]

Наименование и модел: [3]

Сериен номер(а) [4]

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

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

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

Място и дата на декларацията: [5]

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

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

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

CZ

My, [1]

Prohlašujeme, že produkt:

Typ zařízení: [2]

Název a model: [3]

Sériové(á) číslo)a): [4]

splňuje všechna relevantní ustanovení směrnice 2006/42/EC.

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

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

Místo a datum prohlášení: [5]

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

Jméno a adresa osoby oprávněné k vyplnění technického souboru:

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

DA

Vi, [1]

erklærer, at prduktet:

Maskintype [2]

Navn og model: [3]

Serienummer (-numre): [4]

Opfylder alle bestemmelser i direktiv 2006/42/EF.

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

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

Sted og dato for erklæringen: [5]

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

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

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

DE

Wir, [1]

Erklären hiermit, dass das Produkt:

Maschinentyp: [2]

Name & Modell: [3]

Seriennummer (n): [4]

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

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

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

Ort und Datum der Erklärung: [5]

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

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

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

ES

Nosotros [1]

declaramos que el producto:

Tipo de máquina: [2]

Nombre y modelo: [3]

Números de serie: [4]

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

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

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

Lugar y fecha de la declaración: [5]

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

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

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

ET

Meie, [1]

deklareerime, et toode

Seadme tüüp: [2]

Nimi ja mudel: [3]

Seerianumbrid: [4]

vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele.

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

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

Deklaratsiooni koht ja kuupäev: [5]

Deklaratsiooni koostamiseks volitatud isiku nimi ja allkiri: [6]

Tehnilise dokumendi koostamiseks volitatud isiku nimi ja aadress:

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

FR

Nous soussignés, [1]

Déclarons que le produit :

Type de machine : [2]

Nom et modèle : [3]

Numéro(s) de série : [4]

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

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

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

Lieu et date de la déclaration : [5]

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

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

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

The Harvesting Specialists MacDon

1031890

EC Declaration of Conformity

IT

Noi, [1]

Dichiariamo che il prodotto:

Tipo di macchina: [2]

Nome e modello: [3]

Numero(i) di serie: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Luogo e data della dichiarazione: [5]

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

Nome e persona autorizzata a compilare il file tecnico:

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

HU

Mi, [1]

Ezennel kijelentjük, hogy a következő termék:

Gép típusa: [2]

Név és modell: [3]

Sériaszám(ok): [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

A nyilatkozattétel ideje és helye: [5]

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

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

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

LT

Mes, [1]

Pareiškiame, kad šis produktas:

Mašinos tipas: [2]

Pavadinimas ir modelis: [3]

Serijos numeris (-iai): [4]

atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklaracijos vieta ir data: [5]

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

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

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

LV

Mēs, [1]

Deklarējam, ka produkts:

Mašīnas tips: [2]

Nosaukums un modelis: [3]

Sērijas numurs(-i): [4]

Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Deklarācijas parakstīšanas vieta un datums: [5]

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

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

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

NL

Wij, [1]

Verklaren dat het product:

Machinetype: [2]

Naam en model: [3]

Serienummer(s): [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plaats en datum van verklaring: [5]

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

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

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

PO

My niżej podpisani, [1]

Oświadczamy, że produkt:

Typ urządzenia: [2]

Nazwa i model: [3]

Numer seryjny/numery seryjne: [4]

spełnia wszystkie odpowiednie przepisy dyrektywy 2006/42/WE.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data i miejsce oświadczenia: [5]

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

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

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

PT

Nós, [1]

Declaramos, que o produto:

Tipo de máquina: [2]

Nome e Modelo: [3]

Número(s) de Série: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Local e data da declaração: [5]

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

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

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

RO

Noi, [1]

Declarăm, că următorul produs:

Tipul mașinii: [2]

Denumirea și modelul: [3]

Număr (numere) serie: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Data și locul declarației: [5]

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

Numele și semnătura persoanei autorizate pentru întocmirea cărții tehnice:

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

SR

Mi, [1]

Izjavljujemo da proizvod

Tip mašine: [2]

Naziv i model: [3]

Serijski broj(evi): [4]

Ispunjava sve relevantne odredbe direktive 2006/42/EC.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Datum i mesto izdavanja deklaracije: [5]

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

Ime i adresa osobe ovlašæene za sastavljanje tehnièke datoteke:

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

SV

Vi, [1]

Intygar att produkten:

Maskintyp: [2]

Namn och modell: [3]

Serienummer: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Plats och datum för intyget: [5]

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

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

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

SL

Mi, [1]

izjavljamo, da izdelek:

Vrsta stroja: [2]

Ime in model: [3]

Serijska/-e številka/-e: [4]

ustreza vsem zadevnim določbam Direktive 2006/42/ES.

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Kraj in datum izjave: [5]

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

Ime in naslov osebe, pooblaščene za pripravo tehnične datoteke:

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

SK

My, [1]

týmto prehlasujeme, že tento výrobok:

Typ zariadenia: [2]

Názov a model: [3]

Výrobné číslo: [4]

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

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

EN ISO 4254-1:2013

EN ISO 4254-7:2009

Miesto a dátum prehlásenia: [5]

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

Meno a adresa osoby oprávnenej zostaviť technický súbor:

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

1031891

Introduction

This instructional manual contains information on the FD2 Series FlexDraper® and the FM200 Float Module. It must be used in conjunction with your combine operator's manual.

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

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

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

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

The following conventions are used in this document:

- Right and left are determined from the operator’s position. The front of the header faces the crop; the back of the header attaches to the float module and combine.
- Unless otherwise noted, use the standard torque values provided in Chapter *8.1 Torque Specifications, page 599*.

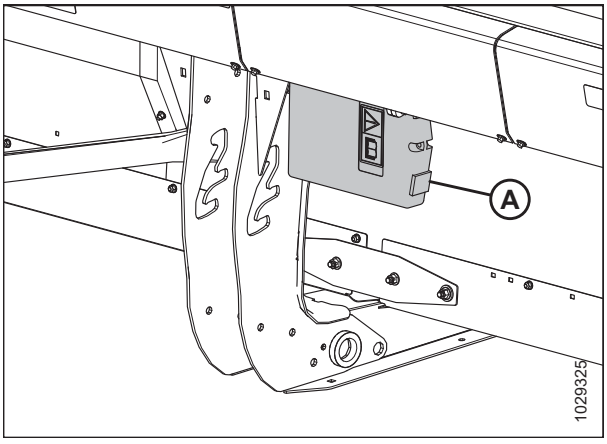
When setting up the machine or making adjustments, review and follow the recommended machine settings in all relevant MacDon publications. Failure to do so may compromise machine function and machine life and may result in a hazardous situation.

The 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. The manual storage case (A) is located at the rear of the header, beside the right outer leg.

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

This document is available in English only.



Manual Storage Location

Summary of Changes

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

Section	Summary of Change	Internal Use Only
Throughout	Revision level increased to B.	Tech Pubs
1.7 Safety Decal Locations, page 8	Changed in safety decals.	Product Matrix
1.8 Understanding Safety Signs, page 12	Changed in safety decals.	Product Matrix
2.2 Specifications, page 21	Updated.	Tech Pubs
2.3 Dimensions, page 24	Updated.	Product Sheet
	Revised illustration.	Tech Pubs
3.2.1 Header Safety Props, page 30	Fixed link.	Tech Pubs
3.2.3 Header Endshields, page 33	Added “Header” to the title to distinguished from Reel Endshield topics.	Engineering
3.2.5 Flex Linkage Cover, page 40	Added image.	Tech Pubs
Removing the Flex Linkage Cover, page 40	Revised procedure.	Tech Pubs
Installing the Flex Linkage Cover, page 41	Revised procedure.	Tech Pubs
Adjusting Stabilizer / Slow Speed Transport Wheels, page 61	Changed topic title from “Adjusting / Slow Speed Transport Wheels” to “Adjusting Stabilizer / Slow Speed Transport Wheels”.	Engineering
Adjusting Stabilizer Wheels, page 63	Changed topic title from “Adjusting Wheels” to “Adjusting Stabilizer Wheels”.	Engineering
Checking and Adjusting Header Float, page 67	Revised illustrations.	Tech Pubs
Locking/Unlocking Header Float, page 72	Revised illustration.	Tech Pubs
Lock/Unlock Header Wings , page 72	Merged two topics into one (“Locking Header Wings” and “Unlocking Header Wings”.	Tech Pubs
Operating in Flex Mode, page 73	Added topic.	Tech Pubs
Operating in Rigid Mode, page 74	Added topic.	Tech Pubs
Checking Wing Balance, page 75	Revised illustrations.	Tech Pubs
Adjusting Wing Balance, page 80	Revised.	Tech Pubs
Adjusting Header Angle from Combine, page 83	Added extra information and note about fore-aft and header tilt system.	Engineering
3.7.6 Reel Speed, page 89	Fixed link.	Tech Pubs

Section	Summary of Change	Internal Use Only
3.7.9 Knife Speed Information, page 92	Added topic.	Tech Pubs
Checking Knife Speed, page 92	Added topic.	Tech Pubs
Checking and Adjusting Reel Height Sensor, page 94	• Added AGCO IDEAL configuration. • Revised illustrations.	• Tech Pubs • Engineering
Replacing Reel Height Sensor, page 97	Revised illustrations.	Engineering
Repositioning Fore-Aft Cylinders – Double Reel, page 99	Revised illustrations.	Engineering
Repositioning Fore-Aft Cylinders – Triple Reel, page 103	Revised illustrations.	Engineering
3.7.13 Upper Cross Auger, page 109	Added topic.	Tech Pubs
Adjusting Upper Cross Auger Position, page 109	Added topic.	Tech Pubs
Installing Crop Dividers, page 113	Revised step re torque.	Engineering
3.8 Auto Header Height Control, page 119	Added image.	Tech Pubs
3.8.5 10 Volt Adapter (MD #B6877) – New Holland Combines Only, page 125	Added topic.	Tech Pubs
Checking Voltage Range from Combine Cab – Case IH 5130/6130/7130; 5140/6140/7140, page 139	Revised illustrations of float indicator.	Engineering
Setting Preset Cutting Height – Case 5130/6130/7130, 5140/6140/7140, page 143	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – Case IH, 120, 230, 240, and 250 Series Combines, page 146	Revised illustrations of float indicator.	Engineering
Setting Preset Cutting Height – Case IH, 120, 230, 240, and 250 Series Combines, page 157	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – Challenger and Massey Ferguson, page 158	Revised illustrations.	Tech Pubs
Calibrating Reel Height Sensor – CLAAS 600 and 700 Series, page 180	Added note to let combine idle to calibrate sensor.	Engineering
Calibrating Reel Height Sensor – CLAAS 8000/7000 Series, page 191	Added note to let combine idle to calibrate sensor.	Engineering
Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 S Series, page 194	Revised illustrations.	Tech Pubs
Adjusting Ground Pressure – Gleaner R65/R66/R75/R76 and Pre-2016 S Series, page 199	Revised illustration.	Tech Pubs
Checking Voltage Range from the Combine Cab – John Deere 70 Series, page 216	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 223	Revised illustrations of float indicator.	Engineering

Section	Summary of Change	Internal Use Only
Adjusting the Manual Header Raise/Lower Rate – John Deere S and T Series, page 229	Revised illustrations of float indicator.	Engineering
Setting Preset Cutting Height – John Deere S and T Series, page 230	Revised illustrations of float indicator.	Engineering
Calibrating Reel Height Sensor – John Deere S and T Series, page 238	Added note to let combine idle to calibrate sensor.	Engineering
Checking Voltage Range from the Combine Cab – John Deere S7 Series, page 244	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – New Holland CR/CX Series, page 252	Revised illustrations of float indicator.	Engineering
Setting Preset Cutting Height – New Holland CR/CX Series, page 260	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – New Holland CR Series, page 261	Revised illustrations of float indicator.	Engineering
Checking Voltage Range from the Combine Cab – New Holland CR Series, page 261	Revised illustrations of float indicator.	Engineering
Removing Tow-Bar, page 282	Revised instructions and illustrations.	Tech Pubs
Storing Tow-Bar, page 285	Revised instructions and illustrations.	Tech Pubs
Moving Front (Left) Wheels into Field Position, page 286	Revised instructions and illustrations.	Tech Pubs
Moving Rear (Right) Wheels into Field Position, page 288	Revised illustrations.	Tech Pubs
Moving Front (Left) Wheels into Transport Position, page 290	Revised instructions and illustrations.	Tech Pubs
Moving Rear (Right) Wheels into Transport Position, page 291	Revised illustrations.	Tech Pubs
Removing Tow-Bar from Storage, page 293	Revised instructions and illustrations.	Tech Pubs
Attaching Tow-Bar, page 294	Revised instructions and illustrations.	Tech Pubs
4.1 FM200 Feed Auger Configurations, page 299	Changed standard configuration of AGCO IDEAL™ Series from Medium to Narrow	ECN 59301
4.1 FM200 Feed Auger Configurations, page 299	Changed optional configuration of AGCO IDEAL™ Series from Wide to Medium	Engineering
4.1 FM200 Feed Auger Configurations, page 299	Removed Fendt IDEAL™ from the list; all IDEAL models are under AGCO IDEAL™ Series	Engineering
4.9.1 Detaching Header from FM200 Float Module, page 373	Revised procedures.	Tech Pubs

Section	Summary of Change	Internal Use Only
4.9.2 Attaching Header to FM200 Float Module, page 377	Revised procedures.	
5 Maintenance and Servicing, page 383	Updated location of manual case.	Product Matrix
5 Maintenance and Servicing, page 383	Fixed link to maintenance record.	Tech Pubs
Every 50 Hours, page 390	added 3-pc. upper cross auger illustration.	Tech Pubs
5.3.2 Greasing Procedure, page 399	Added illustrations.	Tech Pubs
5.7.3 Adjusting Feed Auger Drive Chain Tension, page 424	Revised instructions.	Engineering
Every 50 Hours, page 390	Updated illustration for FM200 every 100-hr. service intervals – added remote grease lines for auger pivot. Changed service interval from 100-hr to 50-hr.	Engineering
5.8.2 Removing Knife, page 441	Revised illustration.	Tech Pubs
5.8.5 Installing Knife, page 443	Revised illustrations.	Tech Pubs
Replacing Reel Endshield Supports, page 558	Revised illustrations.	Tech Pubs
5.8.6 Spare Knives, page 444	Revised illustration.	Tech Pubs
5.8.9 Knifehead Shield, page 468	Added topics.	Tech Pubs
5.8.7 Pointed Knife Guards and Hold-Downs, page 445	Removed topic “Pointed Guard Configurations” and added content to “Pointed Knife Guards and Hold-Downs”	Tech Pubs
Pointed Knife Guards on Single-Knife Headers, page 446	Changed title from “Single-Knife Headers” to “Pointed Knife Guards on Single-Knife Headers”	Tech Pubs
Pointed Knife Guards on FD240 Double-Knife Header, page 447	Changed title from “FD240 Double-Knife Header” to “Pointed Knife Guards on FD240 Double-Knife Header”	Tech Pubs
Pointed Knife Guards on FD241 Double-Knife Header, page 448	Changed title from “FD241 Double-Knife Header” to “Pointed Knife Guards on FD241 Double-Knife Header”	Tech Pubs
Pointed Knife Guards on FD250 Double-Knife Header, page 449	Changed title from “FD250 Double-Knife Header” to “Pointed Knife Guards on FD250 Double-Knife Header”	Tech Pubs
5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458	Removed topic “Stub Guard Configurations” and added content to “PlugFree™ Short Knife Guards and Hold-Downs”	Tech Pubs

Section	Summary of Change	Internal Use Only
PlugFree™ Short Knife Guards on Single-Knife Headers, page 459	Changed title from “Single-Knife Headers” to “Short Knife Guards on Single-Knife Headers”	Tech Pubs
PlugFree™ Short Knife Guards on Double-Knife Headers – All Sizes Except FD241, page 460	Changed title from “Double-Knife Header – All Sizes Except FD241” to “Short Knife Guards on Double-Knife Header – All Sizes Except FD241”	Tech Pubs
PlugFree™ Short Knife Guards on FD241 Double-Knife Header, page 461	Changed title from “FD241 Double-Knife” to “Short Knife Guards on FD241 Double-Knife Header”	Tech Pubs
Installing Knife Drive Box, page 475	Revised callouts and updated torque value.	Tech Pubs
5.14 FM200 Stripper Bars and Feed Deflectors, page 509	Added topic.	Tech Pubs
5.14.1 Removing Stripper Bars, page 509	Added topic.	Tech Pubs
5.14.2 Installing Stripper Bars, page 510	Added topic.	Tech Pubs
5.14.3 Replacing Feed Deflectors on New Holland CR Combines, page 510	Added topic.	Tech Pubs
5.15.1 Removing Side Drapers, page 512	Revised illustration of side draper connectors.	Tech Pubs
5.15.2 Installing Side Drapers, page 513	Revised illustration of side draper connectors.	Tech Pubs
5.15.4 Adjusting Side Draper Tracking, page 515	Revised topic.	Tech Pubs
Removing Side Draper Deck Idler Roller, page 517	Revised illustration and step for removing draper.	Tech Pubs
Installing Side Draper Deck Idler Roller, page 521	Revised illustration and step for installing draper.	Tech Pubs
Removing Side Draper Drive Roller, page 522	Revised illustration and step for removing draper.	Tech Pubs
Installing Side Draper Drive Roller, page 526	Revised illustration and step for installing draper.	Tech Pubs
Replacing Reel Endshields at Outboard Cam End, page 550	Added topic.	Tech Pubs
5.16.6 Reel Endshields, page 550	Revised.	Tech Pubs
Replacing Reel Endshields at Inboard Cam End, page 552	Added topic.	Tech Pubs
Replacing Reel Endshields at Outboard Tail End, page 554	Added topic.	Tech Pubs
Replacing Reel Endshields at Inboard Tail End, page 556	Added topic.	Tech Pubs

Section	Summary of Change	Internal Use Only
5.17.6 Replacing Reel Speed Sensor, page 571	Added topics.	Tech Pubs
Replacing Challenger, Gleaner, and Massey Ferguson Reel Speed Sensor, page 571	Added topics.	Tech Pubs
Replacing John Deere Reel Speed Sensor, page 572	Added topics.	Tech Pubs
Replacing CLAAS 400 Series Reel Speed Sensor, page 572	Added topics.	Tech Pubs
Replacing CLAAS 400 Series Reel Speed Sensor, page 572	Revised callouts and steps.	Tech Pubs
Replacing CLAAS 500/700 Series Reel Speed Sensor, page 573	Added topics.	Tech Pubs
6.1.1 Crop Lifter Storage Racks, page 577	Revised information.	Product Sheet
6.1.3 Grain Crop Lifters, page 577	Revised information.	Product Sheet
6.1.2 Divider Storage Bracket Kit, page 577	Added topic.	Product Sheet
6.1.5 Full Interface Filler Kit, page 578	Added topic.	Product Sheet
6.1.4 Rice Divider Rods, page 578	Revised information.	Product Sheet
6.1.6 Full Length Upper Cross Auger, page 578	Revised information.	Product Sheet
6.2.1 Rock Retarder, page 580	Added topic.	Tech Pubs
6.2.2 VertiBlade™ Vertical Knife Kit, page 580	Added topic.	Product Sheet
6.3.1 FM200 Feed Auger High Wear Flighting Extensions, page 581	Added topic.	Tech Pubs
6.3.3 Stripper Bars, page 581	Added topic.	Tech Pubs
6.3.2 Hillside Extension Kit, page 581	Added topic.	Tech Pubs
6.4.1 ContourMax™ Contour Wheels Kit, page 582	Added information.	Product Sheet
6.4.2 EasyMove™ Transport System, page 583	Added information.	Product Sheet
6.4.3 Header Tilt Footswitch Kit, page 583	Added topic.	Product Sheet
6.4.4 Side Hill Stabilizer Kit, page 583	Added topic.	Product Sheet
6.4.5 Stabilizer Wheels, page 583	Revised title.	Product Sheet
6.4.6 Steel Skid Shoes Kit, page 584	Added topic.	Tech Pubs
6.4.7 Stubble Light Kit, page 584	Added topic.	Product Sheet
Installing Knifehead Shield, page 469	Added topics.	Tech Pubs
8.3 Unloading and Assembly, page 608	Updated part numbers.	Product Sheet
Throughout Knife Section	Replaced “Stub Guards” with “Short Knife Guards” or “PlugFree™ Short Knife Guards”.	Marketing

Section	Summary of Change	Internal Use Only
Inside back cover	Added generic lubricant information.	Tech Pubs
	Removed Wheel Kit from Options and Attachments section	Product Sheet
	Removed Floating crop dividers (MD #B6800) from Options and Attachments.	Product Sheet

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 and left designations are determined from the operator's position, facing forward.

FD2 FlexDraper® Header

Header Model: _____

Serial Number: _____

Year: _____

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

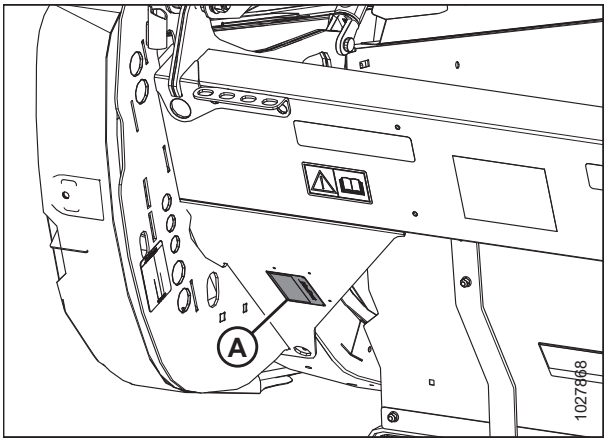


Figure 1: Header Serial Number Plate Location

FM200 Float Module for Combine

Serial Number: _____

Year: _____

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

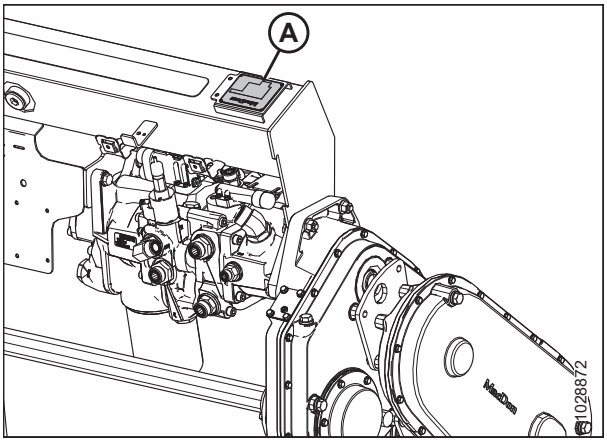


Figure 2: Float Module Serial Number Plate Location

Slow Speed Transport Option

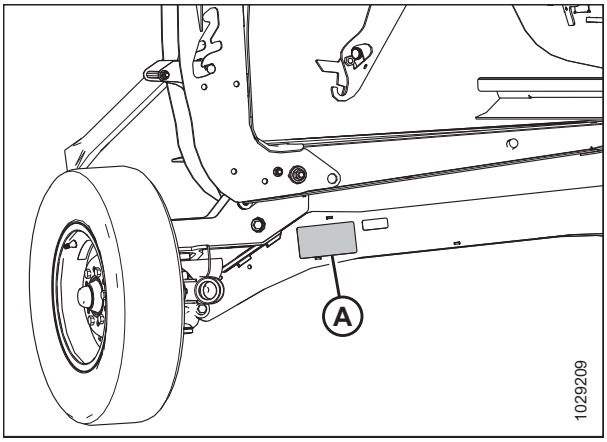
Serial Number: _____

Year: _____

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

NOTE:

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



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Chapter 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. Two signal words, **IMPORTANT** and **NOTE**, identify non-safety related information. Signal words are selected using the following guidelines:

DANGER

Indicates an imminently hazardous situation that, if 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.

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

CAUTION

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

Protect yourself when assembling, operating, and servicing machinery, wear all protective clothing and personal safety devices that could be necessary for the job at hand. Do **NOT** take chances. You may need the following:

- Hard hat
- Protective footwear with slip-resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Respirator or filter mask
- Be aware that exposure to loud noises can cause hearing impairment or loss. Wear suitable hearing protection devices such as earmuffs or earplugs to help protect against loud noises.

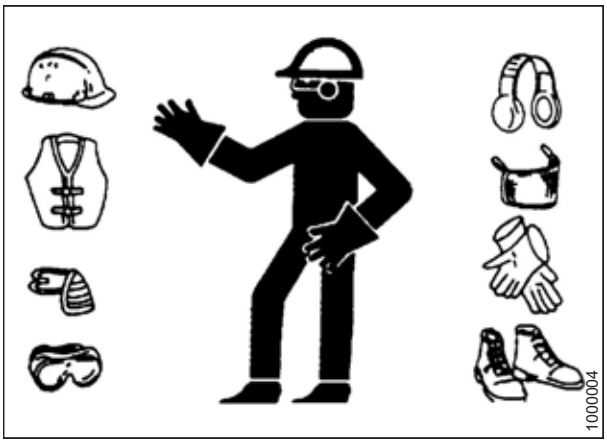


Figure 1.2: Safety Equipment

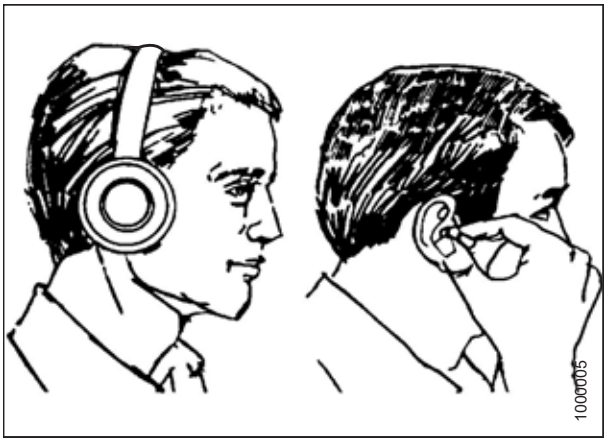


Figure 1.3: Safety Equipment

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

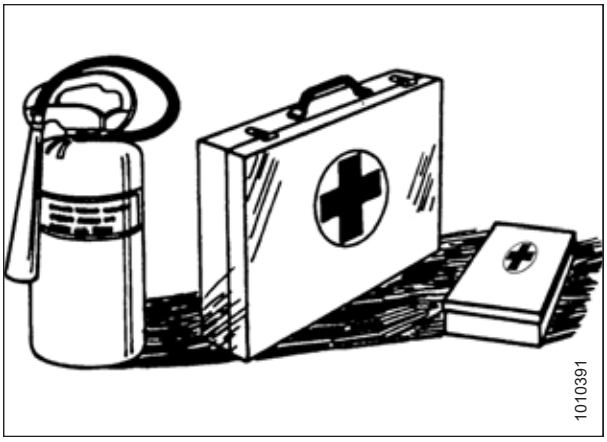


Figure 1.4: Safety Equipment

- 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 shaft and can telescope freely.
- Use only service and repair parts made or approved by 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. Unauthorized modifications may impair machine function and/or safety. It may also shorten the machine's life.
- To avoid injury or death from unexpected startup of the machine, **ALWAYS** stop the engine and remove the key from the ignition before leaving the operator's seat for any reason.

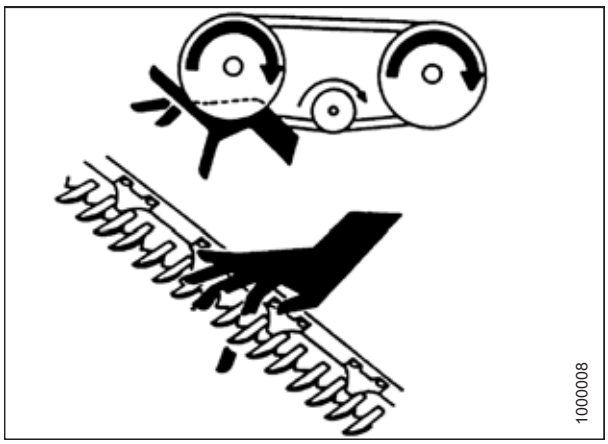


Figure 1.6: Safety around Equipment

- Keep service area clean and dry. Wet and/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 are fire hazards. 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 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
  - Keep work area well lit

Figure 1.8: Safety around Equipment

- 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 lubricant 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.

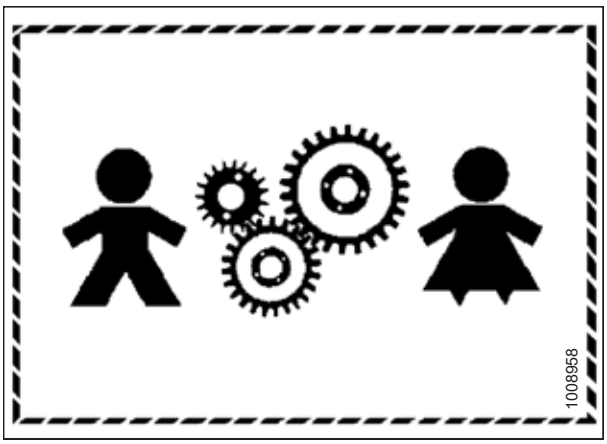


Figure 1.9: Equipment NOT Safe for Children

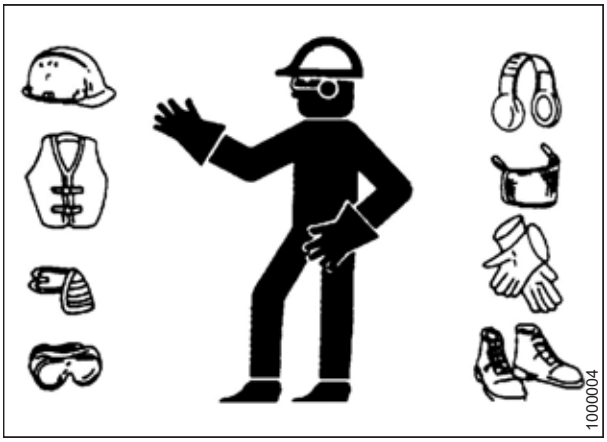


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

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

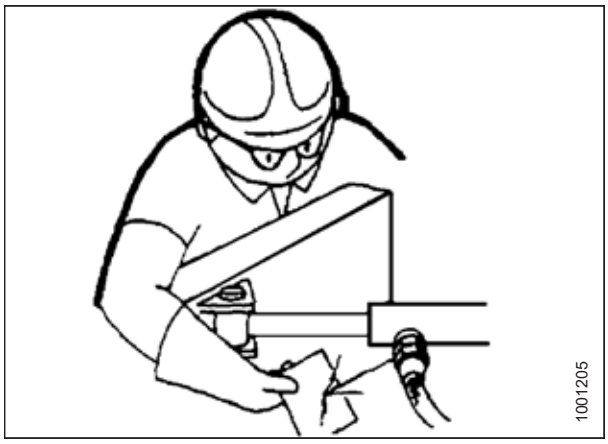


Figure 1.11: Testing for Hydraulic Leaks

- 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.

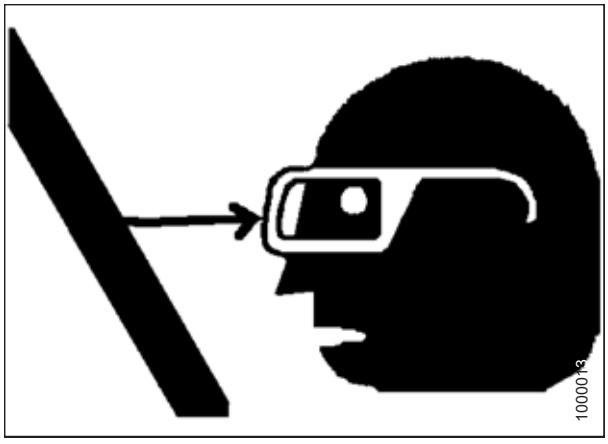


Figure 1.13: Safety around Equipment

1.6 Safety Signs

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

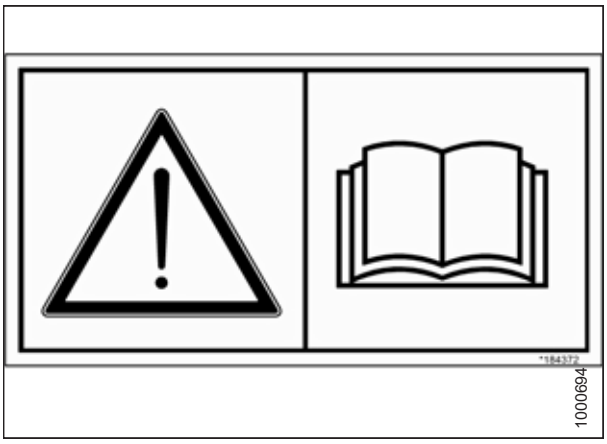


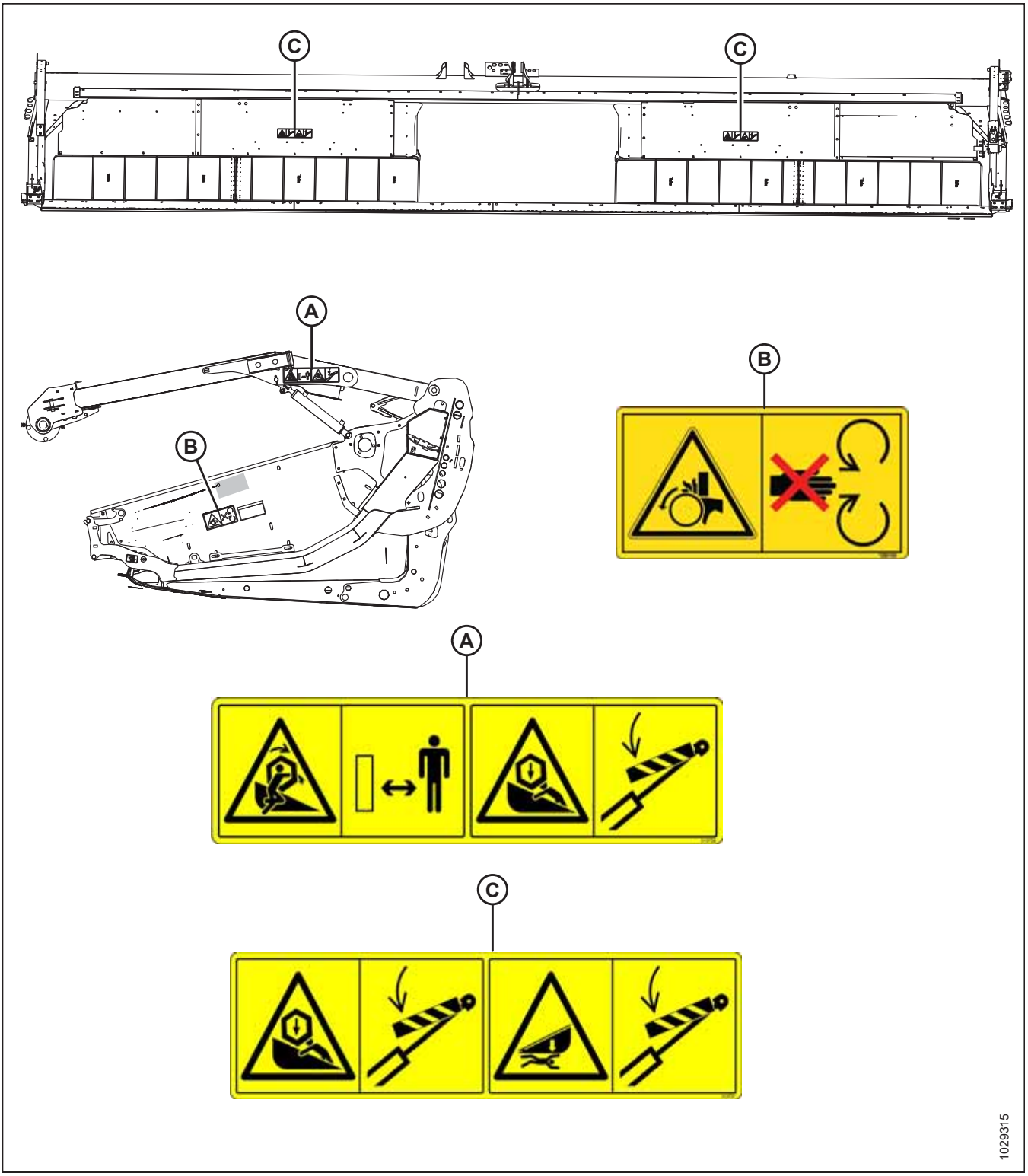
Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

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

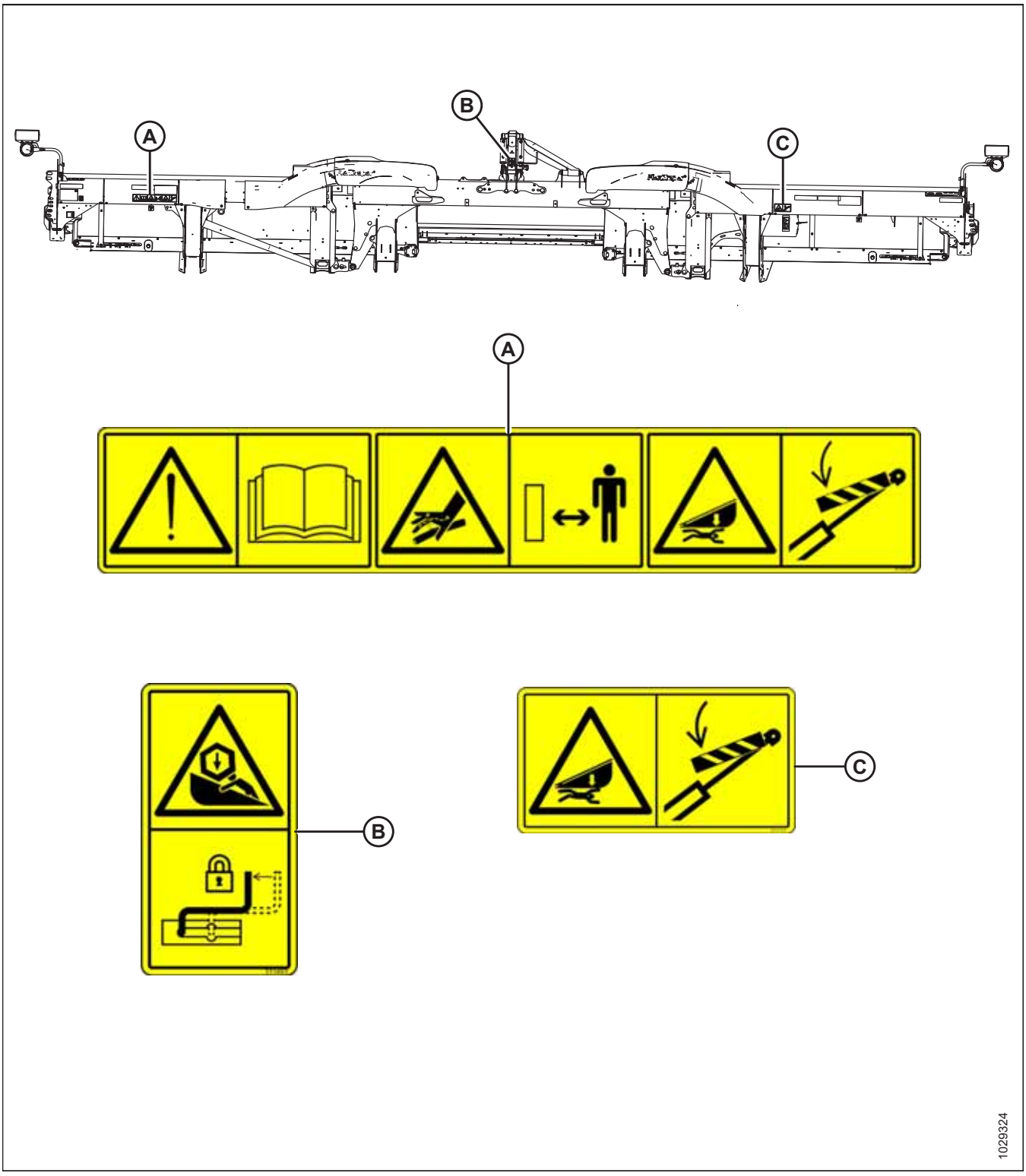
1.7 Safety Decal Locations

Figure 1.15: Endsheets, Reel Arms, and Backsheet



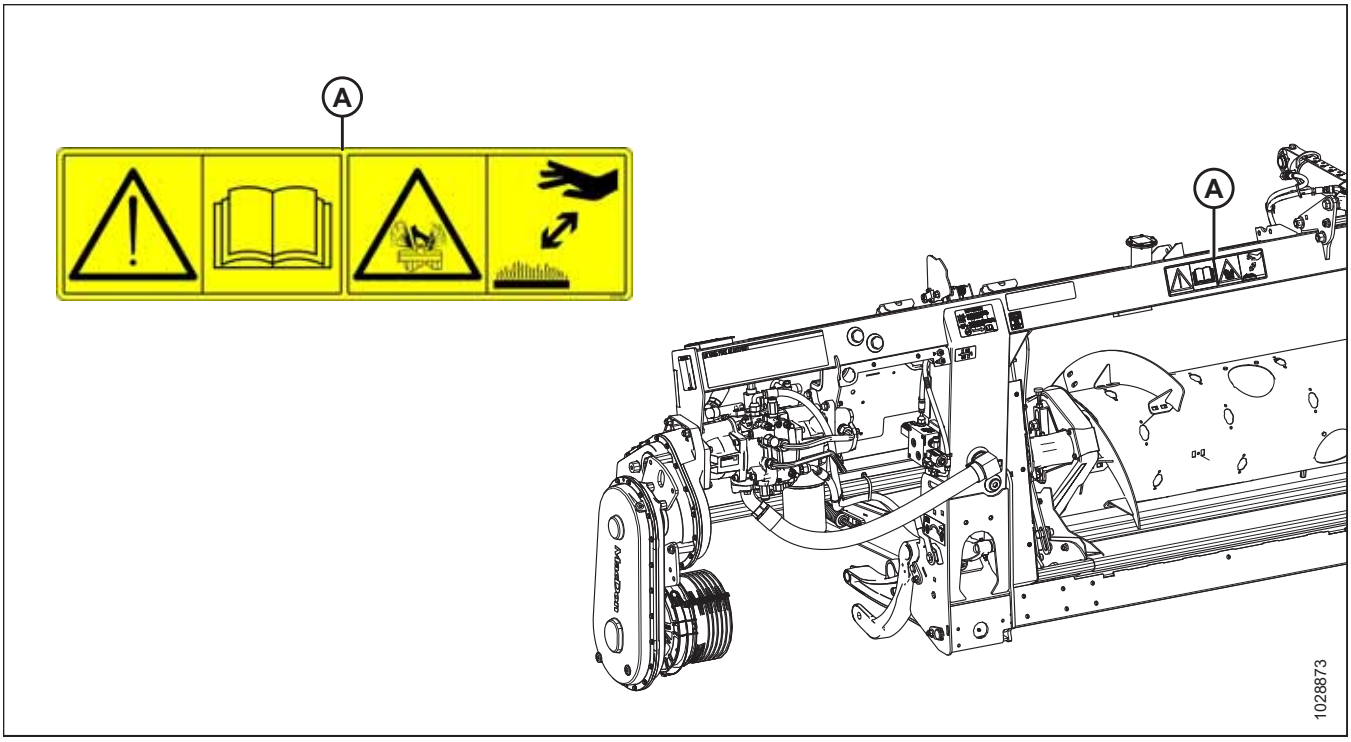
A - MD #313726 – Reel Entanglement/ Hazard (Two Locations) **B - MD #288195 – Danger, Rotating Part (Two Locations)** **C - MD #313727 – Reel/Header Hazard**

Figure 1.16: Backtube



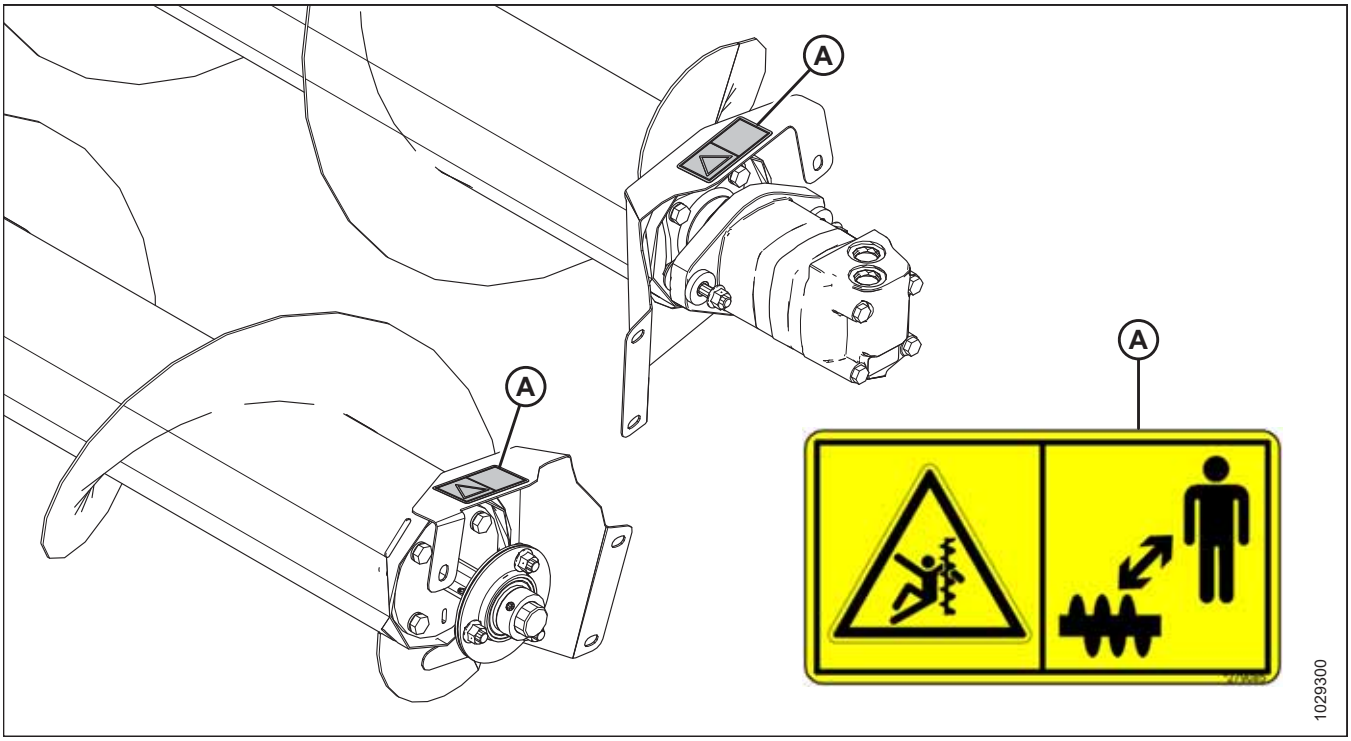
A - MD #313725 – Read Manual / High Pressure Fluid / Header Hazard
B - MD #311493 – Center Prop Lock
C - MD #313733 – Header Crushing Hazard

Figure 1.17: FM200 Float Module



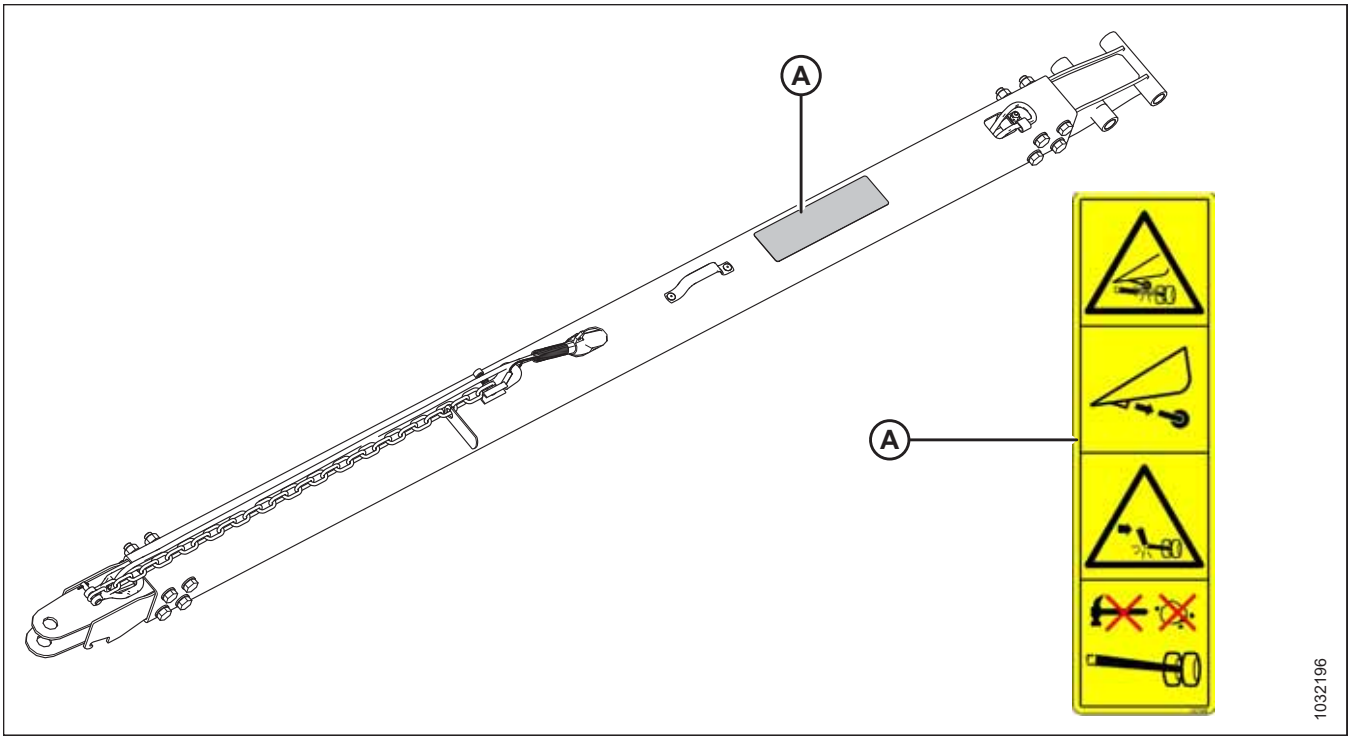
A - MD #313728 – Read Manual / Fluid Spray Hazard

Figure 1.18: Upper Cross Auger



A - MD #279085 – Auger Warning

Figure 1.19: EasyMove™ Transport System – Tow-Bar

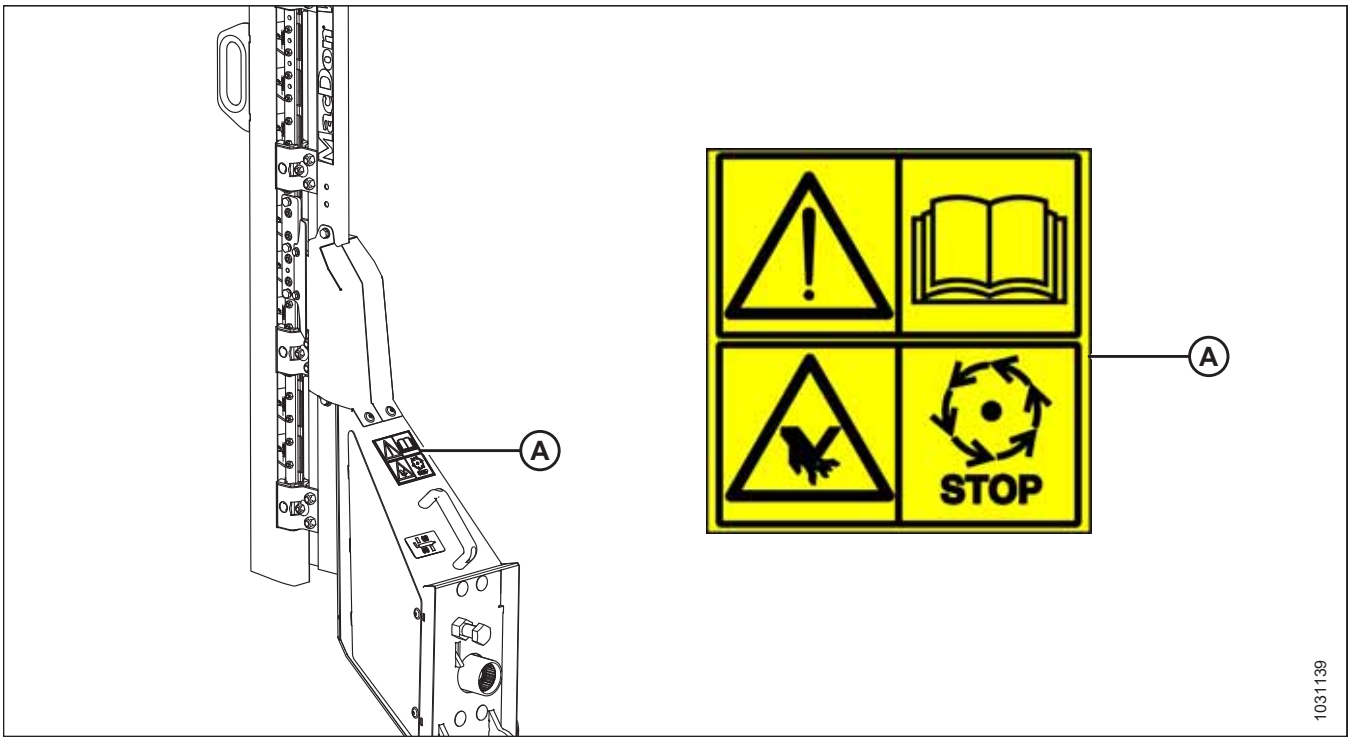


A - MD #327588 – Hitch Damage Hazard

NOTE:

Short tow-bar shown, long tow-bar similar.

Figure 1.20: Vertical Knife



A - MD #313881 – Knife Hazard

1.8 Understanding Safety Signs

MD #174436

High-pressure oil hazard

WARNING

To prevent serious injury, gangrene, or death:

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

Figure 1.21: MD #174436

MD #220799

Loss of control hazard

WARNING

To prevent serious injury or death from loss of control:

- Ensure tow-bar lock mechanism is locked.

Figure 1.22: MD #220799

MD #279085

Auger entanglement hazard

DANGER

To prevent injury from rotating auger:

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

Figure 1.23: MD #279085

MD #288195

Rotating object pinch hazard

CAUTION

To prevent injury:

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

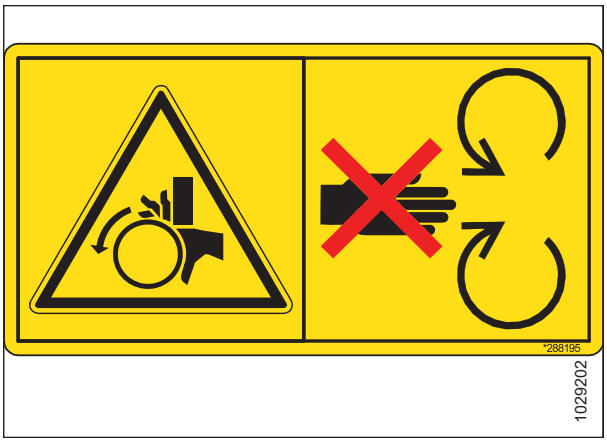


Figure 1.24: MD #288195

MD #311493

Center Prop Lock

WARNING

- To prevent injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage mechanical safety lock on each reel support arm before working on or under reel.

Figure 1.25: MD #311493

MD #313725

Read manual / high pressure fluid / header crushing hazard

DANGER

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

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all 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.

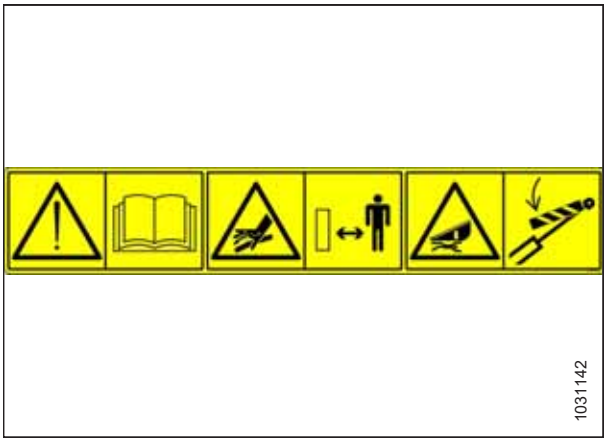


Figure 1.26: MD #313725

- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage safety locks 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.

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

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

WARNING

To prevent serious injury, gangrene, or death:

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

MD #313726

Reel entanglement / reel crushing hazard

DANGER

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

Figure 1.27: MD #313726

MD #313727

Reel/header hazard

DANGER

- To prevent injury from fall of raised reel; fully raise reel, stop the engine, remove the key, and engage mechanical safety lock on each reel support arm before working on or under reel.

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

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

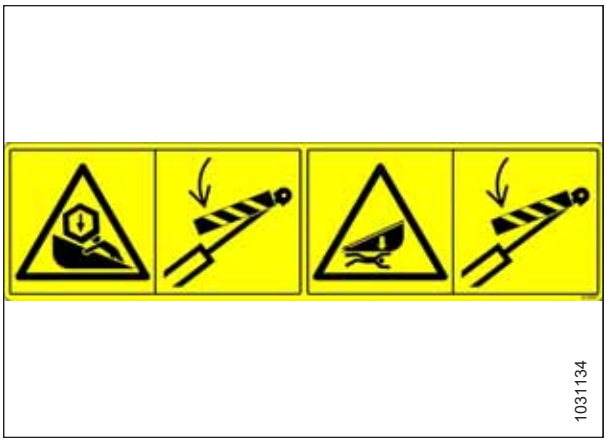


Figure 1.28: MD #313727

MD #313728

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

DANGER

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

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all 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 the ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage safety locks 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.

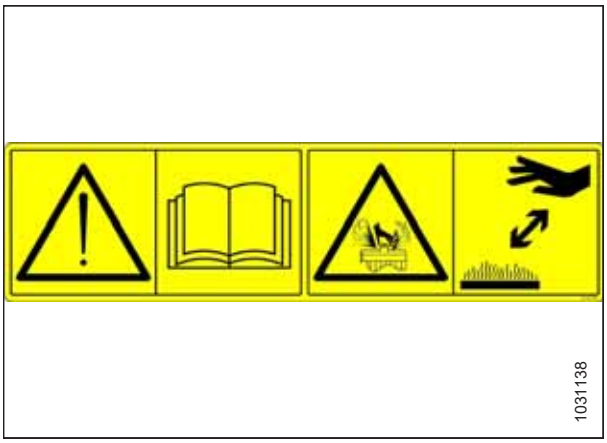


Figure 1.29: MD #313728

CAUTION

To prevent injury:

- Do **NOT** remove fluid fill cap when machine is hot.

- Allow machine to cool down before opening fluid fill cap.
- Fluid is under pressure and may be hot.

MD #313733

Header crushing hazard

DANGER

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

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

Figure 1.30: MD #313733

MD #313881

General hazard pertaining to machine operation and servicing / knife hazard

DANGER

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

- Read the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Do **NOT** allow untrained persons to operate the machine.
- Review safety instructions with all Operators every year.
- Ensure that all 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 the ignition before servicing, adjusting, lubricating, cleaning, or unplugging machine.
- Engage safety locks 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 1.31: MD #313881

WARNING

To prevent injury from sharp cutting knife:

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

MD #327588

Hitch damage hazard

DANGER

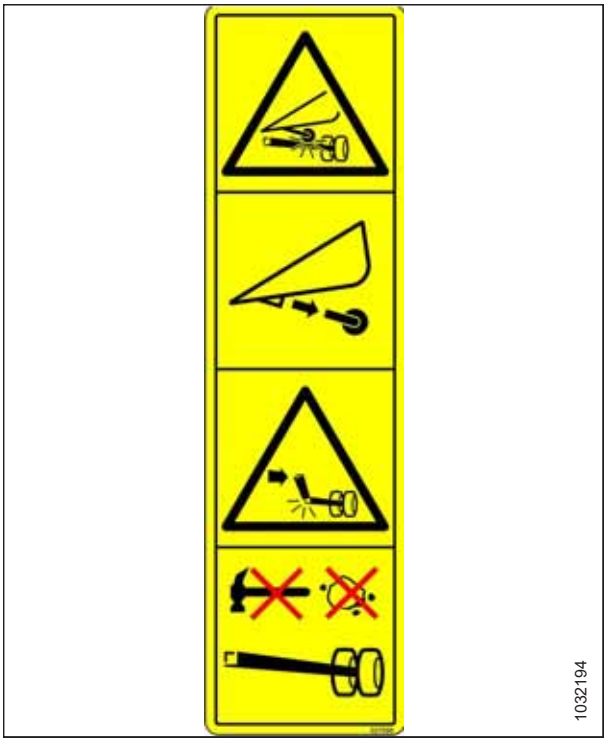


Figure 1.32: MD #327588

Chapter 2: Product Overview

2.1 Definitions

The following terms and acronyms may be used in this manual:

Term	Definition
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 header and machine used to change header angle
CGVW	Combined gross vehicle weight
Export header	Header configuration typical outside North America
FD2 Series header	MacDon FD230, FD235, FD240, FD241, or FD250 FlexDraper® header from the FD2 model number series
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
FM200	Float module used with a D2 or FD2 Series header for combining
FSI	Float setting indicator
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
hp	Horsepower
HPT display	Harvest Performance Tracker display module on an M1 Series Windrower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
North American header	Header configuration typical in North America
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part

Term	Definition
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
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 locking mechanism

2.2 Specifications

The following symbol and letters are used in Table *2.1, page 21* and Table *2.2, page 22*:

FD2 | FM200 | 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; cut width plus divider gather)			
FD230		9.2 m (362 in.)	S
FD235		10.7 m (421 in.)	S
FD240		12.2 m (480 in.)	S
FD241		12.5 m (492 in.)	S
FD250		15.3 m (602 in.)	S
Cutterbar lift range		Varies with combine model	S
Knife			
Single-knife drive (FD230–FD240): hydraulic motor mounted to enclosed heavy duty MacDon knife drive box on the left side of header.			O_F
Double knife drive (FD240–FD250): one hydraulic motor, untimed, one mounted to enclosed heavy duty MacDon knife drive box on each side of header.			O_F
Knife stroke		76 mm (3 in.)	S
Single-knife speed (strokes per minute)	FD230 and FD235	1200–1500 spm	S
Single-knife speed (strokes per minute)	FD240	1200–1400 spm	S
Double-knife speed (strokes per minute)	FD240, FD241, and FD250	1200–1500 spm	S
Knife Sections			
Over-serrated, ClearCut™, bolted, 3.5 serrations per cm (9 serrations per inch)			S
Knife overlap at center (double-knife headers)		3 mm (1/8 in.)	S
Guards and Hold-Downs			
Guard: ClearCut™ pointed, forged and double heat treated (DHT) Hold-down: forged, single adjustment bolt			O_F
Guard: PlugFree™, forged and double heat treated (DHT) Hold-down: forged, dual adjustment bolt			O_F
Guard Angle (Cutterbar on Ground)			
Center-link retracted		1.7 degrees	S
Center-link extended		8.9 degrees	S

Table 2.1 Header Specifications (continued)

Draper (Conveyor) and Decks			
Draper width		1.27 m (50 in.)	S
Draper drive		Hydraulic	S
Draper speed: FM200 Float Module controlled		209 m/min. (687 fpm)	S
Delivery opening width		1905 mm (75 in.)	S
PR15 Pick-Up Reel			
Quantity of tine tubes		5-tine tubes	
Center tube diameter: all reel sizes except FD235 single span		203 mm (8 in.)	S
Finger tip radius	Factory-set	800 mm (31 1/2 in.)	S
Finger tip radius	Adjustment range	766–800 mm (30 3/16–31 1/2 in.)	S
Effective reel diameter (via shaped cam action)		1.650 m (65 in.)	S
Finger length		290 mm (11 in.)	S
Finger spacing (nominal, staggered on alternate bats)		100 mm (4 in.)	S
Reel drive		Hydraulic	S
Reel speed (adjustable from cab, varies with combine model)		0–67 rpm	S

Table 2.2 Header Attachments

FM200 Float Module			
Feed draper	Width	2 m (78 11/16 in.)	S
Feed draper	Speed	107–122 m/min (350–400 fpm)	S
Feed auger	Width	1.630 m (64 1/8 in.)	S
Feed auger	Outside diameter	559 mm (22 in.)	S
Feed auger	Tube diameter	356 mm (14 in.)	S
Feed auger	Speed (varies with combine model)	191–195 rpm (varies with combine model)	S
Oil reservoir capacity		75 liters (20 US gallons)	S
Oil type		Single grade transmission/hydraulic fluid (THF).	—
THF viscosity at 40°C (104°F)		60.1 cSt	—
THF viscosity at 100°C (212°F)		9.5 cSt	—

Table 2.2 Header Attachments (continued)

Driveline overall length	21-tooth spline	Maximum (extended)	1524.4 mm (60 in.)	O_F
Driveline overall length	21-tooth spline	Minimum (compressed)	990.7 mm (39 in.)	O_F
Driveline overall length	6-tooth spline	Maximum (extended)	1546.8 mm (60 7/8 in.)	O_F
Driveline overall length	6-tooth spline	Minimum (compressed)	1013 mm (39 7/8 in.)	O_F
Upper Cross Auger				O_D
Outside diameter			330 mm (13 in.)	—
Tube diameter			152 mm (6 in.)	—
Stabilizer Wheel / Slow Speed Transport				O_D
Wheels			38 cm (15 in.)	—
Tires			225/75 R-15	—

Weight	
Estimated weight range – base header with float module – variances are due to different package configurations.	
9.1 m (30 ft.) header	3495 kg (7706 lb.)
10.7 m (35 ft.) header	3694–3712 kg (8146–8184 lb.)
12.2 m (40 ft.) header	3876–3979 kg (8547–8774 lb.)
12.5 m (41 ft.) header	3983–4015 kg (8783–8852 lb.)
15.2 m (50 ft.) header	4508–4551 kg (9940–10,036 lb.)

2.3 Dimensions

Figure 2.1: Header Dimensions

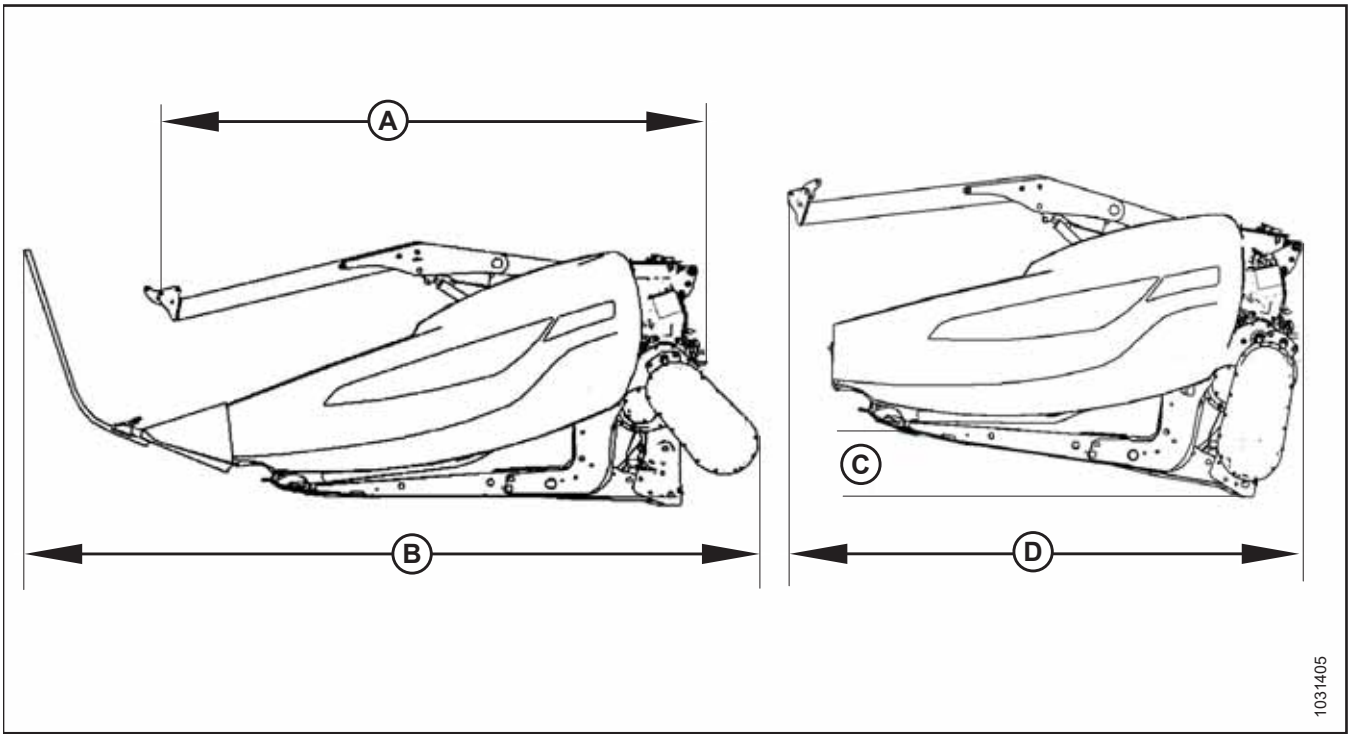


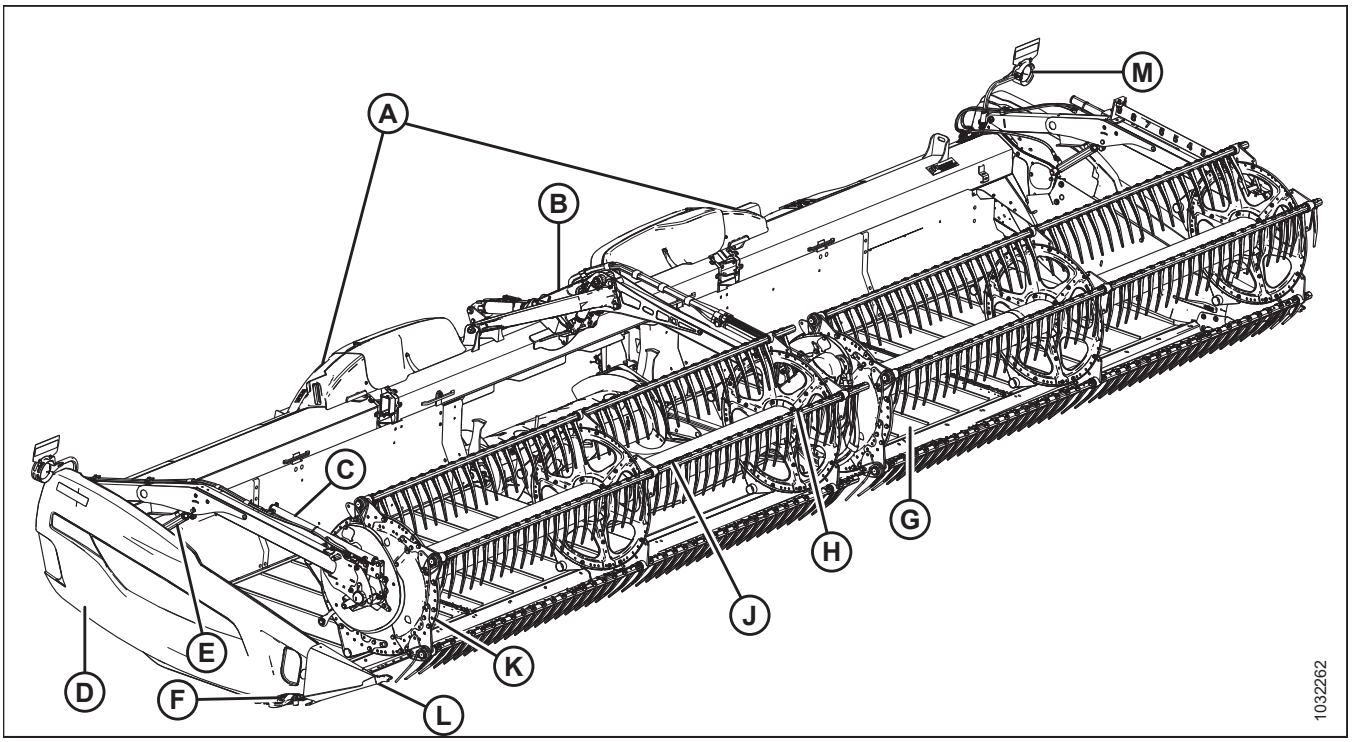
Table 2.3 Header Specifications

Frame and Structure				
Header width	Field mode		Cut width + 500 mm (19 1/5 in.)	S
Cutterbar width			Cut width - 500 mm (19 1/5 in.)	S
Header width	Flat/field position with FM200 installed (shortest center-link)	(A) Gearbox rotated (storage), dividers removed (refer to *2.1, page 24*)	2.616 m (103 in.)	—
Header width	Flat/field position with FM200 installed (shortest center-link)	(B) Gearbox operational, standard dividers installed (refer to *2.1, page 24*)	3.505 m (138 in.)	—
Header width	Transport position - reel fully retracted with FM200 installed (shortest center-link)	Gearbox rotated, dividers removed (refer to *2.1, page 24*) Angle (C) required to meet transport width (D) **NOTE:** Dimension (D) can be further decreased by using a transport trailer with greater angle	8 degrees 2.591 m (102 in.)	—

2.4 Component Identification

2.4.1 FD2 Series FlexDraper®

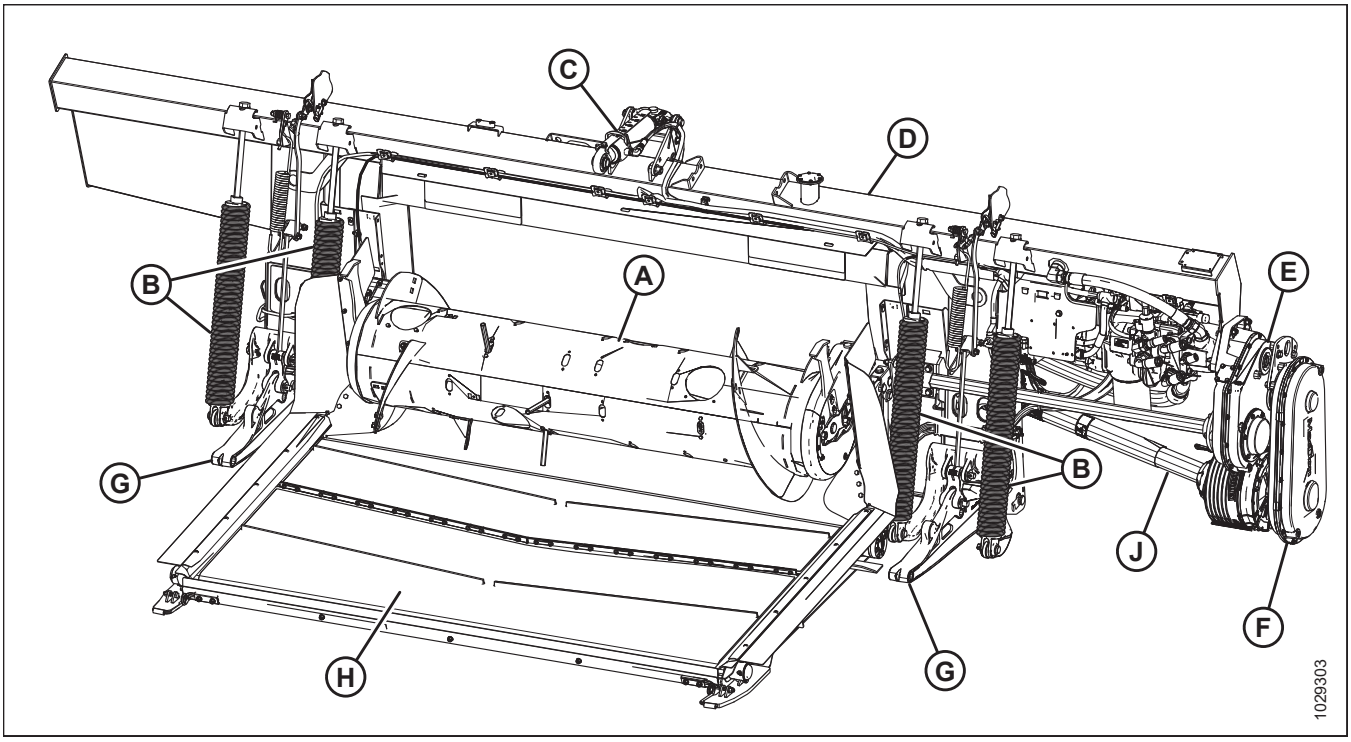
Figure 2.2: FD2 Series FlexDraper® Components



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

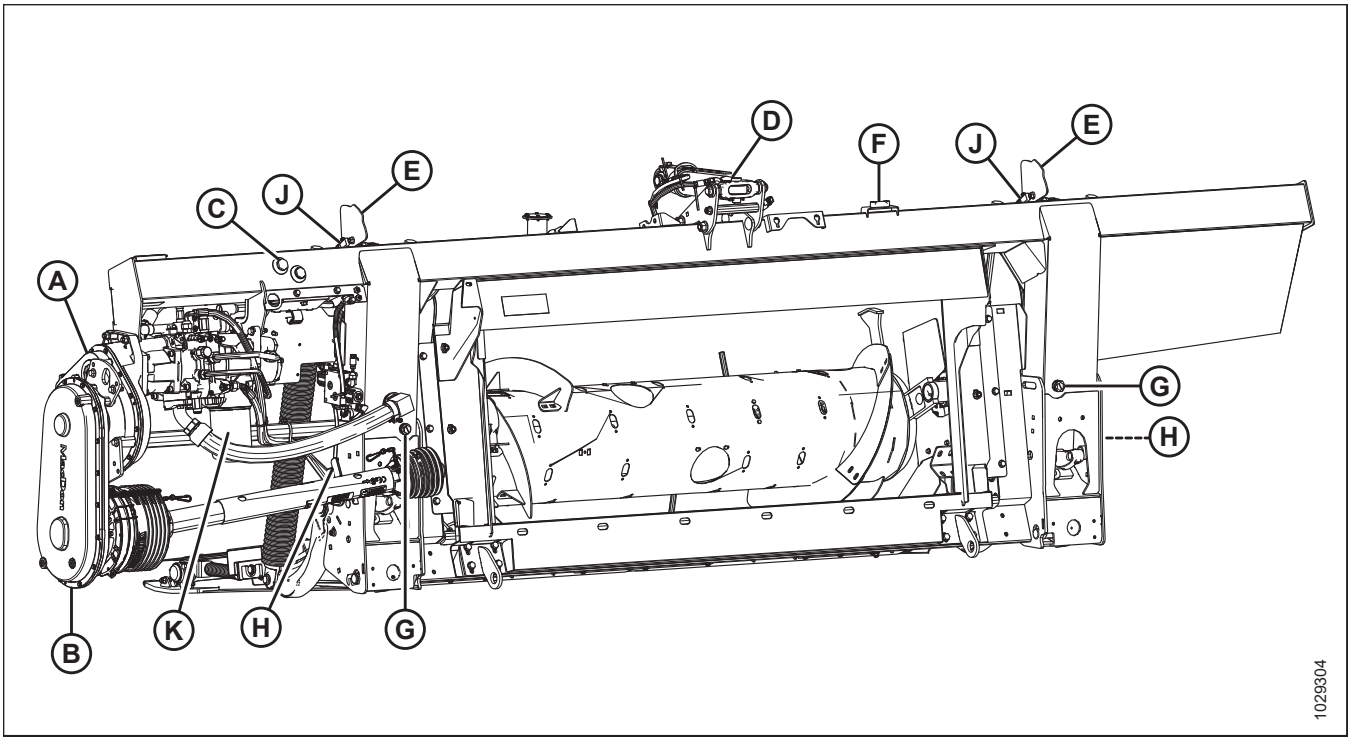
2.4.2 FM200 Float Module

Figure 2.3: Header Side of FM200 Float Module



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

Figure 2.4: Combine Side of FM200 Float Module



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

Chapter 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 someone to operate the header, for however short a time or distance, make sure they have been instructed in its safe and proper use.**
- **Review the manual and all safety related items with all Operators annually.**
- **Be alert for other Operators not using recommended procedures or not following safety precautions. Correct these mistakes immediately, before an accident occurs.**
- **Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety of the machine and may reduce the length of service you receive from your machine.**
- **The safety information given in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.**

3.2 Operational Safety

CAUTION

Adhere to the following safety precautions:

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

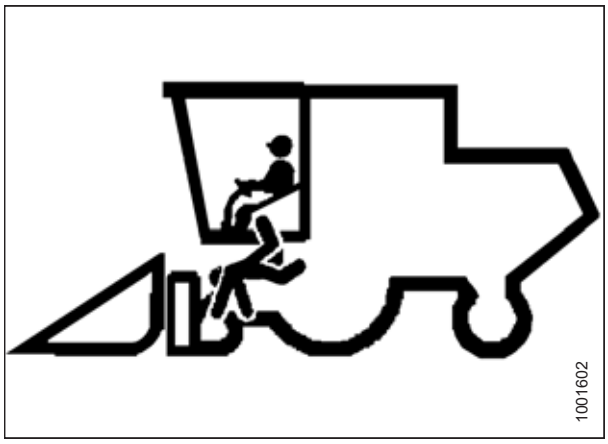


Figure 3.1: No Riders

CAUTION

- **Never start or move the machine until you are sure all bystanders have cleared the area.**
- **Avoid travelling over loose fill, rocks, ditches, or holes.**
- **Drive slowly through gates and doorways.**
- **When working on inclines, travel uphill or downhill whenever possible. Be sure to keep 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.**

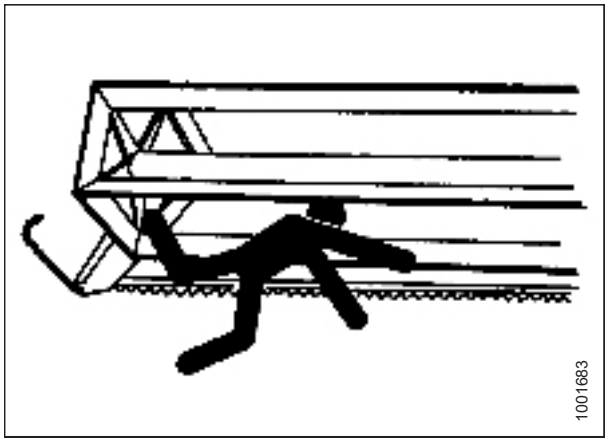


Figure 3.2: Bystander Safety

- **Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. For instructions, refer to *3.4 Shutting down the Combine, page 44*.**
- **Operate only in daylight or good artificial light.**

3.2.1 Header Safety Props

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

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 are located on the reel support arms and prevent the reel from unexpectedly lowering.

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.

IMPORTANT:

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

Engaging Reel Safety Props

Outer reel arms

1. Raise reel to maximum height.
2. Lift up on safety prop (A) and push forward to remove prop off hook (B).

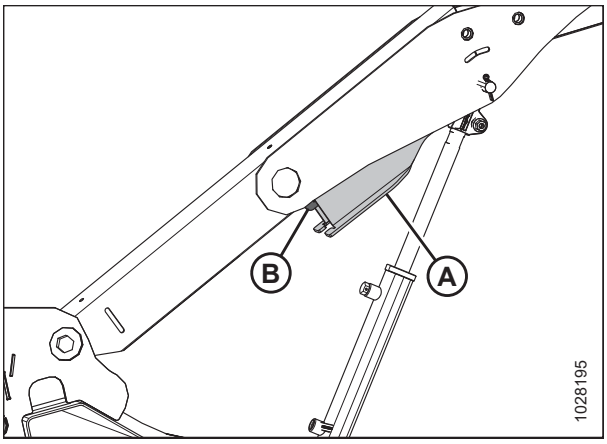


Figure 3.3: Outer Right Arm

3. Lower safety prop (A) and engage on the cylinder shaft as shown. Repeat on the opposite arm.

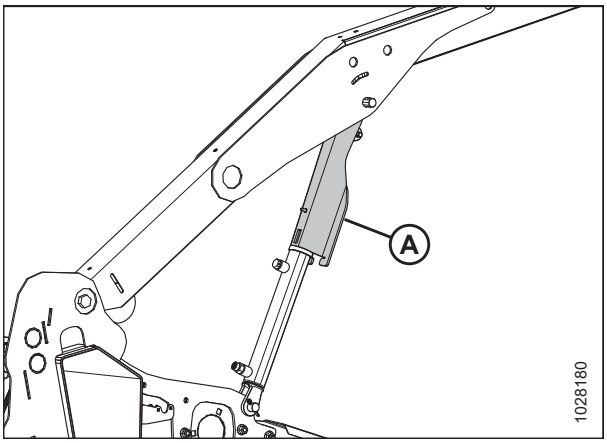


Figure 3.4: Engaged Reel Safety Prop – Outer Right Arm

Center reel arm

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

   NOTE:

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

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

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

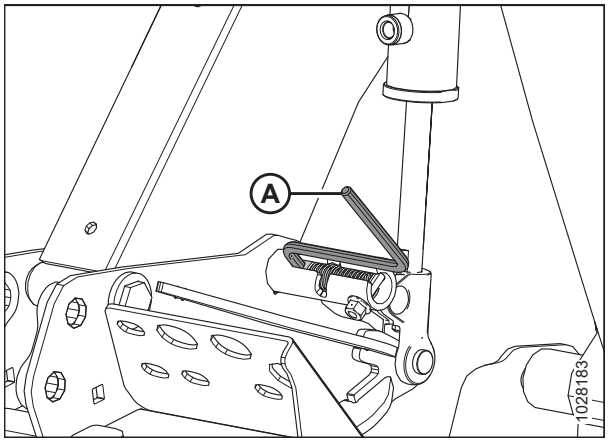


Figure 3.5: Engaged Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

Outer reel arms

1. Raise the reel to its maximum height.

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

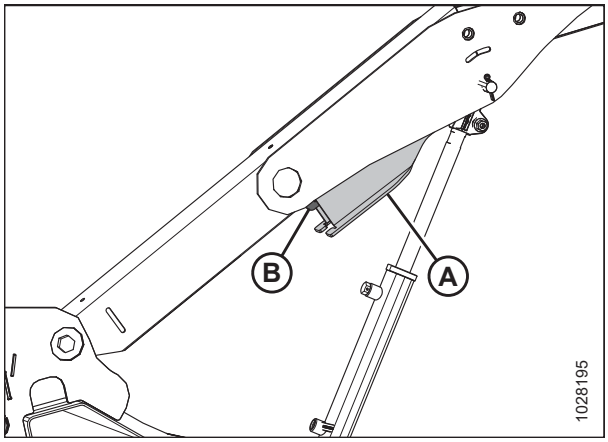


Figure 3.6: Reel Safety Prop – Right Outer Arm

Center reel arm

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

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

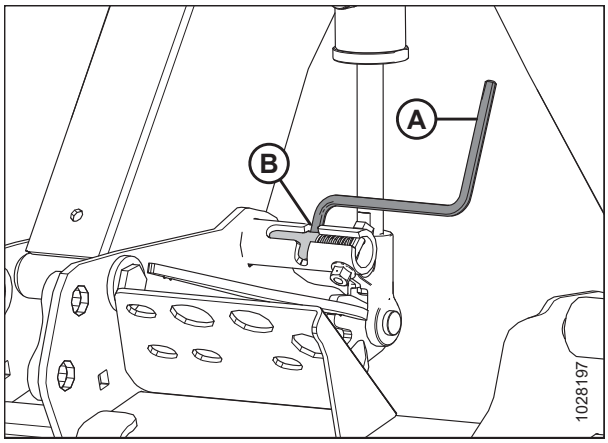


Figure 3.7: Reel Safety Prop – Center Arm

3.2.3 Header Endshields

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

Opening Header Endshields

1. Push release lever (B) using access hole (A) located on the backside of the header endshield to unlock the shield.

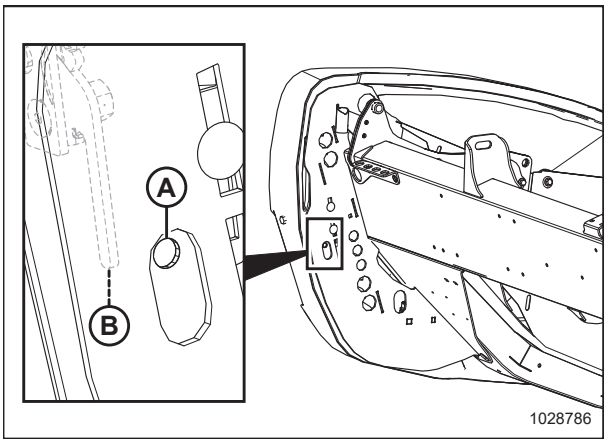


Figure 3.8: Left Header Endshield

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

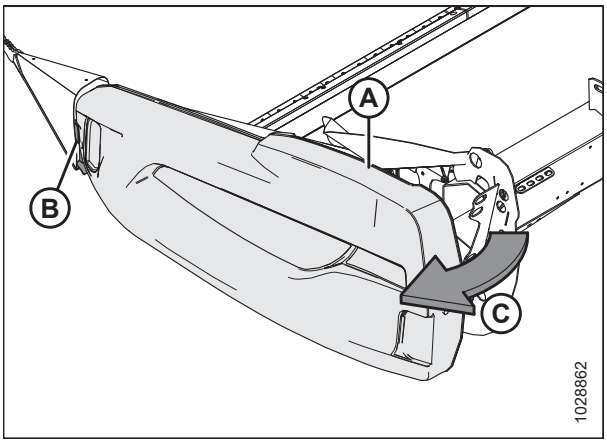


Figure 3.9: Left Header Endshield

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

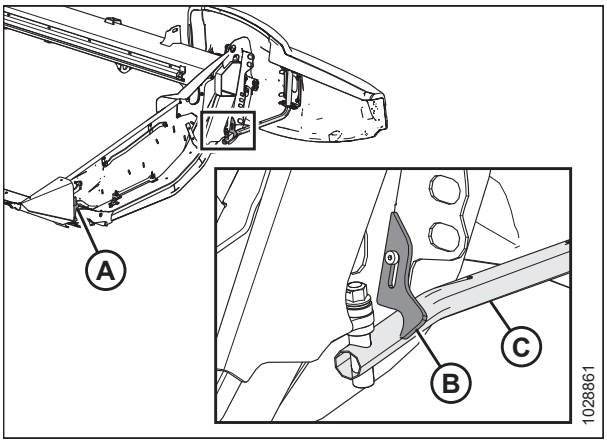


Figure 3.10: Left Header Endshield

Closing Header Endshields

1. Disengage lock (A) to allow header endshield (B) to move.
2. Rotate header endshield toward the front of the header.

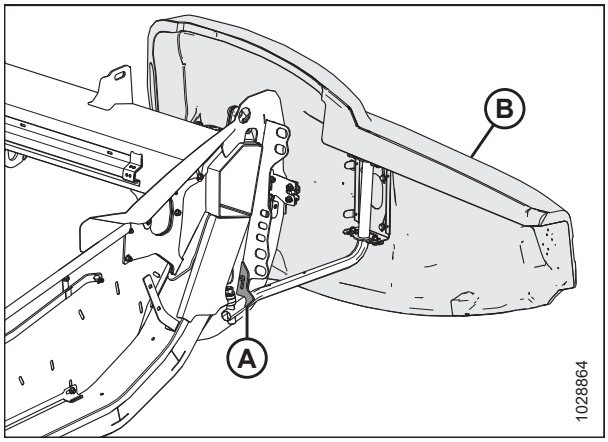


Figure 3.11: Left Header Endshield

3. While closing, ensure header endshield (A) does not contact the top of endsheet (B). If adjustment is required, refer to *Checking and Adjusting Header Endshields, page 35*.

   IMPORTANT:

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

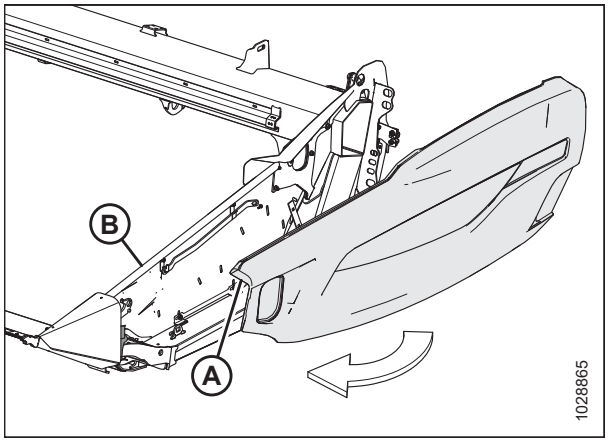


Figure 3.12: Left Header Endshield

4. Insert the front of the header endshield behind hinge tab (B) and into the divider cone.
5. Swing the header endshield in direction (A) into closed position. Engage two-stage latch (C) with a firm push.

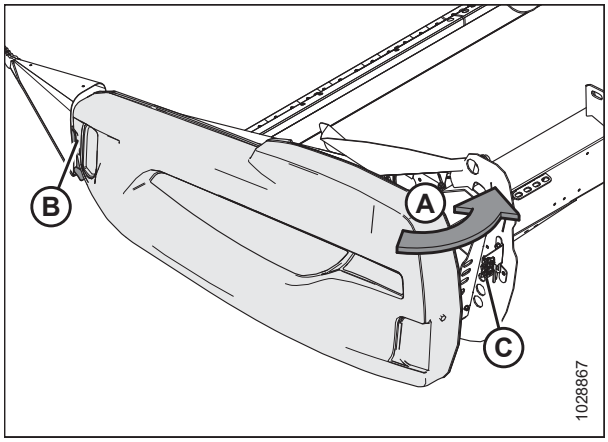


Figure 3.13: Left Header Endshield

IMPORTANT:

Check that the header endshield is locked. Ensure bolt (A) is fully engaged on two-stage latch (B) to prevent the header endshield from opening during operation.

NOTE:

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

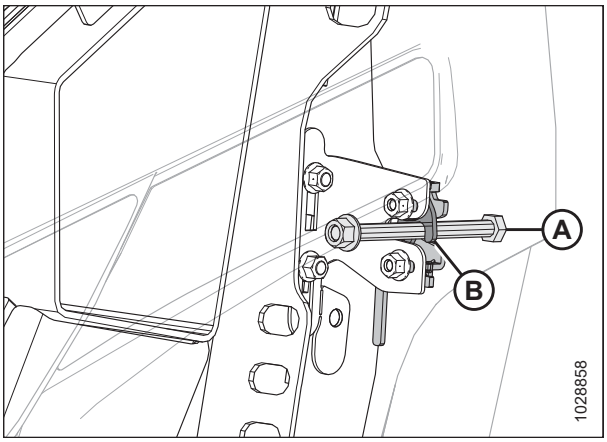


Figure 3.14: Two-Stage Latch

Checking and Adjusting Header Endshields

Header endshields are subject to expansion or contraction caused by large temperature variations. The position of the header endshield can be adjusted to compensate for dimensional changes.

IMPORTANT:

Damage to the aluminum endsheet will result if the weight of the plastic header endshield rests on it.

1. Check if gap (A) between header endshield (B) and endsheet (C) is 1–3 mm (0.04–0.12 in.).

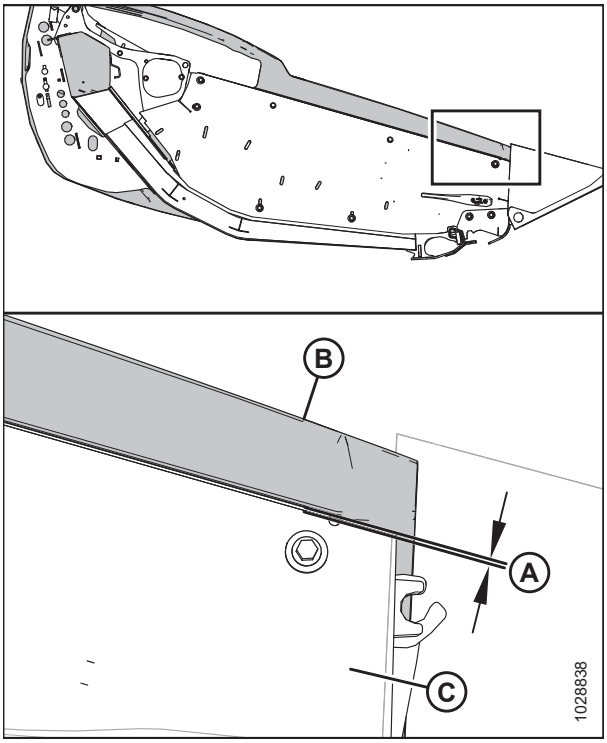


Figure 3.15: Gap between Header Endshield and Endsheet

2. If adjustment is required, adjust support bracket (A) as follows:
   a. Loosen bolts (B).
   b. Move support bracket (A) up or down, as required to achieve correct clearance.
   c. Retighten hardware.

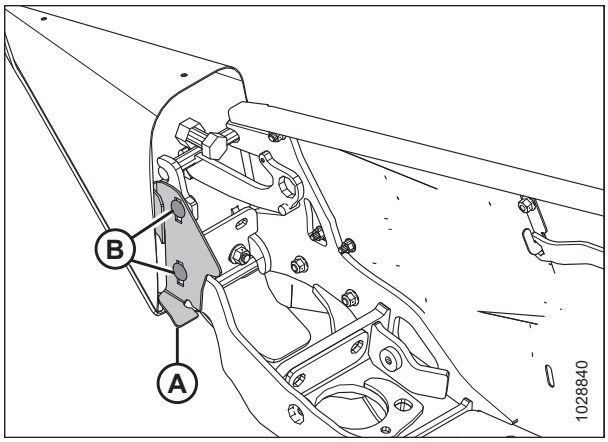


Figure 3.16: Header Endshield Support Bracket

3. Check if gap (A) between front of the header endshield and support bracket (B) is 6–10 mm (1/4–3/8 in.).

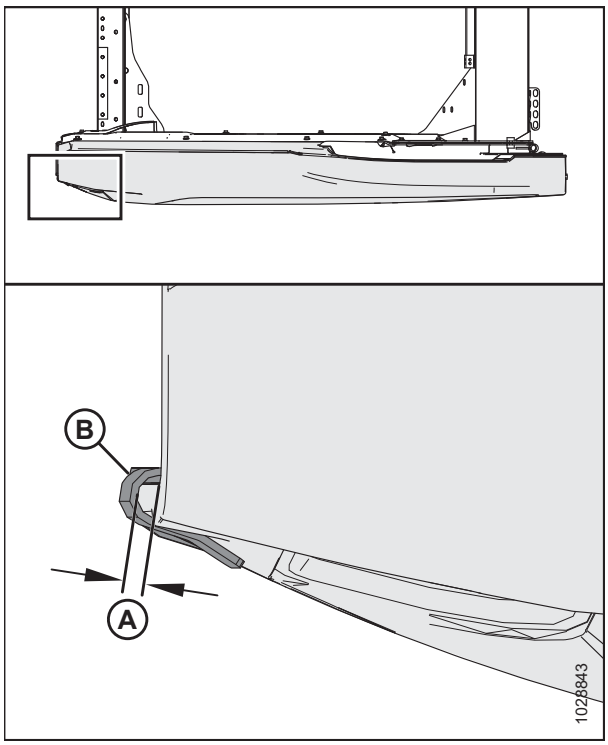


Figure 3.17: Gap between Header Endshield and Support Bracket

4. If adjustment is required, adjust the position of hinge arm (A) as follows:
   a. Loosen four nuts (B).
   b. Slide brackets (C) and hinge arm (A) fore or aft, as required to achieve correct clearance.
   c. Retighten hardware.

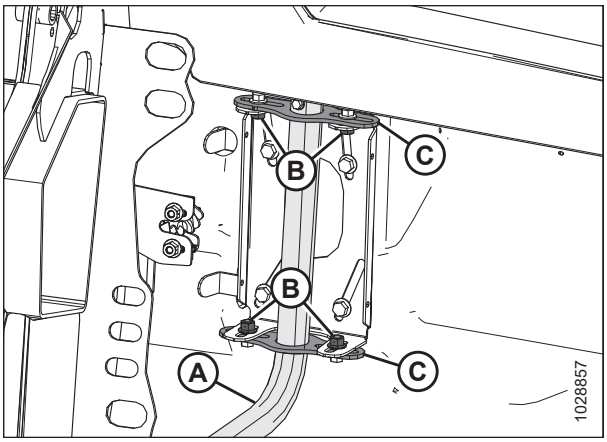


Figure 3.18: Left Header Endshield

IMPORTANT:

After making adjustments, ensure bolt (A) is fully engaged on two-stage latch (B) to prevent the header endshield from opening during operation.

NOTE:

The header endshield is shown transparent in the illustration.

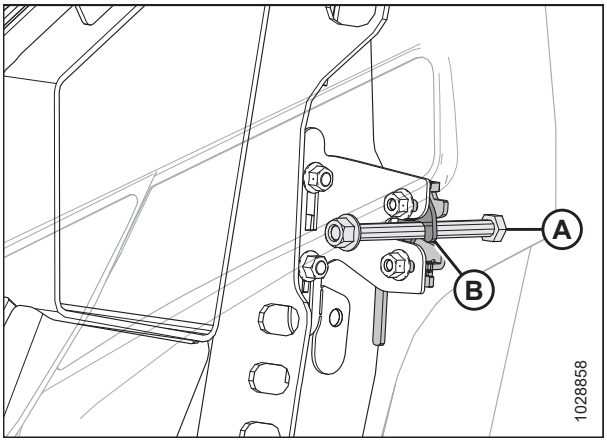


Figure 3.19: Two-Stage Latch

Removing Header Endshields

1. Fully open the header endshield. For instructions, refer to *Opening Header Endshields, page 33*.
2. Engage latch (A) to prevent endshield movement.
3. Remove self-tapping screw (B).
4. Slide header endshield upwards and remove from hinge arm (C).
5. Place header endshield away from work area.

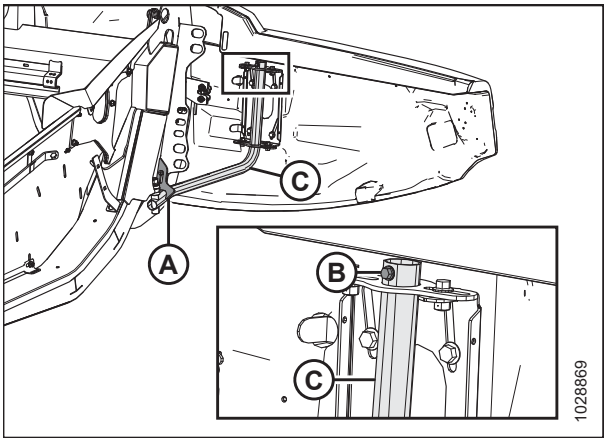


Figure 3.20: Left Header Endshield

Installing Header Endshields

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

NOTE:

Header endshields may expand or contract when subjected to large temperature changes. The header endshield position can be adjusted to compensate for dimensional changes. Refer to *Checking and Adjusting Header Endshields, page 35*.

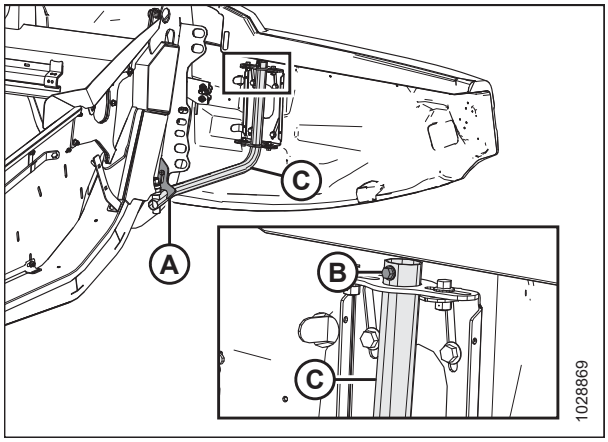


Figure 3.21: Left Header Endshield

3.2.4 Reel Drive Cover

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

Removing Reel Drive Cover

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Rotate spring latch (A) up and over the back plate.

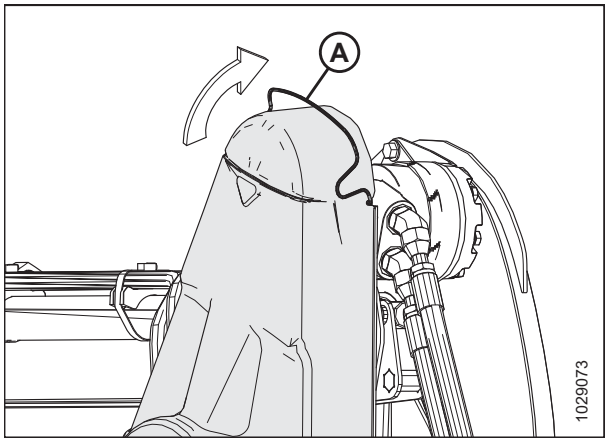


Figure 3.22: Upper Drive Cover

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

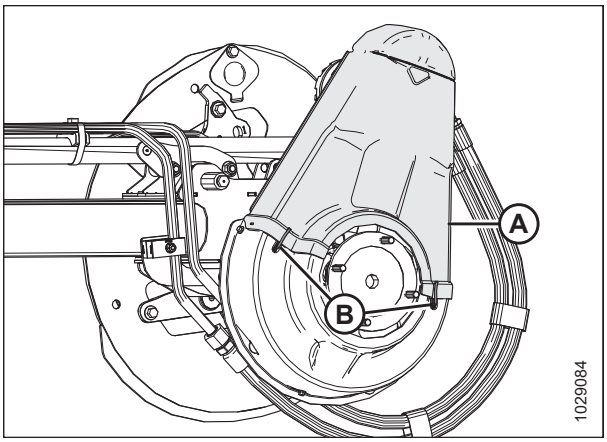


Figure 3.23: Upper Drive Cover

4. If necessary to remove lower cover (B), remove three bolts (A).

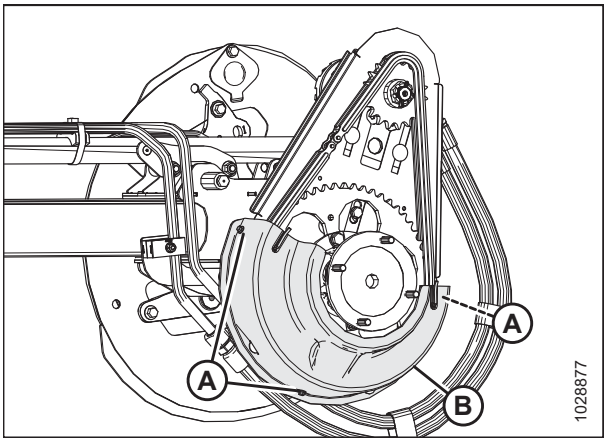


Figure 3.24: Lower Drive Cover

Installing Reel Drive Cover

WARNING

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

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

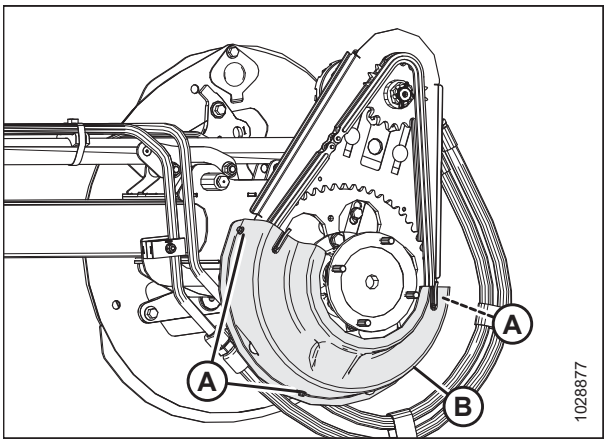


Figure 3.25: Lower Drive Cover

3. Position upper cover (A) onto the reel drive, and secure in place using the two clips (B) on the lower cover.

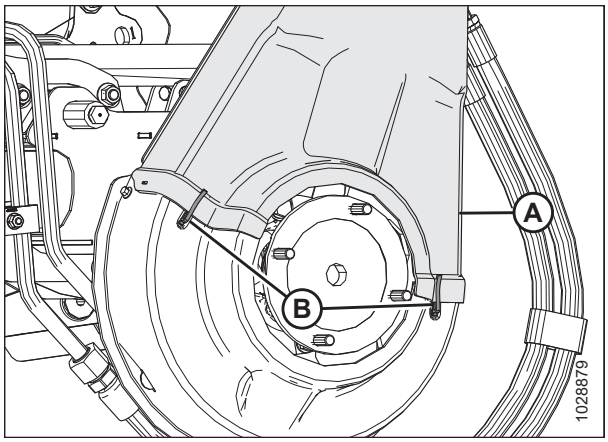


Figure 3.26: Upper Drive Cover

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

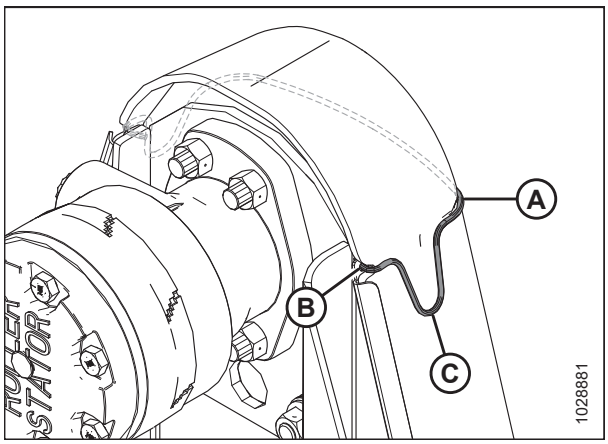


Figure 3.27: Reel Drive

3.2.5 Flex Linkage Cover

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

Removing the Flex Linkage Cover

⚠ WARNING

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

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

3. Remove lynch pins (A) that secure flex linkage cover (B) to the back tube.
4. Slide the flex linkage cover inboard, then lift the flex linkage cover upward to remove.

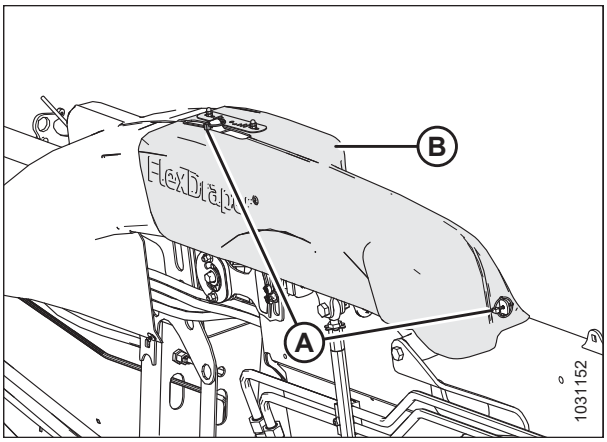


Figure 3.28: Flex Linkage Cover – Left Side

Installing the Flex Linkage Cover

1. Lower flex linkage cover (A) over linkage. Ensure slots (B) lines up with tabs (C) and (D).
2. Slide flex linkage cover outboard so tab (D) will extend beyond slot.

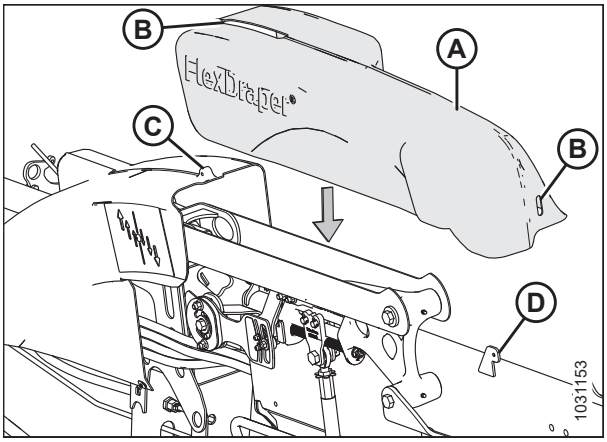


Figure 3.29: Flex Linkage Cover – Left Side

3. Secure flex linkage cover (B) in place with lynch pins (A).

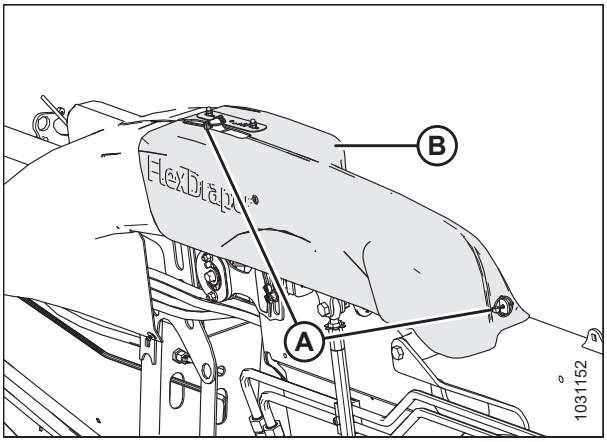


Figure 3.30: Flex Linkage Cover – Left Side

3.2.6 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.**

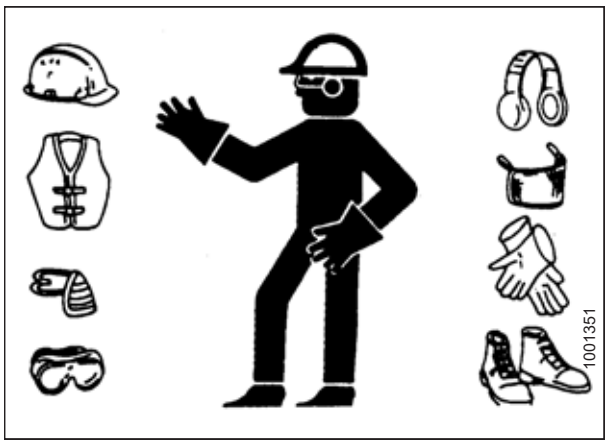


Figure 3.31: Safety Devices

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

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. For instructions, refer to *5.2.5 Checking Hydraulic Hoses and Lines, page 389*.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. For instructions, refer to *5.2.1 Maintenance Schedule/Record, page 384*.

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 5 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 *5.2.2 Break-In Inspection, page 387* and perform all specified tasks.

3.4 Shutting down the Combine

Before leaving the operator's seat for any reason, shut down the combine by following these steps:

DANGER

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

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

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

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

3.6 Header Setup

3.6.1 Header Attachments

Several optional attachments that can improve your header's performance are available. Optional attachments can be ordered and installed by your MacDon Dealer. Refer to *6 Options and Attachments, page 577* for descriptions of available items.

3.6.2 Header Settings

The following tables provide a guideline for setting up the FD2 Series FlexDraper® Header; however, the suggested settings can be changed to suit various crops and conditions not covered in the tables.

For reel settings, refer to *3.6.4 Reel Settings, page 59*.

For FM200 auger configurations, refer to *4.1 FM200 Feed Auger Configurations, page 299*.

NOTE:

Increase side draper speed for increased performance due to increased crop material or due to increased ground speed.

Table 3.1 Recommended FD2 Series / FM200 Draper Header Settings for Cereals

Stubble Height	102 (<4)						
Stabilizer Wheels[1]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[2]	**Header Angle**[3], [4]	**Reel Cam**	**Reel Speed %**[5]	**Reel Position**	**Upper Cross Auger**
Light	Off	8	B – C	3	10–15	6 or 7	Not required
Normal	On	7	B – C	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Recommended
Lodged	Off	7	B – C	3 or 4	5–10	4 or 5	Not required
Stubble Height	102–203 (4–8)						
Stabilizer Wheels	As required						
Skid Shoe Position	Down for lodged crop conditions, middle or down for other crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**	**Header Angle**[3], [4]	**Reel Cam**	**Reel Speed %**[5]	**Reel Position**	**Upper Cross Auger**
Light	Off	8	B – C	4	10–15	6 or 7	Not required
Normal	On	7	A	2	10	6 or 7	Not required
Heavy	On	7	A	2	10	6 or 7	Recommended
Lodged	Off	7	D	3 or 4	5–10	4 or 5	Not required

1. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
2. Setting on FM200 draper control.
3. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
4. Cutting height is controlled with a combination of skid shoes and header angle.
5. Percentage above ground speed.

Table 3.1 Recommended FD2 Series / FM200 Draper Header Settings for Cereals (continued)

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

Table 3.2 Recommended FD2 Series / FM200 Draper Header Settings for Lentils

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

6. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
7. Setting on FM200 draper control.
8. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
9. Cutting height is controlled with a combination of skid shoes and header angle.
10. Percentage above ground speed.

Table 3.3 Recommended FD2 Series / FM200 Draper Header Settings for Peas

Stubble Height	On ground						
Stabilizer Wheels[11]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[12]	**Header Angle**[13, 14]	**Reel Cam**	**Reel Speed %**[15]	**Reel Position**	**Upper Cross Auger**
Light	On	7	B – C	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	2	10	6 or 7	Recommended
Heavy	On	7	B – C	2	10	4 or 5	Recommended
Lodged	On	7	D	2	5–10	4 or 5	Recommended

11. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
12. Setting on FM200 draper control.
13. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
14. Cutting height is controlled with a combination of skid shoes and header angle.
15. Percentage above ground speed.

Table 3.4 Recommended FD2 Series / FM200 Draper Header Settings for Canola

Stubble Height	102–203 (4–8)						
Stabilizer Wheels[16]	As required						
Skid Shoe Position	Down for light or heavy crop conditions, middle or down for normal or lodged crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[17]	**Header Angle**[18], [19]	**Reel Cam**	**Reel Speed %**[20]	**Reel Position**	**Upper Cross Auger**
Light	On	7	A	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	1	10	6 or 7	Recommended
Heavy	On	8	B – C	1	10	3 or 4	Recommended
Lodged	On	7	D	2	5–10	3 or 4	Recommended
Stubble Height	203+ (8+)						
Stabilizer Wheels[16]	As required						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**	**Draper Speed Setting**	**Header Angle**[18], [19]	**Reel Cam**	**Reel Speed %**[20]	**Reel Position**	**Upper Cross Auger**
Light	On	7	A	2	5–10	6 or 7	Recommended
Normal	On	7	B – C	2	10	6 or 7	Recommended
Heavy	On	8	B – C	1 or 2	10	3 or 4	Recommended
Lodged	On	7	D	2 or 3	5–10	3 or 4	Recommended

16. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
17. Setting on FM200 draper control.
18. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
19. Cutting height is controlled with a combination of skid shoes and header angle.
20. Percentage above ground speed.

Table 3.5 Recommended FD2 Series / FM200 Draper Header Settings for California Rice

Stubble Height	102 (<4)						
Stabilizer Wheels[21]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**[22]	**Draper Speed Setting**[23]	**Header Angle**[24], [25]	**Reel Cam**	**Reel Speed %**[26]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	D	2	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	2	10	4 or 5	Not required
Heavy	Rice divider rod	4	B – C	2	10	4 or 5	Not required
Lodged	Rice divider rod	4	D	2	5–10	4 or 5	Not required
Stubble Height	102–203 (4–8)						
Stabilizer Wheels[21]	As required						
Skid Shoe Position	Middle or down						
Crop Condition	**Divider Rods**[22]	**Draper Speed Setting**	**Header Angle**[24], [25]	**Reel Cam**	**Reel Speed %**[26]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	D	3	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Heavy	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Lodged	Rice divider rod	4	D	4	5–10	6 or 7	Not required

21. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
22. The rice divider rod is available. Rice divider rod not required on both ends of header.
23. Setting on FM200 draper control.
24. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
25. Cutting height is controlled with a combination of skid shoes and header angle.
26. Percentage above ground speed.

Table 3.5 Recommended FD2 Series / FM200 Draper Header Settings for California Rice (continued)

Stubble Height	203+ (8+)						
Stabilizer Wheels[21]	As required						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**[22]	**Draper Speed Setting**	**Header Angle**[24, 25]	**Reel Cam**	**Reel Speed %**[26]	**Reel Position**	**Upper Cross Auger**
Light	Rice divider rod	4	A	3	10–15	6 or 7	Not required
Normal	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Heavy	Rice divider rod	4	B – C	3	10	6 or 7	Not required
Lodged	Rice divider rod	4	D	4	5–10	6 or 7	Not required

Table 3.6 Recommended FD2 Series / FM200 Draper Header Settings for Delta Rice

Stubble Height	51–152 (2–6)						
Stabilizer Wheels[27]	As required						
Skid Shoe Position	Middle or down						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[28]	**Header Angle**[29, 30]	**Reel Cam**	**Reel Speed %**[31]	**Reel Position**	**Upper Cross Auger**
Light	Off	6	D	2 or 3	10–15	6 or 7	Not required
Normal	Off	6	B – C	2 or 3	10	6 or 7	Not required
Heavy	Off	6	B – C	2 or 3	10	6 or 7	Not required
Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not required
Stubble Height	152+ (6+)						
Stabilizer Wheels[27]	As required						
Skid Shoe Position	Not applicable						
Crop Condition	**Divider Rods**	**Draper Speed Setting**	**Header Angle**[29, 30]	**Reel Cam**	**Reel Speed %**[31]	**Reel Position**	**Upper Cross Auger**
Light	Off	6	A	2 or 3	10–15	6 or 7	Not required
Normal	Off	6	B – C	2 or 3	10	6 or 7	Not required
Heavy	Off	6	B – C	2 or 3	10	6 or 7	Not required
Lodged	Off	6	D	3 or 4	5–10	4 or 5	Not required

27. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
28. Setting on FM200 draper control.
29. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
30. Cutting height is controlled with a combination of skid shoes and header angle.
31. Percentage above ground speed.

Table 3.7 Recommended FD2 Series / FM200 Draper Header Settings for Edible Beans

Stubble Height	On ground						
Stabilizer Wheels[32]	Storage						
Skid Shoe Position	Up or middle						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[33]	**Header Angle**[34, 35]	**Reel Cam**	**Reel Speed %**[36]	**Reel Position**	**Upper Cross Auger**
Light	On	8	D	2	5–10	6 or 7	Not required
Normal	On	7	B – C	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	On	7	D	2	5–10	6 or 7	Not required

32. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
33. Setting on FM200 draper control.
34. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
35. Cutting height is controlled with a combination of skid shoes and header angle.
36. Percentage above ground speed.

Table 3.8 Recommended FD2 Series / FM200 Draper Header Settings for Flax

Stubble Height	51–153 (2–6)						
Stabilizer Wheels[37]	As required						
Skid Shoe Position	Down for lodged crop conditions, middle or down for other crop conditions						
Crop Condition	**Divider Rods**	**Draper Speed Setting**[38]	**Header Angle**[39, 40]	**Reel Cam**	**Reel Speed %**[41]	**Reel Position**	**Upper Cross Auger**
Light	On	8	B – C	2	5–10	6 or 7	Not required
Normal	On	7	A	2	10	6 or 7	Not required
Heavy	On	7	B – C	2	10	6 or 7	Not required
Lodged	On	7	D	2	5–10	6 or 7	Not required

37. Stabilizer wheels are used to limit the side-to-side movement when cutting off the ground in rolling terrain and to minimize bouncing.
38. Setting on FM200 draper control.
39. Set header angle as shallow as possible (setting A) with center-link and skid shoes while maintaining cutting height.
40. Cutting height is controlled with a combination of skid shoes and header angle.
41. Percentage above ground speed.

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 FD2 Series FlexDraper® Headers for straight combining canola.

Recommended attachments

The optimization includes the following modifications to the header:

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

NOTE:

Each kit includes installation instructions and the necessary hardware. For more information, refer to *6 Options and Attachments, page 577*.

Recommended settings

Optimizing the header requires adjustments to the following settings:

- Loosen auger spring tension. For instructions, refer to *Checking and Adjusting Feed Auger Springs, page 57*.
- Setting reel speed equal to ground speed and increase as required. For instructions, refer to *3.7.6 Reel Speed, page 89*.
- Set the side draper speed to position six on in-cab side draper speed control. For instructions, refer to *3.7.8 Draper Speed, page 90*.
- Adjusting reel height so that fingers just engage the crop. For instructions, refer to *3.7.10 Reel Height, page 93*.
- Adjusting reel fore-aft position. For instructions, refer to *Adjusting Reel Fore-Aft Position, page 99*.
- Moving the reel fore-aft cylinders to the alternative aft location. For instructions, refer to *Repositioning Fore-Aft Cylinders – Double Reel, page 99* or *Repositioning Fore-Aft Cylinders – Triple Reel, page 103*.
- Setting reel cam to position 1. For instructions, refer to *Adjusting Reel Cam, page 108*.
- Set auger to floating position. For instructions, refer to *3.7.16 Setting Auger Position, page 117*.

Checking and Adjusting Feed Auger Springs

The feed auger has an adjustable spring tensioning system that allows the auger to float on top of the crop instead of crushing and damaging it. The factory-set tension is adequate for most crop conditions.

DANGER

To 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 the engine. For instructions, refer to the combine operator's manual.
2. Raise the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the header safety props.

5. Check the thread length protruding past nut (A). Length should be 22–26 mm (7/8–1 in.).

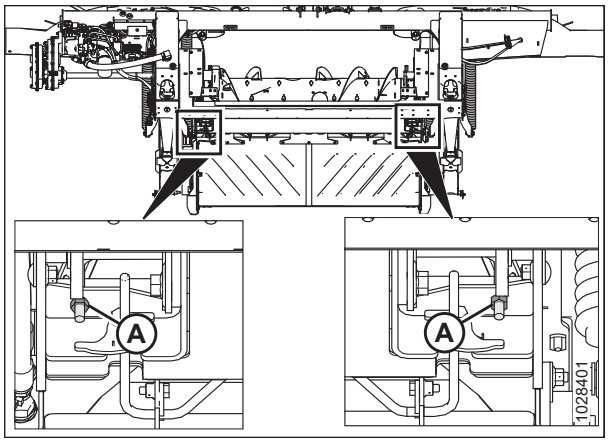


Figure 3.32: Spring Tensioner

If adjustment is required, follow these steps:

1. Loosen upper jam nut (A) on the spring tensioner.

   NOTE:

   Upper jam nut is located on other side of the plate.

2. Turn lower nut (B) until thread (C) protrudes 22–26 mm (7/8–1 in.).
3. Tighten jam nut (A).
4. Repeat Steps *1, page 58* to *3, page 58* on opposite side.

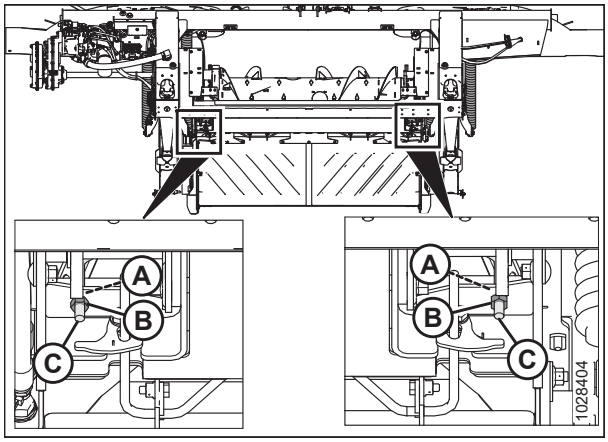


Figure 3.33: Spring Tensioner

3.6.4 Reel Settings

Table 3.9 FD2 Series Recommended Reel Settings

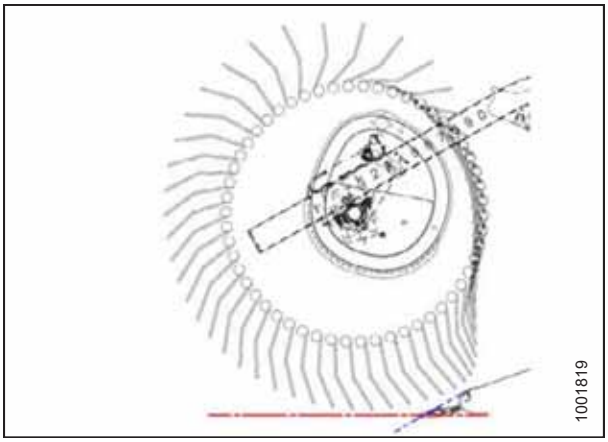
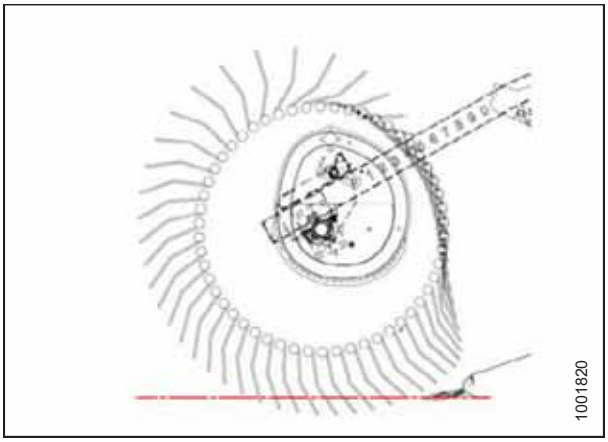
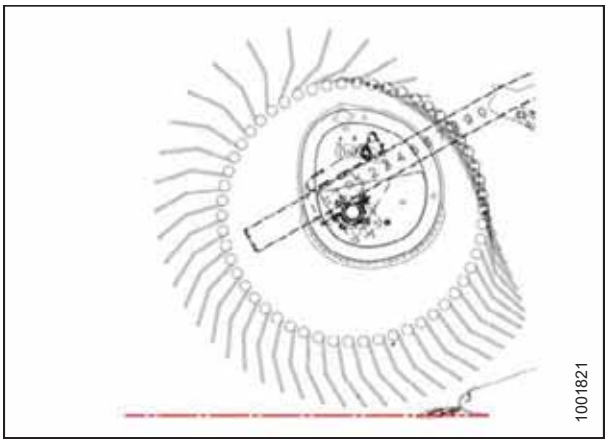
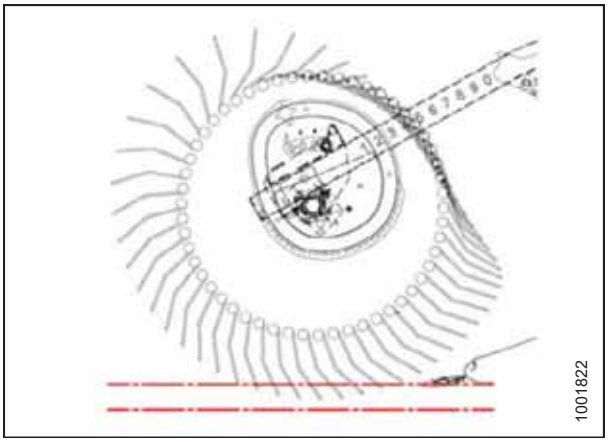
Cam Setting Number (Finger Speed Gain)	Reel Position Number	Reel Finger Pattern
1 (0)	6 or 7	
2 (20%)	6 or 7	

Table 3.9 FD2 Series Recommended Reel Settings (continued)

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

NOTE:

- Adjust the reel forward to get closer to the ground while tilting the header back. Fingers/tines will dig into the ground at extreme reel-forward positions, so adjust the skid shoes or header angle to compensate. Adjust the reel rearward to position the reel farther away from the ground when tilting the header forward.
- Header tilt can be increased to position the reel closer to the ground, or decreased to position the reel farther from the ground, while keeping material flowing onto drapers.
- To leave the maximum amount of stubble in lodged crop, raise the header and increase the header tilt to keep the reel close to the ground. Position the reel fully forward.
- The reel may have to be moved back to prevent lumps or plugging on the cutterbar in thinner crops.
- Minimum crop carrying capacity (minimum area of exposed draper between the reel and the header backsheet) occurs with the reel in the farthest aft position.
- Maximum crop carrying capacity (maximum area of exposed draper between the reel and the header backsheet) occurs with the reel in the farthest forward position.
- Due to the nature of the cam action, the tip speed of the fingers/tines at the cutterbar becomes higher than that of the reel speed at higher cam settings. For more information, refer to Table *3.9, page 59*.

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 *3.10, page 61* 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 3.10 Operating Variables

Variable	Refer to
Cutting height	*3.7.1 Cutting off the Ground, page 61*; *3.7.2 Cutting on the Ground, page 64*
Header float	*3.7.3 Header Float, page 66*
Header angle	*3.7.5 Header Angle, page 81*
Reel speed	*3.7.6 Reel Speed, page 89*
Ground speed	*3.7.7 Ground Speed, page 90*
Draper speed	*3.7.8 Draper Speed, page 90*
Knife speed	*3.7.9 Knife Speed Information, page 92*
Reel height	*3.7.10 Reel Height, page 93*
Reel fore-aft position	*3.7.11 Reel Fore-Aft Position, page 98*
Reel tine pitch	*3.7.12 Reel Tine Pitch, page 105*
Crop divider rods	*3.7.14 Crop Dividers, page 111*
Feed auger configurations	*4.1 FM200 Feed Auger Configurations, page 299*

3.7.1 Cutting off the Ground

The header's design allows operators to cut crop above the ground in relation to desired stubble height. The cutting height will vary depending on factors including crop type, crop conditions, etc.

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 and a stabilizer wheel system (or stabilizer / slow speed transport wheel system).

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.

WARNING

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

1. Raise the header so the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Check that the float is working properly. For instructions, refer to *Checking and Adjusting Header Float, page 67*.
3. Remove hairpin (A) from the latch on the right wheel assembly.
4. Disengage latch (B), lift the wheel out of the hook, and place 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, then pull handle (C) upwards to release the lock.
6. Lift the left wheel to the desired height and engage the support channel into the slot (D) in the upper support.
7. Push down on handle (C) to lock.
8. Lift the right wheel back into the field position and ensure latch (B) is engaged.
9. Secure the latch with hairpin (A).
10. Support the wheel weight by lifting slightly with one hand, and pull up on handle (A) to release the lock.
11. Lift the wheels to the desired height, and engage the support channel into slot (B) in the upper support.
12. Push down on handle (A) to lock.
13. Lower the header to the desired cutting height using the combine controls and check load indicator (A).

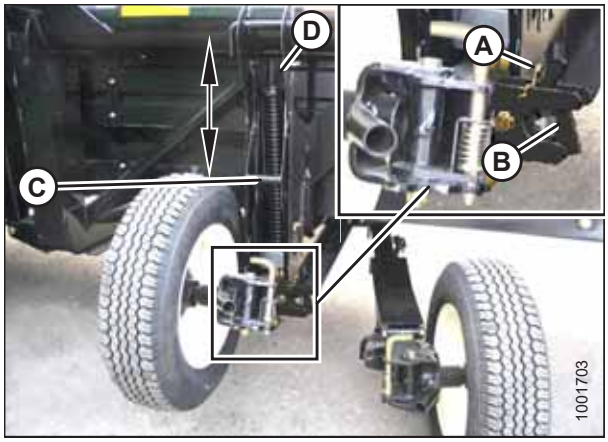


Figure 3.34: Right Wheel

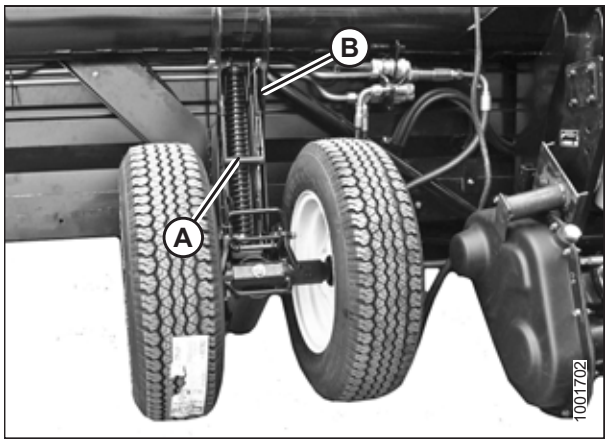


Figure 3.35: Left Wheel

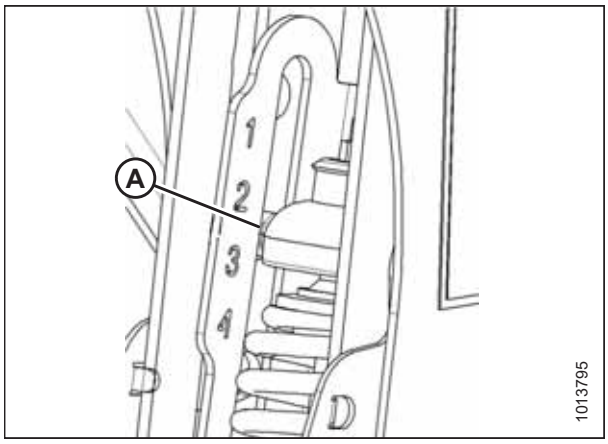


Figure 3.36: Load Indicator

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.

    IMPORTANT:

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

15. Use the combine's auto header height control (AHHC) to automatically maintain cutting height. For instructions, refer to *3.8 Auto Header Height Control, page 119* and your combine operator's manual for details.

    NOTE:

    The height sensor on the FM200 Float Module must be connected to the combine header control module in the cab.

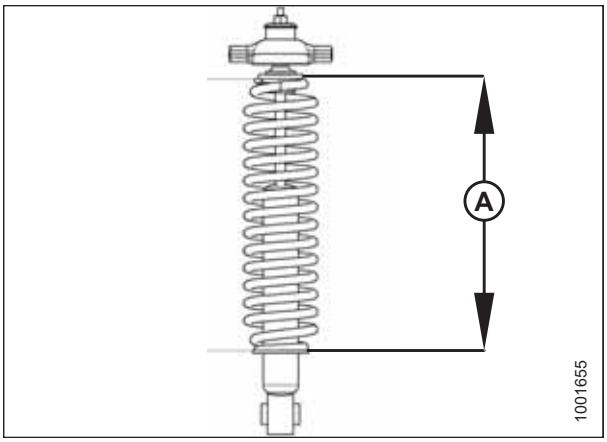


Figure 3.37: Spring Compression

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 46* for recommended use in specific crops and crop conditions.

WARNING

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

1. Raise the header until the stabilizer wheels are off the ground. Shut down engine and remove the key.
2. Support the wheel weight by lifting slightly with one hand on support (B), and pull up on handle (A) to release the lock.
3. Lift the wheel using support (B), and engage the support channel into center slot (C) in the upper support.
4. Push down on handle (A) to lock.

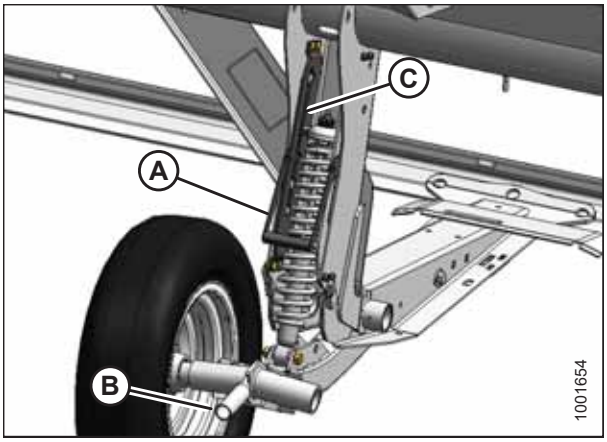


Figure 3.38: Stabilizer Wheel

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

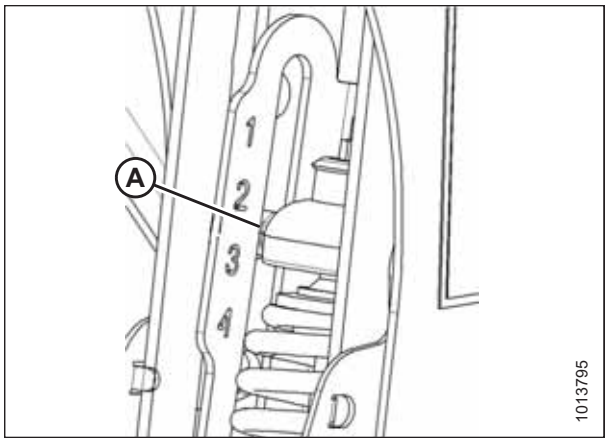


Figure 3.39: Load Indicator

6. 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.

   IMPORTANT:

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

7. Use the combine's Auto Header Height Control (AHHC) to automatically maintain cutting height. For instructions, refer to *3.8 Auto Header Height Control, page 119* and your combine operator's manual for details.

   NOTE:

   The height sensor on the FM200 Float Module must be connected to the combine height control system in the cab.

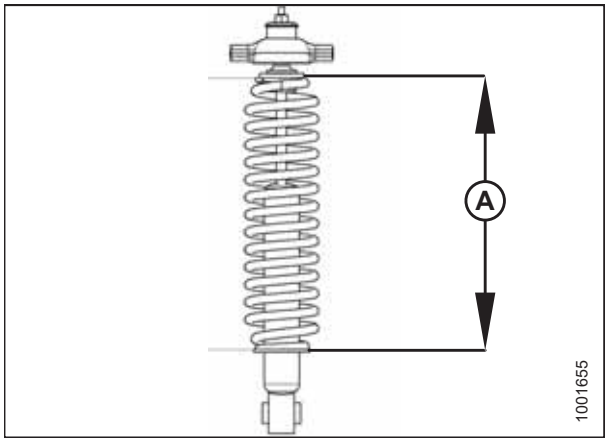


Figure 3.40: Spring Compression

3.7.2 Cutting on the Ground

Cutting height will vary depending on what kind of crop, crop conditions, etc.

Cutting on the ground is performed with the header fully lowered and the cutterbar on the ground. The orientation of the knife and 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 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 65*
- *Adjusting Outer Skid Shoes, page 65*
- *3.7.3 Header Float, page 66*
- *3.7.5 Header Angle, page 81*

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). For instructions, refer to the following:
   - *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*
   - *Adjusting Stabilizer Wheels, page 63*
4. Remove lynch pin (A) from each skid shoe.
5. Hold shoe (B) and remove pin (C) by disengaging from the frame and pulling away from the shoe.
6. Raise or lower skid shoe (B) to achieve the desired position using the holes in support (D) as a guide.
7. Install pin (C) in the desired position on support (D), engage in frame, and secure with lynch pin (A).
8. Check that all skid shoes are adjusted to the same position.

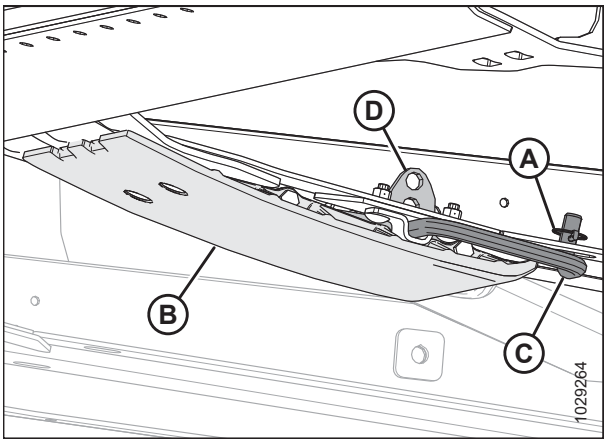


Figure 3.41: Inner Skid Shoe

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. For instructions, refer to *3.7.3 Header Float, page 66*.

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). For instructions, refer to the following:
   - *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*
   - *Adjusting Stabilizer Wheels, page 63*

4. Remove lynch pin (A) from each skid shoe (B).
5. Hold skid shoe (B) and remove pin (C) by disengaging from the frame and pulling away from the shoe.
6. Raise or lower skid shoe (B) to achieve the desired position using the holes in the support plate as a guide.
7. Reinstall pin (C) in the desired position on the support plate, and secure with lynch pin (A).
8. Check that all skid shoes are adjusted to the same position.
9. Check the header float. For instructions, refer to *3.7.3 Header Float, page 66*.

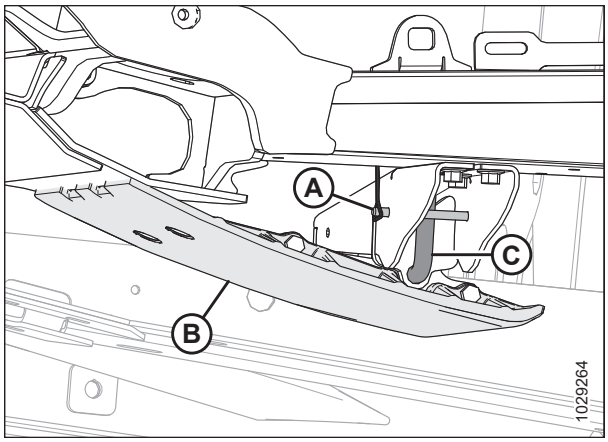


Figure 3.42: Outer Skid Shoe

3.7.3 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). Values 0 to 4 represent the force of the cutterbar on the ground with 0 being the minimum and 4 being the maximum. They also represent where the header is at in the float range, 0 being the bottom end of the float range and 4 being the top end of the float range.

NOTE:

The indicator on the left side of the float module is for float indication and float settings; the indicator on the right side is for float settings only.

The maximum force is determined by the tension on the float module's adjustable float springs. Float can be changed to suit field and crop conditions and is dependent on what options have been installed on the header.

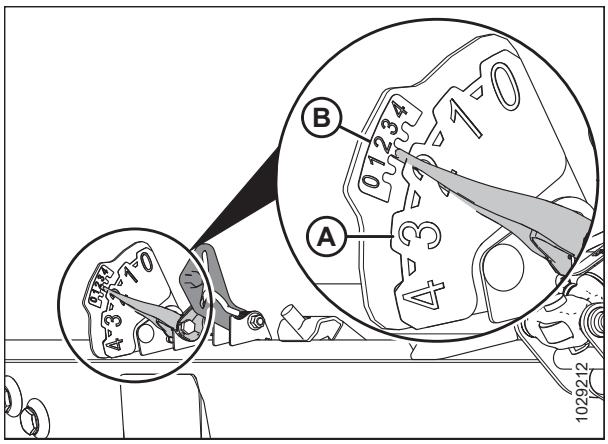


Figure 3.43: Float Indicator – Left Side

NOTE:

The small number set (B) at the top of the float indicator is used to check and adjust the float setting. For instructions, refer to *Checking and Adjusting Header Float, page 67*.

The FD2 Series draper header for combines performs best with minimum ground pressure under normal conditions. Readjust the float if adding optional attachments to the header that affect header weight.

1. Set the float for cutting on the ground as follows:
   a. Ensure the header float locks are disengaged. For instructions, refer to *Locking/Unlocking Header Float, page 72*.
   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 initially to float value 2 and adjust as necessary.
2. Set the float for cutting off the ground as follows:
   a. Set up the gauge wheels. For instructions, refer to *3.7.1 Cutting off the Ground, page 61*.
   b. Note the float value on the float indicator and maintain this value during operation (disregard minor fluctuations on the indicator).

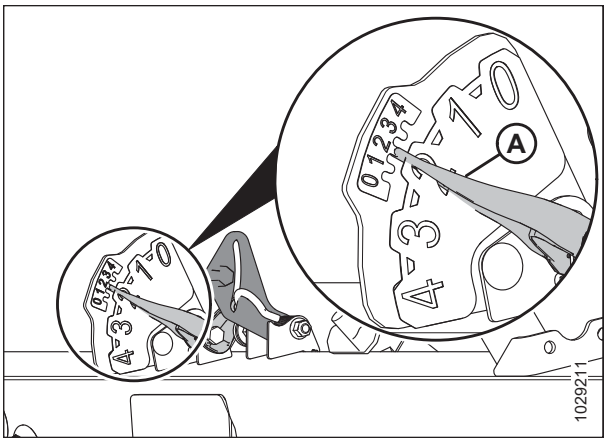


Figure 3.44: Cutting on the Ground

Checking and Adjusting Header Float

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

IMPORTANT:

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

WARNING

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

Use the following guidelines when adjusting the float:

- Set the header float as light as possible (without causing excessive bouncing) to prevent knife component breakage, soil scooping, and soil build-up at the cutterbar in wet conditions.
- To avoid excessive bouncing and leaving a ragged cut, use a slower ground speed with a light float setting.
- When cutting off the ground, use the stabilizer wheels in conjunction with the header float to minimize bouncing at the header ends and to control cut height. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.

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.

1. Park the combine on a level surface.
2. Locate spirit level (A) on top of the float module frame. Check that the bubble is in the center. If adjustment is required, refer to *3.9 Leveling Header, page 276*.
3. Level the header and float module. If the header and float module are not level, refer to *3.9 Leveling Header, page 276*.
4. Position the header so that the cutterbar is 305–356 mm (12–14 in.) off the ground.

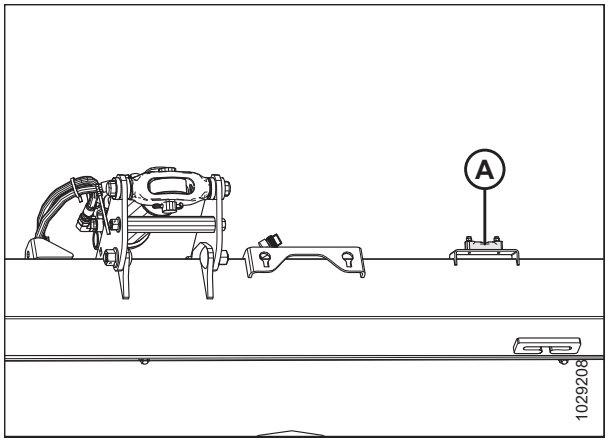


Figure 3.45: Spirit Level

5. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
6. Lower the reel fully.
7. Shut down the engine, and remove the key from the ignition.
8. Lock the header wings. For instructions, refer to *Lock/Unlock Header Wings , page 72*.

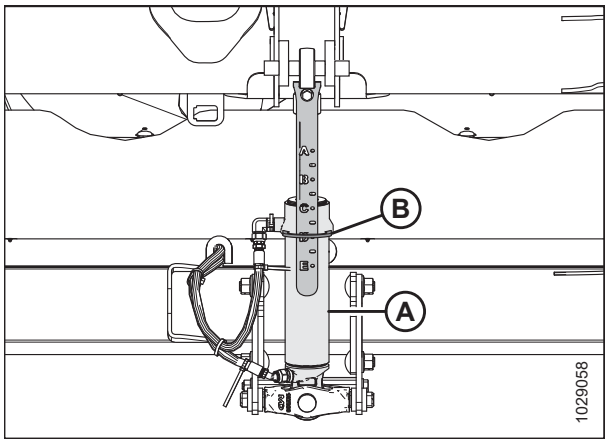


Figure 3.46: Center-Link

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

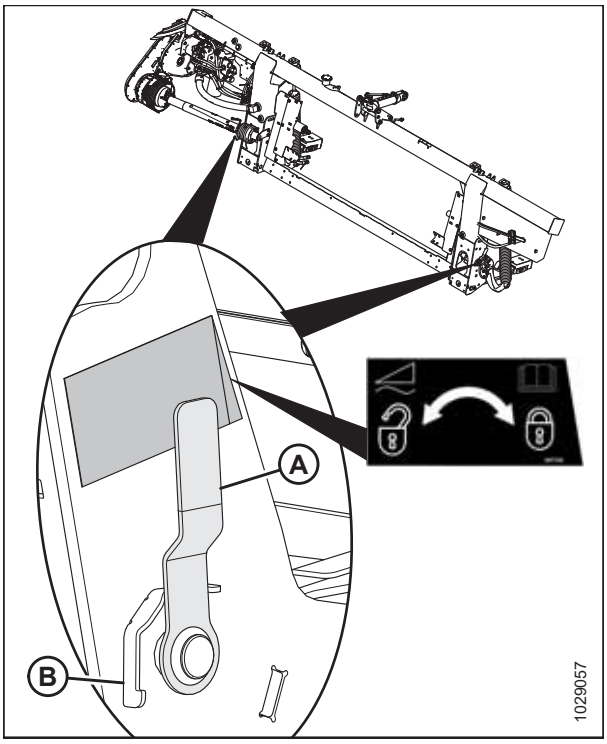


Figure 3.47: Header Float Lock in Locked Position

10. Open the left endshield.For instructions, refer to *Opening Header Endshields, page 33*.
11. Remove hairpin (A) securing tool (B) to tool holder bracket on the left endsheet.
12. Remove tool (B), and reinstall hairpin to tool holder.

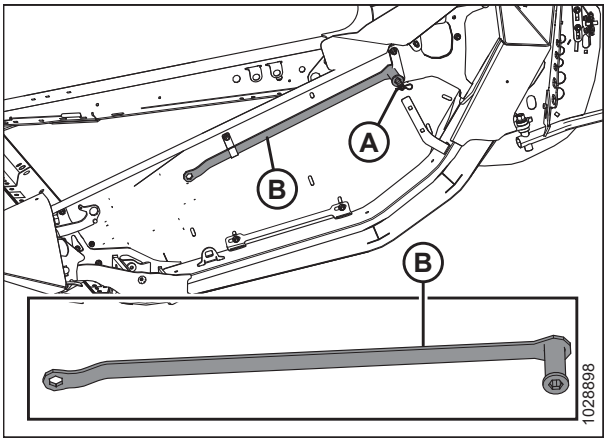


Figure 3.48: Tool Location

13. Lift float setting lever (A) by hand to remove any slack.
14. Place tool (B) on the float setting lever. The tool should be slightly angled towards the front of the header.

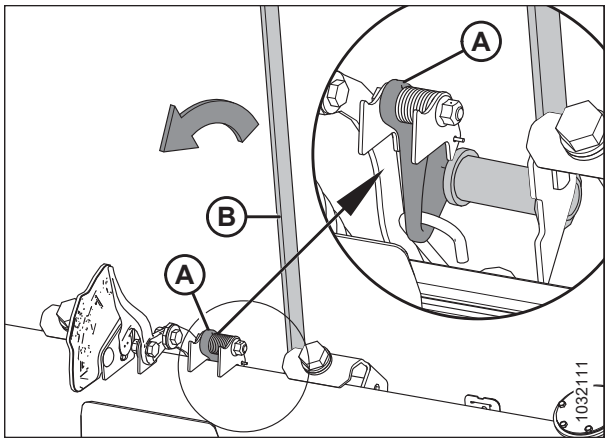


Figure 3.49: Float Setting Assembly – Left

15. Pull down on tool (B) towards the back of the header until lever (A) is over center and will not return to its original position. Remove the tool and repeat on the opposite side.

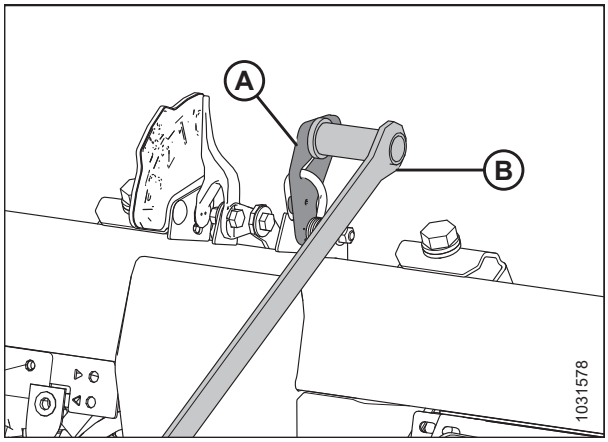


Figure 3.50: Float Setting Assembly – Left

16. Return tool (B) to its storage position, and secure with hairpin (A).
17. On the side that you are adjusting, push header down 76 mm (3 in.) and then let go.

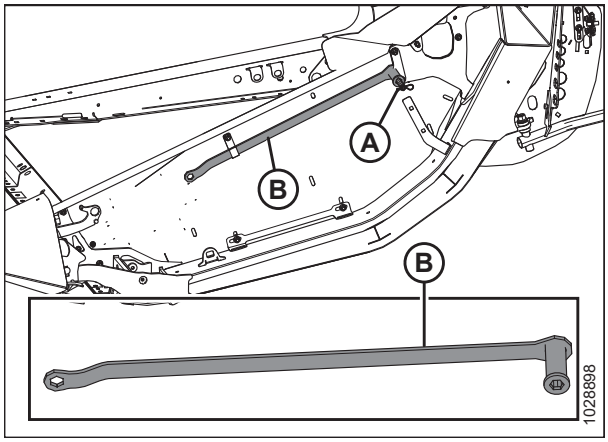


Figure 3.51: Tool Location

18. Check the smaller float setting indicator (B) for the current float value. The arm on the float setting indicator should be on 2 (B).
    - If arm (A) on the float setting indicator (FSI) (B) is higher than 2, the header is heavy.
    - If the reading on the FSI (B) is lower than 2, the header is light.

    NOTE:

    The larger numbers are for the float height indicator and used when operating the header in the field.

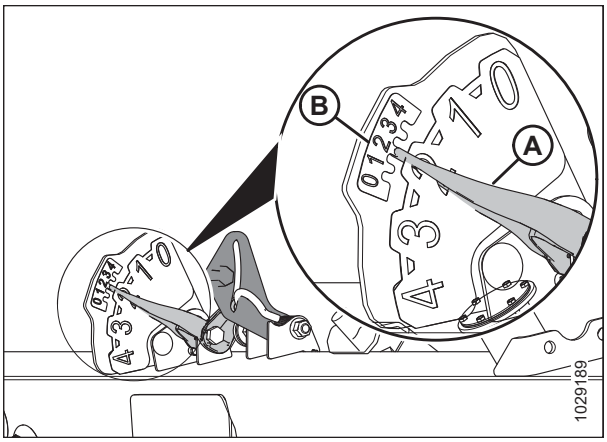


Figure 3.52: FSI – Left

19. To access float spring adjustment bolts (A), loosen bolts (C) and rotate spring locks (B).
20. To increase float and (decrease the header weight), turn both adjustment bolts (A) on the left side clockwise. Repeat adjustment at opposite side.

    To decrease the float and (increase the header weight), turn left side adjustment bolts (A) counterclockwise. Repeat adjustment at opposite side.

    NOTE:

    Turn each bolt pair equally.
21. Adjust the float until the FSI readings are equal on both sides of the header.
22. Lock adjustment bolts (A) with spring locks (B). Ensure bolt heads (A) are engaged in the spring lock cutouts. Tighten bolts (C) to secure spring locks in place.
23. Proceed to *Adjusting Wing Balance, page 80*.

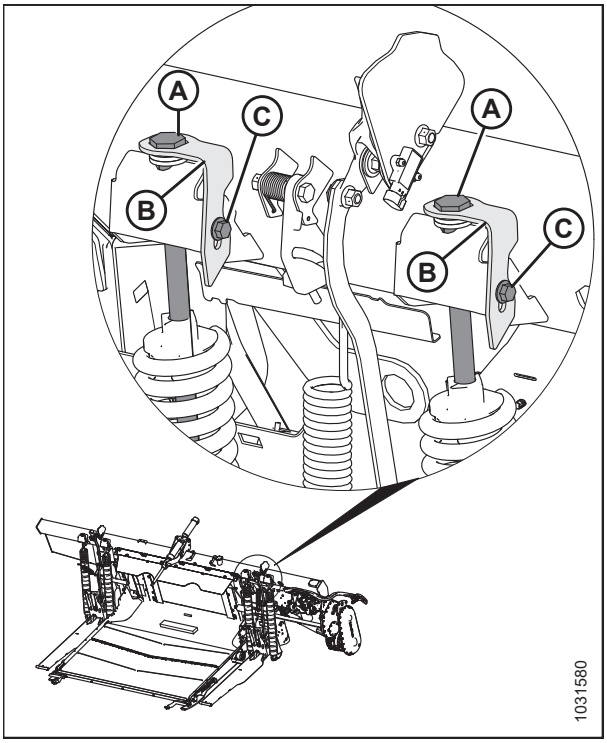


Figure 3.53: Float Adjustment – Left

Locking/Unlocking Header Float

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

IMPORTANT:

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

To **engage (lock) float locks**, push float lock handle (A) into position (C) (**LOCK**). In this position, the header cannot move with respect to the float module.

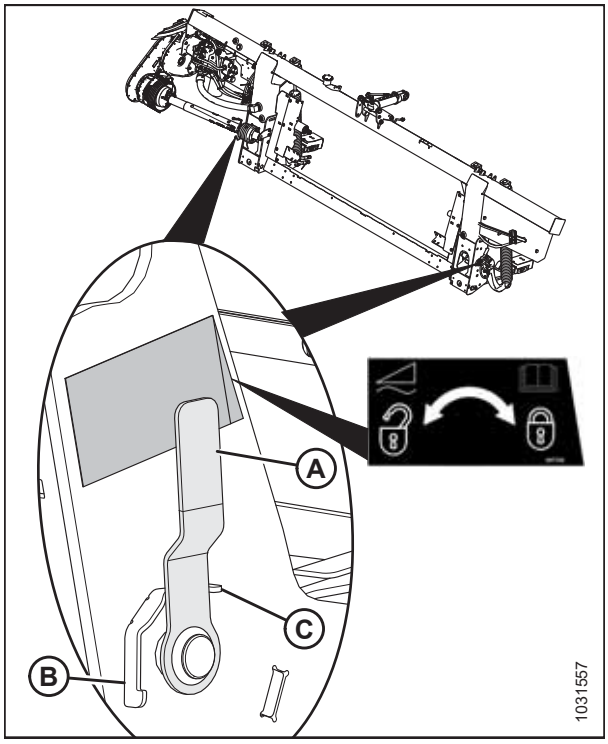


Figure 3.54: Float Lock – in Locked Position

Lock/Unlock Header Wings

Locking the wings allows the header to be operated as a rigid header with the cutterbar straight.

NOTE:

Wing is locked when the spring handle (A) is at the top slot as shown.

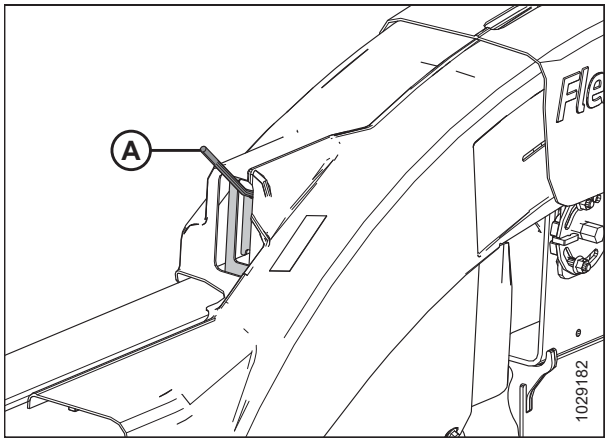


Figure 3.55: Wing in Locked Position

Unlocking the wings allows the three sections to move independently to follow the ground contours. When the wings are unlocked, they are free to move up and down.

NOTE:

Wing is unlocked when the spring handle (A) is at the bottom slot as shown.

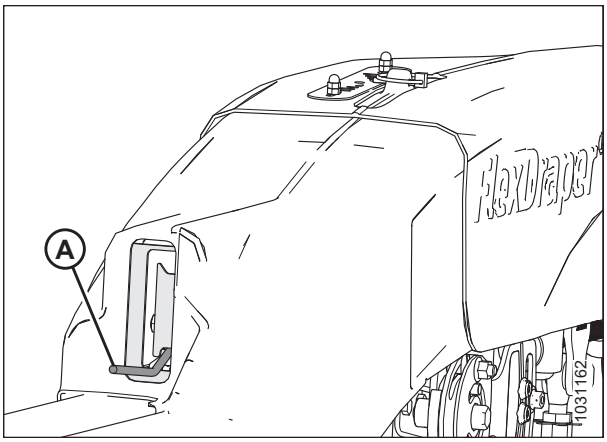


Figure 3.56: Wing in Unlocked Position

Operating in Flex Mode

The header is designed to operate with the cutterbar on the ground. The three sections move independently to follow the ground contours. When the wings are unlocked, they are free to move up and down.

Unlock the wings as follows:

1. Move spring handle (A) in the lower slot to unlock the wing. You should hear the lock disengaged.
2. If the lock link does not disengage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it disengages.
3. If the lock still does not disengage, continue to Step *4, page 73*.
4. Remove the flex linkage cover. For instructions, refer to *Removing the Flex Linkage Cover, page 40*.

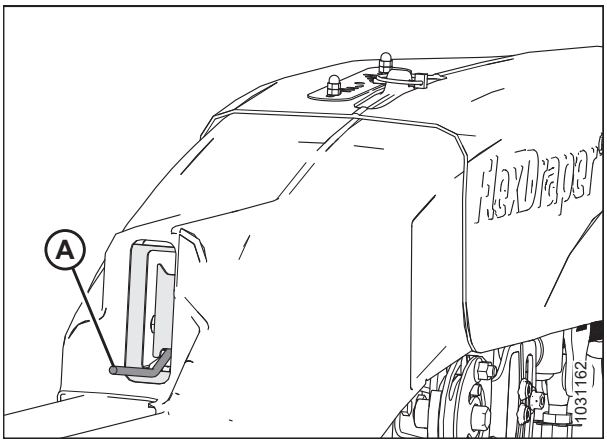


Figure 3.57: Wing in Unlocked Position

5. Remove hairpin (A) securing tool to bracket on left endsheet.
6. Remove tool (B), and reinstall hairpin to bracket.

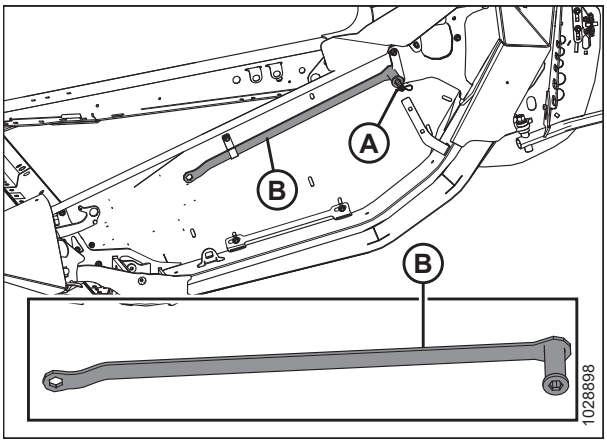


Figure 3.58: Left Endsheet

7. Use tool (A) on plate (B) to move the wing up and down until the lock disengages.
8. Return tool (A) to storage position and reinstall the linkage cover.
9. If necessary, balance the wing. For instructions, refer to *3.7.4 Wing Balance, page 75*.

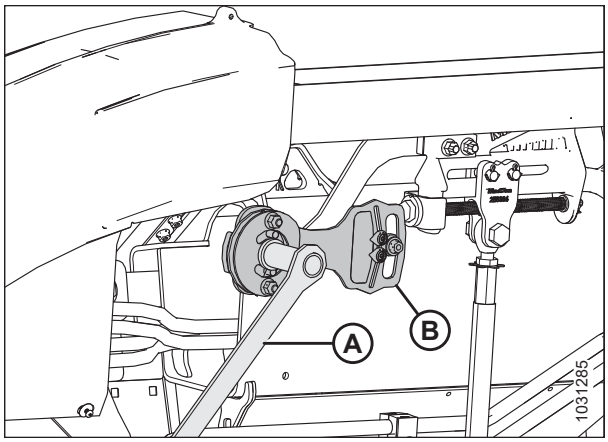


Figure 3.59: Wing Lock in Unlocked Position

NOTE:

With the header attached to a combine, wings locked and straight, lynch pin (A) should point to the center of indicator (B). If not, calibrate the indicator by loosening two bolts (C) that fasten to the shield and adjust its position. While harvesting with the wings unlocked, the indicator should periodically move thru the range. If the indicator remains stuck at either end of the range, refer to *Checking and Adjusting Header Float, page 67* and *3.7.4 Wing Balance, page 75*

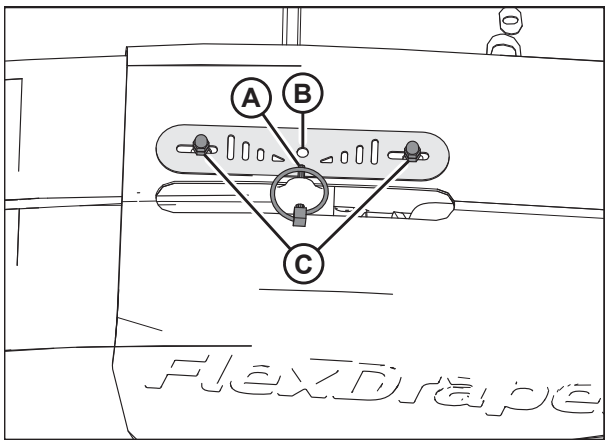


Figure 3.60: Wing Movement Indicator on Top of Flex Linkage Cover – Left Side Shown

Operating in Rigid Mode

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

Locking the wings allows the header to be operated as a rigid header with the cutterbar straight.

Lock the wings as follows:

1. Move spring handle (A) in the upper slot to lock the wing. The locking should be audible.
2. If the lock link does not engage, move the wing by raising and lowering the header, changing the header angle, or driving the combine until it engages.
3. If the lock still does not engage, continue to Step *4, page 74*.
4. Remove the flex linkage cover. For instructions, refer to *Removing the Flex Linkage Cover, page 40*.

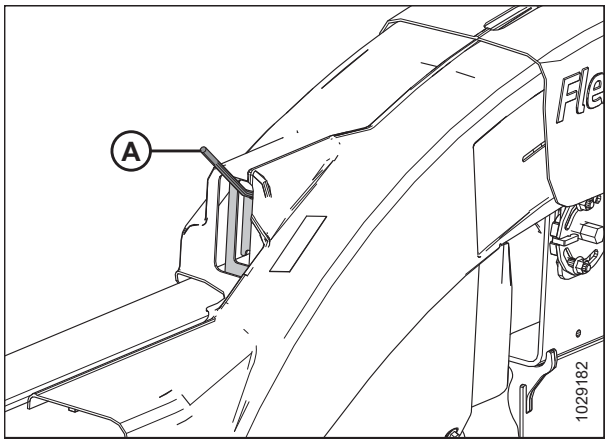


Figure 3.61: Wing in Locked Position

5. Remove hairpin (A) securing wrench to wrench holder bracket on left endsheet.
6. Remove wrench (B) from storage location, and reinstall hairpin to wrench holder.

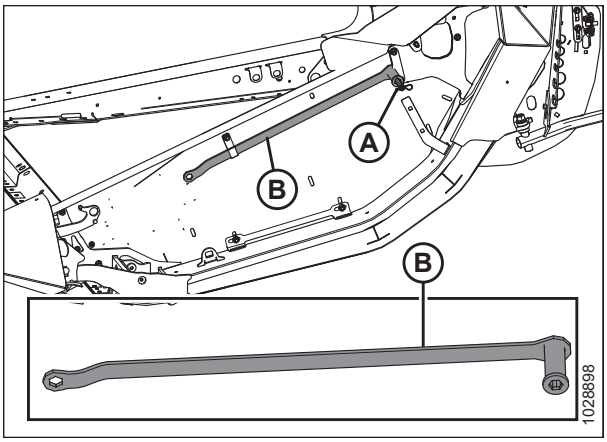


Figure 3.62: Left Endsheet

7. Use wrench (A) on plate (B) to move the wing up and down until the lock engages.
8. Return wrench (A) to storage position, and reinstall the linkage cover.
9. Reinstall flex linkage cover. For instructions, refer to *Installing the Flex Linkage Cover, page 41*.

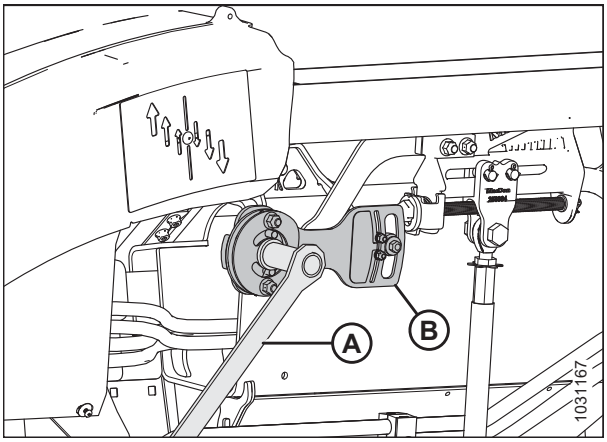


Figure 3.63: Wing in Locked Position

3.7.4 Wing Balance

IMPORTANT:

Before proceeding, the header float must be set properly. For instructions, refer to *Checking and Adjusting Header Float, page 67*.

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

Checking Wing Balance

This procedure describes how to check the balance of each wing.

IMPORTANT:

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *Checking and Adjusting Header Float, page 67*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

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

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

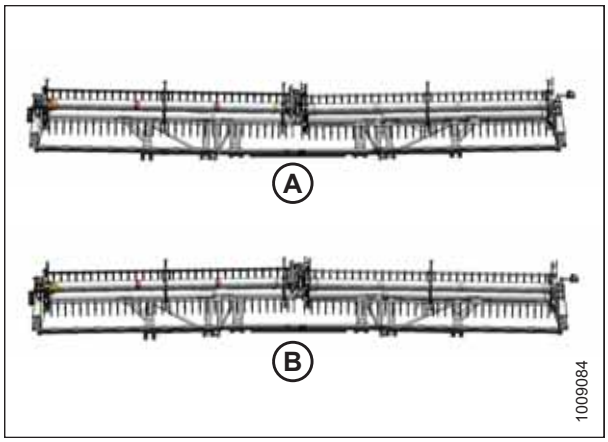


Figure 3.64: Wing Imbalance

WARNING

Check to be sure all bystanders have cleared the area.

1. Adjust the reel fore-aft to position 6 on indicator bracket (A) located on the left arm.
2. Lower the reel fully.

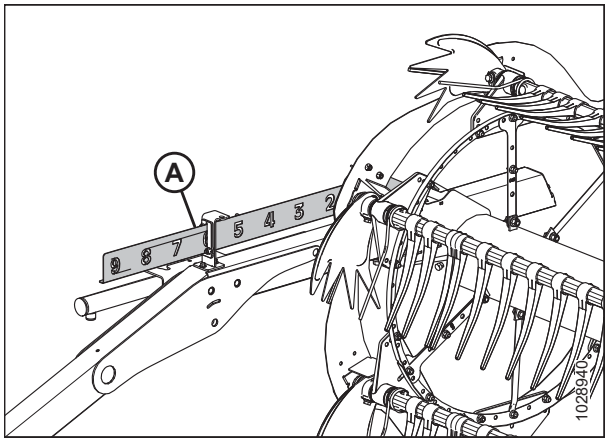


Figure 3.65: Fore-Aft Position

3. Adjust center-link (A) so that indicator (B) is at position **D** on the gauge.
4. If installed, move the transport wheels so that they are supported by the header. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.
5. Park the combine on a level surface.
6. Position the header so that the cutterbar is 254–305 mm (10–12 in.) off the ground.

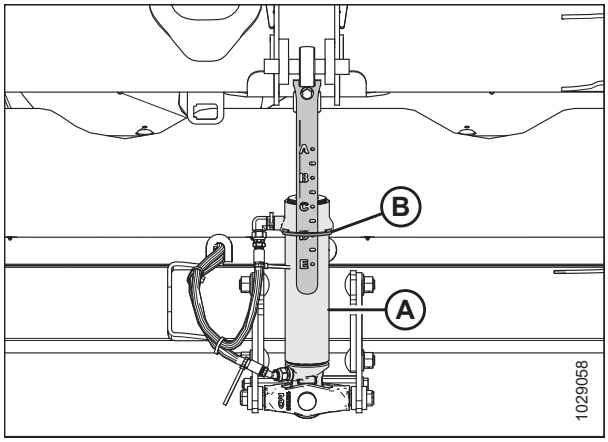


Figure 3.66: Center-Link

7. Locate spirit level (A) on top of the float module frame. Check that the bubble is in the center. If adjustment is required, refer to *3.9 Leveling Header, page 276*.
8. Shut down the engine, and remove the key from the ignition.
9. Remove the linkage cover. For instructions, refer to *Removing the Flex Linkage Cover, page 40*.
10. Open left header endshield. For instructions, refer to *Opening Header Endshields, page 33*.

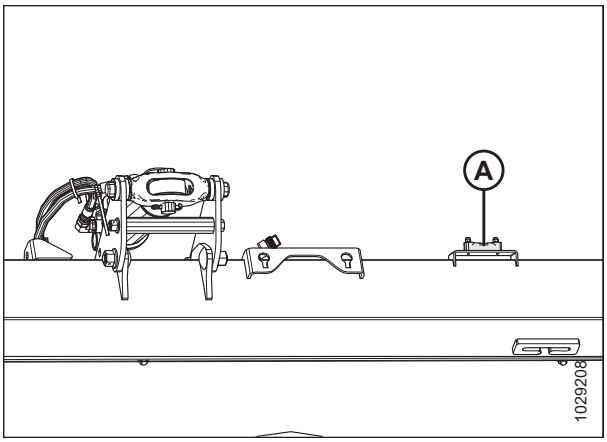


Figure 3.67: Spirit Level

11. Remove hairpin (A) securing tool to tool holder bracket on left endsheet.
12. Remove tool (B), and reinstall hairpin to tool holder.

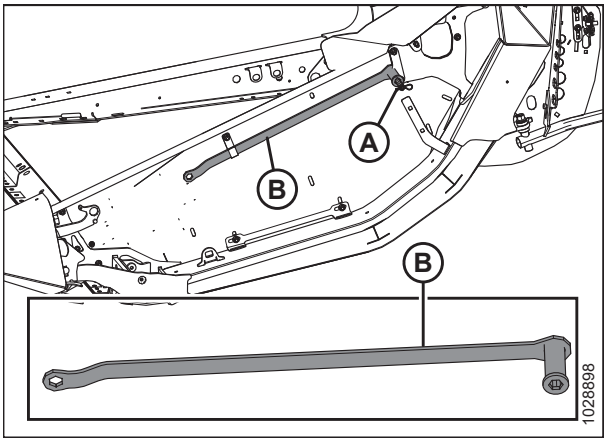


Figure 3.68: Left Endsheet

13. Unlock the wing you are checking by moving spring handle (A) to the lower (UNLOCK) position. Unlock **ONLY** the wing you are checking. Keep the opposite wing locked.

    NOTE:

    There should be an audible click when you move the spring handle indicating that the internal mechanism engaged or disengaged.
14. If the internal lock mechanism does not engage, move the wing with tool (B) until you hear an audible click.

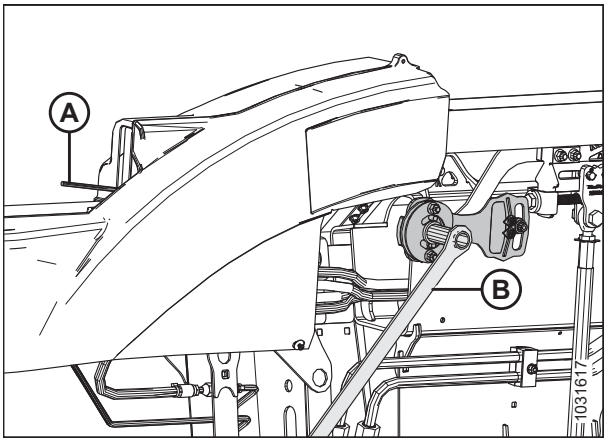


Figure 3.69: Wing Unlocked Position

15. On checker plate assembly (A), pinch two indicators (B) together with your fingers to compress spring (C) located behind the plate.

    NOTE:

    Checker plate assembly (A) made transparent in illustration to show spring (C).

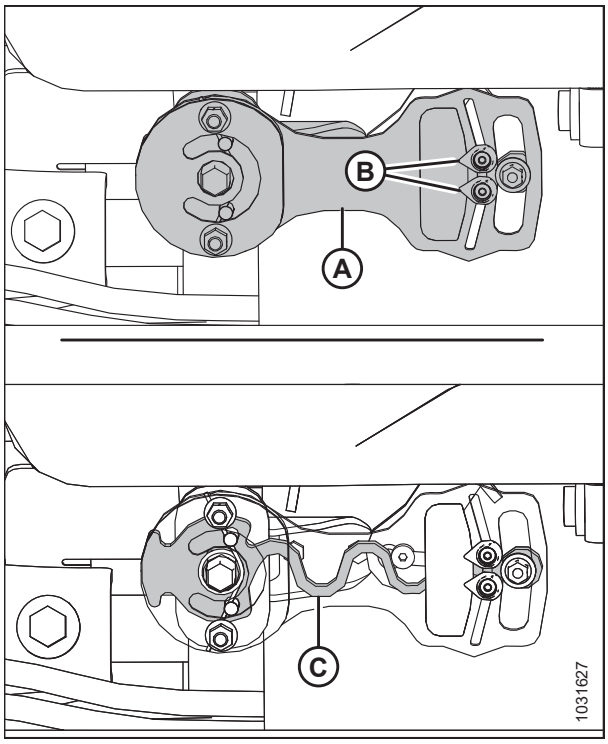


Figure 3.70: Checker Plate Assembly

16. Use tool (C) to rotate checker plate assembly (A) up until pin (B) bottoms out at the end of slot. The lower indicator (D) will move down to give the first reading.

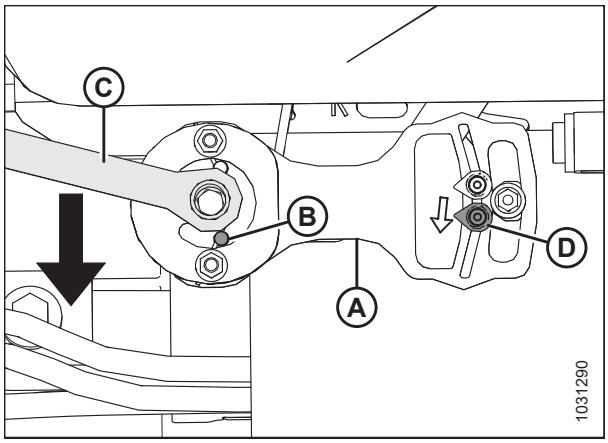


Figure 3.71: Checker Plate Assembly

17. Use tool (C) to rotate checker plate assembly (A) down until pin (B) bottoms out at the end of slot. Upper indicator (D) will move up to give the second reading.

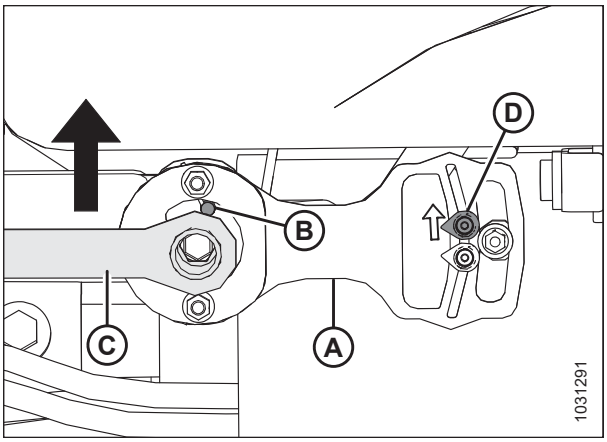


Figure 3.72: Checker Plate Assembly

18. Refer to decal (A) and compare the two readings.

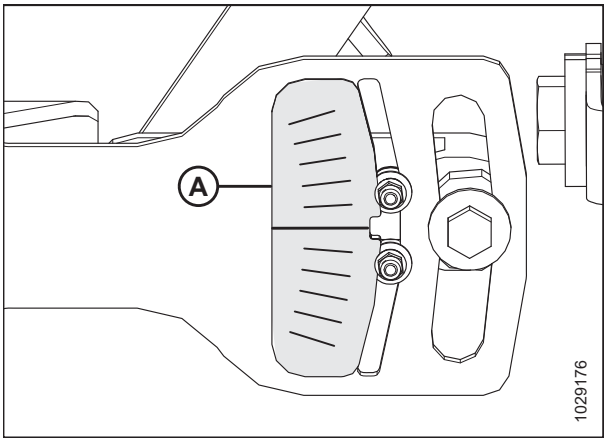


Figure 3.73: Flex Checker Decal Location

- (A) – If both indicators have moved an equal distance, then the wing is balanced correctly; no adjustment is required. Reinstall the linkage cover, and repeat the procedure on the opposite wing. For instructions, refer to *Installing the Flex Linkage Cover, page 41*.
- (B) – If the top indicator moved more than the bottom indicator, then the wing is too light and must be made heavier (frown). For instructions, refer to *Adjusting Wing Balance, page 80*.
- (C) – If the bottom indicator moved more than the top indicator, then the wing is too heavy and must be made lighter (smile). For instructions, refer to *Adjusting Wing Balance, page 80*.

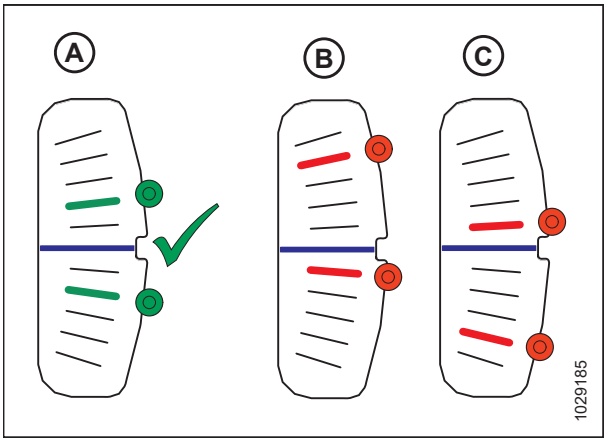


Figure 3.74: Wing Balance Reference

Adjusting Wing Balance

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

This procedure describes how to adjust the balance of each wing. Before proceeding, refer to *Checking Wing Balance, page 75* to determine if adjustments are necessary.

IMPORTANT:

To ensure correct wing balance readings, make sure the header float is set properly before proceeding. For instructions, refer to *Checking and Adjusting Header Float, page 67*. The float module must be sitting level before performing any adjustments.

1. Ensure spring handle (A) is in the lower (UNLOCK) position. Unlock **ONLY** the wing you are adjusting. Keep the opposite wing locked.

   NOTE:

   There should be an audible click when you move the spring handle indicating that the internal mechanism engaged or disengaged.

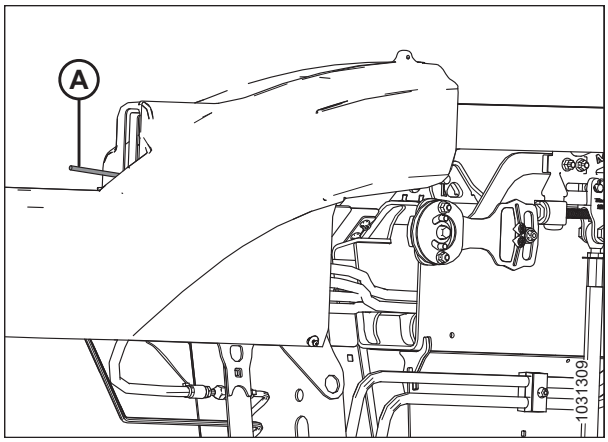


Figure 3.75: Wing in Unlocked Position

2. If necessary, perform the following adjustments:

   - If upper indicator (E) moved more than lower indicator (F), the wing is too light. Add frown by turning adjuster bolt (A) to move clevis (B) in direction (D).
   - If lower indicator (F) moved more than upper indicator (E), the wing is too heavy. Add smile by turning adjuster bolt (A) to move clevis (B) in direction (C).

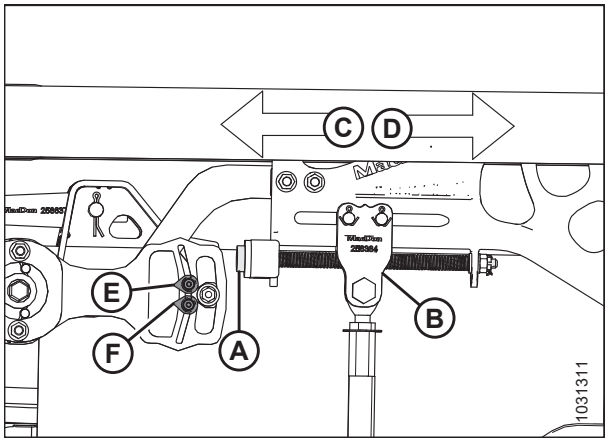


Figure 3.76: Balance Linkage – Left Side

3. Move spring handle (A) to the upper (LOCK) position.
4. If the lock does not engage, move the wing up and down with tool (B) until it locks. When locked, there will be some movement in the linkage.
5. If the cutterbar is not straight when the wings are in lock mode, then further adjustments are required. Contact your MacDon Dealer.
6. Return the tool to its storage location and reinstall the linkage cover. For instructions, refer to *Installing the Flex Linkage Cover, page 41*.

   NOTE:

   Adjustment to the main float may be required to maintain good wing balance when operating in the field. For instructions, refer to *Checking and Adjusting Header Float, page 67*.

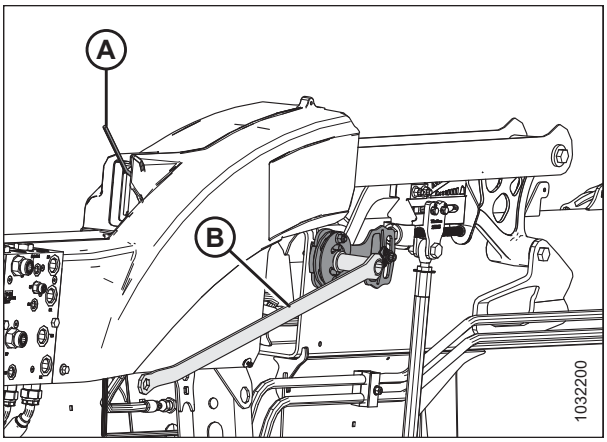


Figure 3.77: Wing in Locked Position

3.7.5 Header Angle

Header angle is adjustable to accommodate different crop conditions and/or soil types and can be adjusted using the center-link between the combine and the header. Some combines have an adjustable feeder house, which provides the operator an alternate method for controlling header angle.

Refer to *Adjusting Header Angle from Combine, page 83* for combine-specific adjustment details.

Header angle (A) is the angle between the header and the ground.

The header angle controls distance (B) between the cutterbar knife and the ground and is a critical component for effective cutting crop at ground level.

Adjusting the header angle pivots the header at the point of skid shoe/ground contact (C).

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

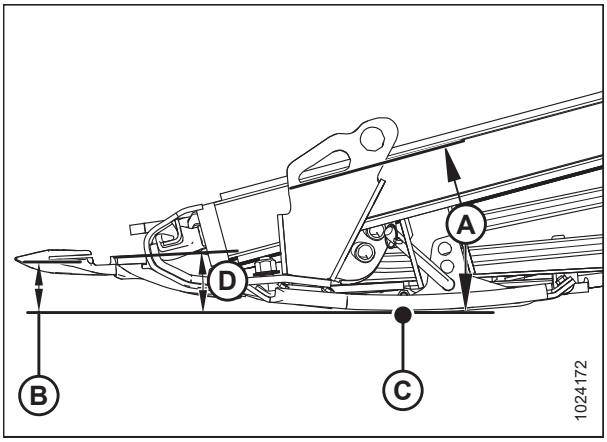


Figure 3.78: Header Angle

1. Set the header angle according to the type and condition of crop and soil as follows:

   a. Use shallower settings (A) (position **A** on the indicator) for normal cutting conditions and wet soil to reduce soil buildup at the cutterbar. Shallow angle settings also minimize damage to the knife in stony fields.

   b. Use steeper settings (E) (position **E** on the indicator) for lodged crops and crops that are close to the ground such as soybeans.

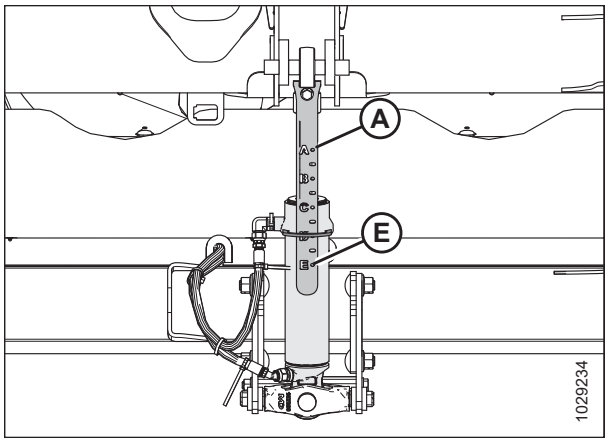


Figure 3.79: Center-Link

Shallowest angle (A) (center-link fully retracted) is at 1.7°, and produces the highest stubble when cutting on the ground.

Steepest angle (D) (center-link fully extended) is at 8.9°, and produces the lowest stubble when cutting on the ground.

Choose an angle that maximizes performance for your crop and field conditions.

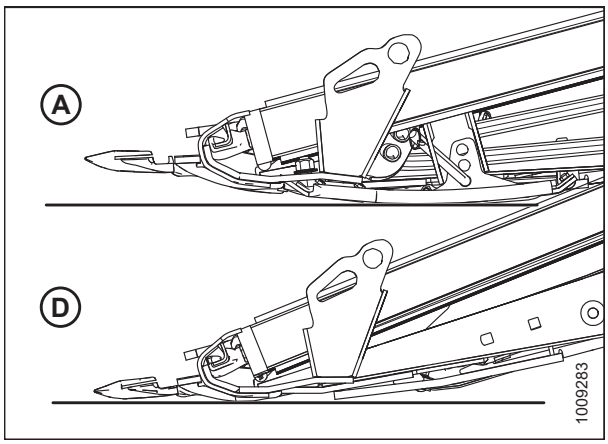


Figure 3.80: Guard Angles

Adjusting Header Angle from Combine

The header/guard angle is adjusted from the combine cab with a switch on the operator's control handle and an indicator on the center-link or on the monitor in the cab. The header/guard angle is determined by the length of the center-link between the combine float module and the header, or by tilting the feeder house on selected combines.

Case combines:

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

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

Figure 3.81: Case Controls

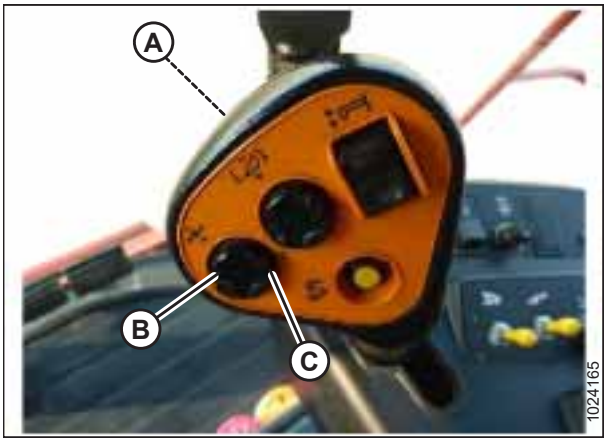


Figure 3.82: Case Controls

New Holland combines:

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

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

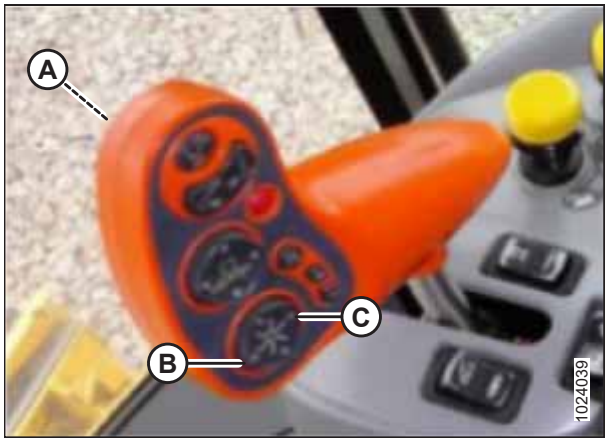


Figure 3.83: NH CR/CX Controls

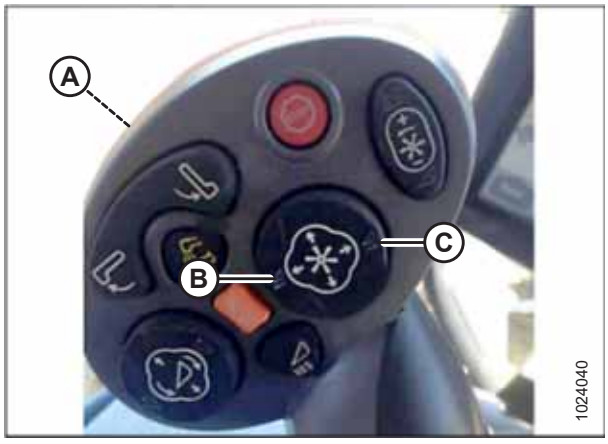


Figure 3.84: NH CR/CX Controls

AGCO combines:

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

1. **Gleaner A only:** Open armrest cover (A) (Gleaner A only) to expose row of switches, and press dealer-installed rocker switch (B) to HEADER TILT position.

   NOTE:

   Gleaner A shown. Other Challenger and Massey Ferguson combine models have rocker switch on the console (not shown).

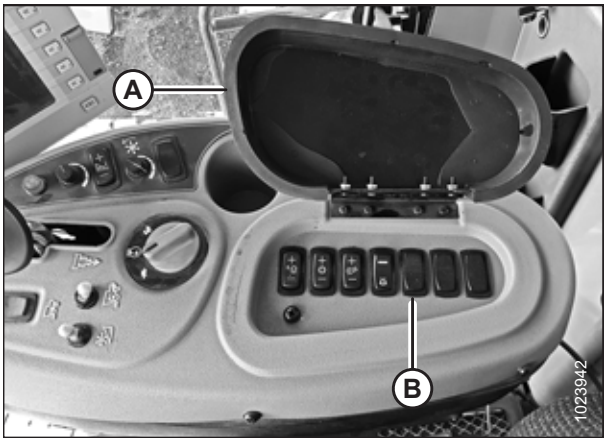


Figure 3.85: Gleaner A Console

2. Press button (A) on control handle to tilt header forward (steeper angle) or button (B) to tilt header back (shallower angle).

Figure 3.86: Gleaner Controls

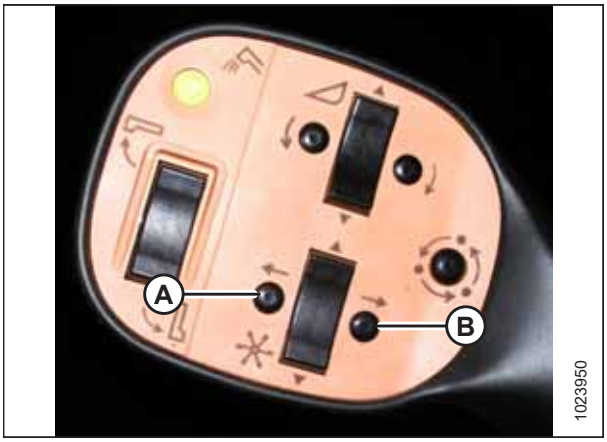


Figure 3.87: Gleaner Controls

Figure 3.88: Challenger/Massey Controls

CLAAS combines:

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

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

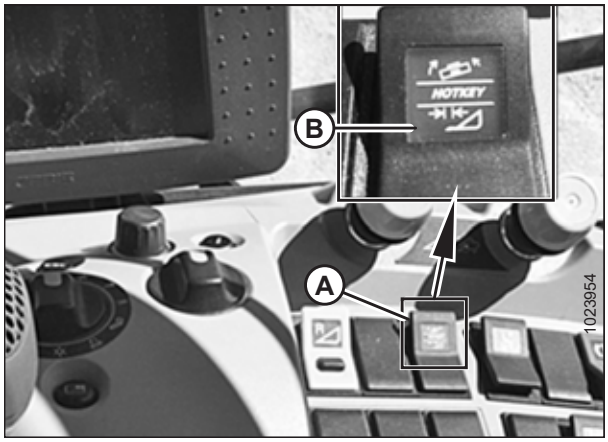


Figure 3.89: CLAAS 700 Console

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

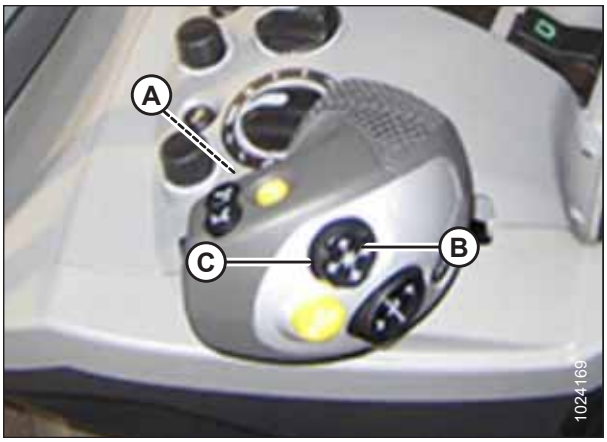


Figure 3.90: CLAAS 600/700 Control Handle

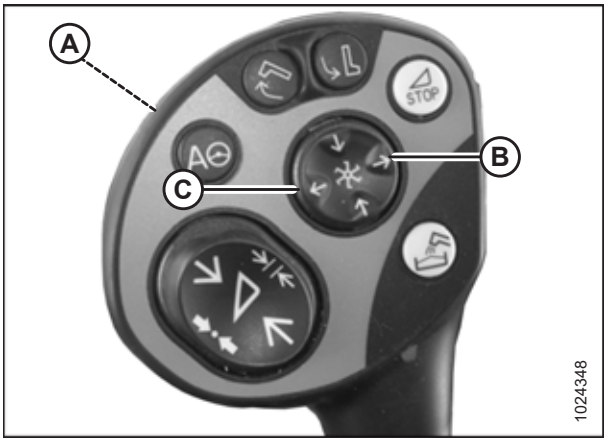


Figure 3.91: CLAAS 500 Control Handle

John Deere combines:

John Deere S700: S700 Series combines can use a feeder house deckplate tilting system for header fore-aft adjustment, instead of using the MacDon center-link for header tilt. It is recommended to set the deckplate at a mid-point position and use the MacDon fore-aft and header tilt system for tilt functionality.

IMPORTANT:

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

1. Press switch (A) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).

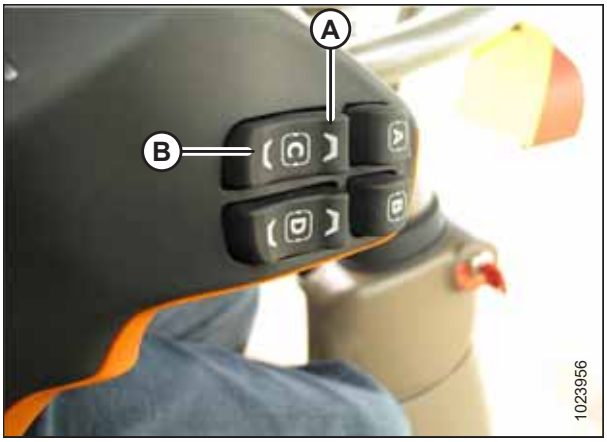


Figure 3.92: John Deere 700 Control

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

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

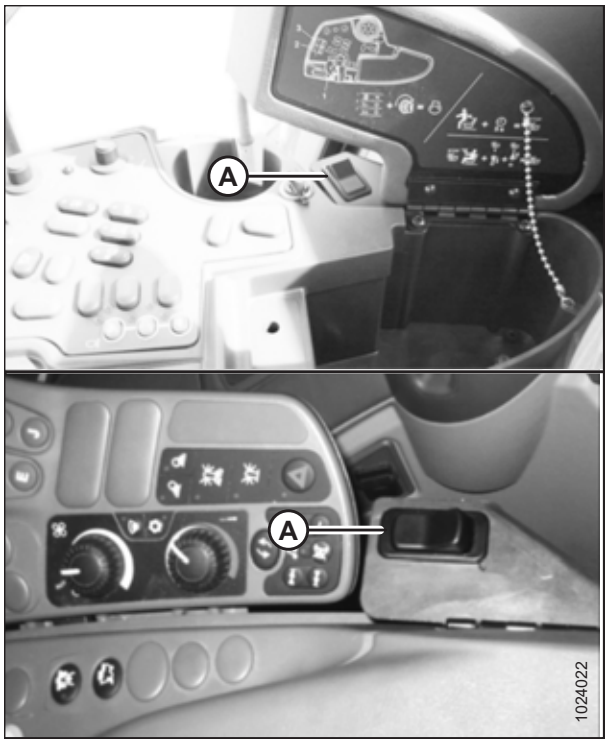


Figure 3.93: John Deere Consoles

2. Press switch (A) to tilt header forward (steeper angle) or switch (B) to tilt header back (shallower angle).

Figure 3.94: John Deere Control Handle

Versatile combines:

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

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

Figure 3.95: Versatile Control Handle and Console

3.7.6 Reel Speed

Reel speed is one of the factors that determines how crop is moved from the cutterbar onto the drapers.

The reel performs best when it appears to be driven by the ground. It should move the cut crop evenly through the cutterbar and onto the drapers without bunching and with minimal disturbance.

In standing crop, reel speed should be slightly higher than, or equal to, ground speed.

In flattened crop or crop that is leaning away from the cutterbar, the reel speed needs to be higher than the ground speed. To achieve this, either increase the reel speed or decrease the ground speed.

Excessive shattering of grain heads or crop loss over the header backtube may indicate that the reel speed is too high. Excessive reel speed also increases reel component wear and overloads the reel drive.

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

For recommended reel speeds in specific crops and conditions, refer to *3.6.2 Header Settings, page 46*.

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

Optional Reel Drive Sprockets

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

The header is factory-equipped with a 19-tooth reel drive sprocket, which is suitable for most crops. Other sprockets are available that provide more torque to the reel in heavy cutting conditions or allow for higher reel speeds in light crops when operating at increased ground speeds.

For installation details, refer to *5.17.2 Reel Drive Sprocket, page 562*.

3.7.7 Ground Speed

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

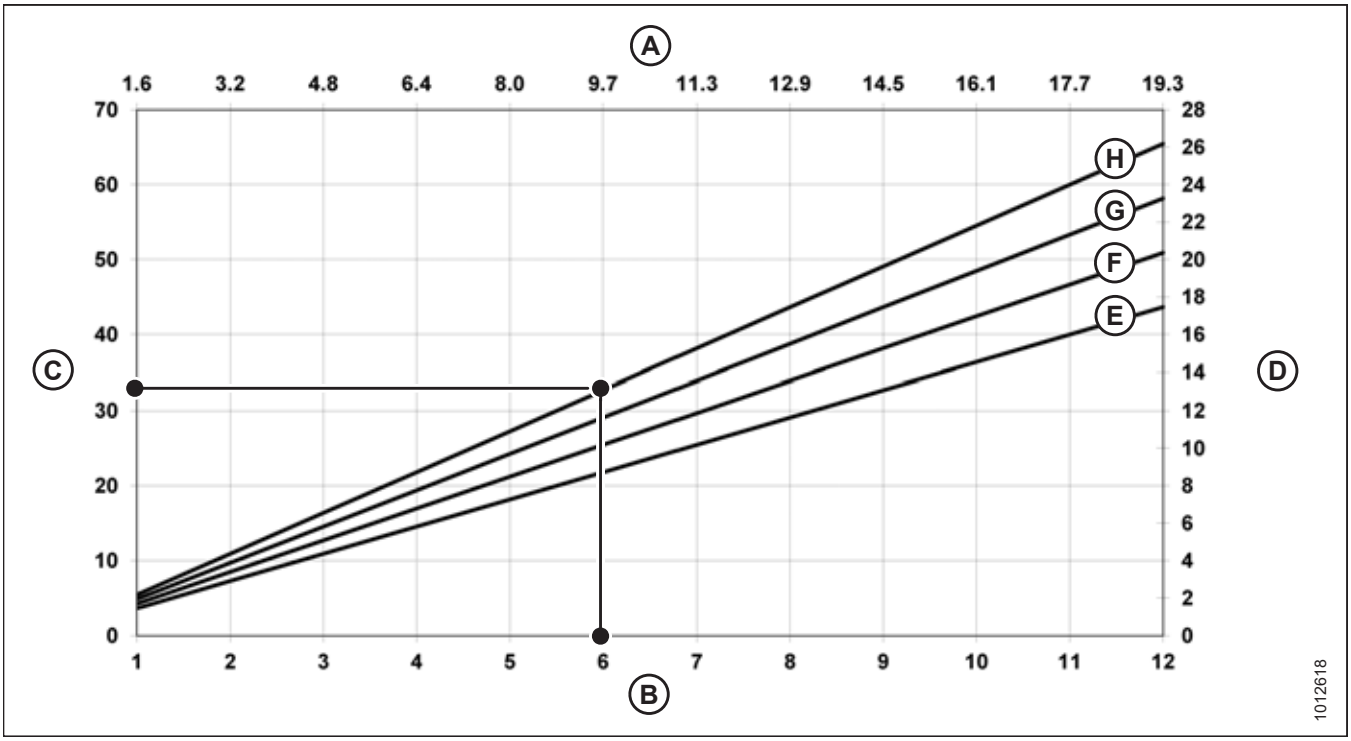
Reduce ground speed in difficult cutting conditions to reduce loads on cutting components and drives.

Use lower ground speeds in very light crops (e.g., short soybeans) to allow the reel to pull in short plants. Start at 4.8–5.8 km/h (3.0–3.5 mph) 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. If ground speed is increased, draper and reel speeds should generally be increased to handle the extra material.

Figure *3.96, page 90* illustrates the relationship between ground speed and area cut for the various sized headers.

Figure 3.96: Ground Speed versus Acres



A - Kilometers/Hour
B - Miles/Hour
C - Acres/Hour
D - Hectares/Hour
E - 9.1 m (30 ft.)
F - 10.7 m (35 ft.)
G - 12.2 m (40 ft.)
H - 13.7 m (45 ft.)

Example: A 12.2 m (40 ft.) header operating at a ground speed of 9.7 km/h (6 mph) would produce a cut area of approximately 11.3 hectares (28 acres) in one hour.

3.7.8 Draper Speed

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

Adjust the draper speed to achieve efficient crop feeding onto the float module feed draper. For instructions, refer to *Adjusting Side Draper Speed, page 91*.

Adjusting Side Draper Speed

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

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

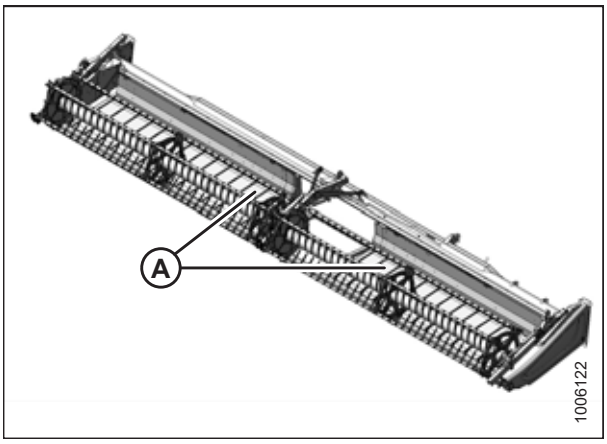


Figure 3.97: Side Drapers

1. Rotate knob (A) to setting 6 as a starting point.

   NOTE:

   Switch (B) activates the header tilt or reel fore-aft controls. For instructions on header tilt or reel fore-aft controls, refer to *Adjusting Header Angle from Combine, page 83*.

2. For recommended draper settings, refer to one of the following:

   - *3.6.2 Header Settings, page 46*
   - *3.6.3 Optimizing Header for Straight Combining Canola, page 57*

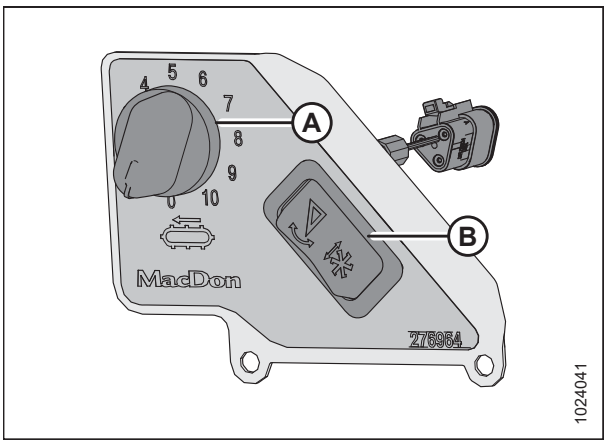


Figure 3.98: In-Cab Side Draper Speed Control

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.

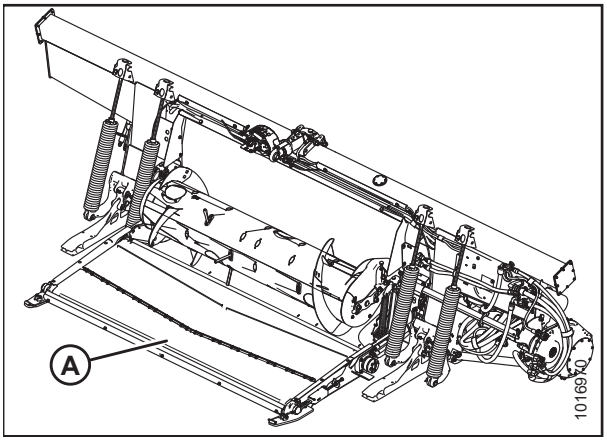


Figure 3.99: FM100 Float Module

3.7.9 Knife Speed Information

The header knife drive is powered by the integrated pump.

Table 3.11 Feeder House Speed

Combine	Feeder House Speed (rpm)
Case IH	580
Challenger	625
CLAAS[42]	420
Gleaner	625
John Deere	490
Massey Ferguson	625
New Holland	580

IMPORTANT:

Ensure the knife speed is within the range of rpm values in Table *3.12, page 92*. For instructions, refer to *Checking Knife Speed, page 92*.

IMPORTANT:

Set knife speed at maximum to avoid risk of overspeeding and failing the knife if the feederhouse speed is adjusted.

Table 3.12 FD2 Series Header Knife Speed

Header	Recommended Knife Drive Speed Range (rpm)	
	Single-Knife Drive	Double-Knife Drive
FD230	600–750	—
FD235	600–750	—
FD240	600–700	600–750
FD241	—	600–750
FD250	—	600–750

Checking Knife Speed

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 33*.

WARNING

Check to be sure all bystanders have cleared the area.

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

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

6. Measure the rpm of the flywheel (A) with a hand-held tachometer.
7. Shut down the engine, and remove the key from the ignition.
8. Compare pulley rpm measurement with the rpm values in the knife speed chart. Refer to *3.7.9 Knife Speed Information, page 92*.
9. Contact your MacDon Dealer if the pulley rpm measurement exceeds the specified rpm range for your header.

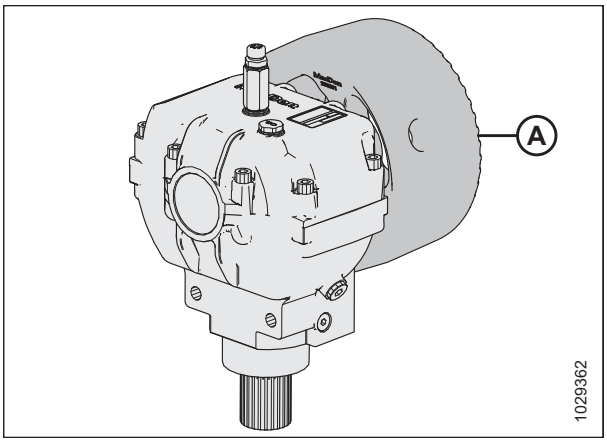


Figure 3.100: Flywheel

3.7.10 Reel Height

The reel operating position depends on the type of crop and cutting conditions. Set the reel height and fore-aft position to carry material past the knife and onto the drapers with minimal damage to the crop. Refer to *3.7.11 Reel Fore-Aft Position, page 98*.

The reel height is controlled manually or with button presets on the ground speed lever (GSL) in the combine cab. For instructions, refer to your combine operator's manual for instructions on controlling reel height or setting up auto reel height presets. Where applicable, this manual contains instructions for presetting reel height on selected combines. Refer to *3.8 Auto Header Height Control, page 119*.

Table 3.13 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

For recommended reel heights for specific crops and crop conditions, refer to *3.6.2 Header Settings, page 46*.

IMPORTANT:

Maintain adequate clearance to prevent fingers contacting the knife or the ground. For instructions, refer to *5.16.1 Reel Clearance to Cutterbar, page 528*.

Checking and Adjusting Reel Height Sensor

The output voltage range of the auto reel height sensor can be checked from inside the combine or manually at the sensor. For in-cab instructions, refer to the combine operator's manual.

IMPORTANT:

Ensure minimum reel height is properly set before adjusting reel height sensor. For instructions, refer to *5.16.1 Reel Clearance to Cutterbar, page 528*.

Reel height sensor (A) is located on the right endsheet and connects to the right reel arm.

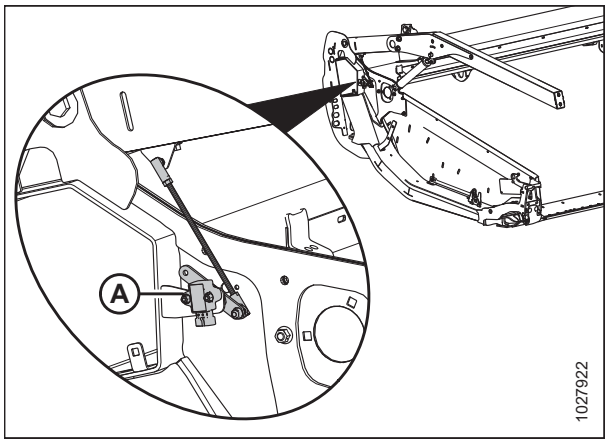
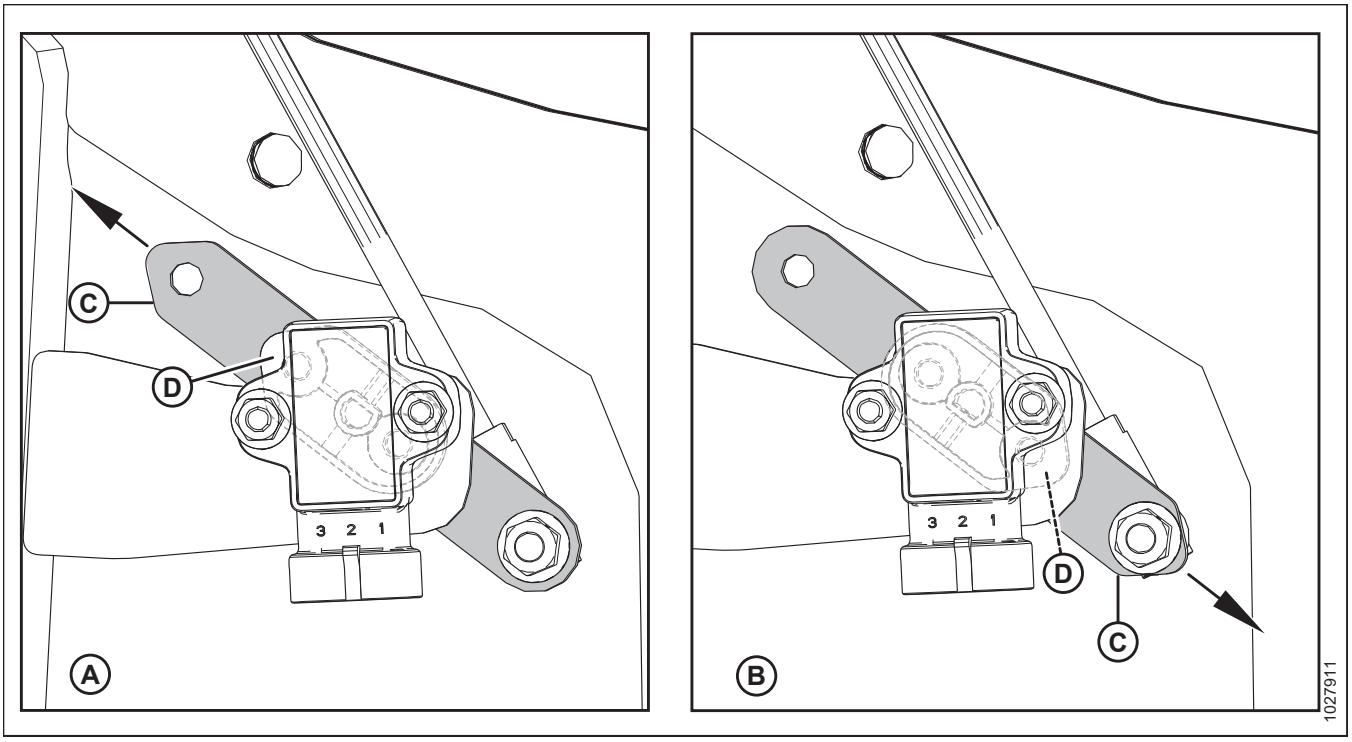


Figure 3.101: Reel Height Sensor Location

Figure 3.102: Sensor Arm/Pointer Configurations



A - John Deere, CLAAS, AGCO IDEAL Configuration

B - Case/New Holland Configuration

C - Sensor Arm

D - Sensor Pointer (Located Between Sensor and Sensor Arm)

NOTE:

In configuration **A**, the arrow indicates that the pointed end of the sensor arm is pointed toward the back of the header.

In configuration **B**, the arrow indicates that the pointed end of the sensor arm is pointed toward the front of the header.

1. Check that sensor arm (C) and pointer (D) are configured properly for your machine. Refer to Figure *3.102, page 95*.

IMPORTANT:

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

Table 3.14 Reel Height Sensor Voltage Limits

Combine Type	Voltage Range	
	X Voltage	Y Voltage
AGCO IDEAL	3.9–4.3 V	0.7–0.11 V
Case/New Holland	0.7–0.11 V	3.9–4.3 V
CLAAS	3.9–4.3 V	0.7–0.11 V
John Deere	3.9–4.3 V	0.7–0.11 V

NOTE:

For CLAAS combines: To avoid a collision of the reel with the cab, the machine is equipped with an automatic reel height limitation. Some CLAAS combines have an automatic shutoff feature that engages when the automatic reel height limitation is reached. When raising the header by more than 80 percent, the reel is automatically lowered. The automatic lowering of the reel can be manually overridden, and a warning will appear on the CEBIS terminal.

WARNING

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

CAUTION

Check to be sure all bystanders have cleared the area.

To check the voltage range manually, follow these steps:

1. Engage combine parking brake.
2. Start the engine. For instructions, refer to the combine operator's manual.
3. Lower the reel fully.
4. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **Y**. Refer to Table *3.14, page 95* for range requirements.
5. If using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at the reel height sensor (B).
6. Shut down the engine, and remove the key from the ignition.
7. Adjust length of threaded rod (A) to modify voltage range **Y**.

   NOTE:

   Dimension (C) is factory set to 164.5 mm (6.5 in).
8. Repeat checking and adjusting until voltage range **Y** is within the range specified.
9. Start the engine, and fully raise the reel.
10. Use the combine display or a voltmeter (if measuring the sensor manually) to measure voltage range **X**. Refer to Table *3.14, page 95* for range requirements.
11. If using a voltmeter, measure the voltage between the ground (pin 2 wire) and the signal (pin 3 wire) at the reel height sensor (A).
12. Shut down the engine, and remove the key from the ignition.
13. Loosen two M5 hex nuts (B) and rotate sensor (A) to achieve voltage range **X**.
14. Repeat checking and adjusting until voltage range **X** is within the range specified.
15. Start the engine and fully lower the reel.
16. Recheck voltage range **Y** and ensure it is still within the range specified. Adjust if required.

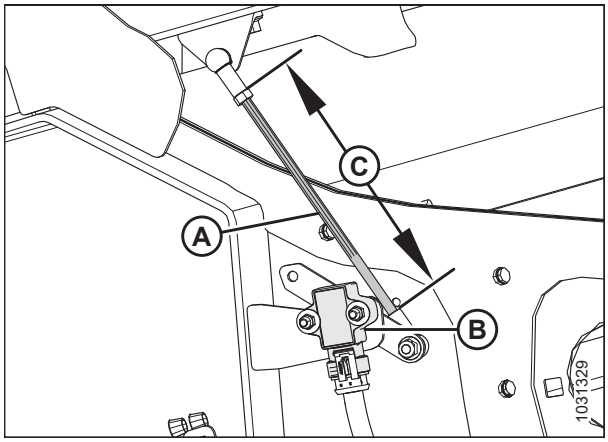


Figure 3.103: Reel Height Sensor – Right Reel Arm with Reel Down

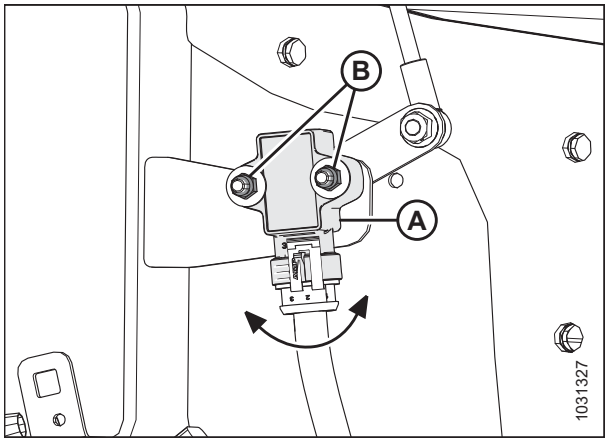


Figure 3.104: Reel Height Sensor – Right Reel Arm with Reel Up

Replacing Reel Height Sensor

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Start engine and lower reel fully.
2. Stop engine and remove key.
3. Disconnect harness from sensor (A).
4. Remove two hex head bolts (B) from sensor arm (C). Retain hardware for reinstallation.

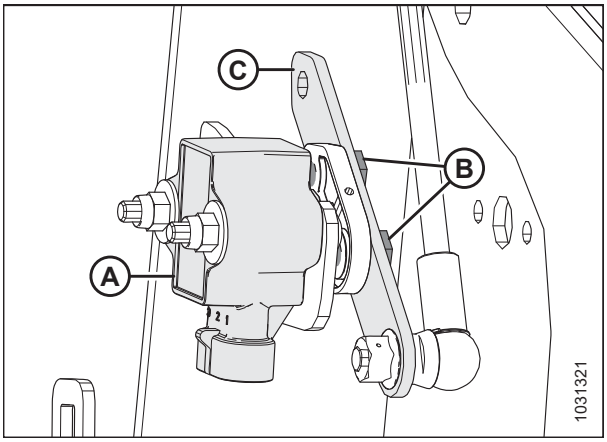


Figure 3.105: Reel Height Sensor – Right Reel Arm

5. Remove two nyloc nuts, washers, and bolts (A) securing sensor (B) to the header frame. Remove sensor.
6. Install new sensor (B) to bracket (C) on header frame, and attach using retained bolts (A), washers, and nyloc nuts. Torque bolts (A) to 2–3 Nm (17–27 lbf·in.).

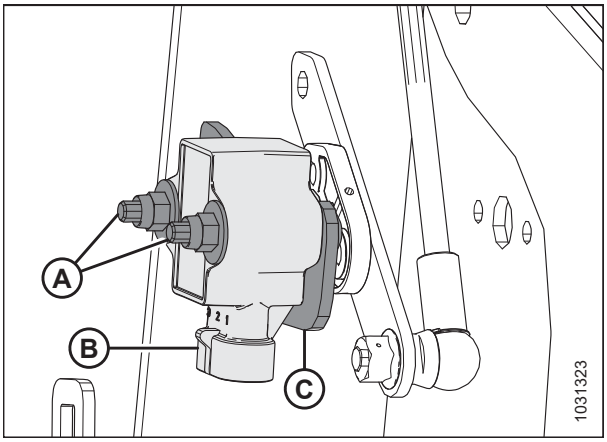


Figure 3.106: Reel Height Sensor – Right Reel Arm

7. Secure sensor arm (B) using retained hex head bolts (A). Ensure sensor pointer (C) is installed in the same direction as the pointed end of sensor arm (B).
8. Torque bolts (A) to 4 Nm (35 lbf·in.).
9. Connect the sensor to the harness.
10. Check the sensor voltage range. Refer to *Checking and Adjusting Reel Height Sensor, page 94*.

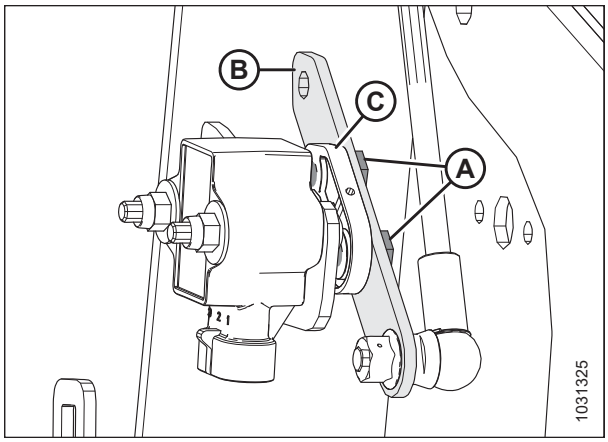


Figure 3.107: Reel Height Sensor – Right Reel Arm

3.7.11 Reel Fore-Aft Position

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

The reel can be moved approximately 155 mm (6 in.) farther aft by repositioning the fore-aft cylinders on the header's reel arms to accommodate certain crop conditions.

- For double-reel headers, refer to *Repositioning Fore-Aft Cylinders – Double Reel, page 99*.
- For triple-reel headers, refer to *Repositioning Fore-Aft Cylinders – Triple Reel, page 103*.

The reel position indicator (A) is located at the left reel arm. Bracket (B) is the reel fore-aft position marker.

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

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

NOTE:

If experiencing difficulty picking up flattened crop, adjust to a steeper header angle. Refer to *3.7.5 Header Angle, page 81* for adjustment instructions. Adjust reel position only if header angle adjustments are not satisfactory.

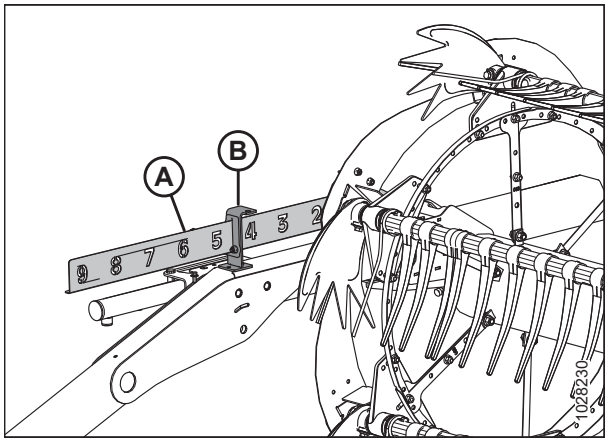


Figure 3.108: Fore-Aft Indicator

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 *3.7.12 Reel Tine Pitch, page 105* 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 fore-aft indicator (A) as a reference. Bracket (B) is the position marker.
3. Check the reel clearance to cutterbar after making changes to the cam setting. Refer to the following for measurement and adjustment procedures:
   - *5.16.1 Reel Clearance to Cutterbar, page 528*
   - *5.16.2 Reel Frown, page 533*

   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.

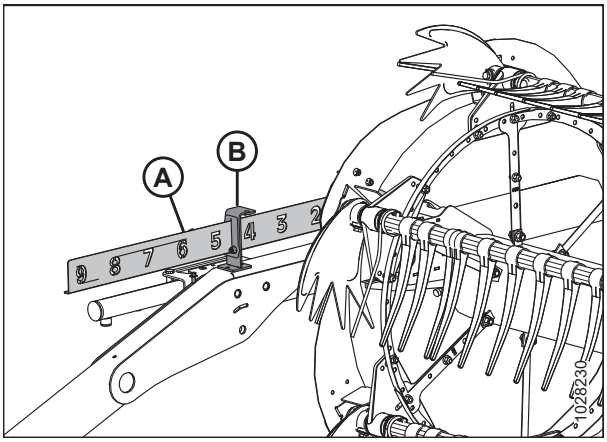


Figure 3.109: Fore-Aft Indicator

Repositioning Fore-Aft Cylinders – Double Reel

The reel can be moved approximately 155 mm (6 in.) farther aft by repositioning the fore-aft cylinders on the reel arms. This may be desirable when straight-combining canola.

DANGER

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

IMPORTANT:

Ensure all fore-aft cylinders are set to the same position.

1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.
3. Remove hairpin (A) securing wrench to wrench holder bracket on left endsheet.
4. Remove wrench (B), and reinstall hairpin to wrench holder.

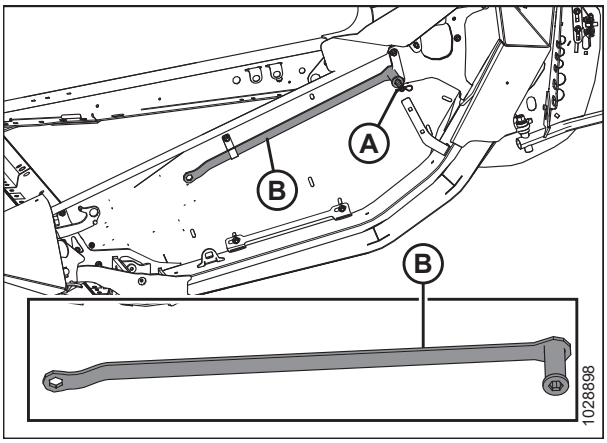


Figure 3.110: Left Endsheet

Reposition the center cylinder as follows:

5. Remove split ring (A), clevis pin (B), and washer securing the center fore-aft cylinder in the forward position.

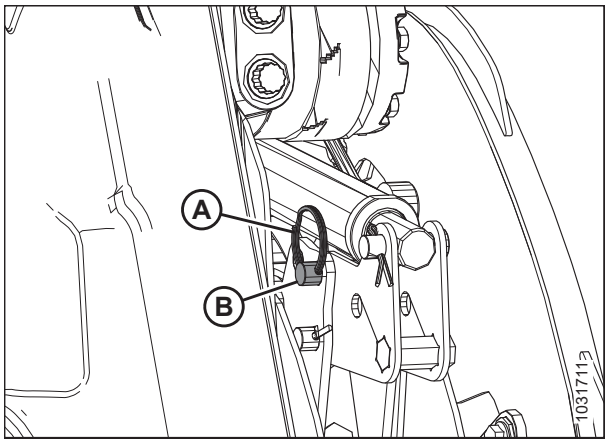


Figure 3.111: Center Arm Cylinder – Forward Position

6. Use wrench (A) to push bracket (B) rearward until hole (C) aligns with hole (D). The reel will move rearward as bracket (B) rotates on bottom pin (E).

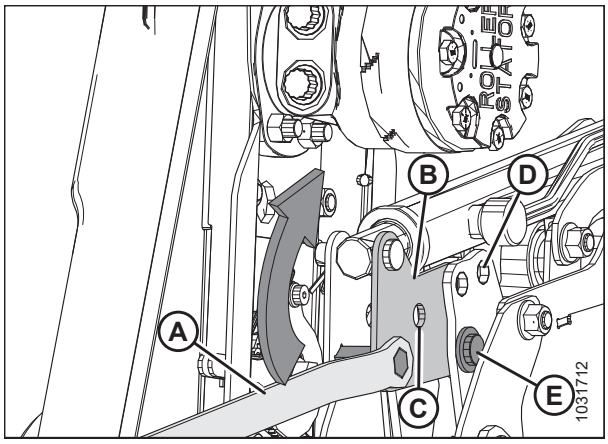


Figure 3.112: Center Arm Cylinder – Forward Position

7. When the bracket holes are lined up, secure in aft position with clevis pin (A), washer, and split ring (B).

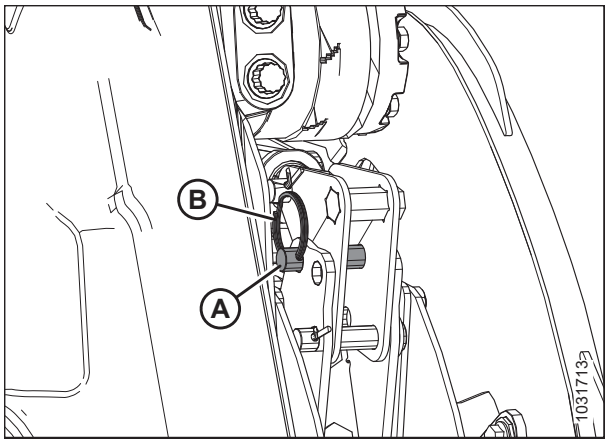


Figure 3.113: Center Arm Cylinder – Aft Position

Reposition the outer right cylinder as follows:

1. Remove split ring (A), clevis pin (B), and flat washer securing the right fore-aft cylinder in the forward position.

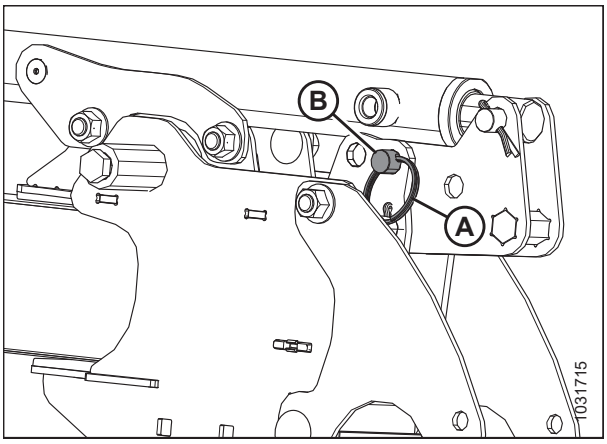


Figure 3.114: Right Arm Cylinder – Forward Position

2. Use wrench (A) to push bracket (B) rearward until hole (C) aligns with hole (D). The reel will move rearward as bracket (B) rotates on bottom pin (E).

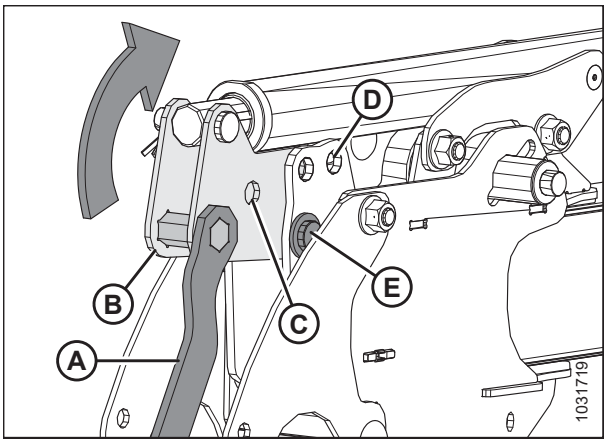


Figure 3.115: Right Arm Cylinder – Forward Position

3. When the bracket holes are lined up, secure in aft position with clevis pin (A), washer, and split ring (B).

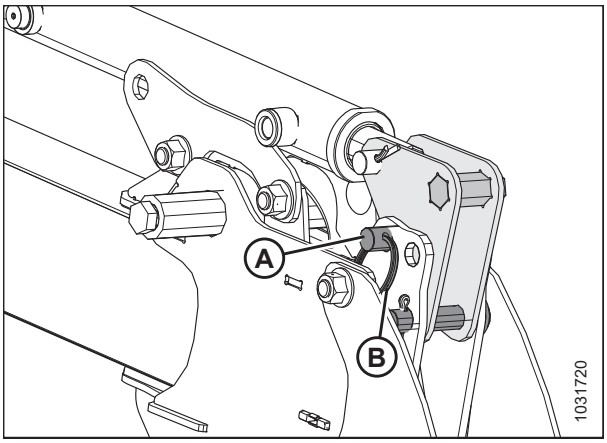


Figure 3.116: Right Arm Cylinder – Aft Position

Reposition the outer left cylinder as follows:

1. Remove split ring (A) and clevis pin (B) securing the left cylinder in forward position on cylinder bracket (C).

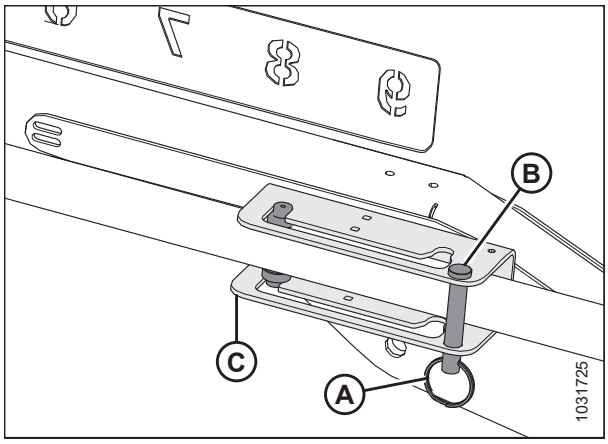


Figure 3.117: Left Arm Cylinder – Forward Position

2. Grab hold of the cylinder, and use guides (A) to slide the cylinder along the bracket slot and into aft position (B).

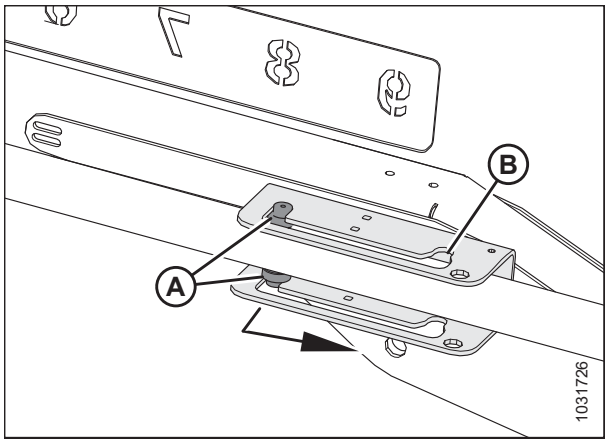


Figure 3.118: Left Arm Cylinder – Forward Position

3. Reinstall clevis pin (A) and split ring (B) to secure the cylinder in aft position (C) on the bracket.

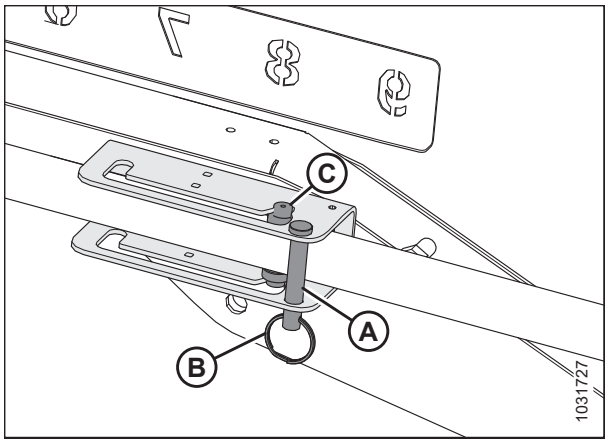


Figure 3.119: Left Arm Cylinder – Aft Position

4. Check reel clearance to backsheet, upper cross auger (if installed), and reel braces.
5. Adjust reel tine pitch (if required). For adjustment procedures, refer to *3.7.12 Reel Tine Pitch, page 105*.

Repositioning Fore-Aft Cylinders – Triple Reel

The reel can be moved approximately 155 mm (6 in.) farther aft by repositioning the fore-aft cylinders on the reel arms This may be desirable when straight-combining canola.

DANGER

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

IMPORTANT:

Ensure all fore-aft cylinders are set to the same position.

1. Position reel fully aft with support arms horizontal.
2. Stop engine and remove key.
3. Remove hairpin (A) securing wrench to wrench holder bracket on left endsheet.
4. Remove wrench (B), and reinstall hairpin to wrench holder.

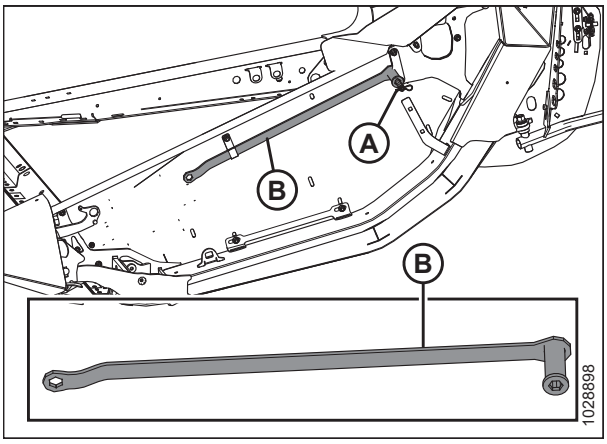


Figure 3.120: Left Endsheet

Reposition the center left and center right fore-aft cylinders as follows:

5. Remove split ring (A) and clevis pin (B) securing the center fore-aft cylinder in the forward position.

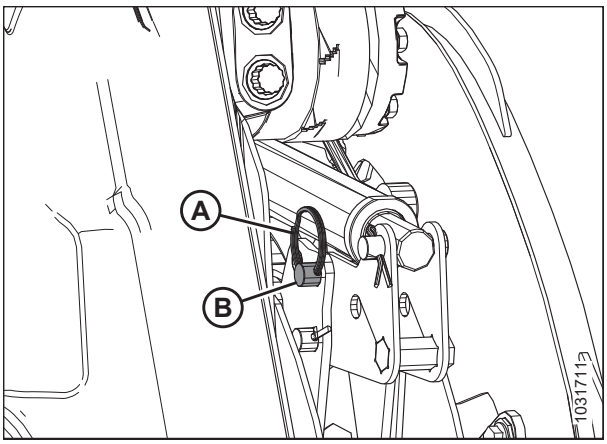


Figure 3.121: Center Left Arm Cylinder – Forward Position

6. Use wrench (A) to push bracket (B) rearward until hole (C) aligns with hole (D). The reel will move rearward as bracket (B) rotates on bottom pin (E).

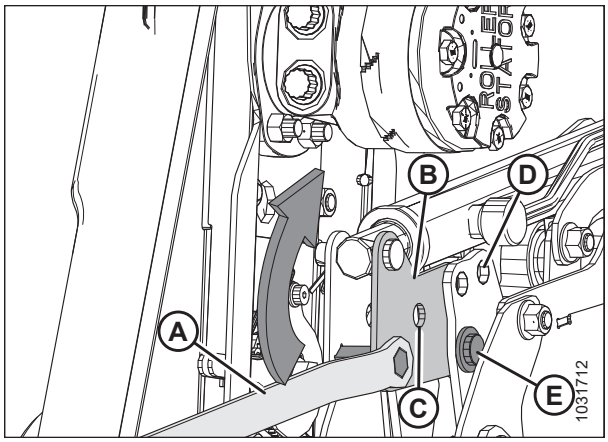


Figure 3.122: Center Left Arm Cylinder – Forward Position

7. When the bracket holes are lined up, secure in aft position with clevis pin (A) and split ring (B).

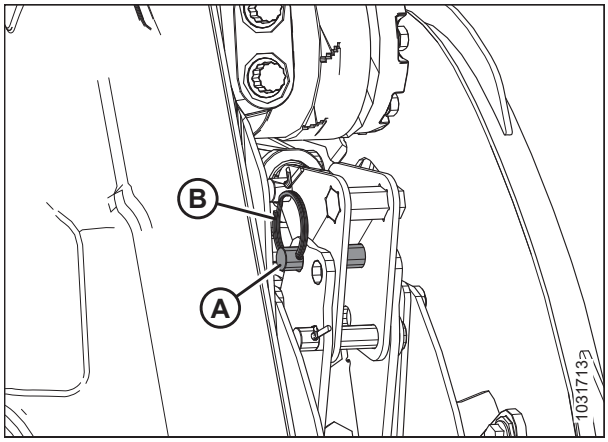


Figure 3.123: Center Left Arm Cylinder – Aft Position

Reposition the outer left and outer right fore-aft cylinders as follows:

1. Remove split ring (A) and clevis pin (B) securing the left cylinder in forward position on cylinder bracket (C).

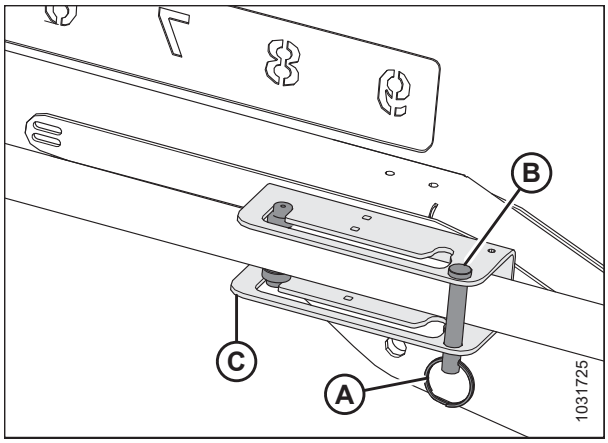


Figure 3.124: Outer Left Arm Cylinder – Forward Position

2. Grab hold of the cylinder, and use guides (A) to slide the cylinder along the bracket slot and into aft position (B).

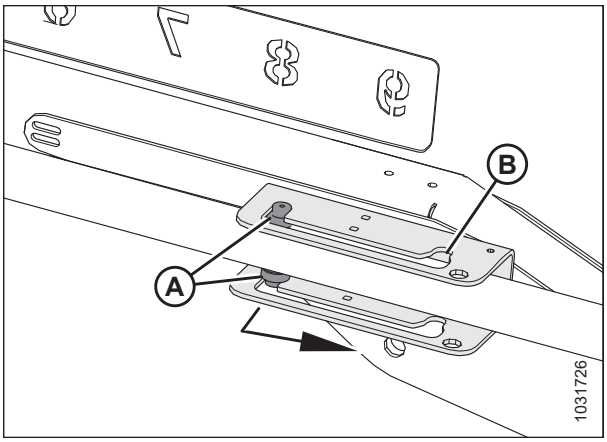


Figure 3.125: Outer Left Arm Cylinder – Forward Position

3. Reinstall clevis pin (A) and split ring (B) to secure the cylinder in aft position (C) on the bracket.

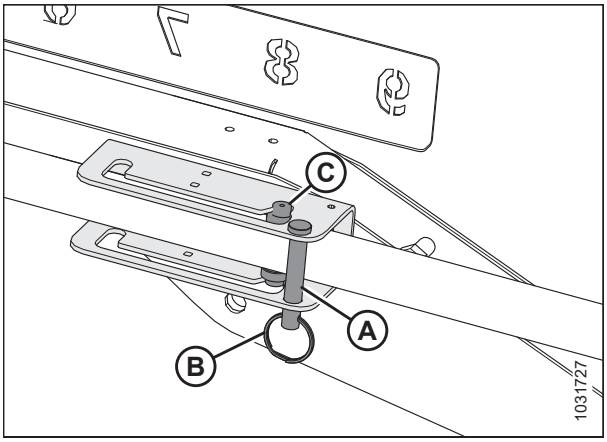


Figure 3.126: Outer Left Arm Cylinder – Aft Position

4. Check reel clearance to backsheet, upper cross auger (if installed), and reel braces.
5. Adjust reel tine pitch (if required). For adjustment procedures, refer to *3.7.12 Reel Tine Pitch, page 105*.

3.7.12 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.

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. For instructions, refer to *Adjusting Reel Cam, page 108*.

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.

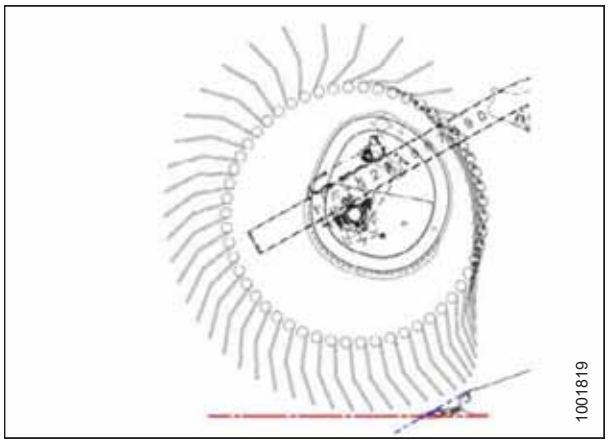


Figure 3.127: Finger Profile – Position 1

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.

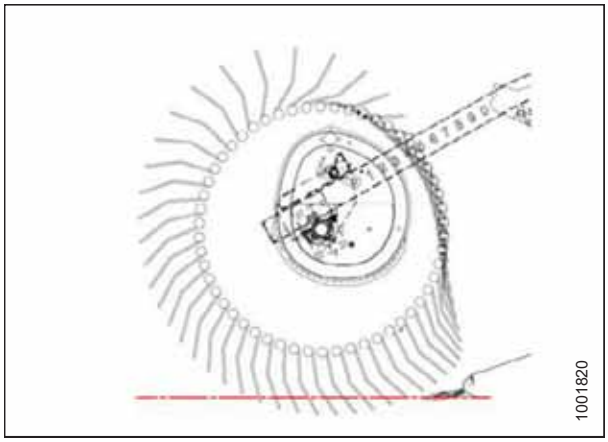


Figure 3.128: Finger Profile – Position 2

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.

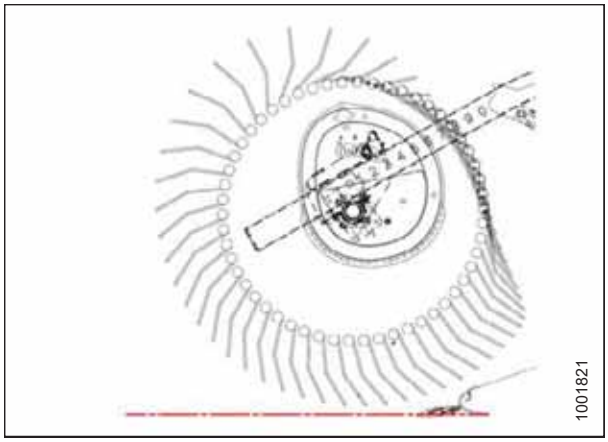


Figure 3.129: Finger Profile – Position 3

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.

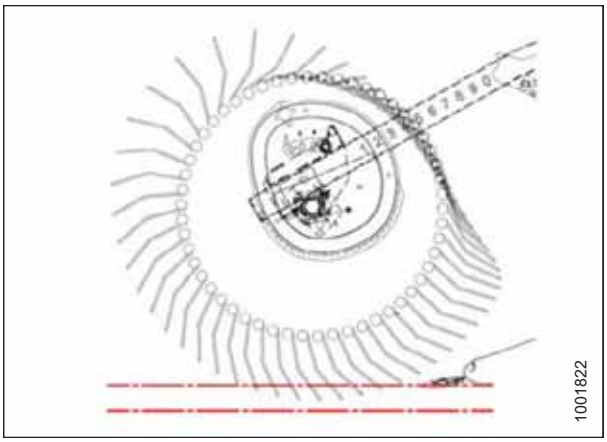


Figure 3.130: Finger Profile – Position 4

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 203 mm (8 in.). In damp materials such as rice, it is 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.

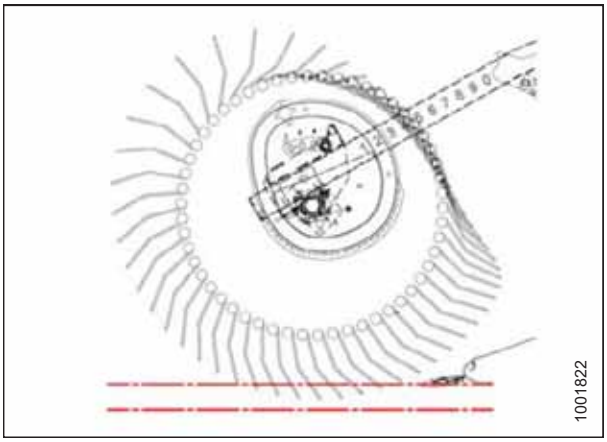


Figure 3.131: Finger Profile – Position 4

IMPORTANT:

The reel to cutterbar clearance should always be checked following adjustments to reel tine pitch and reel fore-aft positions (refer to *5.16.1 Reel Clearance to Cutterbar, page 528*). Refer to *3.6.2 Header Settings, page 46* for recommended reel tine pitch in specific crops and crop conditions.

NOTE:

Higher cam settings with the reel fore-aft position set between 4–5 sharply decrease 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.

Adjusting Reel Cam

DANGER

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

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

   IMPORTANT:

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

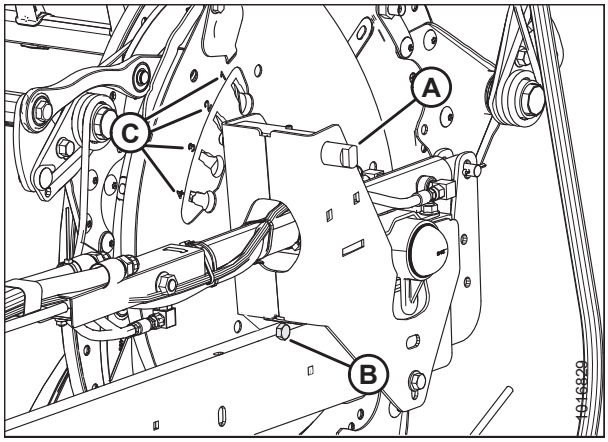


Figure 3.132: Cam Disc Positions

3.7.13 Upper Cross Auger

The Upper Cross Auger (UCA) improves crop feeding into the center of the header in heavy crop conditions. It is ideal for high-volume harvesting forages, oats, canola, mustard, and other tall, bushy, hard-to-feed crops.

The Operator can use the shutoff valve to turn off the UCA when it is not needed.

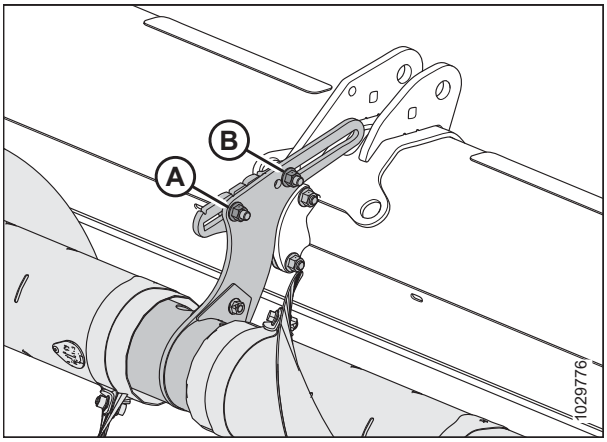


Figure 3.133: Shutoff Manifold

Adjusting Upper Cross Auger Position

The Upper Cross Auger (UCA) has an adjustable mount that enables you to adjust the auger position for specific harvesting conditions. Headers with three-piece augers have two adjustable mounts—one on each end of the center auger.

NOTE:

For primary and secondary front bolt position details, refer to Figure *3.136, page 110*.

The mount(s) are initially installed in the rear-most position, with front bolt (A) in the primary position. This is the recommended position for most conditions.

With front bolt (A) in the primary position, the auger and reel are safe to run in any position. The auger position can be adjusted to a limited extent by changing the position of the mount with respect to rear bolt (B).

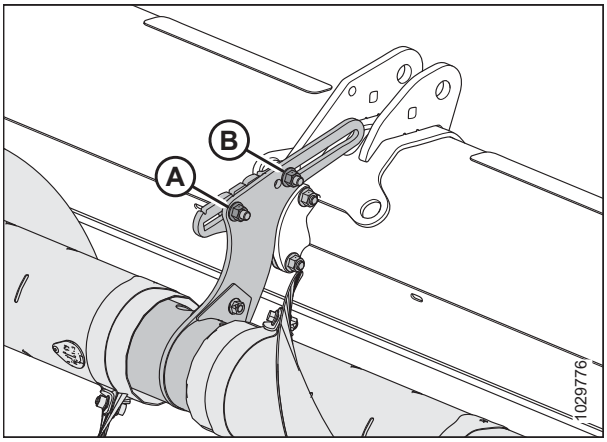


Figure 3.134: Initial Position of Adjustable Mounts – Two-Piece Auger

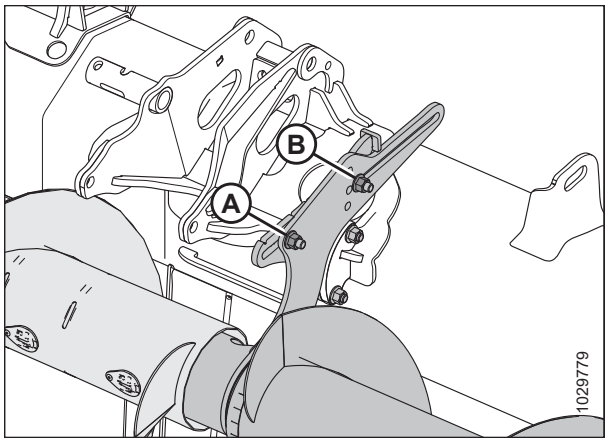


Figure 3.135: Initial Position of Adjustable Mounts – Three-Piece Auger

When the front bolt is moved to secondary position (B), the auger position can be adjusted to a greater extent. For three-piece augers, additional secondary positions (B) are available to raise and lower the auger if desired. When the front bolt is in one of these positions, the fore-aft adjustment is limited to prevent interference with the feed auger and header frame.

IMPORTANT:

When the front bolt is in one of secondary positions (B), and the reel is in its rear-most position, the reel fingers and cam arms may contact the upper cross auger, damaging it. When you move the reel all the way back (for example, when harvesting canola), you must also move the upper cross auger all the way back to allow sufficient clearance between the reel fingers and the auger.

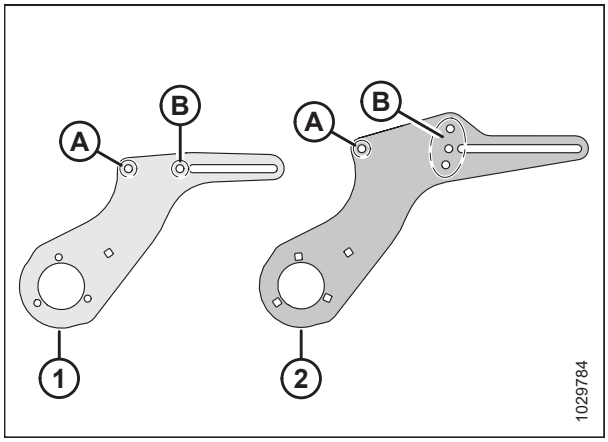


Figure 3.136: Adjustable Mount Details

1 - Mount on a Two-Piece Auger
2 - Mount on a Three-Piece Auger
A - Primary Position for Front Bolt
B - Secondary Position(s) for Front Bolt

Move the auger forward to

- Help convey light crops, especially on side hills
- Improve feeding of light crops
- Reduce reel carry over or flipping of the crop by the reel

Move the auger rearward to

- Increase the available volume for conveying heavy crop
- Keep the auger close to the deflectors to prevent crop from getting behind the auger and wrapping

To adjust the auger position, follow these steps:

1. Locate the adjustable mount, sticking up out of the center support assembly on two-piece augers, and out of the ends of the center auger on three-piece augers.

   NOTE:

   The illustration at right shows the left adjustable mount on a three-piece auger. The adjustable mount on a two-piece auger is similar, but has only one secondary position for the front bolt instead of three. Refer to Figure *3.136, page 110* for more details.

2. If desired, relocate front bolt and nut (A). They have two possible locations on two-piece augers (one primary and one secondary), and four possible locations on three-piece augers (one primary and three secondary).

3. Loosen front nut (A) and rear nut (B) just enough to allow the adjustable mount to slide.

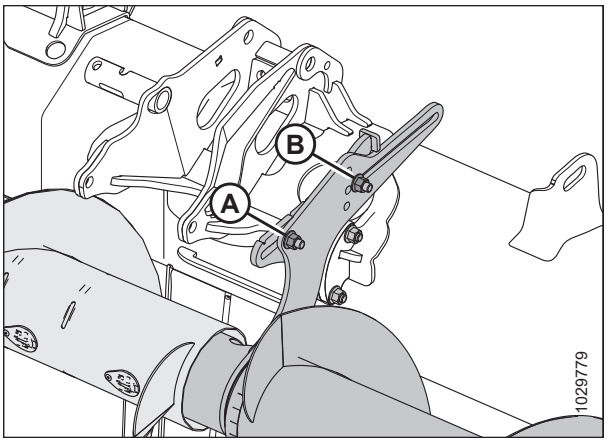


Figure 3.137: Initial Position of Adjustable Mounts – Three-Piece Auger

4. Move the mount to the desired position.

5. Retighten nuts (A) and (B). Torque to 69 Nm (51 lbf·ft).

6. If a three-piece upper cross auger is installed, repeat these steps on the second adjustable mount.

   NOTE:

   On headers with three-piece augers, make sure both mounts are in the same position.

7. After adjusting the auger position, check for interference between the reel fingers and the upper cross auger and between the cam arms and the upper cross auger throughout the entire hydraulic fore-aft range of the reel.

3.7.14 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

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 endshields. Refer to *Opening Header Endshields, page 33*.

5. Remove lynch pin (C).
6. Hold onto crop divider (A) and lift forward end of latch (B) to disengage from bolt (D).

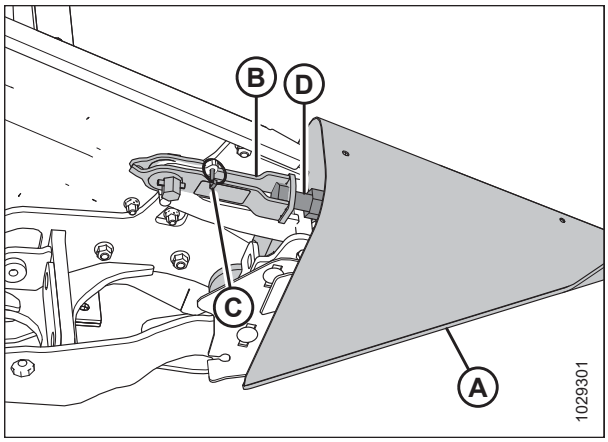


Figure 3.138: Crop Divider with Latch

7. Lower crop divider (A), and remove from endsheet.
8. Close endshield. Refer to *Closing Header Endshields, page 34*.

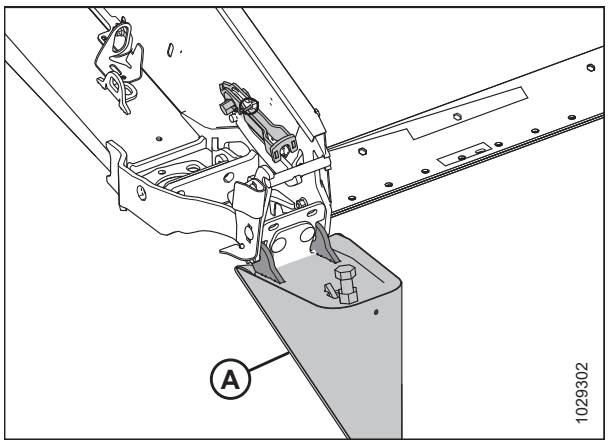


Figure 3.139: Crop Divider with Latch

9. Return crop divider (A) to storage position on bracket (B).

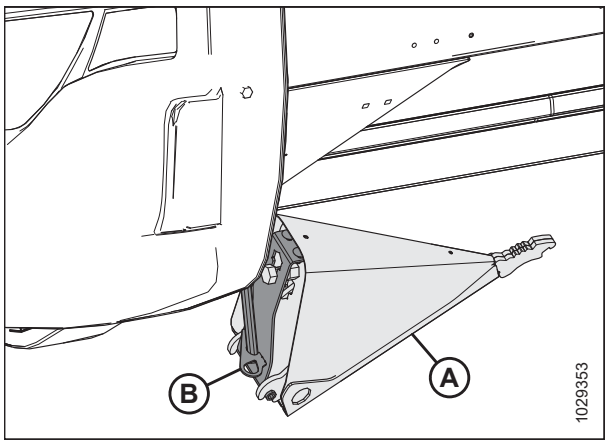


Figure 3.140: Stored Crop Divider

Installing Crop Dividers

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. Remove crop divider (A) from storage position by lifting the crop divider so that bolt (B) clears the slot in storage bracket (C).
5. Open endshield. Refer to *Opening Header Endshields, page 33*.

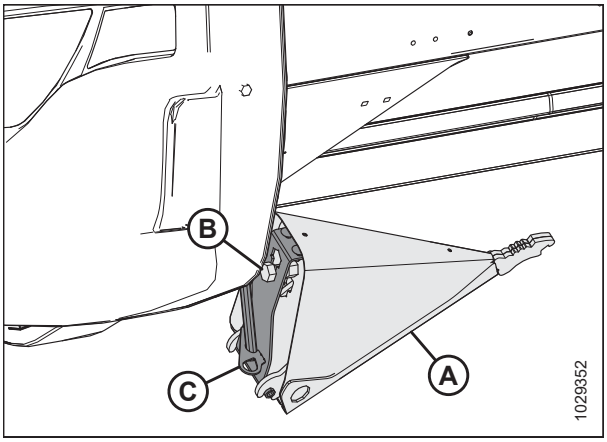


Figure 3.141: Stored Crop Divider

6. Insert crop divider lugs (A) into holes in the endsheet as shown.
7. Remove lynch pin (B) from latch (C).

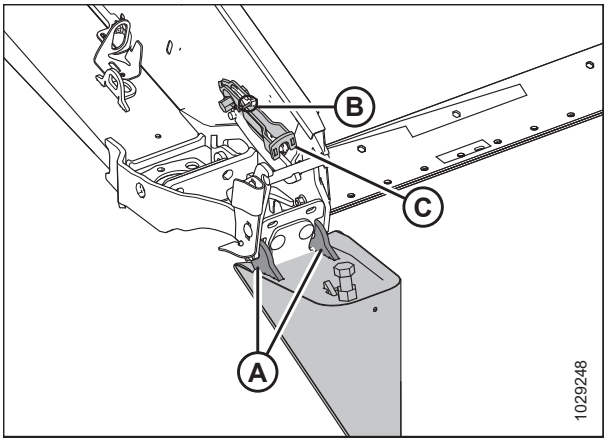


Figure 3.142: Crop Divider with Latch

8. Lift forward end of latch (A) and crop divider (B).

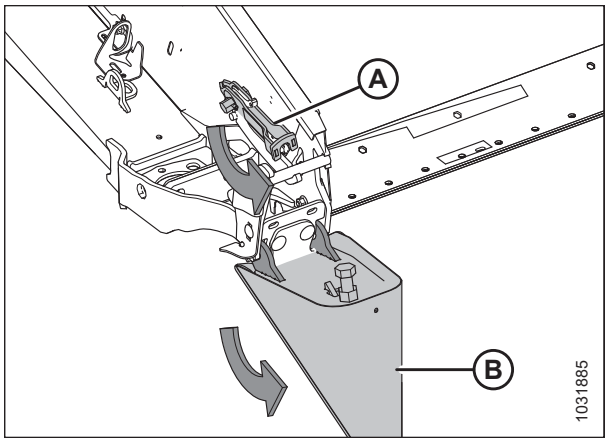


Figure 3.143: Crop Divider with Latch

9. Engage latch (A) to crop divider bolt (B), and secure with lynch pin (C).
10. Use nut (D) to adjust the length of bolt (B) so that torque of 40–54 Nm (30–40 lbf·ft) is required to close the latch.
11. Close endshield. Refer to *Closing Header Endshields, page 34*.

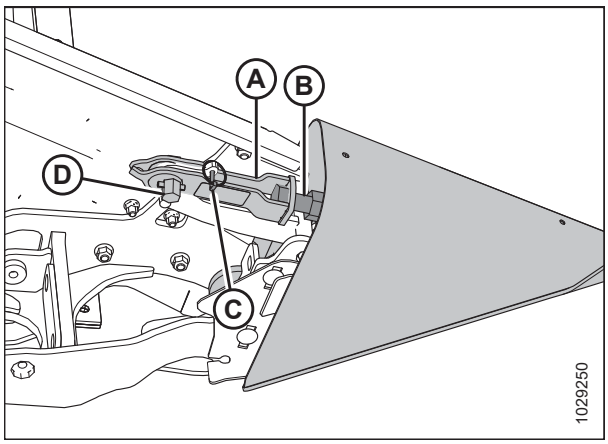


Figure 3.144: Crop Divider with Latch

3.7.15 Crop Divider Rods

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

Table 3.15 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 the header.

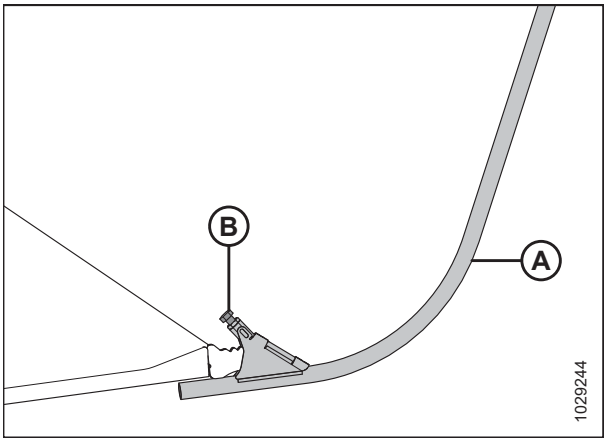


Figure 3.145: Crop Divider Rod

2. Store both crop divider rods (B) on the right endsheet, and secure with lynch pin (A).

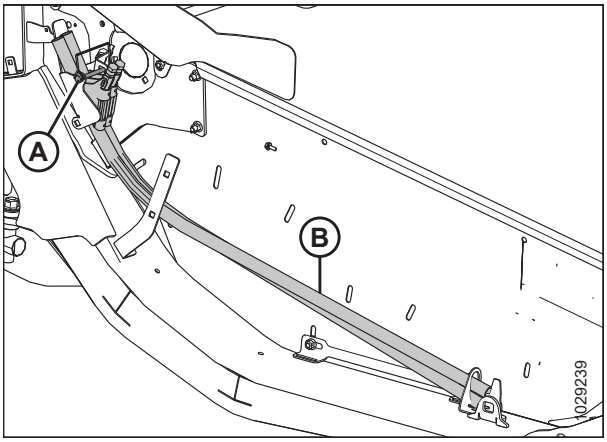


Figure 3.146: Right Side Endsheet

Installing Crop Divider Rods

1. Undo lynch pin (A) securing divider rods (B) to the header endsheet, and remove divider rods from storage location.
2. Reinstall lynch pin (A).

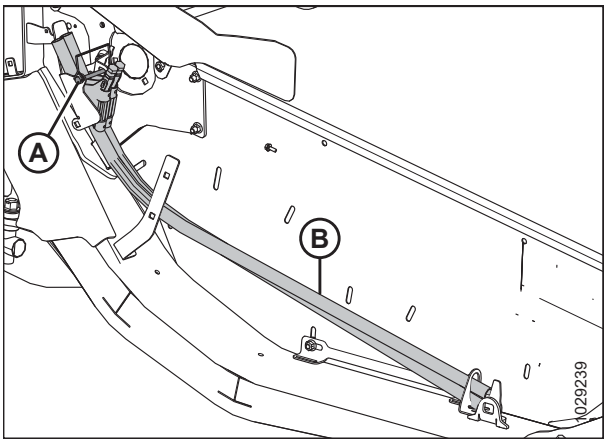


Figure 3.147: Divider Rods in Storage Location at Right Header Endsheet

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

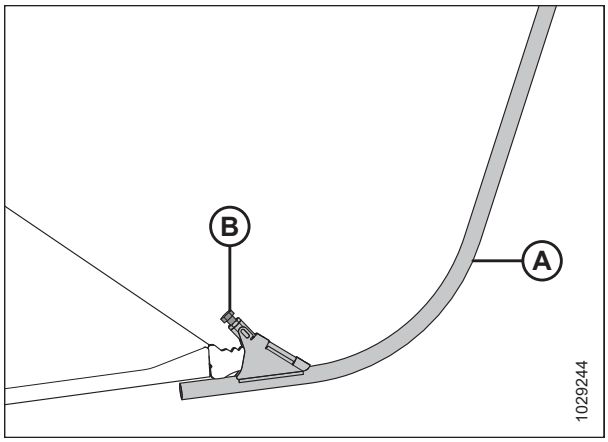


Figure 3.148: Divider Rod on Crop Divider

Rice Divider Rods

Optional rice divider rods provide improved performance in tall and tangled rice crops.

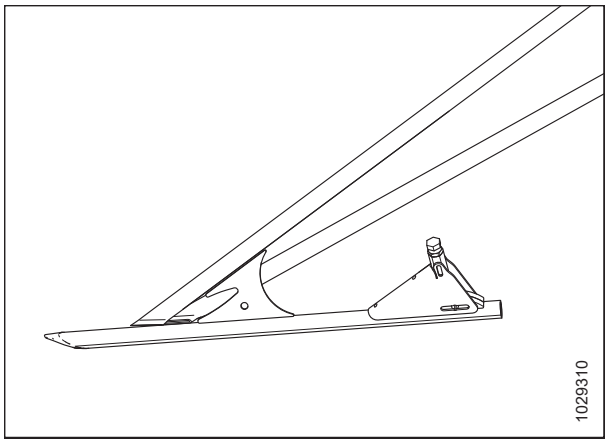


Figure 3.149: Divider Rod for Rice

Rice divider rods are stored at the rear of both endsheets on storage bracket (A) and secured in place with pin (B). The installation and removal of these rods are the same as the procedures for standard crop divider rods.

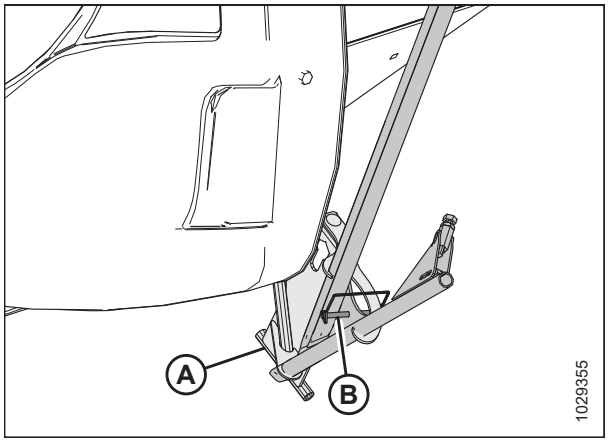


Figure 3.150: Rice Divider Rod Storage

3.7.16 Setting Auger Position

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

DANGER

To 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.

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

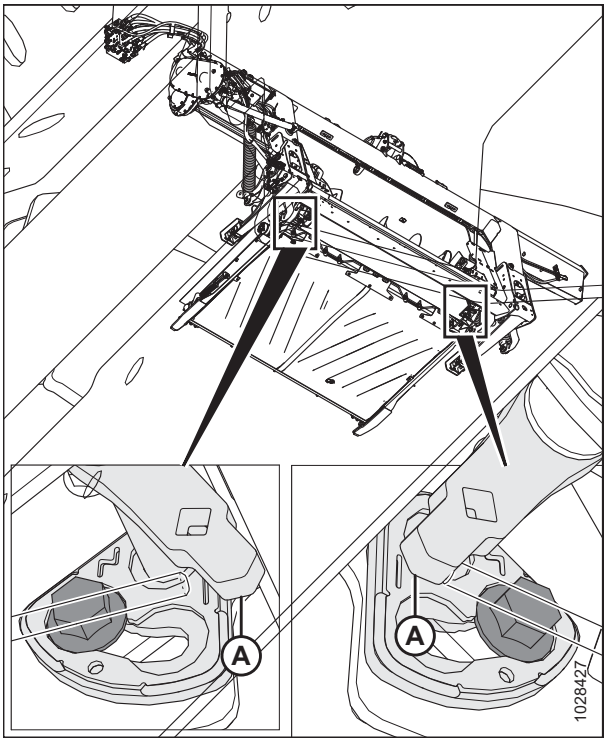


Figure 3.151: Auger Float Adjustment Arms

If bolt (A) is next to floating symbol (B), the auger is in the floating position. If bolt (A) is next to fixed symbol (C), the auger is in the fixed position.

CAUTION

Make sure left and right brackets are set to the same position; two bolts (A) must be in the same location to prevent damage to the machine during operation.

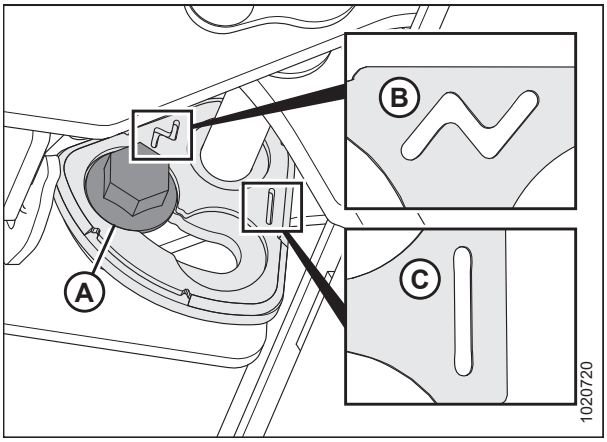


Figure 3.152: Auger Float Positions

To set the auger position, follow these steps:

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the header fully.

3. Engage the header safety props.
4. Shut down the engine, and remove the key from the ignition.
5. Using a 21 mm wrench, loosen bolt (A) until the bolt head is clear of bracket (B).

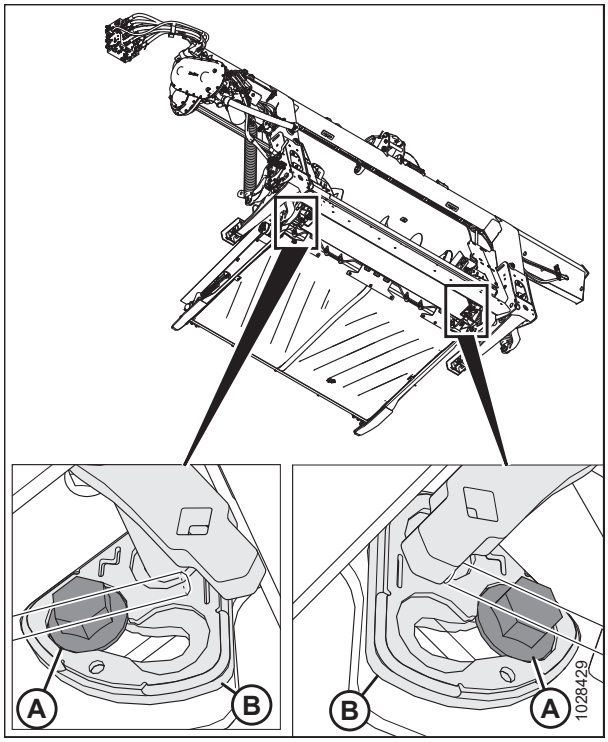


Figure 3.153: Feed Auger Float Adjustment

6. Using a breaker bar in the square hole on arm (B), move arm forward until bolt (A) is in the slot on bracket next to the fixed symbol.

   NOTE:

   If changing the auger position from fixed to floating, move arm in opposite direction.

7. Tighten bolt (A) to 122 Nm (90 lbf·ft).

   IMPORTANT:

   Bolt (A) must be properly seated in recess on bracket before tightening bolt. If arm (B) can be moved after tightening bolt, then bolt (A) is not seated properly.

8. Repeat on opposite side.

   IMPORTANT:

   Bolt (A) on each side of the float module must be in the same position to prevent damage to the machine during operation.

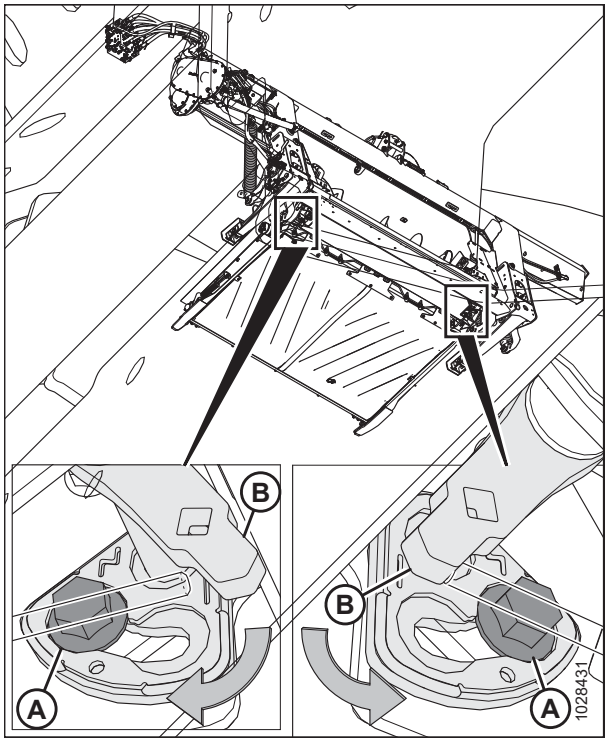


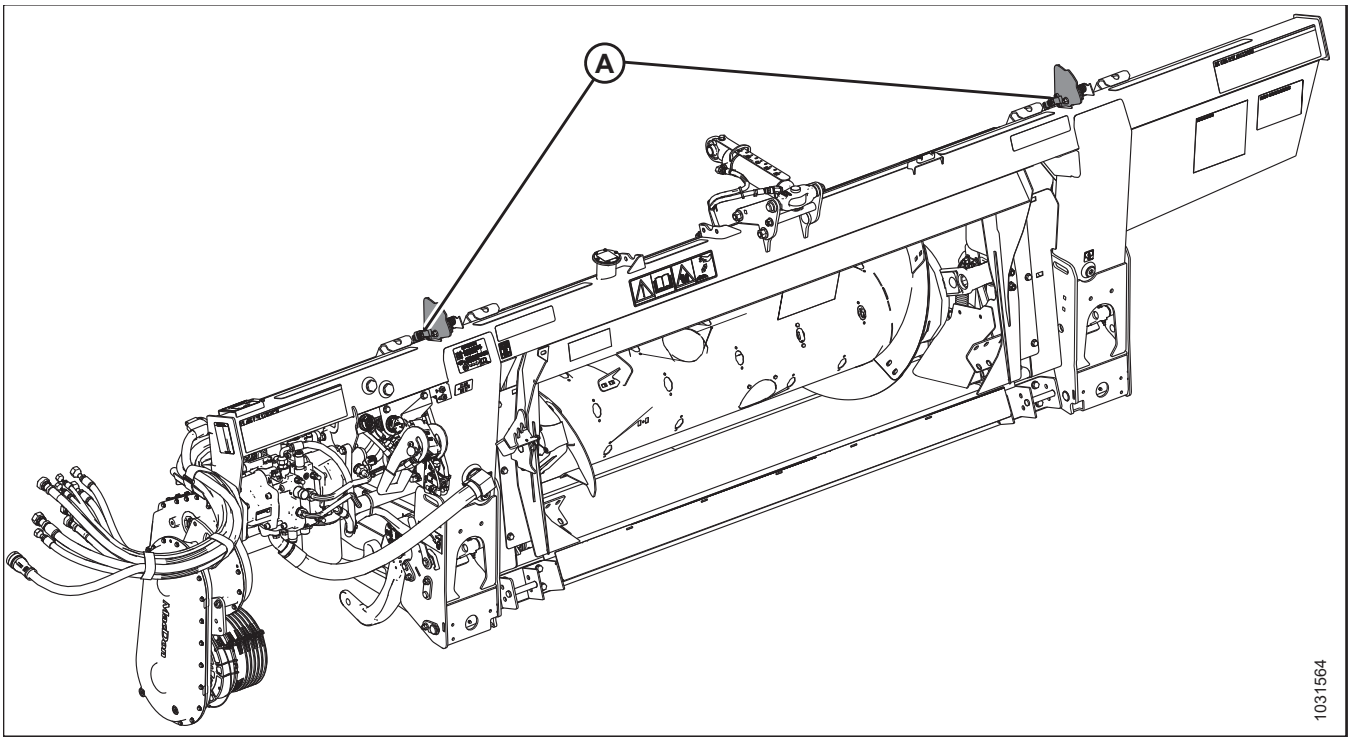
Figure 3.154: Feed Auger Float Adjustment

3.8 Auto Header Height Control

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

There are two float height sensors (A) installed on the float setting indicators on the float module. These sensors send signals to the combine allowing it to maintain a consistent cutting height and an optimum float as the header follows ground contours.

Figure 3.155: FM200 Float Module



FM200 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 *3.8.2 Sensor Output Voltage Range – Combine Requirements, page 120*.
2. Prepare the combine to use the AHHC feature (applies only to some combine models—refer to the following instructions for your combine).
3. Calibrate the AHHC system so that the combine can correctly interpret data from the height sensor on the float module (refer to the following 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:

- *3.8.6 AGCO IDEAL™ Series Combines, page 125*
- *3.8.8 Case IH, 120, 230, 240, and 250 Series Combines, page 146*
- *3.8.9 Challenger and Massey Ferguson 6 and 7 Series Combines, page 158*
- *3.8.10 CLAAS 500 Series Combines, page 165*
- *3.8.11 CLAAS 600 and 700 Series Combines, page 174*
- *3.8.12 CLAAS 8000/7000 Series Combines, page 184*
- *3.8.13 Gleaner R65/R66/R75/R76 and S Series Combines, page 194*
- *3.8.14 Gleaner S9 Series Combines, page 202*
- *3.8.15 John Deere 70 Series Combines, page 216*
- *3.8.16 John Deere S and T Series Combines, page 223*
- *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*
- *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*

3.8.1 Sensor Operation

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

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

3.8.2 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 3.16 Combine Voltage Limits

Combine	Low Voltage Limit	High Voltage Limit	Range (Difference between High and Low Limits)
Case IH 5088/6088/7088, 5130/6130/7130, 7120/8120/9120, 7230/8230/9230, and 7240/8240/9240	0.5 V	4.5 V	2.5 V
Challenger B, C, and IDEAL Series	0.5 V	4.5 V	2.5 V
CLAAS 500/600/700, and Tucano Series	0.5 V	4.5 V	2.5 V
Fendt IDEAL Series	0.5 V	4.5 V	2.5 V
Gleaner A6, R, and S Series	0.5 V	4.5 V	2.5 V
John Deere 70, S, and T Series	0.5 V	4.5 V	2.5 V
Massey Ferguson 9005, 9500, and IDEAL 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

Table 3.16 Combine Voltage Limits (continued)

Combine	Low Voltage Limit	High Voltage Limit	Range (Difference between High and Low Limits)
Rostelmash Torum and RSM161 Series	0.5 V	4.5 V	2.5 V
Versatile RT490	0.5 V	4.5 V	2.5 V

3.8.3 Checking Voltage Limits

WARNING

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

1. Start the engine.
2. Park the combine on a level surface.
3. Position the header so that the cutterbar is 305–356 mm (12–14 in.) off the ground.

Checking sensor high voltage limit:

4. Extend the guard angle until header angle indicator (A) is at **E**.

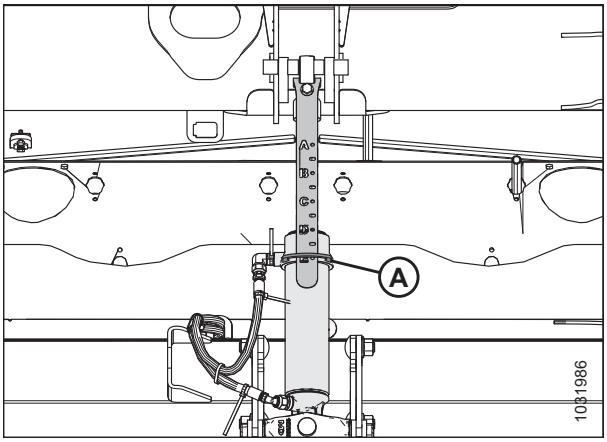


Figure 3.156: Center-Link

5. Float indicator pointer (A) should be at 0 (B).
6. Shut down the engine, and remove the key from the ignition.

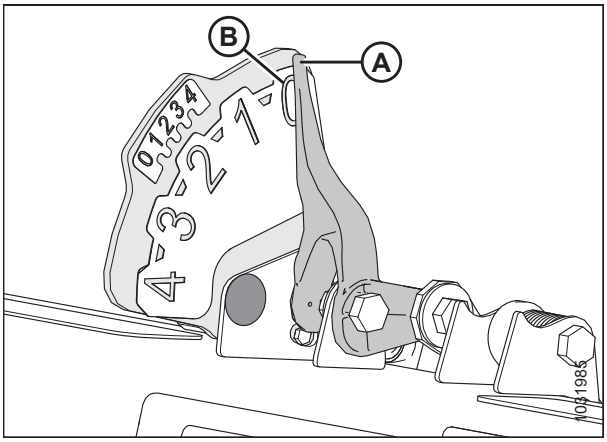


Figure 3.157: Left Float Indicator – View from Rear

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

   NOTE:

   If the header is **NOT** on its down stops, the voltage may go out of range during operation causing a malfunction of the AHHC system. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

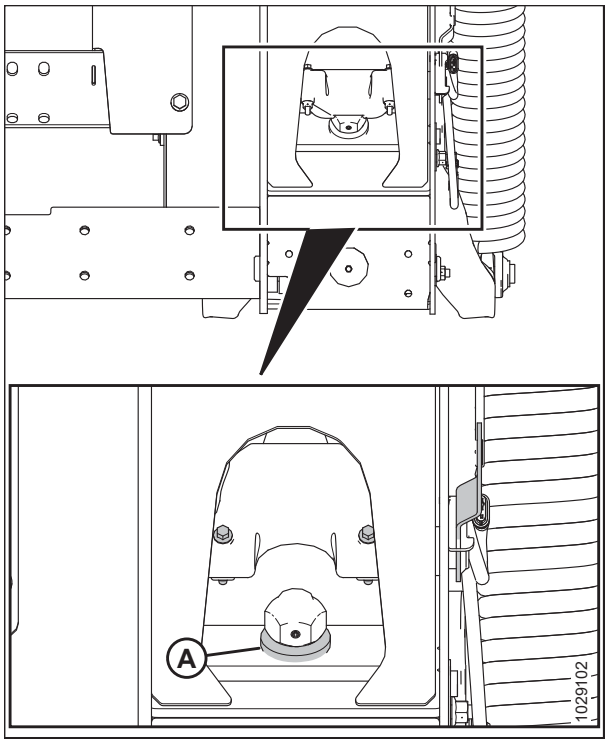


Figure 3.158: Down Stop Washer

8. Locate connector P600 (A) at the left front of the float module.
9. Remove plug cap (B).
10. Turn the key to the run position.
11. Check P600 for power from the combine. There should be 5V at pin 7.
    - Pin 7 - FM2215E – signal
    - Pin 8 - FM2515E – ground
12. Check left (pins 1 and 8) and right (pins 3 and 8) sensors. Voltage range: 3.8 - 4.3V.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3- FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

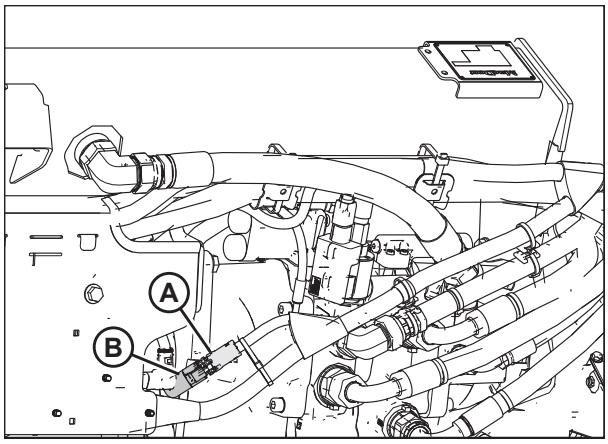


Figure 3.159: Left Float Indicator – View from Rear

NOTE:

The average of both sensors is what is sent to the combine.

Checking sensor low voltage limit:

13. Extend the guard angle until header angle indicator (A) is at **E**.

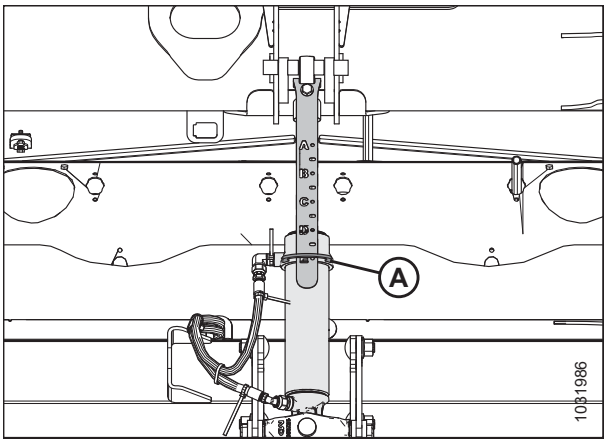


Figure 3.160: Center-Link

14. Fully lower header on the ground, float indicator pointer (A) should be at **4** (B).
15. Turn the key to the run position.
16. Check left (pins 1 and 8) and right (pins 3 and 8) sensors. Voltage range: 0.7 - 1.2V.
    - Pin 1 - FM3326A – left sensor signal
    - Pin 3- FM3328A – right sensor signal
    - Pin 8 - FM2515E – ground

NOTE:

The average of both sensors is what is sent to the combine.

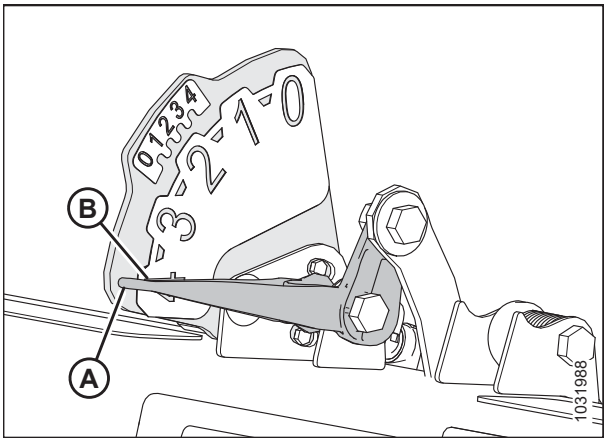


Figure 3.161: Left Float Indicator – View from Rear

3.8.4 Replacing Float Height Sensor

⚠ WARNING

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

NOTE:

This procedure can be completed on either side of the float module.

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

5. Disconnect harness plug P537 (C) from the sensor on the left side.

   NOTE:

   If replacing the float height indicator sensor on the right side, disconnect plug P539.

6. Remove bolt (A).
7. Remove indicator plate (B) with sensor.

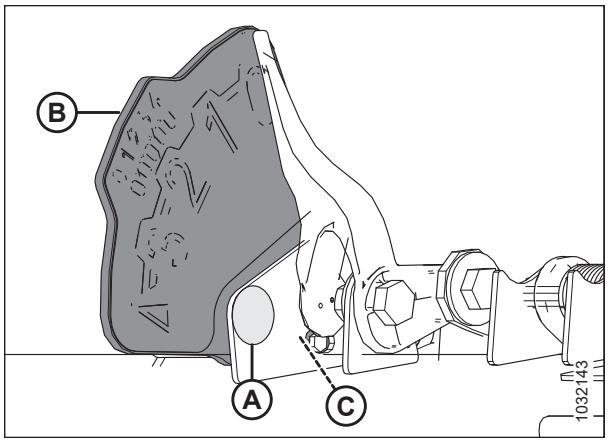


Figure 3.162: Float Setting Indicator - Left

8. Remove two bolts and nuts (A).
9. Remove sensor (B).
10. Install sensor (B), so the plug is facing down.
11. Install two bolts and nuts (A).

    NOTE:

    Bolt heads should be on the same side as the decal.

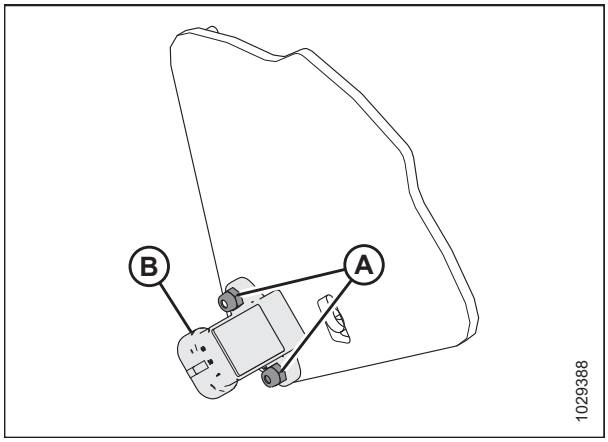


Figure 3.163: Float Height Sensor

12. Install indicator plate (B) with sensor.
13. Install bolt (A).
14. Connect harness plug (C).

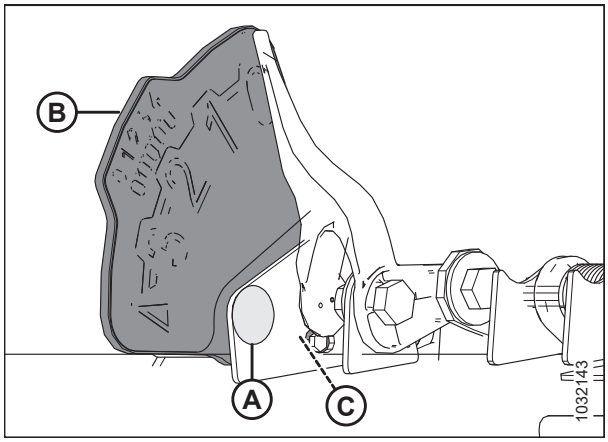


Figure 3.164: Float Setting Indicator - Left

3.8.5 10 Volt Adapter (MD #B6877) – New Holland Combines Only

New Holland combines with a 10 V system require the 10 V adapter (A) (MD #B6877) for proper calibration of the auto header height control (AHHC) feature.

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

To check sensor voltages, refer to *3.8.3 Checking Voltage Limits, page 121*.

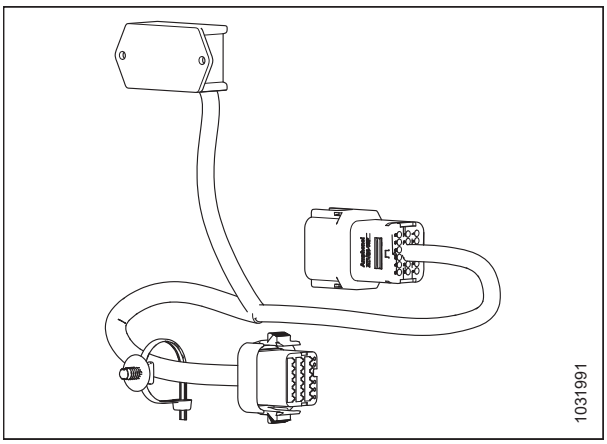


Figure 3.165: 10 V Adapter (MD #B6877)

3.8.6 AGCO IDEAL™ Series Combines

Setting up the Header – AGCO IDEAL™ Series

NOTE:

Up-to-date images of the AGCO IDEAL™ Series combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

AGCO Tyton terminal (A) is used to set up and manage a MacDon header on an IDEAL™ combine. Use the touch screen display to select the desired item on the screen.

Figure 3.166: AGCO IDEAL™ Operator Station

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right of the home screen, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

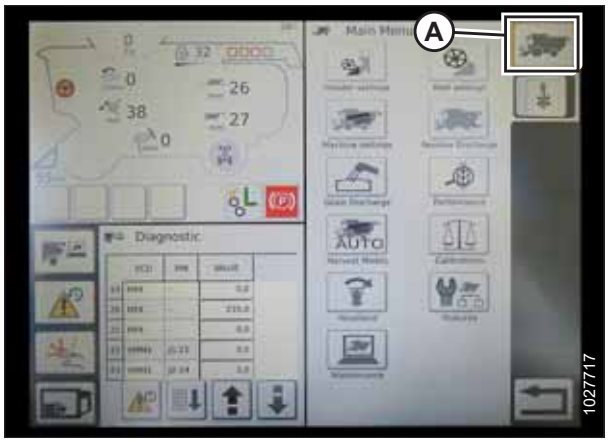


Figure 3.167: Combine Icon on Home Page

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

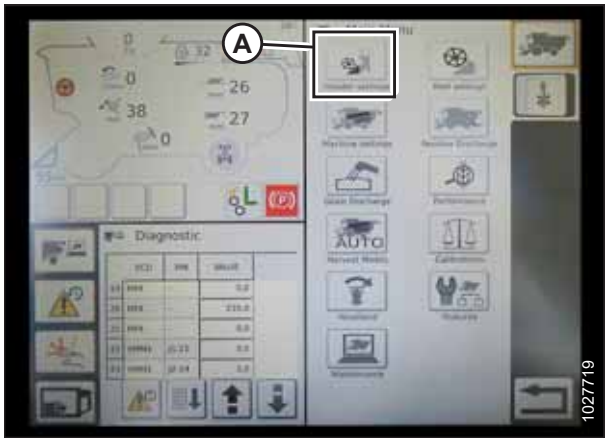


Figure 3.168: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A dialog box showing predefined headers opens.
   - If your MacDon header is already set up, it appears on the header list. Touch the MacDon header title (B) to highlight the selection in blue, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ABC button (C), and use the on-screen keyboard to enter the MacDon header information. When complete, select one of the following options to return to the HEADER SETTINGS page:
     – Green check mark (E) saves the settings
     – Garbage can icon (F) deletes the highlighted header from the list
     – Red X (G) cancels the change(s)

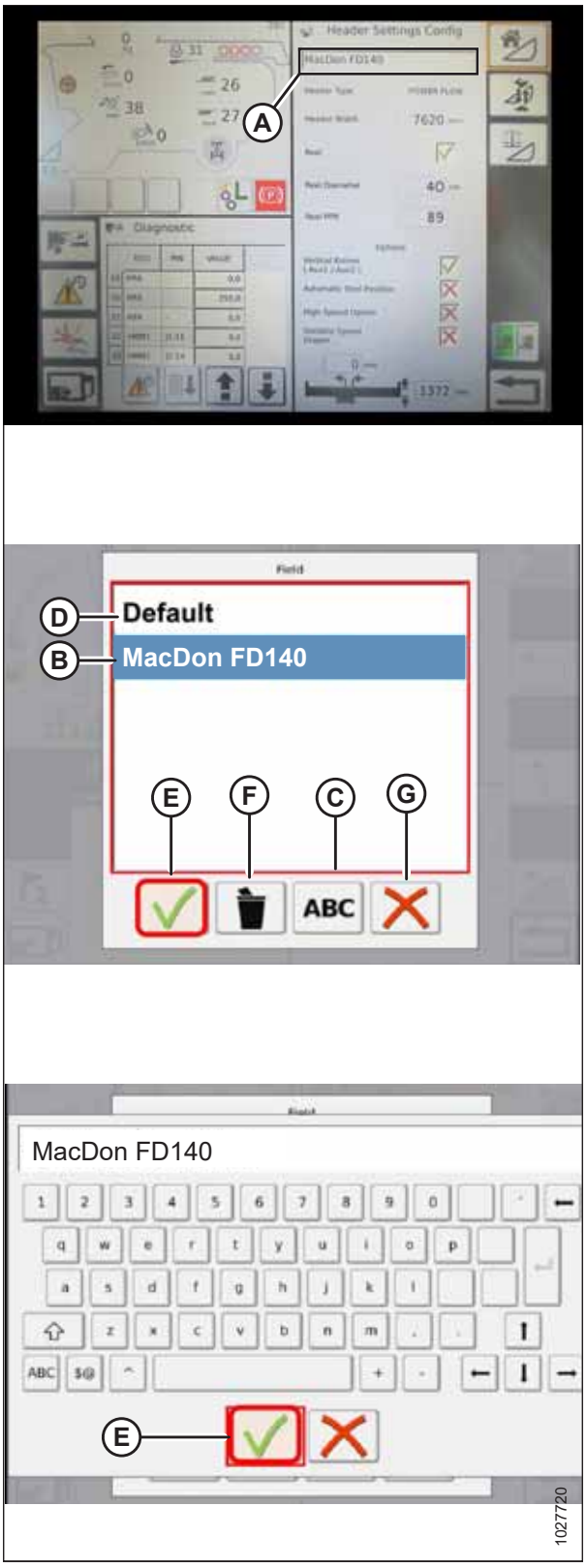


Figure 3.169: Header Configuration Menu on Header Settings Page

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

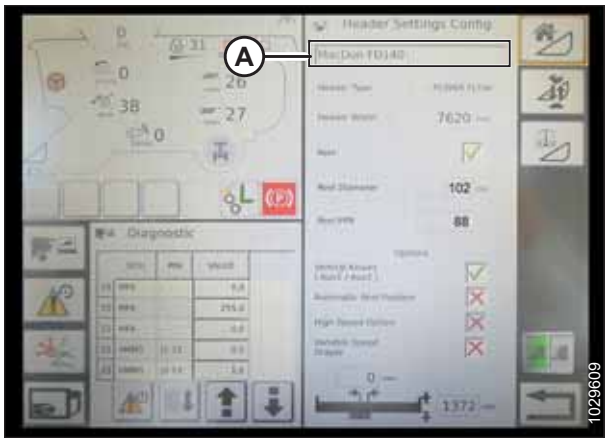


Figure 3.170: Header Settings

5. Make sure that REEL check box (A) is checked.

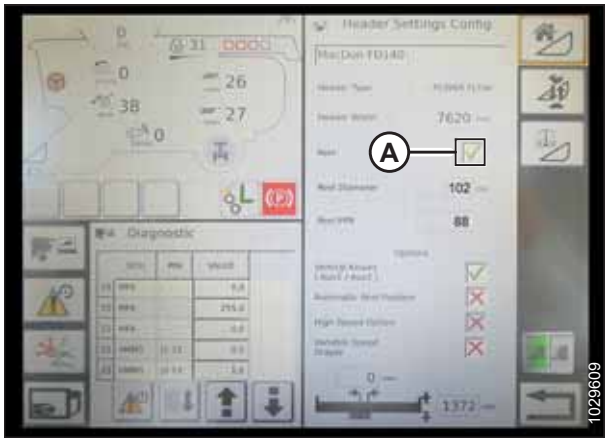


Figure 3.171: Header Settings

6. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **102** for a MacDon reel.
7. Touch REEL PPR (Pulses Per Revolution) field (B) and enter **88** as the value for your MacDon header.

   NOTE:

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

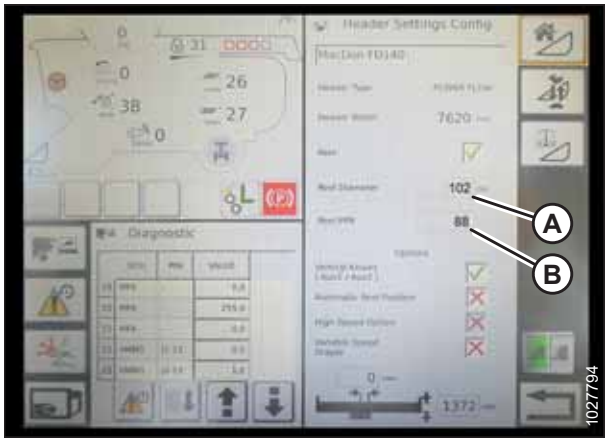


Figure 3.172: Header Settings

8. Touch green check mark (B) at the bottom of numeric keypad (A) when complete, or the red X to cancel.

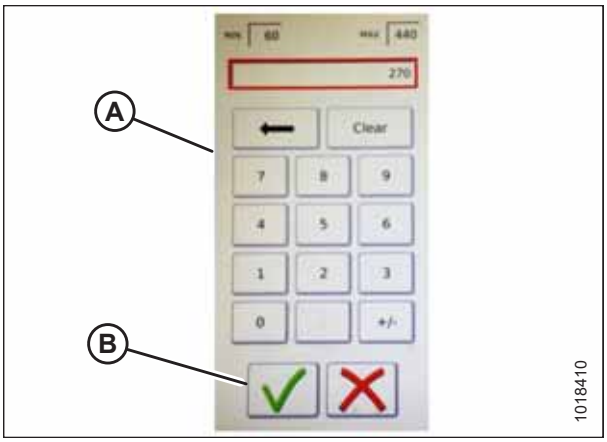


Figure 3.173: Numeric Keypad

9. When complete, touch green check mark (A) at the bottom of the HEADER SETTINGS page.

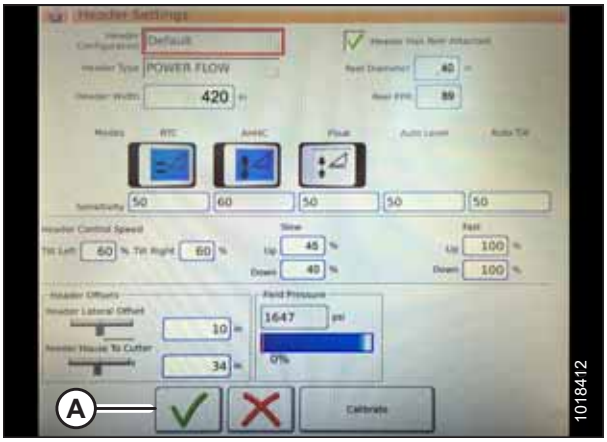


Figure 3.174: Header Settings Page

Setting Minimum Reel Speed and Calibrating Reel – AGCO IDEAL™ Series

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.

NOTE:

Up-to-date images of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

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

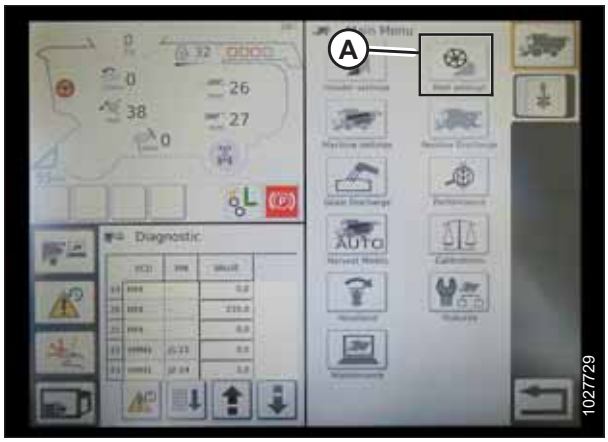


Figure 3.175: Reel Settings on Combine Main Menu

2. To set minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard displays. Enter the desired value. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in miles per hour (mph) and rotations per minute (rpm).

   NOTE:

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

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

   NOTE:

   The CALIBRATION WIZARD opens and displays a hazard warning.

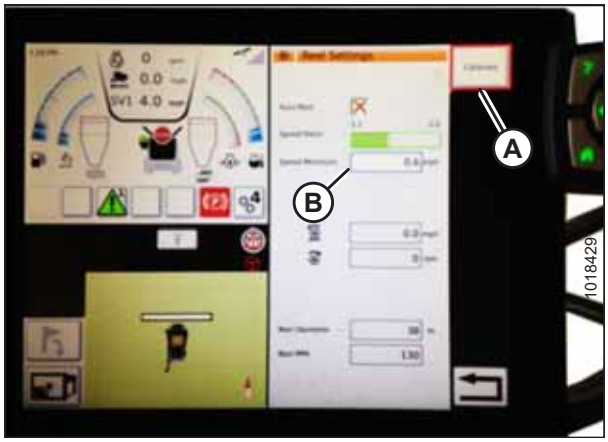


Figure 3.176: Reel Settings Calibration

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

Figure 3.177: Calibration Wizard

5. A message appears in the CALIBRATION WIZARD stating that reel calibration has started. The reel will begin turning slowly and increase to high speed. A progress bar is provided. If necessary, touch the red X (not shown) to cancel. Otherwise, wait for the message that reel calibration has completed successfully. Touch the green check mark to save the calibrated settings.

Figure 3.178: Calibration Progress

Setting up Automatic Header Controls – AGCO IDEAL™ Series

Automatic header functions are configured on the HEADER SETTINGS page.

NOTE:

Up-to-date images of the IDEAL™ Series combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

1. **Automatic Control Functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches are disabled (not highlighted).

2. **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease sensitivity if the combine hunts for a position in Auto Mode.

   NOTE:

   Recommended sensitivity starting points for MacDon headers are:

   - **50** for RTC (A)
   - **60** for AHHC (B)

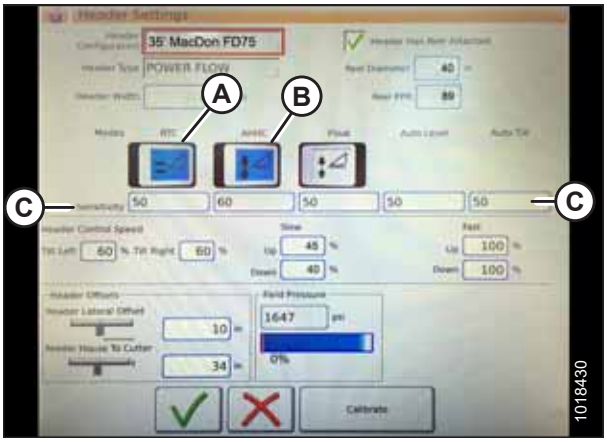


Figure 3.179: Automatic Controls and Sensitivity Settings

3. **Header Speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on the first detent and fast on the second

   NOTE:

   Recommended header control speed starting points

   - Slow: Up 45/Down 40
   - Fast: Up 100/Down 100

4. **Header Offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:

   - Header Lateral Offset: the distance between the centerline of the header and the centerline of the machine. This should be set at **0** for a MacDon header.
   - Feeder House to Cutter: the distance from the machine interface to the cutterbar. This should be set at **68** for a MacDon header.

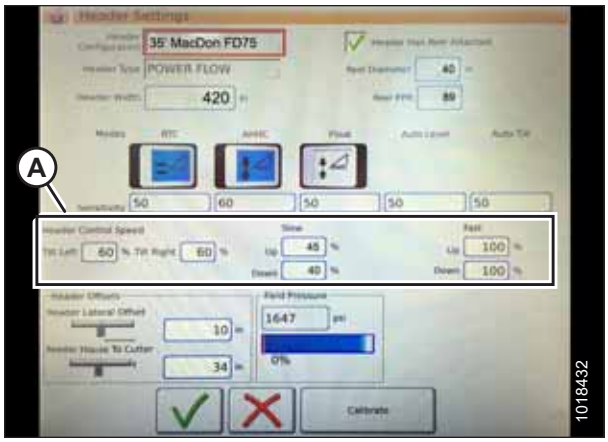


Figure 3.180: Header Speed Control Settings

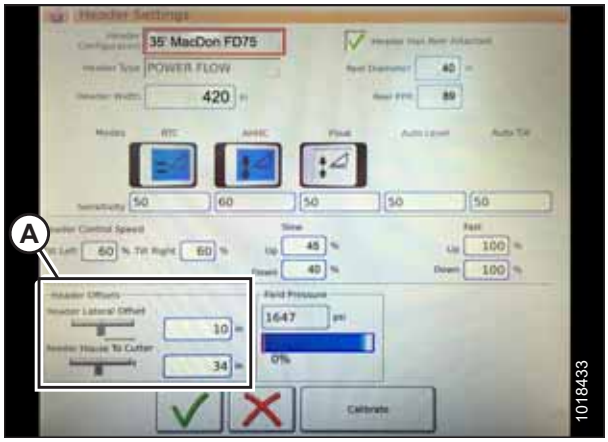


Figure 3.181: Header Offset Settings

Calibrating the Header – AGCO IDEAL™ Series

The auto header control functions are configured on the HEADER SETTINGS page.

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.

NOTE:

Up-to-date images of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

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

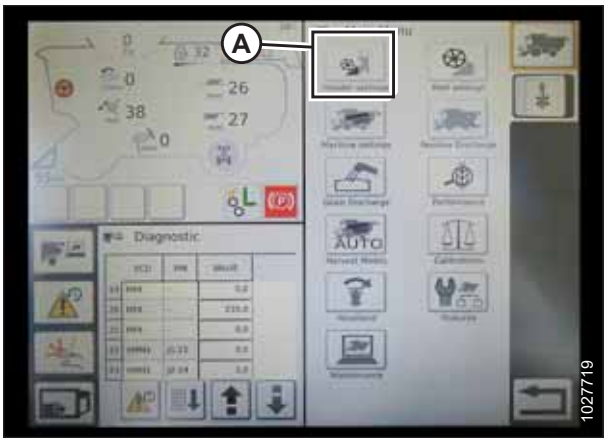


Figure 3.182: Combine Main Menu

2. Touch HEADER CALIBRATE (A) at the right side of the HEADER SETTINGS CONFIG page.

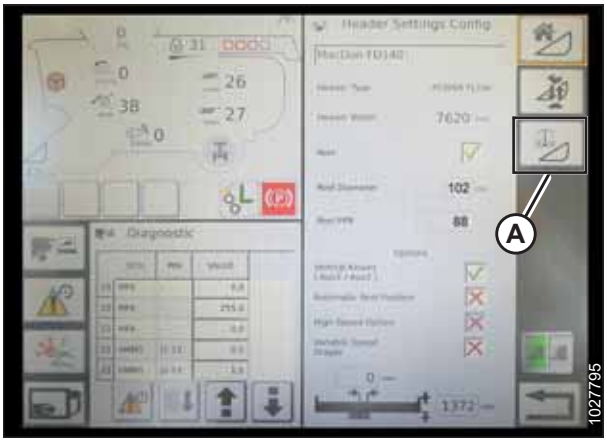


Figure 3.183: Header Settings Page

3. The hazard warning for HEADER CALIBRATION appears. Make sure that all conditions are met.
4. Touch the green check mark at the bottom of the page to start the calibration and follow the on-screen commands.

Figure 3.184: Header Calibration Warning

A progress bar is provided and the calibration can be stopped by touching the red X. The header moves automatically and erratically during this process.

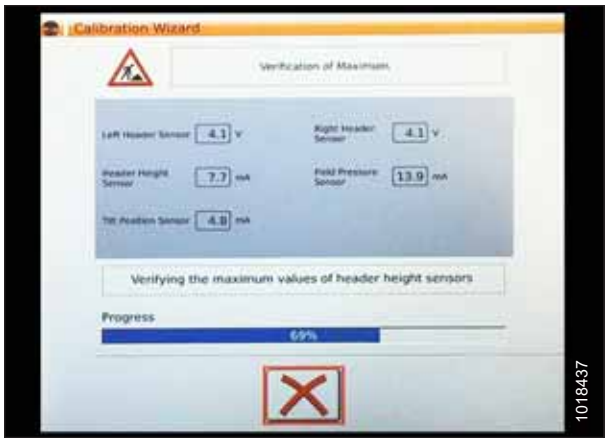


Figure 3.185: Calibration in Progress

5. When the calibration is complete:
   - Review summary information (A)
   - Review green check marks confirming calibrated functions (B)
   - Touch check mark (C) to save

Figure 3.186: Completed Calibration Page

NOTE:

Touch CALIBRATIONS icon (A) on MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.

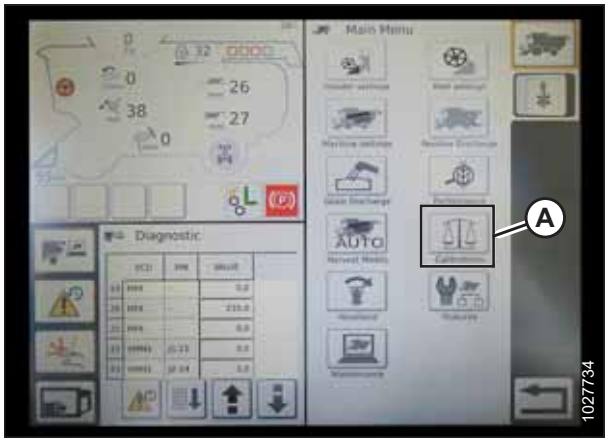


Figure 3.187: Direct Calibration Menu

Operating the Header – AGCO IDEAL™ Series

NOTE:

Up-to-date images of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

The following controls are used to operate the auto header height control (AHHC) functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

For instructions, refer to the combine operator's manual to familiarize yourself with the controls.

Figure 3.188: AGCO IDEAL™ Operator Station

1. With the header running, set lateral tilt to MANUAL by pressing switch (A) so the light above switch is off.
2. Engage the AHHC by pressing switch (B) so light above switch is on.

Figure 3.189: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current setpoint position.

Figure 3.190: AHHC on Control Handle

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

Figure 3.191: Header Control Cluster

Reviewing Header In-Field Settings – AGCO IDEAL™ Series

NOTE:

Up-to-date images of the IDEAL™ combine display were not available at time of publishing. For instructions, refer to the combine operator's manual for updates.

1. To view header group settings, touch HEADER icon (A) on the right side of the home page.
2. The following information is displayed:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by red line)
   - HEADER symbol (D) – touch to adjust the setpoint cut-off position using the adjustment wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune with the header height setpoint control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

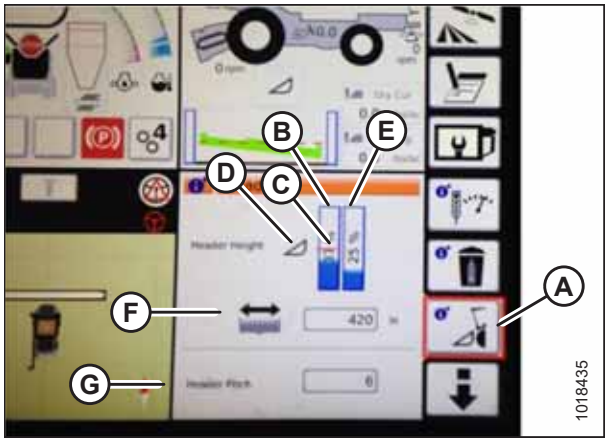


Figure 3.192: Header Groups

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

   NOTE:

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

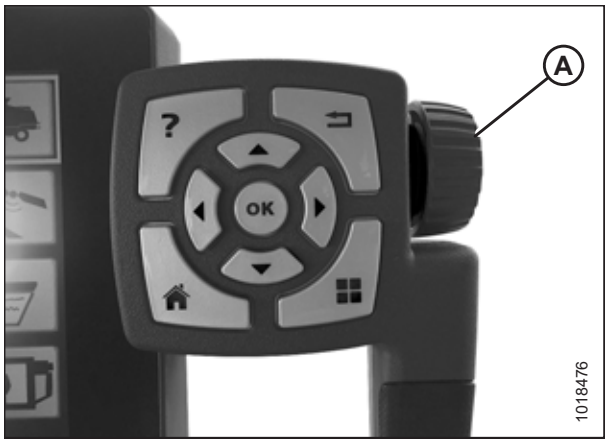


Figure 3.193: Adjustment Wheel on Right of Tyton Terminal

NOTE:

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

Figure 3.194: Header Control Cluster

3.8.7 Case IH 130 and 140 Series Mid-Range Combines

Setting up the Header on the Combine Display – Case IH 5130/6130/7130; 5140/6140/7140

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

Figure 3.195: Case IH Combine Display

2. Select HEAD 1 tab (A). The HEADER SETUP page displays.

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (C).

3. From CUTTING TYPE menu (B), select PLATFORM.

Figure 3.196: Case IH Combine Display

4. Select HEAD 2 tab (A). The HEADER SETUP 2 page displays.
5. From HEADER PRESSURE FLOAT menu (B), select NOT INSTALLED.
6. If you are operating a D2 Series Draper Header, from DRAPER GRAIN HEADER STYLE menu (C), select RIGID 2000 SERIES.

   If you are operating an FD2 Series FlexDraper® Header, from DRAPER GRAIN HEADER STYLE menu (C), select FLEX 2000 SERIES.

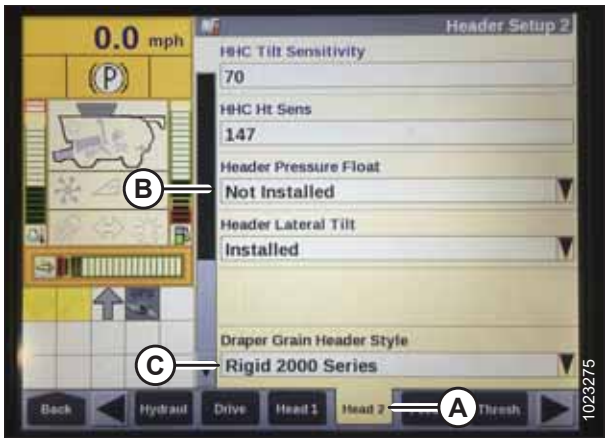


Figure 3.197: Case IH Combine Display

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

   NOTE:

   If hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.
8. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease as desired.

Figure 3.198: Case IH Combine Display

9. From REEL DRIVE TYPE menu (A), select one of the following:
   - 4 if you are using a standard 19-tooth drive sprocket.
   - 5 if you are using an optional high-torque 14-tooth drive sprocket.
   - 6 if you are using an optional high-torque 10-tooth drive sprocket.

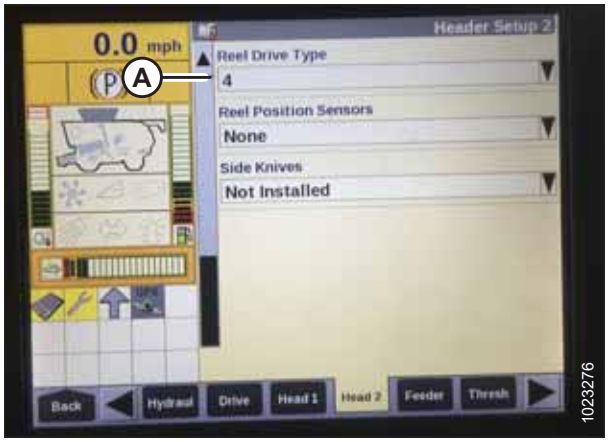


Figure 3.199: Case IH Combine Display

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

Figure 3.200: Case IH Combine Display

11. Locate AUTOTILT field (A).
    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

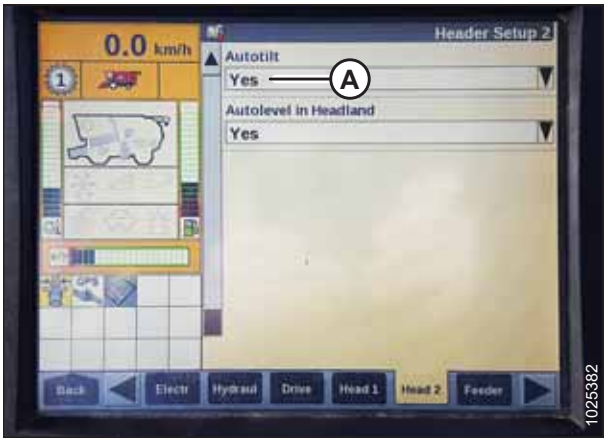


Figure 3.201: Case IH Combine Display

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

NOTE:

Changes may have been made to combine controls or display since this document was published. For instructions, refer to the combine operator's manual for updates.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

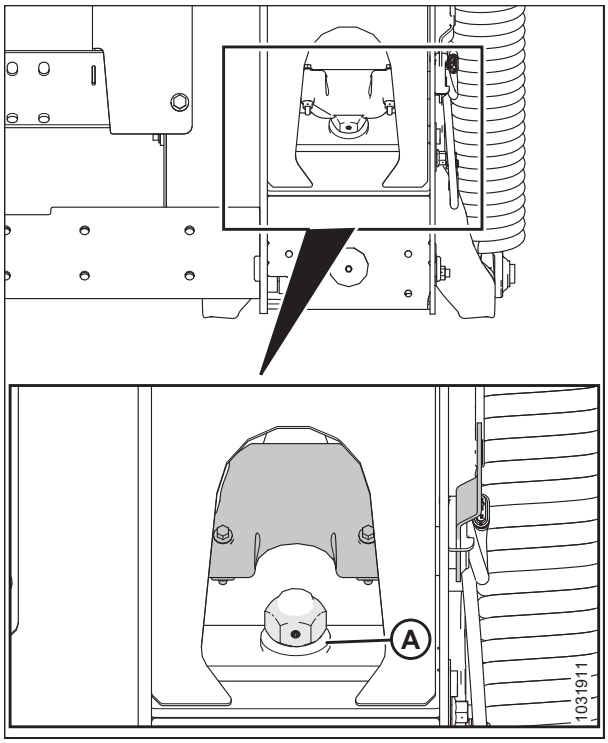


Figure 3.202: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

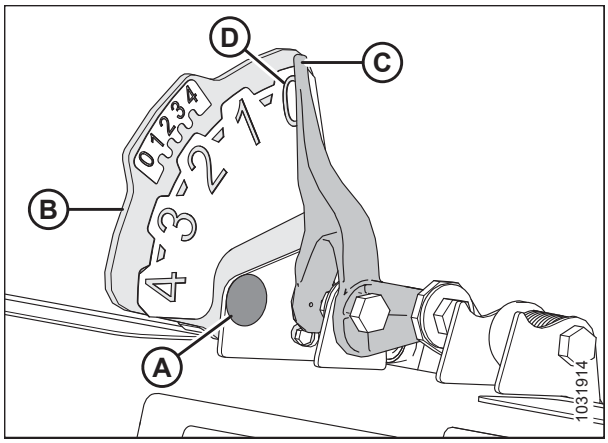


Figure 3.203: Float Indicator

5. Ensure header float is unlocked.
6. On the main page of the combine display, select DIAGNOSTICS (A). The DIAGNOSTICS page opens.

Figure 3.204: Case IH Combine Display

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

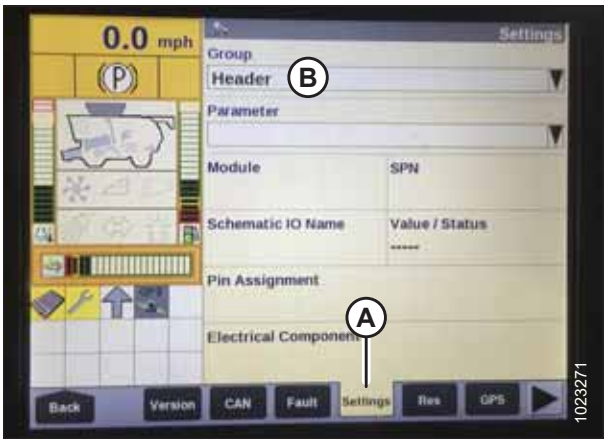


Figure 3.205: Case IH Combine Display

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

Figure 3.206: Case IH Combine Display

10. The SETTINGS page updates to display the voltage in VALUE/STATUS field (A). Lower the feeder house fully, and then raise it 305 mm (12 in.) off the ground to view the full range of voltage readings.

Figure 3.207: Case IH Combine Display

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

For best performance of the auto header height control (AHHC), perform these procedures with center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle. Refer to *3.7.5 Header Angle, page 81*.

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.

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 IH Combines with Version 28.00 or Higher Software, page 152*.

NOTE:

Changes may have been made to the combine controls or display since this document was published. For instructions, refer to the combine operator's manual for updates.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.
2. Ensure all header and float module electrical and hydraulic connections are made.
3. Start the combine engine, but do **NOT** engage separator or feeder house.

4. Locate HEADER CONTROL switch (A) on the right console, and set to HT (this is AHHC mode).
5. Hold the DOWN button for 10 seconds, or until the combine feeder house has been lowered all the way down (the feeder house will stop moving).
6. Push the RAISE button and hold it until the feeder house travels all the way up. It will stop 61 cm (2 ft.) above ground for 5 seconds, then it will resume lift. This is an indication that calibration is successful.

   NOTE:

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

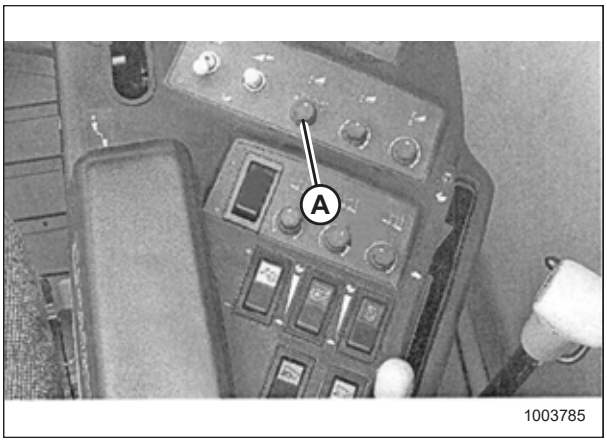


Figure 3.208: Right Console

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

To set 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.

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

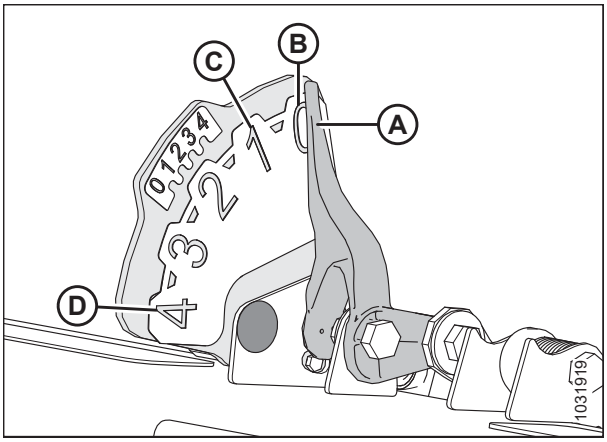


Figure 3.209: Float Indicator Box

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

   NOTE:

   When setting presets, always set header position before setting reel position. If header and reel are set at the same time, the reel setting will not be saved.
4. Manually raise or lower the reel to the desired working position.
5. Press 1 on button (A). A yellow light next to the button will illuminate.

Figure 3.210: Case Combine Console

6. Manually raise or lower the header to a second desired cutting height.
7. Press 2 on button (A). A yellow light next to the button will illuminate.
8. Manually raise or lower the reel to the desired working position.
9. Press 2 on button (A). A yellow light next to the button will illuminate.

Figure 3.211: Case Combine Console

Up and down arrows should now appear in MANUAL HEIGHT box (A) on the RUN 1 page on the combine display. This indicates that the auto header height control (AHHC) is functioning.

Figure 3.212: Case Combine Display – Run 1 Page

10. To enable the presets, activate AHHC button (A) to place the header on the ground. To enable the first preset, tap the button once. To enable the second preset, tap the button twice.

    To lift the header to maximum working height, hold the SHIFT button on the back of the control handle while tapping AHHC button (A).

Figure 3.213: Case Combine Control Handle

11. The maximum working height can be adjusted on the HEADER SETUP page on the combine display. Enter the desired height in MAXIMUM WORKING HEIGHT field (A).

Figure 3.214: Case Combine Display – Header Setup Page

12. If you need to change the position of one of the presets, you can fine-tune this setting with button (A) on the combine console.

Figure 3.215: Case Combine Console

3.8.8 Case IH, 120, 230, 240, and 250 Series Combines

Checking Voltage Range from the Combine Cab – Case IH, 120, 230, 240, and 250 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.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

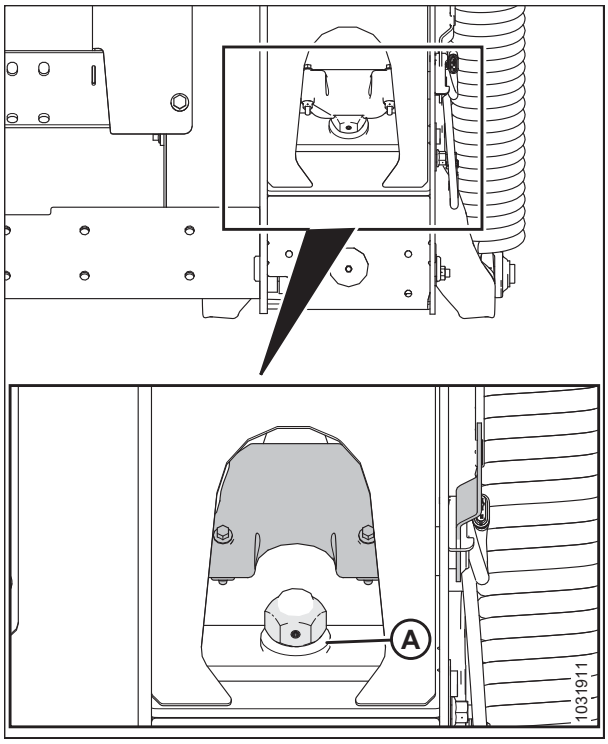


Figure 3.216: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

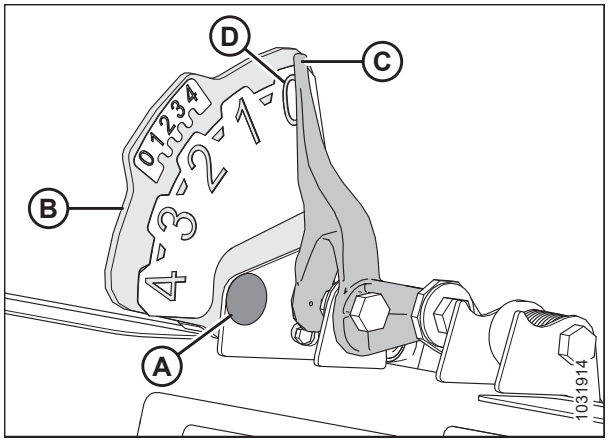


Figure 3.217: Float Indicator

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

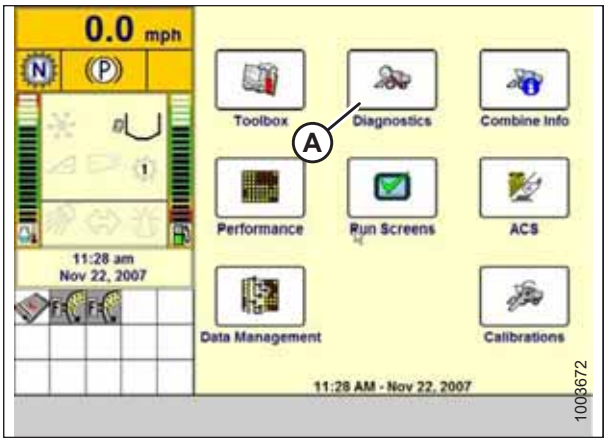


Figure 3.218: Case IH Combine Display

8. Select GROUP arrow (A). The GROUP dialog box opens.

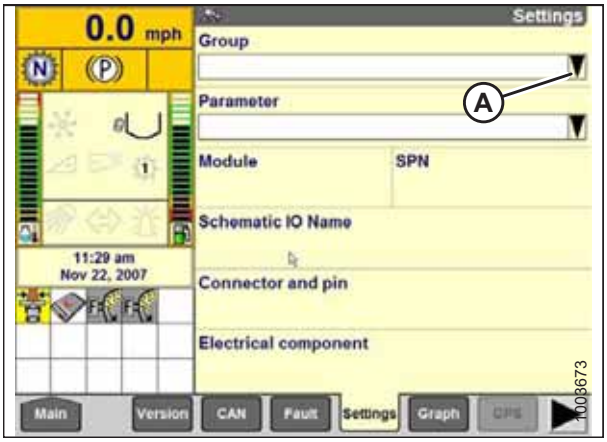


Figure 3.219: Case IH Combine Display

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

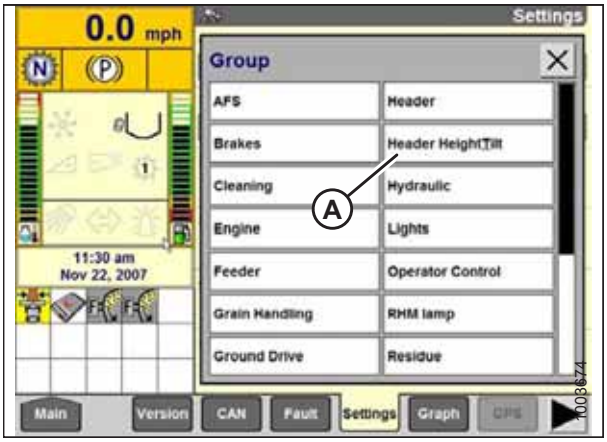


Figure 3.220: Case IH Combine Display

10. 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.

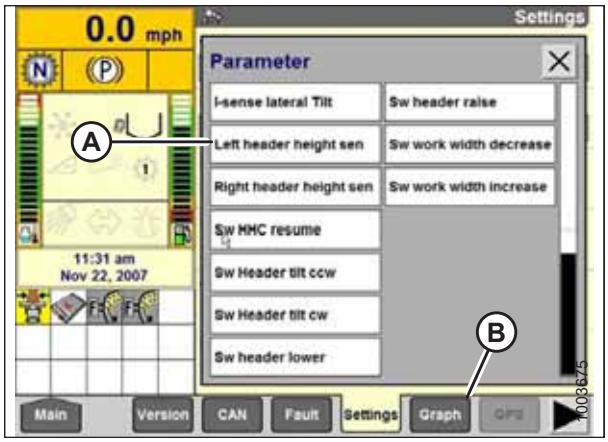


Figure 3.221: Case IH Combine Display

Calibrating the Auto Header Height Control – Case IH120, 230, 240, and 250 Series Combines

For best performance of the auto header height control (AHHC), perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

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 IH Combines with Version 28.00 or Higher Software, page 152*.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.
2. Ensure all header and float module electrical and hydraulic connections are made.

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

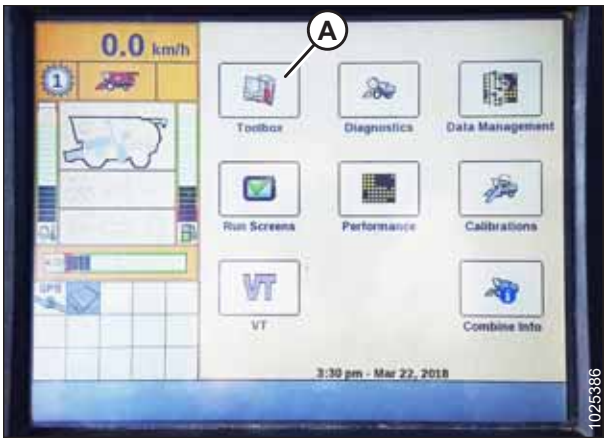


Figure 3.222: Case IH Combine Display

4. Select HEADER tab (A).

   NOTE:

   To locate the HEADER tab, you may need to scroll to the right using side arrows (C).

5. Set appropriate HEADER STYLE (B).

Figure 3.223: Case IH Combine Display

6. Set AUTO REEL SPEED SLOPE.

   NOTE:

   The AUTO REEL SPEED SLOPE value is the percentage of the reel speed compared to the ground speed. For example, if the value is set to 100, then the reel speed will be the same as the ground speed. Normally you want the reel going slightly faster than the ground speed. However, adjust the value according to crop conditions.

7. Set HEADER PRESSURE FLOAT to NO if equipped, and ensure REEL DRIVE is HYDRAULIC.

Figure 3.224: Case IH Combine Display

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

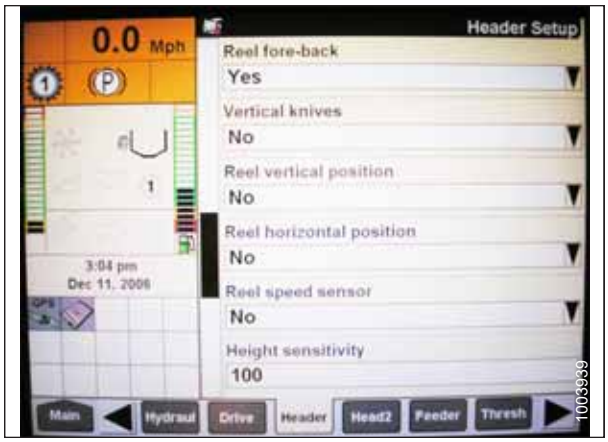


Figure 3.225: Case IH Combine Display

9. Locate HHC HEIGHT SENSITIVITY field (A), and set as follows:

   - **If using a two-sensor system:** Set HHC HEIGHT SENSITIVITY to 250.
   - **If using a single-sensor system:** Set HHC HEIGHT SENSITIVITY to 180.

   NOTE:

   If hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.

10. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease as desired.

Figure 3.226: Case IH Combine Display

11. Install FORE/AFT CONTROL and HDR FORE/AFT TILT (if applicable).

Figure 3.227: Case IH Combine Display

12. Press HEAD2 (A) at bottom of page.
13. Ensure HEADER TYPE (B) is DRAPER.

    NOTE:

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

14. Set CUTTING TYPE (C) to PLATFORM.
15. Set appropriate HEADER WIDTH (D) and HEADER USAGE (E).

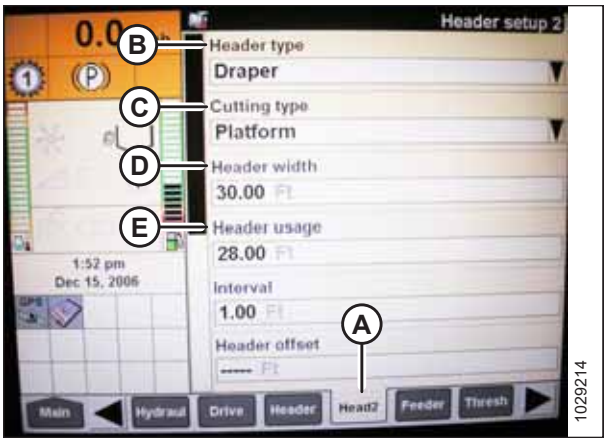


Figure 3.228: Case IH Combine Display

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

Figure 3.229: Case IH Combine Display

17. Locate AUTOTILT field (A).

    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

    NOTE:

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

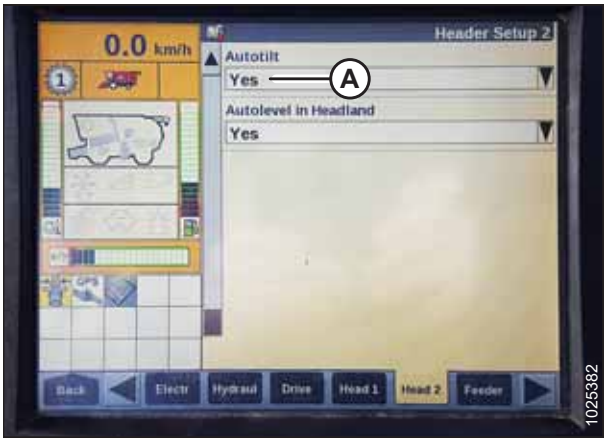


Figure 3.230: Case IH Combine Display

Calibrating the Auto Header Height Control – Case IH 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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure header center-link is set to **D**.
2. Raise header on down stops and unlock float.
3. Place wings in locked position.
4. Select TOOLBOX (A) on the MAIN page.

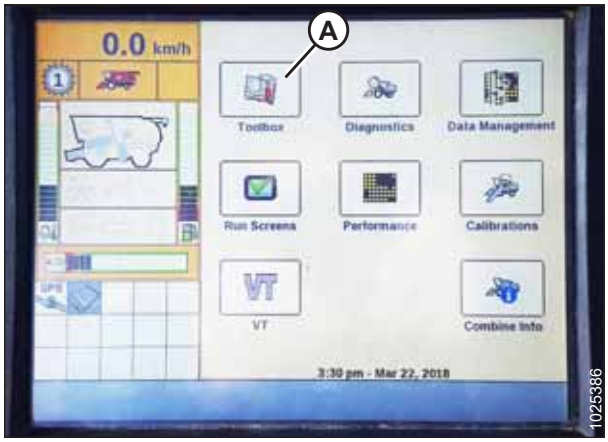


Figure 3.231: Case IH Combine Display

5. Select HEAD 1 tab (A).

   NOTE:

   To locate the HEAD 1 tab, you may need to scroll to the right using side arrows (B).

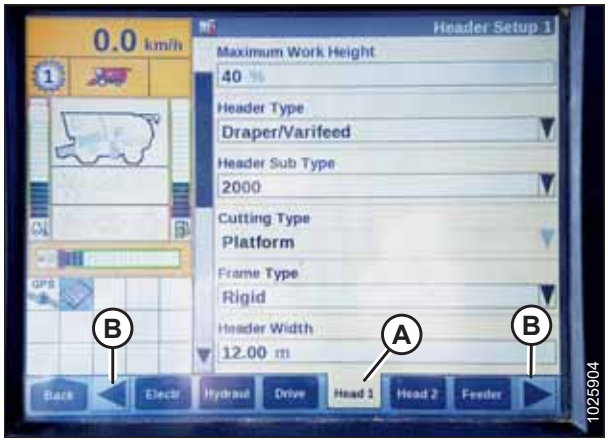


Figure 3.232: Case IH Combine Display

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

Figure 3.233: Case IH Combine Display

8. Select HEAD 2 tab (A).
9. In HEADER SENSORS field (B), select ENABLE.
10. In HEADER PRESSURE FLOAT field (C), select NO.
11. In HEIGHT/TILT RESPONSE field (D), select FAST.
12. In AUTO HEIGHT OVERRIDE field (E), select YES.
13. Press down arrow (F) to go to the next page.

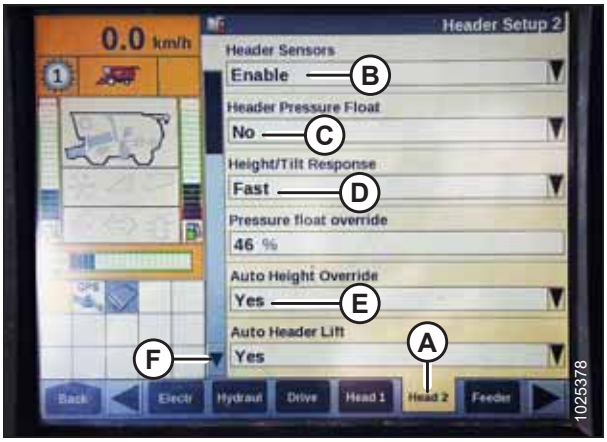


Figure 3.234: Case IH Combine Display

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

    NOTE:

    If hunting occurs during operation, decrease this setting by 20 points at a time until hunting no longer occurs.
15. Set HHC TILT SENSITIVITY (B) to 150. Increase or decrease as desired.

Figure 3.235: Case IH Combine Display

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

Figure 3.236: Case IH Combine Display

17. Locate AUTOTILT field (A).

    - **If using a two-sensor system:** Select YES in the AUTOTILT field.
    - **If using a single-sensor system:** Select NO in the AUTOTILT field.

Figure 3.237: Case IH Combine Display

NOTE:

Icons (A) and (B) appear on the monitor only after engaging the separator and header, and then pressing HEADER RESUME button on the control panel.

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

NOTE:

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

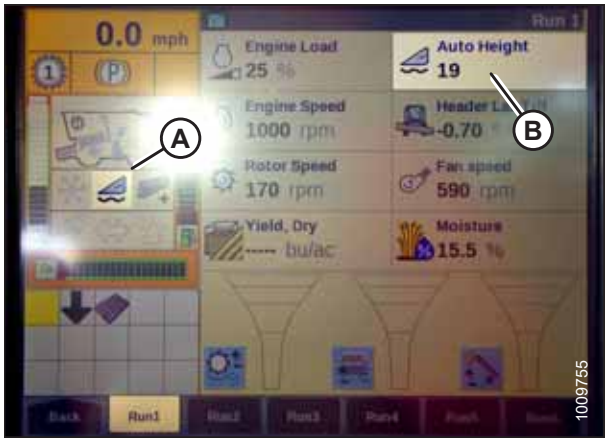


Figure 3.238: Case IH Combine Display

19. Select CALIBRATION on the combine display, and press the right arrow navigation key to enter the information box.
20. 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.

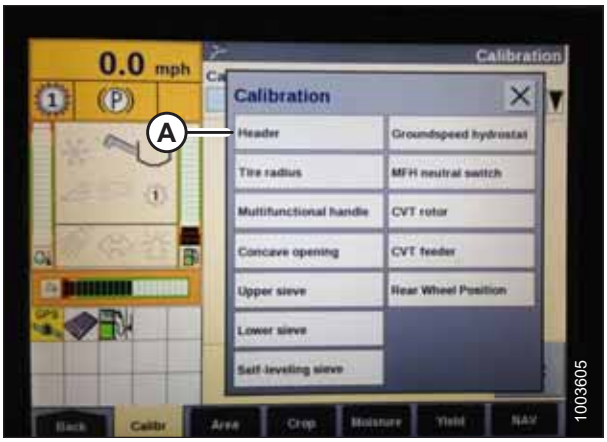


Figure 3.239: Case IH Combine Display

21. Follow the calibration steps in the order in which they appear in the dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

    NOTE:

    Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will cause the calibration procedure to stop.

    NOTE:

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

Figure 3.240: Case IH Combine Display

22. 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 the AHHC calibration procedure, adjust to recommended operating float after the calibration is complete.

Checking Reel Height Sensor Voltages – Case IH Combines

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.

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

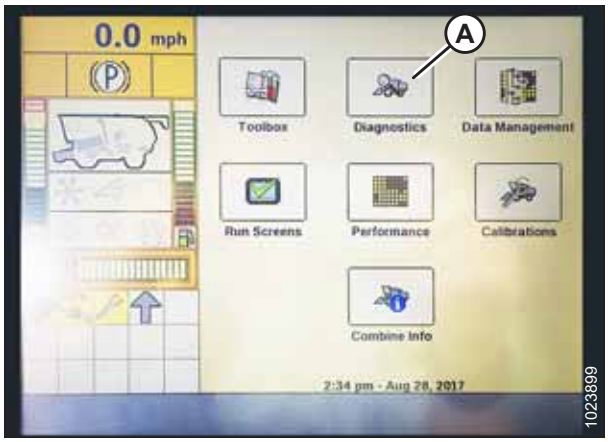


Figure 3.241: Case IH Combine Display

2. Select SETTINGS tab (A). The SETTINGS page opens.
3. From the GROUP menu, select HEADER (B).
4. From the PARAMETER menu, select REEL VERTICAL POSITION (C).

Figure 3.242: Case IH Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Lower the reel to view high voltage (B). The voltage should be 4.1–4.5 V.
7. Raise the reel to view low voltage (C). The voltage should be 0.5–0.9 V.
8. If either voltage is out of range, refer to *Checking and Adjusting Reel Height Sensor, page 94*.

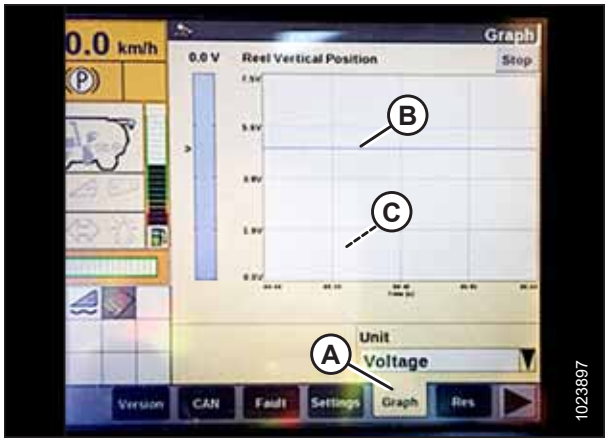


Figure 3.243: Case IH Combine Display

Setting Preset Cutting Height – Case IH, 120, 230, 240, and 250 Series Combines

To set the preset cutting height, follow these steps:

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.

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.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

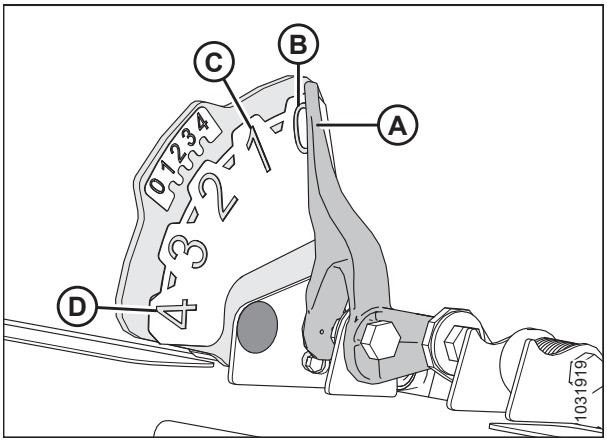


Figure 3.244: Float Indicator Box

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

   NOTE:

   Use switch (E) for fine adjustments.

   NOTE:

   When setting presets, always set header position before setting reel position. If header and reel are set at the same time, the reel setting will not save.
4. Manually raise or lower the reel to the desired position.
5. Press SET #1 switch (A). Light (C) beside switch (A) will illuminate.
6. Manually raise or lower the header to a second desired cutting height.
7. Press SET #2 switch (B). Light (D) beside switch (B) will illuminate.
8. Manually raise or lower the reel to a second desired working position.
9. Press SET #2 switch (B). Light (D) beside switch (B) will illuminate.

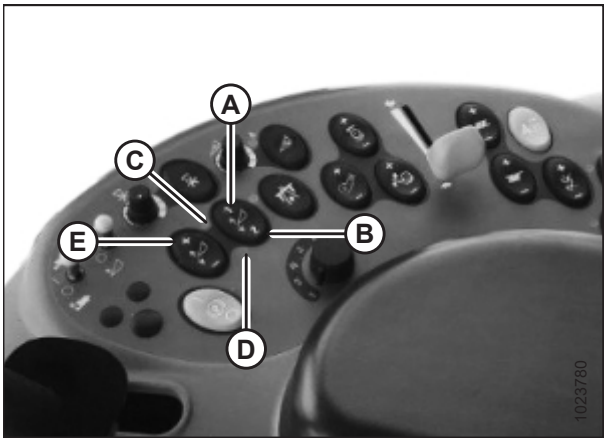


Figure 3.245: Case Combine Controls

10. To swap between set points, press HEADER RESUME (A).
11. To raise header at headlands, press and hold SHIFT button (B) at the back of the control handle and press HEADER RESUME switch (A). To lower header, press HEADER RESUME switch (A) once to return to header preset height.

    NOTE:

    Pressing HEADER RAISE/LOWER switches (C) and (D) disengages AUTO HEIGHT mode. Press HEADER RESUME (A) to re-engage.

Figure 3.246: Case Combine Controls

3.8.9 Challenger and Massey Ferguson 6 and 7 Series Combines

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

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.

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 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to for instructions.

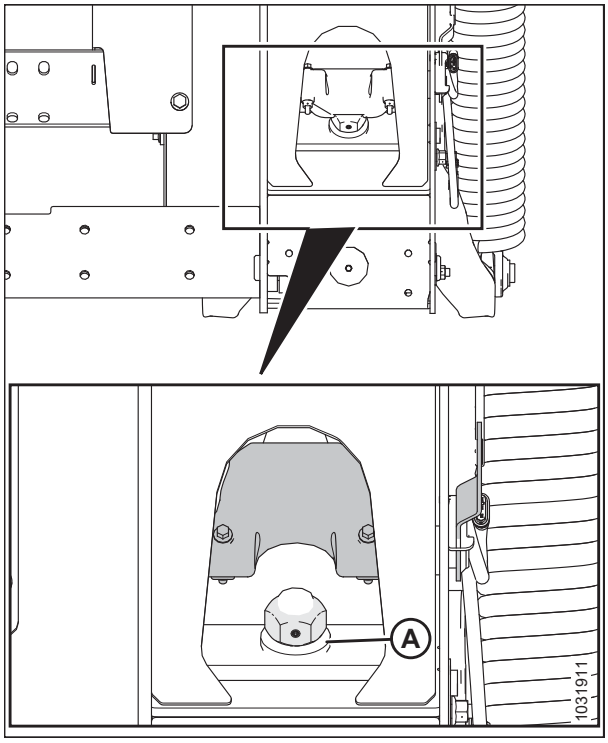


Figure 3.247: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on 0 (D).
4. Tighten bolt (A).

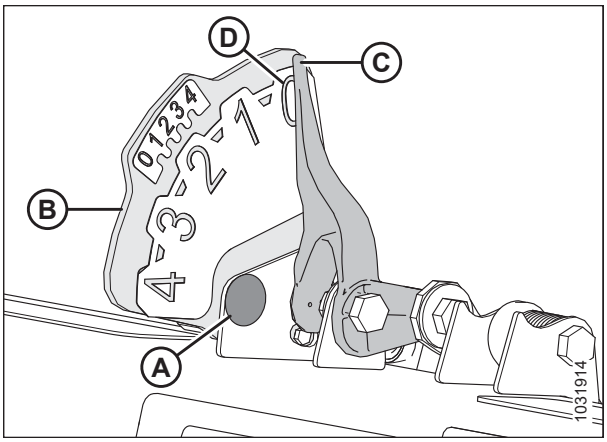


Figure 3.248: Challenger Combine Display

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

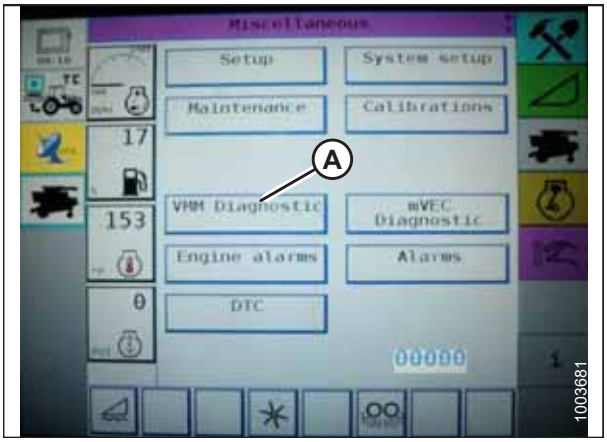


Figure 3.249: Challenger Combine Display

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

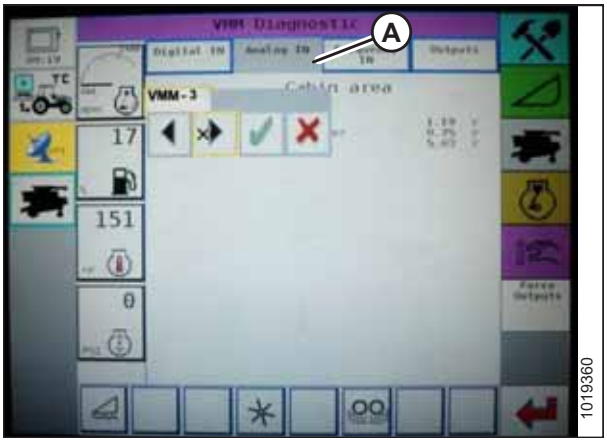


Figure 3.250: Challenger Combine Display

8. 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.

9. Read voltage.
10. Raise header so cutterbar is 150 mm (6 in.) off the ground.
11. Read voltage.
12. If the sensor voltage is not within the low and high limits, or if the range between the low and high limits is insufficient, adjust the voltage limits. For instructions, refer to or .

Figure 3.251: 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)
- Multifunction control handle operator inputs
- Operator inputs mounted in the control console module (CC) panel

NOTE:

In addition to the above components, the electrohydraulic header lift control valve is an integral part of the system.

Engage the AHHC as follows:

1. Scroll through the header control options on the combine display using the header control switch until AHHC icon (A) is displayed in the first message box. The AHHC will adjust the header height in relation to the ground according to the height setting and sensitivity setting.

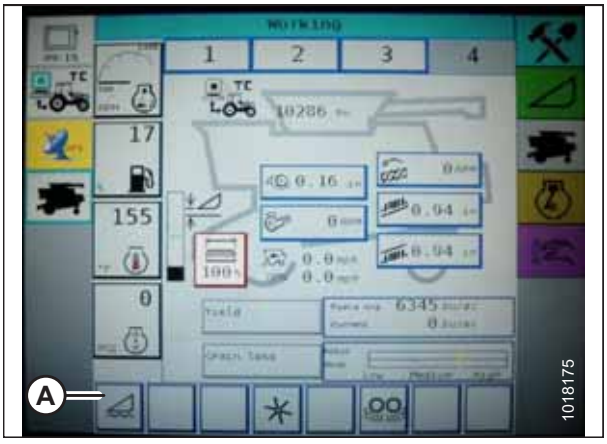


Figure 3.252: Challenger Combine Display

Calibrating the Auto Header Height Control – Challenger and Massey Ferguson

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.

NOTE:

For best performance of the auto header height control (AHHC) system, perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust the center-link back to desired header angle. For instructions, refer to .

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.

NOTE:

If the header float is set too light, it can prevent AHHC calibration. You may need to set the float heavier for the calibration procedure so the header doesn't separate from the float module.

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

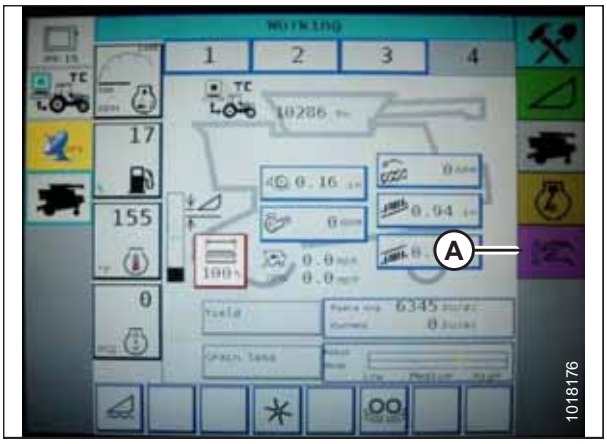


Figure 3.253: Challenger Combine Display

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

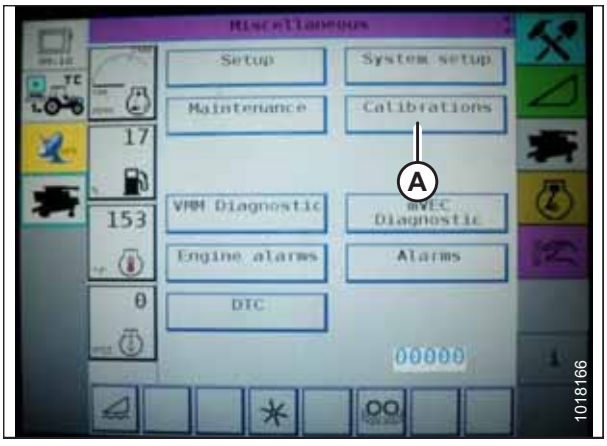


Figure 3.254: Challenger Combine Display

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

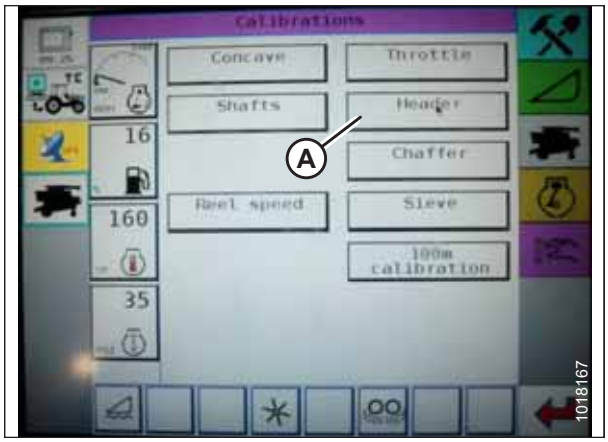


Figure 3.255: Challenger Combine Display

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

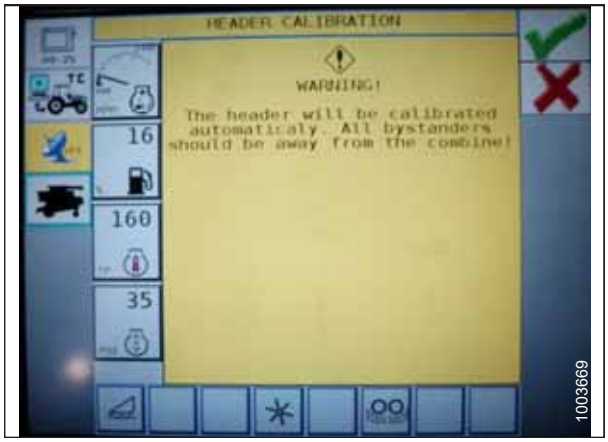


Figure 3.256: Challenger Combine Display

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

   NOTE:

   The calibration procedure can be canceled at any time by pressing the cancel button 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.

   NOTE:

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

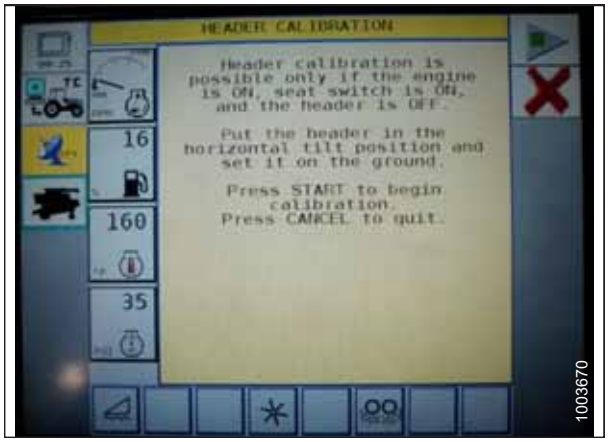


Figure 3.257: Challenger Combine Display

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.

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.

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.

You can adjust the selected AHHC height using HEIGHT ADJUSTMENT knob (A) on the control console. Turning the knob clockwise increases the selected height, and turning the knob counterclockwise decreases the selected height.

Figure 3.258: 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 Header icon (A) on the FIELD screen. The HEADER screen displays.

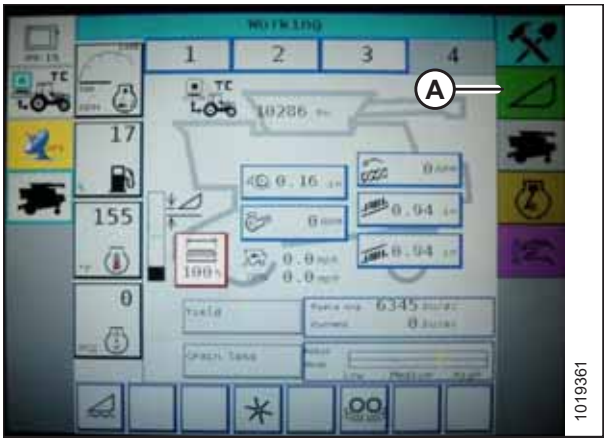


Figure 3.259: Challenger Combine Display

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

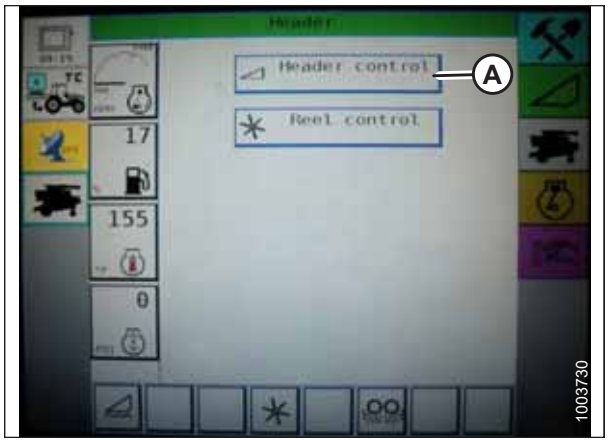


Figure 3.260: Challenger Combine Display

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.

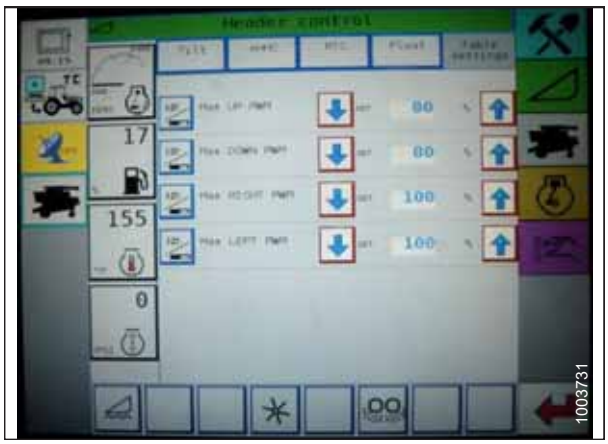


Figure 3.261: Challenger Combine Display

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.

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.

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 screen. The HEADER screen appears.

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

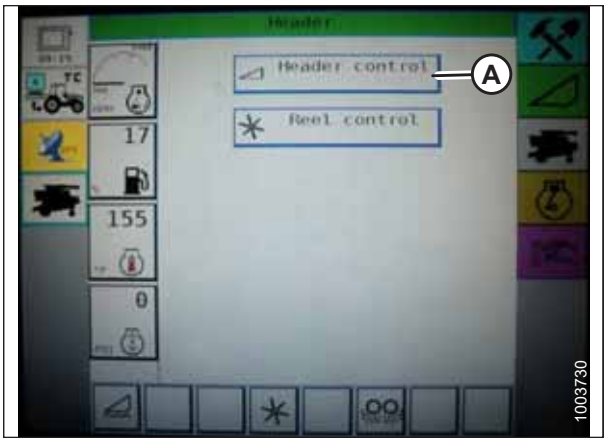


Figure 3.262: Challenger Combine Display

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 3.263: Challenger Combine Display

3.8.10 CLAAS 500 Series Combines

Calibrating the Auto Header Height Control – CLAAS 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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.

2. Use < key (A) or > key (B) to select AUTO HEADER, and press OK key (C). The E5 screen displays whether the automatic header height is on or off.

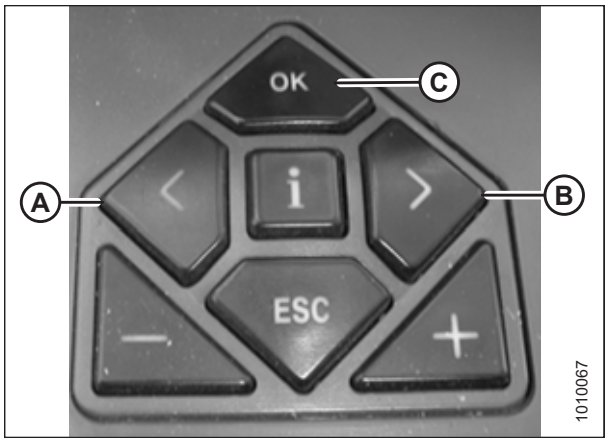


Figure 3.264: CLAAS Combine Controls

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

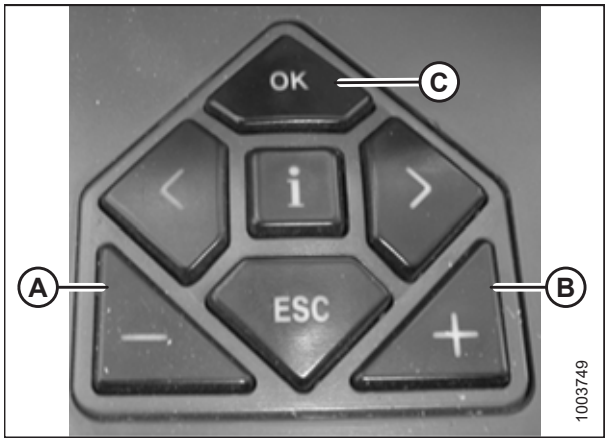


Figure 3.265: CLAAS Combine Controls

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

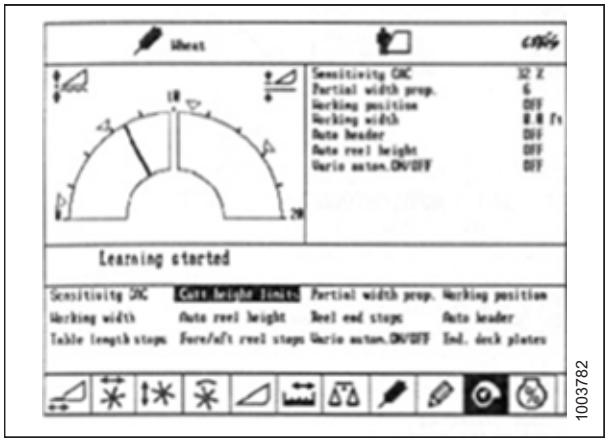


Figure 3.266: CLAAS Combine Display

7. Use the **<** or **>** key to select SENSITIVITY CAC, and press the combine controls OK key.

   NOTE:

   Setting the sensitivity of the AHHC system affects the reaction speed of the AHHC on the header.

8. Use the **–** key or the **+** key to change the setting of the reaction speed, and press the combine controls OK key.

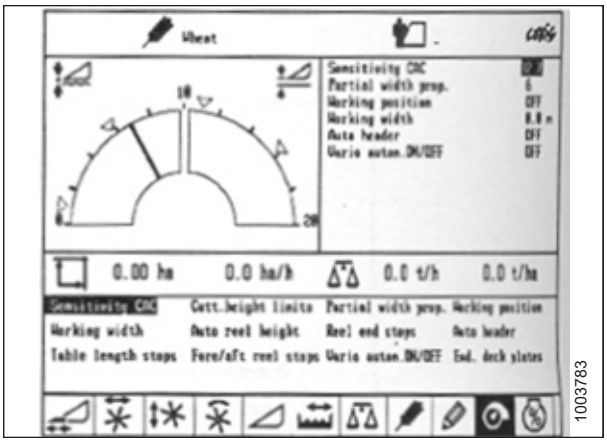


Figure 3.267: CLAAS Combine Display

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

   NOTE:

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

   NOTE:

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

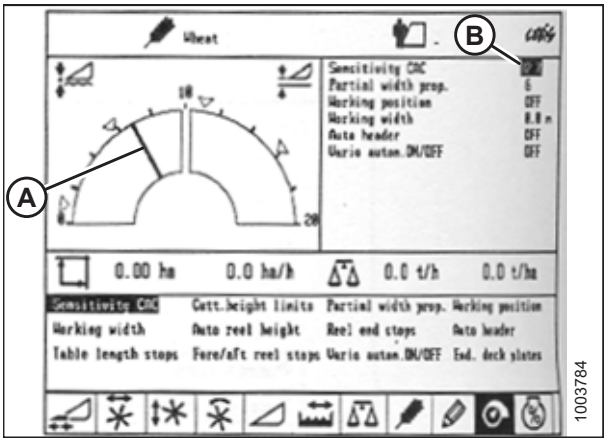


Figure 3.268: CLAAS Combine Display

Setting Cutting Height – CLAAS 500 Series

Cutting heights can be programmed into the preset cutting height and auto contour systems. Use the preset cutting height system for cutting heights above 150 mm (6 in.), and use the auto contour system for cutting heights below 150 mm (6 in.).

Setting Preset Cutting Height – CLAAS 500 Series

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 3.269: Control Handle Buttons

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

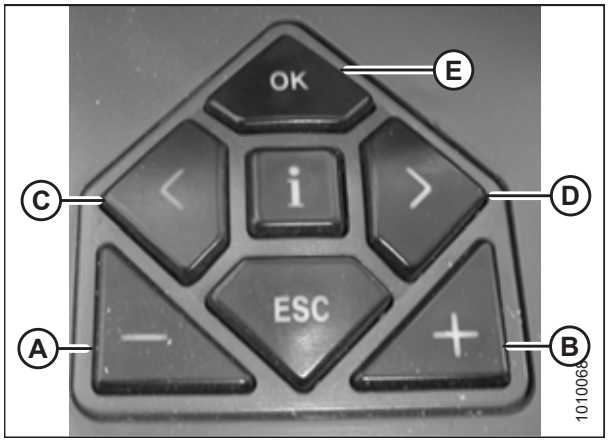


Figure 3.270: CLAAS Combine Controls

8. Briefly press button (A) or button (B) in order to select the set point.
9. Repeat Step *7, page 168* for the set point.

Figure 3.271: Control Handle Buttons

Setting Cutting Height Manually – CLAAS 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 3 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 169*, and use button (D) instead of button (C) while repeating Step *2, page 169*.

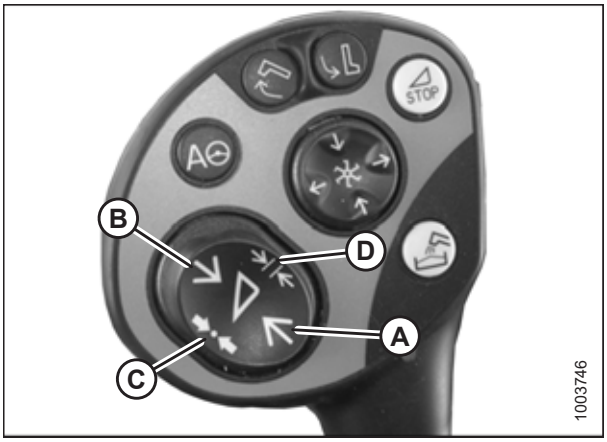


Figure 3.272: Control Handle Buttons

Setting the Sensitivity of the Auto Header Height Control – CLAAS 500 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the 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 **<** key (C) or **>** key (D) to select SENSITIVITY CAC, and press OK key (E).
2. Use **–** key (A) or **+** (B) key to change the reaction speed setting, and press OK key (E).

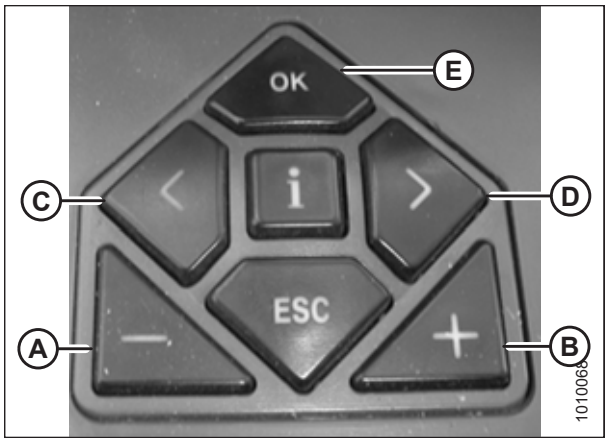


Figure 3.273: CLAAS Combine Controls

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

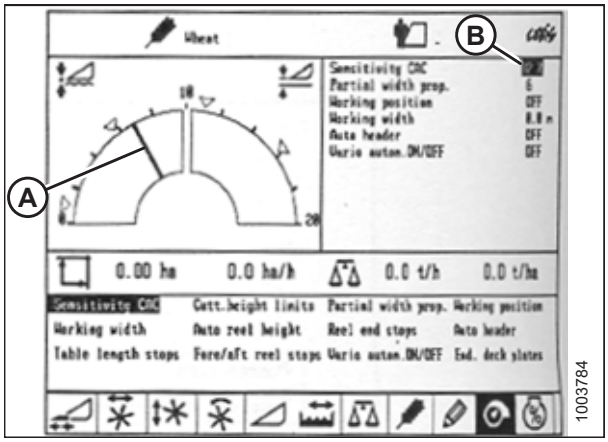
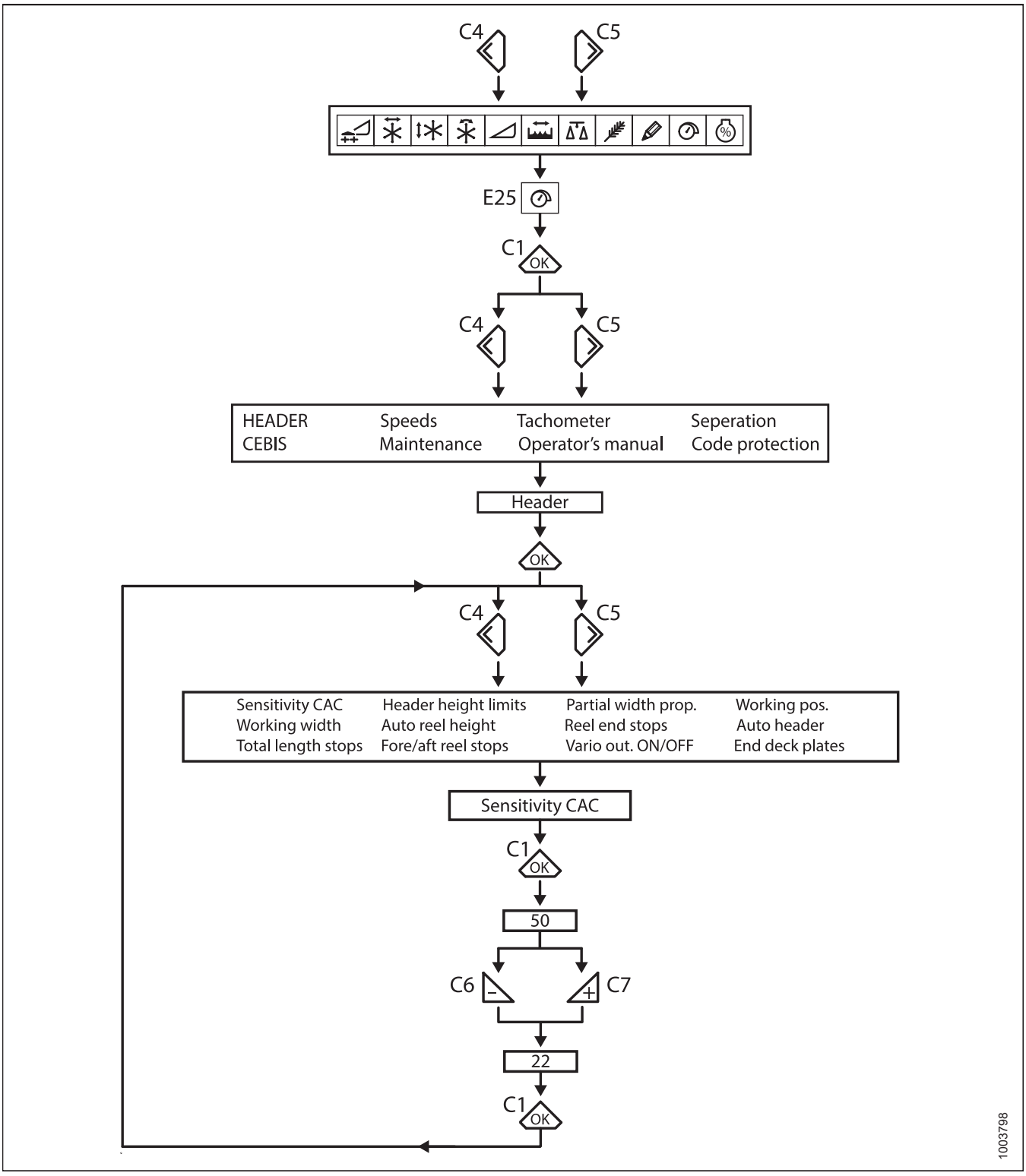


Figure 3.274: CLAAS Combine Display

Figure 3.275: Flow Chart for Setting the Sensitivity of the Float Optimizer



Adjusting Auto Reel Speed – CLAAS 500 Series

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

NOTE:

Changes may have been made to the combine controls or 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.

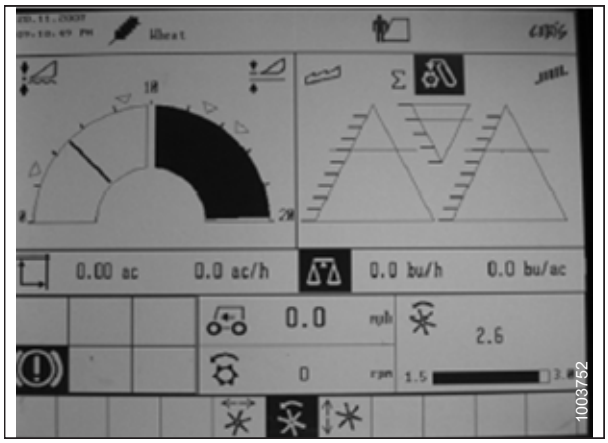


Figure 3.276: CLAAS Combine Display

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

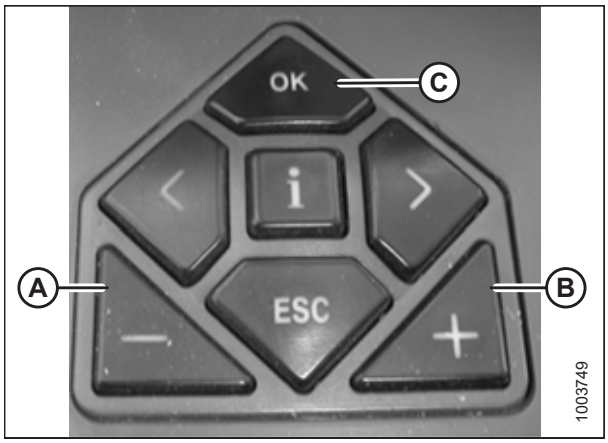


Figure 3.277: CLAAS Combine Controls

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

Figure 3.278: CLAAS Combine Rotary Switch

5. Press and hold button (A) or button (B) for 3 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 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 3.279: CLAAS Control Handle 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.

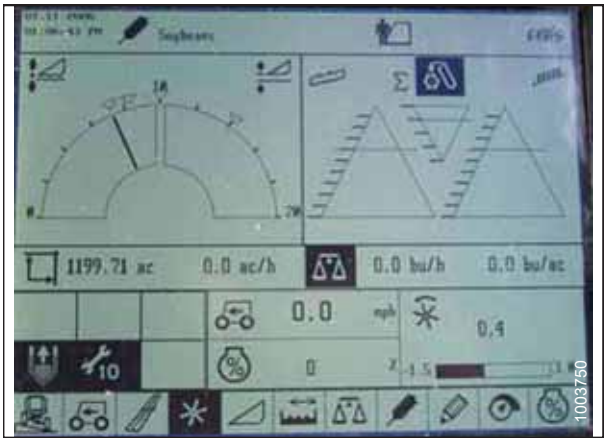


Figure 3.280: CLAAS Combine Display

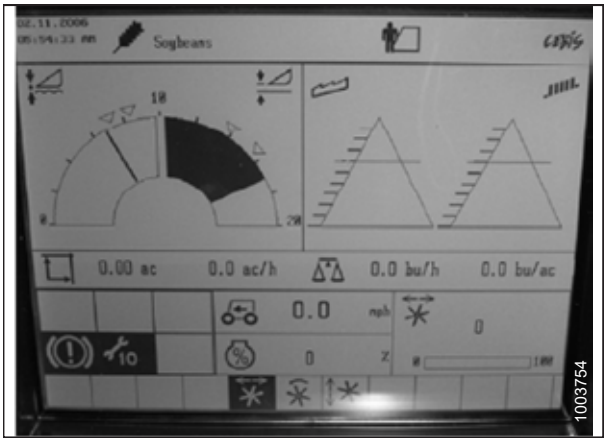


Figure 3.281: CLAAS Combine Display

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

   NOTE:

   Control handle button (A) or button (B) (as shown in Figure *3.283, page 174*) can also be used to set the reel fore-aft position.

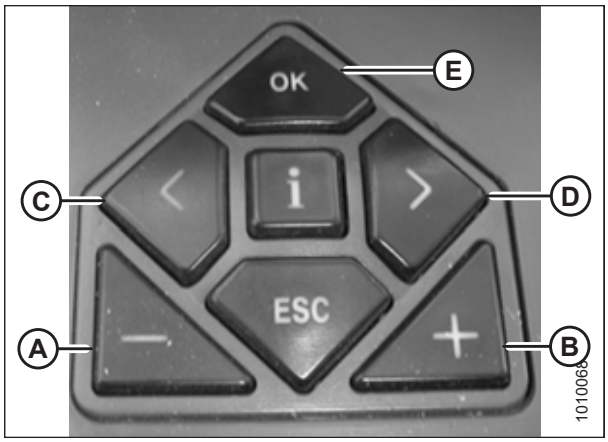


Figure 3.282: CLAAS Combine Controls

9. Press and hold button (A) or button (B) for 3 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 3 seconds, the current positions for reel speed and cutting height are stored.

Figure 3.283: CLAAS Control Handle Buttons

3.8.11 CLAAS 600 and 700 Series Combines

Calibrating the Auto Header Height Control – CLAAS 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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

If header float is set too light, it can prevent AHHC calibration. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.
2. Ensure that the header float is unlocked.
3. Place wings in locked position.

4. Use control knob (A) to highlight AUTO CONTOUR icon (B) and press control knob (A) to select it.

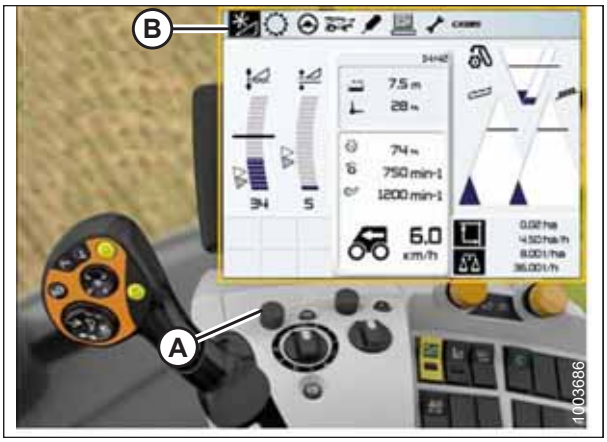


Figure 3.284: CLAAS Combine Display, Console, and Control Handle

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

Figure 3.285: CLAAS Combine Display, Console, and Control Handle

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

Figure 3.286: CLAAS Combine Display, Console, and Control Handle

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

Figure 3.287: CLAAS Combine Display, Console, and Control Handle

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

Figure 3.288: CLAAS Combine Display, Console, and Control Handle

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

    NOTE:

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

    NOTE:

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

Figure 3.289: CLAAS Combine Display, Console, and Control Handle

Setting Cutting Height – CLAAS 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 header raise and lower switch (A) until you hear a ping.

   NOTE:

   You can set two different cutting heights.

Figure 3.290: CLAAS Combine Display, Console, and Control Handle

Setting the Sensitivity of the Auto Header Height Control – CLAAS 600 and 700 Series

The sensitivity adjustment controls the distance the cutterbar must travel up or down before the auto header height control (AHHC) reacts and raises or lowers the feeder house. When the sensitivity is set to maximum, only small changes in ground height are needed to cause the feeder house to raise or lower. When the sensitivity is set to minimum, large changes in the ground height are needed to cause the feeder house to raise or lower.

NOTE:

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

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

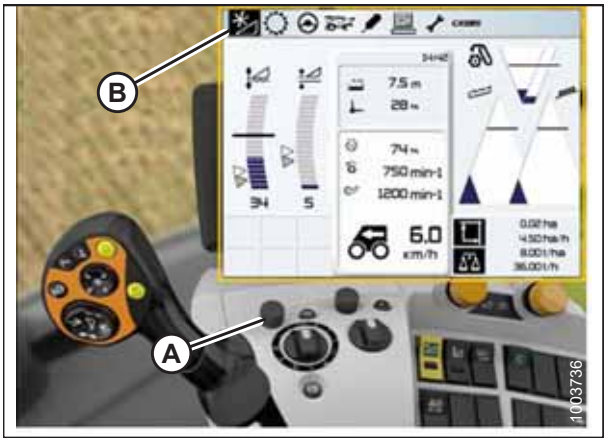


Figure 3.291: CLAAS Combine Display, Console, and Control Handle

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

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

5. Select SENSITIVITY CAC icon (A).

   NOTE:

   To set the sensitivity, you will have to change the CUTTING HEIGHT ADJUSTMENT (B) from the 0 default. The settings from 1–50 provide a faster response, whereas the settings from -1 to -50 provide a slower response. For best results, make adjustments in increments of 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 3.293: CLAAS Combine Display

Adjusting Auto Reel Speed – CLAAS 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 HEADER/REEL icon (B), and press control knob (A) to select it. The HEADER/REEL dialog box opens.

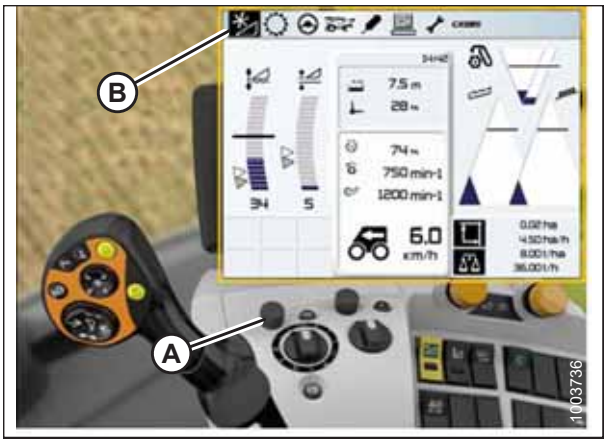


Figure 3.294: CLAAS Combine Display, Console, and Control Handle

2. Use control knob (A) to select REEL SPEED (B), and adjust the reel speed (if you are **NOT** using Auto Reel Speed). A graph displays in the dialog box.

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

3. Select ACTUAL VALUE (A) from the AUTO REEL SPEED dialog box (if you are using Auto Reel Speed). The ACTUAL VALUE dialog box indicates the auto reel speed.

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

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

   NOTE:

   This option is only available at full throttle.

Figure 3.297: CLAAS Combine Display, Console, and Control Handle

Calibrating Reel Height Sensor – CLAAS 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.

To calibrate reel height, follow these steps:

1. Place header off the ground 15–25 cm (6–10 in.).

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. Use control knob (A) to highlight FRONT ATTACHMENT icon (B) and press control knob (A) to select it.

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

3. Use control knob (A) to highlight REEL icon (B), and press control knob (A) to select it.

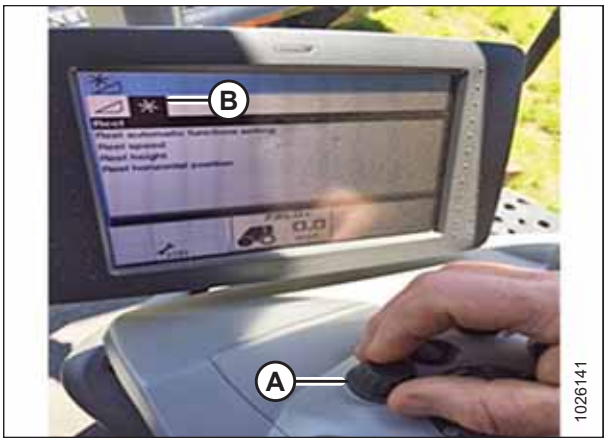


Figure 3.299: CLAAS Combine Display and Console

4. Highlight REEL HEIGHT icon (A), and press control knob to select it.
5. Select LEARNING END STOPS (B) from the list.

Figure 3.300: CLAAS Combine Display and Console

6. Use control knob (A) to highlight screwdriver icon (B).

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

7. Press control knob and a progress bar chart (A) will appear.
8. Follow the prompts on the screen to raise the reel.
9. Follow the prompts on the screen to lower the reel.

Figure 3.302: CLAAS Combine Display, Console, and Control Handle

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

Figure 3.303: CLAAS Combine Display, Console, and Control Handle

Adjusting Auto Reel Height – CLAAS 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.

To adjust the auto reel height, follow these steps:

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

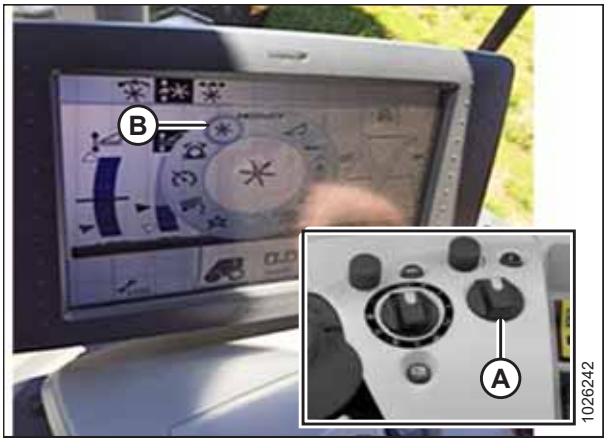


Figure 3.304: CLAAS Combine Display and Console

2. Use control knob (A) to select AUTO REEL HEIGHT icon (B) at the top of the page.

   NOTE:

   AUTO REEL HEIGHT icon (C) at the center of the page should be highlighted black. If it is not black, either the end stops have not been set or the AHHC is not active. For instructions, refer to *Calibrating Reel Height Sensor – CLAAS 600 and 700 Series, page 180*.

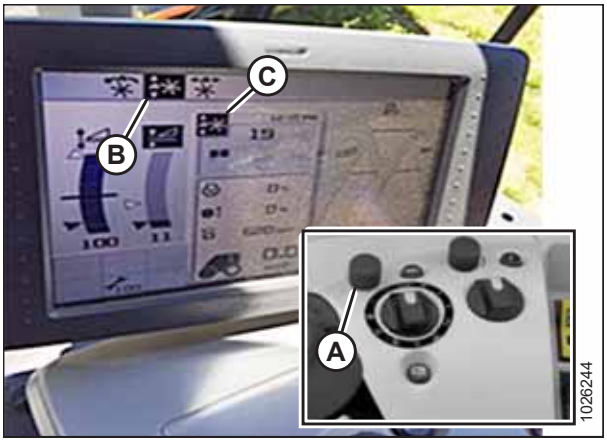


Figure 3.305: CLAAS Combine Display and Console

3. Adjust the auto reel height position for the current AHHC position using outer scroll knob (A). To lower the preset reel position, turn the scroll knob counterclockwise; to raise the preset reel position, turn the scroll knob clockwise. The display will update current setting (B).

   NOTE:

   If the AUTO REEL HEIGHT icon in the center of the page is not black, an AHHC position is not currently active.

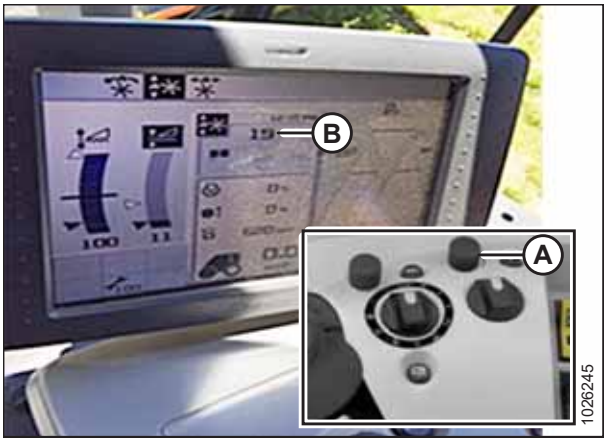


Figure 3.306: CLAAS Combine Display and Console

3.8.12 CLAAS 8000/7000 Series Combines

Setting up the Header – CLAAS 8000/7000 Series

Follow these steps to setup a MacDon header:

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.

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

Figure 3.307: CEBIS Main Page

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

Figure 3.308: Front Attachment Page

3. From the Front Attachment Parameters page, select FRONT ATTACHMENT TYPE (A).
4. From the drop down list, select FLEX CUTTERBAR PRODUCT BY OTHER MANUFACTURER (B).

Figure 3.309: Attachment Parameters Page

5. From the Front Attachment Parameters page, select WORKING WIDTH (A).
6. Set header width by sliding adjuster arrow (B) up or down.
7. Select CHECK (C) to save settings.

Figure 3.310: Attachment Parameters Page

Calibrating the Auto Header Height Control – CLAAS 8000/7000 Series

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.

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

Figure 3.311: CEBIS Main Page

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

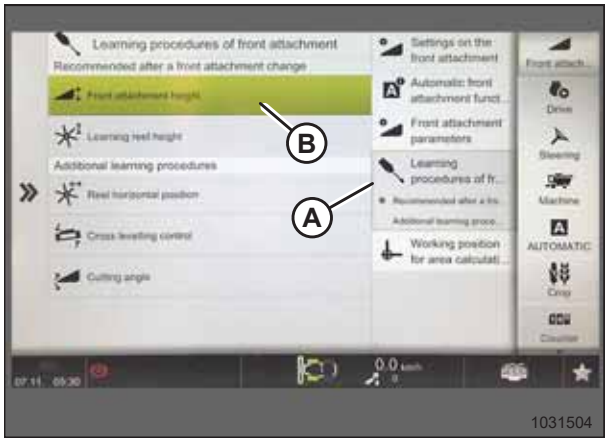


Figure 3.312: Learning Procedures Page

4. Follow the prompts that appear in Description and Notes fields (A).

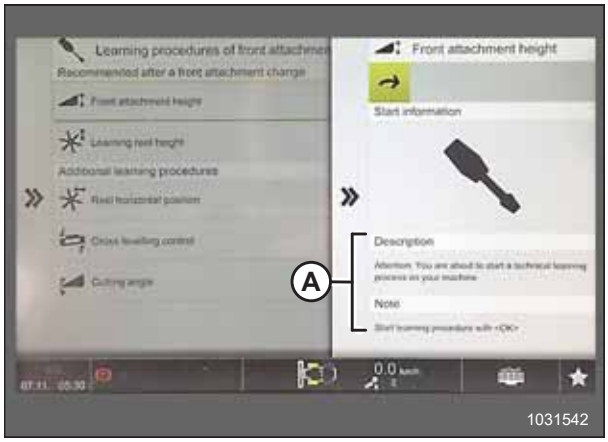


Figure 3.313: Front Attachment Height Page

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

Figure 3.314: Operator Controls

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

Figure 3.315: Multifunction Lever

Setting Cut and Reel Height Preset – CLAAS 8000/7000 Series

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.

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. Set desired cutting height with feederhouse raise/lower buttons (A) on the multifunction lever.
2. Set desired reel position with buttons (B).
3. Press and hold AUTO HEIGHT PRESET button (C) to store settings.

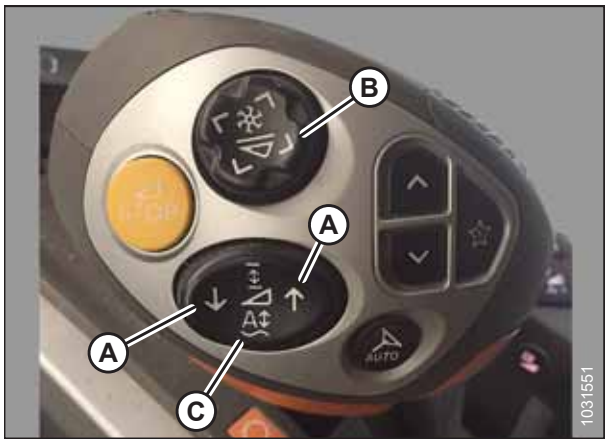


Figure 3.316: Multifunction Lever

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

Figure 3.317: CEBIS Main Page

Setting the Sensitivity of the Auto Header Height Control – CLAAS 8000/7000 Series

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.

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

Figure 3.318: CEBIS Main Page

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

Figure 3.319: Front Attachment Parameters Page

3. Scroll through the list and select DROP RATE WITH AUTO CONTOUR icon (A).
4. Adjust the drop rate by sliding adjuster arrow (B) up or down.
5. Select check mark (C) to confirm settings.

Figure 3.320: Drop Rate with Auto Contour Page

Adjusting Auto Reel Speed – CLAAS 8000/7000 Series

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.

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

Figure 3.321: CEBIS Main Page

2. From the list, select SETTINGS ON FRONT ATTACHMENT (A).
3. Select REEL TARGET VALUES (B).
4. Select REEL SPEED ADJUST icon (C)

Figure 3.322: Settings on Front Attachment Page

5. Adjust the reel speed target value by sliding adjuster arrow (A) up or down.
6. Select check mark (B) to save setting.

Figure 3.323: Reel Speed Target Value Page

Calibrating Reel Height Sensor – CLAAS 8000/7000 Series

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.

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. Place header off the ground 15–25 cm (6–10 in.).

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

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

Figure 3.324: CEBIS Main Page

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

Figure 3.325: Front Attachment Page

5. Follow the prompts that appear in Description and Notes fields (A).

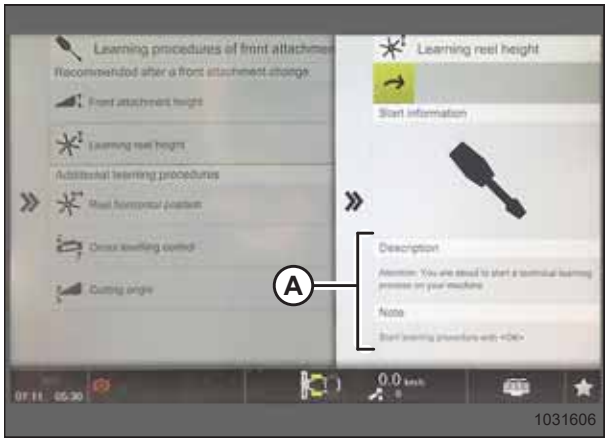


Figure 3.326: Learning Reel Height Page

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

Figure 3.327: Operator Controls

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

Checking Voltage Range from the Combine Cab – Gleaner R65/R66/R75/R76 and Pre-2016 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 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to for instructions.

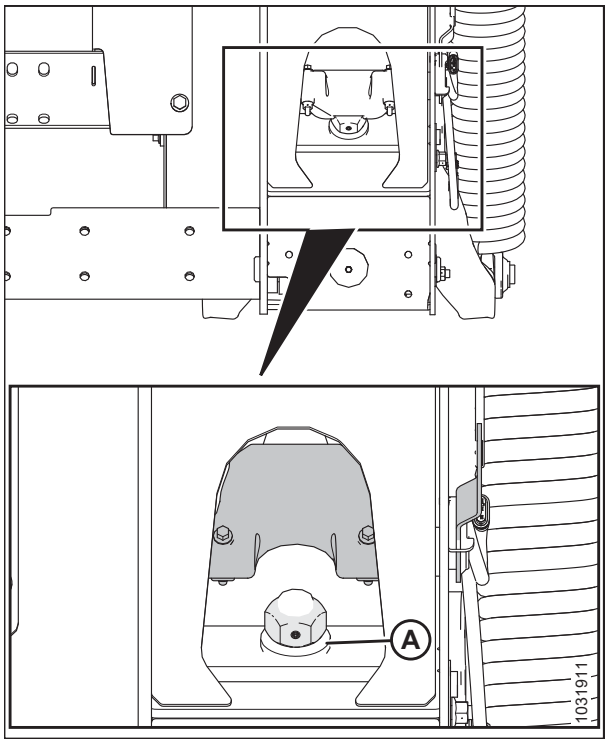


Figure 3.328: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) in on 0 (D).
4. Tighten bolt (A).

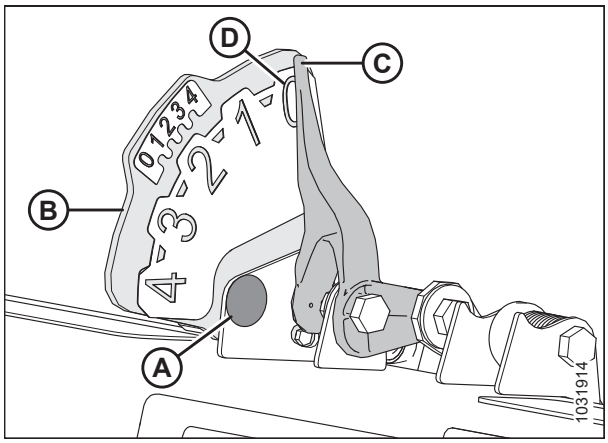
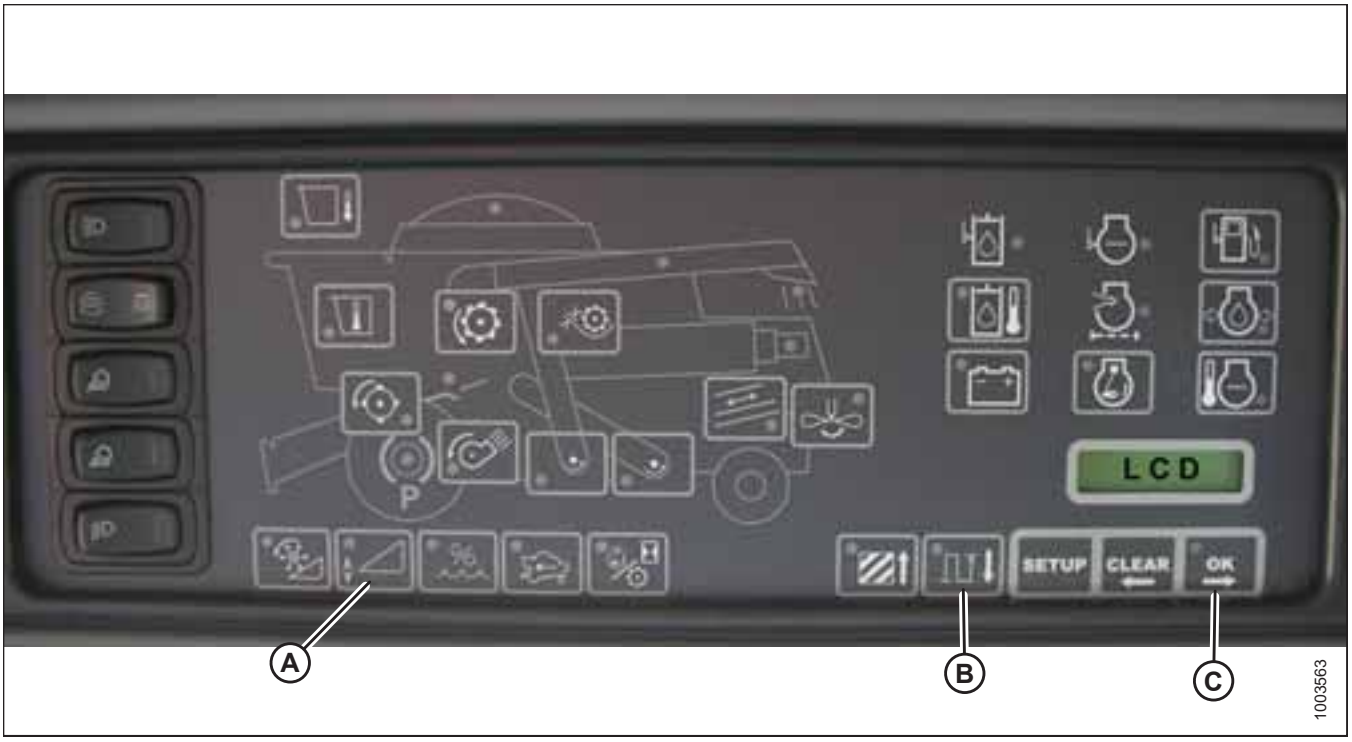


Figure 3.329: Float Indicator Box

Figure 3.330: Combine Heads-Up Display



5. Ensure header float is unlocked.
6. Press and hold button (A) on the heads-up display for 3 seconds to enter diagnostic mode.
7. Scroll down using button (B) until LEFT is displayed on the LCD screen.
8. Press OK button (C). The number indicated on the LCD screen is the voltage reading from the sensor of the 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 Pre-2016 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 and header driver module mounted in card box in fuse panel (FP) module.
- Multifunction control handle operator inputs.
- Operator inputs mounted in the control console (CC) module panel.

NOTE:

In addition to the above components, the electrohydraulic header lift control valve is an integral part of the system.

Figure 3.331: Combine Auto Header Height Controls

1. Press AUTO MODE button (A) until AHHC LED light (B) begins flashing. If the RTC light is flashing, press AUTO MODE button (A) again until it switches to AHHC.

CAUTION

Check to be sure all bystanders have cleared the area.

2. Briefly press button (A) on the control handle. The AHHC light should change from flashing to solid. The header 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.

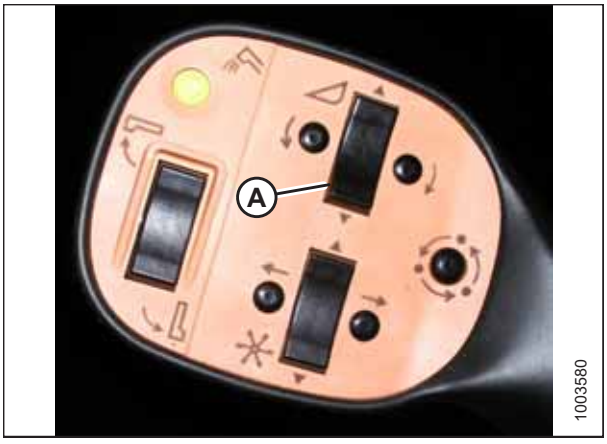


Figure 3.332: Control Handle

Calibrating the Auto Header Height Control – Gleaner R65/R66/R75/R76 and Pre-2016 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). For instructions, refer to the combine operator's manual.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

Figure 3.333: 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. For instructions, refer to *3.7.5 Header Angle, page 81*.

1. Ensure center-link is set to **D**.
2. Press AUTO MODE button (A) until 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 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.

    NOTE:

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

Turning off the Accumulator – Gleaner R65/R66/R75/R76 and Pre-2016 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 3.334: Combine Accumulator ON/OFF Switch
A - Accumulator Lever (Off Position)

Adjusting the Header Raise/Lower Rate – Gleaner R65/R66/R75/R76 and Pre-2016 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 header raise (A) and header lower (B) adjustable restrictors in the hydraulic manifold are adjusted so that it takes approximately 6 seconds to raise the header from ground level to maximum height (hydraulic cylinders fully extended), and approximately 6 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: 7 or 8 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 3.335: Header Raise and Lower Adjustable Restrictors

Adjusting Ground Pressure – Gleaner R65/R66/R75/R76 and Pre-2016 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.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. If not, the float sensor output voltage should be checked. Refer to Step . When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

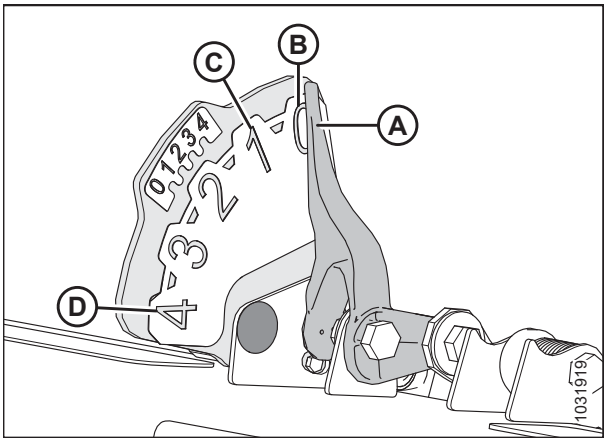


Figure 3.336: Float Indicator

1. Ensure the header is in auto header height control (AHHC) mode. This is indicated by AUTO MODE LED light (A) displaying a continuous, solid light.
2. The header will lower to the height (ground pressure) corresponding to the position selected with height control knob (B). Turn the knob counterclockwise for minimum ground pressure, and clockwise for maximum ground pressure.

Figure 3.337: AHHC Console

Adjusting the Sensitivity of the Auto Header Height Control – Gleaner R65/R66/R75/R76 and Pre-2016 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 3.338: Auto Header Height Control Console

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

When SENSITIVITY ADJUSTMENT dial (A) is set to maximum (turned completely clockwise), only small changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 19 mm (3/4 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

When SENSITIVITY ADJUSTMENT dial (A) is set to minimum (turned completely counterclockwise), large changes in ground height are needed to cause the feeder house to raise or lower. In this position, the cutterbar moves up and down approximately 51 mm (2 in.) before the control module signals the hydraulic control valve to raise or lower the header frame.

The HEADER SENSE LINE input also changes the range of the sensitivity. When connected to a draper, the counterclockwise position (least sensitive) allows for approximately 102 mm (4 in.) of vertical travel before correction is made.

Troubleshooting Alarms and Diagnostic Faults – Gleaner R65/R66/R75/R76 and Pre-2016 S Series

NOTE:

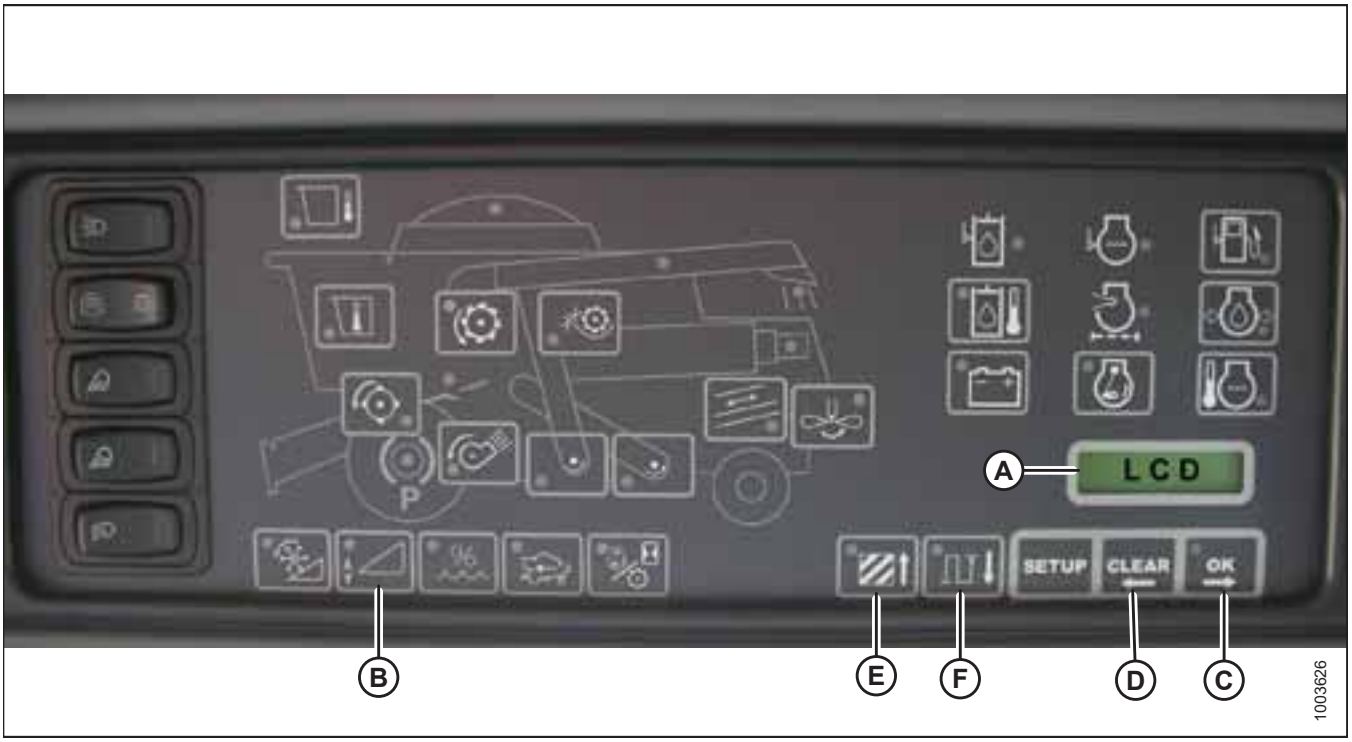
Changes may have been made to the combine controls or display since this document was published. Refer to the combine operator's manual for updates.

Display type:

Displayed on tachometer (A) as XX or XXX.

Figure 3.339: Tachometer

Figure 3.340: Combine Heads-Up Display



NOTE:

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

Alarm conditions:

If an error message is received from the fuse panel, an audible alarm sounds. The alarm buzzer sounds five times every 10 seconds. 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.

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 *3.340, page 201*.

Pressing header height switch (B) for a minimum of 5 seconds will put the EIP in header diagnostic mode. The LCD (shown on previous screen) will display the message HDR DIAG when the EIP has entered header diagnostic mode.

In this mode, after 3 seconds, header fault parameter labels are displayed on the EIP LCD. All the information displayed is read-only.

OK (C) and CLEAR (D) buttons allow you to scroll through the list of parameters. If there are no active fault codes, the EIP LCD will display NO CODE.

When a parameter is displayed, its label is displayed for 3 seconds, after which its value is automatically displayed.

Pressing OK button (C) while the value is displayed will advance to the next parameter and display its label.

When a parameter label is displayed and OK button (C) is pressed before 3 seconds, the parameter's value will be displayed.

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

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

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

Refer to *3.8.1 Sensor Operation, page 120*.

3.8.14 Gleaner S9 Series Combines

Setting up the Header – Gleaner S9 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.

AGCO Tyton terminal (A) is used to set up and manage a MacDon draper header on a Gleaner S9 Series combine. Use the touch screen display to select the desired item on the screen.

Figure 3.341: Gleaner S9

A - Tyton Terminal **B - Control Handle**
C - Throttle **D - Header Control Cluster**

1. On the top right quadrant of the home screen, touch COMBINE icon (A). The COMBINE MAIN MENU opens.

Figure 3.342: Combine Icon on Home Page

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

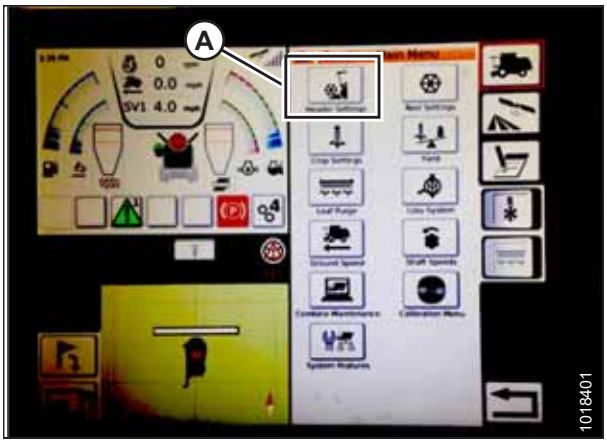


Figure 3.343: Header Settings in Combine Main Menu

3. Touch HEADER CONFIGURATION field (A). A dialog box showing predefined headers opens.
   - If your MacDon header is already set up, it appears on the header list. Touch MacDon header title (B) to highlight the selection in blue, and then touch green check mark (E) to continue.
   - If only default header (D) is shown, touch ABC button (C), and use the on-screen keyboard to enter the MacDon header information. When complete, select one of the following options to return to the HEADER SETTINGS page:
     – Green check mark (E) saves the settings
     – Garbage can icon (F) deletes the highlighted header from the list
     – Red X (G) cancels the change(s)

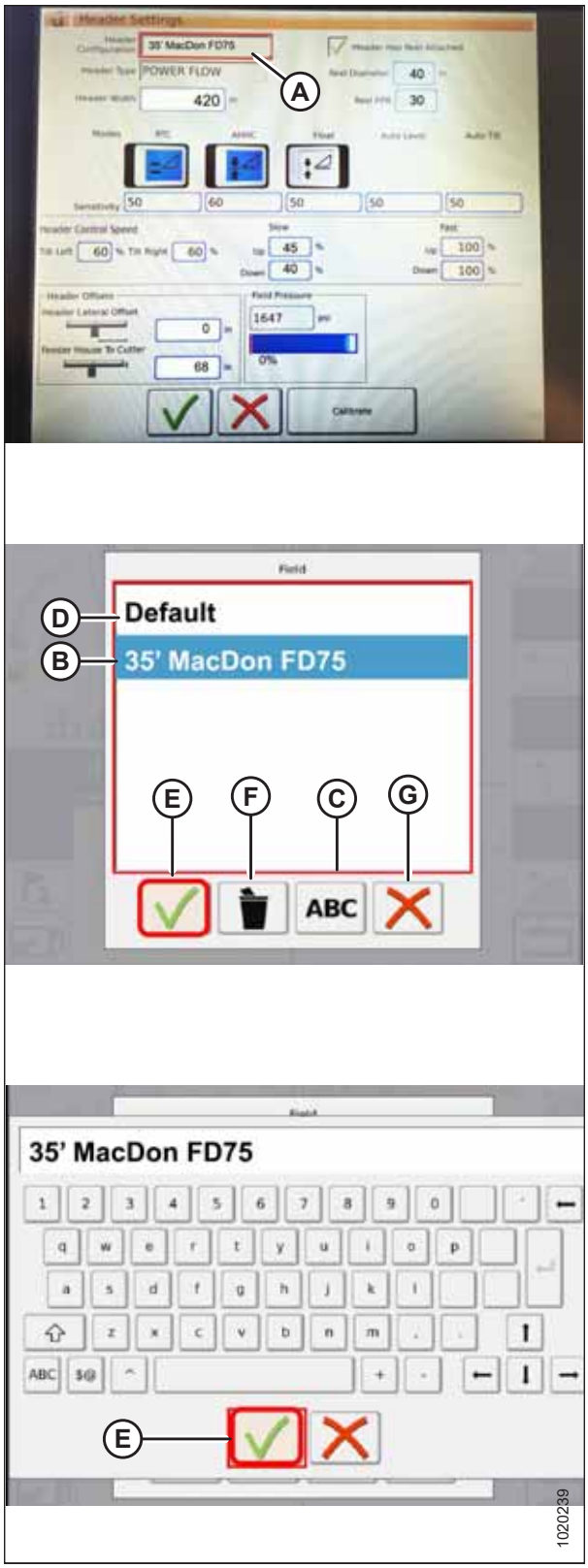


Figure 3.344: Header Configuration Menu on Header Settings Page

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

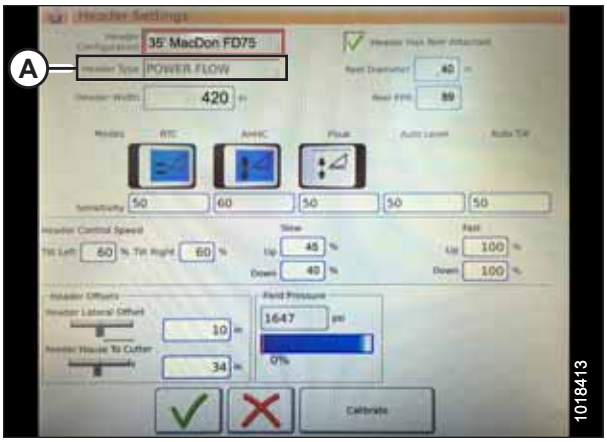


Figure 3.345: Header Settings

5. A list of predefined header types appears.
   - Touch green check mark (B) to save the selection and continue

Figure 3.346: Header Type

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

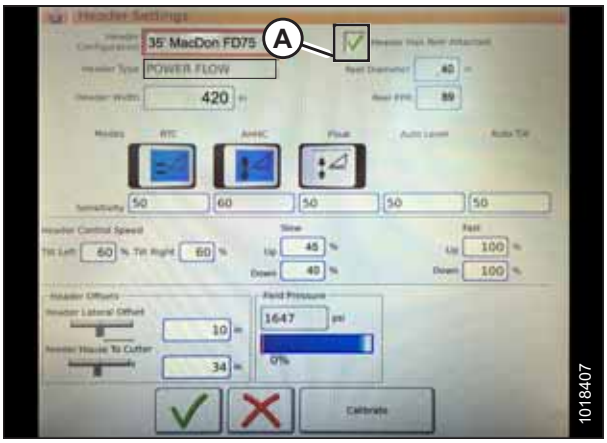


Figure 3.347: Header Settings

7. Touch REEL DIAMETER field (A) and a numeric keypad displays. Enter **40** for a MacDon reel.
8. Touch REEL PPR (Pulses Per Revolution) field (B) and enter **30** as the value for your MacDon header.

   NOTE:

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

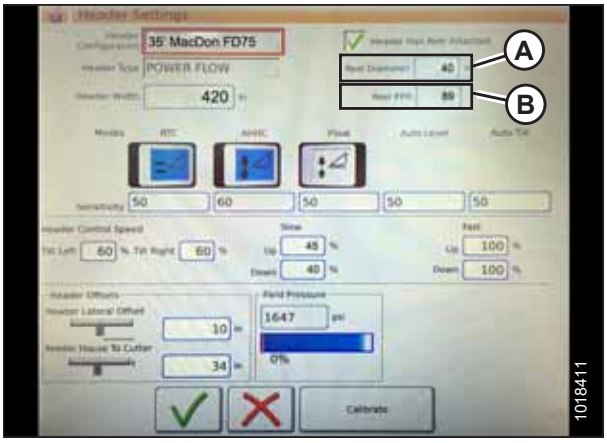


Figure 3.348: Header Settings

9. Touch green check mark (B) at the bottom of numeric keypad (A) when complete, or the red X to cancel.

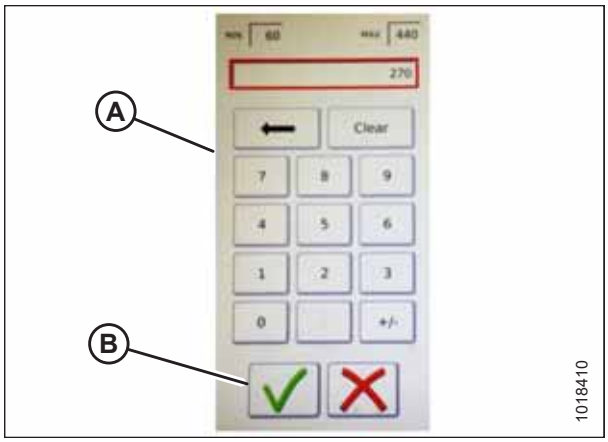


Figure 3.349: Numeric Keypad

10. When complete, touch green check mark (A) at the bottom of the HEADER SETTINGS page.

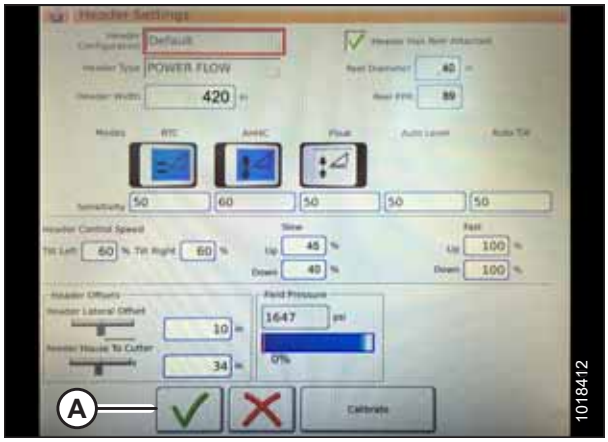


Figure 3.350: Header Settings Page

Setting Minimum Reel Speed and Calibrating Reel – Gleaner S9 Series

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.

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

Figure 3.351: Reel Settings on Combine Main Menu

2. To set minimum reel speed, touch SPEED MINIMUM FIELD (B). The on-screen keyboard displays. Enter the desired value. Touch the green check mark to accept the new value, or the red X to cancel. The reel speed is shown in mph and rpm.

   NOTE:

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

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

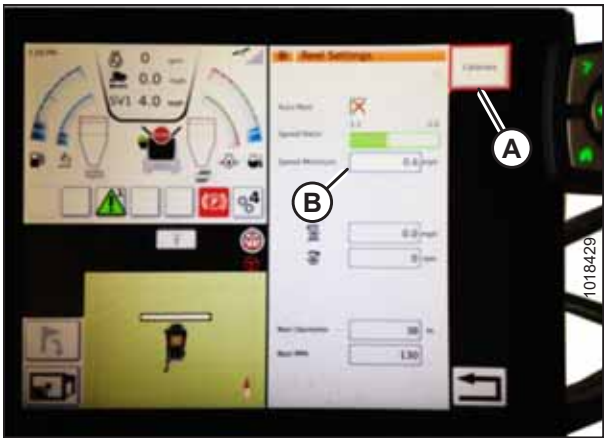


Figure 3.352: Reel Settings Calibration

The CALIBRATION WIZARD opens and displays a hazard warning.

Figure 3.353: Calibration Wizard

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

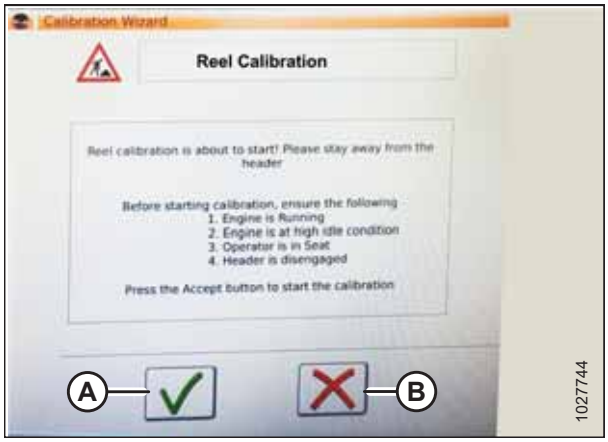


Figure 3.354: Calibration Wizard

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

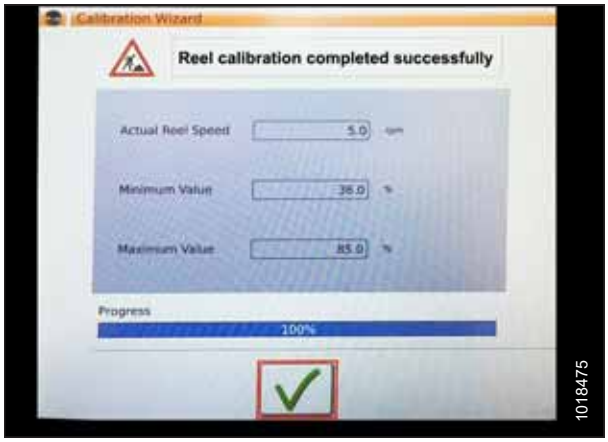


Figure 3.355: Calibration Progress

Setting up Automatic Header Controls – Gleaner S9 Series

Automatic header functions are configured on the HEADER SETTINGS page.

NOTE:

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

1. **Automatic Control Functions:** There are toggle (OFF/ON) switches on the HEADER SETTINGS page for the automatic control functions. For MacDon headers, ensure the following two functions are enabled as shown:

   - RTC (return to cut) (A)
   - AHHC (automatic header height control) (B)

   All other switches are disabled (not highlighted).

2. **Sensitivity** setting (C) controls how responsive a control (RTC or AHHC) is to a given change in sensor feedback. The setting fields are located directly below the toggle switches. To enter a new sensitivity setting, touch the setting field below the specific toggle switch, and enter the new value in the on-screen keyboard.

   - Increase sensitivity if the combine does not change the feeder position quickly enough when in Auto Mode.
   - Decrease sensitivity if the combine hunts for a position in Auto Mode.

   NOTE:

   Recommended sensitivity starting points for MacDon headers are:

   - **50** for RTC (A)
   - **60** for AHHC (B)

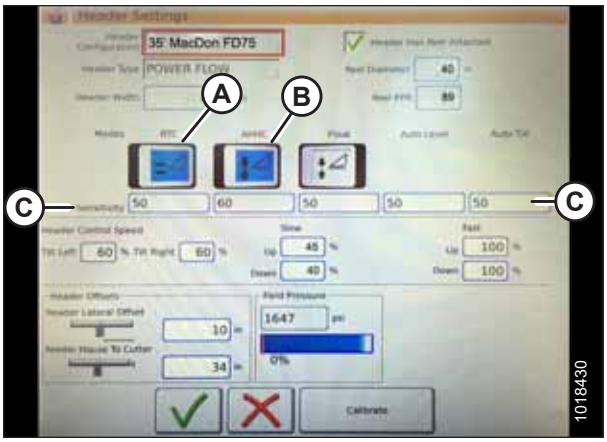


Figure 3.356: Automatic Controls and Sensitivity Settings

3. **Header Speed:** HEADER CONTROL SPEED area (A) on the HEADER SETTINGS page is used to adjust the following speeds:

   - Tilt left and right is the lateral tilt of the combine faceplate
   - Header up and down (slow and fast speeds) is a two-stage button with slow speed on the first detent and fast on the second

   NOTE:

   Recommended header control speed starting points

   - Slow: 45 up / 40 down
   - Fast: 100 up / 100 down

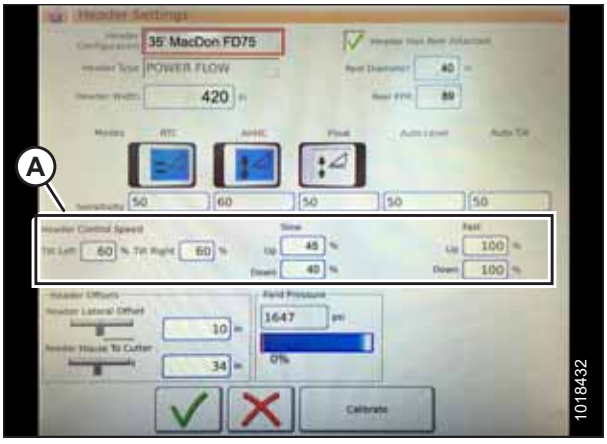


Figure 3.357: Header Speed Control Settings

4. **Header Offsets (A):** Offset distances are important for yield mapping. There are two adjustable dimensions on the HEADER SETTINGS page:
   - Header Lateral Offset: the distance between the centerline of the header and the centerline of the machine. This should be set at **0** for a MacDon header.
   - Feeder House to Cutter: the distance from the machine interface to the cutterbar. This should be set at **68** for a MacDon header.

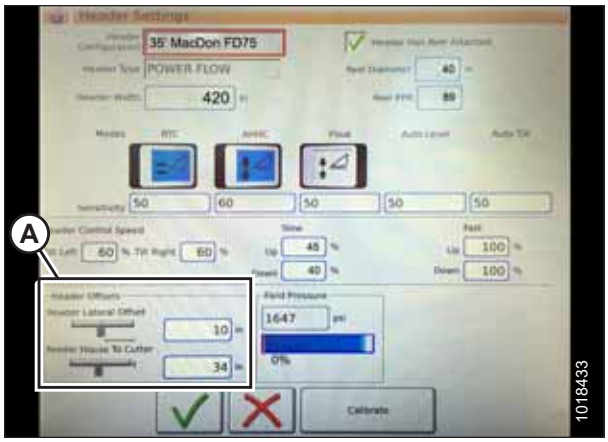
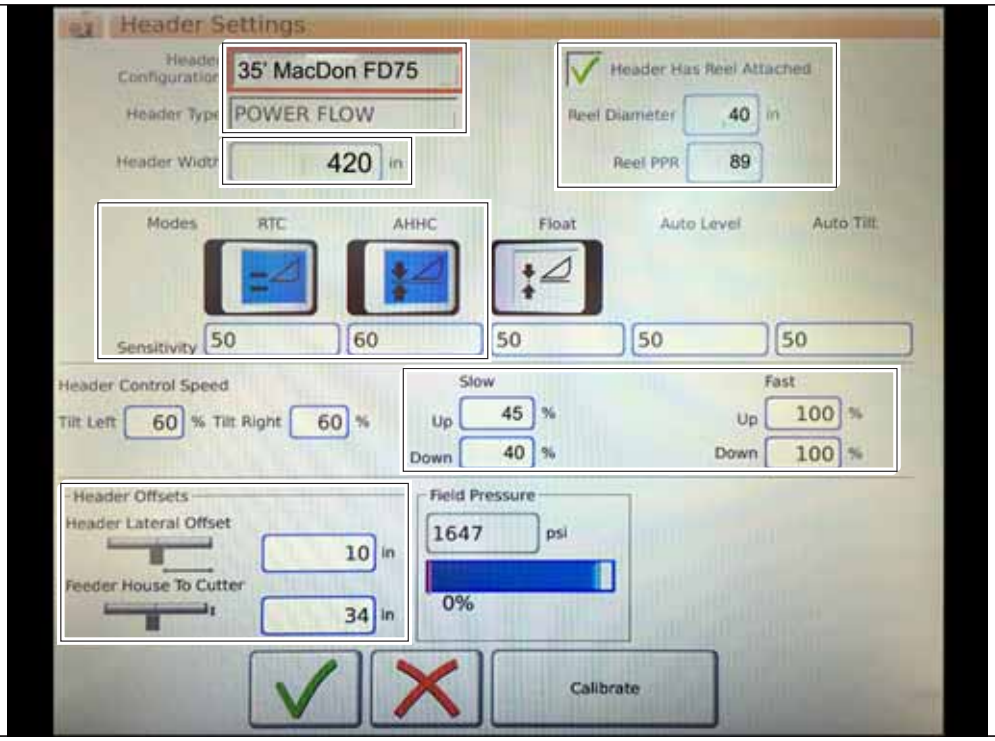


Figure 3.358: Header Offset Settings

Figure 3.359: MacDon Header Settings Inputs



Calibrating the Header – Gleaner S9 Series

The auto header control functions are configured on the HEADER SETTINGS page.

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.

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

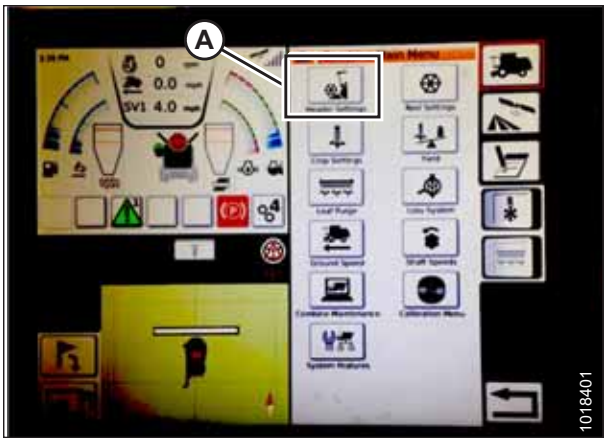


Figure 3.360: Combine Main Menu

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

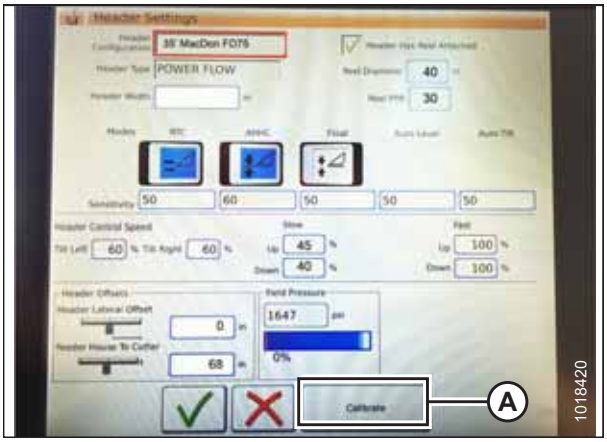


Figure 3.361: Header Settings Page

The right side of the page shows Header Calibration information (A). Results are shown for a variety of sensors (B):

- Left and right header sensor (voltage) (values will be the same with MacDon headers)
- Header height sensor (mA)
- Tilt position sensor (mA)

The following valid modes are shown with check marks (C) below sensor values (B):

- Return to cut
- Automatic header height control

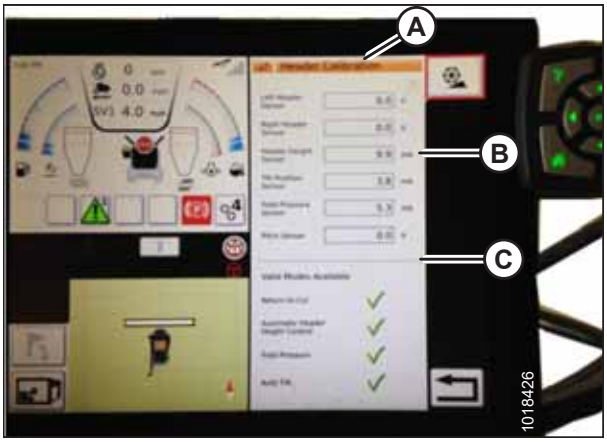


Figure 3.362: Header Calibration Page

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.

3. On the control handle, touch HEADER DOWN button (A). Sensor values start changing on the HEADER CALIBRATION page as the header lowers.

   NOTE:

   The header needs to be lowered all the way, and then raised off the ground. The range should be between **0.5 and 4.5 V**. If the value is not in that range, the sensor needs to be adjusted. For instructions, refer to or .

Figure 3.363: Header Down Switch

4. When the sensor values are stable, touch CALIBRATE icon (A).

Figure 3.364: Header Calibration

5. The hazard warning for HEADER CALIBRATION appears. Make sure that all conditions are met.
6. Touch the green check mark at the bottom of the page to start the CALIBRATION WIZARD.

Figure 3.365: Header Calibration Warning

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

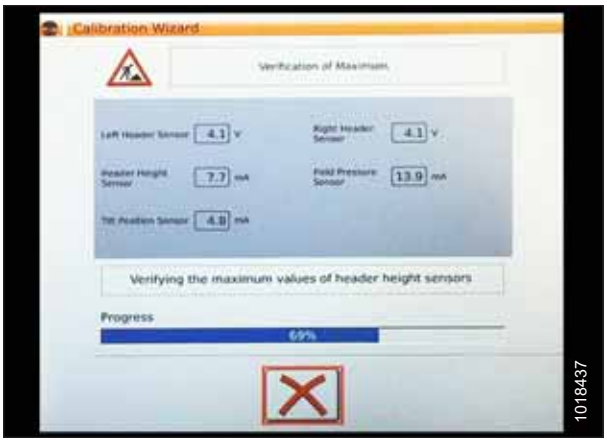


Figure 3.366: Calibration in Progress

7. When the calibration is complete, a message displays, and summary information (A) is shown. Green check marks confirm the functions have been calibrated (B). Touch bottom green check mark (C) to save.

Figure 3.367: Completed Calibration Page

NOTE:

Touch CALIBRATION icon (A) on the COMBINE MAIN MENU page to display the CALIBRATION MENU where you can choose from a variety of calibrations including header and reel calibration.

Figure 3.368: Direct Calibration Menu

Operating the Header – Gleaner S9 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 controls are used to operate the auto header height control (AHHC) functions:

- Tyton terminal (A)
- Control handle (B)
- Throttle (C)
- Header control cluster (D)

Use the combine operator's manual to familiarize yourself with the controls.

Figure 3.369: Gleaner S9 Operator Controls

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

Figure 3.370: Header Control Cluster

3. Press AHHC control switch (A) on the control handle to engage the AHHC. The header moves to the current setpoint position.

Figure 3.371: AHHC on Control Handle

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

Figure 3.372: Header Control Cluster

Reviewing Header In-Field Settings – Gleaner S9 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. To view header group settings, touch HEADER icon (A) on the right side of the home page.
2. The following information is displayed:
   - CURRENT POSITION of header (B).
   - SETPOINT cut-off position (C) (indicated by red line)
   - HEADER symbol (D) – touch to adjust the setpoint cut-off position using the scroll wheel on the right side of the Tyton terminal.
   - CUT HEIGHT for AHHC (E) – fine-tune with the header height setpoint control dial on the header control cluster.
   - HEADER WORKING WIDTH (F)
   - HEADER PITCH (G)

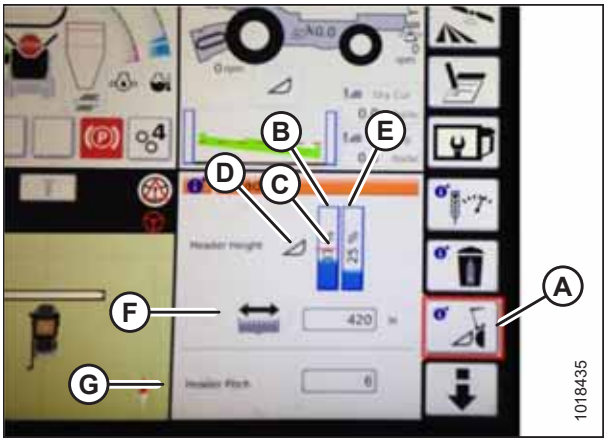


Figure 3.373: Header Groups

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

   NOTE:

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

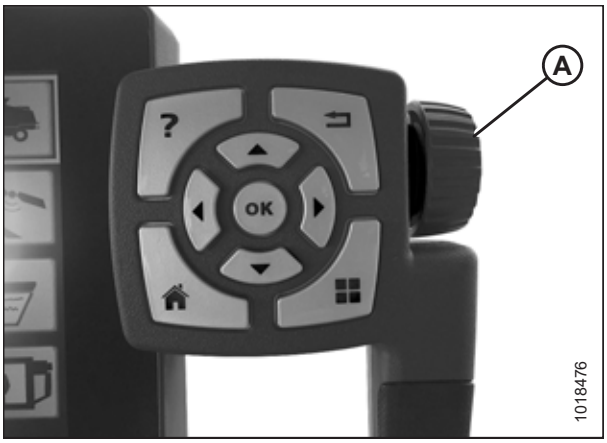


Figure 3.374: Adjustment Wheel on Right Side of Tyton Terminal

NOTE:

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

Figure 3.375: Header Control Cluster

3.8.15 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 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

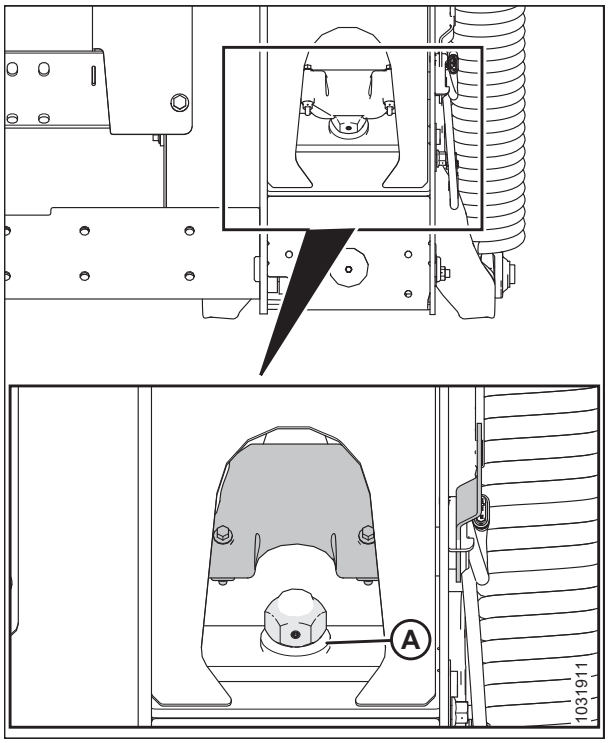


Figure 3.376: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

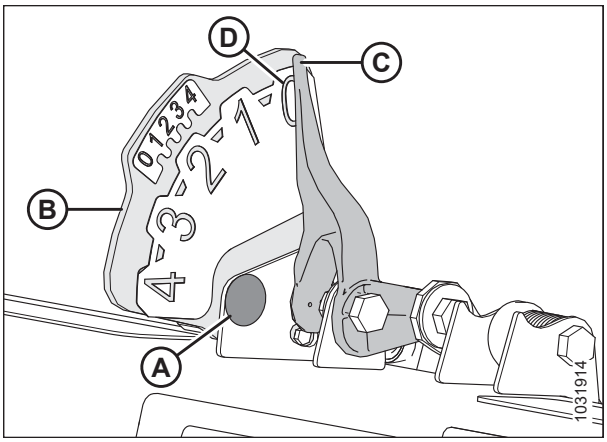


Figure 3.377: Float Indicator

5. Press HOME PAGE button (A) on the main screen of the monitor.

Figure 3.378: John Deere Combine Display

6. Ensure three icons (A) shown in the illustration at right appear on the monitor.

Figure 3.379: John Deere Combine Display

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

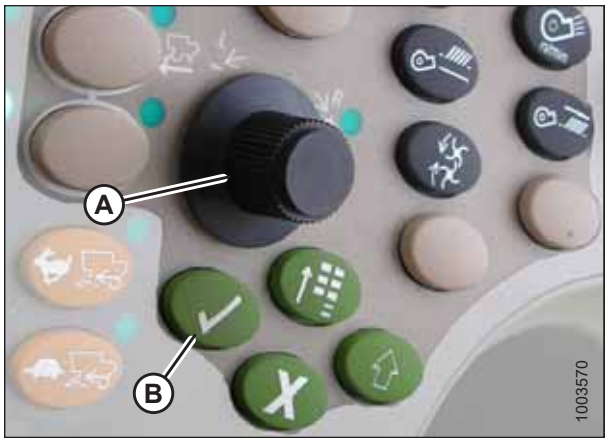


Figure 3.380: John Deere Combine Control Console

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

Figure 3.381: John Deere Combine Display

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

Figure 3.382: John Deere Combine Display

11. Use the scroll knob to highlight 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.

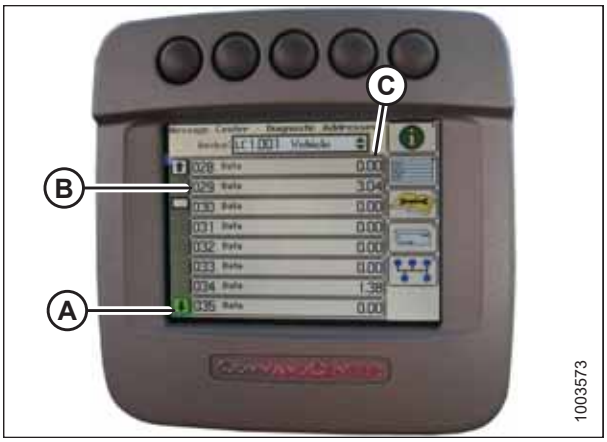


Figure 3.383: John Deere Combine Display

12. Ensure header float is unlocked.
13. 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.

14. Check the sensor reading on the monitor.
15. Raise the header so it is just off the ground and recheck the sensor reading.

Calibrating Feeder House Speed – John Deere 70 Series

The feeder house speed must be calibrated before you calibrate the auto header height control (AHHC) system. For instructions, refer to the combine operator's manual.

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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.
3. Start the combine.

4. Press the button located fourth from the left along the top of monitor (A) to select the icon that resembles an open book with a wrench on it (B).
5. Press top button (A) a second time to enter diagnostics and calibration mode.

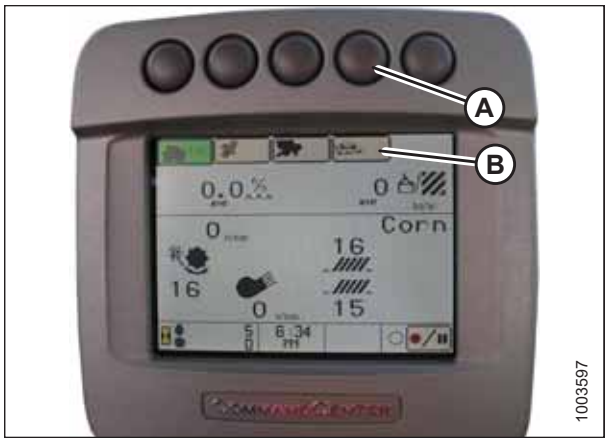


Figure 3.384: John Deere Combine Display

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 *3.386, page 220*).
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.

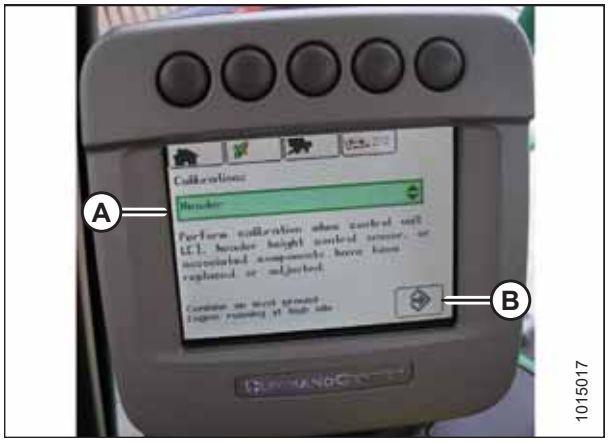


Figure 3.385: John Deere Combine Display

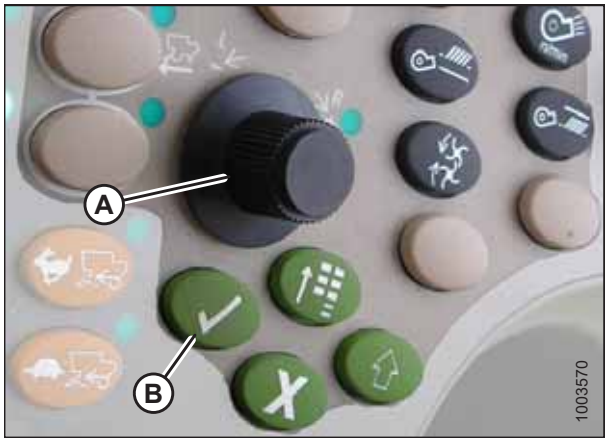


Figure 3.386: John Deere Combine Control Console

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 screen, the sensor is not in the correct working range. For instructions, refer to *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 223* to check and adjust the range.

NOTE:

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

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 screen remains idle for a short period of time, it will automatically return to the previous screen. Pressing check mark button (C) also will return the monitor to the previous screen.

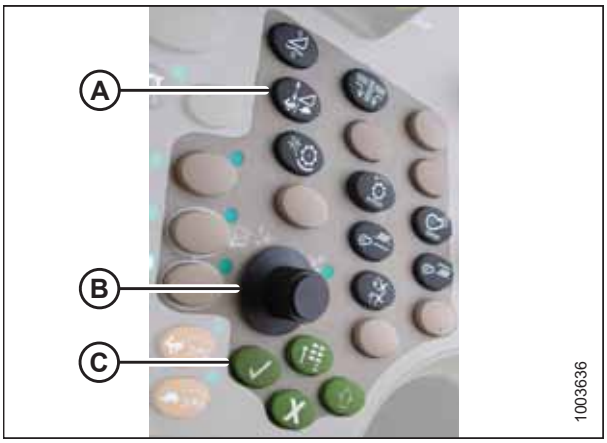


Figure 3.387: John Deere Combine Control Console

NOTE:

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

Figure 3.388: John Deere Combine Display

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

The weight of the header will dictate the rate at which the header can be raised or lowered during operation.

To manually adjust the header raise/lower rate, do the following 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. 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 screen remains idle for a short period of time, it will automatically return to the previous screen. Pressing check mark button (C) will also return the monitor to the previous screen.

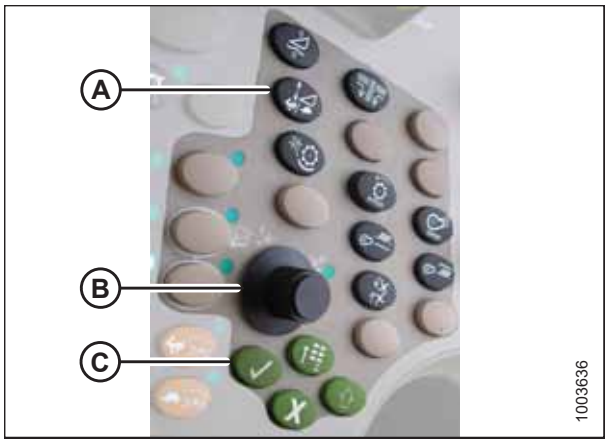


Figure 3.389: John Deere Combine Control Console

NOTE:

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

Figure 3.390: John Deere Combine Display

3.8.16 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 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

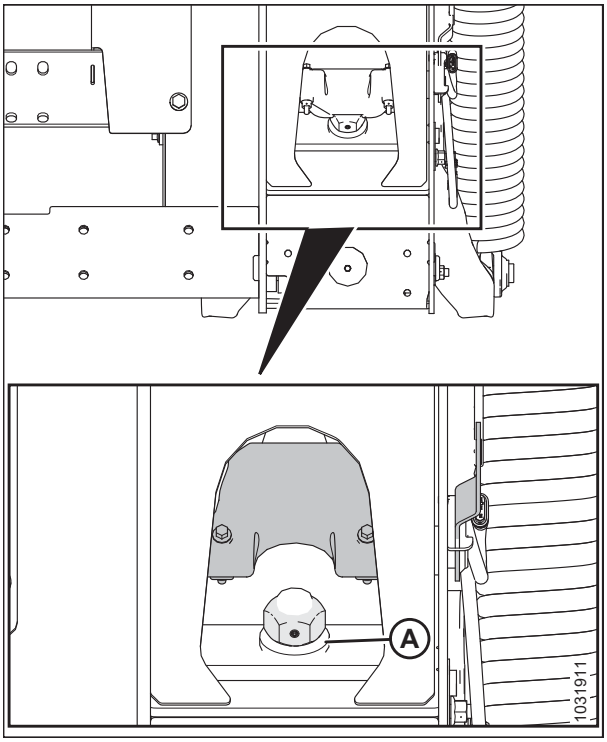


Figure 3.391: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

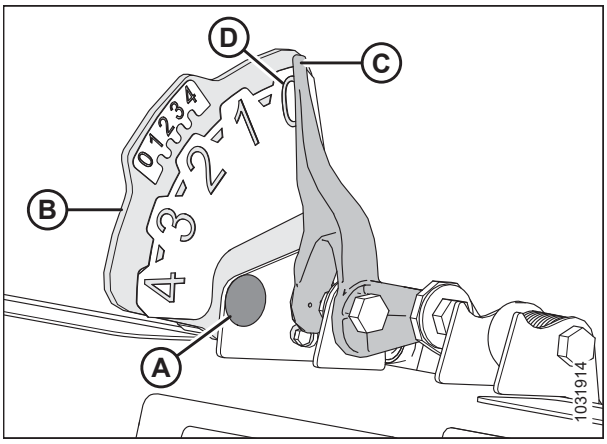


Figure 3.392: Float Indicator

5. Press CALIBRATION icon (A) on the main screen of the monitor. The CALIBRATION screen appears.

Figure 3.393: John Deere Combine Display

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

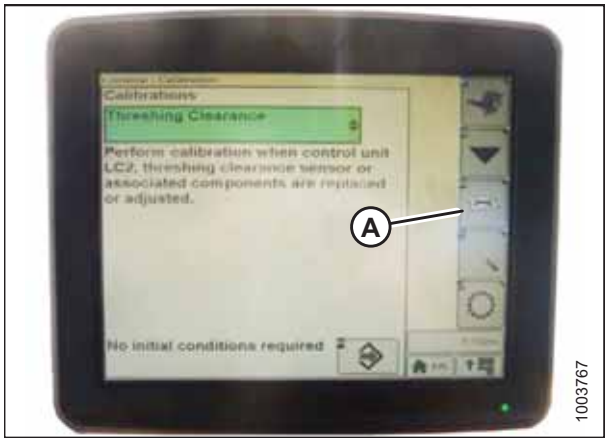


Figure 3.394: John Deere Combine Display

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

Figure 3.395: John Deere Combine Display

8. Select the AHHC SENSING option.
9. Press icon (A) displayed on screen. The AHHC SENSING menu appears and five screens of information are displayed.

Figure 3.396: John Deere Combine Display

10. Press icon (A) until it reads Page 5 near the top of the screen 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 3.397: 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.

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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

1. Ensure center-link is set to **D**.
2. Rest header on down stops and unlock float.

3. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen appears.

Figure 3.398: John Deere Combine Display

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

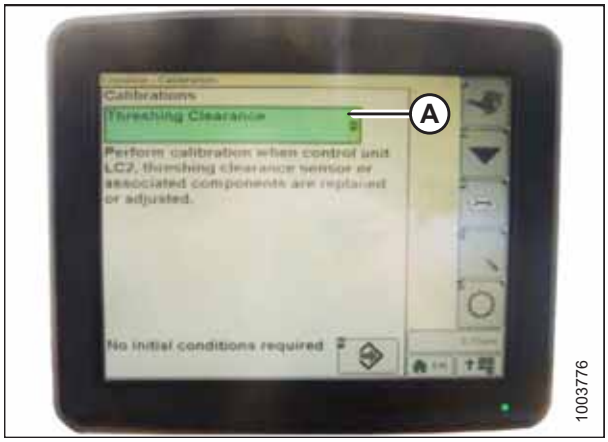


Figure 3.399: John Deere Combine Display

5. Select FEEDER HOUSE SPEED (A) from the list of calibration options.

   NOTE:

   Feeder house speed calibration must be done before header calibration.

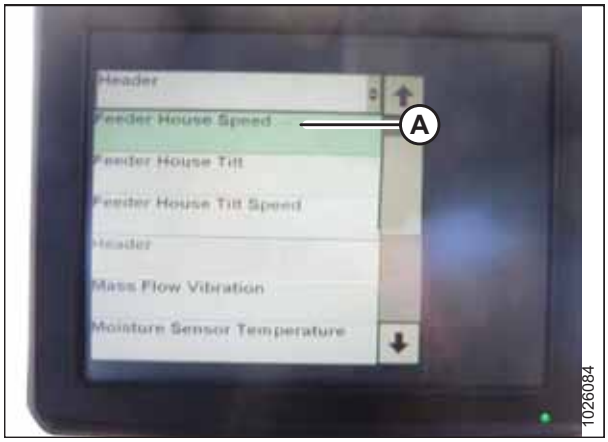


Figure 3.400: John Deere Combine Display

6. With FEEDER HOUSE SPEED selected, press icon (A). The icon will turn green.

Figure 3.401: John Deere Combine Display

7. Press icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

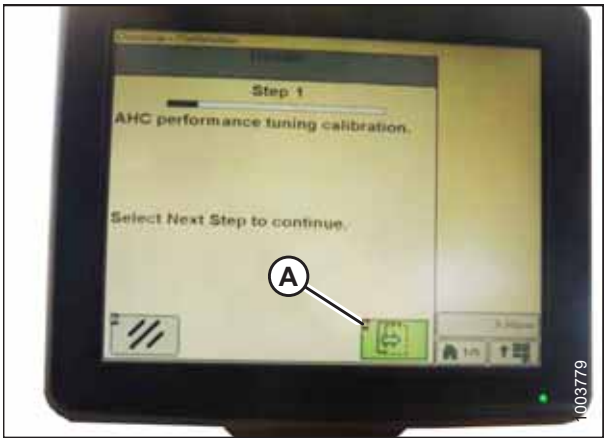


Figure 3.402: John Deere Combine Display

8. Select HEADER (A) from the list of calibration options.

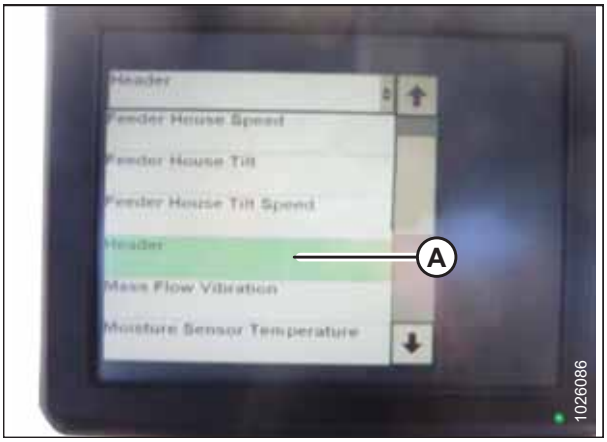


Figure 3.403: John Deere Combine Display

9. With HEADER selected, press icon (A). The icon will turn green.

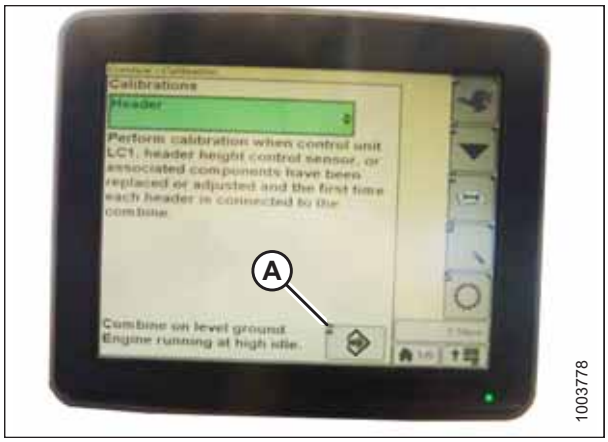


Figure 3.404: John Deere Combine Display

10. Press icon (A) and instructions will appear on screen to guide you through the remaining calibration steps.

    NOTE:

    If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 223*.

    NOTE:

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

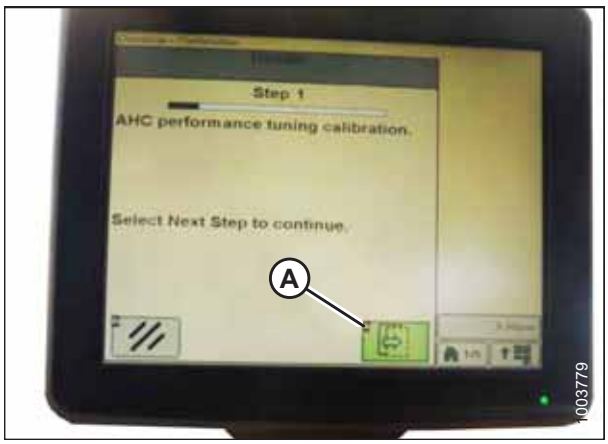


Figure 3.405: John Deere Combine Display

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 3.406: John Deere Combine Command Center

2. Press **–** or **+** icons (A) to adjust rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.407: 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.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

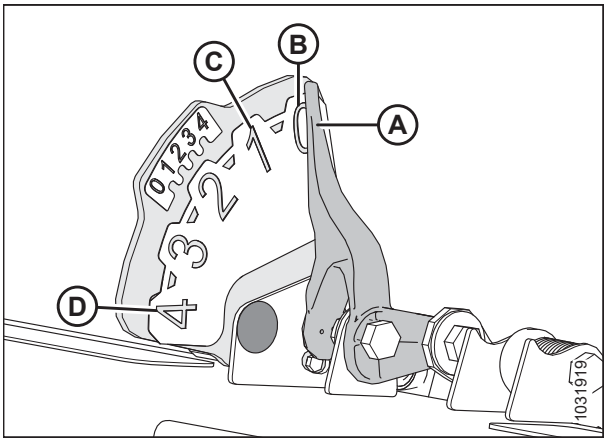


Figure 3.408: Float Indicator Box

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

Figure 3.409: John Deere Combine Command Center

2. Press **–** or **+** icons (A) to adjust rates.

   NOTE:

   The numbers shown on the combine display in this illustration are for reference purposes only; they are not intended to represent the specific settings for your equipment.

Figure 3.410: John Deere Combine Display

Setting Preset Cutting Height – 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.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

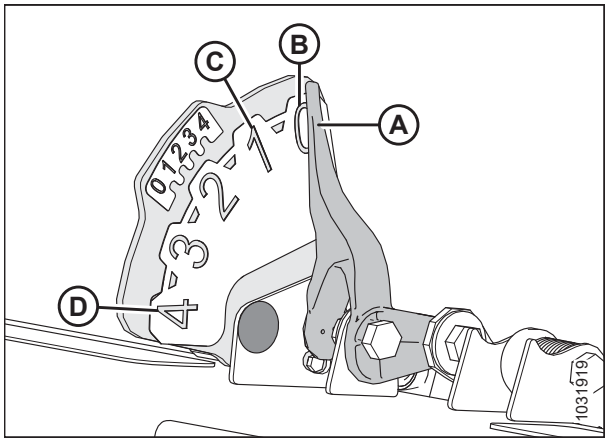


Figure 3.411: Float Indicator Box

1. Press COMBINE – HEADER SETUP icon (A) on the main screen. The COMBINE – HEADER SETUP screen appears. This screen is used to set various header settings such as reel speed, header width, and height of feeder house for acre counter engagement.

Figure 3.412: Combine Display

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

Figure 3.413: Combine Display

3. Select AUTO HEIGHT SENSING (A), RETURN TO CUT (B), and REEL POSITION (C) icons.

   NOTE:

   If REEL POSITION icon (C) cannot be selected (no check mark), the reel height sensor requires calibration. For instructions, refer to *Calibrating Reel Height Sensor – John Deere S and T Series, page 238*.

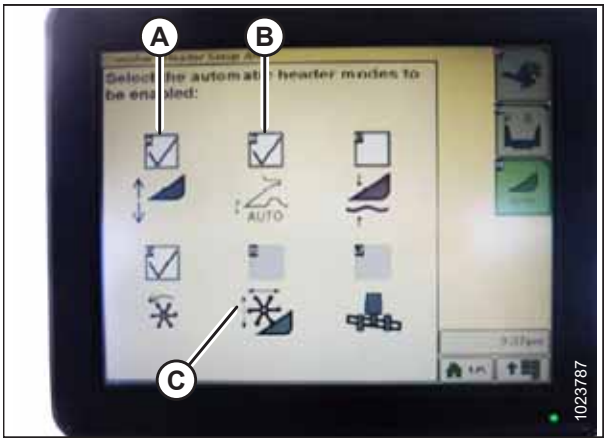


Figure 3.414: Combine Display

4. Engage the header.
5. Move the header to the desired position and use knob (A) to fine tune the position.
6. Move the reel to the desired position.

Figure 3.415: Combine Control Console

7. Press and hold preset switch 2 (B) until 1 reel height icon flashes on monitor.
8. Repeat previous three steps for preset switch 3 (C).
9. Select an appropriate ground pressure setting. Use preset button 2 (B) on the control handle for a low ground pressure setting in muddy or soft soil conditions, and preset 3 (C) for a high ground pressure setting in firm soil conditions and a higher ground speed.

   NOTE:

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

Figure 3.416: Control Handle Buttons

NOTE:

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

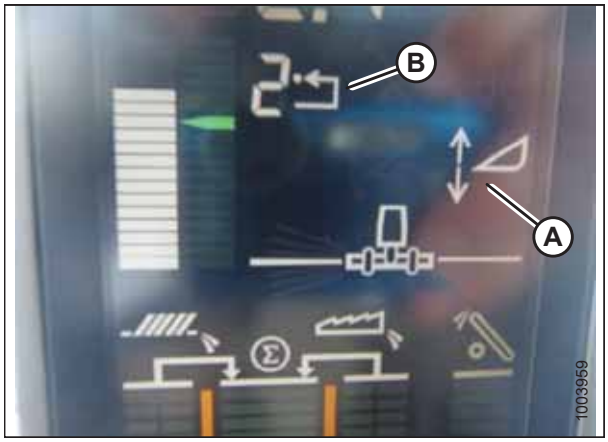


Figure 3.417: Combine Display

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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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 control handle.

Figure 3.418: John Deere Control Handle

NOTE:

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

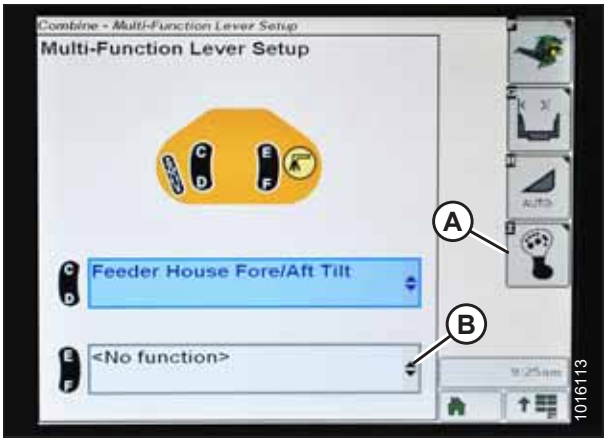


Figure 3.419: John Deere Combine Display

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.

3. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen displays.

Figure 3.420: John Deere Combine Display

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

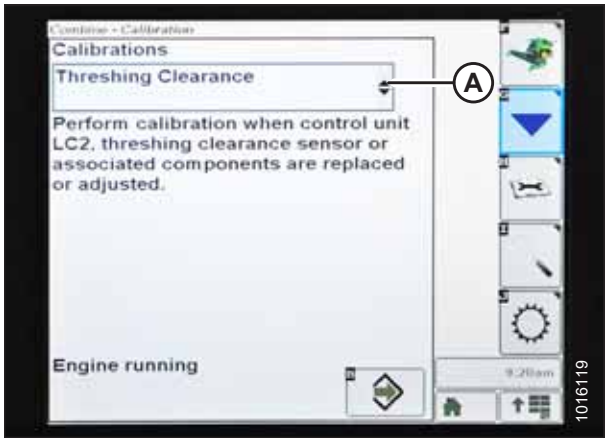


Figure 3.421: John Deere Combine Display

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

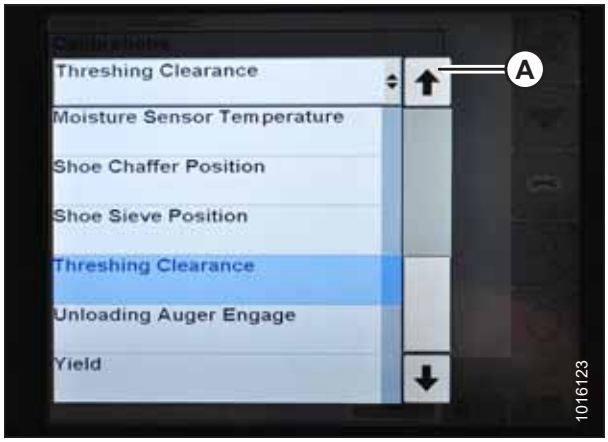


Figure 3.422: John Deere Combine Display

6. Press ENTER icon (A).

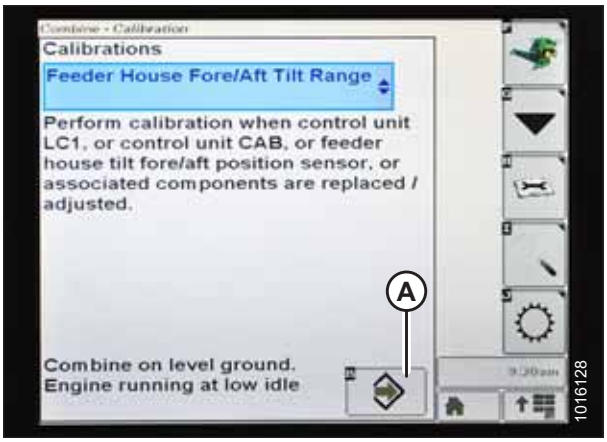


Figure 3.423: John Deere Combine Display

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. For instructions, refer to *Checking Voltage Range from the Combine Cab – John Deere S and T Series, page 223*.

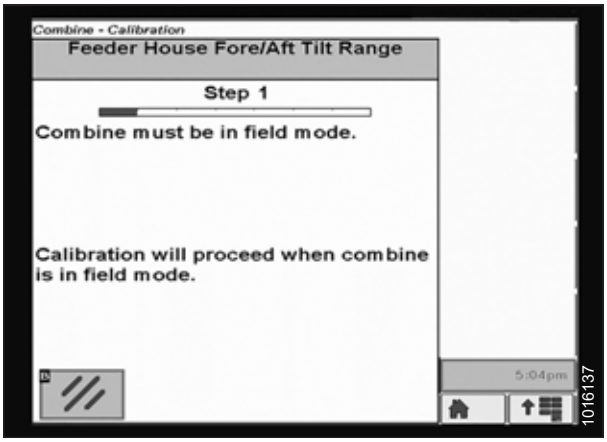


Figure 3.424: John Deere Combine Display

Checking Reel Height Sensor Voltages – 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 CALIBRATION icon (A) on the main screen of the monitor. The CALIBRATION screen appears.

Figure 3.425: John Deere Combine Display

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

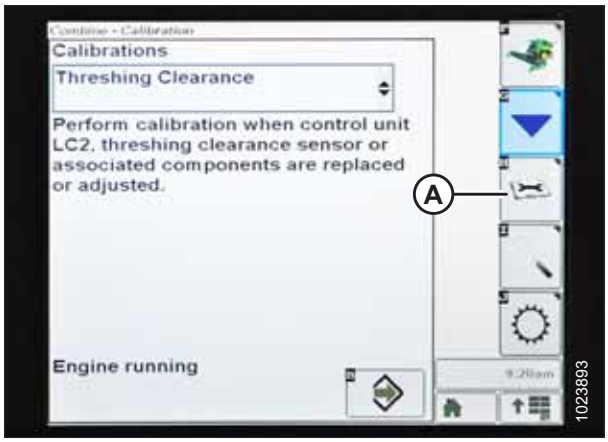


Figure 3.426: John Deere Combine Display

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

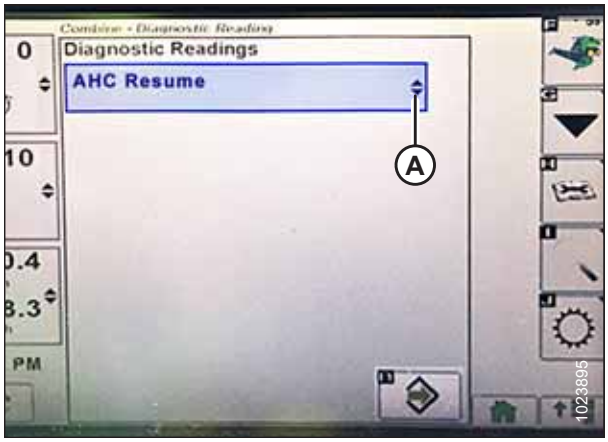


Figure 3.427: John Deere Combine Display

4. Scroll down and select REEL RESUME (A).

Figure 3.428: John Deere Combine Display

5. Press ENTER icon (A). The REEL RESUME page displays.

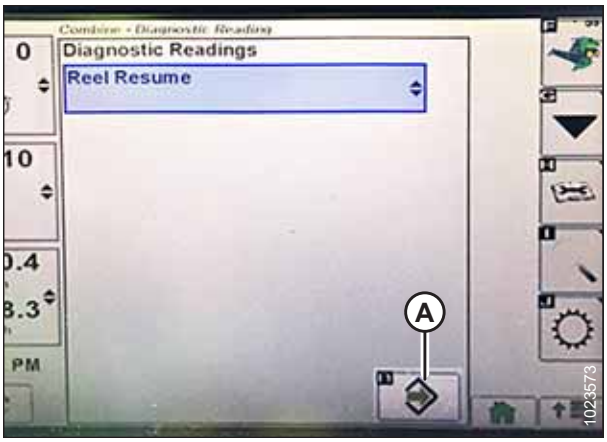


Figure 3.429: John Deere Combine Display

6. Press NEXT PAGE icon (A) to cycle to page 3.
7. Lower the reel to view low voltage (B). The voltage should be 0.5–0.9 V.

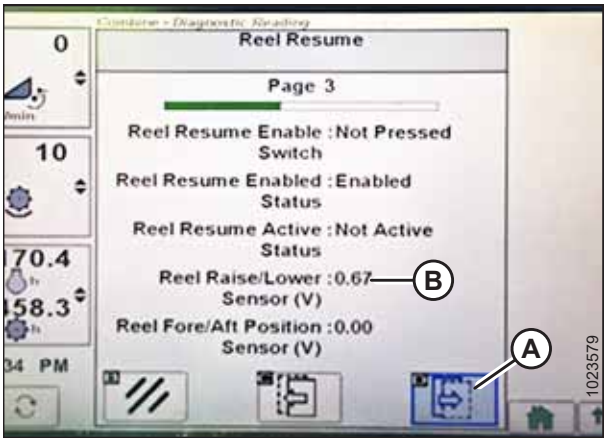


Figure 3.430: John Deere Combine Display

8. Raise the reel to view high voltage (A). The voltage should be 4.1–4.5 V.
9. If either voltage is not within the correct range, refer tos not within the correct range, refer to *Checking and Adjusting Reel Height Sensor, page 94*.

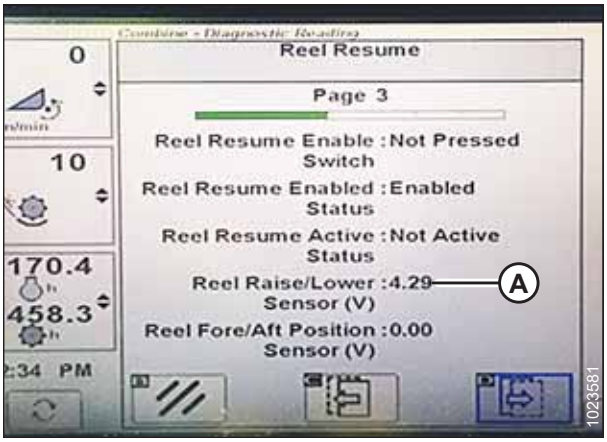


Figure 3.431: John Deere Combine Display

Calibrating Reel Height Sensor – John Deere S and T Series

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.

To calibrate reel height, follow these steps:

1. Place header off the ground 15–25 cm (6–10 in.).

   IMPORTANT:

   Do **NOT** turn off the engine. The combine has to be at full idle for the sensors to calibrate properly.

2. Press DIAGNOSTIC icon (A) on the main screen of the monitor. The CALIBRATION screen displays.

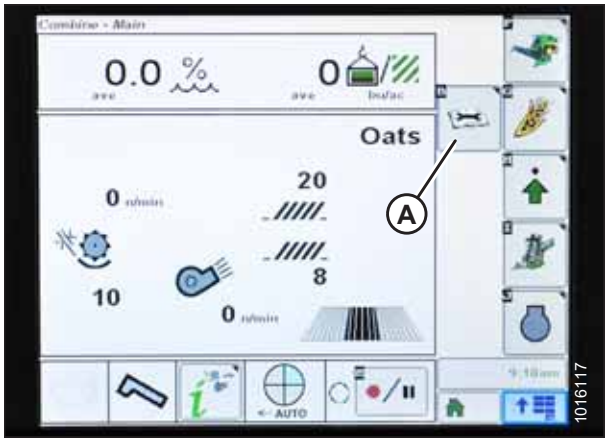


Figure 3.432: John Deere Combine Display

3. Select CALIBRATIONS drop-down menu (A) to view the list of calibration options.
4. Scroll through the list of options and select REEL POSITION.
5. Press ENTER icon (B).

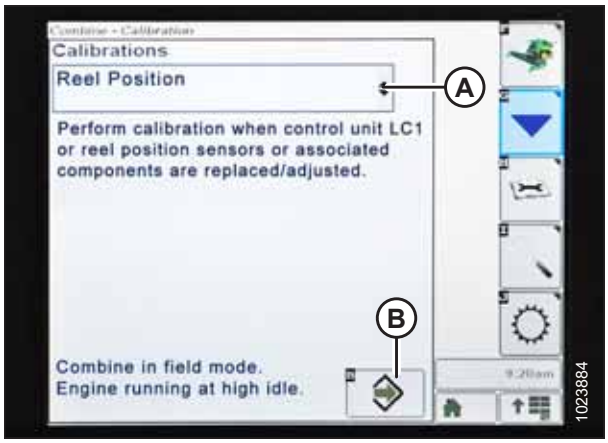


Figure 3.433: John Deere Combine Display

6. 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. This calibration requires you to use reel raise (A) and reel lower (B) switches on the control handle.

Figure 3.434: John Deere Control Handle

7. Press and hold REEL LOWER switch until reel is fully lowered. Continue holding REEL LOWER switch until prompted by the display.

Figure 3.435: John Deere Combine Display

8. Press and hold REEL RAISE switch until reel is fully raised. Continue holding REEL RAISE switch until prompted by the display.

Figure 3.436: John Deere Combine Display

9. When all steps have been completed, CALIBRATION COMPLETE message is displayed on the screen. Exit the CALIBRATION menu by pressing ENTER icon (A).

   NOTE:

   If an error code appears during calibration, the sensor is out of voltage range and will require adjustment. For instructions, refer to *Checking Reel Height Sensor Voltages – John Deere S and T Series, page 235*.

Figure 3.437: John Deere Combine Display

3.8.17 John Deere S7 Series Combines

Setting up Header – John Deere S7 Series

NOTE:

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

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

Figure 3.438: John Deere S7 Display

2. Select HEADER TYPE field (A). The HEADER DETAILS window opens.

Figure 3.439: John Deere S7 Display – Header Page

3. Verify correct header width is displayed under WIDTH.
4. To change header width, select field (A). The WIDTH window opens.

Figure 3.440: John Deere S7 Display – Header Details Window

5. Use the on-screen keypad to enter the correct header width, and then press OK.

Figure 3.441: John Deere S7 Display – Setting Header Width

6. Press window close button (A) in top right corner of the window to return to the HEADER page.

Figure 3.442: John Deere S7 Display – Header Details Window

7. Raise/lower speed (A), tilt speed (B), height sensitivity (C), and tilt sensitivity (D) can all be adjusted from this page. Select the option you would like to adjust. The following example shows the raise/lower speed adjustment.

Figure 3.443: John Deere S7 Display – Header Page

8. Use **+** and **–** buttons (A) to adjust the setting.
9. Press window close button in top right corner of the window to return to the HEADER page.

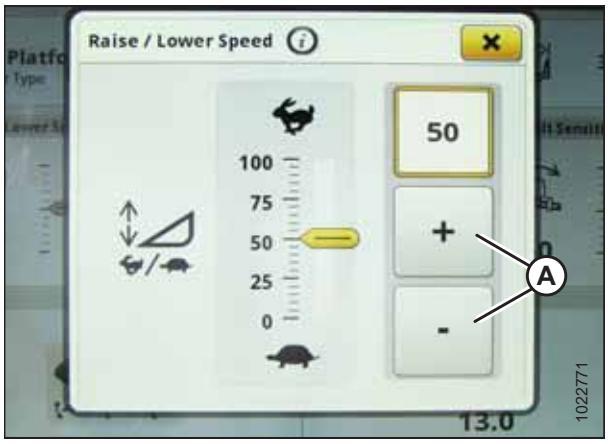


Figure 3.444: John Deere S7 Display – Raise/Lower Speed Adjustment

10. Select AUTO CONTROL icons (A). The AUTO HEADER CONTROLS page opens.

Figure 3.445: John Deere S7 Display – Header Page

11. If the header has not been calibrated yet, an error icon will appear on HEIGHT SENSING button (A). Select button (A) to view error message.

Figure 3.446: John Deere S7 Display – Auto Header Controls

12. Read error message and then press OK.
13. Proceed to *Checking Voltage Range from the Combine Cab – John Deere S7 Series, page 244*.

Figure 3.447: John Deere S7 Display – Height Sensing Error Message

Checking Voltage Range from the Combine Cab – John Deere S7 Series

The auto header height sensor output must be within a specific range, or the feature will not work properly.

Table 3.17 Voltage Range

Combine	Low Voltage Limit	High Voltage Limit	Minimum Range
John Deere S7 Series	0.5 V	4.5 V	3.0 V

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

   NOTE:

   If header is not on down stops during next two steps, voltage may go out of range during operation causing a malfunction of auto header height control (AHHC) system.

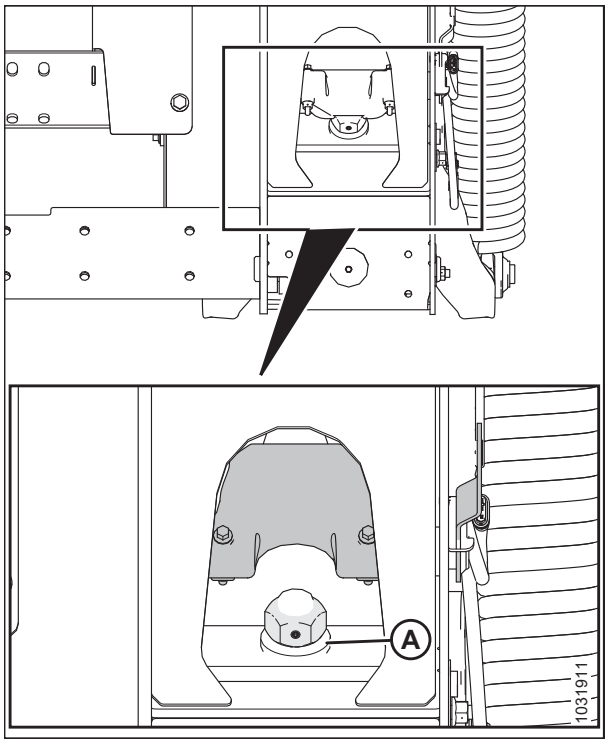


Figure 3.448: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

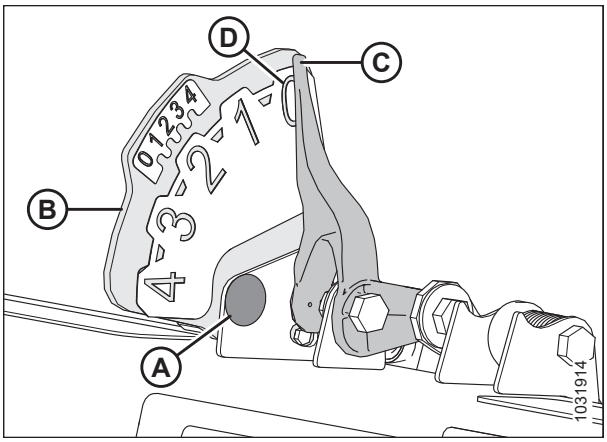


Figure 3.449: Float Indicator

5. On the HARVESTING page, select MENU icon (A) in the bottom right corner of the screen.

Figure 3.450: John Deere S7 Display – Harvesting Page

6. On the MENU page, select SYSTEM tab (A). The MENU opens.
7. Select DIAGNOSTICS CENTER icon (B). The DIAGNOSTICS CENTER page opens.

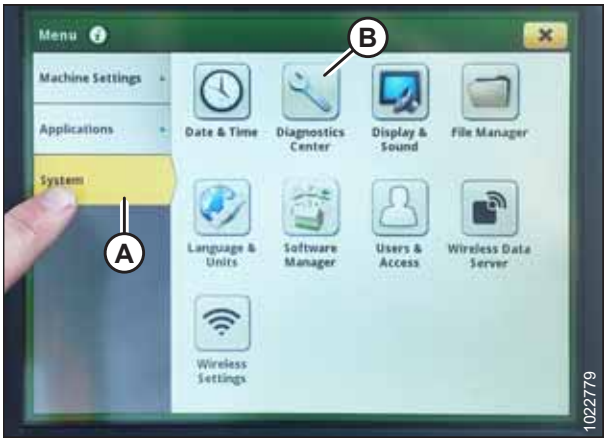


Figure 3.451: John Deere S7 Display – Menu

8. Select AHC - SENSING (A). The AHC - SENSING\ DIAGNOSTICS page displays.

Figure 3.452: John Deere S7 Display – Diagnostics Center

9. Select SENSOR tab (A) to view sensor voltages. Center header height sensor voltage (B) must be between 0.5 and 4.5 V, with at least 3 V of variation between 0 and 4 on the float indicator box.

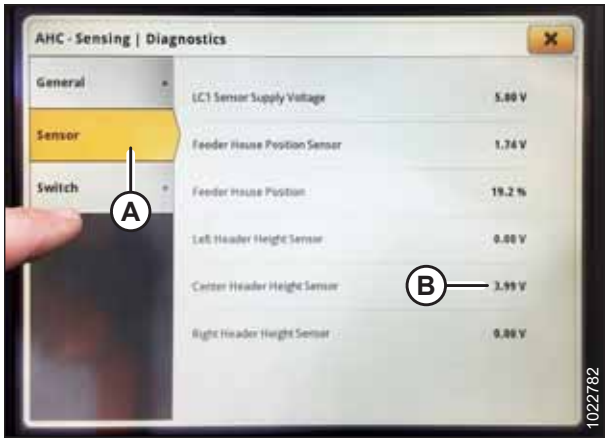


Figure 3.453: John Deere S7 Display – Checking Sensor Voltage

Calibrating Feeder House – John Deere S7 Series

Feeder house calibration must be done before header calibration.

For best performance of auto header height control (AHHC), perform these procedures with center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle. For instructions, refer to *Adjusting Header Angle from Combine, page 83*.

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.

3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 3.454: John Deere S7 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

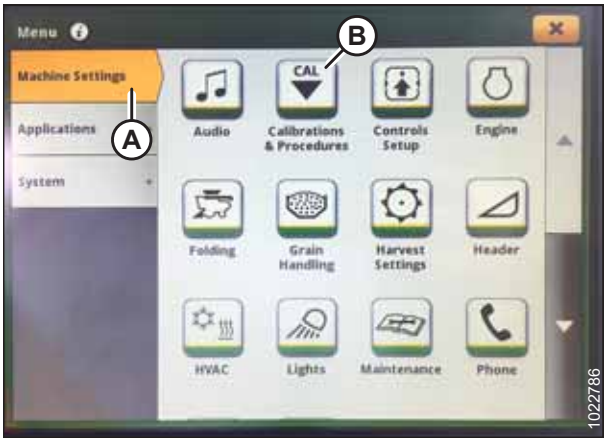


Figure 3.455: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).
7. Select FEEDER HOUSE RAISE SPEED CALIBRATION (B). The FH RAISE SPEED CALIBRATION page displays.

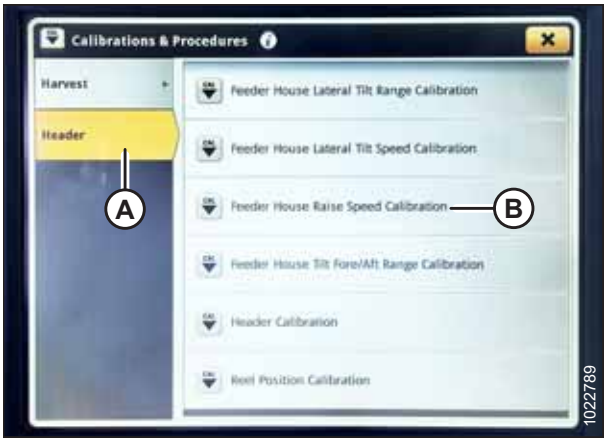


Figure 3.456: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at the bottom of the page. A calibration overview displays.

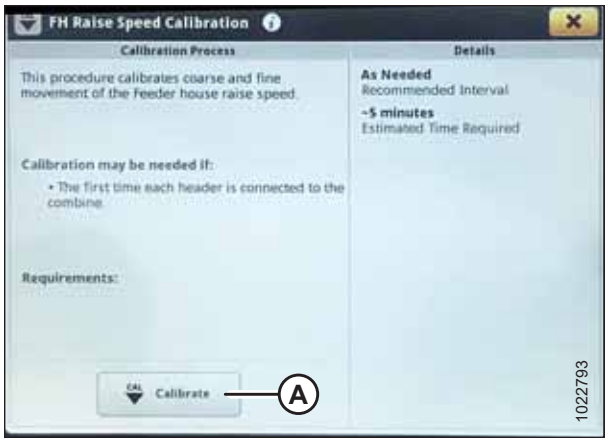


Figure 3.457: John Deere S7 Display – Feeder House Calibration

9. Read the calibration overview, and then press START.

Figure 3.458: John Deere S7 Display – Feeder House Calibration

10. Follow the instructions on the screen. As you proceed through the calibration process, the display will automatically update to show next step.

Figure 3.459: John Deere S7 Display – Feeder House Calibration

11. When calibration is complete, select SAVE to confirm calibration.

Figure 3.460: John Deere S7 Display – Feeder House Calibration

Calibrating Header – John Deere S7 Series

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

Feeder house calibration must be done before header calibration. If feeder house has not yet been calibrated, refer to *Calibrating Feeder House – John Deere S7 Series, page 246*.

For best performance of auto header height control (AHHC), perform these procedures with the center-link set to **D**. When setup and calibration are complete, adjust center-link back to desired header angle.

NOTE:

Changes may have been made to 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.
3. On the HARVESTING page, select MENU icon (A) in the bottom right corner of screen. The MENU opens.

Figure 3.461: John Deere S7 Display – Harvesting Page

4. Select MACHINE SETTINGS tab (A).
5. Select CALIBRATIONS & PROCEDURES icon (B). The CALIBRATIONS & PROCEDURES page displays.

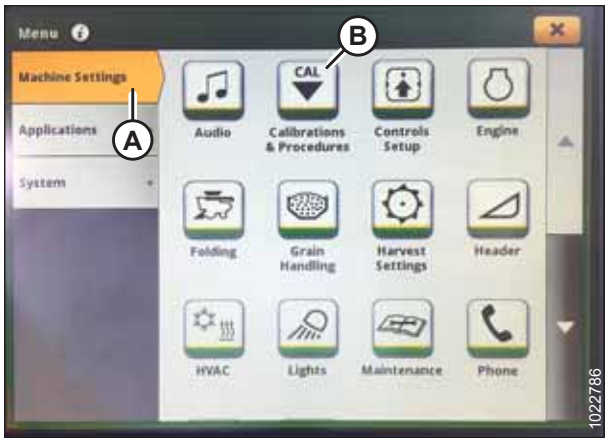


Figure 3.462: John Deere S7 Display – Machine Settings

6. Select HEADER tab (A).
7. Select HEADER CALIBRATION (B). The HEADER CALIBRATION page displays.

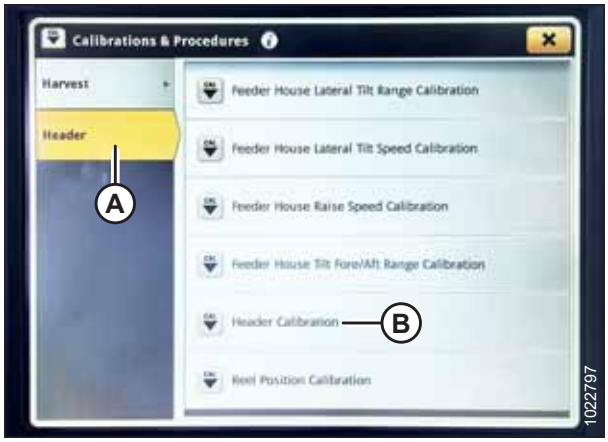


Figure 3.463: John Deere S7 Display – Calibrations and Procedures

8. Select CALIBRATE (A) at bottom of page. The calibration overview window opens.

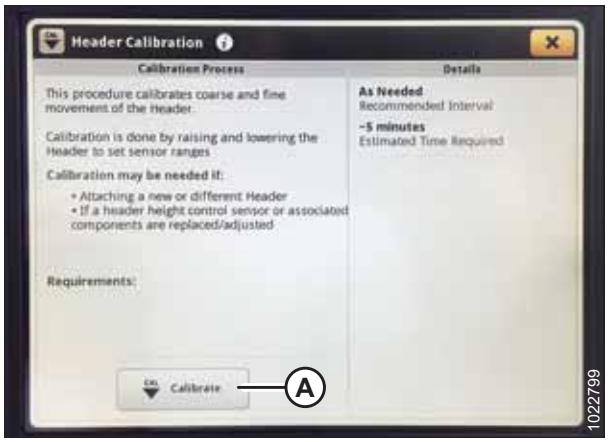


Figure 3.464: John Deere S7 Display – Header Calibration

9. Press button (A) on console to set engine to high idle.

Figure 3.465: John Deere S7 Console

10. Select START on calibration overview page.
11. Follow instructions that appear on combine display. As you proceed through calibration process, display will automatically update to show next step.

Figure 3.466: John Deere S7 Display – Header Calibration

12. When calibration is complete, select SAVE to confirm calibration.

Figure 3.467: John Deere S7 Display – Header Calibration

3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior

This section applies only to pre-2015 CR/CX models. For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

Checking Voltage Range from the Combine Cab – 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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

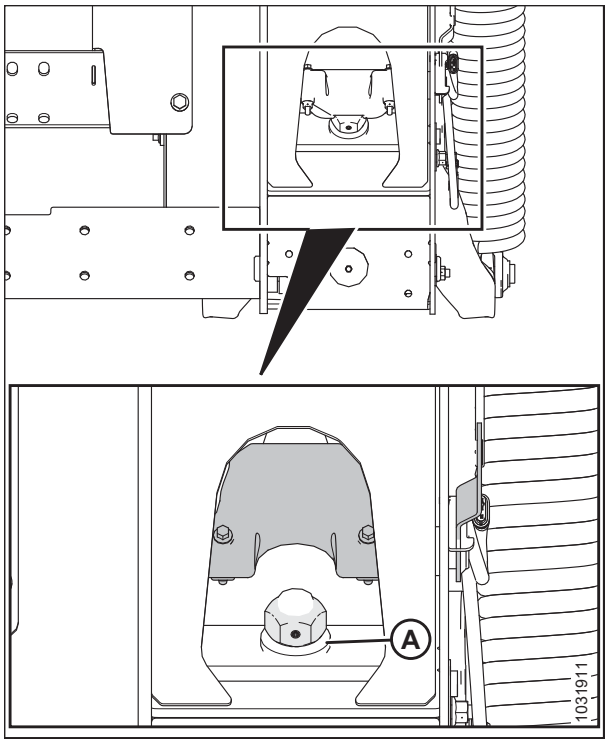


Figure 3.468: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).

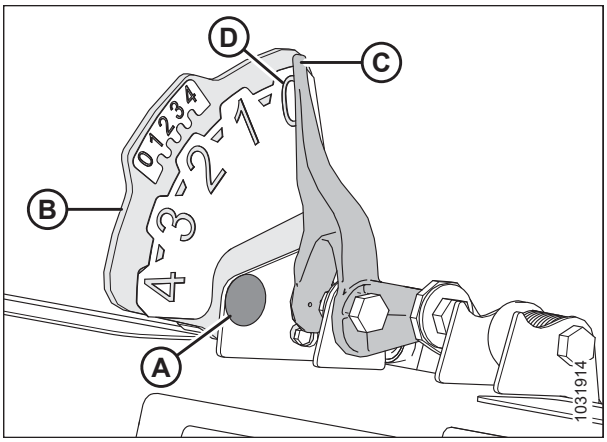


Figure 3.469: Float Indicator

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

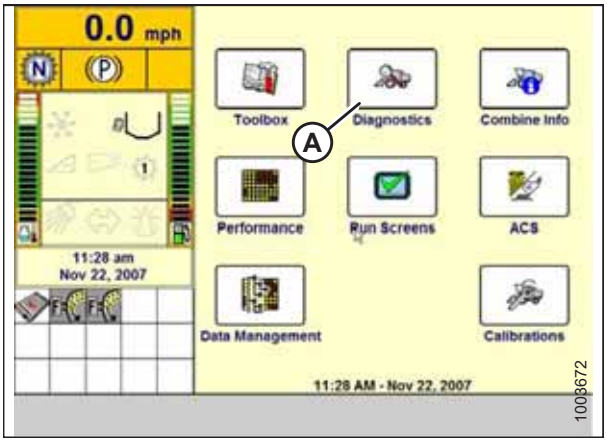


Figure 3.470: New Holland Combine Display

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

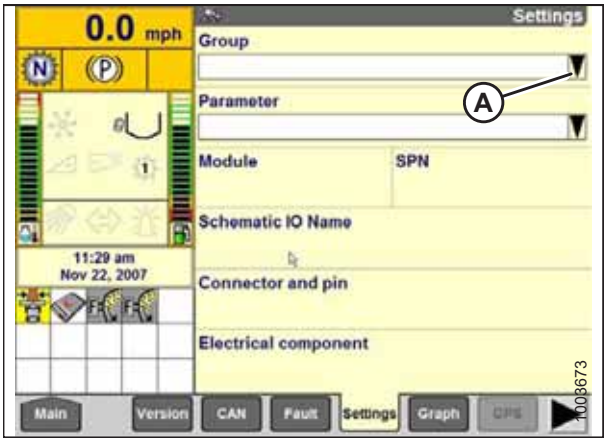


Figure 3.471: New Holland Combine Display

9. Select HEADER HEIGHT/TILT (A). The PARAMETER screen displays.

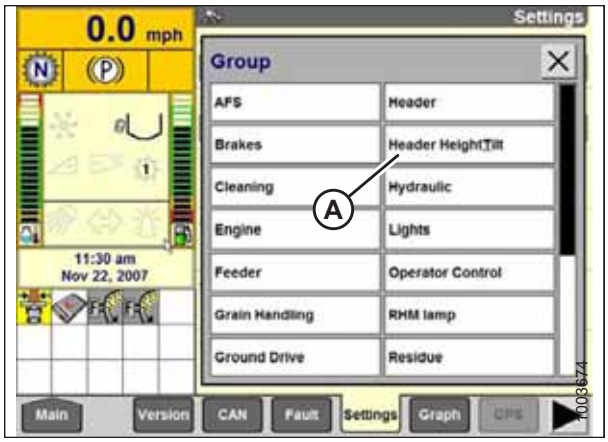


Figure 3.472: New Holland Combine Display

10. Select LEFT HEADER HEIGHT SEN (A), and then select GRAPH button (B). The exact voltage is displayed at the top of the screen.
11. Raise and lower the header to see the full range of voltage readings.

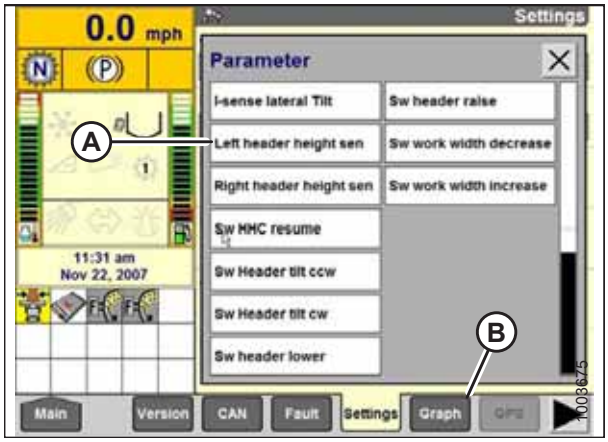


Figure 3.473: New Holland Combine Display

Setting up 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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

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.

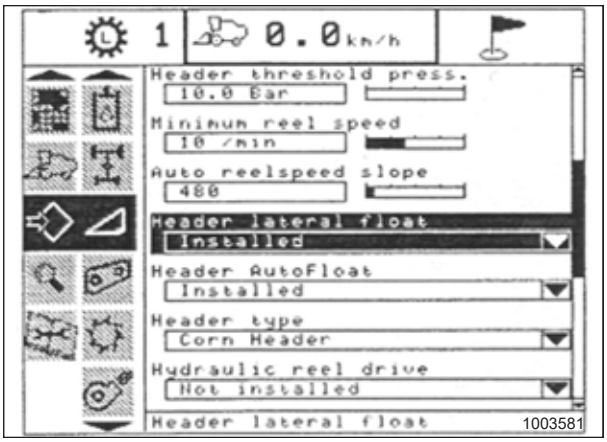


Figure 3.474: New Holland Combine Display

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

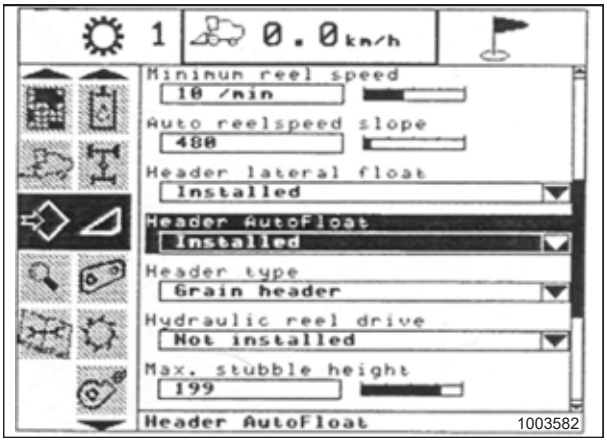


Figure 3.475: New Holland Combine Display

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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

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 float 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.

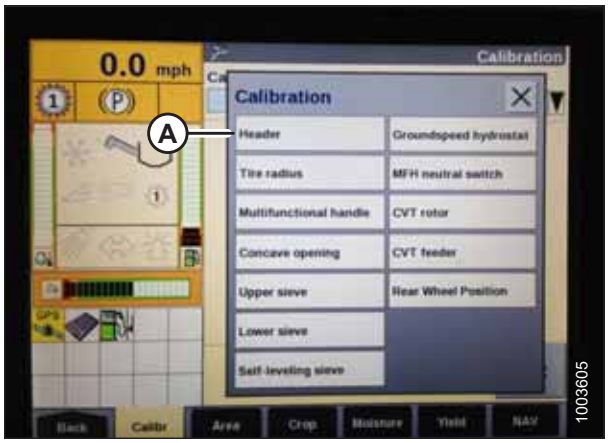


Figure 3.476: New Holland Combine Display

3. Follow the calibration steps in the order in which they appear in the dialog box. As you proceed through the calibration process, the display will automatically update to show the next step.

   NOTE:

   Pressing the ESC key during any of the steps or letting the system sit idle for more than 3 minutes will cause the calibration procedure to stop.

   NOTE:

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

Figure 3.477: New Holland Combine Display

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

NOTE:

If float was set heavier to complete AHHC 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 – New Holland CR/CX Series

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.

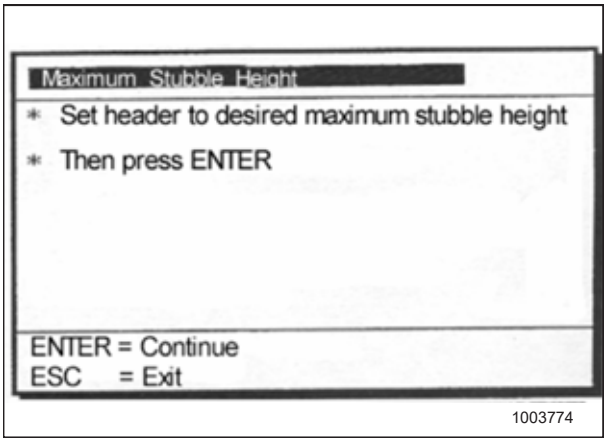


Figure 3.478: New Holland Calibration Dialog Box

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 screen. The calibration is now complete.

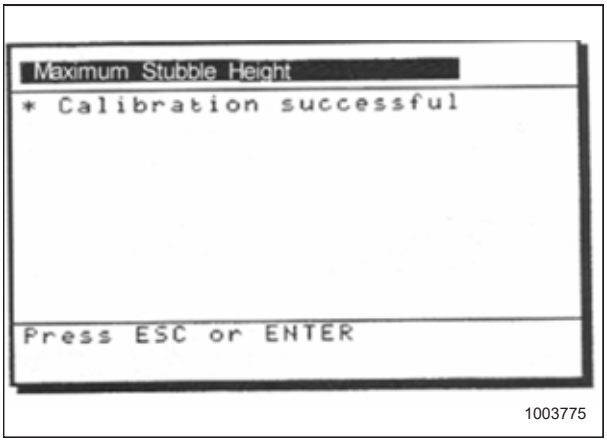


Figure 3.479: New Holland Calibration Dialog Box

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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

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.

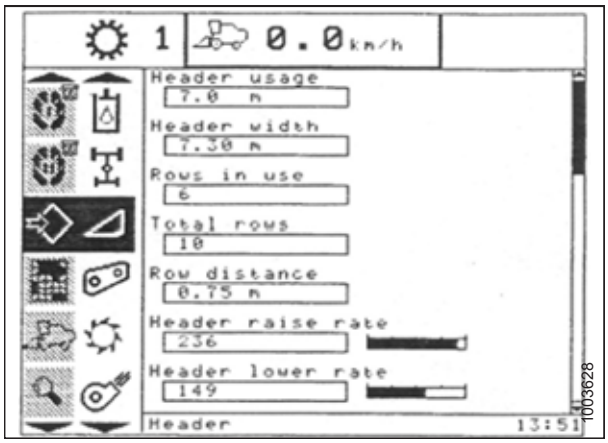


Figure 3.480: New Holland Combine Display

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 multifunction 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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

1. Select HEADER LOWER RATE on the combine display.
2. Use the + or – buttons to change the setting to 50.
3. Press ENTER to save the new setting.

   NOTE:

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

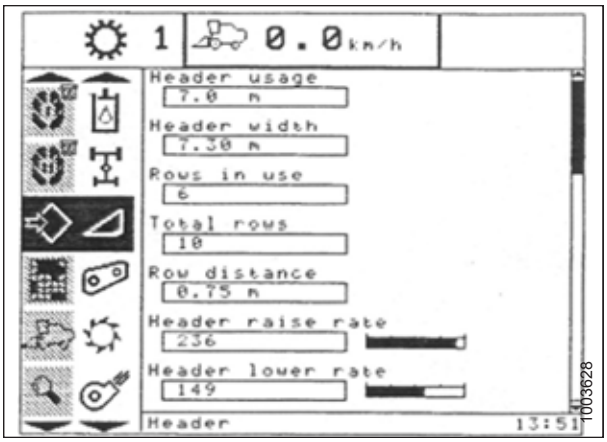


Figure 3.481: New Holland Combine Display

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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

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 increments of 10. It is factory-set to 100.

Figure 3.482: 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.

NOTE:

For New Holland CR models 6.80, 6.90, 7.90, 8.90, 9.90, and 10.90, refer to *3.8.19 New Holland Combines – CR Series – 2015 and Later, page 261*.

NOTE:

Indicator (A) should be at position 0 (B) with the header 152 mm (6 in.) off the ground. When the header is on the ground, the indicator should be at position 1 (C) for low ground pressure, and at position 4 (D) for high ground pressure. Crop and soil conditions determine the amount of float to use. The ideal setting is as light as possible without header bouncing or missing crop. Operating with heavy settings prematurely wears the cutterbar wearplates.

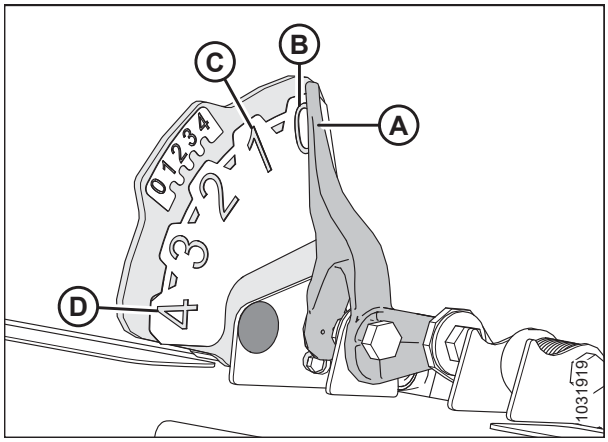


Figure 3.483: Float Indicator Box

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. Raise or lower the header to the desired cutting height using HEADER HEIGHT and HEADER LATERAL FLOAT momentary switch (C).
4. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep 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. Raise or lower the reel to the desired working height using REEL HEIGHT momentary switch (E).
6. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (E) for a minimum of 2 seconds to store the height position. A beep will confirm the setting.

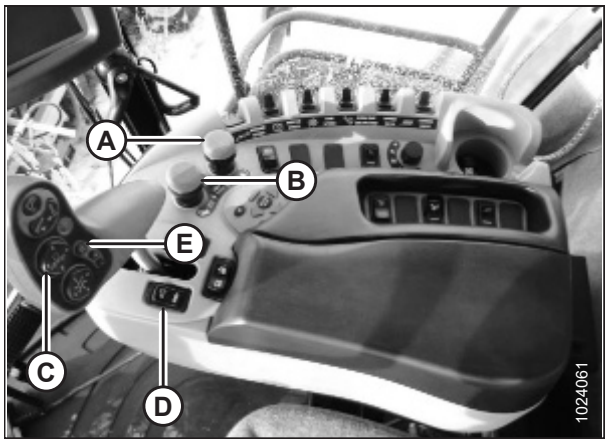


Figure 3.484: New Holland Combine Controls

7. To change one of the memorized header height set points while the combine is in use, use HEADER HEIGHT AND HEADER LATERAL FLOAT rocker switch (A) (slow up/down) to raise or lower header to the desired value. Lightly press AUTOMATIC HEADER HEIGHT CONTROL button (B) for a minimum of 2 seconds to store the new height position. A beep will confirm setting.

   NOTE:

   Fully pressing AUTOMATIC HEADER HEIGHT CONTROL button (B) will disengage float mode.

   NOTE:

   It is not necessary to press rocker switch (C) again after changing header height set point.

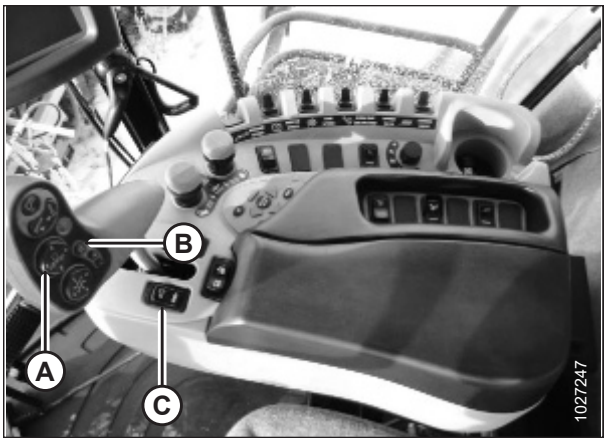


Figure 3.485: New Holland Combine Controls

3.8.19 New Holland Combines – CR Series – 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 pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

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.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

CAUTION

Check to be sure all bystanders have cleared the area.

1. Position the header 150 mm (6 in.) above the ground, and unlock the 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. If the header is not on down stops, refer to *3.9 Leveling Header, page 276* for instructions.

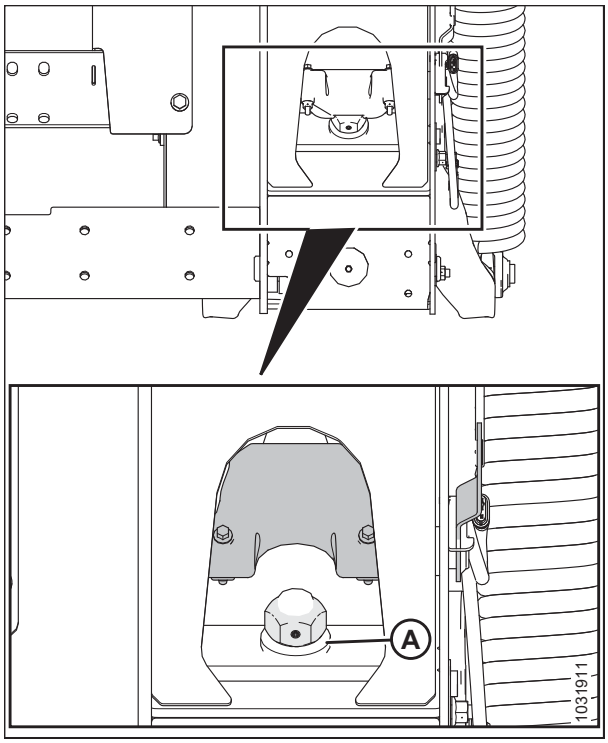


Figure 3.486: Float Lock

3. Loosen bolt (A) and slide float indicator plate (B) until pointer (C) is on **0** (D).
4. Tighten bolt (A).
5. Ensure header float is unlocked.

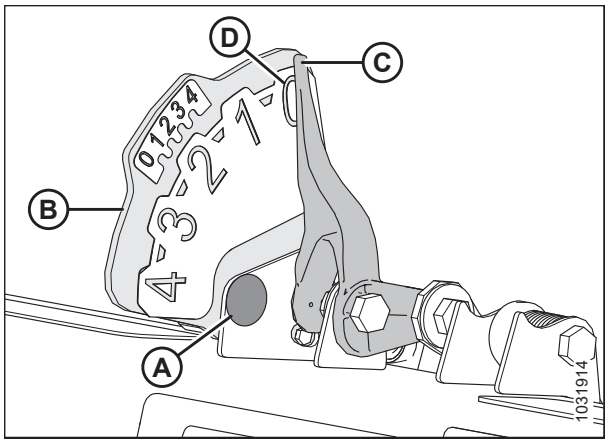


Figure 3.487: Float Indicator

6. Select DIAGNOSTICS (A) on the main screen. The DIAGNOSTICS screen displays.

Figure 3.488: New Holland Combine Display

7. Select SETTINGS (A). The SETTINGS screen displays.

Figure 3.489: New Holland Combine Display

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

Figure 3.490: New Holland Combine Display

10. Select GRAPH (A). The exact voltage (B) is displayed at the top of the screen.
11. Raise and lower the header to see the full range of voltage readings.

Figure 3.491: New Holland Combine Display

Setting up 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.

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.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

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

Figure 3.492: New Holland Combine Display

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

   NOTE:

   Software in some New Holland combines may not allow you to change the header from FLEX to PLATFORM or the header type from DEFAULT to 80/90 at the main menu. This is now a dealer setting, and requires you to access the DEALER SETTING screen by pressing and holding both the UNLOAD and RESUME buttons on the control handle for approximately 10 seconds. The DEALER SETTING screen should appear and will allow you to change the header and header type settings.

Figure 3.493: New Holland Combine Controls

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

Figure 3.494: New Holland Combine Display

6. Select HEADER SUB TYPE drop-down arrow (A). The HEADER SUB TYPE dialog box displays.

Figure 3.495: New Holland Combine Display

7. Set HEADER SUB TYPE to 80/90 (A) for a New Holland combine.

Figure 3.496: New Holland Combine Display

8. Select HEAD 2 (A). The HEADER SETUP 2 screen displays.

Figure 3.497: New Holland Combine Display

9. Select the AUTOFLOAT drop-down arrow and set AUTOFLOAT to INSTALLED (A).
10. 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 control handle.

11. Set the values for MANUAL HHC RAISE RATE (C) and MANUAL HHC LOWER RATE (D) for best performance according to ground conditions.

Figure 3.498: New Holland Combine Display

12. Set the values for HHC HEIGHT SENSITIVITY (A) and HHC TILT SENSITIVITY (B) for best performance according to ground conditions.

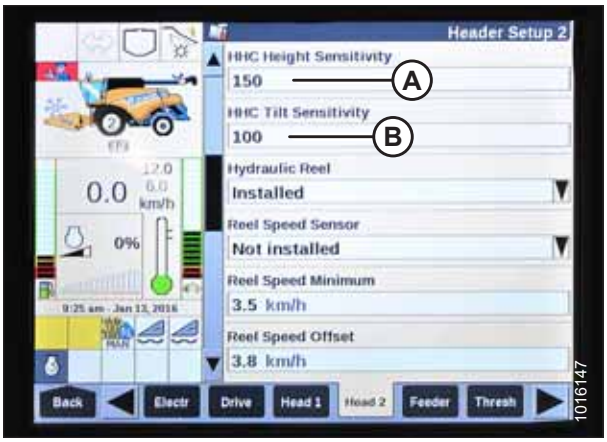


Figure 3.499: New Holland Combine Display

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

Figure 3.500: 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. For instructions, refer to *3.7.5 Header Angle, page 81*.

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.

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

CAUTION

Check to be sure all bystanders have cleared the area.

NOTE:

If header float is set too light, it can prevent calibration of AHHC. You may need to set the float heavier for calibration procedure so header doesn't separate from the float module.

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 float buttons are **NOT** pressed.
- ESC key is **NOT** pressed.

To calibrate the AHHC, follow these steps:

1. Select CALIBRATIONS (A) on the main screen. The CALIBRATION screen displays.

Figure 3.501: New Holland Combine Display

2. Select CALIBRATION drop-down arrow (A).

Figure 3.502: New Holland Combine Display

3. Select HEADER (A) from the list of calibration options.

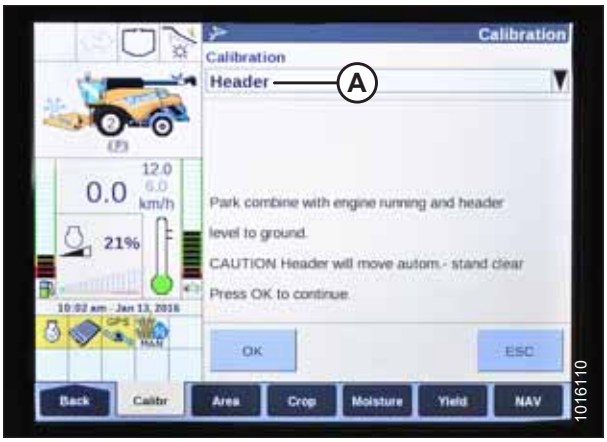


Figure 3.503: New Holland Combine Display

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 3 minutes will cause the calibration procedure to stop.

   NOTE:

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

Figure 3.504: 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 AHHC calibration procedure, adjust to recommended operating float after the calibration is complete.

Figure 3.505: New Holland Combine Display

Checking Reel Height Sensor Voltages – 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.

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

Figure 3.506: New Holland Combine Display

2. Select SETTINGS tab (A). The SETTINGS page opens.
3. From GROUP menu (B), select HEADER.
4. From PARAMETER menu (C), select REEL VERTICAL POSITION.

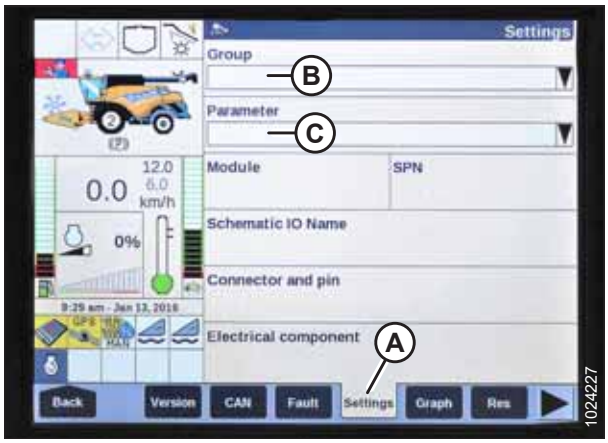


Figure 3.507: New Holland Combine Display

5. Select GRAPH tab (A). The REEL VERTICAL POSITION graph displays.
6. Lower the reel to view high voltage (B). The voltage should be 4.1–4.5 V.
7. Raise the reel to view low voltage (C). The voltage should be 0.5–0.9 V.

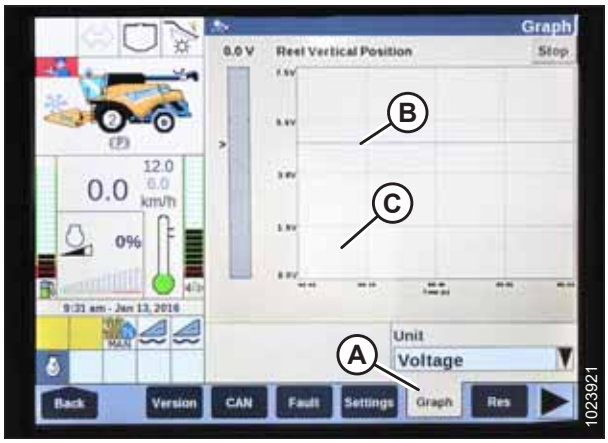


Figure 3.508: New Holland Combine Display

Setting Preset Cutting Height – New Holland CR Series

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

The console has two buttons used for auto height presets. The toggle switch that was present on previous models is now configured as shown at right. MacDon headers only require first two buttons (A) and (B). Third button (C) is not configured.

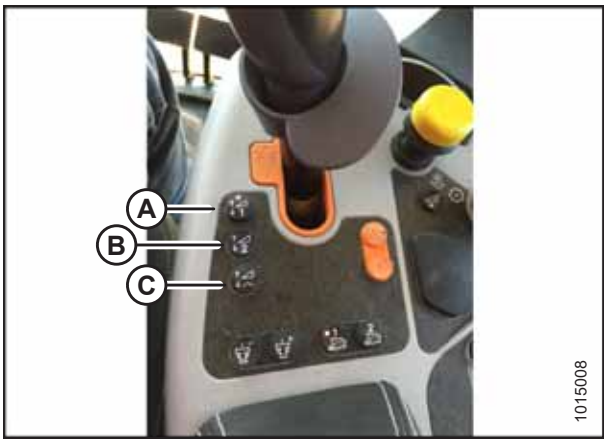


Figure 3.509: New Holland Combine Controls

CAUTION

Check to be sure all bystanders have cleared the area.

To set preset cutting height, follow these steps:

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

Figure 3.510: New Holland Combine Controls

4. Hold RESUME button (C) on the multifunction handle to set the preset.

   NOTE:

   When setting presets, always set header position before setting reel position. If header and reel are set at the same time, the reel setting will not save.

5. Raise or lower the reel to the desired working position.
6. Hold RESUME button (C) on multifunction handle to set the preset.
7. Repeat Step *2, page 271* to Step *6, page 271*, using preset button 2.

Figure 3.511: New Holland Combine Multifunction Handle

8. Lower header to the ground.
9. Select RUN SCREENS (A) on the main screen.

Figure 3.512: New Holland Combine Display

10. Select the RUN tab that shows MANUAL HEIGHT.

    NOTE:

    The MANUAL HEIGHT field may appear on any of the RUN tabs. When an auto height preset button is pressed, the display will change to AUTO HEIGHT (A).

11. Press one of the auto height preset buttons to select a preset cutting height.

Figure 3.513: New Holland Combine Display

Setting Maximum Work Height – New Holland CR Series

NOTE:

This section applies only to 2015 and later CR models (6.80, 6.90, 7.90, 8.90, 9.90, and 10.90). For other pre-2015 New Holland combine models, refer to *3.8.18 New Holland Combines – CR/CX Series – 2014 and Prior, page 252*.

1. Select TOOLBOX (A) on the main screen. The TOOLBOX screen displays.

Figure 3.514: New Holland Combine Display

2. Select FEEDER (A). The FEEDER SETUP screen displays.
3. Select MAXIMUM WORK HEIGHT field (B).

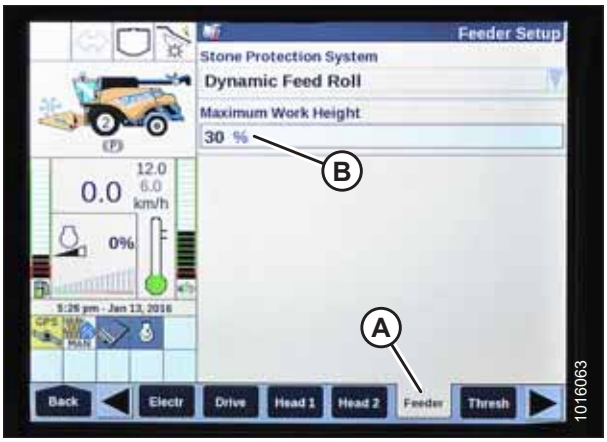


Figure 3.515: New Holland Combine Display

4. Set MAXIMUM WORK HEIGHT to desired value.
5. Press SET and then press ENTER.

Figure 3.516: New Holland Combine Display

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 UNLOAD (A) and RESUME (B) buttons on the control handle.

Figure 3.517: New Holland Combine Controls

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

Figure 3.518: New Holland Combine Display

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

Figure 3.519: 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 first two buttons (A) and (B). Third button down (C) is not configured.

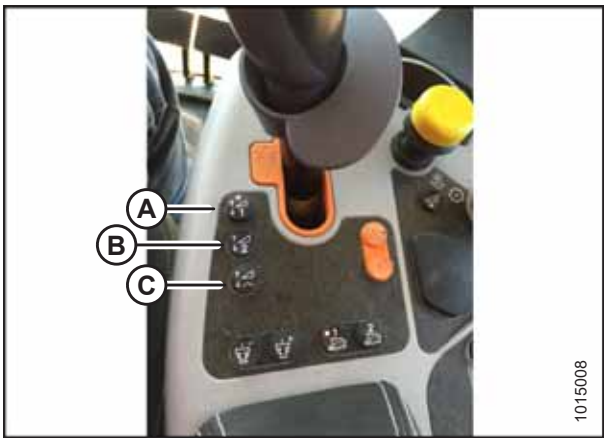


Figure 3.520: New Holland Combine Controls

3.9 Leveling Header

The float module is factory-set to provide the proper level for the header. It should not normally require adjustment.

If the header is **NOT** level, perform the following checks prior to adjusting the leveling linkages:

- Check the combine tire pressures.
- Check that the combine feeder house is level. 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 springs are **NOT** used to level the header.

WARNING

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

1. Park the combine on a level surface.
2. Position the header so that the cutterbar is 305–356 mm (12–14 in.) off the ground.
3. Set the header approximately 150 mm (6 in.) off the ground, and check that the float linkage is against the down stops. Note the high and low end of the header.
4. Shut down the engine, and remove the key from the ignition.
5. Lock the header wings. For instructions, refer to *Lock/Unlock Header Wings , page 72*.
6. Check, and if necessary adjust the float. Refer to *Checking and Adjusting Header Float, page 67*.
7. Disengage both header float locks by pulling float lock handle (A) away from the float module and pushing the float lock handle down and into position (B) (**UNLOCK**).

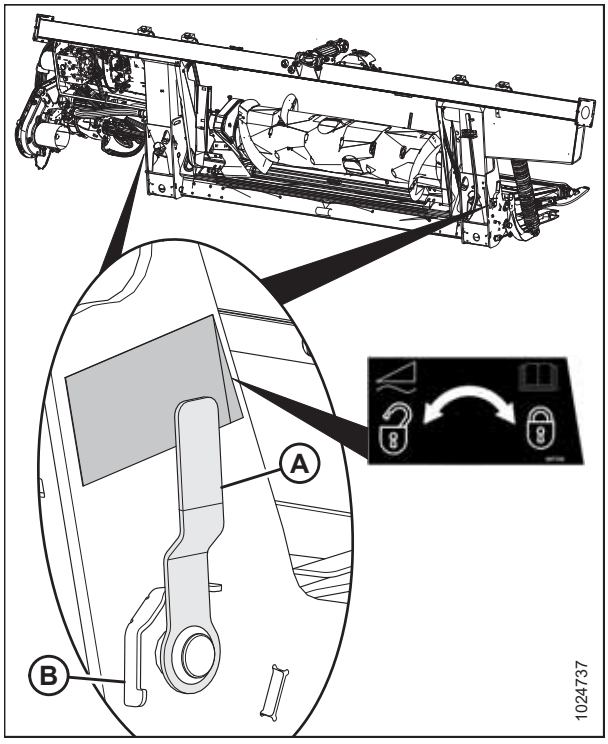


Figure 3.521: Header Float Lock in Locked Position

8. Adjust the header level by making small adjustments (1/4–1/2 turn) to nut (A) on each float lock. Adjust each side equally but in opposite directions as follows:

   NOTE:

   Set screw (B) does not require loosening for adjustments up to one-half turn of nut (A).

   a. On the low side of the header, turn nut (A) **clockwise** to raise the header.

   b. On the high side of the header, turn nut (A) **counterclockwise** to lower the header.

   IMPORTANT:

   Adjustment of more than two turns in either direction may adversely affect header float.

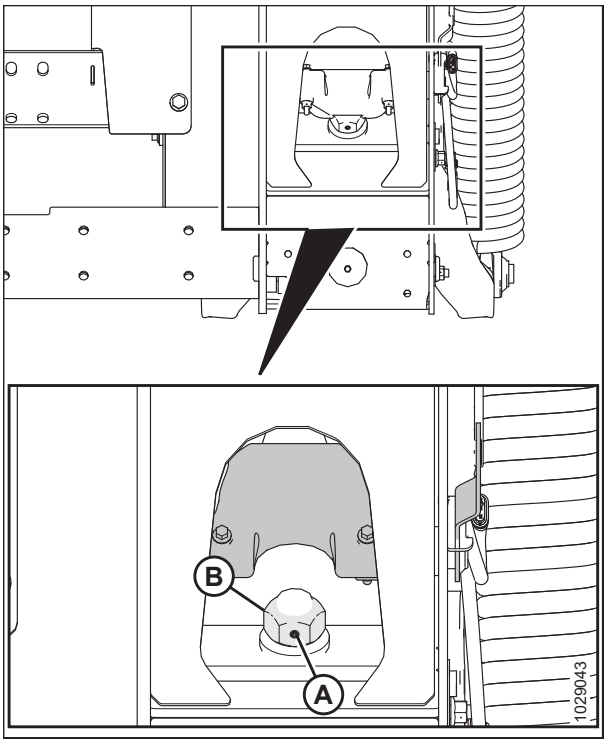


Figure 3.522: Float Lock – Right

NOTE:

Ensure a minimum clearance of 2–3 mm (1/8 in.) (A) between the frame and the back of the bell crank lever.

NOTE:

Check the float after leveling header. Refer to *Checking and Adjusting Header Float, page 67*.

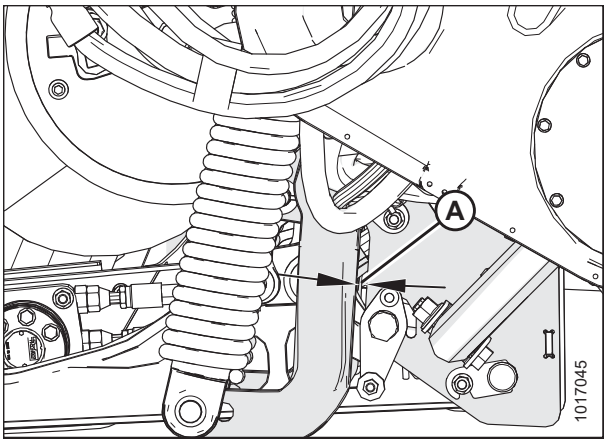


Figure 3.523: Bell Crank

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 the cutterbar is still plugged, do the following:

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header to prevent it from filling with dirt, and engage the header drive clutch.
3. If plug does **NOT** clear, disengage the header drive clutch and fully raise the header.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props.
6. Clean off the cutterbar by hand.

3.11 Unplugging the FM200

1. Stop the forward movement of the machine and disengage the header drives.
2. Raise the header slightly off the ground, and raise the reel.
3. Reverse the combine feed according to the manufacturer specifications (reverse feed varies among different combine models).
4. Engage the header drive.

3.12 Transporting the Header

WARNING

Do NOT drive the 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.

3.12.1 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.**

3.12.2 Towing

Headers with the Slow Speed Transport/Gauge Wheel option can be towed behind a properly configured MacDon windrower or an agricultural tractor. For instructions, refer to the combine operator's manual.

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 seven-pole plug wiring harness to mating receptacle on towing vehicle. (The seven-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 32 km/h (20 mph).**
- **Reduce transport speed to less than 8 km/h (5 mph) for slippery or rough conditions**
- **Turn corners at only very low speeds (8 km/h [5 mph] or less) as header stability is reduced while cornering. 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.**

3.12.3 Converting from Transport to Field Position

Removing Tow-Bar

1. Block the header tires with wheel chocks (A) to prevent header from rolling.

Figure 3.524: Tire Blocking

2. Disconnect electrical connector (A) and safety chain (B) from towing vehicle and store as shown.
3. If removing a tow-bar with an extension, proceed to Step *4, page 282*. If removing a tow-bar without an extension, refer to proceed to Step *16, page 284*.

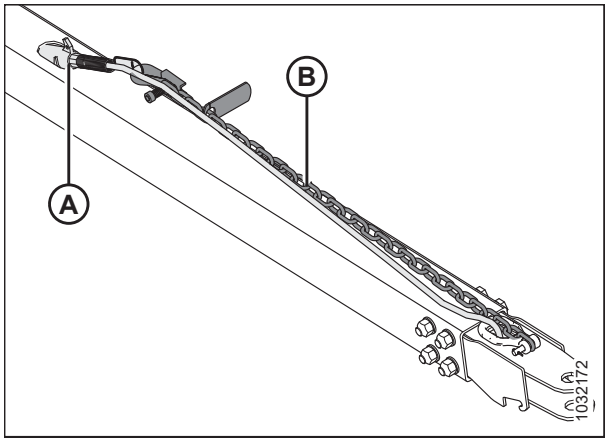


Figure 3.525: Tow-Bar Assembly

Removing tow-bar installed with an extension:

4. Disconnect tow-bar harness (A) from extension harness (B).
5. Remove lynch pin (C) from latch.

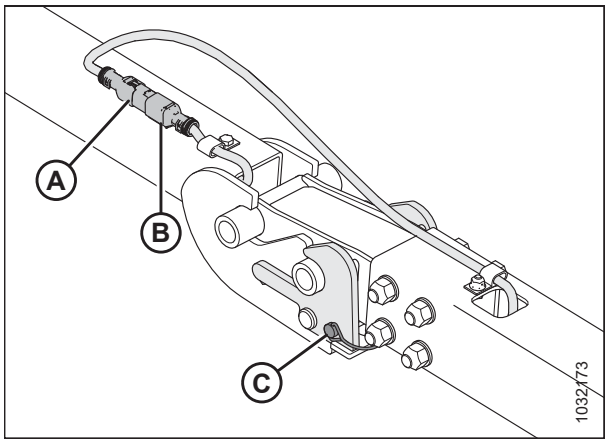


Figure 3.526: Tow-Bar / Extension Harness

6. Secure tow-bar harness (A) in storage location.
7. Push down on tow-bar to relieve tension, and pull up on latch handle (B) to release tow-bar lugs.
8. Lift end of tow-bar (C) and pull away from extension (D).

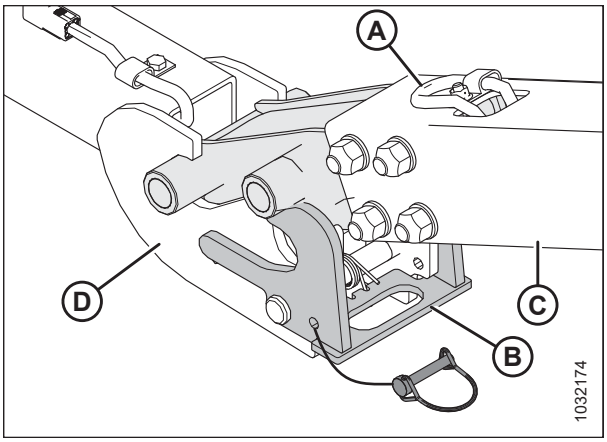


Figure 3.527: Tow-Bar / Extension Joint

9. Unplug tow-bar extension electrical harness (A) from left transport pivot harness (B).

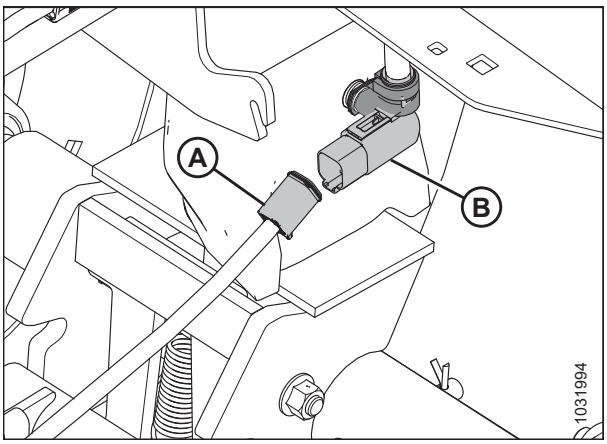


Figure 3.528: Tow-Bar Electrical Connection

10. Remove lynch pin (A) from transport pivot (B).
11. Push back on latch (C) to free extension (D).

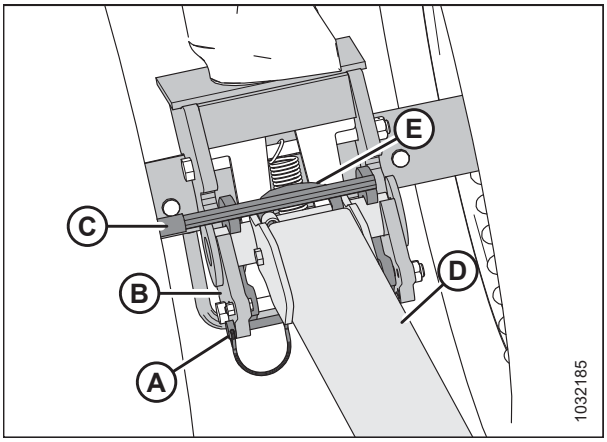


Figure 3.529: Tow-Bar Extension and Transport Pivot

12. Lift extension (A) and pull away from transport pivot (B).
13. Secure extension harness (C) inside the tow-bar extension (A) tube.
14. Reinstall lynch pin in left transport pivot for safe keeping.
15. For tow-bar storage, refer to *Storing Tow-Bar, page 285*.

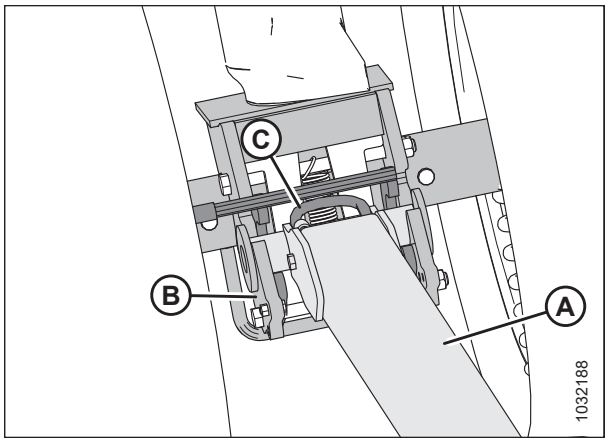


Figure 3.530: Latch Disengaged from Extension

Removing tow-bar installed without an extension:

16. Unplug tow-bar extension electrical harness (A) from left transport pivot harness (B).

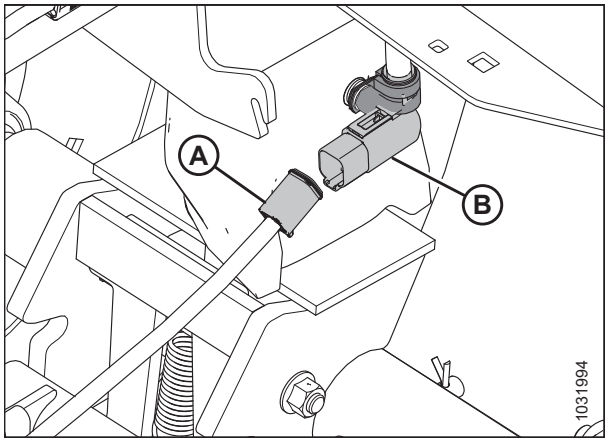


Figure 3.531: Tow-Bar Electrical Connection

17. Remove lynch pin (A), then push back on latch (B) to free the tow-bar.

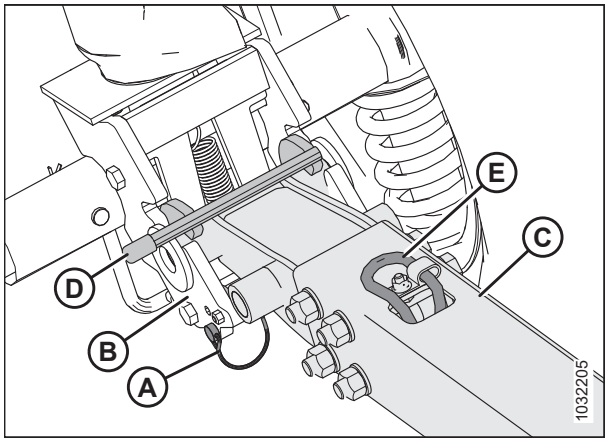


Figure 3.532: Tow-Bar and Left Transport Pivot

18. Lift tow-bar (A) and pull away from transport pivot (B).
19. Reinstall lynch pin in left transport pivot for safe keeping.
20. For tow-bar storage, refer to *Storing Tow-Bar, page 285*.

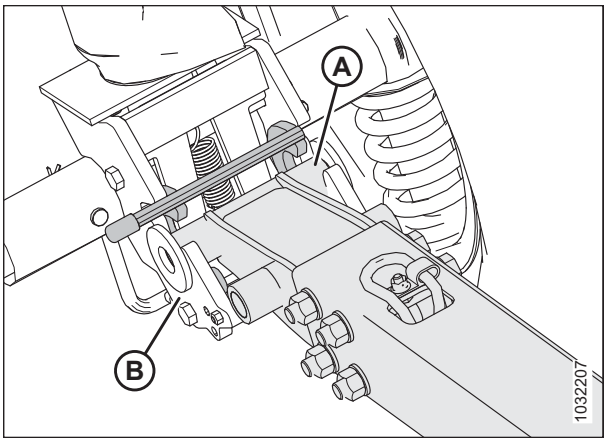


Figure 3.533: Tow-Bar and Left Transport Pivot

Storing Tow-Bar

Tow-bar Extension

1. Insert tube end (B) of tow-bar extension (A) onto pin (C).
2. Rotate tow-bar extension to cradle (D).

   NOTE:

   To prevent tow-bar extension from shaking loose, ensure extension bar engages groove in bracket (E).

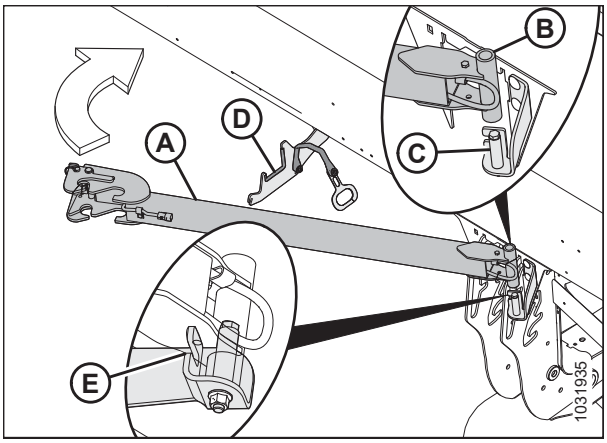


Figure 3.534: Tow-Bar Extension Storage

3. Secure tow-bar extension by hooking strap handle (A) onto notch in cradle (B).

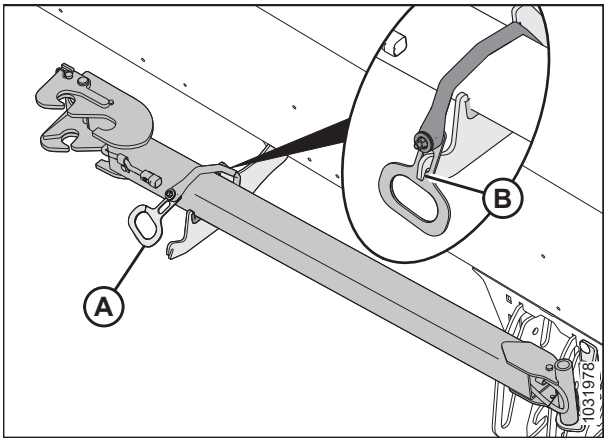


Figure 3.535: Tow-Bar Extension Storage

Tow-bar

4. Open left endshield. For instructions, refer to *Opening Header Endshields, page 33*.
5. With tow chain and harness (A) facing up, insert hitch end (B) of tow bar into left backtube.

   IMPORTANT:

   Header endshield removed from illustration for clarity.

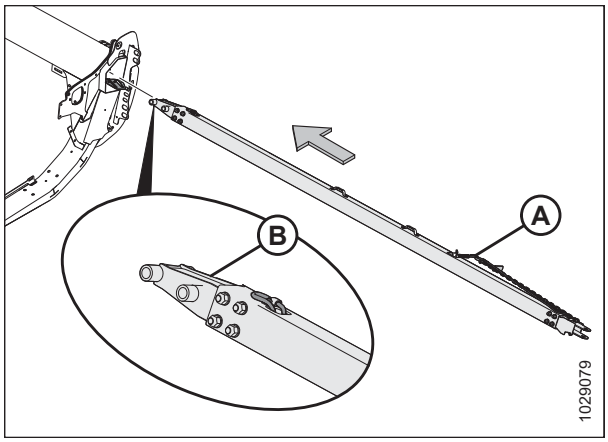


Figure 3.536: Hitch End

6. Slide tow-bar inside the backtube until hooks (A) engage the slots of support angle (B).
7. Close header endshield. For instructions, refer to *Closing Header Endshields, page 34*.

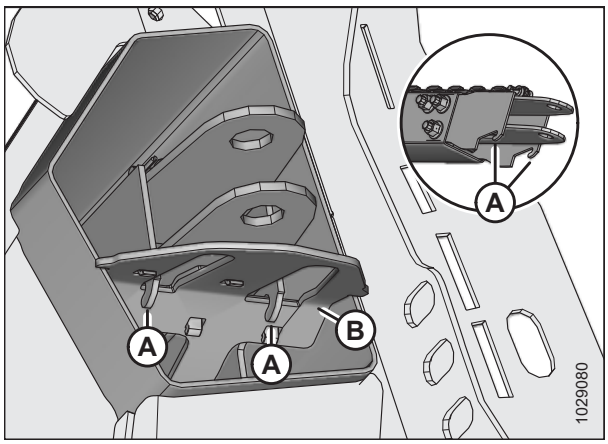


Figure 3.537: Clevis End Retainer Hooks

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 header until right side wheels are 2–4 inches off the ground.
2. Turn front wheel assembly (A) counterclockwise, 90°.

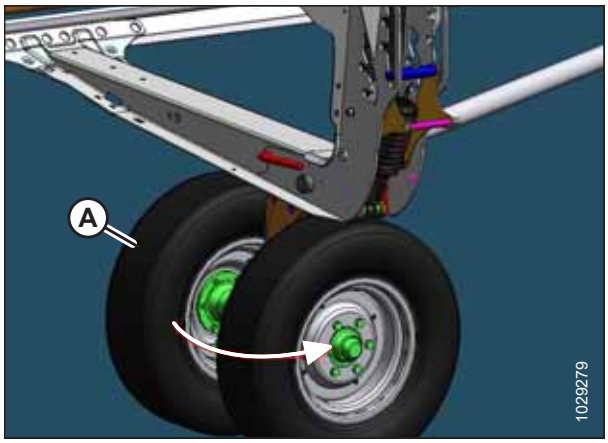


Figure 3.538: Front Wheels

3. Ensure latch (A) is in place, wheel rotation is limited in the position.
4. Secure latch with clevis pin (B).

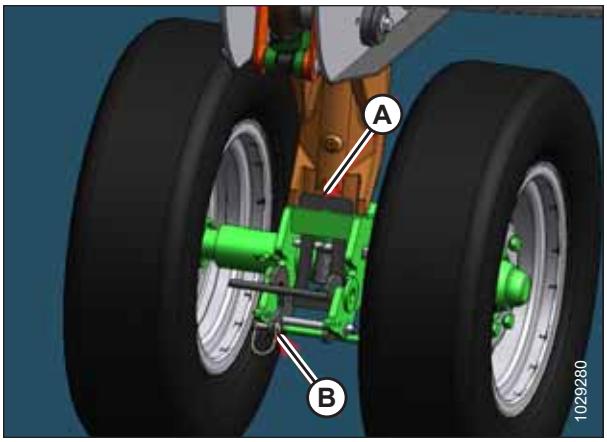


Figure 3.539: Front Wheels

5. Push left transport pivot (A) forward and rotate handle (B) clockwise until left transport pivot releases.

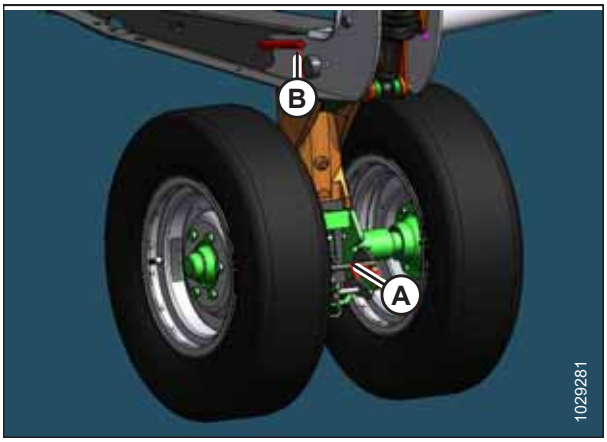


Figure 3.540: Front Wheels

6. Lift up on handle (A) until desired gauge wheel position is reached. Strut pin will automatically engage into position.
7. Pull back on suspension handle (B) to bypass a gauge wheel position.
8. Verify that strut pin (C) is fully engaged into the desired height adjustment slot.

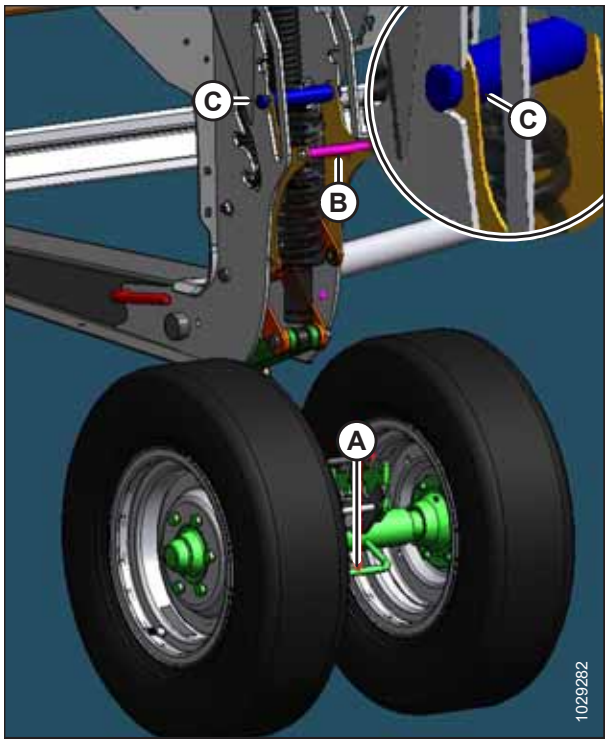


Figure 3.541: Front Wheels

Moving Rear (Right) 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 header until right side wheels are 2–4 inches off the ground.
2. Remove clevis pin (A) from right transport axle latch.
3. Support right transport axle using wheel handle (B) then push handle (C) to release right transport axle from header frame.
4. Lower right transport axle to ground using wheel handle (B).
5. Reinstall clevis pin (A) into latch for safe keeping.

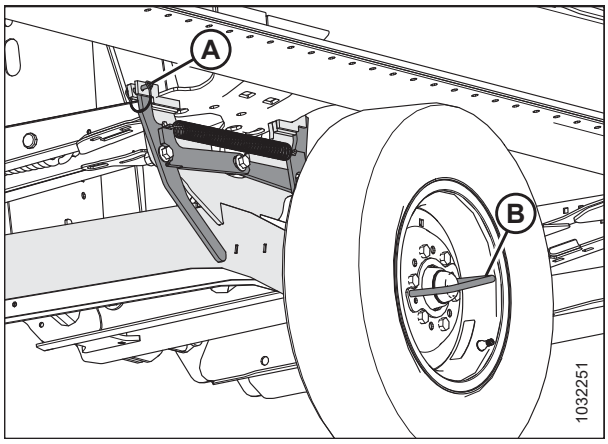


Figure 3.542: Rear Wheel – Right Side

6. Lift and rotate right transport axle (A) from underneath header using wheel handle.

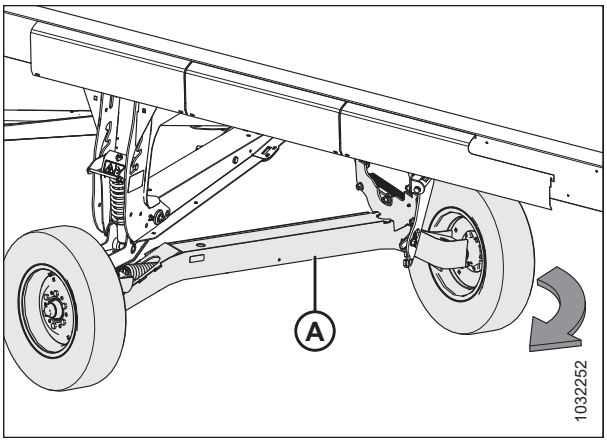


Figure 3.543: Rear Wheel – Right Side

7. Using wheel handle (A), lift and position right transport axle (B) to field support (C) to engage latch.

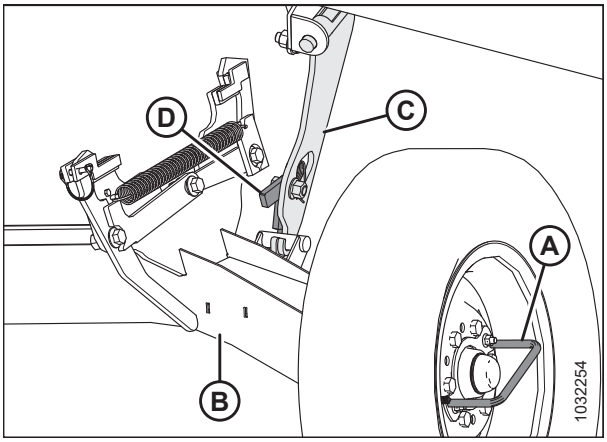


Figure 3.544: Rear Wheel – Right Side

8. Adjust gauge wheel height by pulling suspension handle (A) and lifting axle pivot handle (B).
9. Verify that strut pin is fully engaged into the desired height adjustment slot.

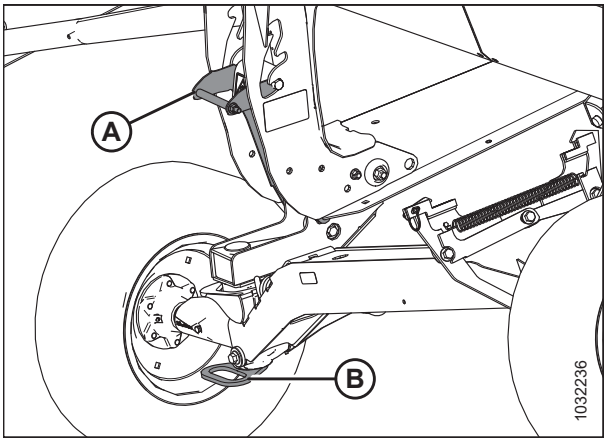


Figure 3.545: Rear Wheel – Right Side

3.12.4 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. Adjust gauge wheel height to transport position (lowest slot).
2. Pull suspension handle (A) outward and push down on axle pivot handle (B) until transport position is reached.

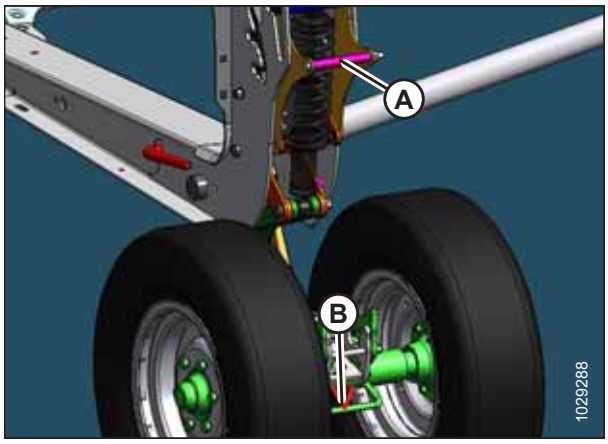


Figure 3.546: Gauge Wheel

3. Secure left transport pivot by pushing pivot handle (A) forward until latch is engaged.
4. Pull back on pivot handle to verify that latch is fully engaged.

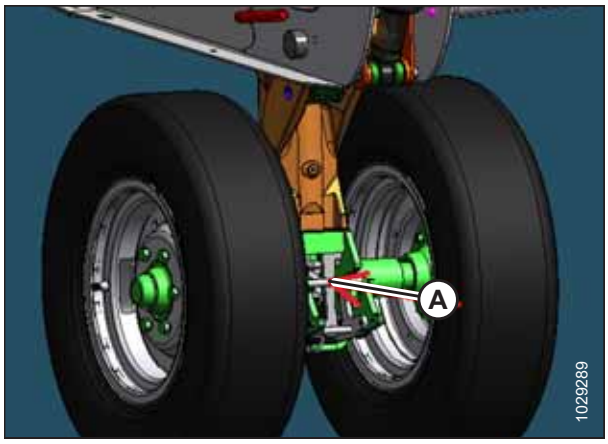


Figure 3.547: Gauge Wheel

5. Remove clevis pin (A) securing latch.
6. Push pivot handle (B) up to unlock wheel assembly.

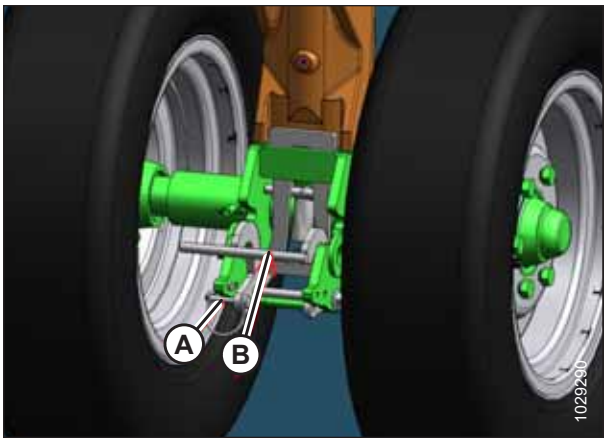


Figure 3.548: Gauge Wheel

7. Turn front wheel assembly clockwise, 90°.

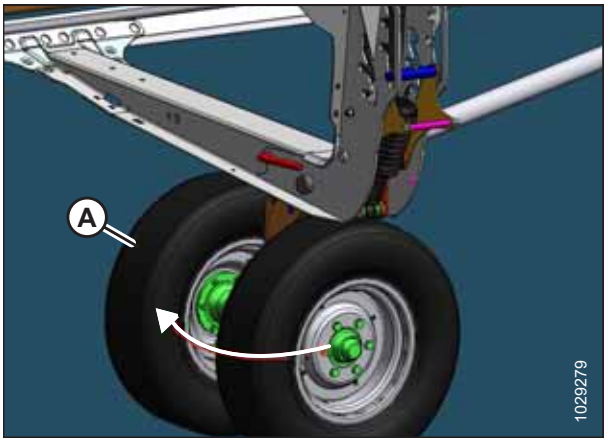


Figure 3.549: Gauge Wheel

Moving Rear (Right) 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. Adjust gauge wheel height to transport position (lowest slot) as follows:
   - if in top slot, push on handle (A) to release.
   - if in mid slot, pull on handle (A) to release.
2. Pull suspension handle (A) outward and push down on axle pivot handle (B).

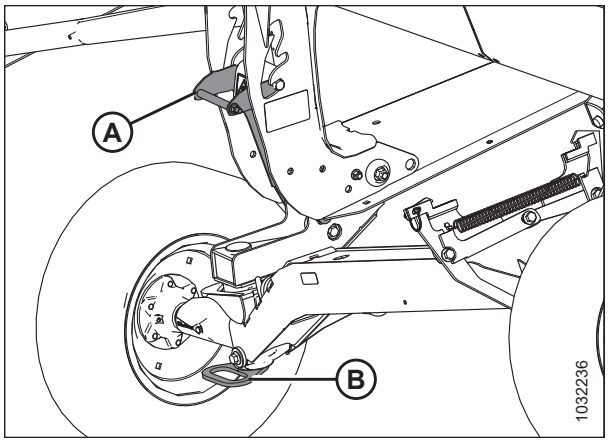


Figure 3.550: Gauge Wheels

3. Push down on latch (A) at right field support (B) to unlock.

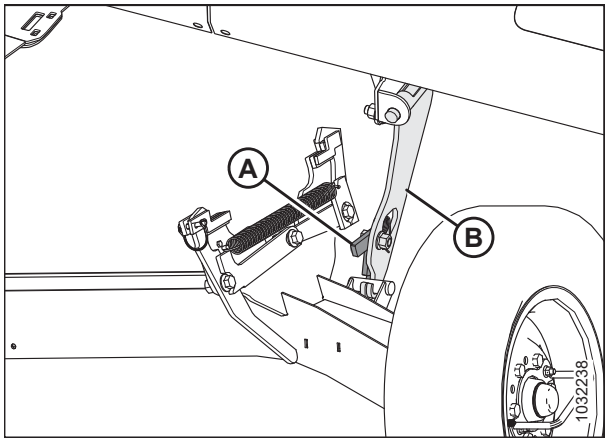


Figure 3.551: Right Field Support

4. Lift wheel handle (A) to remove right transport axle (B) from right field support (C), then lower right transport axle to the ground.

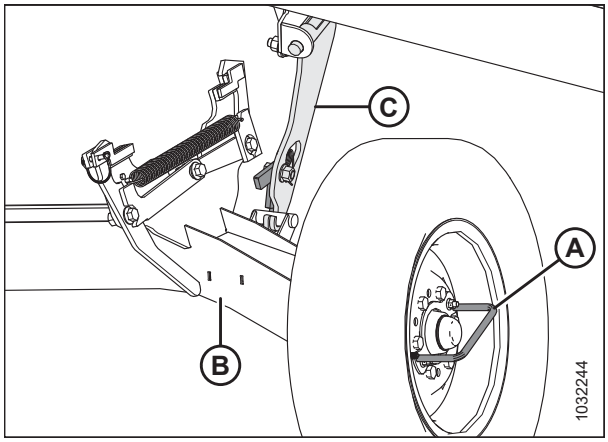


Figure 3.552: Right Field Support

5. Use wheel handle and rotate right transport axle (A) under the header frame.

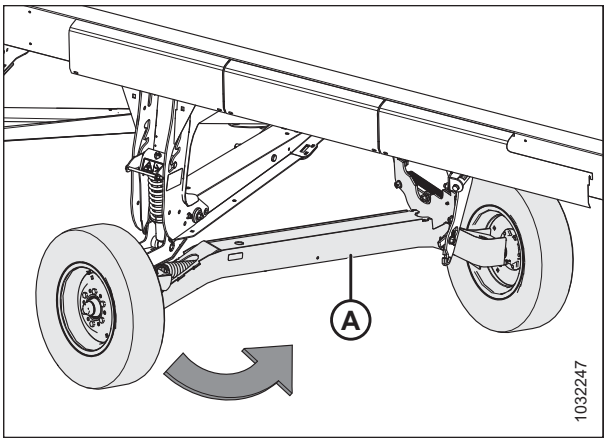


Figure 3.553: Right Transport Axle

6. Remove clevis pin (A) from right transport axle latch.
7. Lift right transport axle with wheel handle (B) until latch engages.
8. Push down on wheel handle (B) to verify latch is engaged.
9. Secure latch by reinstalling clevis pin (A).

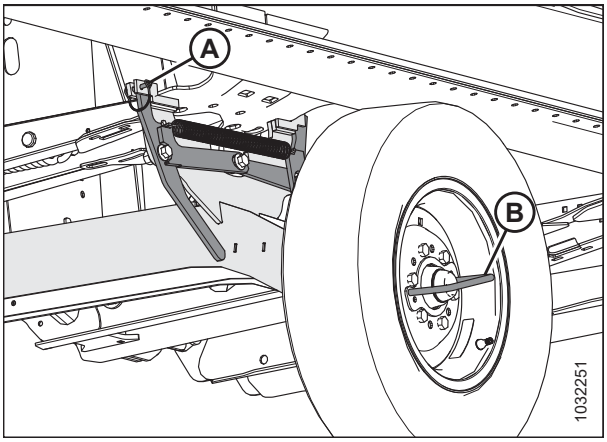


Figure 3.554: Right Transport Axle

Removing Tow-Bar from Storage

Tow-Bar Extension

1. Remove strap (A) from cradle (B) to free tow-bar extension (C).
2. Lift tow-bar extension away (C) from pin (D).

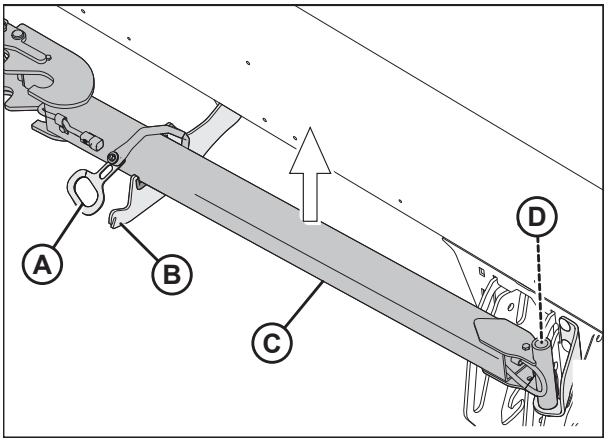


Figure 3.555: Tow-Bar Extension in Storage

Tow-Bar

3. Open left endshield. For instructions, refer to *Opening Header Endshields, page 33*.
4. Lift the tow bar to free clevis stops (C) and hooks (A) from support angle (B).

   NOTE:

   Backtube is shown transparent in illustration at right.
5. Slide tow bar out from header backtube.

   NOTE:

   Use caution to avoid contact with any nearby hydraulic or electrical hoses and lines.

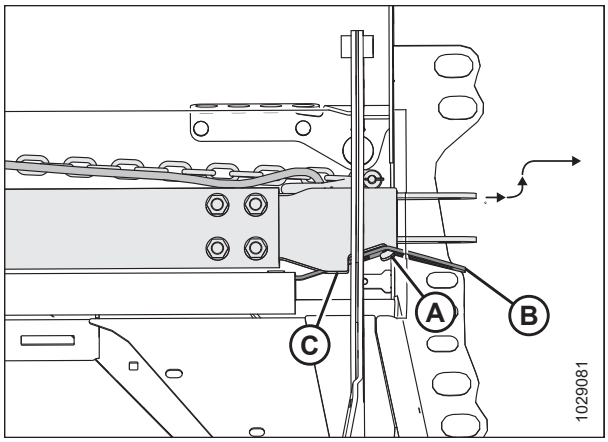


Figure 3.556: Tow-Bar in Storage

Attaching Tow-Bar

The tow-bar consists of two sections which make storage and handling easier.

1. Block the header tires with wheel chocks (A) to prevent header from rolling.
2. Remove tow-bar from storage. For instructions, refer to *Removing Tow-Bar from Storage, page 293*.
3. If installing a tow-bar and extension, proceed to Step *4, page 294*. If installing tow-bar only, proceed to Step *18, page 296*.

Figure 3.557: Tire Blocking

Installing tow-bar and extension:

4. Remove lynch pin (A) from left transport pivot (B).
5. Push extension (D) into lugs of left transport pivot until latch (C) engages.
6. Reinstall lynch pin (A) to transport pivot to secure extension.
7. Retrieve the end of extension harness (E) from inside the extension tube.

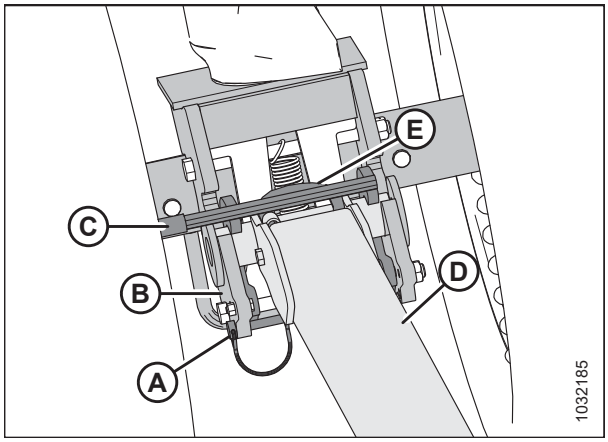


Figure 3.558: Tow-Bar Extension to Left Transport Pivot

8. Connect extension wiring harness (A) to left transport pivot harness (B).

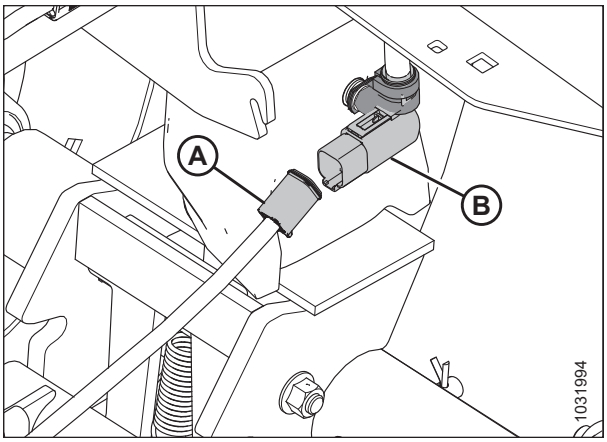


Figure 3.559: Tow-Bar Electrical Connection

9. Remove lynch pin (E) from latch (B).
10. Lower tow-bar (C) and extension (D) to the ground, then position end of tow-bar (C) on extension lugs (D).
11. Lift extension (D) for latch (B) to engage to tow-bar (C).
12. Retrieve the end of tow-bar harness (A) from storage location.

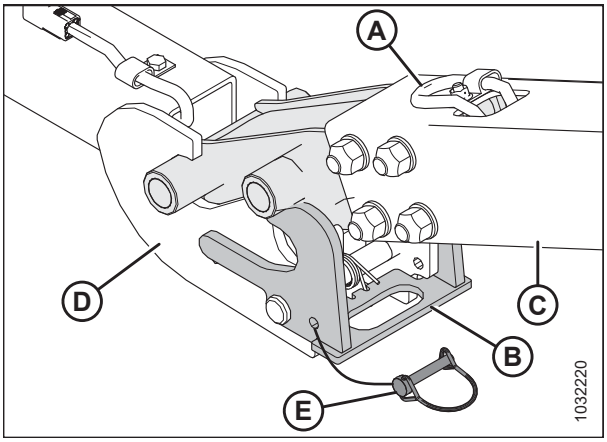


Figure 3.560: Tow-Bar to Extension

13. Connect tow-bar harness (A) to extension harness (B).
14. Reinstall lynch pin (C) to latch to secure tow-bar.

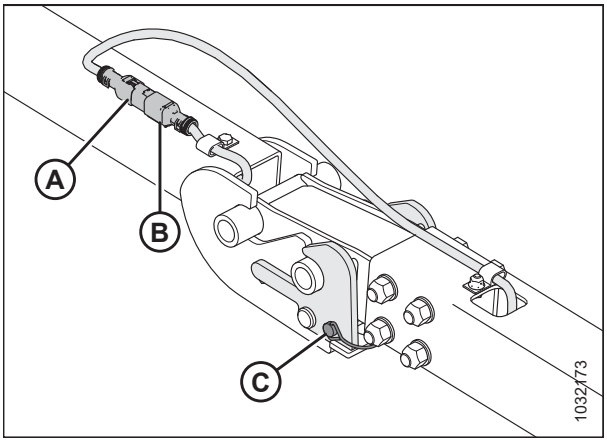


Figure 3.561: Tow-Bar / Extension Harness

15. Retrieve tow-bar wiring harness (A) and safety chain (B) from storage location.
16. Connect tow-bar wiring harness to vehicle, and secure safety chain from tow-bar to tow vehicle.
17. Turn on tow vehicle's 4 way flashers and check that all lights on header are working.

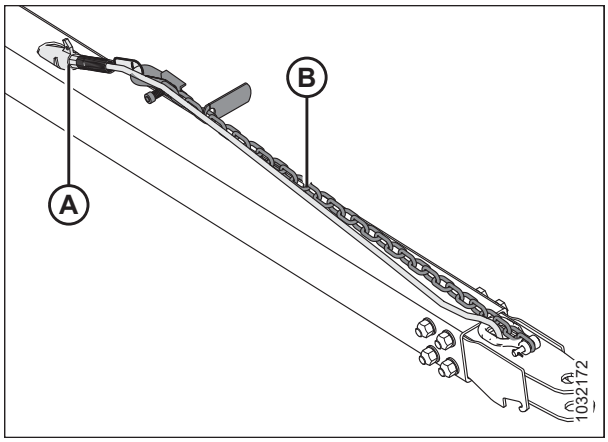


Figure 3.562: Tow-Bar Wiring Harness

Installing tow-bar only:

18. Remove lynch pin (A) from left transport pivot (B).
19. Push tow-bar (C) into lugs of left transport pivot until latch (D) engages.
20. Reinstall lynch pin (A) to transport pivot to secure tow-bar.
21. Retrieve the end of tow-bar harness (E).

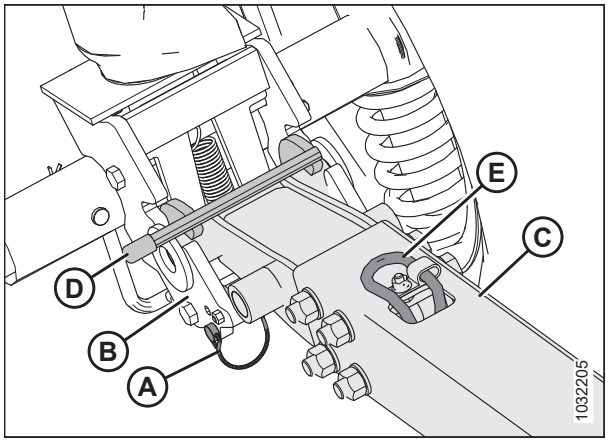


Figure 3.563: Tow-Bar and Left Transport Pivot

22. Connect extension wiring harness (A) to left transport pivot harness (B).

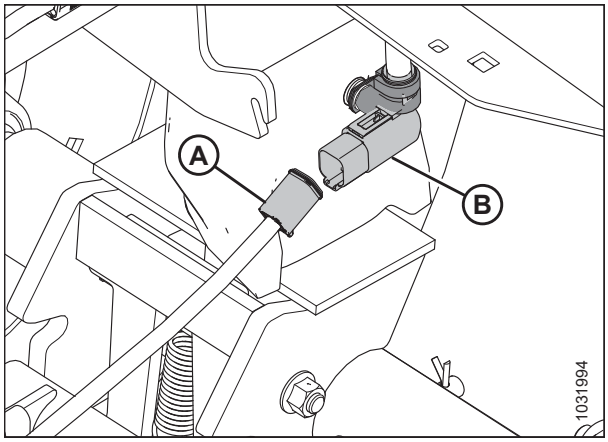


Figure 3.564: Tow-Bar Electrical Connection

23. Retrieve tow-bar wiring harness (A) and safety chain (B) from storage location.
24. Connect tow-bar wiring harness to vehicle, and secure safety chain from tow-bar to tow vehicle.
25. Turn on tow vehicle's 4 way flashers and check that all lights on header are working.

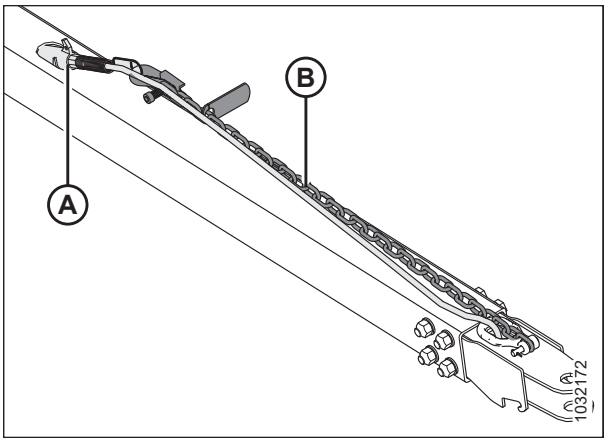


Figure 3.565: Tow-Bar Wiring Harness

3.13 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 599*.

Chapter 4: Header Attachment/Detachment

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

Combine	Refer to
AGCO (Challenger, Gleaner, and Massey Ferguson) Combines	*4.3 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines, page 321*
AGCO IDEAL™ Series	*4.4 AGCO IDEAL™ Series Combines, page 329*
Case IH 7010/8010, 120, 130, 230, 240, 250 Series	*4.5 Case IH Combines, page 335*
CLAAS 500, 700 (R Series), 8000, 7000, Tucano	*4.6 CLAAS Combines, page 343*
John Deere 60, 70, S, and T Series	*4.7 John Deere Combines, page 358*
New Holland CR, CX	*4.8 New Holland Combines, page 365*

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 FM200 Feed Auger Configurations

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

NOTE:

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

Narrow configuration is a standard configuration for the following combines:

- AGCO IDEAL™ Series
- 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

Narrow configuration uses 4 long bolt-on flightings (2 on the left and 2 on the right) and 18 feed auger fingers are recommended.

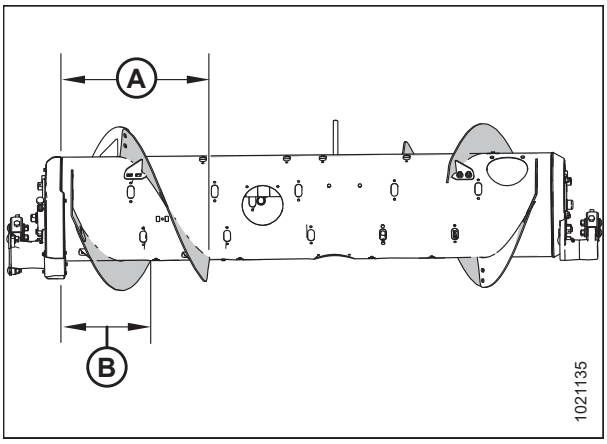


Figure 4.1: Narrow Configuration – Rear View

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

To convert to Narrow configuration from Medium or Wide configuration, refer to *4.1.3 Converting from Medium Configuration or Wide Configuration to Narrow Configuration, page 306*.

To convert to Narrow configuration from Ultra Narrow configuration, refer to *4.1.4 Converting from Ultra Narrow Configuration to Narrow Configuration, page 308*.

NOTE:

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

Medium configuration is a standard configuration for the following combines:

- Case IH 2300/2500 Series
- Case IH 5/6/7088, 7/8010, 7/8/9120, 5/6/7130, 7/8/9230, 5/6/7140, 7/8/9240, 5/6/7150, 7/8/9250
- Challenger 66/67/680B, 54/560C, 54/560E
- CLAAS 56/57/58/590R, 57/58/595R, 62/63/64/65/66/670, 73/74/75/76/77/780, 7000/8000
- John Deere 95/96/97/9860, 95/96/97/9870, S65/66/67/68/690, T670, S76/77/78/790
- Massey Ferguson 96/97/9895, 9520/40/60, 9545/65, 9380
- New Holland CR 970/980, 9070/9080, 8090/9090, X.90, X.80, 10.80/10.90
- New Holland CX 8X0, 80X0, 8.X0, 8080/8090
- Rostselmash Torum 760/780
- Versatile RT490

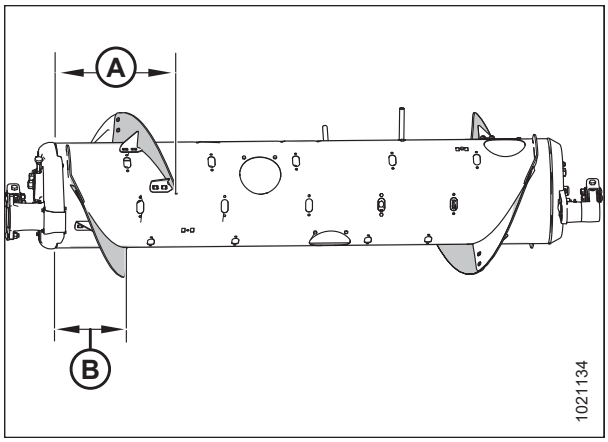


Figure 4.2: Medium Configuration – Rear View

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

Medium configuration is an optional configuration for AGCO IDEAL™ Series.

Medium configuration uses 4 short bolt-on flightings (2 on the left and 2 on the right) and 22 feed auger fingers are recommended.

To convert to Medium configuration from Narrow or Ultra Narrow configuration, refer to *4.1.1 Converting from Ultra Narrow Configuration or Narrow Configuration to Medium Configuration, page 302*.

To convert to Medium configuration from Wide configuration, refer to *4.1.2 Converting from Wide Configuration to Medium Configuration, page 304*.

NOTE:

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

Wide configuration is an optional configuration for the following combines:

- Challenger 670B/680B, 540C/560C, 540E/560E
- CLAAS 590R/595R, 660/670, 760/770/780, 8000
- John Deere T670
- Massey Ferguson 9895, 9540, 9560, 9545, 9565, 9380
- New Holland CX 8X0, 80X0, 8.X0

Wide configuration uses 2 short bolt-on flightings (1 on the left and 1 on the right) and 30 feed auger fingers are recommended.

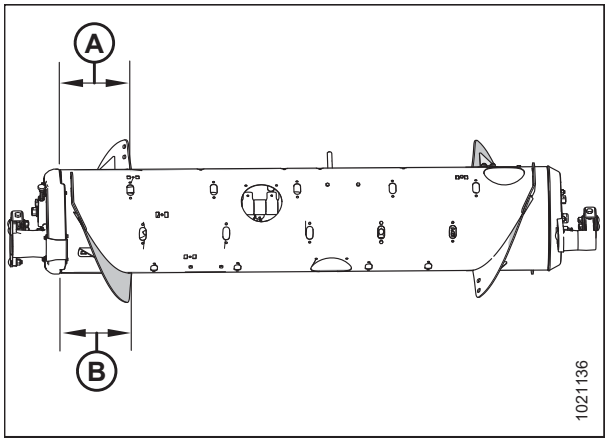


Figure 4.3: Wide Configuration – Rear View

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

NOTE:

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

To convert to Ultra Wide configuration from Wide configuration, refer to *4.1.7 Converting from Wide Configuration to Ultra Wide Configuration, page 312*.

NOTE:

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

Ultra Narrow configuration is an optional configuration that may improve feeding performance on combines with narrow feeder houses. It may also be helpful when harvesting rice.

Ultra Narrow configuration uses 8 long bolt-on flightings (4 on the left and 4 on the right) and 18 auger fingers are suggested.

NOTE:

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

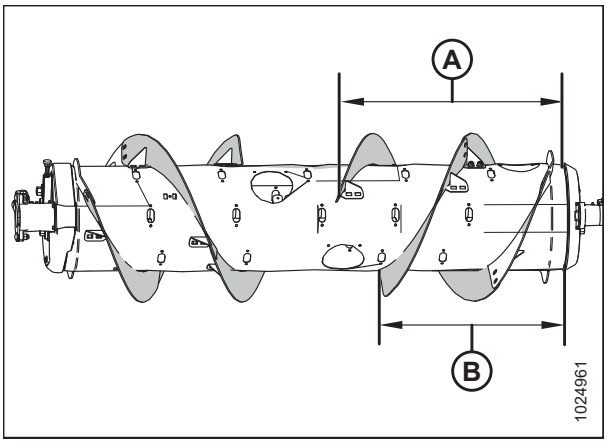


Figure 4.4: Ultra Narrow Configuration – Rear View

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

To convert to Ultra Narrow configuration from Medium or Wide configuration, refer to *4.1.8 Converting from Medium Configuration or Wide Configuration to Ultra Narrow Configuration, page 313*.

To convert to Ultra Narrow configuration from Narrow configuration, refer to *4.1.9 Converting from Narrow Configuration to Ultra Narrow Configuration, page 317*.

Ultra Wide configuration is an optional configuration for the following combines:

- CLAAS 590R/595R, 660/670, 760/770/780/7000/8000

The Ultra Wide configuration uses no bolt on flighting; only the factory welded flighting (A) is responsible for conveying the crop.

A total of 30 auger fingers are recommended for this configuration.

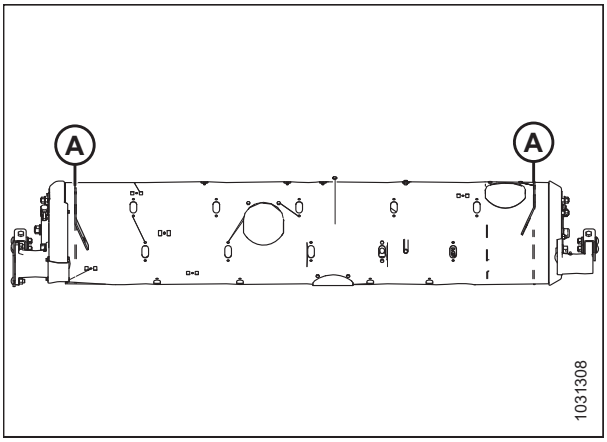


Figure 4.5: Ultra Wide Configuration – Rear View

4.1.1 Converting from Ultra Narrow Configuration or Narrow Configuration to Medium Configuration

Two flighting kits (MD #287031) are required to convert to this configuration.

Ultra Narrow, Narrow, and Medium auger configurations are shown at right. When converting from Ultra Narrow configuration or Narrow configuration to Medium configuration, you will need to replace long flightings (A) with short flightings (B).

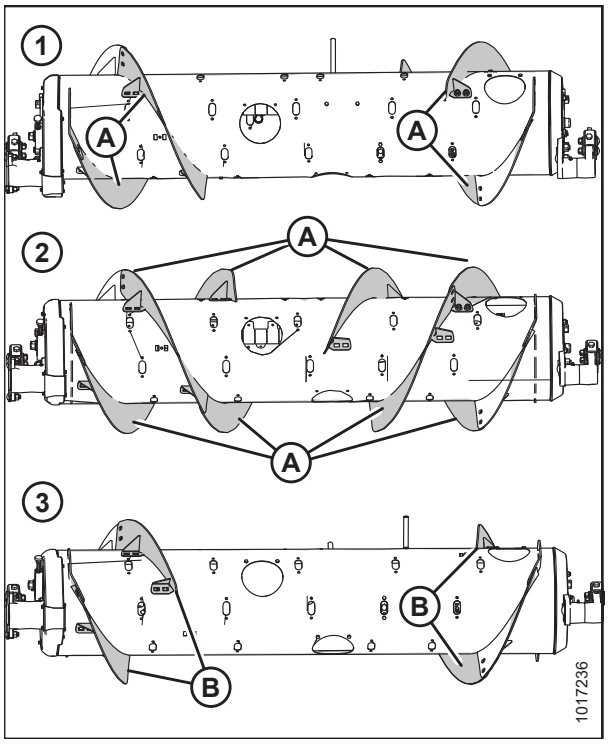


Figure 4.6: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Medium Configuration

NOTE:

Some parts have been removed from the illustrations for clarity.

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove bolts (A) and access cover (B) from each side of the auger. Retain for reassembly.

   NOTE:

   If necessary, remove multiple access covers.
3. Remove hardware (C) and bolt-on flighting (D). Repeat for all the remaining hardware and bolt-on flightings on the auger. Retain hardware to attach new flightings.

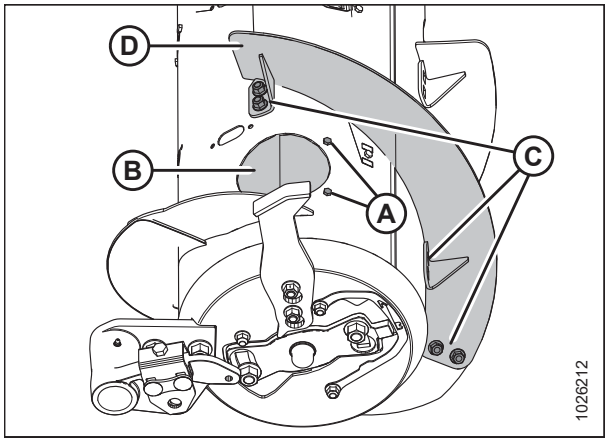


Figure 4.7: Narrow Configuration – Right Side

4. On both sides of the auger, remove M6 bolt (A), tee nut (not illustrated), and flighting slot plug (B) from inside the feed auger. Retain parts for installation.

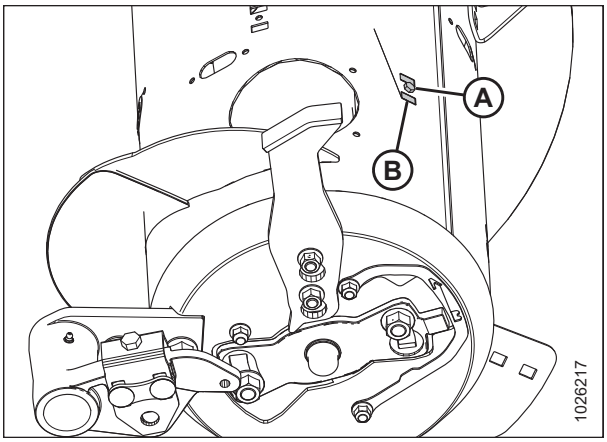


Figure 4.8: Narrow Configuration – Right Side

5. Install two bolt-on flightings (A) on the right side of the auger as shown, and secure each flighting with six retained carriage head bolts and nuts at locations (B).

   IMPORTANT:

   Flighting bolt heads must be installed on inside of auger to prevent damage to internal components.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

6. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).

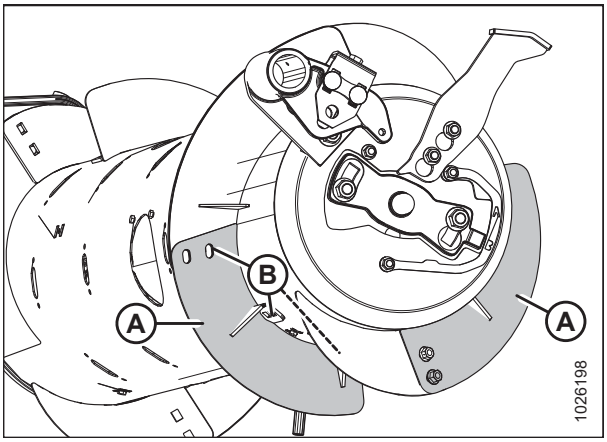


Figure 4.9: Medium Configuration – Right Side

7. Install two bolt-on flightings (A) on the left side of the auger as shown, and secure each flighting with six retained carriage head bolts and nuts at locations (B).

   IMPORTANT:

   Flighting bolt heads must be installed on inside of auger to prevent damage to internal components.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

8. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).

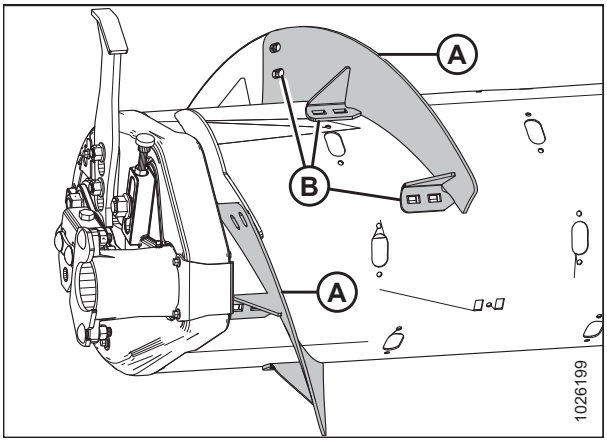


Figure 4.10: Medium Configuration – Left Side

9. Removing the long flightings left empty flighting slots in the auger that were not needed to install the new shorter flightings. Use access hole (A) to position a flighting slot plug (B) from inside the feed auger in each slot and secure with a 20 mm long M6 hex head bolt (C) and tee nut. Use plugs and hardware retained from a previous step.
10. Install additional auger fingers. A total of 22 auger fingers is recommended for this configuration. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

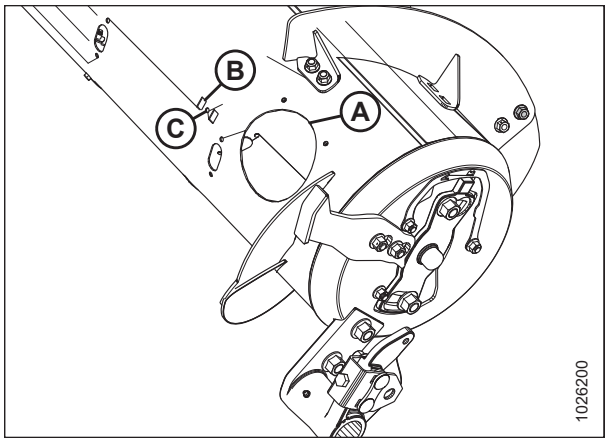


Figure 4.11: Medium Configuration Flighting Plug – Right Side

4.1.2 Converting from Wide Configuration to Medium Configuration

One flighting kit (MD #287031) is required to convert the feed auger from Wide configuration to Medium configuration.

Wide and Medium auger configurations are shown at right. When converting from Wide configuration to Medium configuration, you will need to install new flightings (A).

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

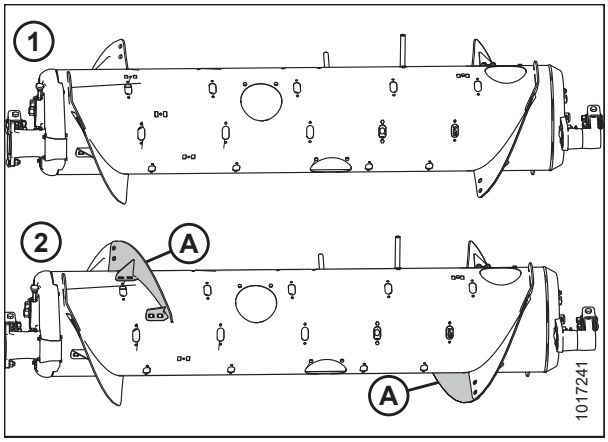


Figure 4.12: Auger Configurations – Rear View

1 - Wide Configuration **2 - Medium Configuration**

1. Improve access and ease installation by removing float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.

2. Remove bolts (A) and remove access cover (B) from the right side of the auger. Retain for reassembly.

   NOTE:

   If necessary, remove multiple access covers.

3. Remove and discard two flighting slot plugs (C) from the right side of the auger.

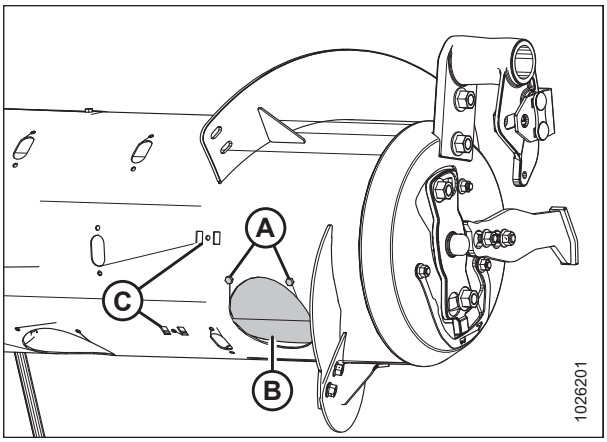


Figure 4.13: Wide Configuration – Right Side

4. Install bolt-on flighting (A) on the right side of the auger as shown, and secure with six carriage head bolts and six nuts at locations (B).

   IMPORTANT:

   Bolt heads must be installed on inside of auger to prevent damage to internal components.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

5. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).

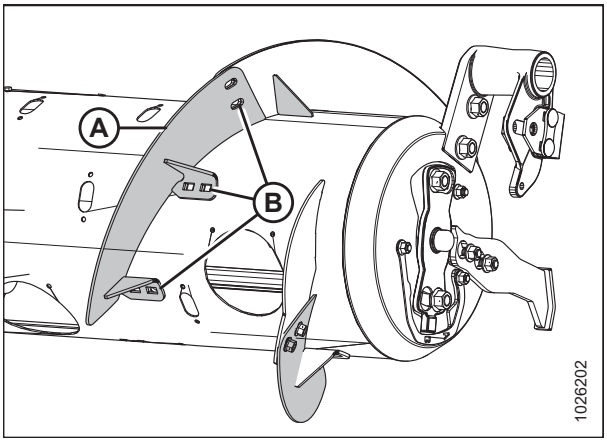


Figure 4.14: Medium Configuration – Right Side

6. Repeat Step *2, page 305* and Step *3, page 305* at the left side of auger.

7. Install bolt-on flighting (A) on the left side of the auger as shown, and secure with six carriage head bolts and six nuts at locations (B).

   IMPORTANT:

   Bolt heads must be installed on inside of auger to prevent damage to internal components.

   NOTE:

   Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

8. Torque all nuts and bolts (B) to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).

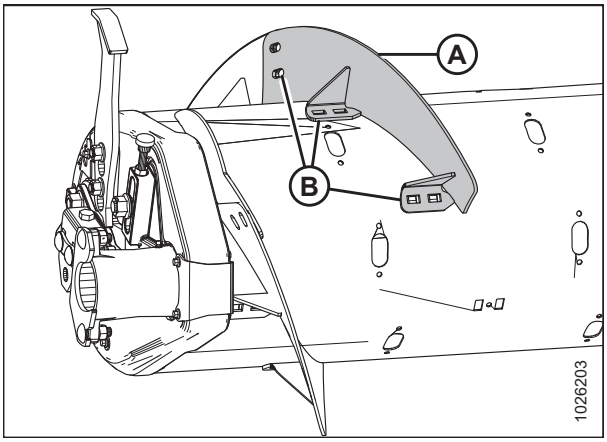


Figure 4.15: Medium Configuration – Left Side

9. Remove extra auger fingers. A total of 22 fingers are recommended for this configuration. For instructions, refer to *Removing Feed Auger Fingers, page 432*.

4.1.3 Converting from Medium Configuration or Wide Configuration to Narrow Configuration

Two of either MD #287032 or B6400[43] 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.

Medium, Wide, and Narrow auger configurations are shown at right. When converting from Medium or Wide configuration to Narrow configuration, you will need to replace existing flightings (A) with flightings (B).

NOTE:

Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

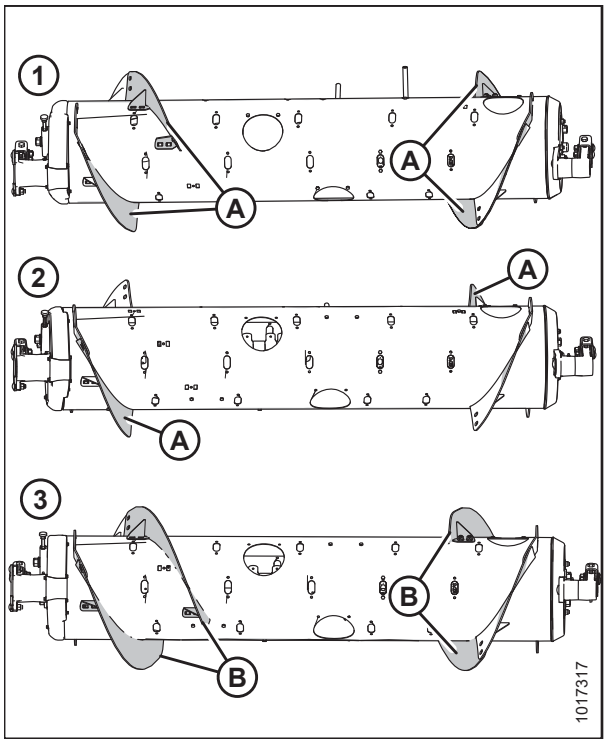


Figure 4.16: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Narrow Configuration

1. To improve access and ease installation, remove float module from combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove bolts (A) and access cover (B) from the right side of the auger. Retain for reassembly.
3. Remove hardware (C) and bolt-on flighting (D) from the auger.
4. Remove and discard flighting slot plug (E) located close to the end of flighting (D).
5. **Converting from Medium configuration:** Repeat above steps for the other flighting on the right side.

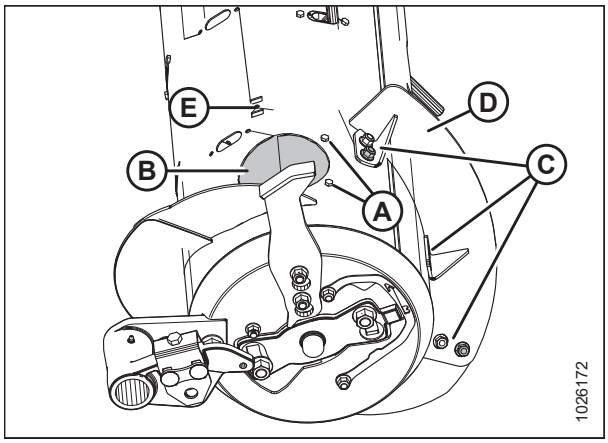


Figure 4.17: Wide Configuration – Right Side

43. MD #287032 is available only through MacDon Parts. B6400 is available only through Whole Goods. Both kits contain wear-resistant flightings.

6. **Converting from Wide configuration:** Remove bolts (A), access cover (B), and two flighting slot plugs (C) from the right side of the auger.
7. Repeat Steps *2, page 306* to *6, page 307* at the left side of the feed auger.

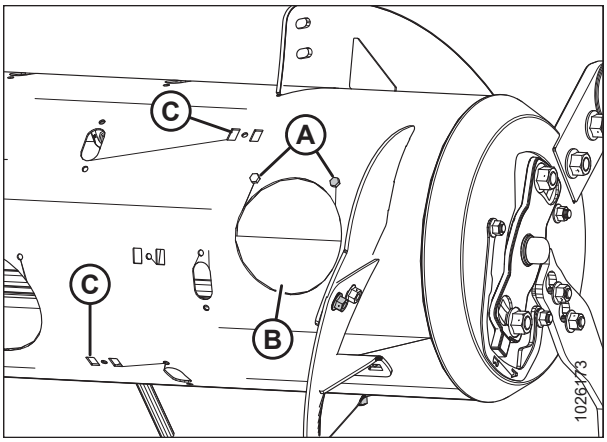


Figure 4.18: Wide Configuration – Right Side

8. Install two bolt-on flightings (A) on the right side as shown, and secure each flighting with six carriage head bolts (MD #136178) and nuts (MD #135799) at locations (B).

   IMPORTANT:

   Bolt heads must be installed on inside of auger to prevent damage to internal components.
9. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).
10. Install flighting slot plug (MD #213084) at location (C) from inside the auger and secure with an M6 hex head bolt (MD #252703) and tee nut (MD #197263). Repeat for the other flighting mounting locations.

    NOTE:

    If the magnet shield has been installed, one slot on the right side of the auger is blocked by the shield and hardware; a flighting slot plug cannot be installed in this location.

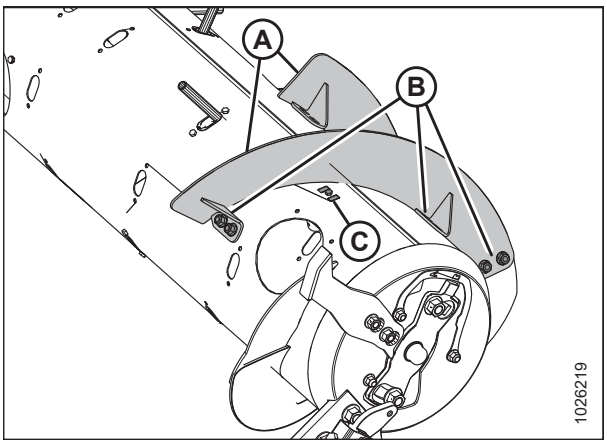


Figure 4.19: Narrow Configuration – Right Side

11. Install two bolt-on flightings (A) on the left side as shown, and secure each flighting with six carriage head bolts (MD #136178) and nuts (MD #135799) at locations (B).

    IMPORTANT:

    Bolt heads must be installed on inside of auger to prevent damage to internal components.
12. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque them to 58–64 Nm (43–47 lbf·ft).
13. Install flighting slot plug (C) (MD #213084) from inside the auger and secure with an M6 hex head bolt (MD #252703) and tee nut (MD #197263). Repeat for the other flighting mounting location used to mount the previous flighting in Step *3, page 306*.

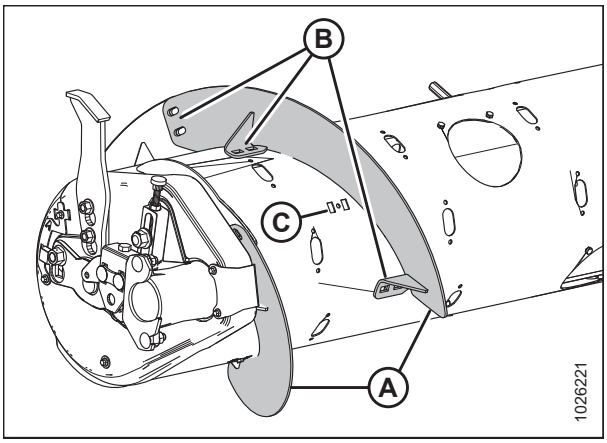


Figure 4.20: Narrow Configuration – Left Side

14. Remove extra auger fingers. A total of 18 fingers is recommended for this configuration. For instructions, refer to *Removing Feed Auger Fingers, page 432*.

4.1.4 Converting from Ultra Narrow Configuration to Narrow Configuration

The Ultra Narrow and Narrow auger configurations are shown at right. Existing flightings (A) are removed from the auger when converting to the Narrow configuration.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

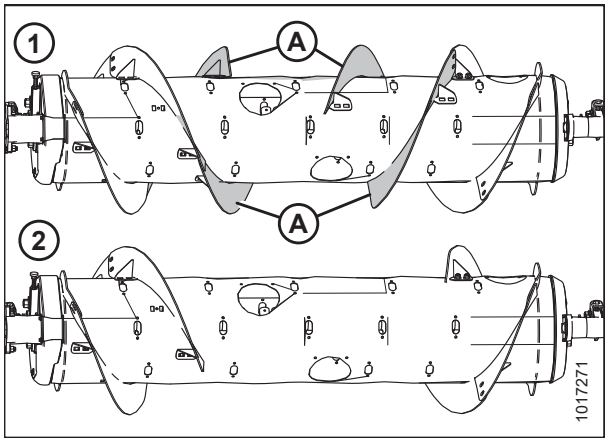


Figure 4.21: Auger Configurations – Rear View

1 - Ultra Narrow Configuration **2 - Narrow Configuration**

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove bolts (A) and access cover (B). Retain for reassembly.
3. Remove hardware from locations (C), and remove bolt-on flighting (D) from feed auger.
4. Repeat procedure for the remaining three inboard flightings.
5. Install additional auger fingers. A total of 18 fingers is recommended for this configuration. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

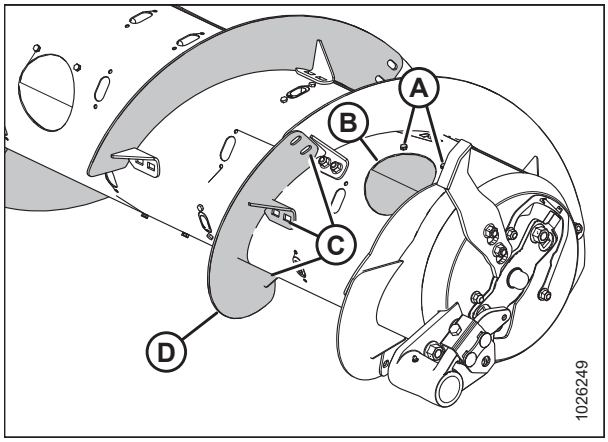


Figure 4.22: Ultra Narrow Configuration – Right Side

4.1.5 Converting from Medium Configuration to Wide Configuration or Ultra Wide Configuration

When converting from Medium configuration to Wide configuration, you will need to remove existing flightings (A) from the auger and add auger fingers. When converting from Medium configuration to Ultra Wide configuration, you will need to remove all existing bolt-on flightings (A) from the auger and add augur fingers.

Four flighting plugs (MD #213084), M6 hex head bolts (MD #252703), and M6 tee nuts (MD #197263) are needed to cover exposed flighting mounting holes after the flightings are removed. These parts can be ordered from a MacDon Dealer.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

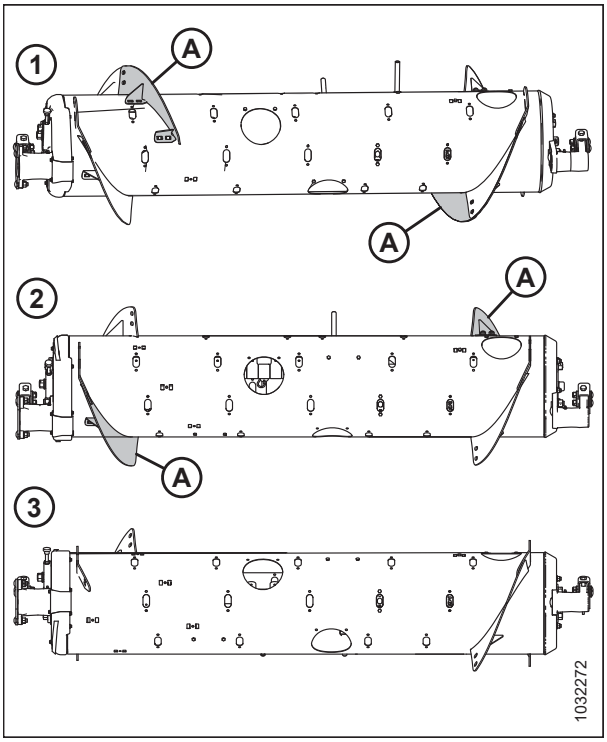


Figure 4.23: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration** **3 - Ultra Wide Configuration**

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.

   NOTE:

   Some parts have been removed from the illustrations for clarity.

To convert from Medium configuration to Wide configuration, follow these steps:

2. Remove bolts (A) and access cover (B). Retain for reassembly.
3. Remove hardware from locations (C), and remove bolt-on flighting (D) from the feed auger.

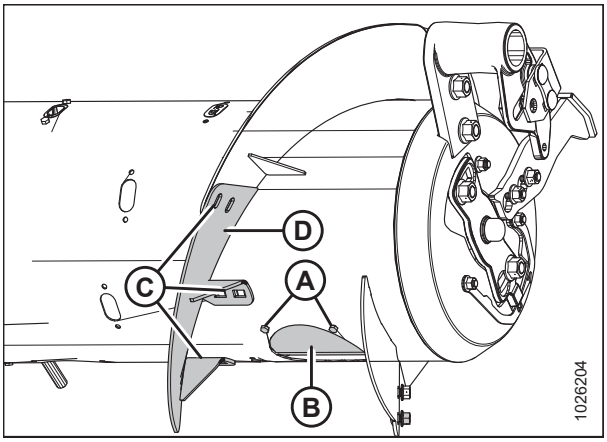


Figure 4.24: Right Side of Medium Configuration

4. Install flighting slot plug (A) (MD #213084) in the flighting slot from inside the auger. Secure with M6 hex head bolts (B) (MD #252703) and tee nuts (MD #197263).
5. Repeat above steps at the left side of the auger.
6. Install additional fingers. A total of 30 fingers are recommended for the Wide configuration. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

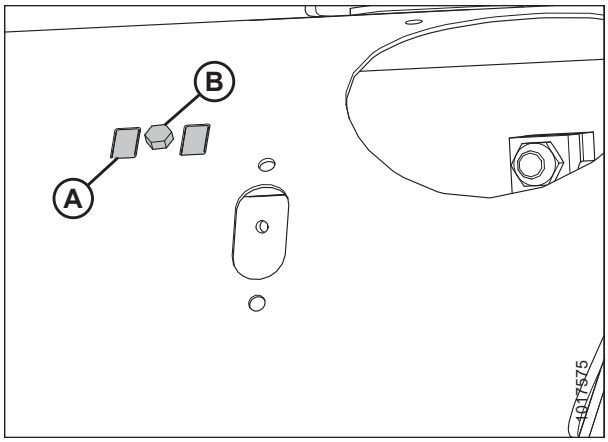


Figure 4.25: Right Side of Wide Configuration

To convert from Medium configuration to Ultra Wide configuration, follow these steps:

7. Remove bolts (A) and access cover (B). Retain for reassembly.
8. Remove hardware from locations (C), and remove all bolt-on flightings (D) from the feed auger.

   NOTE:

   Hardware on opposite side of auger indicated, but not shown in illustration.

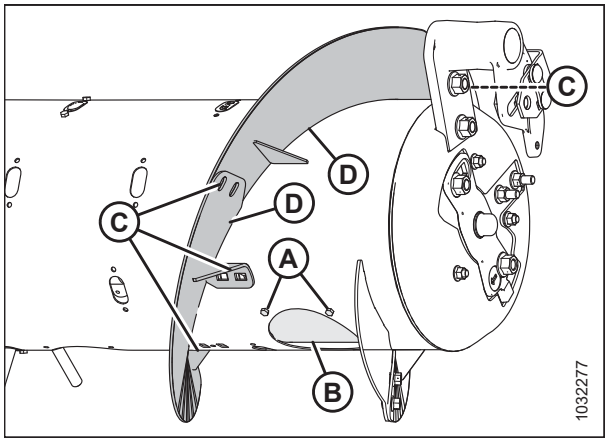


Figure 4.26: Right Side of Medium Configuration

9. Install flighting slot plug (A) (MD #213084) in the flighting slot from inside the auger. Secure with M6 hex head bolts (B) (MD #252703) and tee nuts (MD #197263).
10. Repeat above steps at the left side of the auger.
11. Install additional fingers. A total of 30 fingers are recommended for the Ultra Wide configuration. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

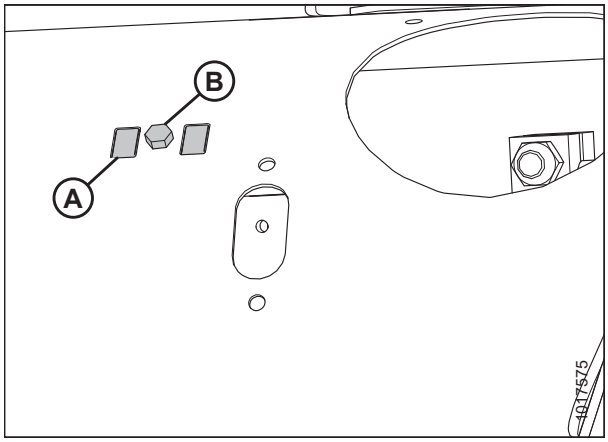


Figure 4.27: Right Side of Ultra Wide Configuration

4.1.6 Converting from Ultra Narrow or Narrow Configuration to Wide Configuration

One flighting kit (MD #287031) is required to convert to this configuration. Two flighting plugs (MD #213084), two M6 hex head bolts (MD #252703), and two M6 tee nuts (MD #197263) are recommended to close the flighting mounting locations. These parts can be ordered from a MacDon Dealer.

The Narrow, Ultra Narrow, and Wide auger configurations are shown at right. When converting from Narrow or Ultra Narrow configuration to Wide configuration, you will need to replace existing flightings (A).

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

NOTE:

Some parts have been removed from the illustrations for clarity.

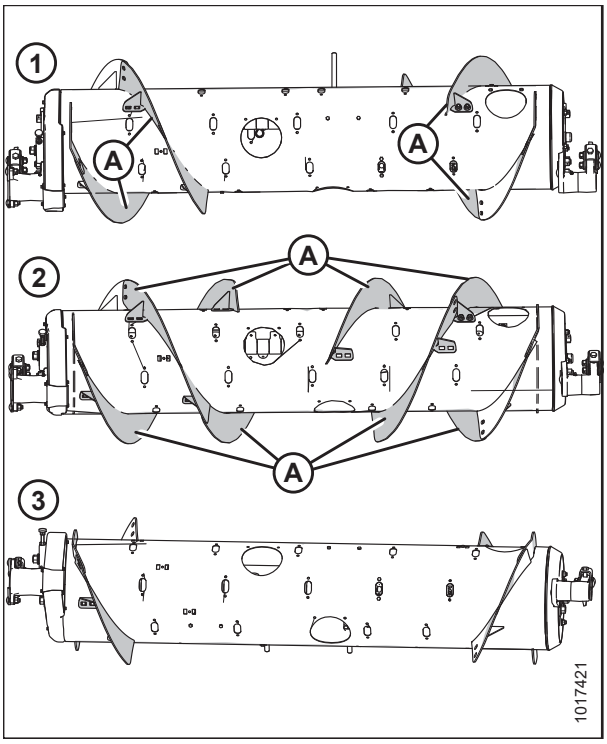


Figure 4.28: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**
3 - Wide Configuration

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove bolts (A) and access cover (B) from the right side of the auger. Retain for reassembly.
3. Remove hardware (C) and bolt-on flighting (D) from the right side of the auger. Discard flighting, but retain hardware to attach the new flighting.
4. Repeat Step *2, page 311* and Step *3, page 311* for the remaining bolt-on flighting(s).
5. Remove flighting slot plug, bolt, and tee nut (E). Retain for reinstallation.

   NOTE:

   Only two flighting slot plugs (E) should be removed—one from each outboard side of the auger.

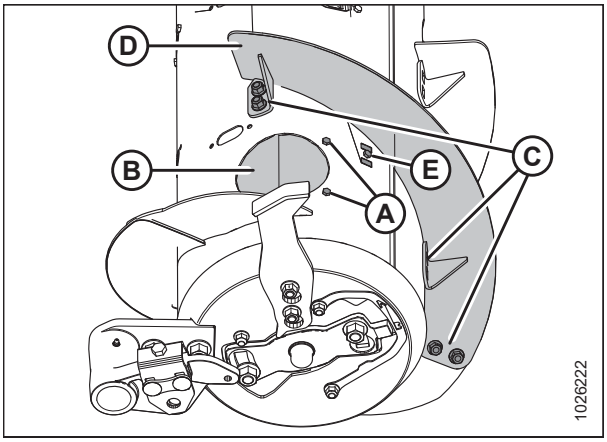


Figure 4.29: Narrow Configuration – Right Side

6. Install new bolt-on flighting (A) using six carriage head bolts and nuts (B) on the right 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) previously removed in Step *5, page 311*.

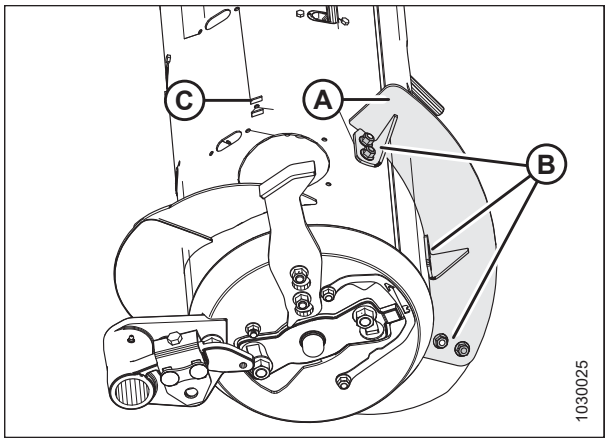


Figure 4.30: Wide Configuration – Right Side

8. Install new bolt-on flighting (A) on the left side of the auger using six carriage head bolts and nuts (B).

   IMPORTANT:

   Bolt heads must be installed on inside of auger to prevent damage to internal components.

9. Reinstall flighting slot plug (C) previously removed in Step *5, page 311*.
10. Install the remaining flighting slot plugs (MD #213084) using the M6 hex head bolts (MD #252703) and tee nuts (MD #197263) in locations previously used to mount flighting in Step *3, page 311* and Step *4, page 311*.
11. Install additional auger fingers. There should be a total of 30 fingers in this configuration. Auger fingers and all required parts are included in kit. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

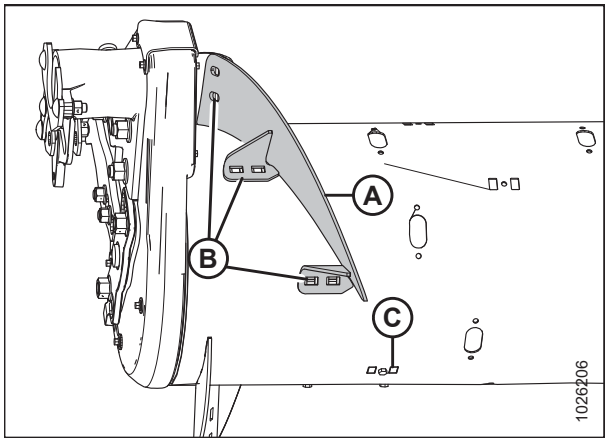


Figure 4.31: Wide Configuration – Left Side

4.1.7 Converting from Wide Configuration to Ultra Wide Configuration

In some conditions, feeding may be further improved by removing all bolt-on flightings (A). Four flighting plugs (MD #213084), M6 bolts (MD #252703), and M6 tee nuts (MD #197263) are recommended to cover the flighting mounting holes. These parts can be ordered from a MacDon Dealer.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

NOTE:

Some parts have been removed from the illustrations for clarity.

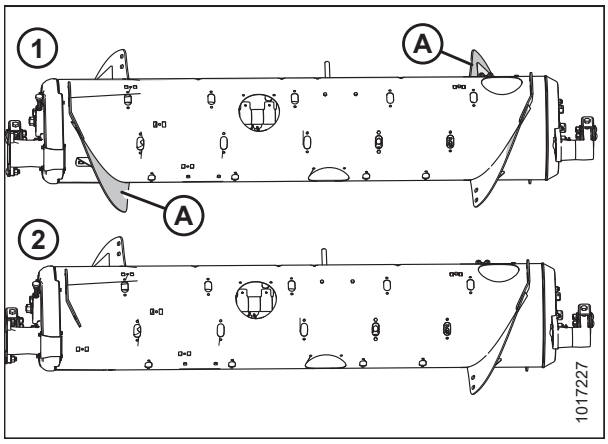


Figure 4.32: Auger Configurations – Rear View

1 - Wide Configuration **2 - Ultra Wide Configuration**

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.

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 #252703) and tee nuts (MD #197263).
5. Repeat all steps at the left side of the auger.
6. Install additional auger fingers. A total of 30 fingers are recommended for this configuration. For instructions, refer to *Installing Feed Auger Fingers, page 434*.

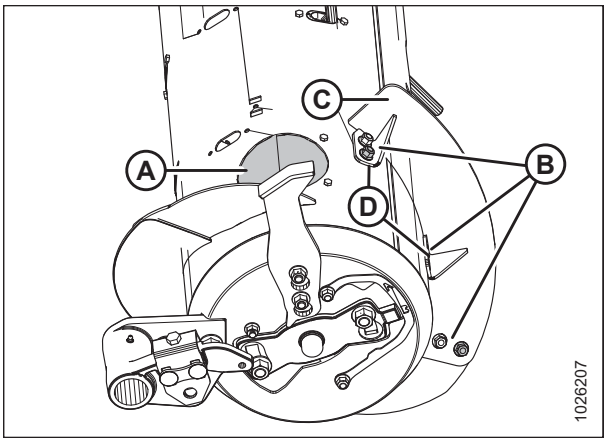


Figure 4.33: Wide Configuration – Right Side

4.1.8 Converting from Medium Configuration or Wide Configuration to Ultra Narrow Configuration

Four kits of either MD #287032 or B6400 and some hole-drilling are required to convert to Ultra Narrow 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.

Medium, Wide, and Ultra Narrow auger configurations are shown at right. When converting to Ultra Narrow configuration, existing flightings (A) are removed and new flightings (B) are installed.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

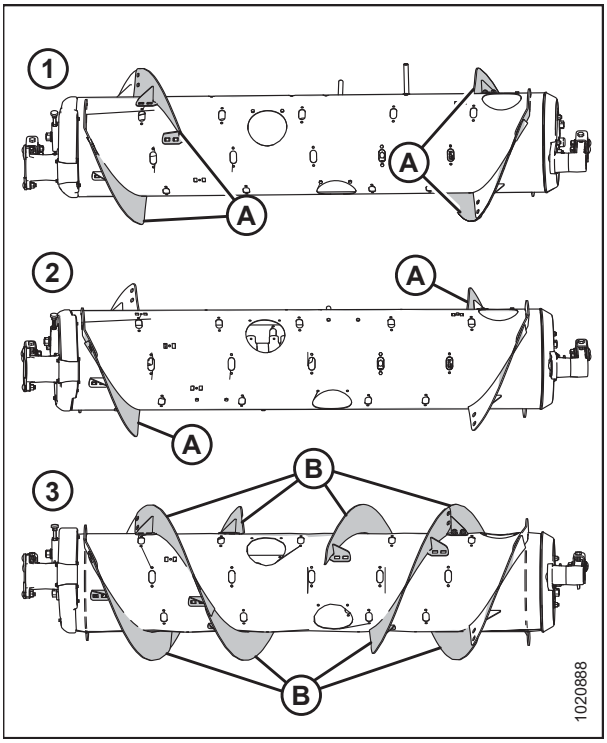


Figure 4.34: Auger Configurations – Rear View

1 - Medium Configuration **2 - Wide Configuration**
3 - Ultra Narrow Configuration

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.

2. Remove bolts (A) and access cover (B) from the right side of the auger. Retain for reassembly.
3. Remove hardware (C) and bolt-on flighting (D) from the auger.
4. Remove flighting slot plug (E) located close to the end of flighting (D).
5. **Converting from Medium configuration:** Repeat the previous steps for the other bolt-on flighting on the same side.

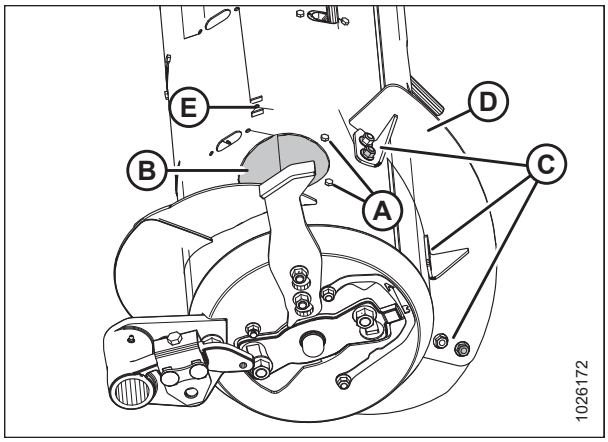


Figure 4.35: Wide Configuration – Right Side

6. **Converting from Wide configuration:** Remove bolts (A), access cover (B), and two flighting slot plugs (C) from the right side of the auger.
7. Repeat Steps *2, page 314* to *6, page 314* at the left side of the auger.

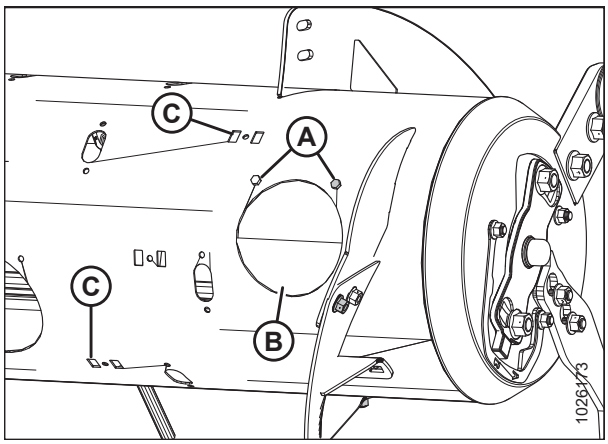


Figure 4.36: Wide Configuration – Right Side

8. Position two bolt-on flightings (A) on the right side, as shown. Temporarily secure flightings with two carriage head bolts and nuts at each location (B).

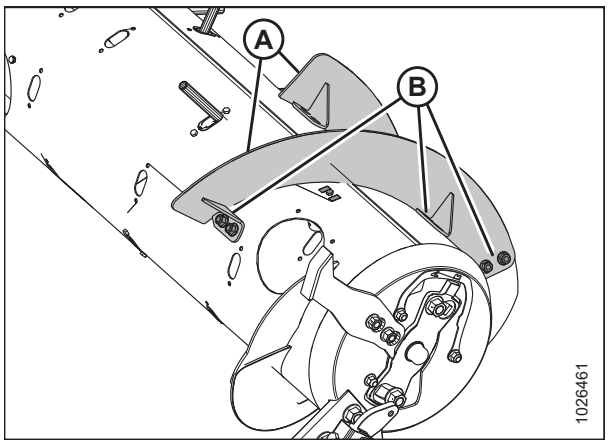


Figure 4.37: Right Side of Auger

9. Position another bolt-on flighting (A) outboard of the temporarily installed bolt-on 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 11 mm (7/16 in.) holes at the marked locations.
11. Install bolt-on flighting (B) with newly drilled holes using six carriage head bolts and nuts.

    IMPORTANT:

    Carriage bolt heads must be installed on inside of auger to prevent damage to internal components.
12. Repeat Step *9, page 315* to Step *11, page 315* to the remaining bolt-on flighting on the right side of the auger.
13. Position two bolt-on flightings (A) on the left side of the auger as shown. Temporarily secure flightings with two carriage head bolts and nuts at each location (B).

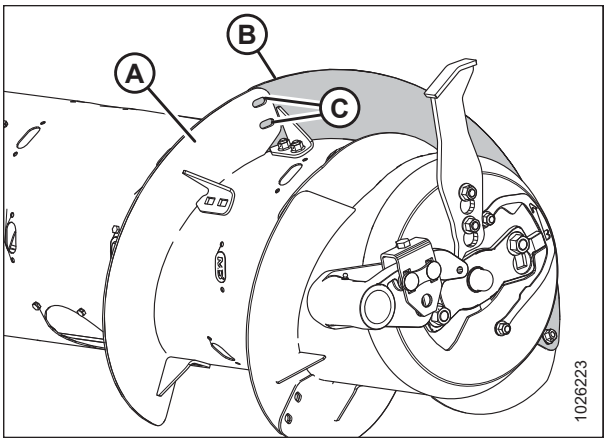


Figure 4.38: Right Side of Auger

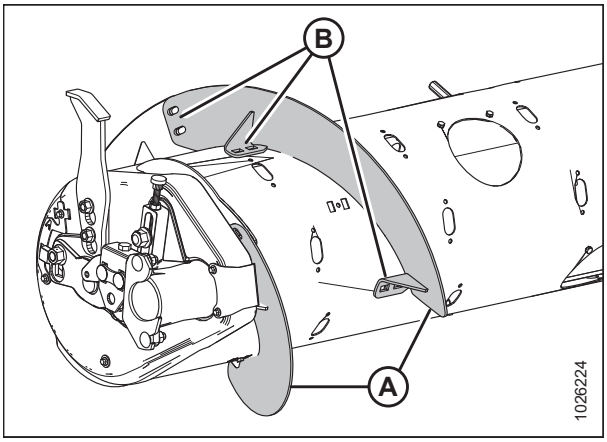


Figure 4.39: Left Side of Auger

14. Position another bolt-on flighting (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 11 mm (7/16 in.) holes at the marked locations.
16. Install bolt-on flighting (B) with newly drilled holes using six carriage head bolts and nuts.

    IMPORTANT:

    Carriage bolt heads must be installed on inside of auger to prevent damage to internal components.
17. Repeat Steps *14, page 315* to *16, page 315* with the remaining bolt-on flighting on the left side of the auger.

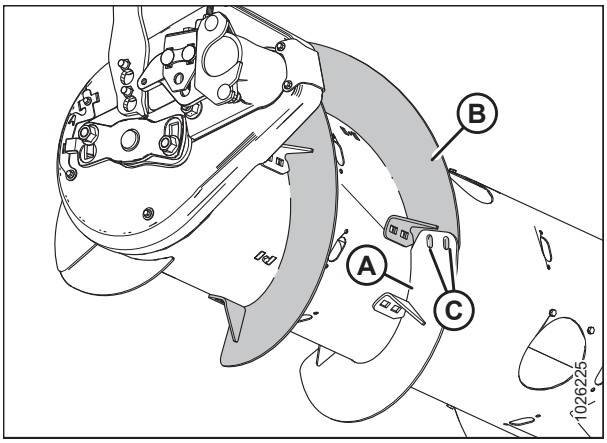


Figure 4.40: Left Side of Auger

18. Place bolt-on flighting (A) outboard of other flighting (B) on the left side of the auger, as shown.
19. Temporarily secure bolt-on flighting (A) with two button head bolts and nuts at location (C).

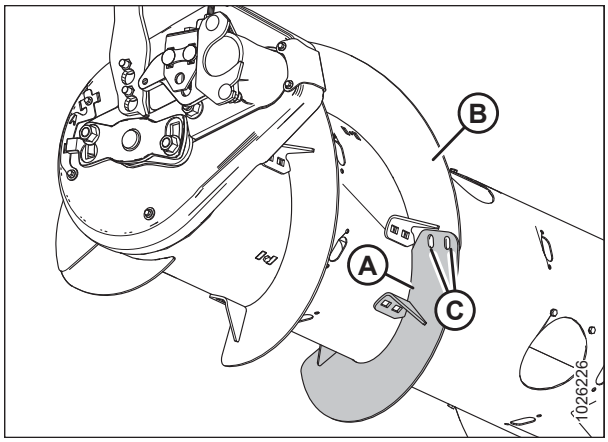


Figure 4.41: Left Side of Auger

20. Stretch flighting (A) to fit auger tube as shown. Use slotted holes on flighting to get the best fit around the auger tube.

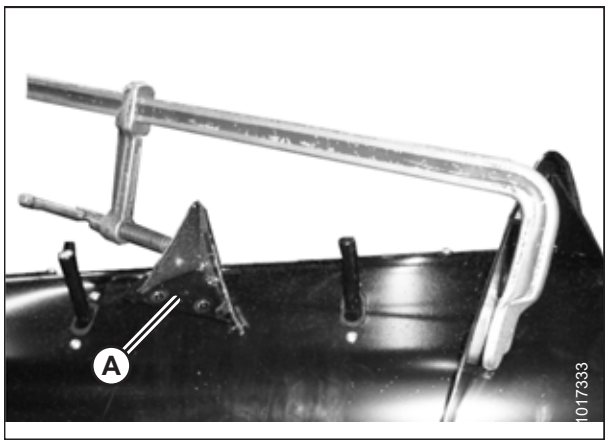


Figure 4.42: Flighting Stretched Axially

21. With flighting in the desired position, mark hole locations (A) on auger tube.
22. Remove flighting (B) from auger, and drill 11 mm (7/16 in.) holes at Smarked locations (A) on auger tube.
23. Remove nearest access cover(s). Retain for reinstallation.
24. Install bolt-on flighting (B) using two button head bolts and nuts at location (C), and four flange head bolts and nuts at locations (A).

    IMPORTANT:

    Ensure bolt heads at location (C) are on the inboard (crop side) and nuts are on the outboard side of the flighting.
25. Repeat Steps *18, page 316* to *24, page 316* for the remaining flighting on the left side of the auger.

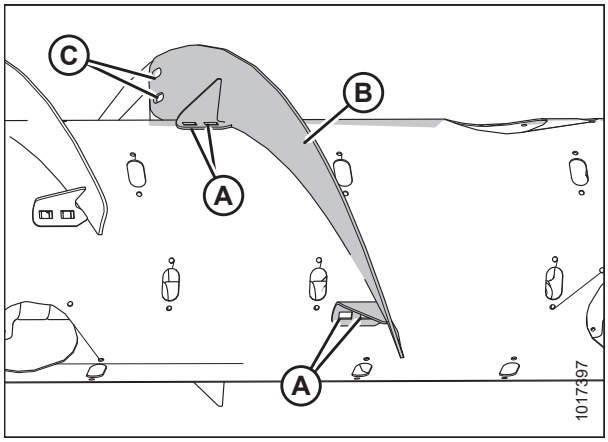


Figure 4.43: Left Side of Auger

26. Place bolt-on flighting (A) outboard of other flighting (B) on the right side of the auger as shown.
27. Temporarily secure bolt-on flighting (A) with two button head bolts and nuts at location (C).
28. Repeat Step *20, page 316* to Step *24, page 316* for both pieces of flighting on the right side of the auger.
29. Install flighting slot plugs (MD #213084) in the flighting mounting locations and secure with M6 bolts and tee nuts.
30. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then retorque them to 58–64 Nm (43–47 lbf·ft).

    NOTE:

    Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

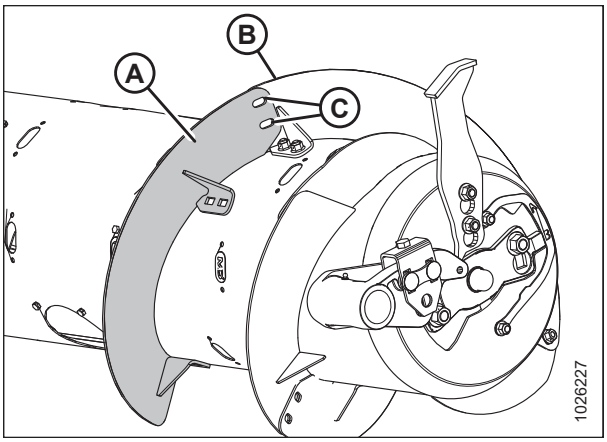


Figure 4.44: Right Side of Auger

31. Add or remove auger fingers to optimize feeding for your combine and crop conditions. For instructions, refer to *Installing Feed Auger Fingers, page 434* or *Removing Feed Auger Fingers, page 432*.
32. If not adding or removing auger fingers, reinstall all access covers and secure with bolts. Coat bolts with medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 9 Nm (80 lbf·in).

4.1.9 Converting from Narrow Configuration to Ultra Narrow Configuration

Two kits of either MD #287032 or B6400[44] 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.

NOTE:

All illustrations show the feed auger separated from the float module for clarity. The procedure can be performed with the feed auger installed in the float module.

NOTE:

Some parts have been removed from the illustrations for clarity.

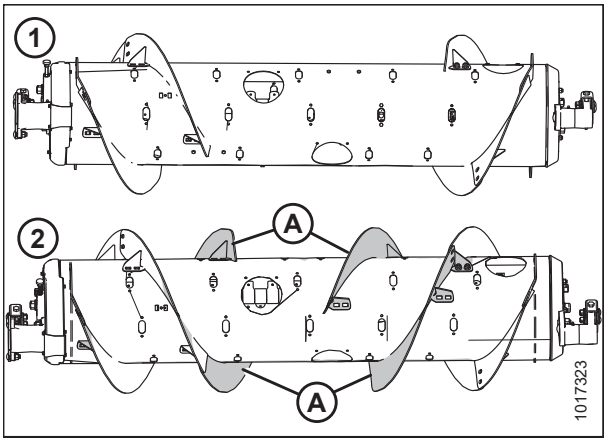


Figure 4.45: Auger Configurations – Rear View

1 - Narrow Configuration **2 - Ultra Narrow Configuration**

1. Improve access and ease installation by removing the float module from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.

44. MD #287032 is available only through MacDon Parts. B6400 is available only through Whole Goods.

2. Place new bolt-on flighting (A) outboard of existing flighting (B) on the left side of the auger, as shown.
3. Mark hole locations (C) of 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 11 mm (7/16 in.) 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.

8. Place new bolt-on flighting (A) outboard of existing flighting (B) on the left side of the auger, as shown.
9. Secure with two button head bolts (MD #135723) and nuts (MD #135799) at locations (C).

IMPORTANT:

Ensure bolt heads are on the inboard (crop side) and nuts are on the outboard side of the flighting.

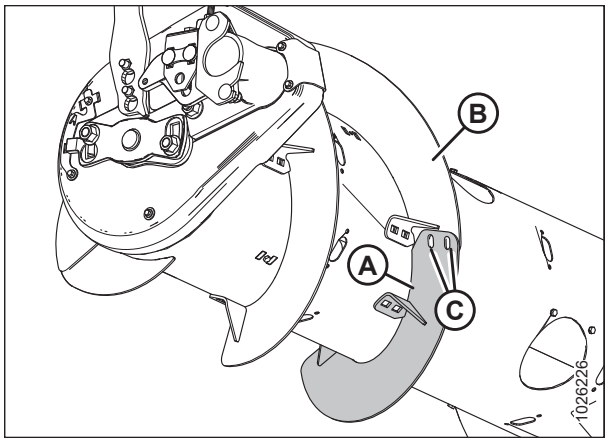


Figure 4.46: Left Side of Auger

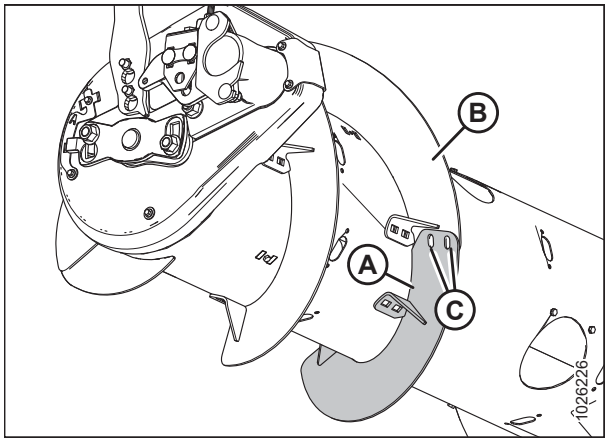


Figure 4.47: Left Side of Auger

10. Stretch flighting (A) to fit auger tube as shown. Use slotted holes on flighting to get the best fit around the auger tube.

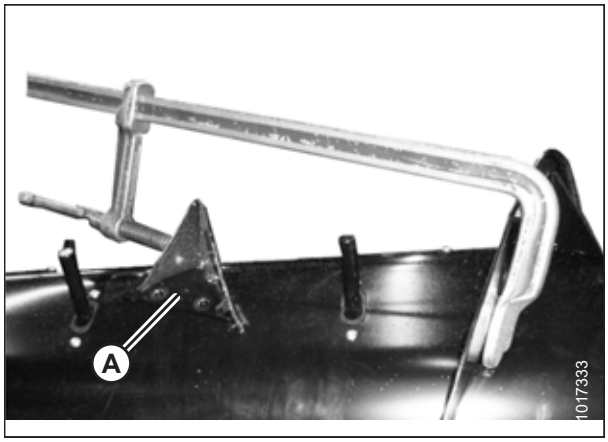


Figure 4.48: Flighting Stretched Axially

11. With flighting in desired position, mark hole locations (A) and drill 11 mm (7/16 in.) holes in auger tube.
12. Remove nearest access cover(s). Retain for reinstallation.
13. Secure bolt-on flighting on newly drilled holes (A) using four flange head bolts and nuts.
14. Repeat Step *2, page 318* to Step *13, page 319* for the other flighting on the left side of the auger.

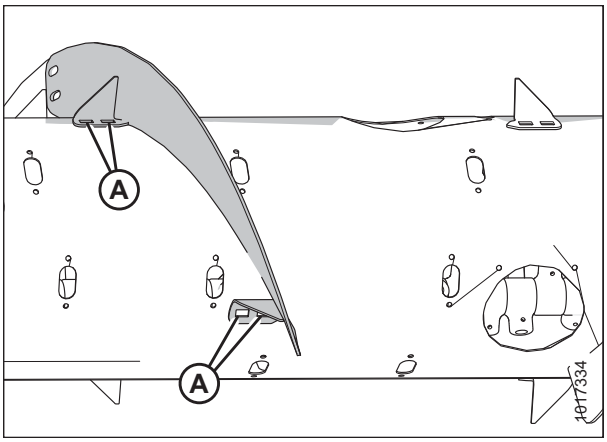


Figure 4.49: Flighting on Left Side of Auger

15. Place flighting (A) outboard of existing flighting (B) on the right side of the auger, as shown.
16. Repeat Step *3, page 318* to Step *13, page 319* for both flightings on the right side of the auger.
17. On both sides of the auger, install flighting slot plugs (MD #213084) in the flighting mounting locations and secure with M6 bolts (MD #252703) and tee nuts (MD #197263).
18. Torque all nuts and bolts to 47 Nm (35 lbf·ft) to eliminate deflection on flighting, then torque nuts and bolts again to 58–64 Nm (43–47 lbf·ft).

    NOTE:

    Flighting performs best when no gaps are present. If desired, use silicone sealant to fill the gaps.

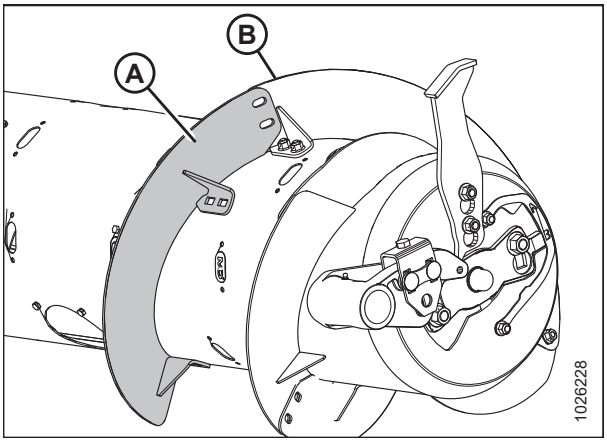


Figure 4.50: Flighting on Right Side of Auger

19. Add or remove auger fingers as necessary to optimize feeding for your combine and crop conditions. For instructions, refer to *Installing Feed Auger Fingers, page 434* or *Removing Feed Auger Fingers, page 432*.
20. If not adding or removing auger fingers, reinstall all access covers and secure with bolts. Coat bolts with medium-strength threadlocker (Loctite® 243 or equivalent) and torque to 9 Nm (80 lbf·in).

4.2 FM200 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 585*.

4.2.1 Using Auger Flighting

The auger flighting on the FM200 can be configured for specific combines and crop conditions. For instructions, refer to *4.1 FM200 Feed Auger Configurations, page 299* 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.

For servicing information, refer to *5.14 FM200 Stripper Bars and Feed Deflectors, page 509*.

4.3 AGCO (Challenger, Gleaner, and Massey Ferguson) Combines

4.3.1 Attaching Header to an AGCO (Challenger, Gleaner, or Massey Ferguson) Combine

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Use lock handle (B) to retract lugs (A) at the base of the feeder house.

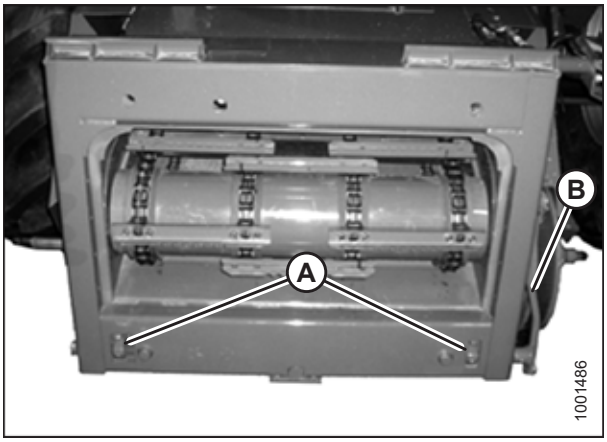


Figure 4.51: AGCO Group Feeder House

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

3. Start the engine and slowly approach the header until the feeder house is directly under float module top cross member (A) and alignment pins (C) (refer to Figure *4.53, page 322*) on the feeder house are aligned with holes (B) in the float module frame.

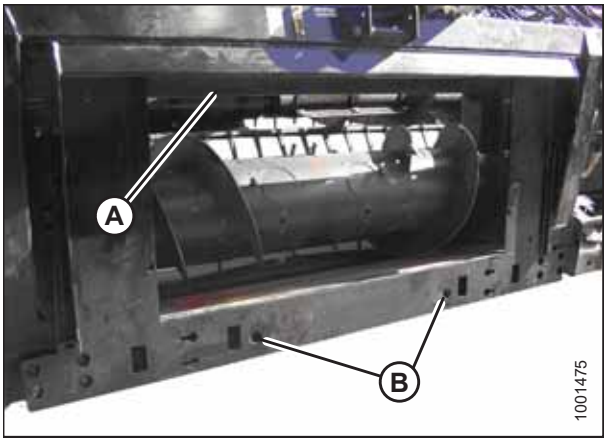


Figure 4.52: Float Module

NOTE:

Your combine feeder house may not be exactly as shown.

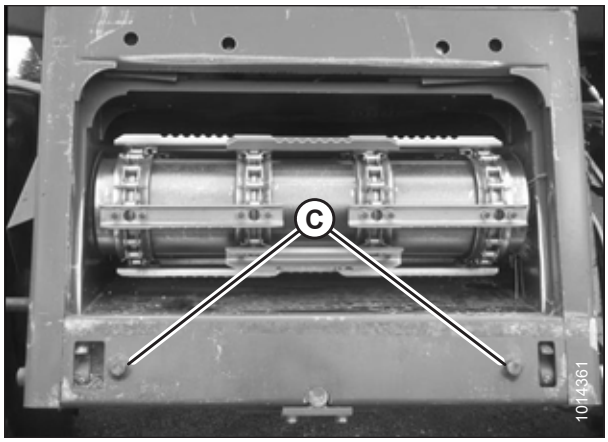


Figure 4.53: AGCO Group Alignment Pins

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

Figure 4.54: Feeder House and Float Module

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

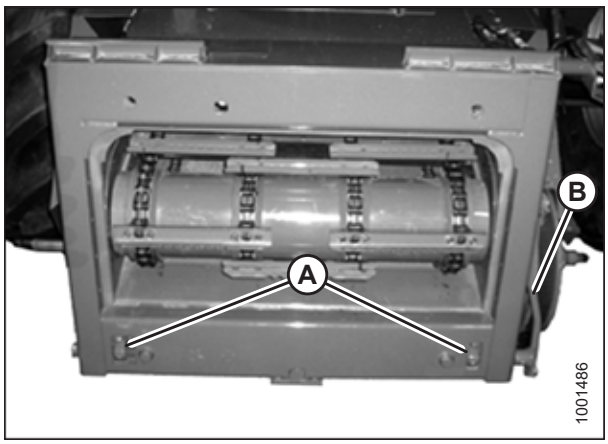


Figure 4.55: AGCO Group Feeder House

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

7. Start the engine. For instructions, refer to the combine operator's manual.
8. Lower the header fully.

NOTE:

The float module is equipped with a multicoupler that connects to the combine. If your combine is equipped with individual connectors, a multicoupler kit (single-point connector) must be installed. Refer to Table *4.1, page 323* for a list of kits and installation instructions that are available through your combine Dealer.

Table 4.1 Multicoupler Kits

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

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

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.

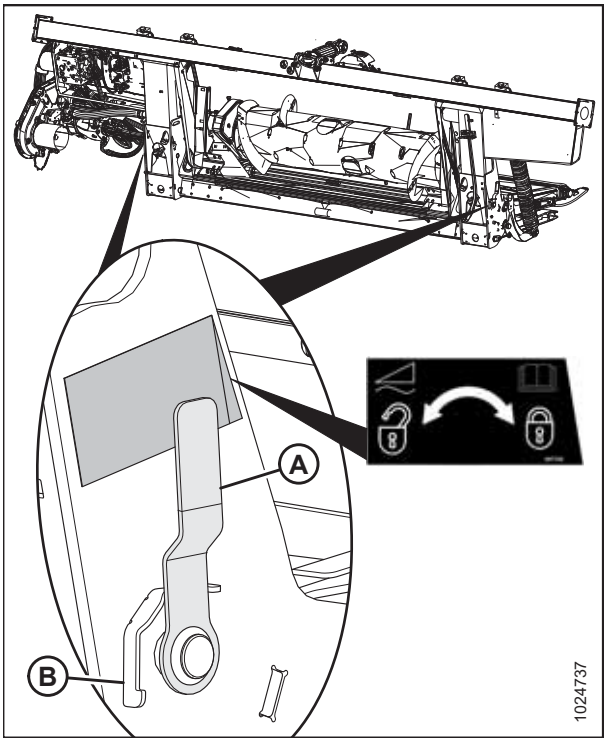


Figure 4.56: Float Lock Handle

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

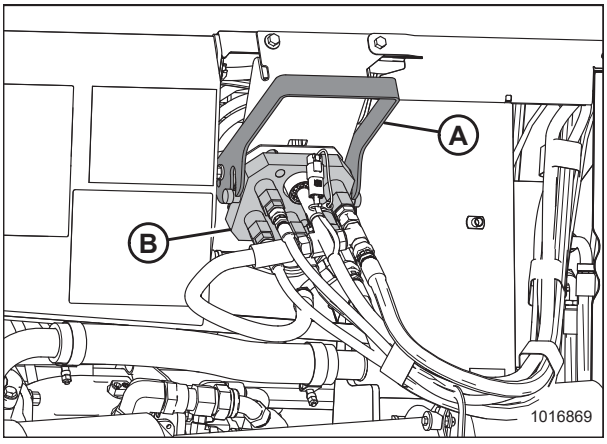


Figure 4.57: Float Module Multicoupler

11. Push handle (A) on the combine to the fully-open position.
12. Clean the mating surfaces of multicoupler (B) and receptacle if necessary.

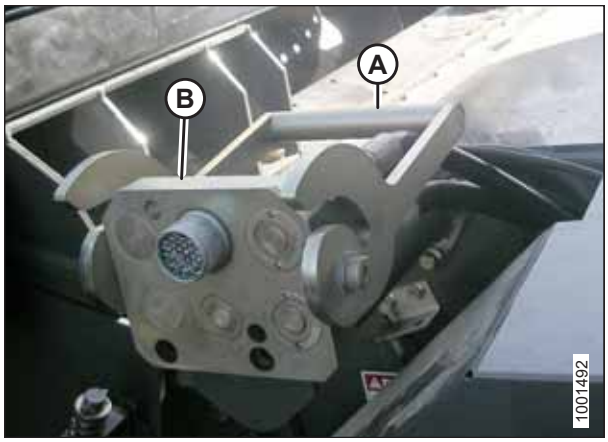


Figure 4.58: Combine Receptacle

13. Position multicoupler (A) onto the combine receptacle, and pull handle (B) to fully engage the multicoupler into the receptacle.
14. Connect reel fore-aft/header tilt selector harness (C) to combine harness (D).

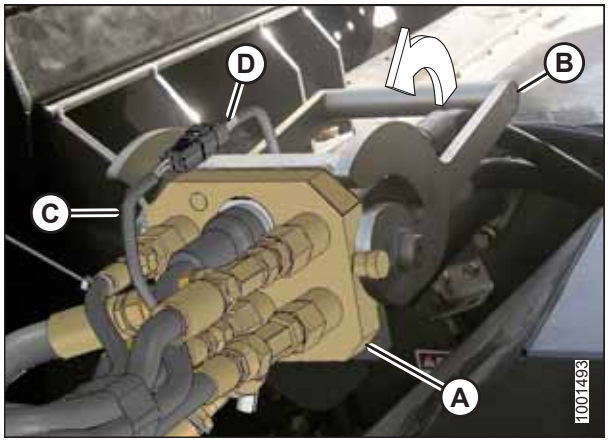


Figure 4.59: Multicoupler

15. Detach safety chain (C) from support bracket (B).
16. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

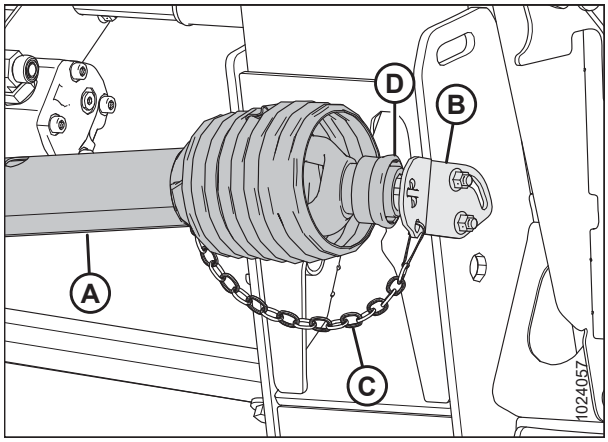


Figure 4.60: Driveline

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

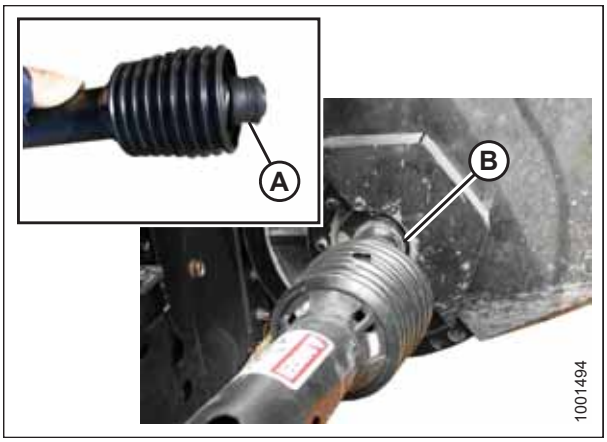


Figure 4.61: Driveline

4.3.2 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. Shut down 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. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.

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

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.

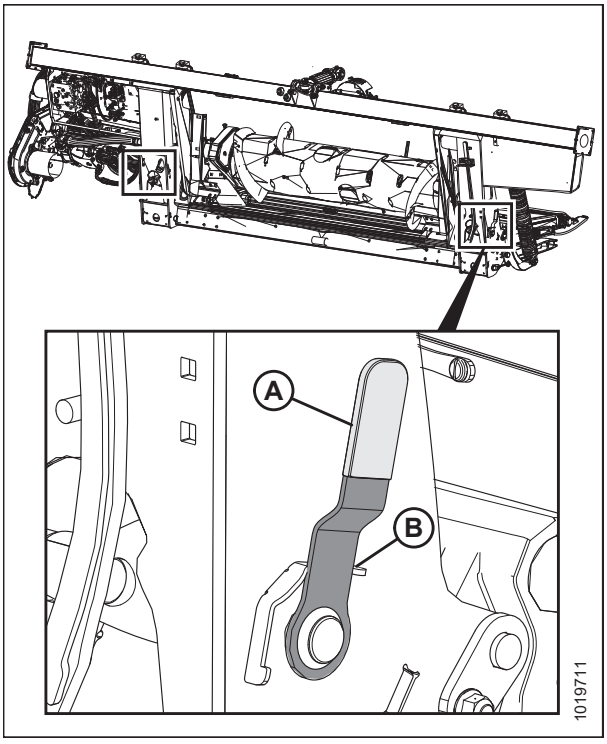


Figure 4.62: Float Lock Handle – Right Shown in Detail, Left Opposite)

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

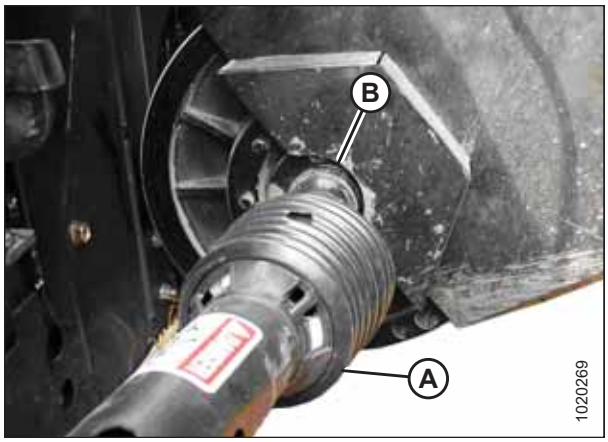


Figure 4.63: Driveline

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

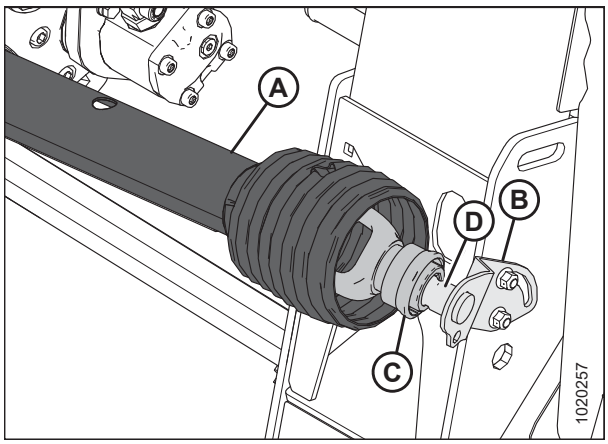


Figure 4.64: Driveline

6. Disconnect the harness at connector (A).
7. Move handle (B) on the combine multicoupler to the full open position to release multicoupler (C) from the combine.

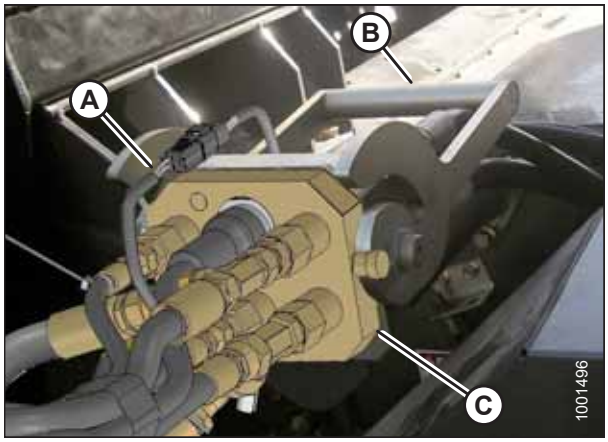


Figure 4.65: Multicoupler

8. Raise handle (A) on the float module, and place multicoupler (B) on the float module receptacle.
9. Lower handle (A) to lock multicoupler (B).

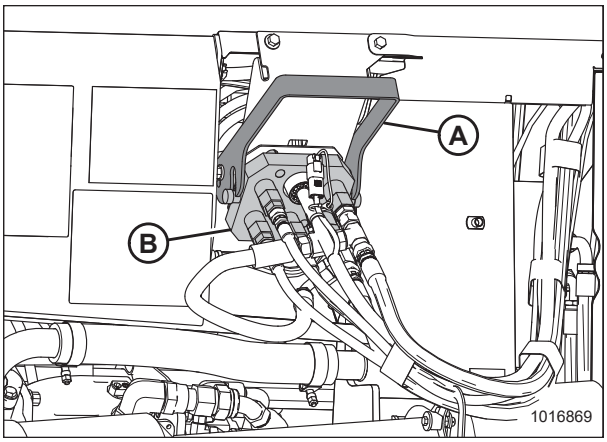


Figure 4.66: Float Module Multicoupler

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

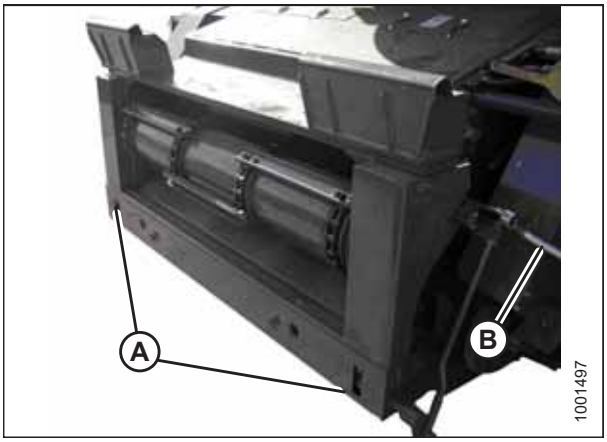


Figure 4.67: Challenger and Massey Ferguson

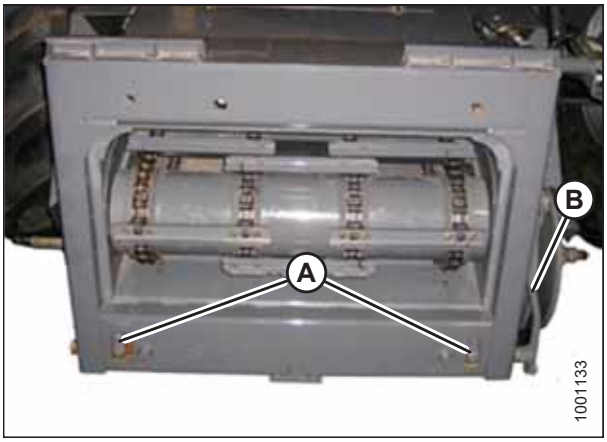


Figure 4.68: Gleaner R and S Series

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

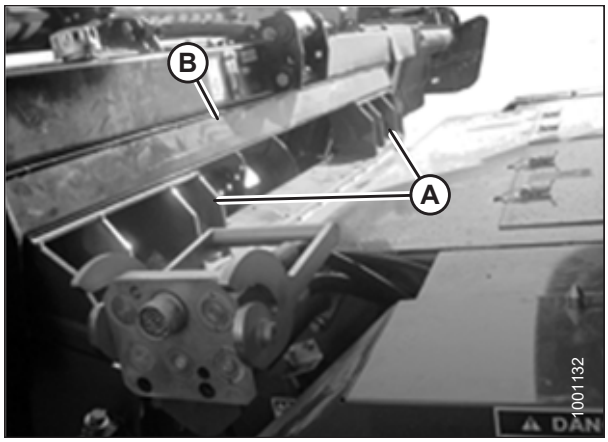


Figure 4.69: Float Module on Combine

4.4 AGCO IDEAL™ Series Combines

4.4.1 Attaching Header to an AGCO IDEAL™ Series Combine

WARNING

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

1. Pull lever (A) up to retract pins (B) at the bottom left and right sides of the feeder house.

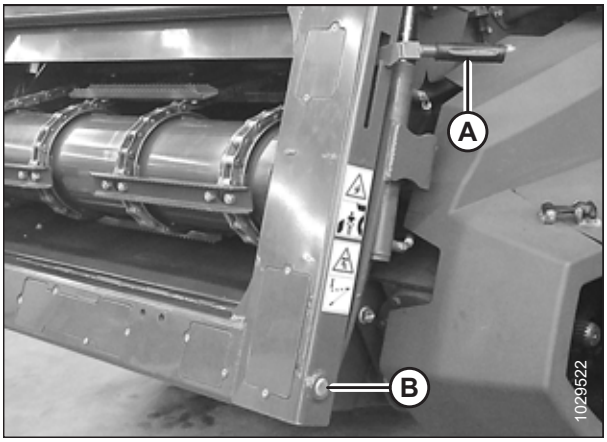


Figure 4.70: Feeder House

2. Drive the combine slowly up to the header until the feeder house is directly under top beam (A), and pins (B) are under hooks (C) on the transition frame.

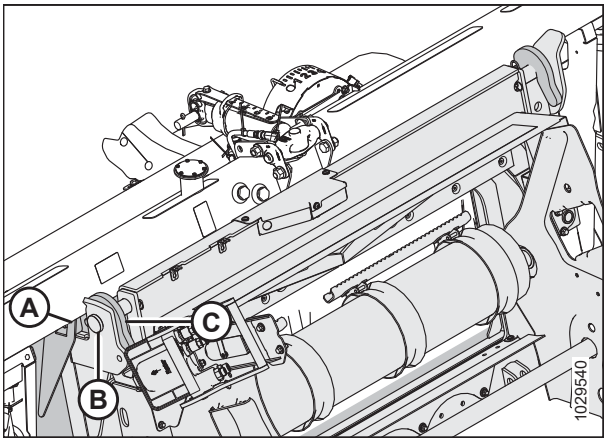


Figure 4.71: Feeder House

3. Raise feeder house until transition frame top beam (A) is fully resting on the feeder house. Raise the header slightly off the ground.

   IMPORTANT:

   The full weight of the header must be on the feeder house, **NOT** on pins (B).

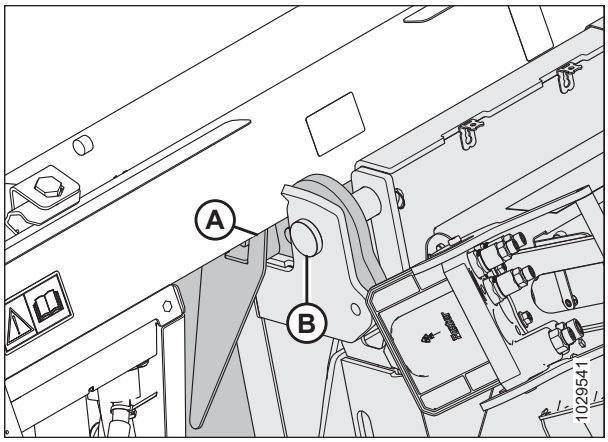


Figure 4.72: Top Beam Resting on Feeder House

4. Position bottom of feeder house so that locking pins (A) align with the holes in mount (C).
5. Push lever (B) down to extend locking pins (A) so they engage in mount (C).

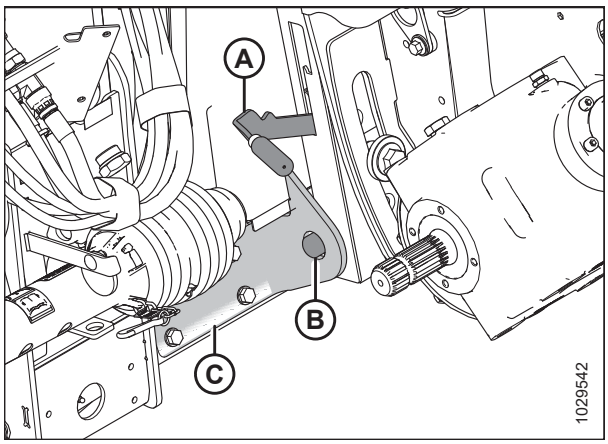


Figure 4.73: Feeder House Locking Pins

6. Rotate lock disc (A) upward and remove driveline (B) from the support.

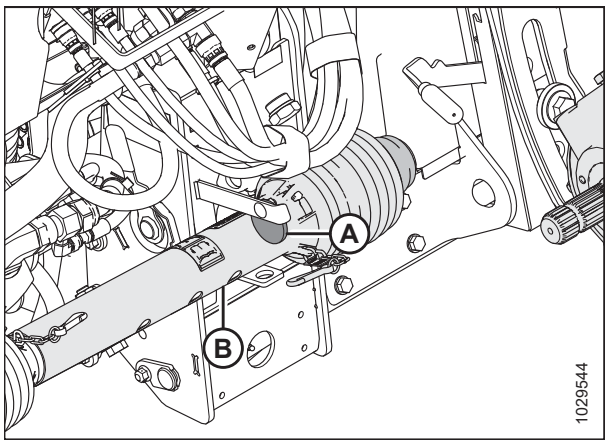


Figure 4.74: Driveline in Storage Position

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

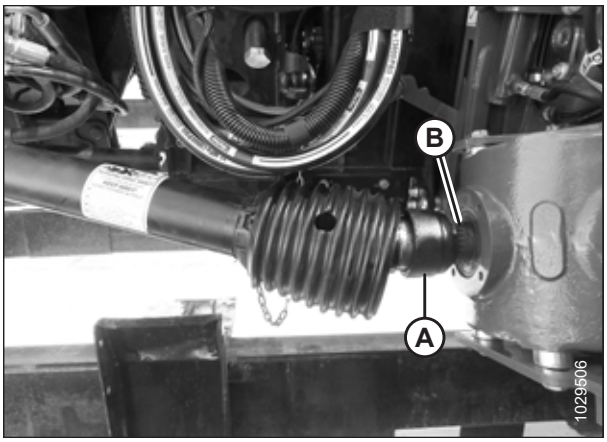


Figure 4.75: Connecting Driveline to Combine

8. Lower handle (A) to release multicoupler (B) from header.
9. Open cover (C) on the combine receptacle.
10. Push handle (D) to fully open position.
11. Clean mating surfaces of coupler and receptacle if necessary.

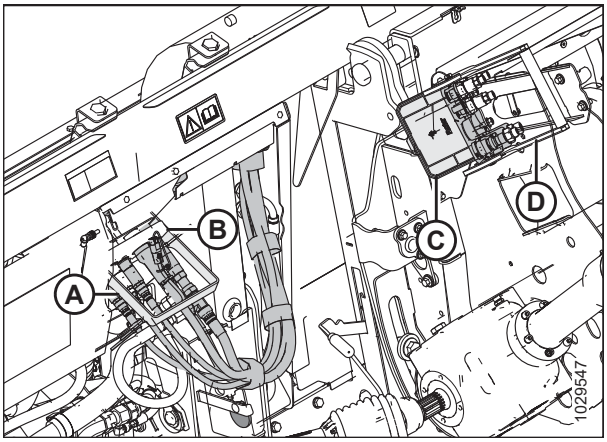


Figure 4.76: Multicoupler Receptacles

12. Position coupler (A) onto combine receptacle, and pull handle (B) to fully engage multicoupler into receptacle.

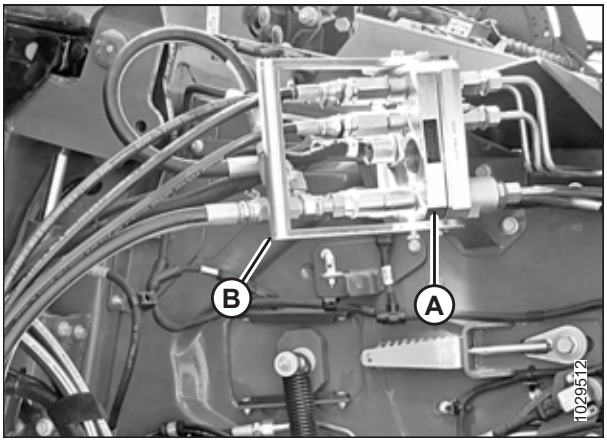


Figure 4.77: Multicoupler

4.4.2 Detaching Header from an AGCO Ideal™ Series Combine

WARNING

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

1. Park the combine on a level surface.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
5. Push combine receptacle handle (B) to fully-open position to release multicoupler (A).

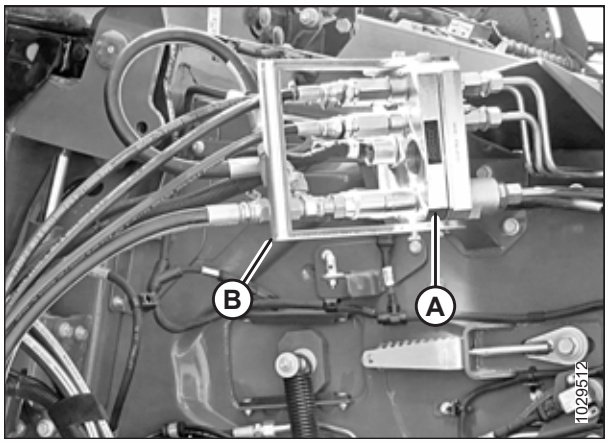


Figure 4.78: Combine Receptacle

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

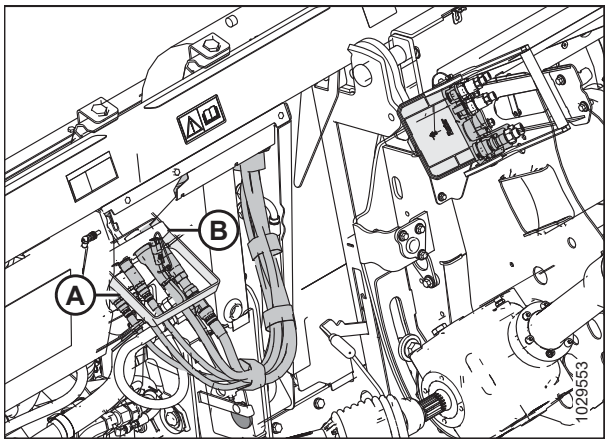


Figure 4.79: Locking Multicoupler

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

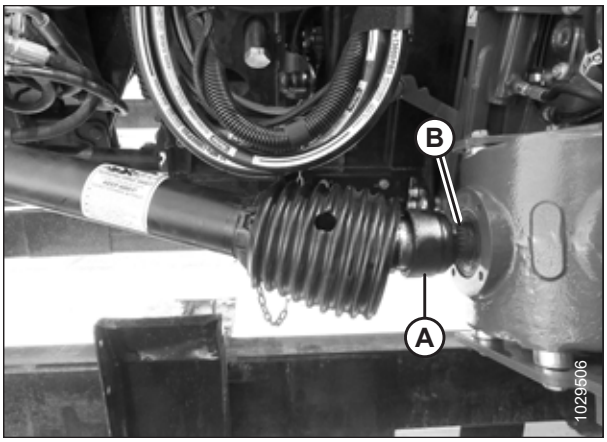


Figure 4.80: Detaching Driveline

8. Rotate lock disc (A) and slide driveline (B) onto the support.
9. Lower lock disc (A) to secure driveline (B) onto the support.

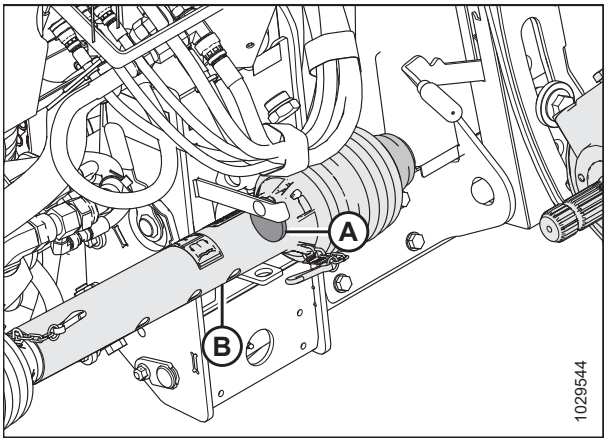


Figure 4.81: Driveline in Storage Position

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

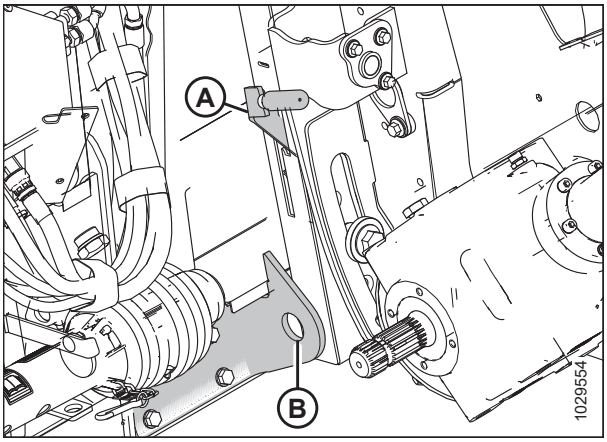


Figure 4.82: Feeder House Locking Pins

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

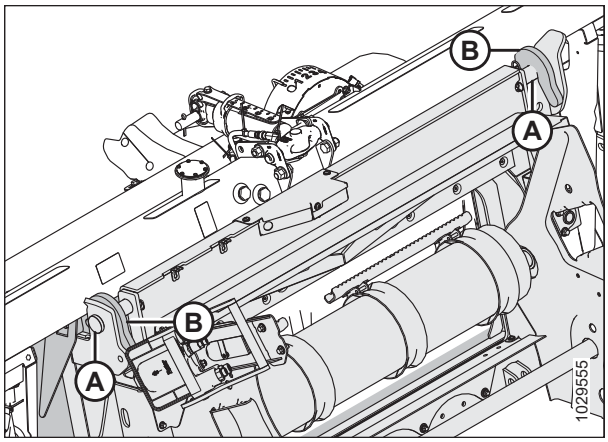


Figure 4.83: Lowering Feeder House

4.5 Case IH Combines

4.5.1 Attaching Header to Case IH Combine

WARNING

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

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

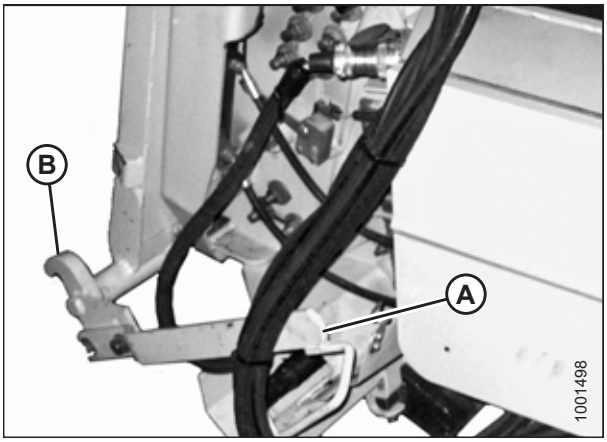


Figure 4.84: Feeder House Locks

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

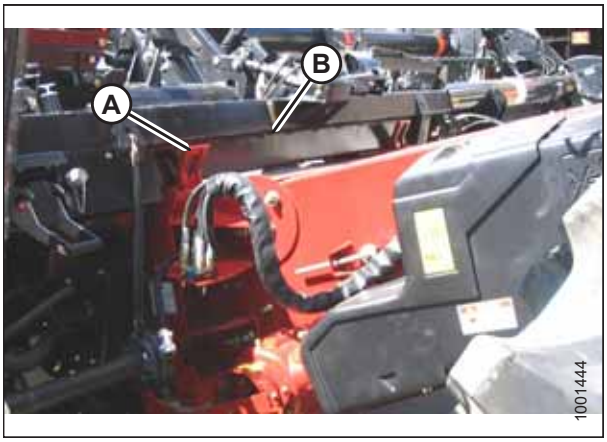


Figure 4.85: Combine and Float Module

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 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.

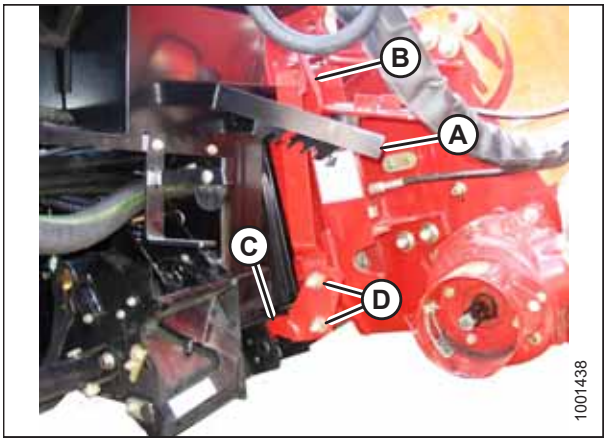


Figure 4.86: Combine and Float Module

8. Open the cover on receptacle (A) located on the left side of the float module.
9. Press lock button (B) and pull handle (C) to the fully-open position.
10. Clean the receptacle mating surfaces.

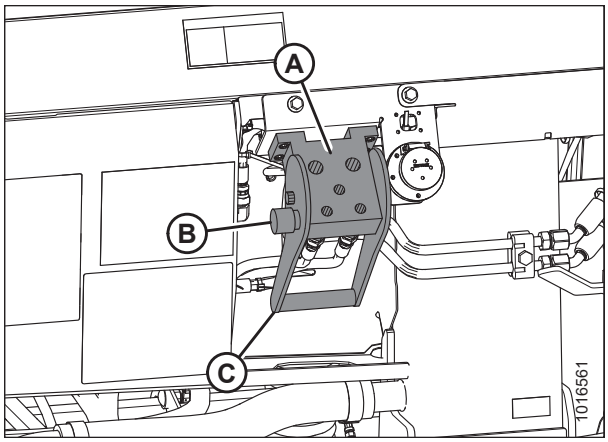


Figure 4.87: Float Module Receptacle

11. Remove hydraulic quick coupler (A) from the combine, and clean the mating surfaces.

Figure 4.88: Combine Connectors

12. Position the coupler onto coupler receptacle (A) and push handle (B) (not shown) to engage the multicoupler pins into the receptacle.
13. Push handle (B) to the closed position until lock button (C) snaps out.

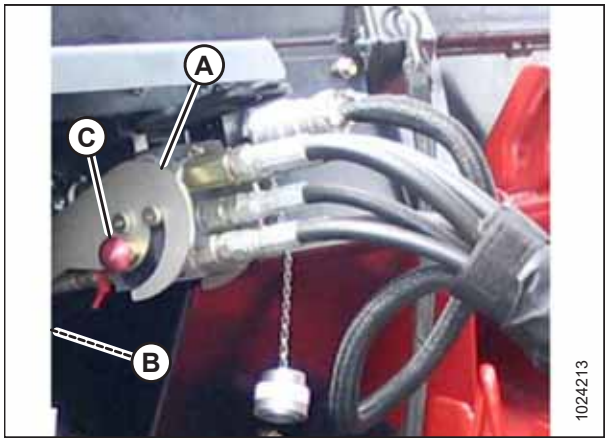


Figure 4.89: Hydraulic Connection

14. Remove the cover from electrical receptacle (A). Ensure the receptacle is clean and has no signs of damage.

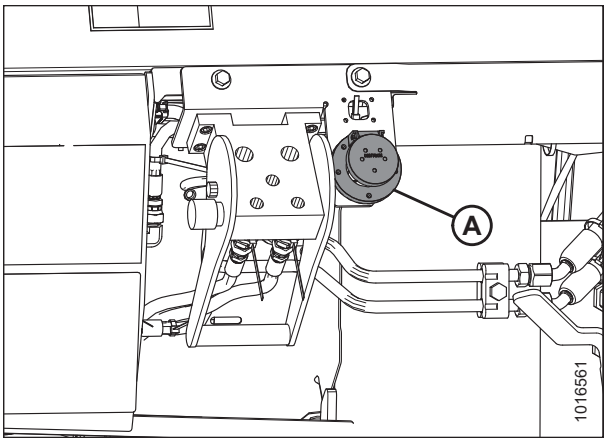


Figure 4.90: Electrical Receptacle

15. Remove electrical connector (A) from the storage cup on the combine and route it to the float module receptacle.

Figure 4.91: Combine Connectors

16. Align the lugs on connector (A) with the slots in receptacle (B), push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

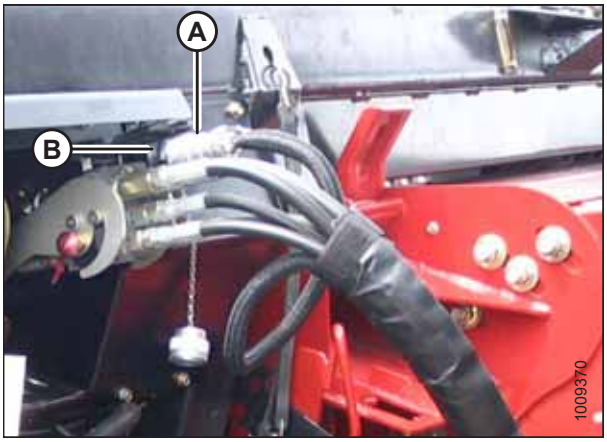


Figure 4.92: Electrical Connection

17. Detach safety chain (C) from support bracket (B).
18. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

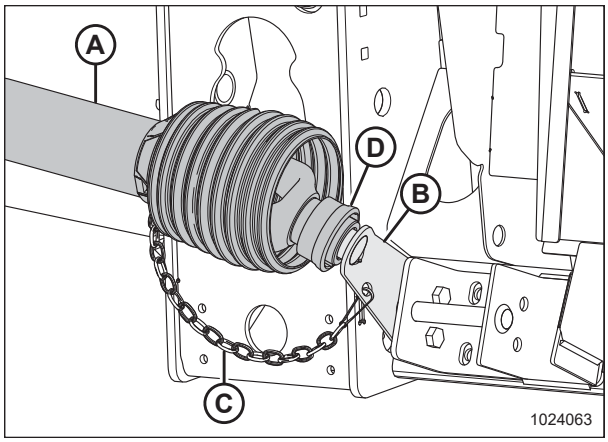


Figure 4.93: Driveline in Storage Position

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

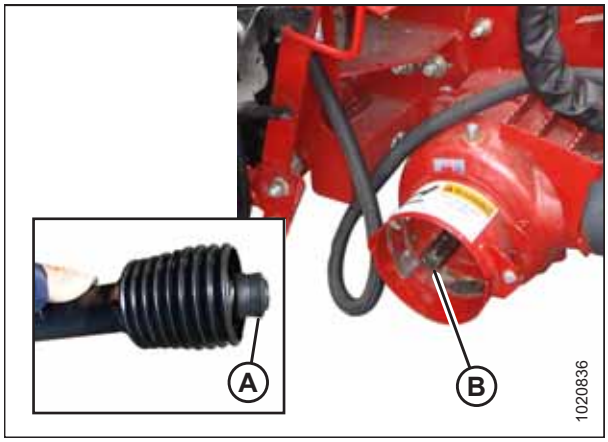


Figure 4.94: Combine Output Shaft

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

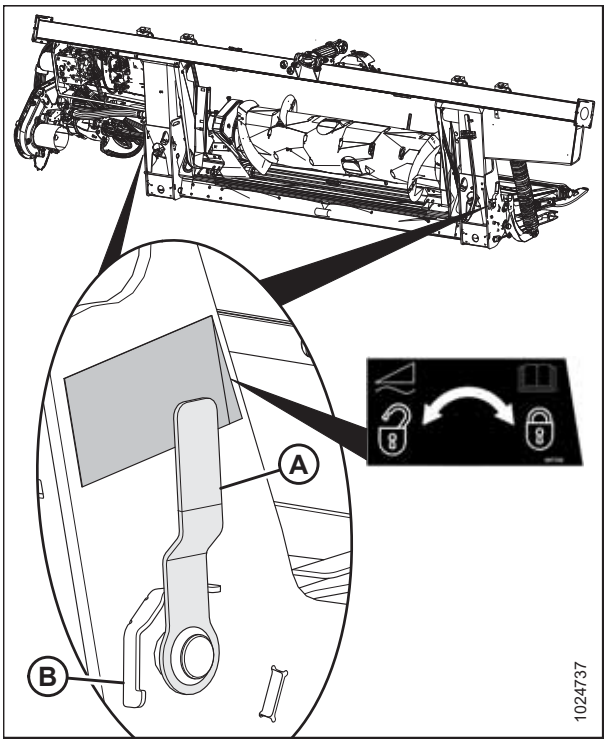


Figure 4.95: Float Lock Handle

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

   IMPORTANT:

   If 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. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.
4. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.
5. Push back collar (A) on the end of the driveline and pull the driveline out of combine output shaft (B) until the collar disengages.

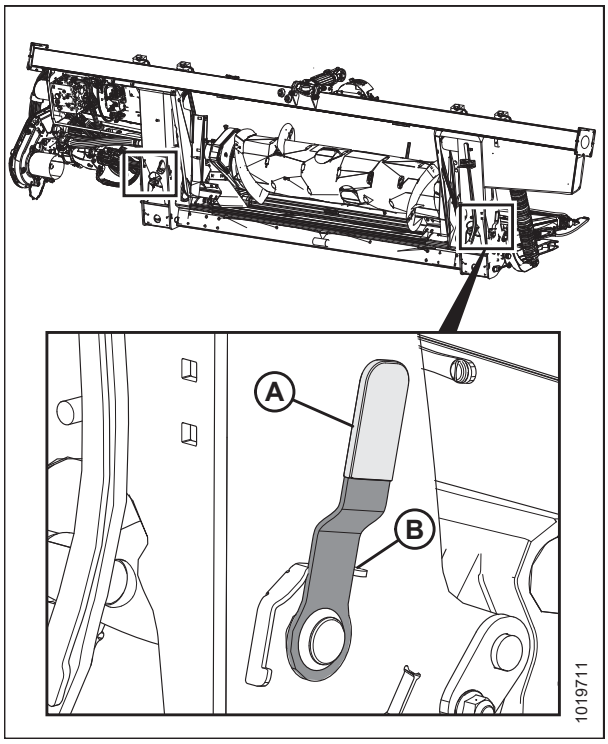


Figure 4.96: Float Lock Handle

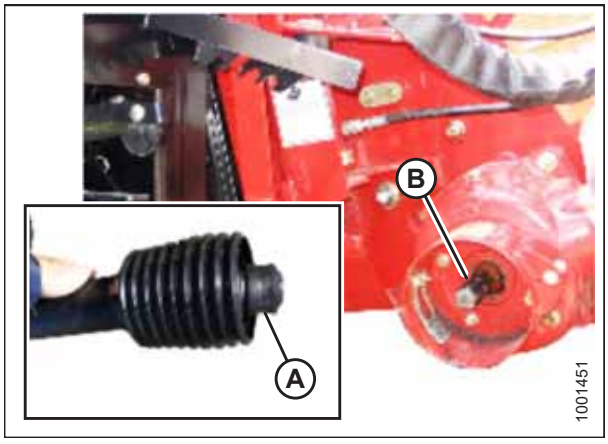


Figure 4.97: Driveline

6. Store driveline (A) on driveline support bracket (B) by pulling back collar (C) on the driveline and fitting it over support bracket body (D). Release the collar so it locks into place over the support bracket body.
7. Attach safety chain (E) to support bracket (B).

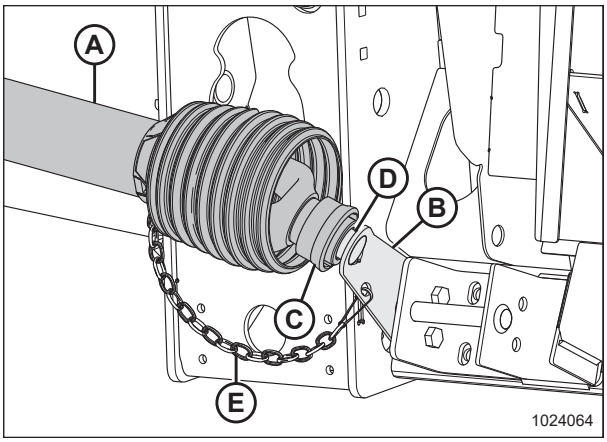


Figure 4.98: Driveline

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

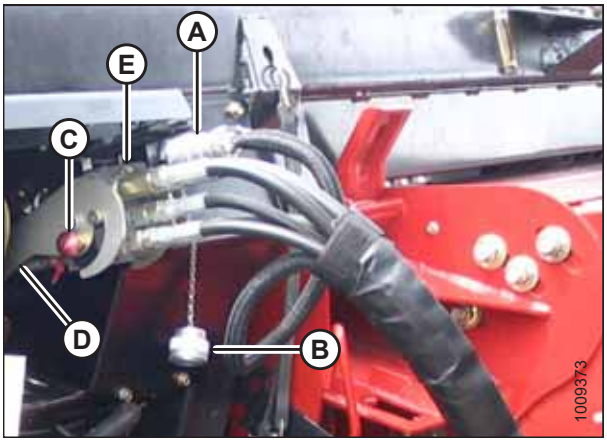


Figure 4.99: Multicoupler

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

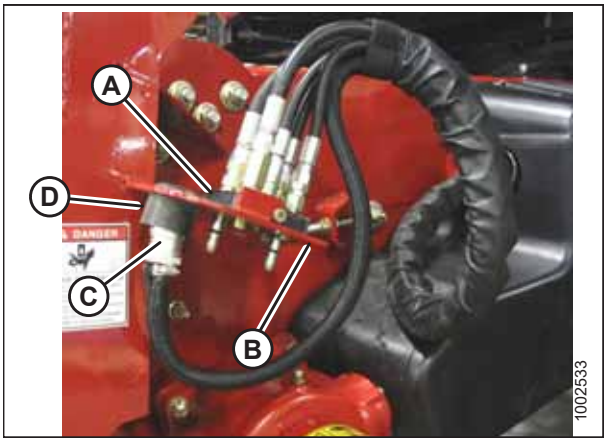


Figure 4.100: Multicoupler Storage

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

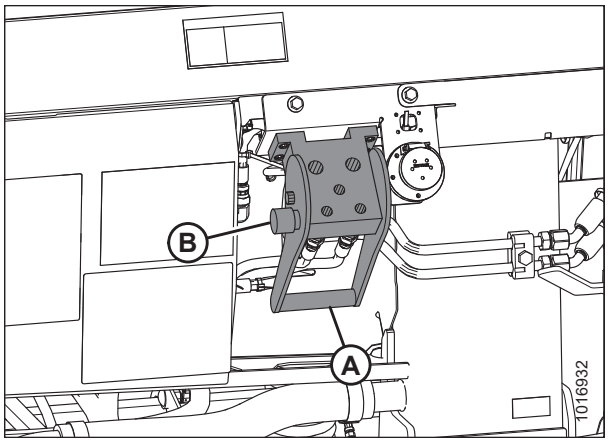


Figure 4.101: Float Module Receptacle

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

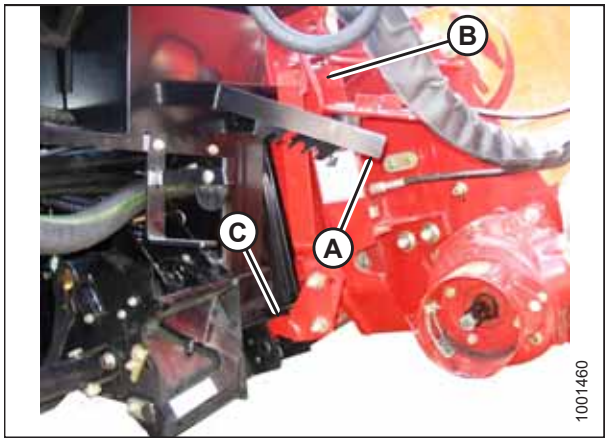


Figure 4.102: Feeder House Locks

4.6 CLAAS Combines

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

4.6.1 Attaching Header to CLAAS Combine

WARNING

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

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

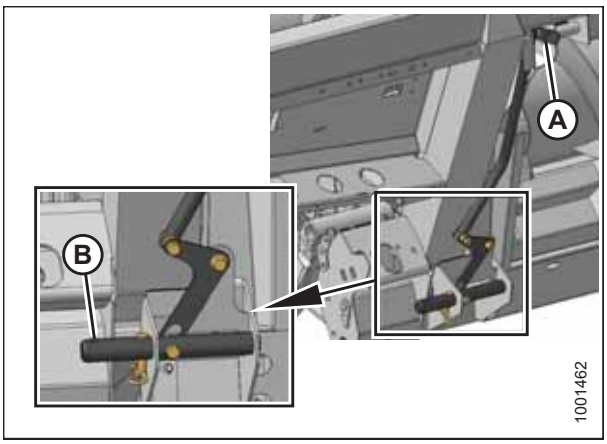


Figure 4.103: Pins Retracted

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

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

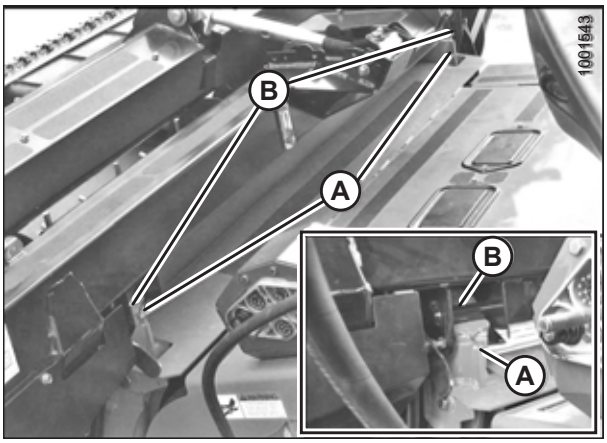


Figure 4.104: Header on Combine

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

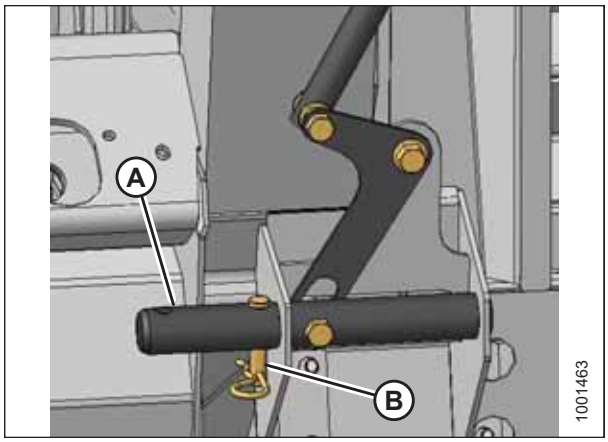


Figure 4.105: Locking Pins

7. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
8. Shut down the engine, and remove the key from the ignition.

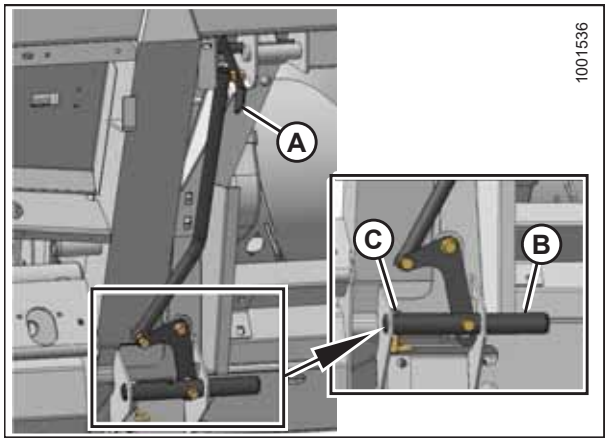


Figure 4.106: Engaging Pins

9. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
10. Clean coupler (B) and receptacle.

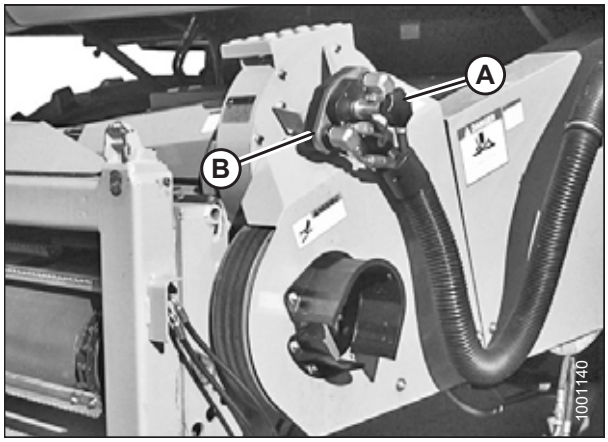


Figure 4.107: Combine Coupler

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

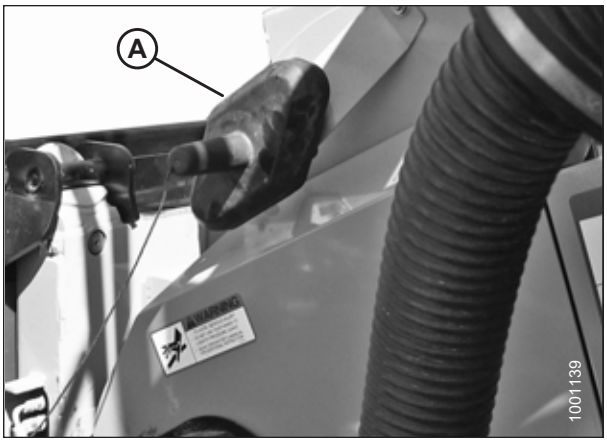


Figure 4.108: Receptacle Cover

12. Clean mating surface of coupler (A) and position onto float module receptacle (C).
13. Turn knob (B) to secure the coupler to the receptacle.

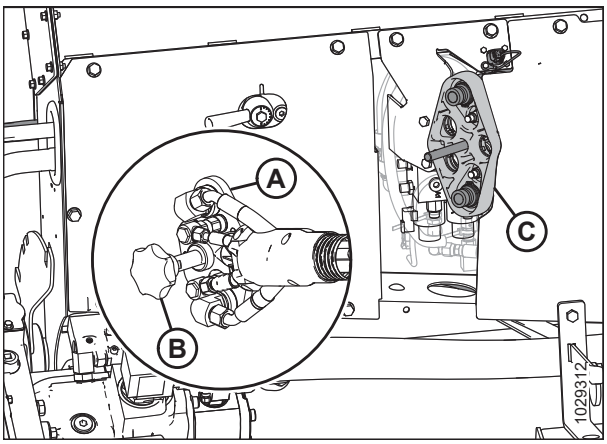


Figure 4.109: Coupler

14. Detach safety chain (C) from support bracket (B).
15. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

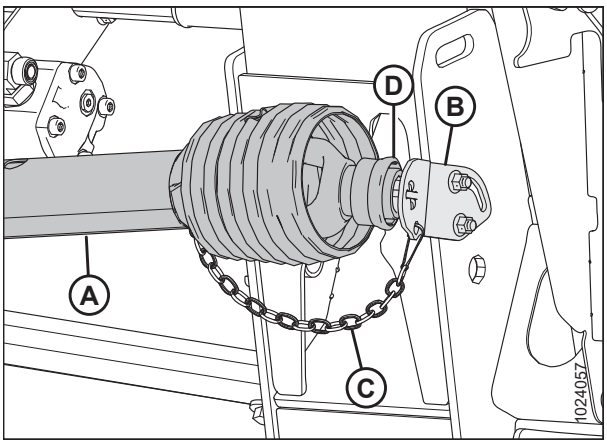


Figure 4.110: Driveline

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

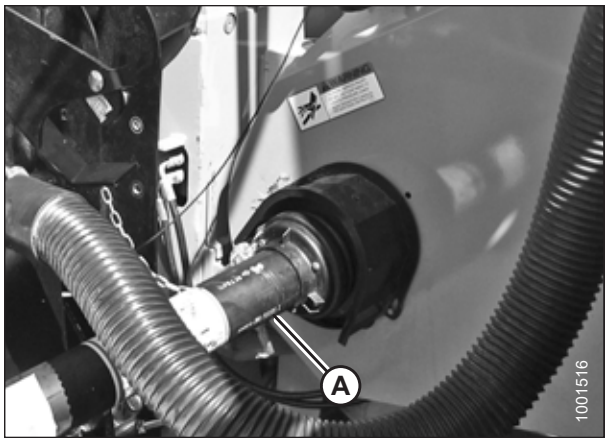


Figure 4.111: Driveline and Output Shaft

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

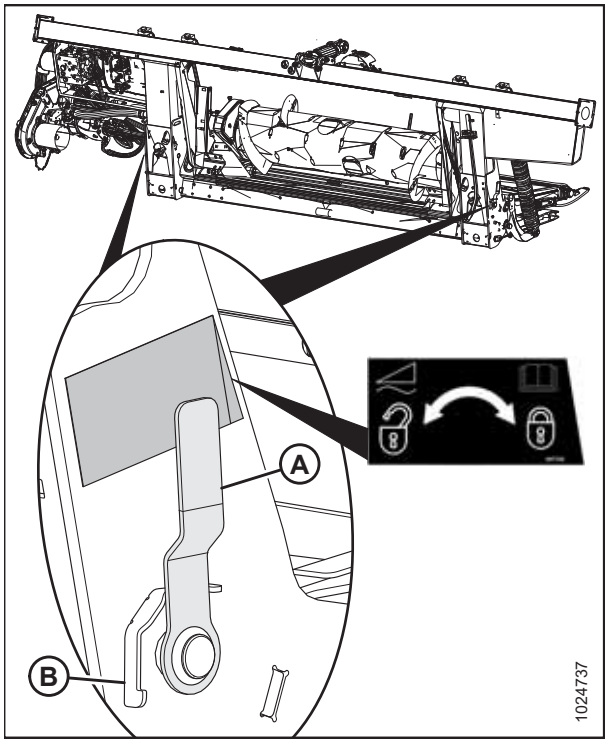


Figure 4.112: Float Lock Handle

4.6.2 Detaching Header from CLAAS 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. Shut down 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. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.
3. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.
4. Disconnect driveline (A) from the combine.

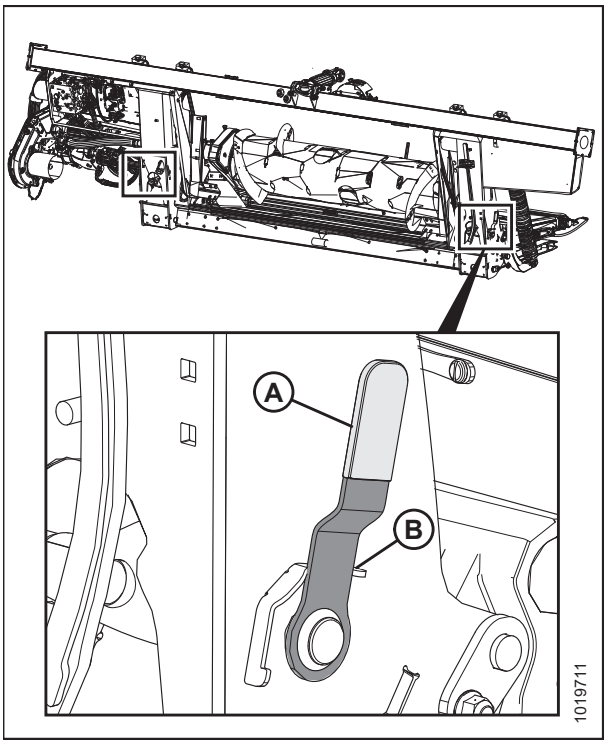


Figure 4.113: Float Lock Handle

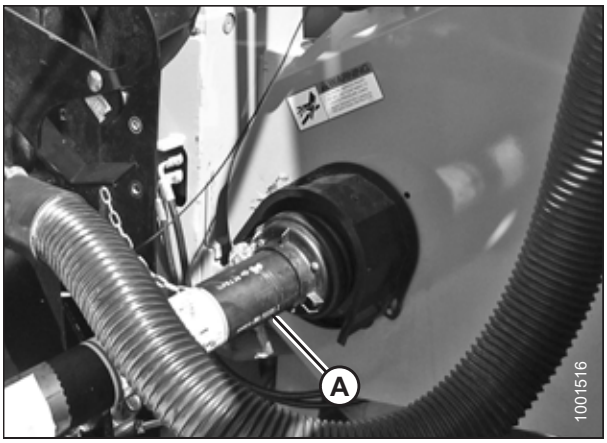


Figure 4.114: Driveline

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

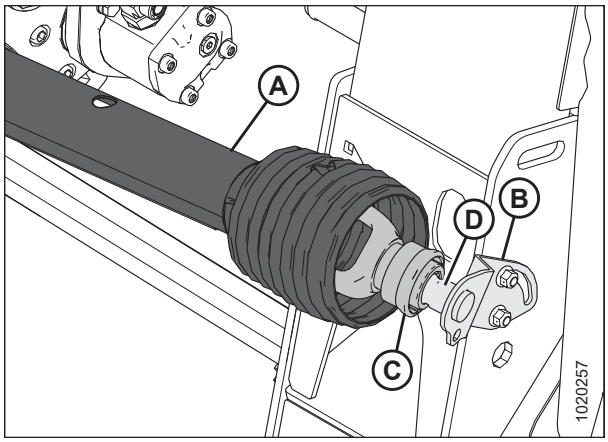


Figure 4.115: Driveline

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

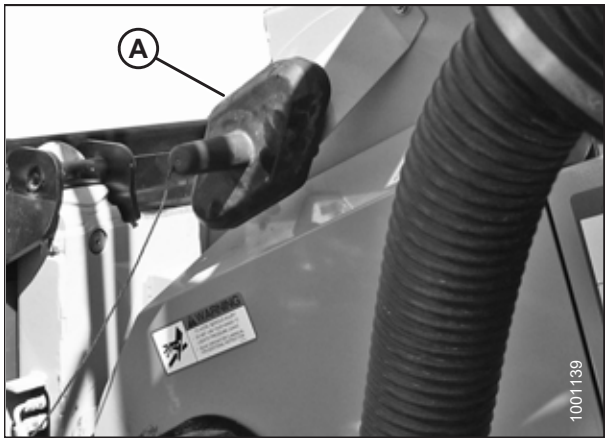


Figure 4.116: Cover

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

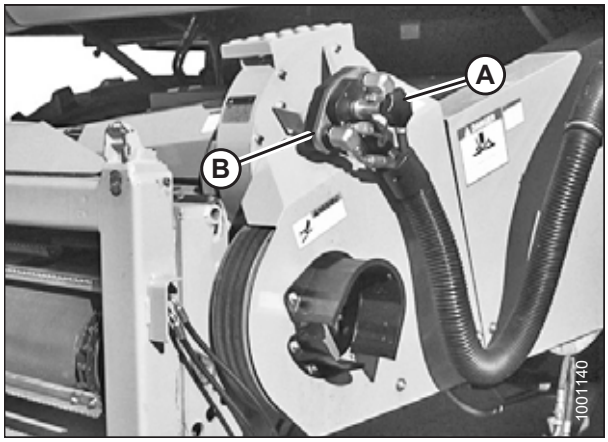


Figure 4.117: Combine Coupler

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

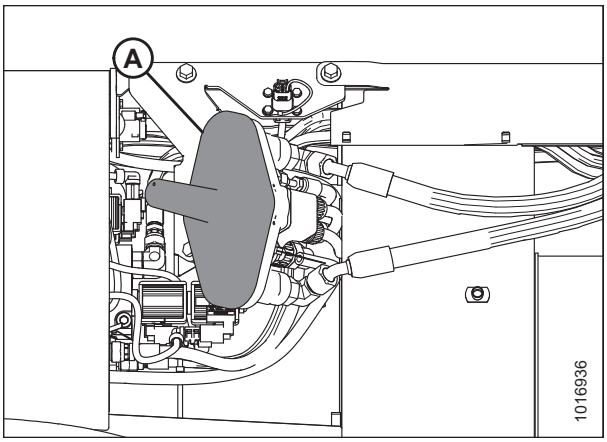


Figure 4.118: Float Module

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

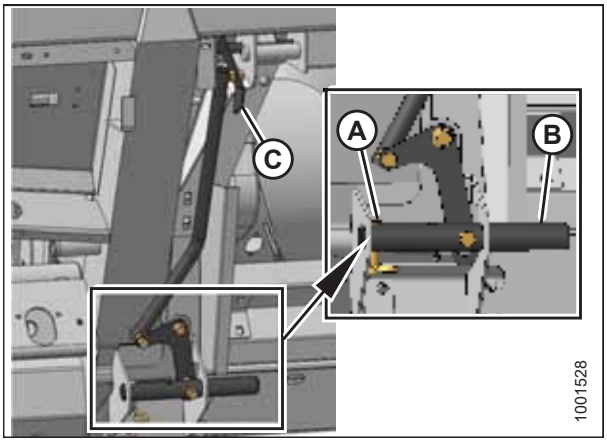


Figure 4.119: Feeder House Locks

12. Lower the feeder house until feeder house posts (A) disengage float module (B).
13. Back the combine away slowly from the float module.

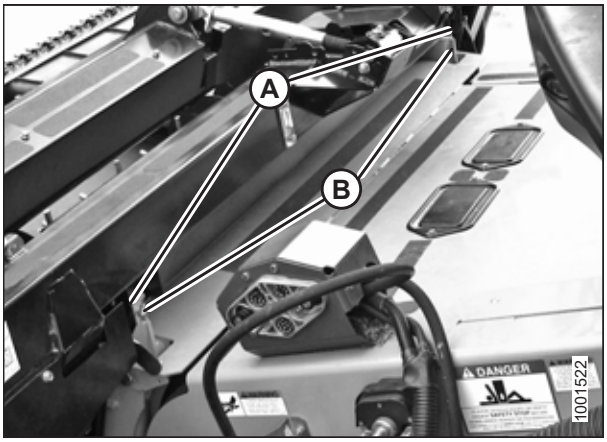


Figure 4.120: Header on Combine

4.6.3 Attaching Header to CLAAS 8000, 7000 Combine

WARNING

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

1. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

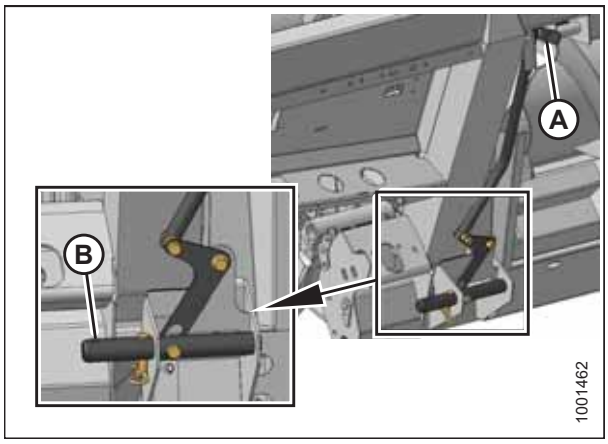


Figure 4.121: Pins Retracted

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

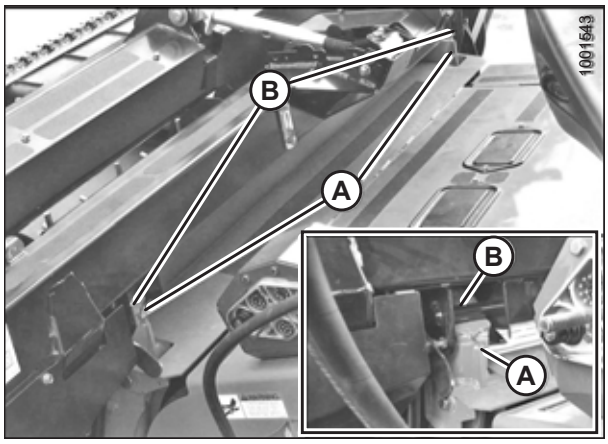


Figure 4.122: Header on Combine

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

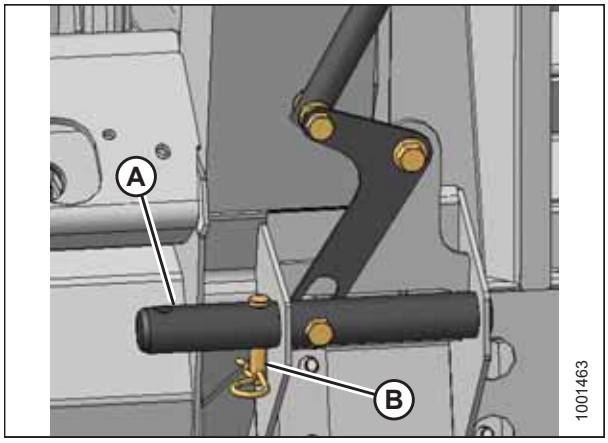


Figure 4.123: Locking Pins

6. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
7. Shut down the engine, and remove the key from the ignition.

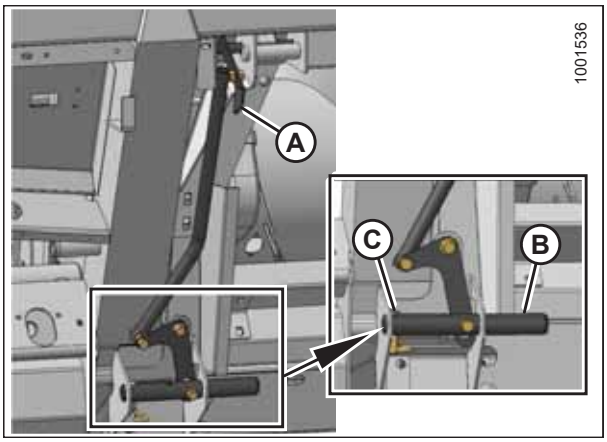


Figure 4.124: Engaging Pins

8. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
9. Clean coupler (B) and receptacle.

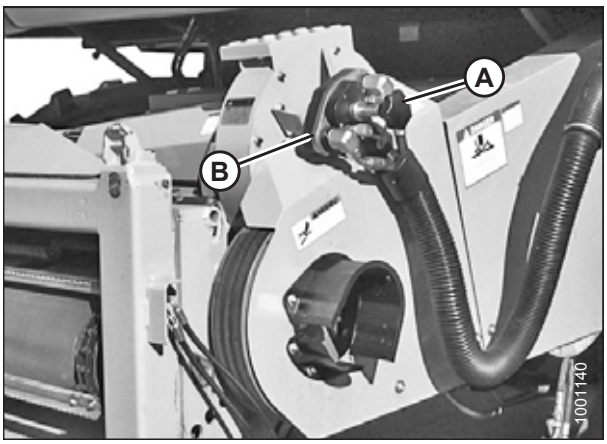


Figure 4.125: Combine Coupler

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

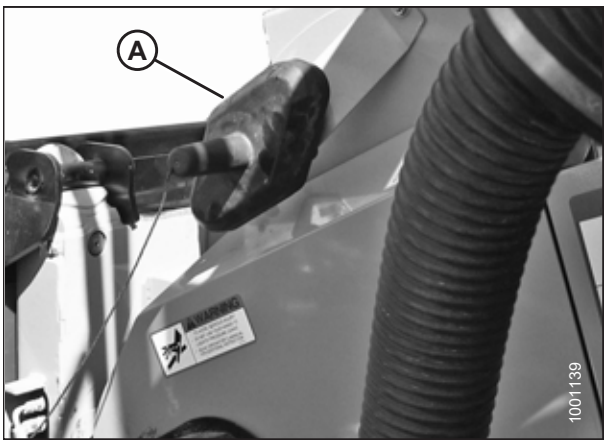


Figure 4.126: Receptacle Cover

11. Clean mating surface of coupler (A) and position onto float module receptacle (C).
12. Turn knob (B) to secure the coupler to the receptacle.

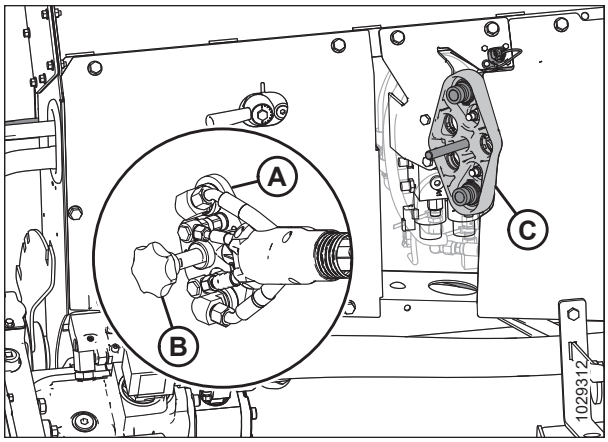


Figure 4.127: Coupler

13. Detach safety chain (C) from support bracket (B).
14. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

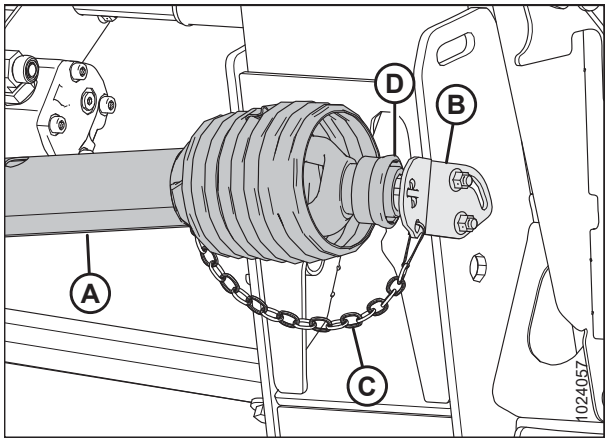


Figure 4.128: Driveline

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

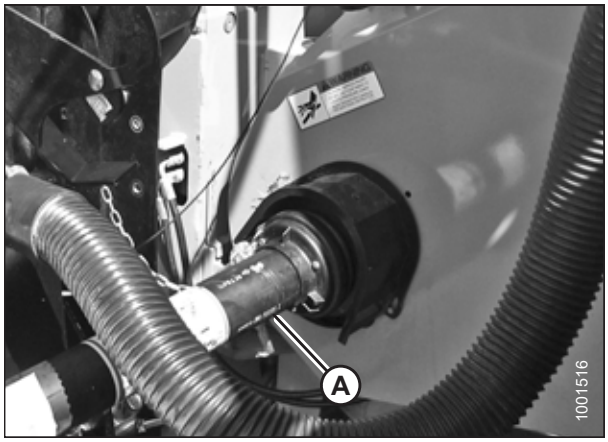


Figure 4.129: Driveline and Output Shaft

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

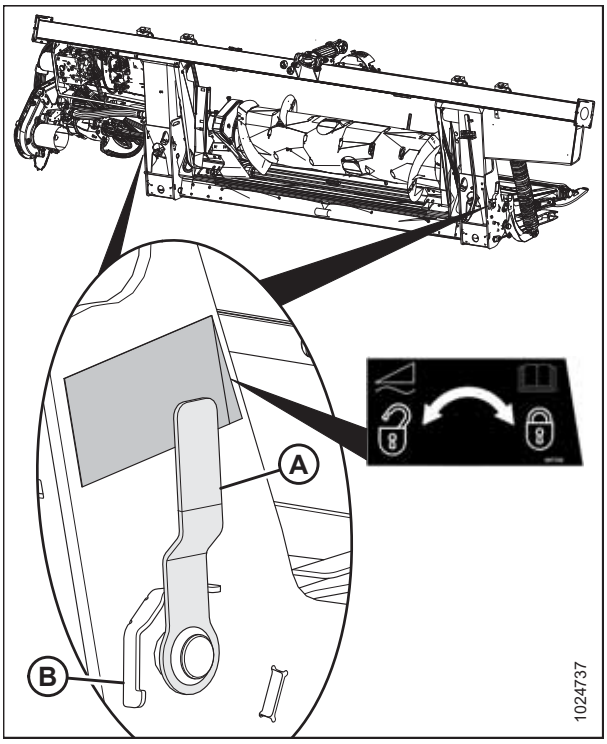


Figure 4.130: Float Lock Handle

4.6.4 Attaching Header to CLAAS Tucano Combine

WARNING

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

1. Move handle (A) on the float module into the raised position, and ensure pins (B) at the bottom corners of the float module are retracted.

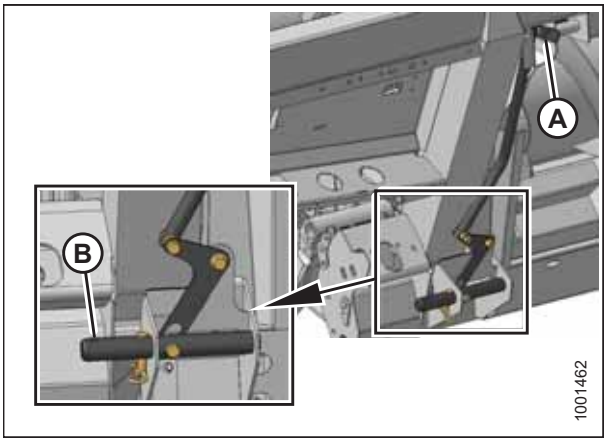


Figure 4.131: Pins Retracted

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

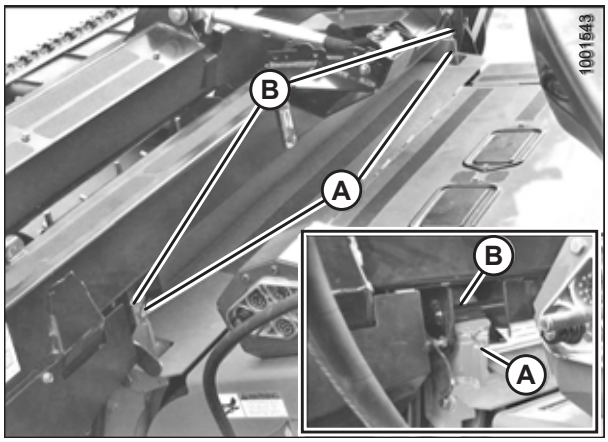


Figure 4.132: Header on Combine

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

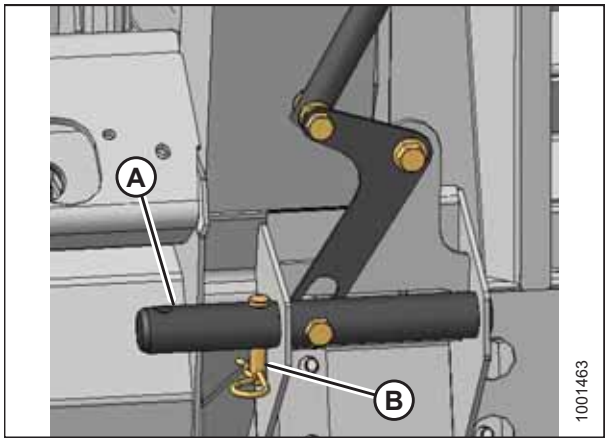


Figure 4.133: Locking Pins

6. Lower handle (A) to engage float module pins (B) into the feeder house. Reinsert locking pin (C) and secure with the hairpin.
7. Shut down the engine, and remove the key from the ignition.

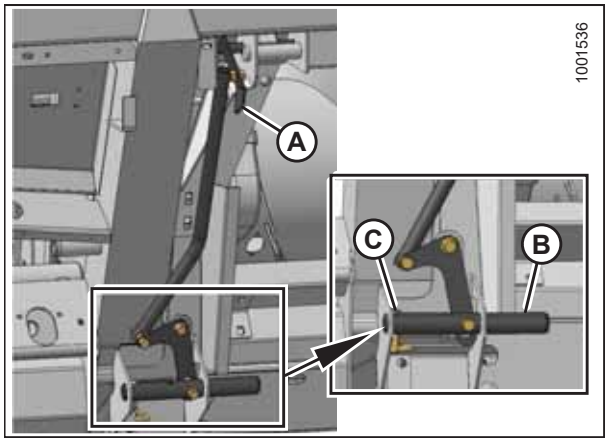


Figure 4.134: Engaging Pins

8. Unscrew knob (A) on combine coupler (B) to release the coupler from the receptacle.
9. Clean coupler (B) and receptacle.

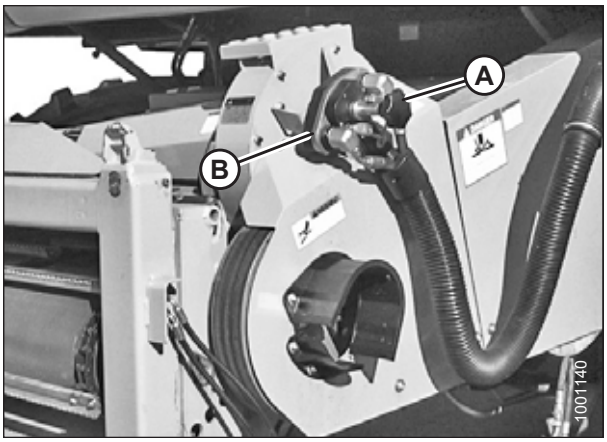


Figure 4.135: Combine Coupler

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

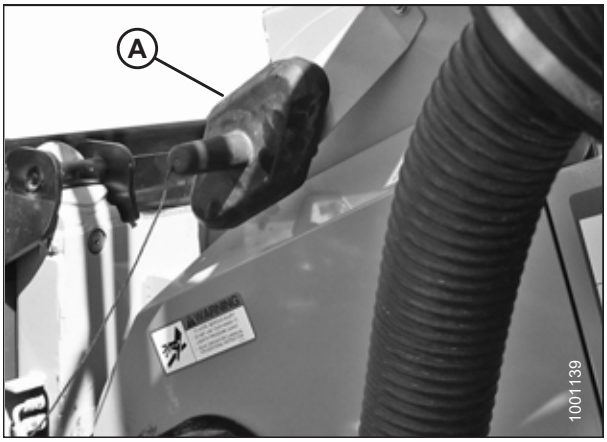


Figure 4.136: Receptacle Cover

11. Clean mating surface of coupler (A) and position onto float module receptacle (C).
12. Turn knob (B) to secure the coupler to the receptacle.

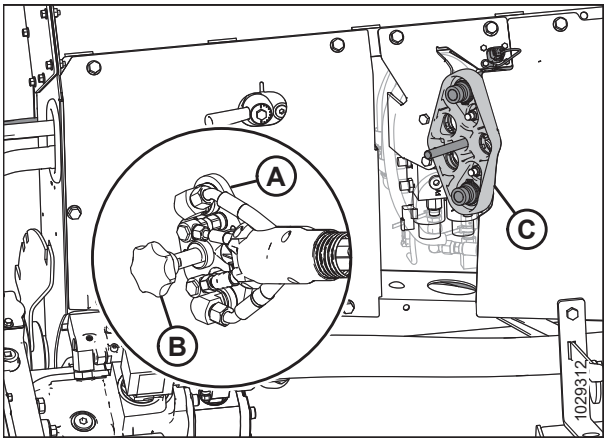


Figure 4.137: Coupler

13. Detach safety chain (C) from support bracket (B).
14. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

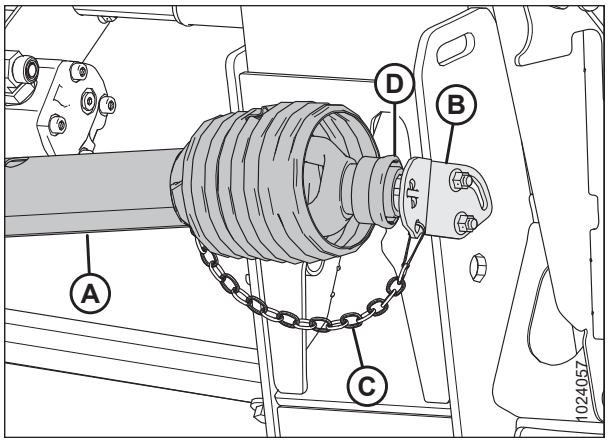


Figure 4.138: Driveline

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

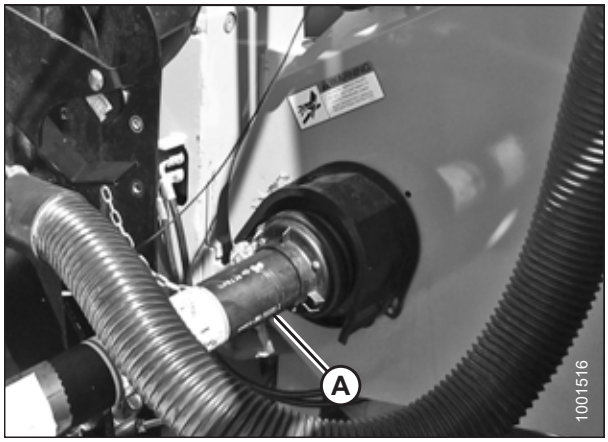


Figure 4.139: Driveline and Output Shaft

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

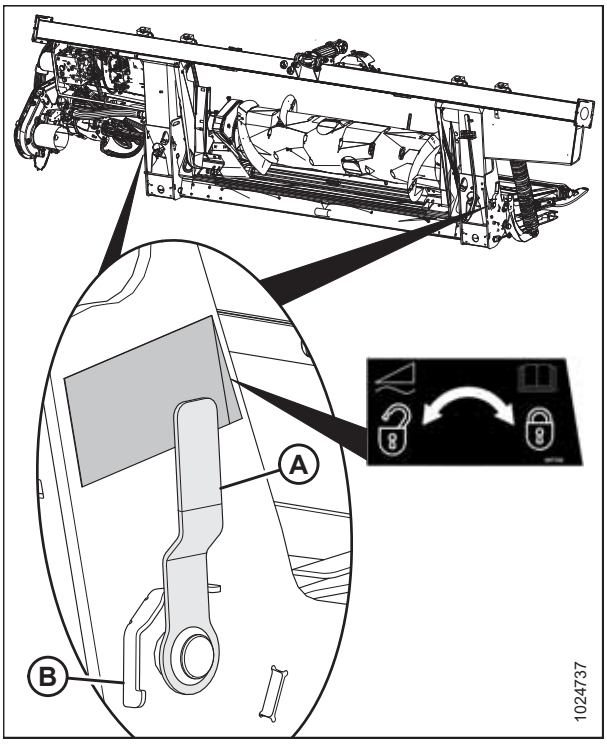


Figure 4.140: Float Lock Handle

4.7 John Deere Combines

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

4.7.1 Attaching Header to John Deere Combine

WARNING

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

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

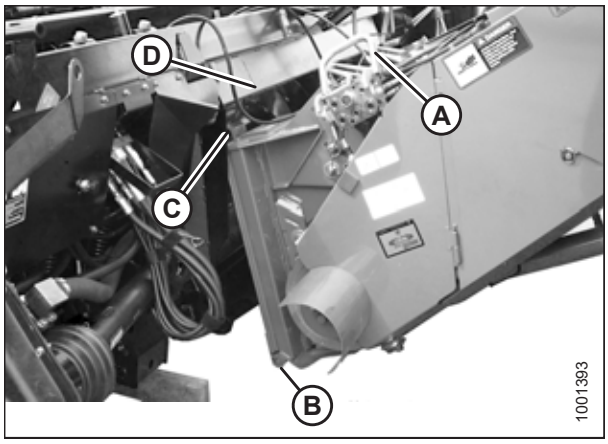


Figure 4.141: Combine and Float Module

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

3. Start the engine and slowly drive the combine up to the header until feeder house saddle (C) is directly under float module top cross member (D).
4. Raise the feeder house slightly to lift the header ensuring the feeder house saddle is properly engaged in the float module frame.
5. Shut down the engine, and remove the key from the ignition.
6. Pull handle (A) on the float module to release multicoupler (B) from the storage position. Remove the multicoupler, and push the handle back into the float module to store.

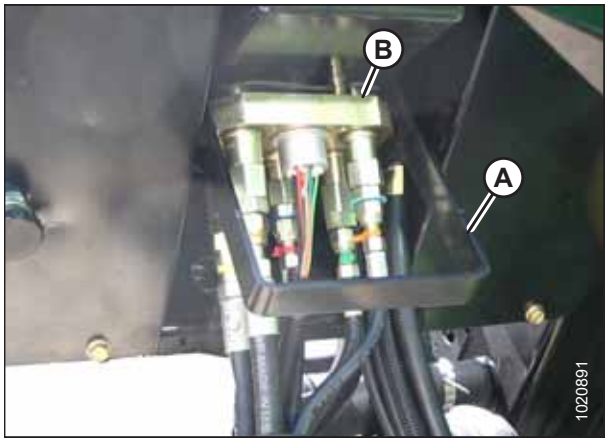


Figure 4.142: Multicoupler Storage

7. Position multicoupler (A) onto the receptacle, and pull handle (B) to engage the lugs on the multicoupler into the handle.
8. Pull handle (B) to a horizontal position and ensure multicoupler (A) is fully engaged into the receptacle.

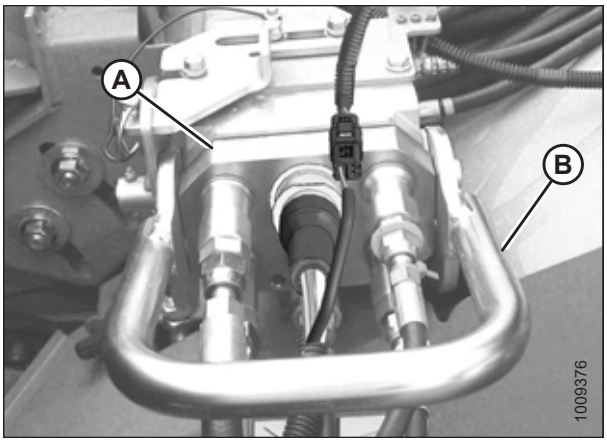


Figure 4.143: Multicoupler

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

   NOTE:

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

10. Tighten bolts (B).

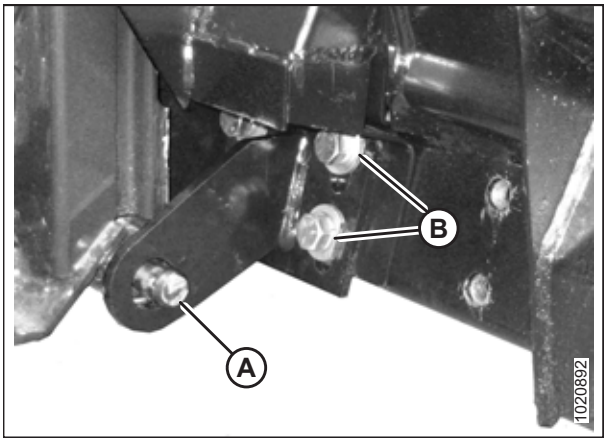


Figure 4.144: Feeder House Pin

11. Slide latch (A) to lock handle (B) in position and secure with lynch pin (C).
12. If the float module is equipped with the reel fore-aft/header tilt selector, connect harness (D) to combine connector (E).

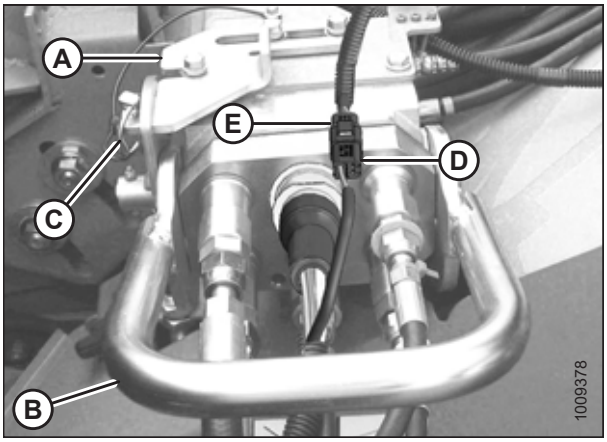


Figure 4.145: Multicoupler

13. Detach safety chain (C) from support bracket (B).
14. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from the support bracket.

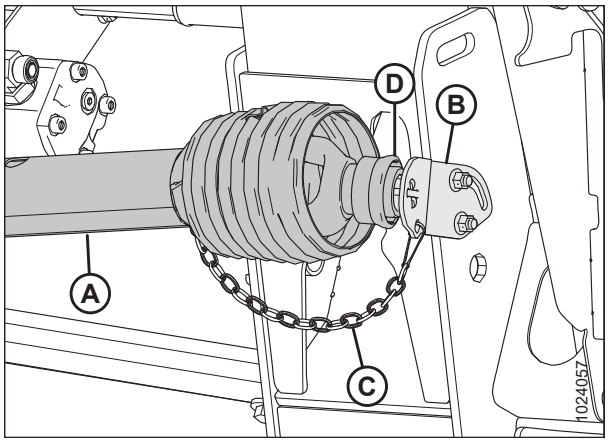


Figure 4.146: Driveline

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

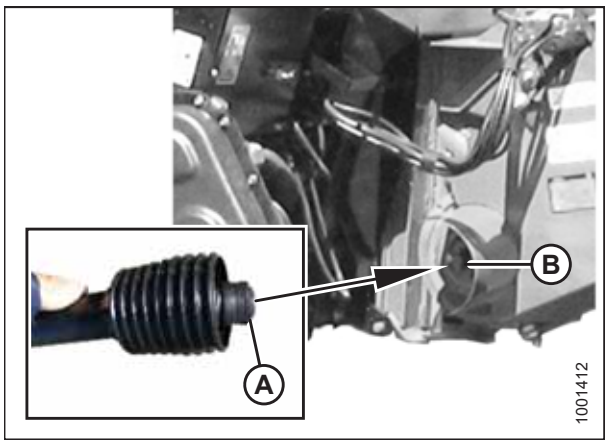


Figure 4.147: Driveline

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

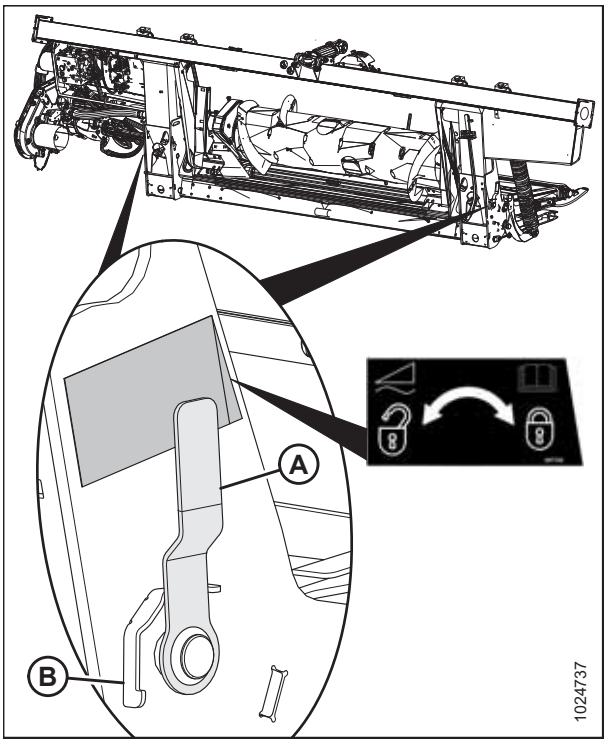


Figure 4.148: Float Lock Handle

4.7.2 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. Shut down 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. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.
3. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in locked position (B).

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.
4. Open shield (A) on the combine, pull back the collar on driveline (B), and pull the driveline off the combine output shaft.

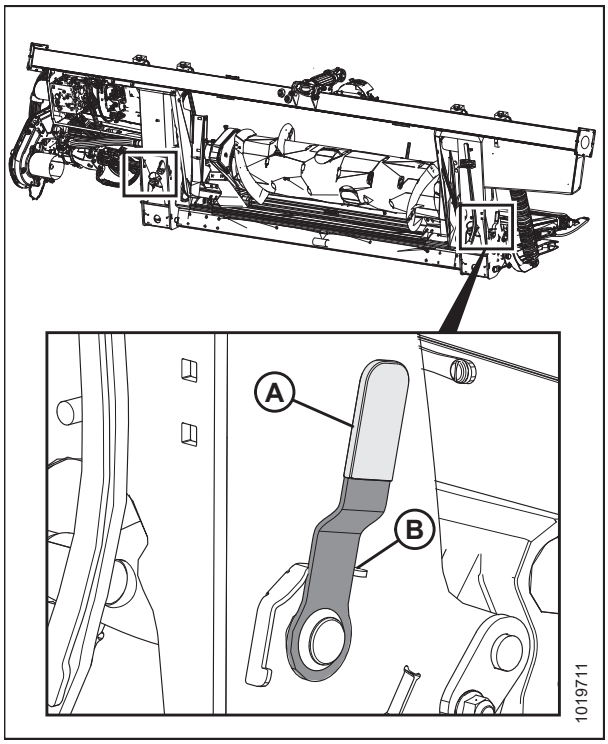


Figure 4.149: Float Lock Handle

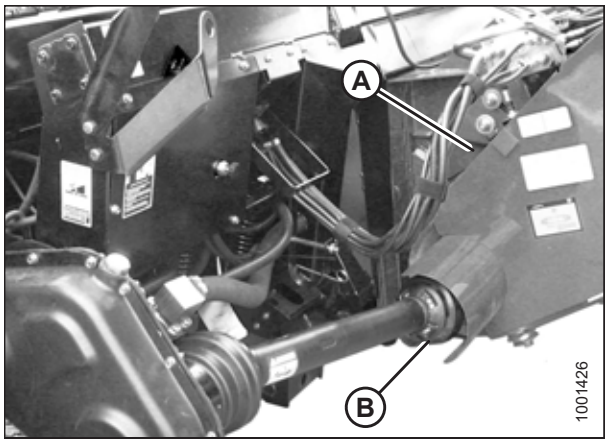


Figure 4.150: Driveline

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

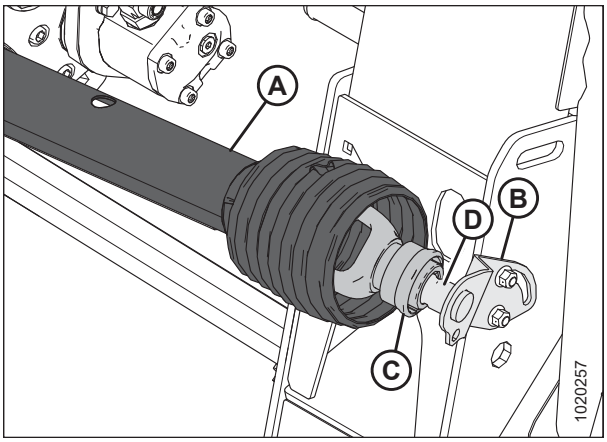


Figure 4.151: Driveline

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

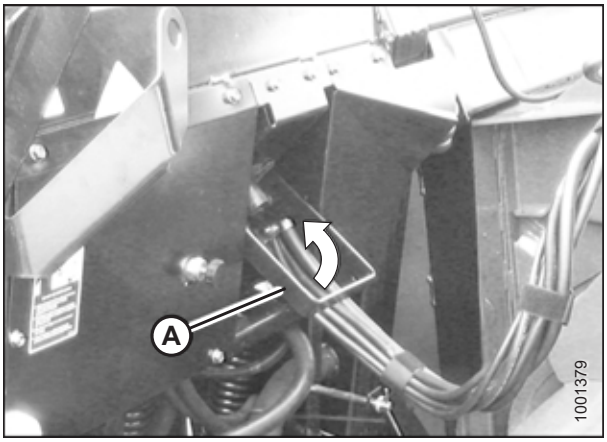


Figure 4.152: Multicoupler Storage

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

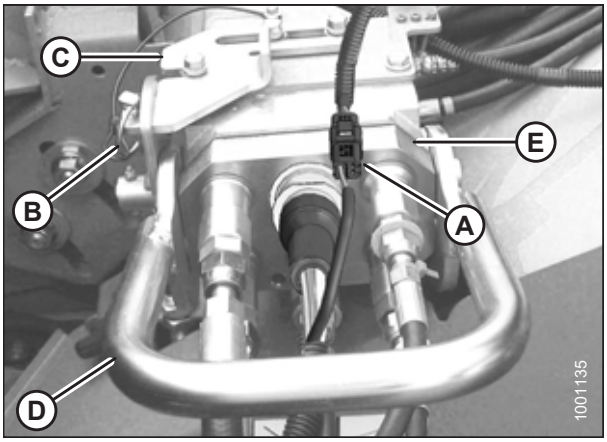


Figure 4.153: Multicoupler

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

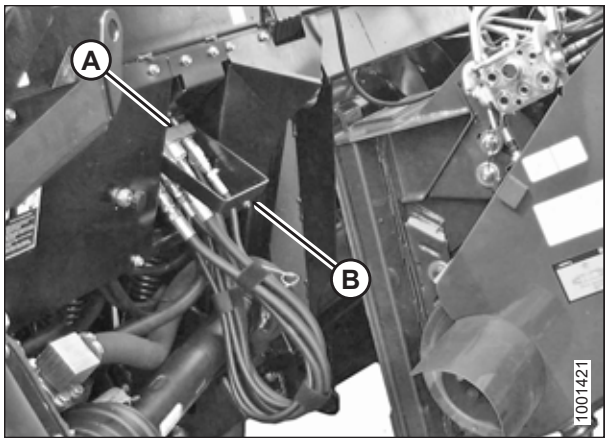


Figure 4.154: Multicoupler Storage

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

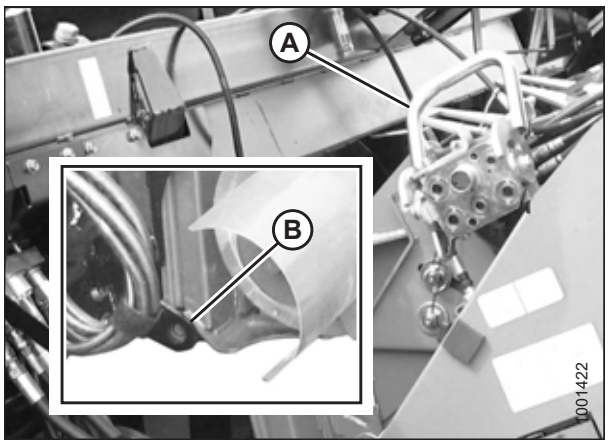


Figure 4.155: Feeder House Locks

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

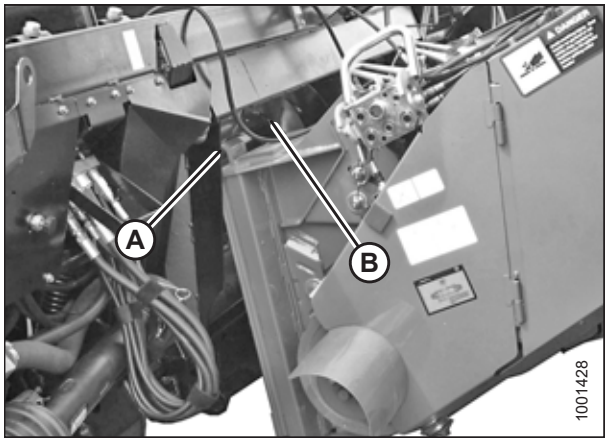


Figure 4.156: Float Module and Feeder House

4.8 New Holland Combines

The FD2 Series FlexDraper® Header is compatible with the following New Holland combines:

Table 4.2 Header and Combine Compatibility

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

4.8.1 Attaching Header to New Holland CR/CX Combine

WARNING

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

1. Ensure handle (A) is positioned so locks (B) can engage the float module.

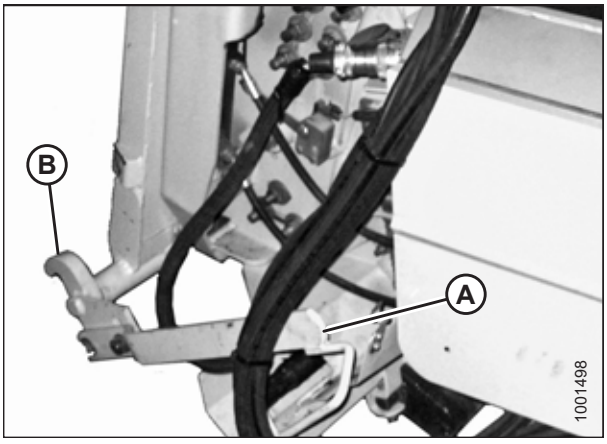


Figure 4.157: Feeder House Locks

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

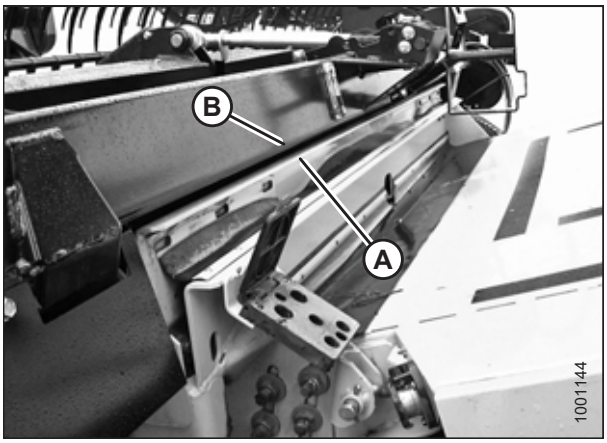


Figure 4.158: Header on Combine

5. Lift lever (A) on the float module on the left side of the feeder house, and push handle (B) on the combine to engage locks (C) on both sides of the feeder house.
6. Push down on 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 pin (D) on the float module when lever (A) and handle (B) are engaged, loosen bolts (E) and adjust lock (C). Retighten bolts.

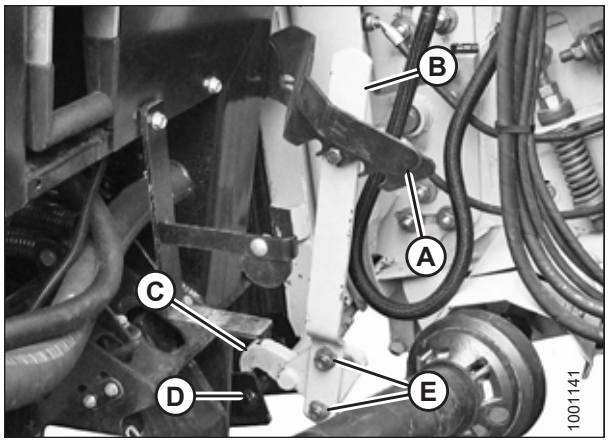


Figure 4.159: Feeder House Locks

8. Open the cover on receptacle (A) located on the left side of the float module.
9. Push in lock button (B) and pull handle (C) to the fully open position.
10. Clean the receptacle mating surfaces.

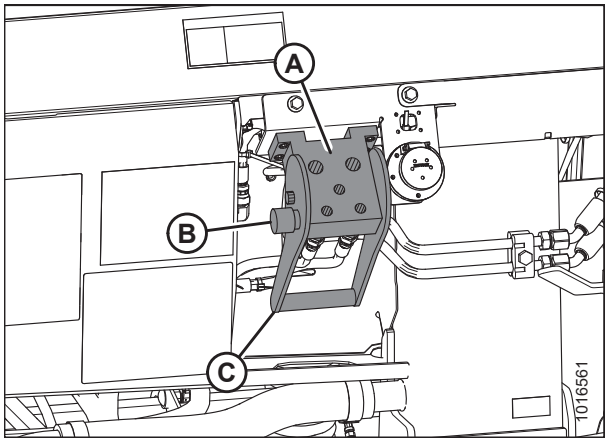


Figure 4.160: Float Module Receptacle

11. Remove hydraulic quick coupler (A) from the storage plate on the combine, and clean the mating surface of the coupler.

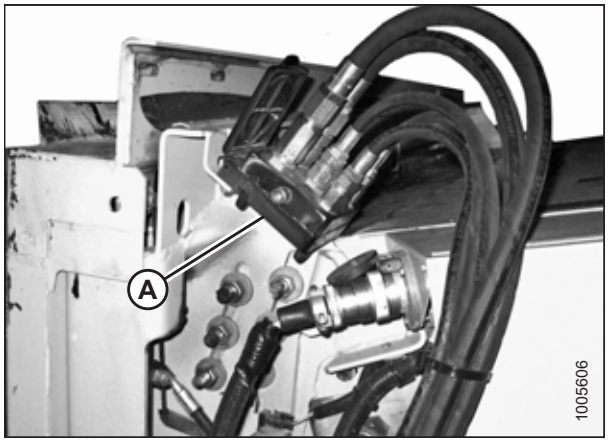


Figure 4.161: Combine Coupler

12. Position coupler (A) onto the float module receptacle, and push handle (B) to engage the pins into the receptacle.
13. Push handle (B) to closed position until lock button (C) snaps out.
14. Remove the cover on the float module electrical receptacle.
15. Remove connector (D) from the combine.
16. Align lugs on connector (D) with the slots in the float module receptacle, and push the connector onto the receptacle. Turn the collar on the connector to lock it in place.

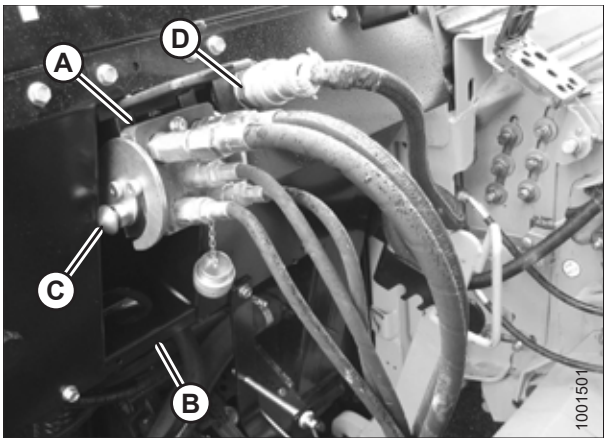


Figure 4.162: Connections

17. Detach safety chain (C) from support bracket (B).
18. Pull collar (D) back to release driveline (A) from support bracket. Remove the driveline from support bracket.

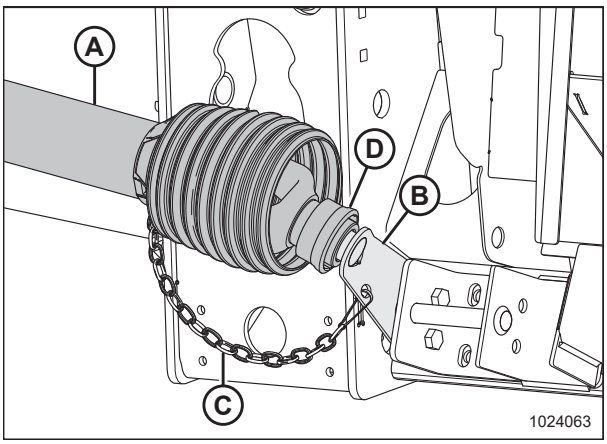


Figure 4.163: Driveline in Storage Position

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

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

    NOTE:

    Illustration at right shows the right side of the header. Float lock on left side of header opposite.

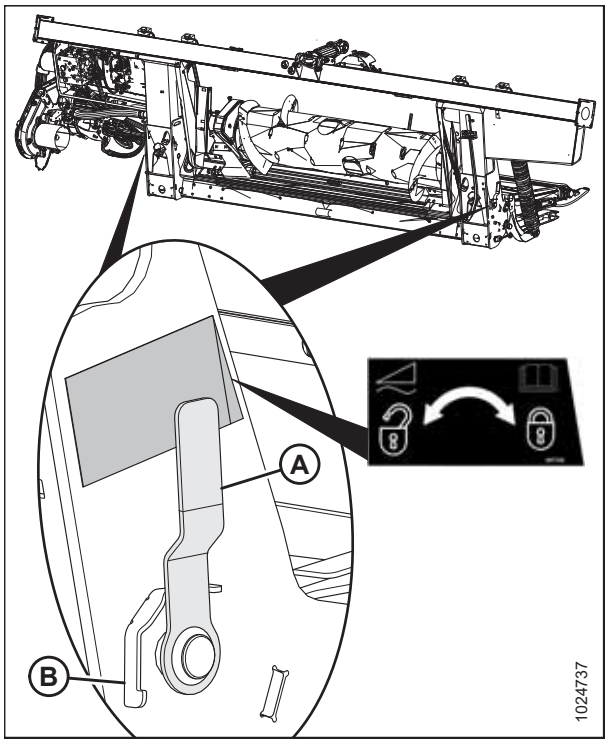


Figure 4.164: Float Lock Handle

4.8.2 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. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

   IMPORTANT:

   If stabilizer wheels are installed, set the wheels to the storage or uppermost working position, otherwise the header may tilt forward, making reattachment difficult. For instructions, refer to *Adjusting Stabilizer Wheels, page 63*.
3. Engage the float locks by pulling each float lock handle (A) away from the float module and setting it in the locked position (B).

   NOTE:

   Illustration at right shows the right side of the header. Float lock on left side of header opposite.
4. Disconnect driveline (A) from the combine.

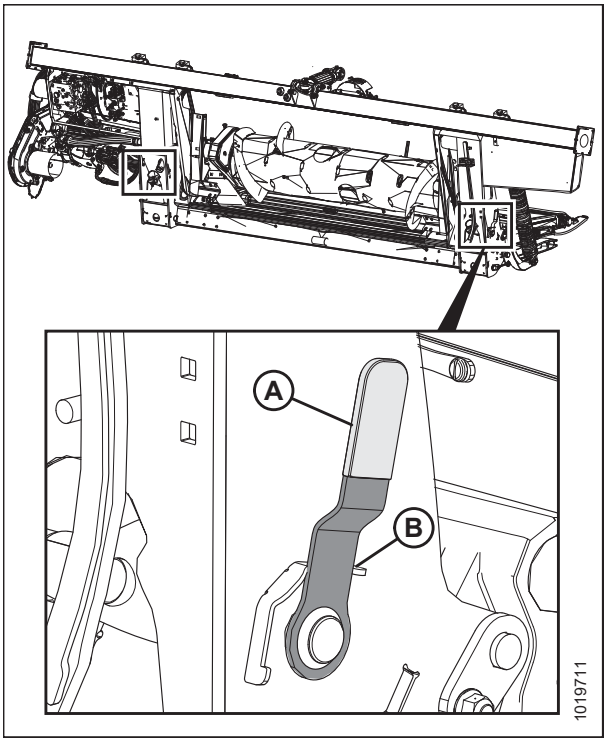


Figure 4.165: Float Lock Handle

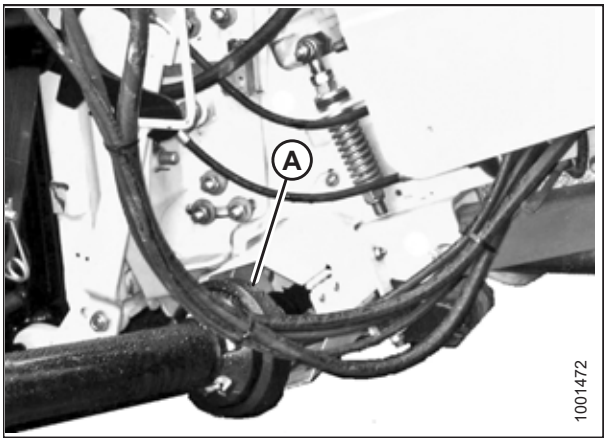


Figure 4.166: Driveline

5. Store driveline (A) on driveline support bracket (B) by pulling back collar (C) on the driveline and fitting it over support bracket weldment (D). Release the collar so it locks into place over the weldment.
6. Attach safety chain (E) to support bracket (B).

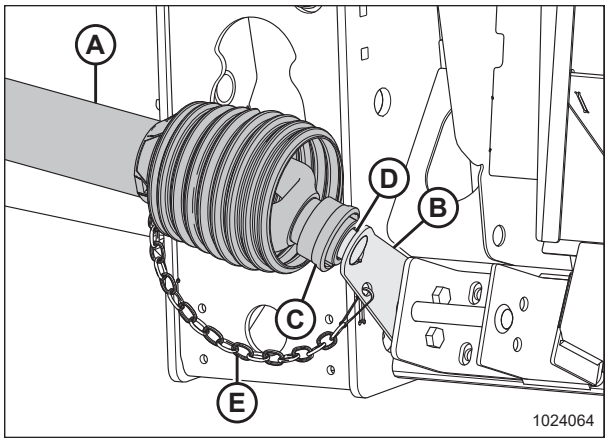


Figure 4.167: Driveline

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

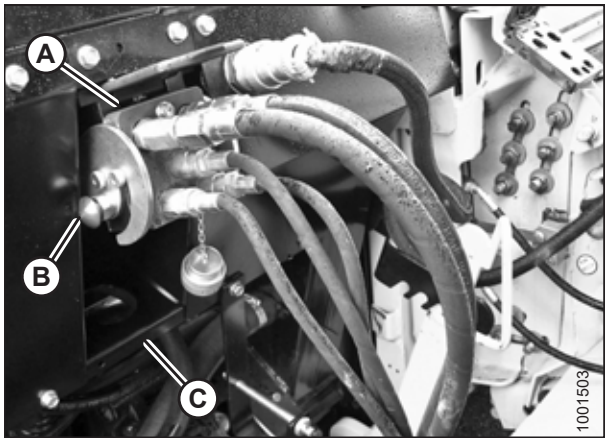


Figure 4.168: Float Module Connections

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

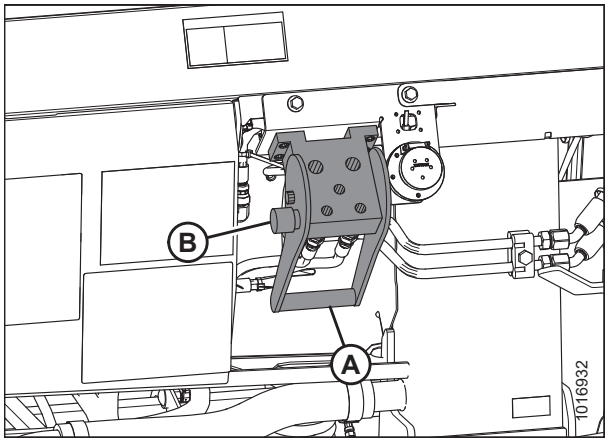


Figure 4.169: Float Module Receptacles

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

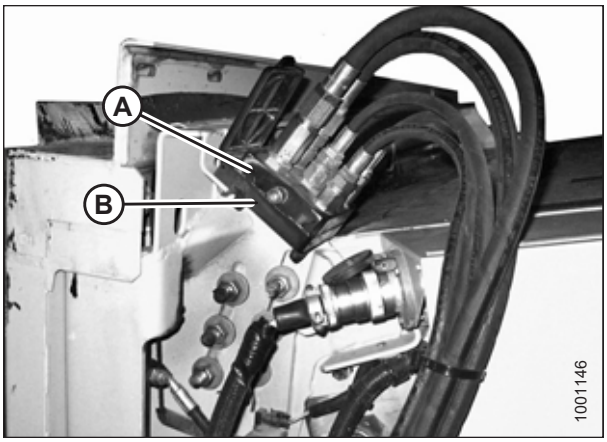


Figure 4.170: Combine Coupler

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

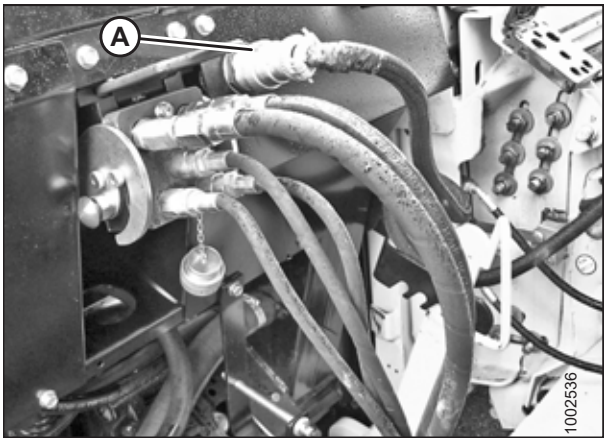


Figure 4.171: Float Module Connections

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

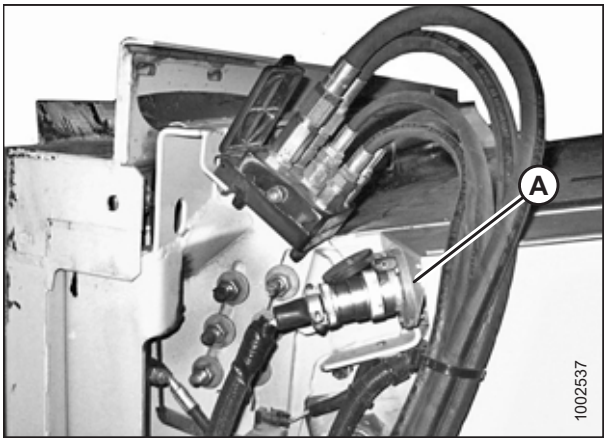


Figure 4.172: Combine Couplers

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

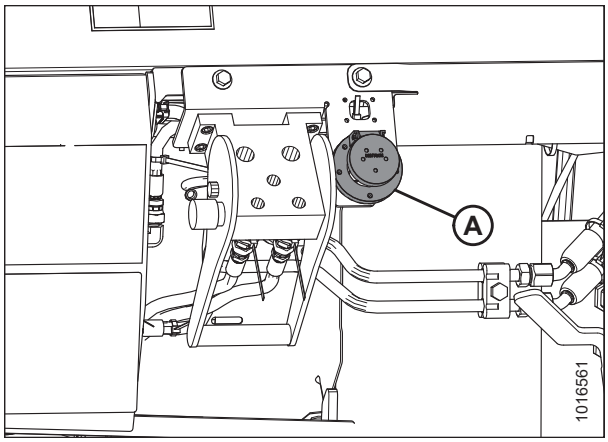


Figure 4.173: Float Module Receptacles

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

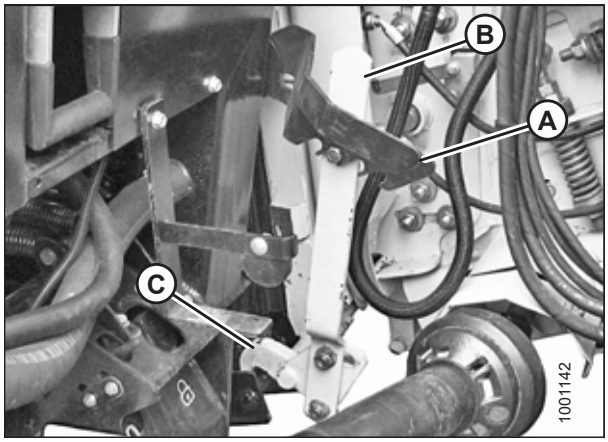


Figure 4.174: Feeder House Locks

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

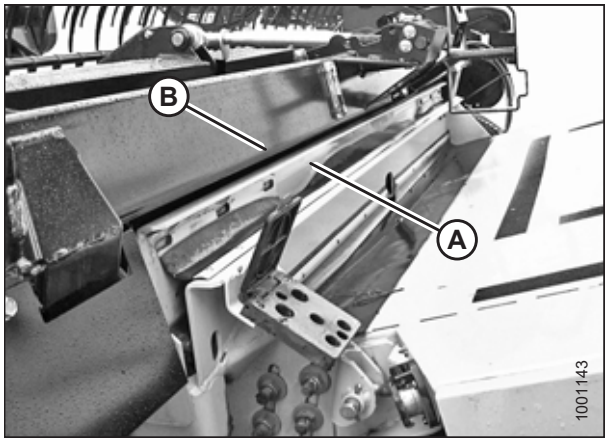


Figure 4.175: Header on Combine

4.9 Attaching and Detaching Header to and from FM200 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

4.9.1 Detaching Header from FM200 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.

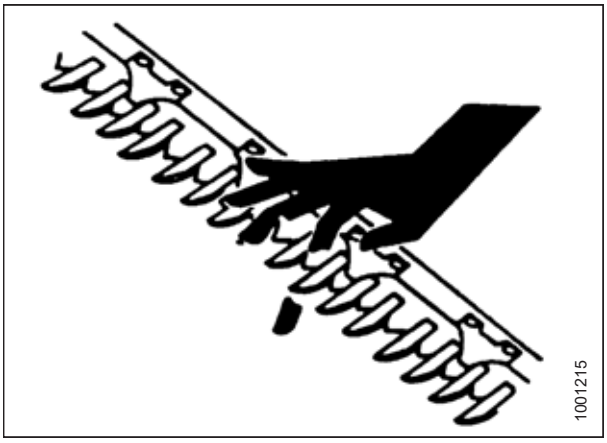


Figure 4.176: Cutterbar Hazard

1. Start the engine, and then lower header.
2. Increase clearance under the float module feed draper by tilting the header and fully extending cylinder (A) until indicator (B) is at position **E**.
3. Raise the reel to its full height.
4. Stop the engine, and then remove key from the ignition.
5. Engage the reel safety props.

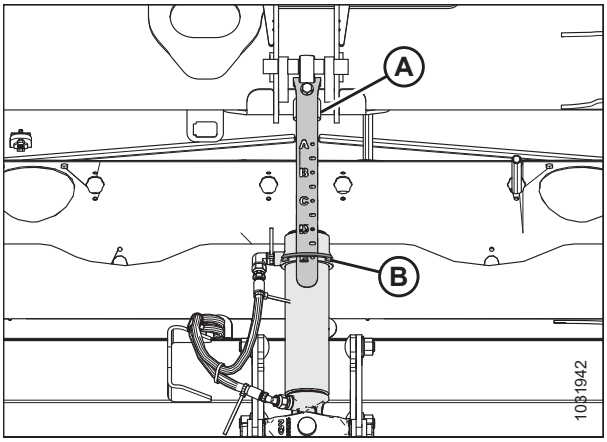


Figure 4.177: Center-Link

6. Move lever (A) to lock position to engage wing locks.

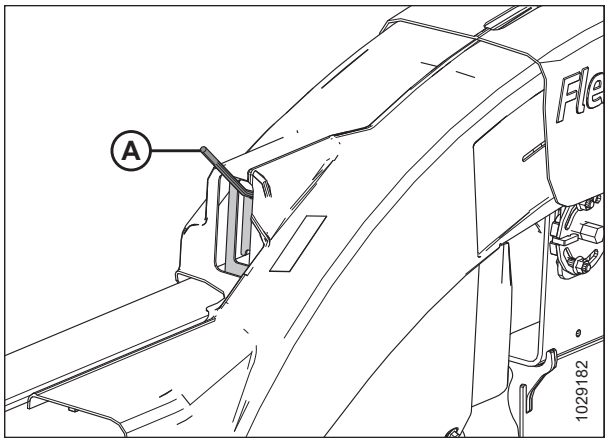


Figure 4.178: Wing Lock – Left Side Shown

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

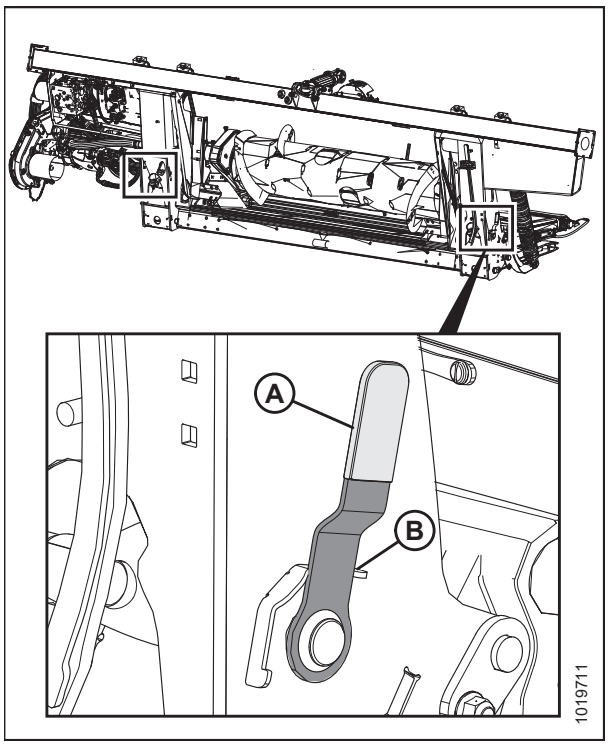


Figure 4.179: Float Lock

8. Remove two bolts (A) and fillers (B) from transition pan support angle (C). Repeat on opposite side.

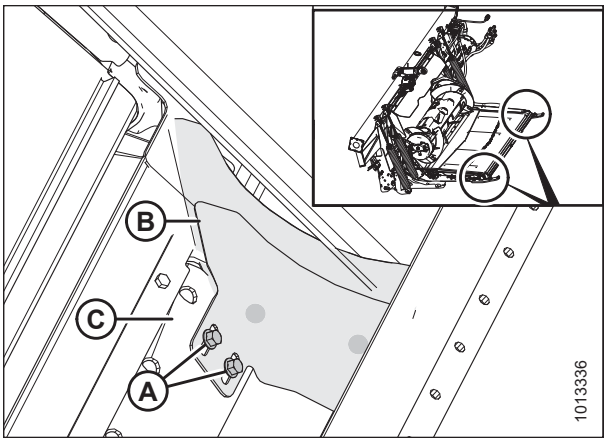


Figure 4.180: Fillers

9. Remove and retain screw (A).
10. Remove the 9/16 in. nut from bolt (B).
11. Use a 24 mm (15/16 in.) wrench on hex bolt (C) to rotate latch downwards and slightly raise the feed deck to remove bolt (B).
12. Rotate latch up and back to lower the float module deck and disengage the transition pan tube.
13. Install screw (A).
14. Repeat for the opposite side of the feed draper deck.

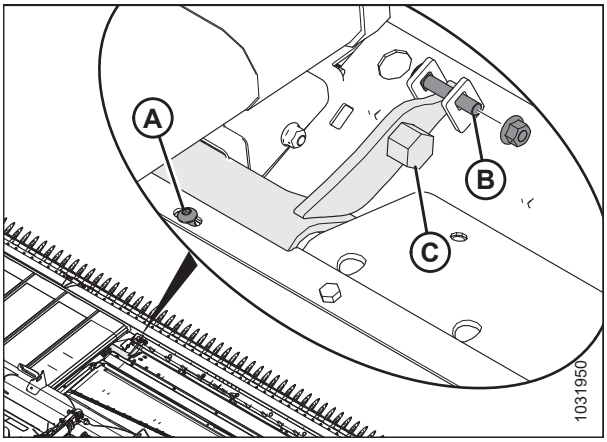


Figure 4.181: Float Module Latch

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

15. Disengage the reel safety props, start the engine, lower the reel, and fully raise the header.
16. Stop the engine, remove the key from the ignition, and engage the combine safety props.
17. Loosen nut and bolt (A), and disengage hook (B) from leg on both sides of float module.

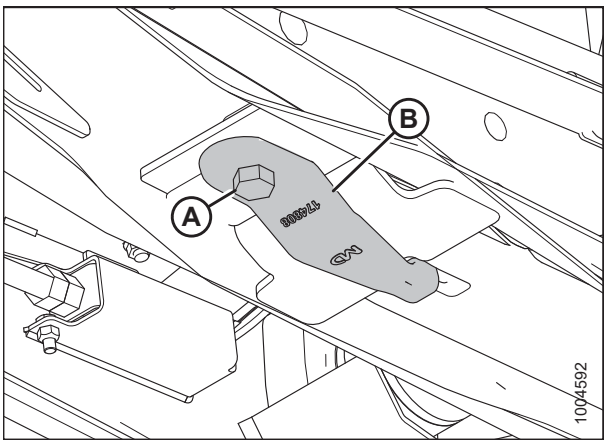


Figure 4.182: Float Module Underside

18. Rotate hook (B) 90° for storage, and retighten bolt (A) and nut.

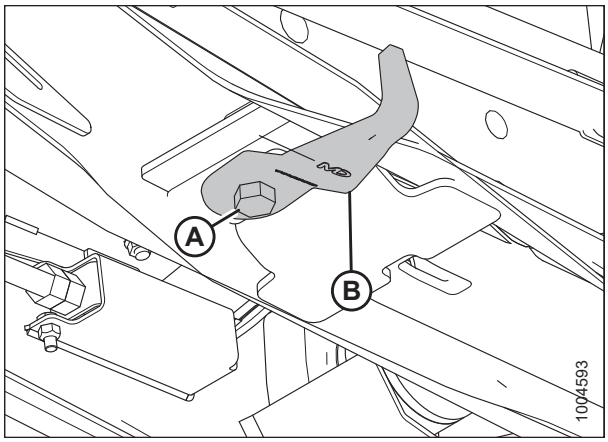


Figure 4.183: Float Module Underside

19. Place a 150 mm (6 in.) block (A) under the header leg. This will assist with disconnecting the center-link.
20. Disengage the combine lift cylinder locks, start the engine, and lower the header until the header leg rests on the block or stabilizer wheels are on the ground.

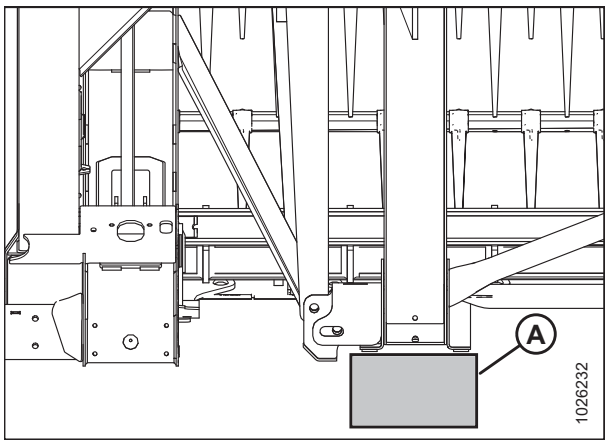


Figure 4.184: Header Leg on Block

21. Disconnect the hydraulic center-link as follows:
    a. Remove lynch pin (A) and pin (B), and lift center-link (C) clear of the bracket.
    b. Reinstall pin (B) on the bracket, and secure with lynch pin (A).

    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.

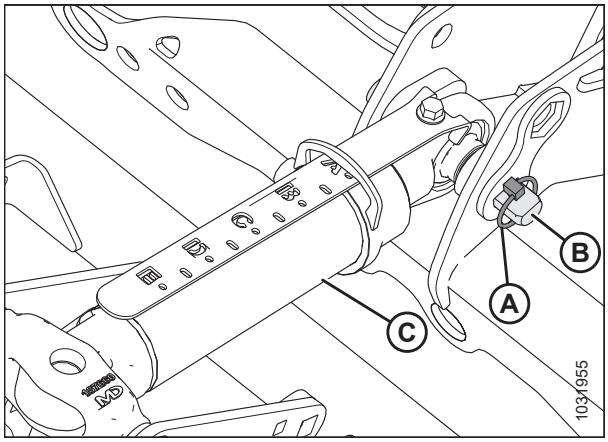


Figure 4.185: Hydraulic Center-Link

NOTE:

- If on the ground: Push reel fully forward to reduce oil loss.
- If on transport: Pull reel fully back.

22. Disconnect electrical connector (A).

NOTE:

If colored plastic ties are missing from any of the hoses, replace them before disconnecting the hoses.

23. Disconnect the case drain, knife, and draper drive hydraulic hoses from manifold (B). Immediately cap the hose ends to prevent oil loss.
24. Store and secure hoses on float module frame.

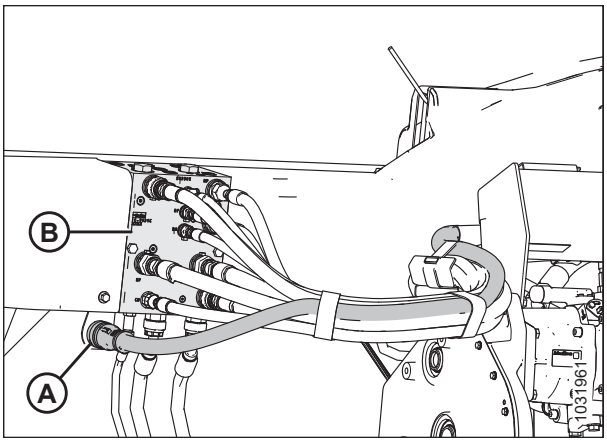


Figure 4.186: Header Connections

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

25. Start the engine and slowly back away in a straight line from header.
26. Stop the engine and remove the key from the ignition.

4.9.2 Attaching Header to FM200 Float Module

The FD2 Series headers can be attached to the float module from either field or transport configuration.

WARNING

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

NOTE:

Gauge/slow speed transport wheels can be used to support the header. For instructions, refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61*.

1. Prop up hydraulic center-link (A) with a pin (or equivalent tool) at location (B) as shown.

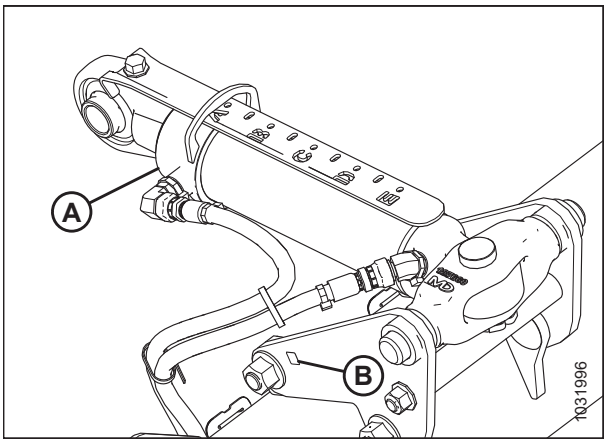


Figure 4.187: Center-Link

2. Ensure latches (A) at the front corners of the float module are rotated towards the rear of the float module.

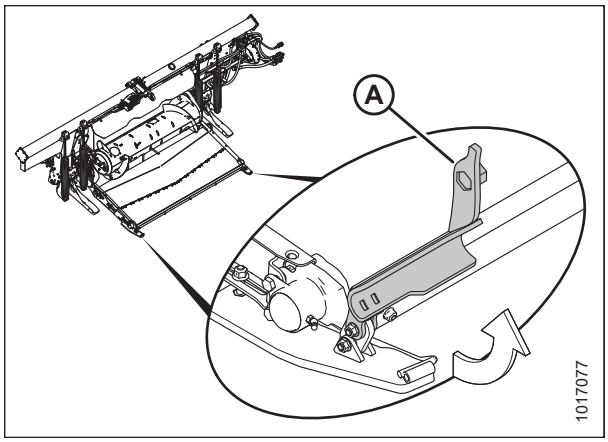


Figure 4.188: Latch

CAUTION

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

3. Start engine, and lower the combine feeder house so that float module arms (A) are aligned with header balance channels (B).
4. Drive slowly forward, maintaining alignment between float module arms (A) and header balance channels (B).
5. Keep float module arms (A) just under balance channels (B) to ensure float module legs seat properly in the header linkage supports at location (C).

   IMPORTANT:

   Keep hydraulic hoses clear to prevent damage when driving into header.
6. Continue forward until float module arms (A) contact stops in balance channels (B).
7. Adjust length of center-link (A) using the header angle hydraulics to approximately align center-link eye (B) with the hole in the header bracket.
8. Shut down the engine, and remove the key from the ignition.
9. Remove lynch pin (C) and pull pin (D) partially out of bracket (C), and remove the prop from under center-link (A).

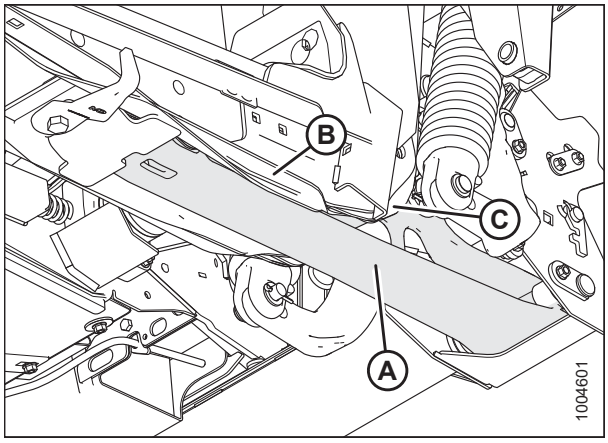


Figure 4.189: Float Module Underside

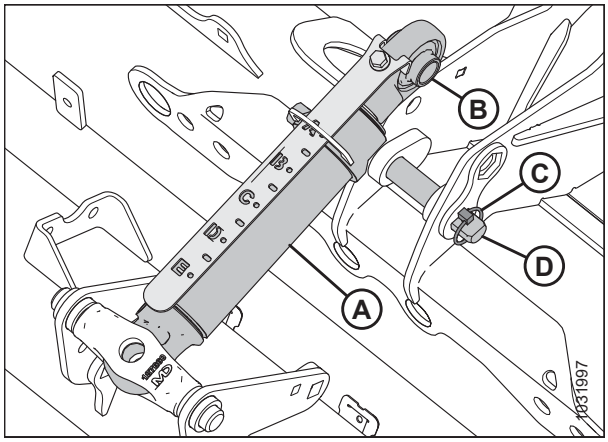


Figure 4.190: Center-Link

10. Align center-link eye (A) with the hole in the bracket, install pin (B), and secure with lynch pin (C).

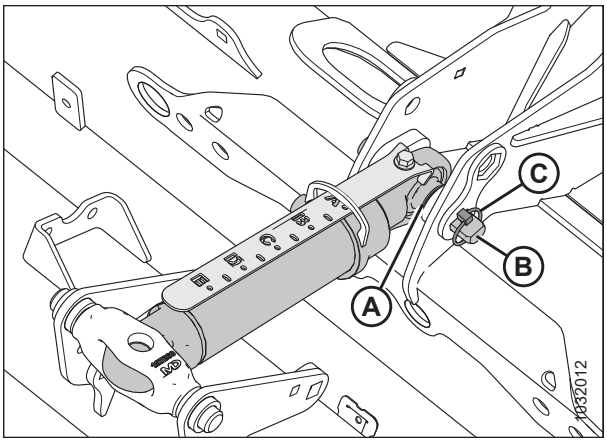


Figure 4.191: Center-Link

CAUTION

Always connect center-link before fully raising header.

CAUTION

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

11. Start the engine and slowly raise the float module while making sure the float module legs engage the header legs.
12. Raise the header to its full height, stop the engine, and remove the key from the ignition.
13. Engage the safety props on the combine.
14. Replace pin (B) in the header legs and secure with ring (A).
15. Loosen nut and bolt (A), and reposition hook (B) as shown to engage float module arm. Tighten bolt and nut (A).

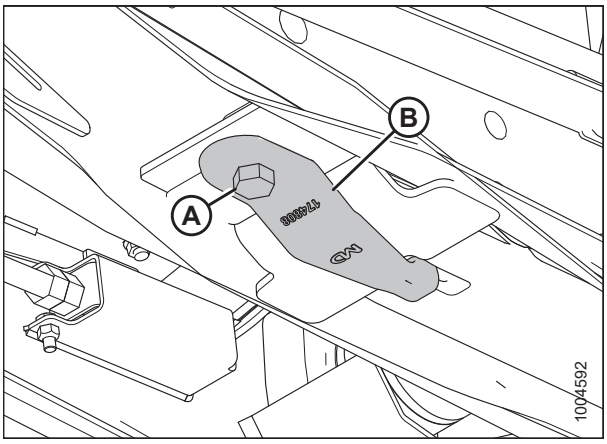


Figure 4.192: FD2 Series Combine Header – Float Module Underside

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 steepest setting (longest 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.

WARNING

Keep hands clear of the area between guards and knife at all times.

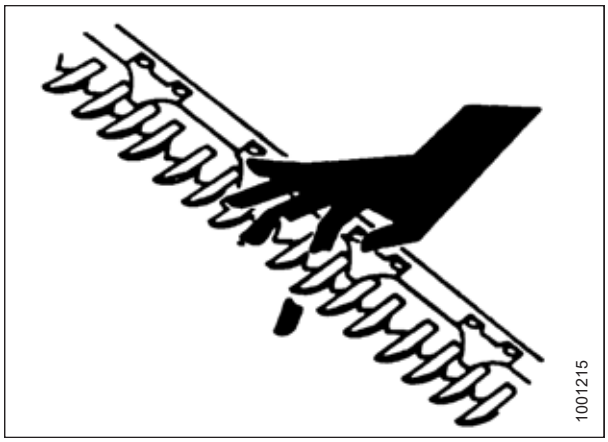


Figure 4.193: Cutterbar Hazard

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 latch (C) forward and down to engage the transition pan tube.

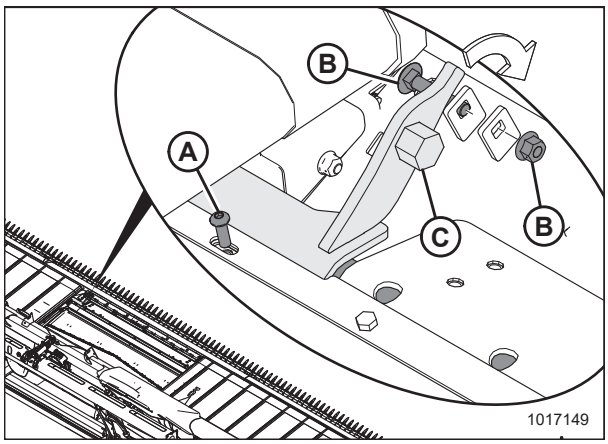


Figure 4.194: Float Module Latch

22. Use a 24 mm (15/16 in.) 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.

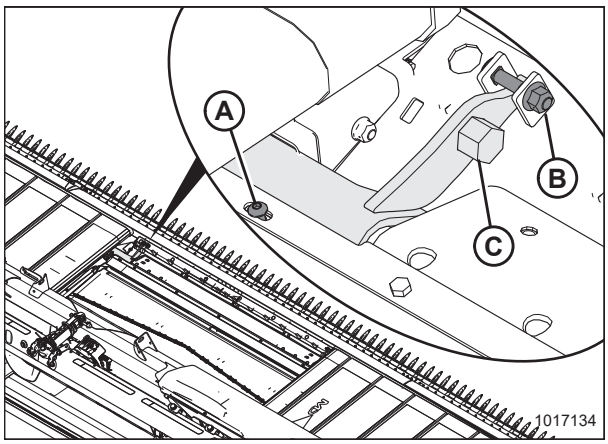


Figure 4.195: Float Module Latch

25. Install fillers (B) on transition pan support angle (C) using two bolts (A).

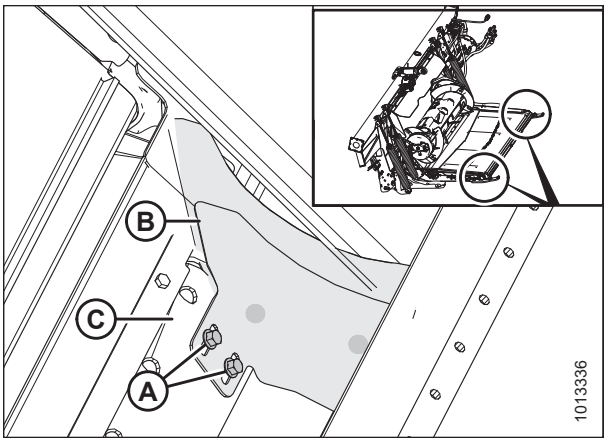


Figure 4.196: Fillers

26. Use a clean cloth to remove debris from couplers and receptacles.
27. Attach the following hydraulic hoses to manifold (A):
    - Knife pressure to KP on manifold
    - Knife return to KR on manifold
    - Draper pressure to DP on manifold
    - Draper return to DR on manifold
    - Case drain to CD on manifold
28. Attach electrical connector (A).

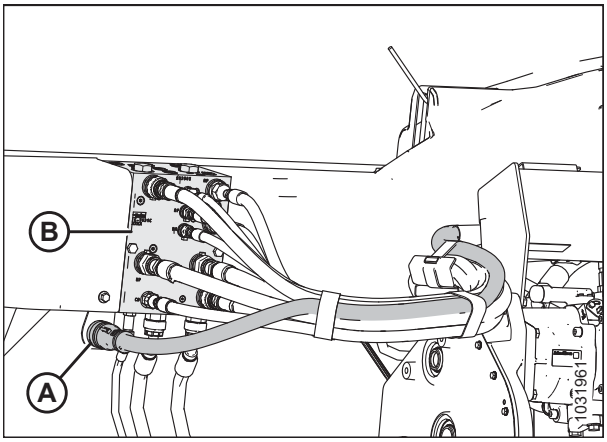


Figure 4.197: Header Connections

29. Check the float and confirm the header is level. For instructions, refer to the following:
    - *3.7.3 Header Float, page 66*
    - *3.9 Leveling Header, page 276*

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.

Chapter 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 at the rear by the right header leg.

Log hours of operation and use the maintenance record provided (refer to *5.2.1 Maintenance Schedule/Record, page 384*) 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. Shut down the engine, and remove the key from the ignition.
3. Engage the park brake.
4. Wait for all moving parts to stop.

5.2 Maintenance 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 *5.2.1 Maintenance Schedule/Record, page 384*).

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 specified fluids and lubricants. Refer to inside back cover for recommended fluids and lubricants.

⚠ CAUTION

Carefully follow safety messages. For instructions, refer to *5.1 Preparing Machine for Servicing, page 383* and *1 Safety, page 1*.

5.2.1 Maintenance Schedule/Record

Action:		✓ – Check					♦ – Lubricate						▲ – Change					
✎	Hour meter reading																	
✎	Service date																	
✎	Serviced by																	
First Use		Refer to *5.2.2 Break-In Inspection, page 387*.																
End of Season		Refer to *5.2.4 End-of-Season Service, page 388*.																
10 Hours or Daily (Whichever Occurs First)																		
✓	Hydraulic hoses and lines; refer to *5.2.5 Checking Hydraulic Hoses and Lines, page 389*[45]																	
✓	Knife sections, guards, and hold-downs; refer to *5.8 Knife, page 440*[46]																	
✓	Tire pressure; refer to *5.18.3 Checking Tire Pressure, page 576*[46]																	
✓	Link holder hooks; refer to *5.13 Checking Link Holder Hooks, page 507*[46]																	
25 Hours																		
✓	Hydraulic oil level at reservoir; refer to *5.4.1 Checking Oil Level in Hydraulic Reservoir, page 406*[46]																	
♦	Knifeheads; refer to *Every 25 Hours, page 390*[46]																	

45. 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.
46. 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.

50 Hours or Annually																		
♦	Driveline and driveline universals; refer to *Every 50 Hours, page 390*																	
♦	Upper cross auger right bearing; refer to *Every 50 Hours, page 390*																	
♦	Upper cross auger center support and U-joint; refer to *Every 50 Hours, page 390*																	
♦	Feed draper roller bearings, 3 locations; refer to *Every 50 Hours, page 390*																	
▲	Knife drive box lubricant (first 50 hours only); refer to *Changing Oil in Knife Drive Box, page 480*																	
▲	Header drive main gearbox lubricant (first 50 hours only); refer to *Changing Oil in Header Drive Main Gearbox, page 403*																	
▲	Header drive completion gearbox lubricant (first 50 hours only); refer to *Changing Oil in Header Drive Completion Gearbox, page 405*																	
100 Hours or Annually (Whichever Occurs First)																		
✓	Auger to pan and feed draper clearance; refer to *5.7.1 Adjusting Feed Auger to Pan Clearance, page 420*																	
✓	Main gearbox lubricant level; refer to *Checking Oil Level in Header Drive Main Gearbox, page 402*																	
✓	Completion gearbox lubricant level; refer to *Checking Oil Level in Header Drive Completion Gearbox, page 404*																	
✓	Reel drive chain tension; refer to *5.17.1 Reel Drive Chain Tension, page 560*																	
✓	Reel finger/cutterbar clearance; refer to *5.16.1 Reel Clearance to Cutterbar, page 528*																	
✓	Wheel bolt torque; refer to *5.18.1 Checking Wheel Bolt Torque, page 574*																	
✓	Knife drive box lubricant level; refer to *Checking Oil Level in Knife Drive Box , page 470*																	
✓	Knife drive box mounting bolts; refer to *Checking Mounting Bolts, page 471*																	
♦	Auger drive chain; refer to *Every 100 Hours, page 394*																	
♦	Float pivots; refer to *Every 100 Hours, page 394*																	
♦	Float module auger pivots; refer to *Every 100 Hours, page 394*																	

♦	Float spring tensioners; refer to *Every 100 Hours, page 394*																	
♦	Reel drive chain; refer to *Every 100 Hours, page 394*																	
200 Hours or Annually (Whichever Occurs First)																		
✓	Draper roller bearings; refer to *5.15.5 Draper Roller Maintenance, page 517*																	
250 Hours or Annually (Whichever Occurs First)																		
♦	Reel drive U-joint; refer to *Every 250 Hours, page 396*																	
♦	Bell crank linkage; refer to *Every 250 Hours, page 396*																	
▲	Hydraulic oil filter; refer to *5.4.4 Changing Oil Filter, page 408*																	
500 Hours or Annually (Whichever Occurs First)																		
♦	Reel shaft bearings; refer to *Every 500 Hours, page 397*																	
♦	Gauge wheel / slow speed transport wheel bearings; refer to *Every 500 Hours, page 397*																	
✓	Header drive main gearbox chain tension; refer to *5.6.5 Adjusting Chain Tension – Main Gearbox, page 416*																	
✓	Header drive completion gearbox chain tension; refer to *5.6.6 Adjusting Chain Tension – Completion Gearbox, page 418*																	
1000 Hours or 3 Years (Whichever Occurs First)																		
▲	Knife drive box lubricant; refer to *Changing Oil in Knife Drive Box, page 480*																	
▲	Header drive main gearbox lubricant; refer to *Changing Oil in Header Drive Main Gearbox, page 403*																	
▲	Header drive completion gearbox lubricant; refer to *Changing Oil in Header Drive Completion Gearbox, page 405*																	
▲	Hydraulic oil; refer to *5.4.3 Changing Oil in the Hydraulic Reservoir, page 407*																	

5.2.2 Break-In Inspection

Break-in inspection involves checking belts, fluids, and performing general machine inspections for loose hardware or other areas of concern. Break-in inspections ensure that all components can operate for an extended period without requiring service or replacement. The break-in period is the first 50 hours of operation after the machine's initial start up.

Inspection Instance	Item	Refer to
5 Minutes	Check hydraulic oil level in reservoir (check after first run-up and after the hydraulic hoses have filled with oil).	*5.4.1 Checking Oil Level in Hydraulic Reservoir, page 406*
5 Hours	Check for loose hardware and tighten to required torque.	*8.1 Torque Specifications, page 599*
10 Hours	Check auger drive chain tension.	*5.7.2 Checking Feed Auger Drive Chain Tension, page 422*
10 Hours	Check knife drive box mounting bolts.	*Checking Mounting Bolts, page 471*
50 Hours	Change float module gearbox oil.	*Changing Oil in Header Drive Main Gearbox, page 403*
50 Hours	Change float module hydraulic oil filter.	*5.4.4 Changing Oil Filter, page 408*
50 Hours	Change knife drive box lubricant.	*Changing Oil in Knife Drive Box, page 480*
50 Hours	Check gearbox chain tension.	*5.6.5 Adjusting Chain Tension – Main Gearbox, page 416* and *5.6.6 Adjusting Chain Tension – Completion Gearbox, page 418*

5.2.3 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. For instructions, refer to *5.3 Lubrication and Servicing, page 390*.
2. Perform all annual maintenance tasks. For instructions, refer to *5.2.1 Maintenance Schedule/Record, page 384*.

5.2.4 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. Bring the machine for storage in a dry and protected place if possible. If storing outside, always cover the machine 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. Lubricate the knife. Refer to the inside back cover for recommended lubricants.
10. Check for worn components and repair as necessary.
11. 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.
12. Replace or tighten any missing or loose hardware. For instructions, refer to *8.1 Torque Specifications, page 599*.

5.2.5 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 5.1: Hydraulic Pressure Hazard

- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. Allowing dust, dirt, water, or foreign material to enter the system is the major cause of hydraulic system damage. Do **NOT** attempt to service hydraulic systems in the field. Precision fits require a perfectly clean connection during overhaul.

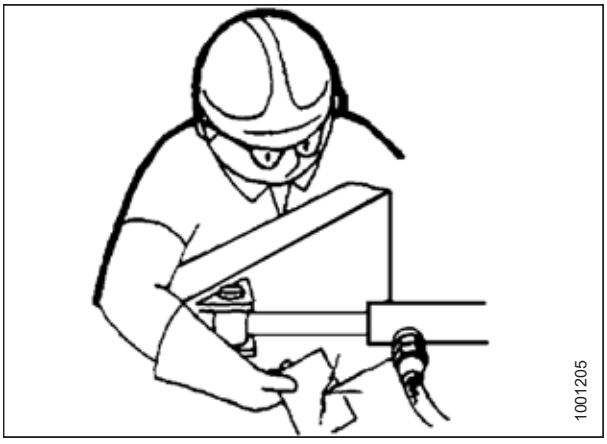


Figure 5.2: Testing for Hydraulic Leaks

5.3 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 383*.

Refer to inside back cover for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to *5.2.1 Maintenance Schedule/Record, page 384*.

5.3.1 Service Intervals

Every 25 Hours

Use high temperature extreme pressure (EP2) performance grease 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:

Overgreasing the knifehead puts pressure on the knife, causing it to rub against the guards, resulting in excessive wear from binding. Do **NOT** overgrease the knifehead. Apply only one to two pumps using a mechanical grease gun (do **NOT** use an electric grease gun). If more than six to eight pumps of the grease gun are required to fill the cavity, replace the seal in the knifehead. Refer to *5.8.3 Removing Knifehead Bearing, page 442*.

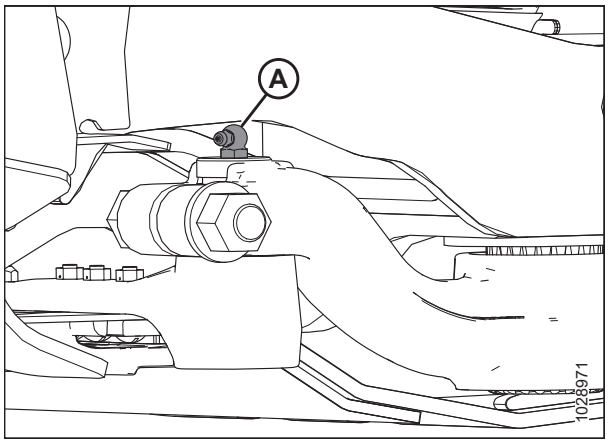
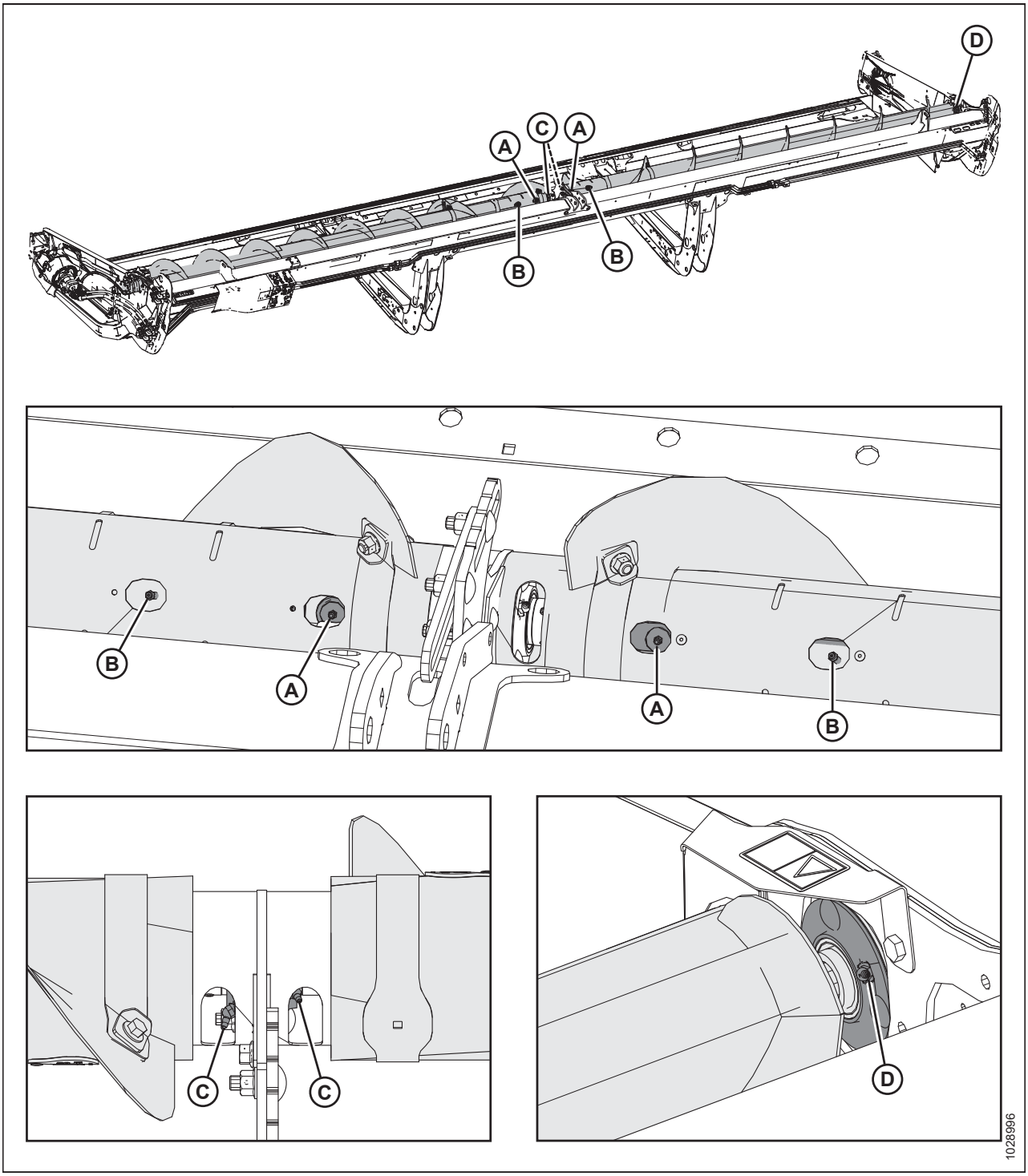


Figure 5.3: Knifehead

Every 50 Hours

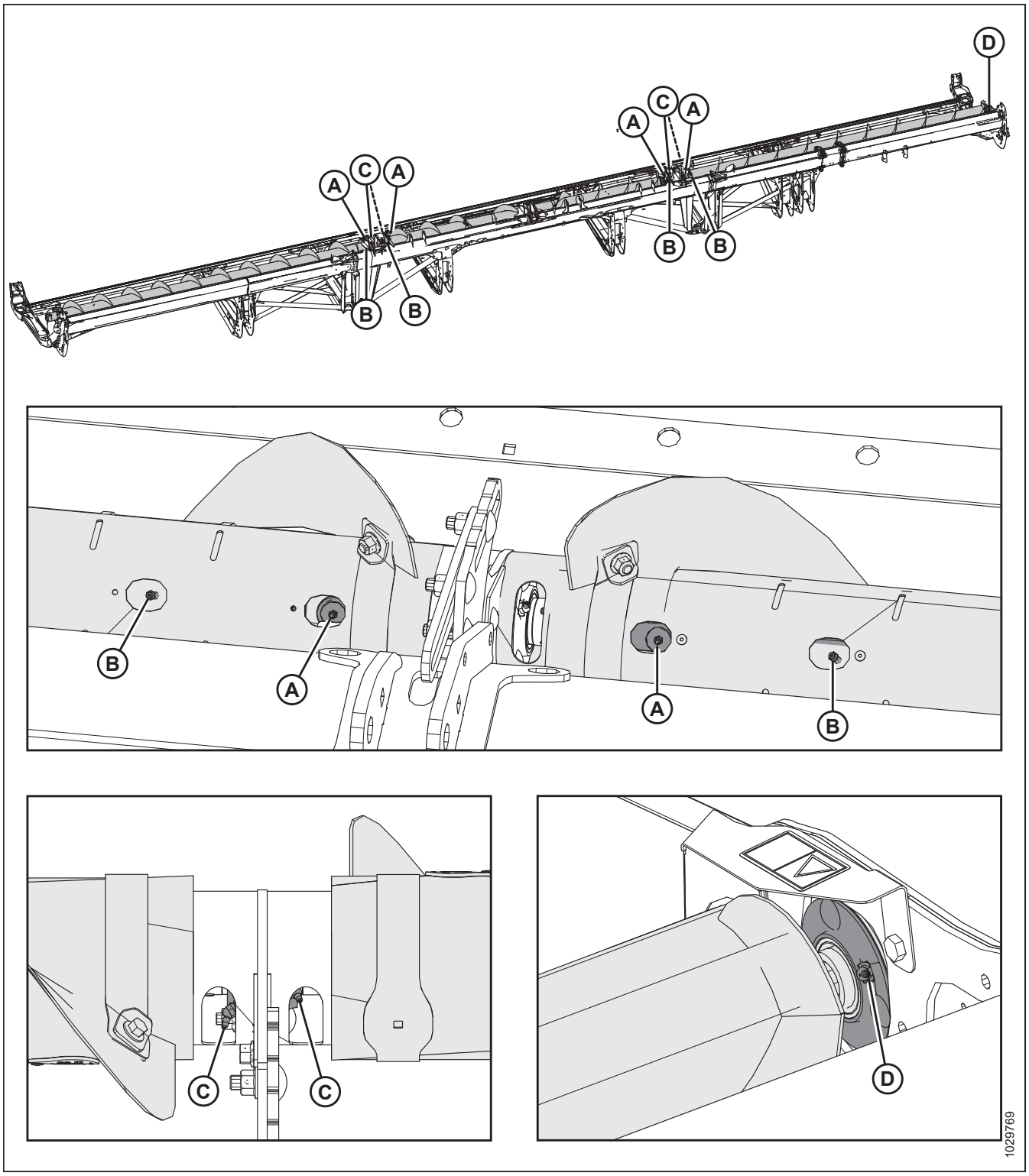
Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.4: Two-Piece Upper Cross Auger



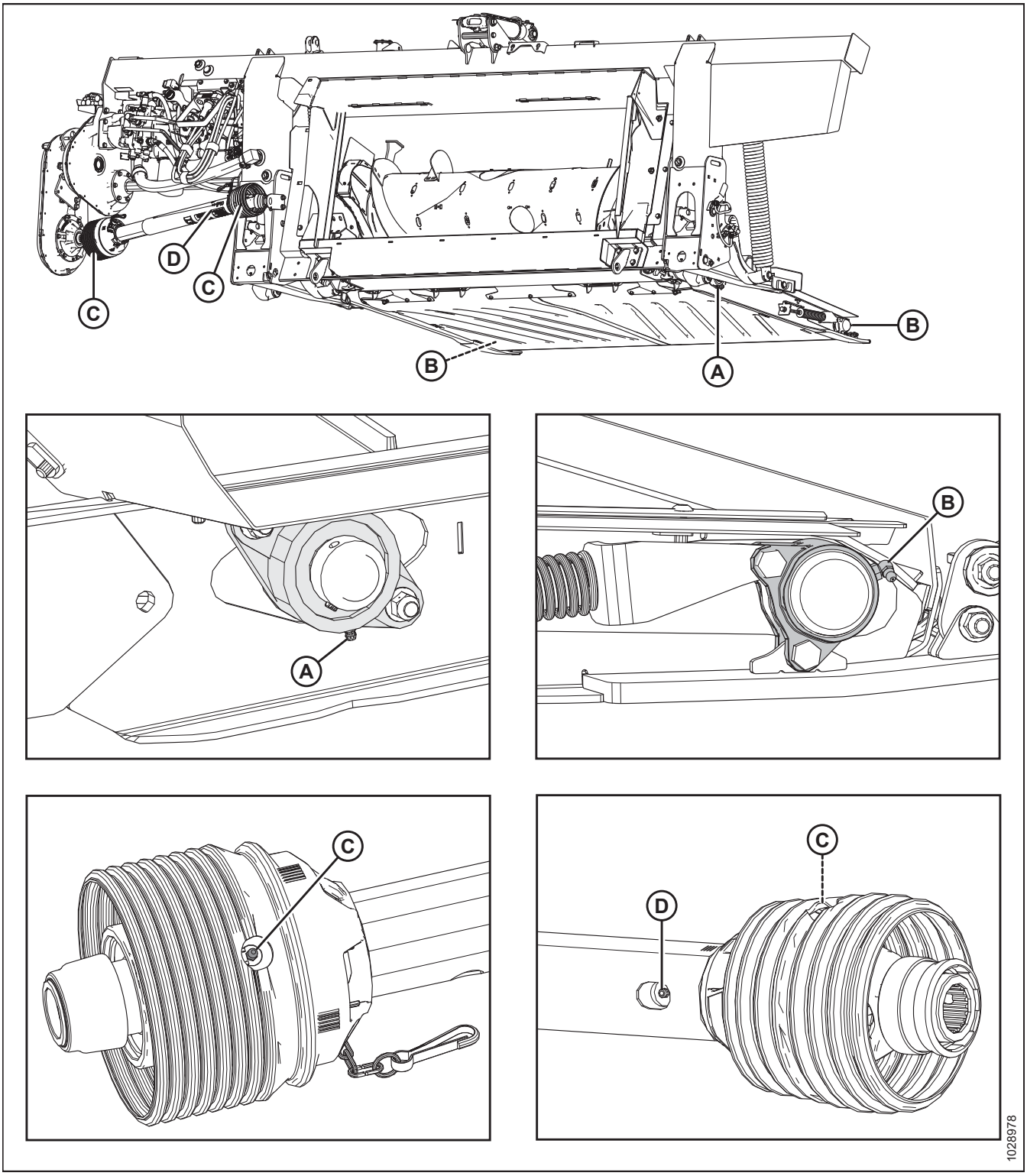
A - Upper Cross Auger U-joints (Two Places)
B - Upper Cross Auger Sliding Hubs (Two Places)
C - Upper Cross Auger Center Bearings (Two Places)
D - Right End Bearing

Figure 5.5: Three-Piece Upper Cross Auger



A - Upper Cross Auger U-joints (Four Places)
B - Upper Cross Auger Sliding Hubs (Four Places)
C - Upper Cross Auger Center Bearings (Four Places)
D - Right End Bearing

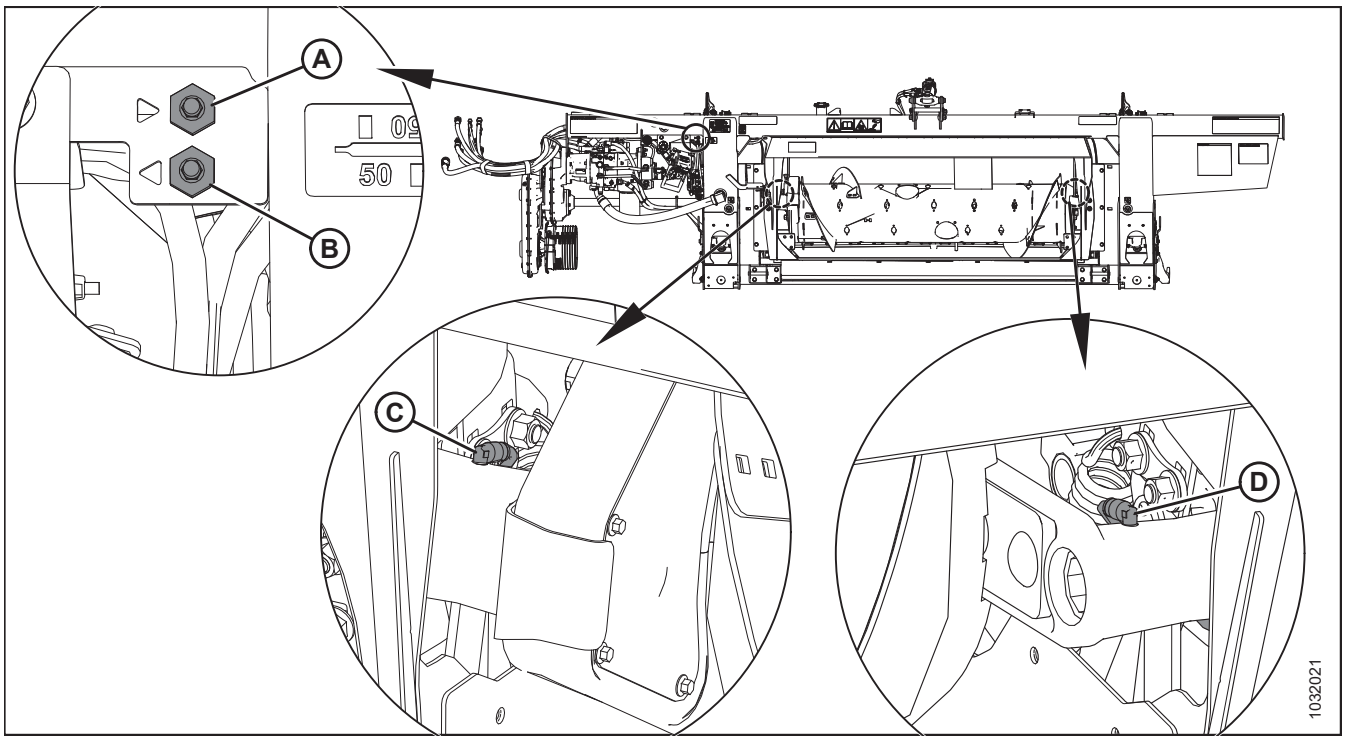
Figure 5.6: FM200



A - Drive Roller Bearing
B - Idler Roller Bearing (Two Places)
C - Driveline Universal (Two Places)
D - Driveline Slip Joint[47]

47. Use high temperature extreme pressure (EP2) performance grease with 10% max molybdenum disulphide (NLGI Grade 2) lithium base.

Figure 5.7: FM200

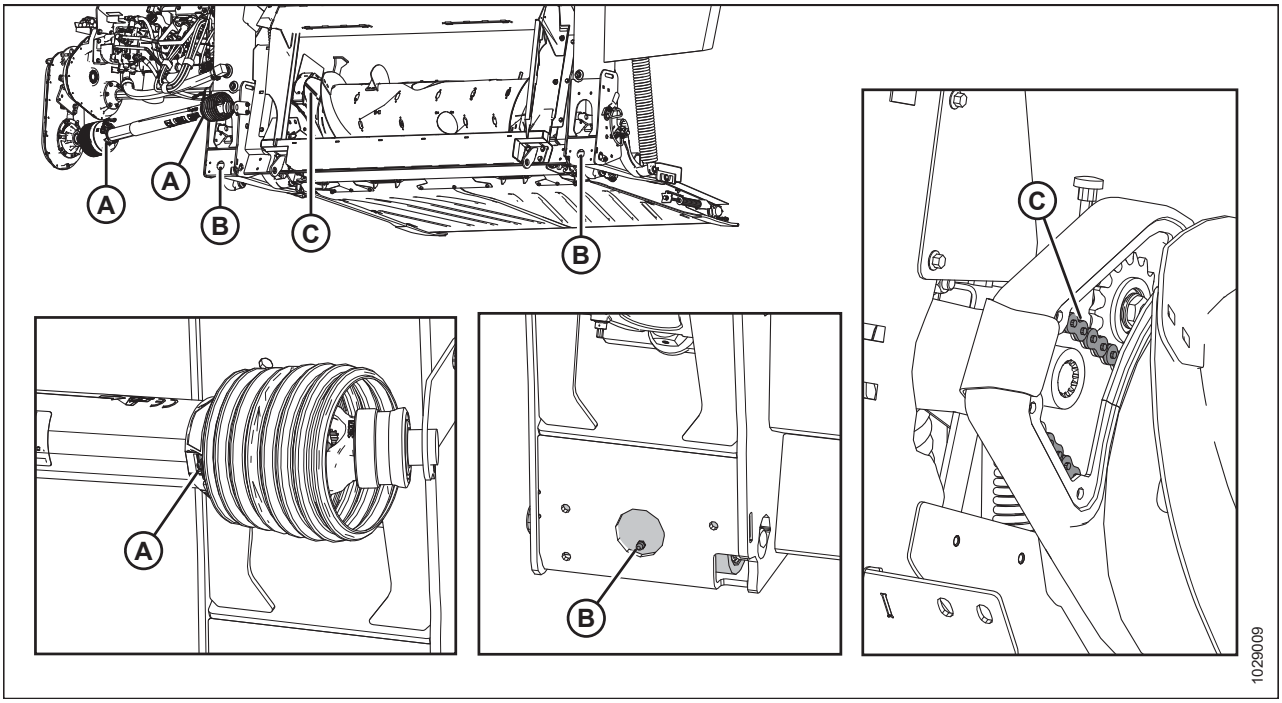


A - Remote Grease Line for Auger Pivot (Right Side)
B - Remote Grease Line for Auger Pivot (Left Side)
C - Auger Pivot (Left Side)
D - Auger Pivot (Right Side)

Every 100 Hours

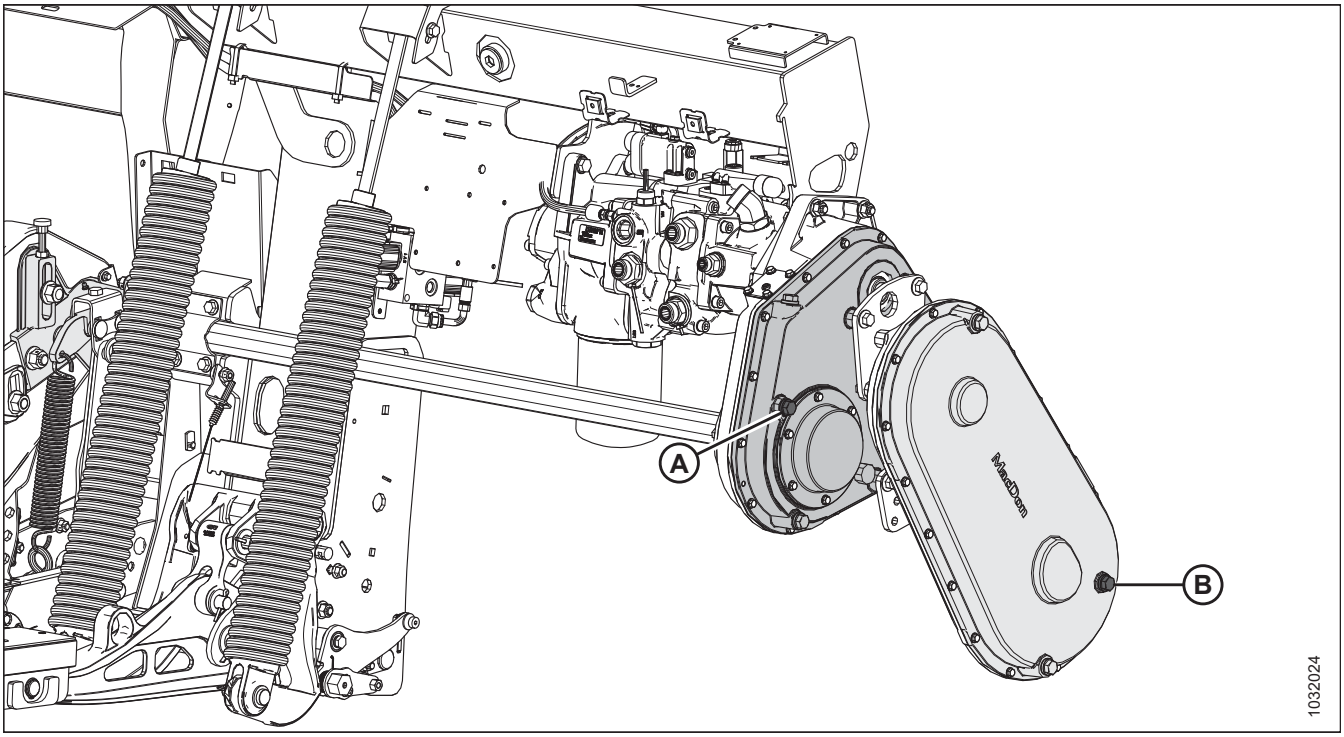
Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.8: FM200



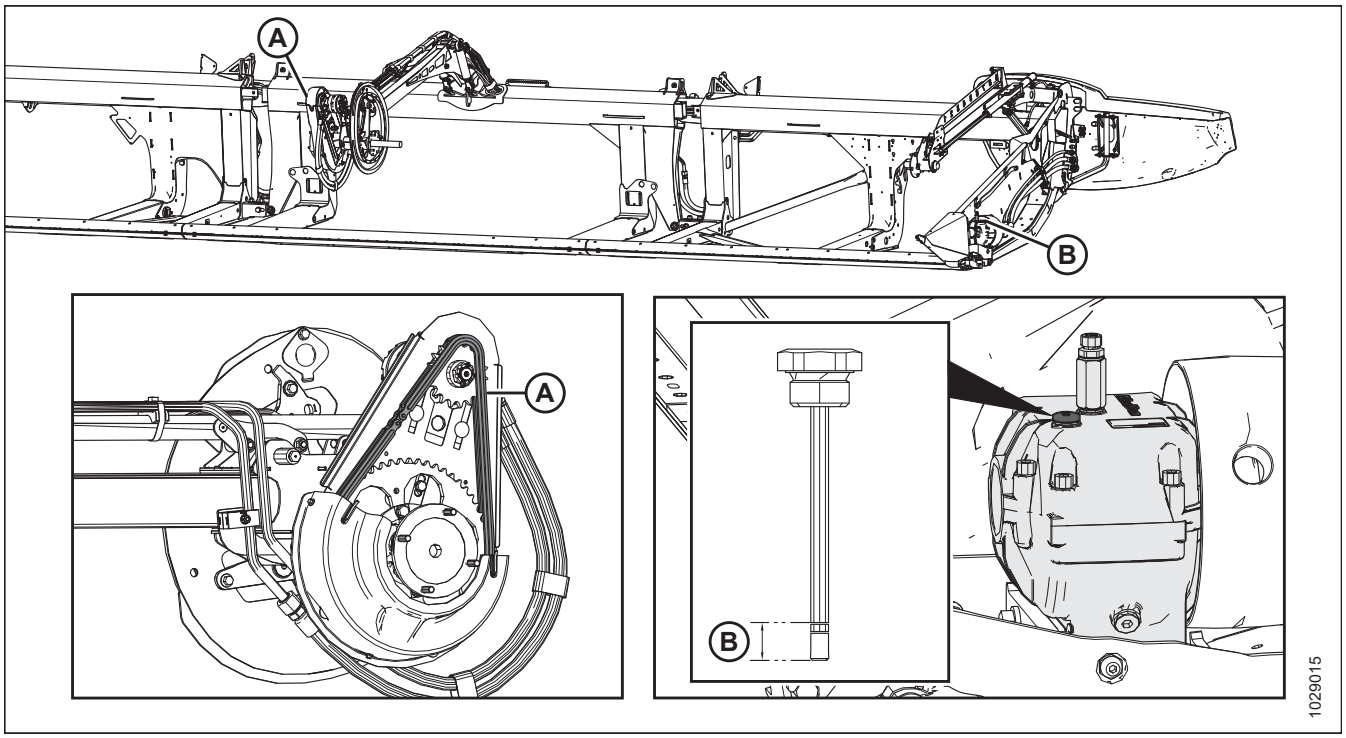
A- Driveline Guards (Both Ends)
B- Float Pivots (Right and Left)
C - Auger Drive Chain. Refer to ***5.3.4 Lubricating Auger Drive Chain, page 400***

Figure 5.9: FM200



A - Main Gearbox Oil Level. Refer to ***5.3.5 Lubricating Header Drive Main Gearbox, page 402***
B - Completion Gearbox Oil Level. Refer to ***5.3.6 Lubricating Header Drive Completion Gearbox, page 404***

Figure 5.10: Reel and Cutterbar

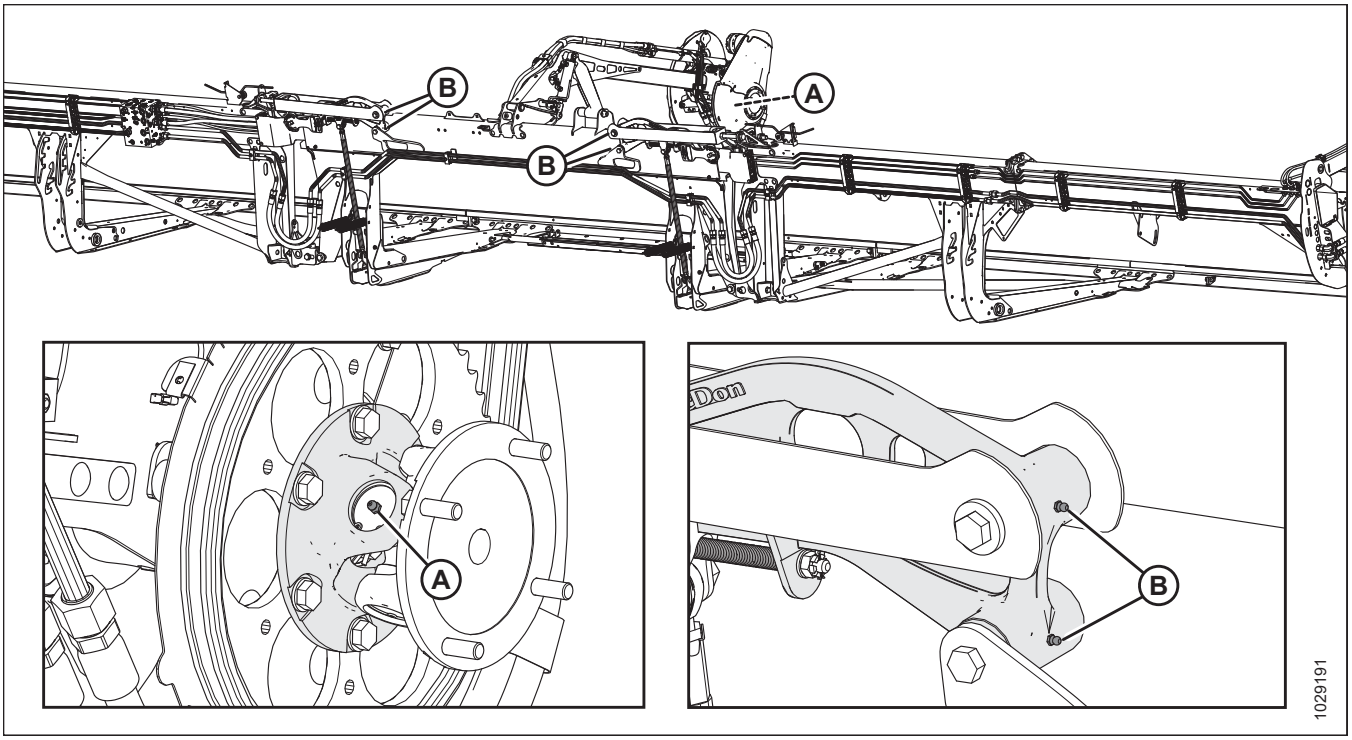


A - Reel Drive Chain. Refer to ***5.3.3 Lubricating Reel Drive Chain, page 400***
B - Knife Drive Box Oil Level. Refer to ***Checking Oil Level in Knife Drive Box , page 470***

Every 250 Hours

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

Figure 5.11: Reel



A - Reel U-joint (One Place)[48]

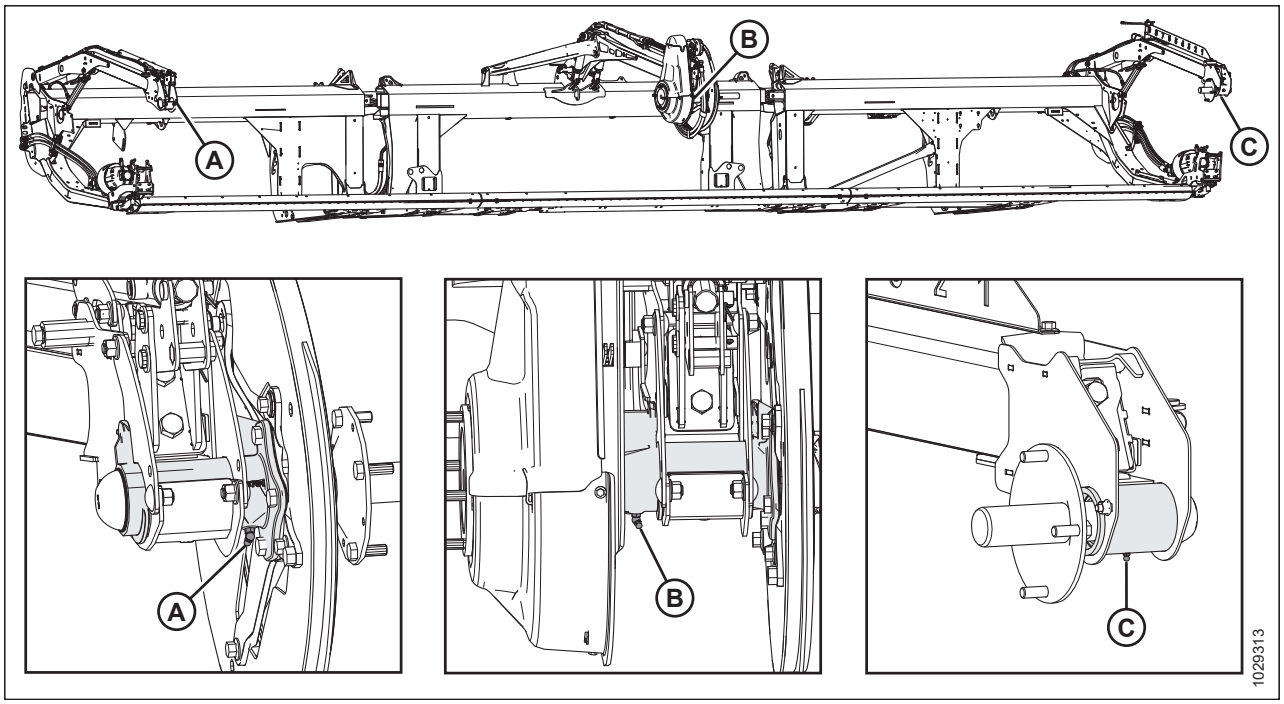
B - Flex Linkage (Two Places) – Both Sides

Every 500 Hours

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

48. 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.

Figure 5.12: Reel



A - Reel Right Bearing (One Place)

B - Reel Center Bearing (One Place)

C - Reel Left Bearing (One Place)

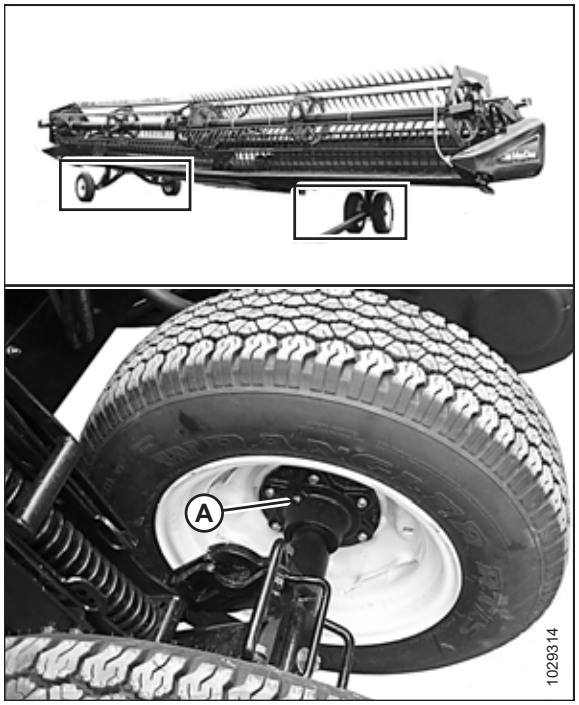


Figure 5.13: Every 500 Hours

A - Wheel Bearings (Four Places)

5.3.2 Greasing Procedure

Greasing points are identified on the machine by decals showing a grease gun and grease interval in hours of operation. Grease point layout decals are located on the header and on the right side of the float module.

WARNING

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

Refer to inside back cover for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance. Refer to *5.2.1 Maintenance Schedule/Record, page 384*.

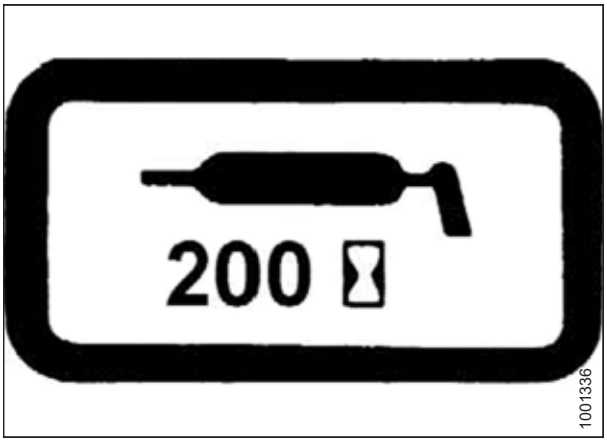


Figure 5.14: Greasing Interval Decal

1. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

   IMPORTANT:

   Use clean, high-temperature, extreme-pressure grease only.

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.

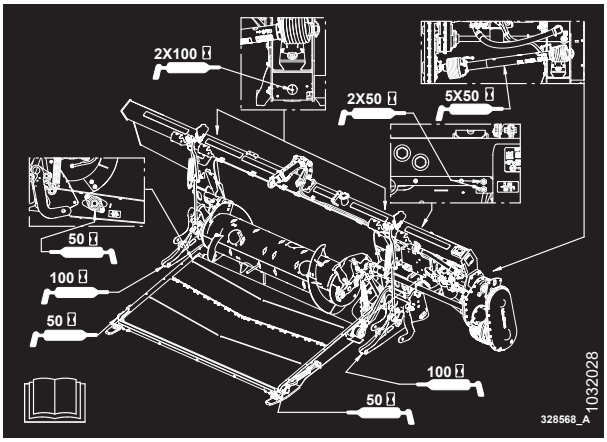


Figure 5.15: FM200 Grease Point Layout Decal

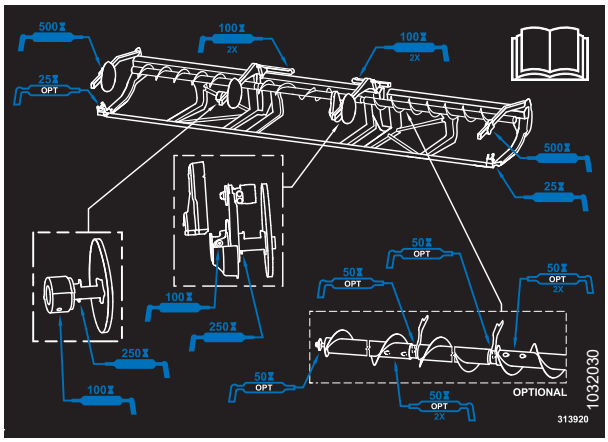


Figure 5.16: FD2 Series Grease Point Layout Decal

5.3.3 Lubricating Reel Drive Chain

DANGER

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

1. Remove the upper cover from the reel drive. Refer to *Removing Reel Drive Cover, page 38*.
2. Apply a liberal amount of grease to the chain (A).
3. Reinstall the upper cover. Refer to *Installing Reel Drive Cover, page 39*.

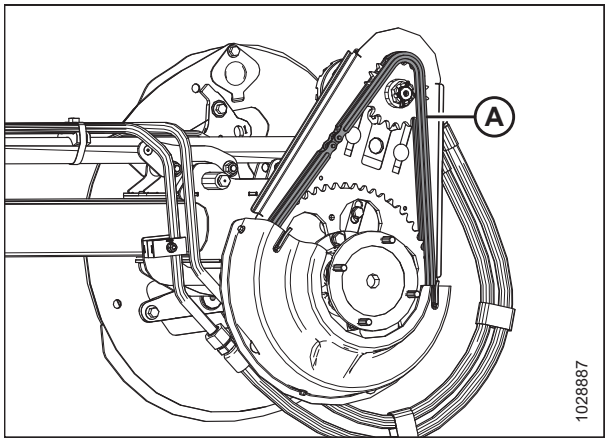


Figure 5.17: Drive Chain

5.3.4 Lubricating Auger Drive Chain

DANGER

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

Lubricate the auger drive chain every 100 hours. The auger drive chain can be lubricated 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).

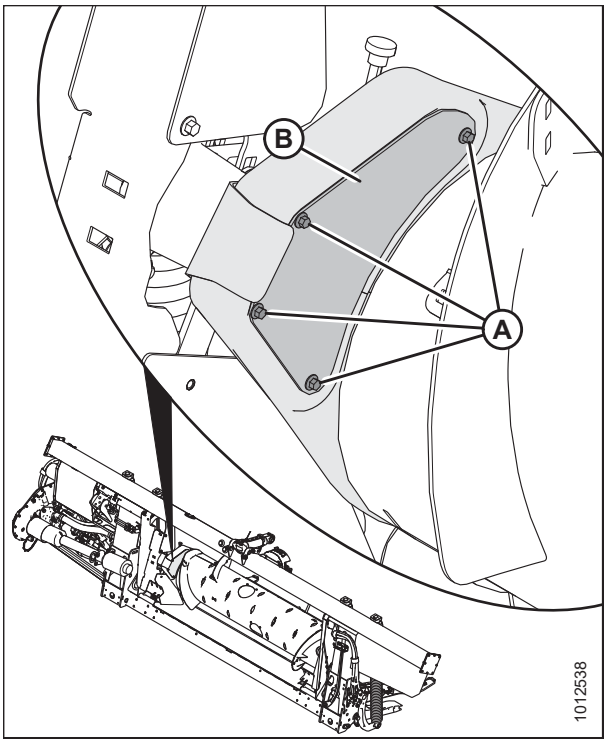


Figure 5.18: Auger Drive Inspection Panel

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 necessary.

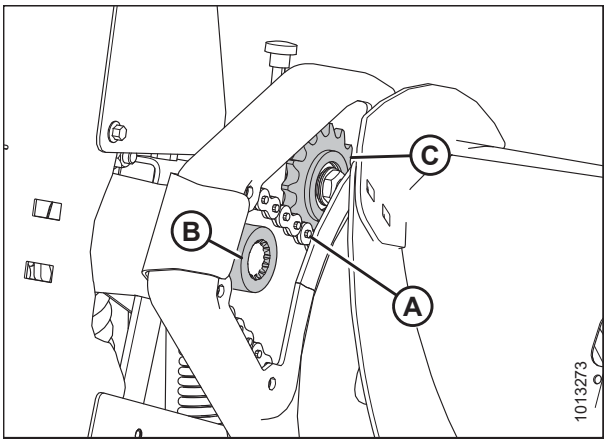


Figure 5.19: Auger Drive Chain

4. Reinstall metal inspection panel (B) and secure with four bolts (A).

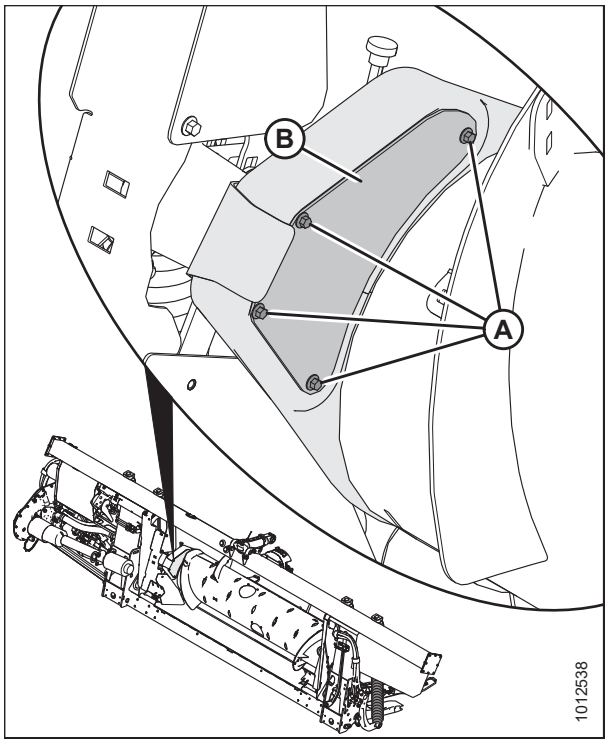


Figure 5.20: Auger Drive Inspection Panel

5.3.5 Lubricating Header Drive Main Gearbox

Checking Oil Level in Header Drive Main Gearbox

Check the header drive gearbox oil level every 100 hours.

WARNING

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

1. Lower the cutterbar to the ground and ensure main gearbox (B) is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) from the main gearbox and check that the oil level is up to the bottom of the hole.
4. Add oil if required. For instructions, refer to *Adding Oil to Header Drive Main Gearbox, page 403*.
5. Reinstall oil level plug (A).

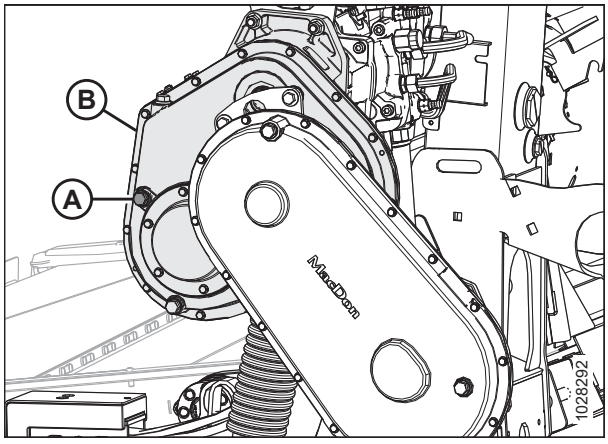


Figure 5.21: Header Drive Main Gearbox

Adding Oil to Header Drive Main Gearbox

WARNING

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

1. Lower the cutterbar to the ground, and ensure the main gearbox is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove filler plug (B) and oil level plug (A) from the main gearbox.
4. Add oil into filler hole (B) until it runs out of oil level plug hole (A). Refer to the inside back cover for recommended fluids and lubricants.
5. Replace oil level plug (A) and filler plug (B).

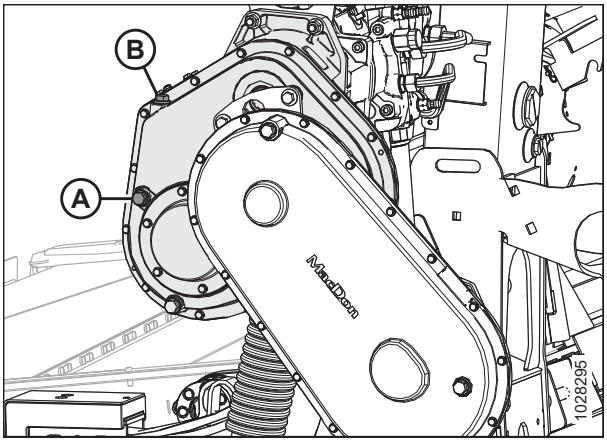


Figure 5.22: Header Drive Main Gearbox

Changing Oil in Header Drive Main Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

WARNING

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

1. Start engine.
2. Engage the header to warm up the oil.
3. Raise or lower the header to position oil drain plug (A) at its lowest point.
4. Shut down the engine, and remove the key from the ignition.
5. Place a suitably sized container (approximately 4 liters [1 US gal]) underneath the gearbox drain to collect the oil.
6. Remove oil drain plug (A) and filler plug (C), and allow the oil to drain.
7. Replace oil drain plug (A) and remove oil level plug (B).
8. Add oil through filler plug (C) until it runs out of oil level hole (B). Refer to this manual's inside back cover for recommended lubricants.

   NOTE:

   The main gearbox holds approximately 2.5 liters (2.6 quarts) of oil.

9. Replace oil level plug (B) and filler plug (C).

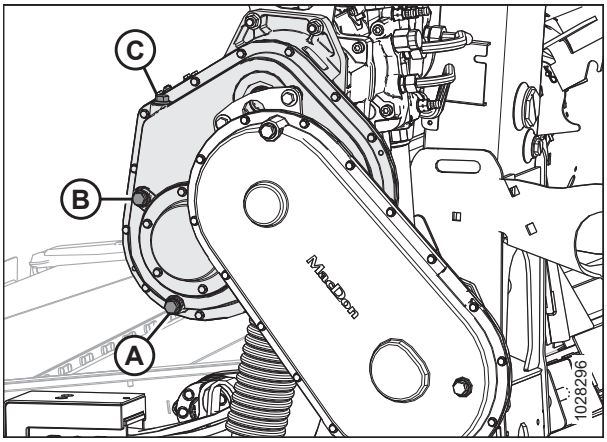


Figure 5.23: Header Drive Main Gearbox

5.3.6 Lubricating Header Drive Completion Gearbox

Checking Oil Level in Header Drive Completion Gearbox

Check the header drive gearbox oil level every 100 hours.

WARNING

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

1. Lower the header to the ground and ensure the completion gearbox (B) is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) from the completion gearbox and check that the oil level is up to the bottom of the hole.
4. Add oil if required. For instructions, refer to *Adding Oil to Header Drive Completion Gearbox, page 404*.
5. Reinstall oil level plug (A).

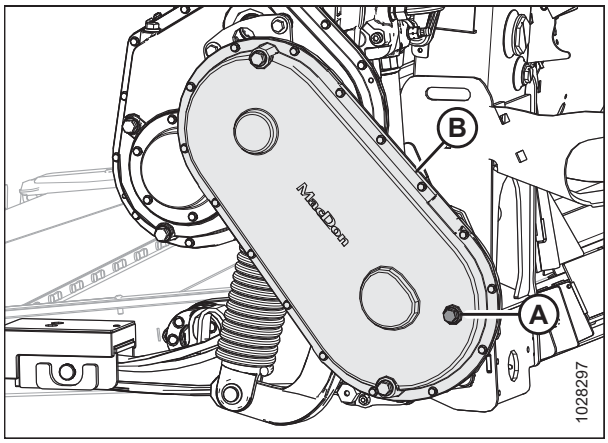


Figure 5.24: Header Drive Completion Gearbox

Adding Oil to Header Drive Completion Gearbox

WARNING

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

1. Lower the cutterbar to the ground, and ensure the completion gearbox is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove filler plug (B) and oil level plug (A).
4. Add oil into filler hole (B) until it runs out of oil level plug hole (A). Refer to the inside back cover for recommended fluids and lubricants.
5. Replace oil level plug (A) and filler plug (B).

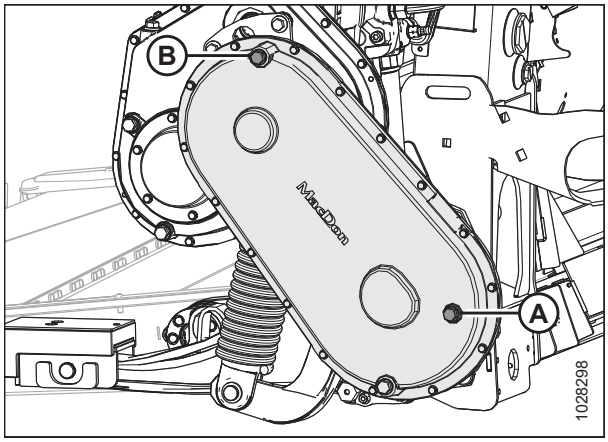


Figure 5.25: Header Drive Completion Gearbox

Changing Oil in Header Drive Completion Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Engage the header to warm up the oil.
3. Raise or lower the header to position oil drain plug (A) at its lowest point.
4. Shut down the engine, and remove the key from the ignition.
5. Place a suitably sized container (approximately 4 liters [1 US gal]) underneath the gearbox drain to collect the oil.
6. Remove oil drain plug (A) and filler plug (C), and allow the oil to drain.
7. Replace oil drain plug (A).
8. Remove oil level plug (B).
9. Add oil through filler plug (C) until it runs out of oil level hole (B). Refer to this manual's inside back cover for recommended lubricants.

   NOTE:

   The header drive gearbox holds approximately 2.5 liters (2.6 quarts) of oil.
10. Replace oil level plug (B) and filler plug (C).

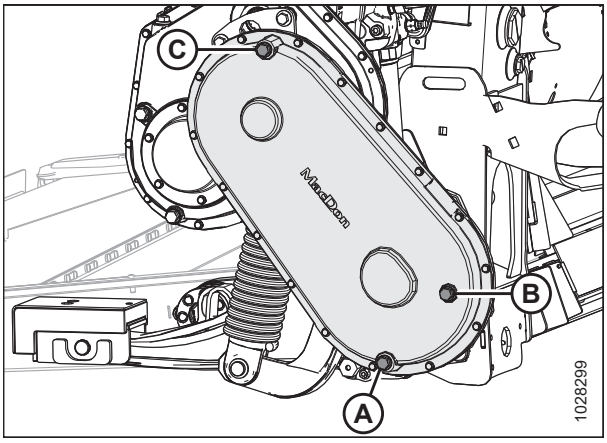


Figure 5.26: Header Drive Completion Gearbox

5.4 Hydraulics

The float module frame acts as an oil reservoir. Refer to inside back cover for oil requirements.

5.4.1 Checking Oil Level in Hydraulic Reservoir

Check the hydraulic oil level in the reservoir every 25 hours.

NOTE:

Check the level when the oil is cold.

1. Check the oil level using lower sight (A) and upper sight (B) with the cutterbar just touching the ground and with the 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.

   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.

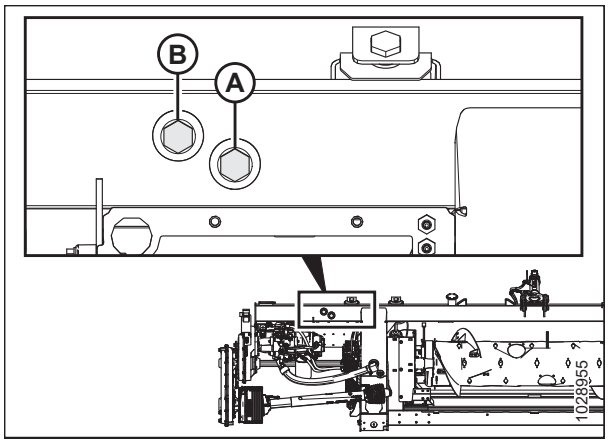


Figure 5.27: Oil Level Sight Glasses

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 the Hydraulic Reservoir, page 407*.

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Clean any dirt or debris from filler cap (A).

CAUTION

Oil reservoir can have up to 10 psi of pressure, remove the cap slowly.

3. Loosen and remove filler cap (A) by turning it counterclockwise.
4. Add warm oil (approximately 21°C [70°F]) and fill to the required level. Refer to this manual's inside back cover for oil type and specification.

   IMPORTANT:

   Warm oil will flow through the screen better than cold oil. Do **NOT** remove the screen.
5. Reinstall filler cap (A).

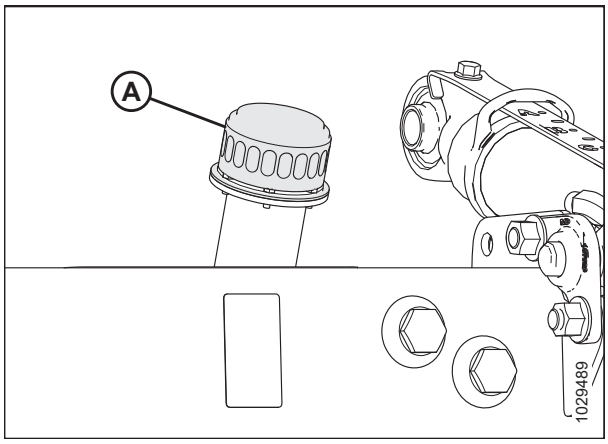


Figure 5.28: Oil Reservoir Filler Cap

6. Recheck oil level. For instructions, refer to *5.4.1 Checking Oil Level in Hydraulic Reservoir, page 406*.

5.4.3 Changing Oil in the Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

WARNING

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

1. Start engine.
2. Engage the header to warm up the oil.
3. Shut down the engine, and remove the key from the ignition.
4. Place a suitably sized container (at least 40 liters [10 gallons]) under each of the two oil drain plugs (A) located at the back on each side of the frame.
5. Remove oil drain plugs (A) with a 7/8 in. hex socket and allow the oil to drain.
6. Replace oil drain plugs (A) when reservoir is empty.
7. Change the oil filter if required. Refer to *5.4.4 Changing Oil Filter, page 408*.
8. Add approximately 75 liters (20 gallons) of oil to the reservoir. Refer to *5.4.2 Adding Oil to Hydraulic Reservoir, page 406*.

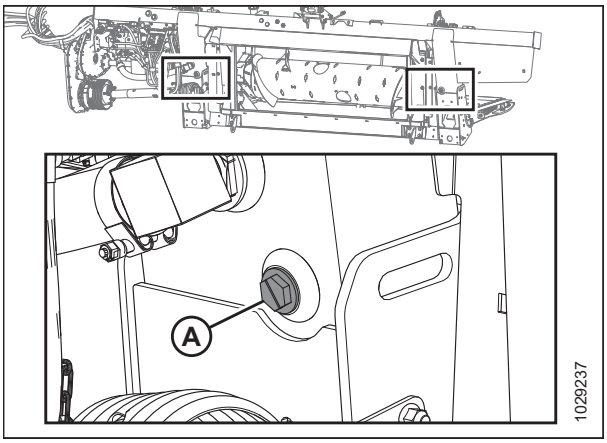


Figure 5.29: Reservoir Drain

5.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

Obtain filter (MD #202986) from your MacDon Dealer.

WARNING

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

1. Clean around the mating surfaces of filter (A) and integrated pump (B).
2. Place a suitably sized container (approximately 1 liter [0.26 gallons]) under the filter to collect oil runoff.
3. Remove spin-off filter (A) and clean the exposed filter port in the integrated pump.
4. Apply a thin film of clean oil to the O-ring provided with the new filter.
5. Turn the new filter onto integrated pump (B) until the O-ring contacts the mating surface. Tighten the filter an additional 1/2 to 3/4 turn by hand.

   IMPORTANT:

   Do **NOT** use a filter wrench to install the new filter. Overtightening can damage the O-ring and filter.

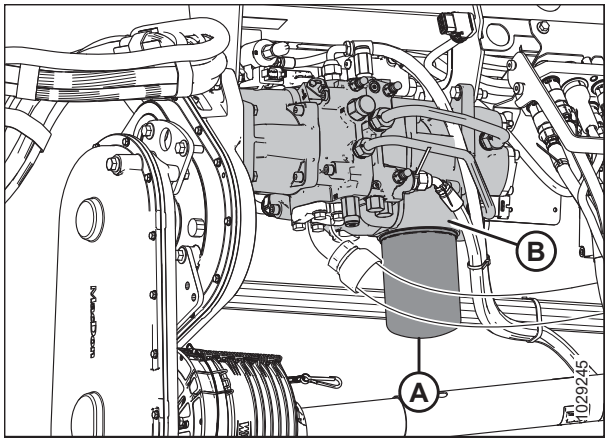


Figure 5.30: FM200 Integrated Pump

5.5 Electrical System

The electrical system for is powered by the windrower.

5.5.1 Replacing Light Bulbs

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

Use bulb trade #1156 for amber transport lights and #1157 for the red tail light (Slow Speed Transport option).

Transport Lights

1. Use a Phillips screwdriver to remove the three screws (A) from the fixture, and remove the plastic lens. Retain screws (A).
2. Replace the bulb, and reinstall the plastic lens and screws.

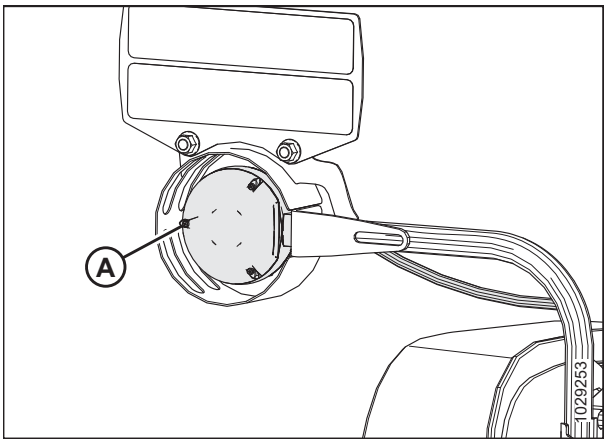


Figure 5.31: Left Transport Light

Slow Speed Transport Lights

3. Use a Phillips screwdriver to remove screws (A) from the fixture, and remove the plastic lens. Retain screws (A).
4. Replace the bulb, and reinstall the plastic lens and screws.

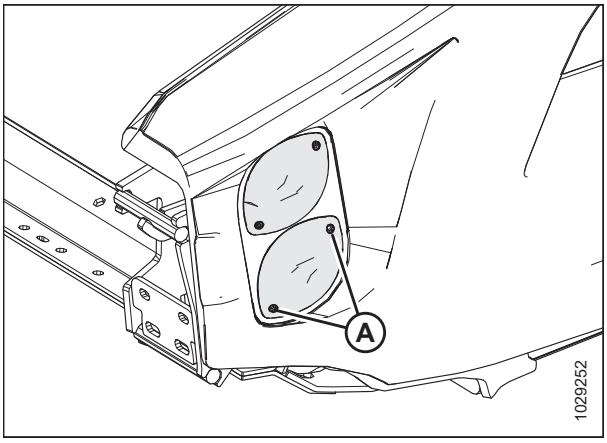


Figure 5.32: Optional Slow Speed Transport – Red and Amber Lights

5.6 Header Drive

The header drive consists of a driveline from the combine to the FM200 Float Module gearbox that drives the feed auger and hydraulic pumps. The pumps provide hydraulic power to the drapers, knives, and optional equipment.

5.6.1 Removing the Driveline

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Pry clips (A) up to release shield (B).

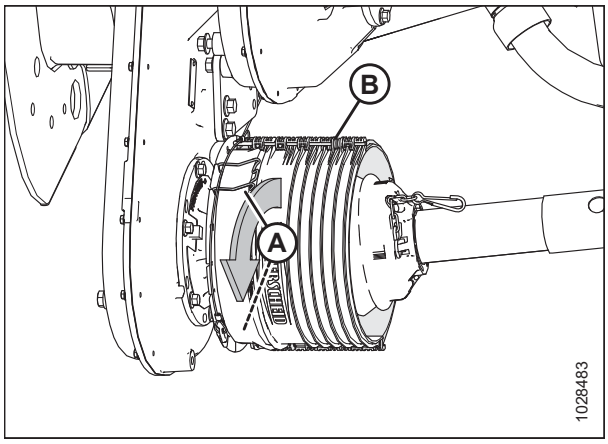


Figure 5.33: Driveline Shield

6. Slide shield (A) along driveline to access quick disconnect collar (B).

   NOTE:

   If the cover does not slide, use a prying tool.

7. Pull back quick disconnect collar (B) to release the driveline yoke. Slide the driveline off of the gearbox shaft.
8. Slide the driveline through the shield, then lower it to the ground.

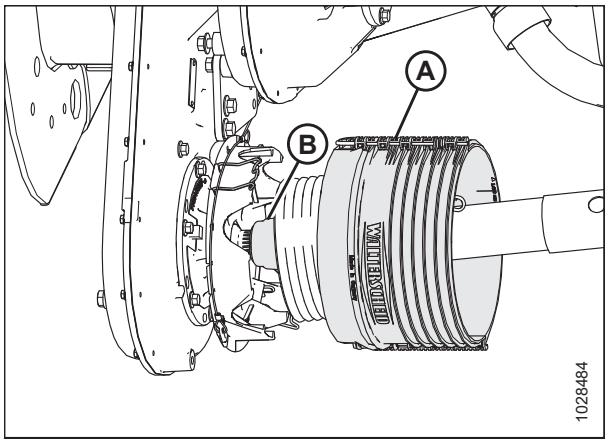


Figure 5.34: Driveline Shield

9. On the opposite end of the driveline, pull back quick disconnect collar (A) to release the driveline yoke. Slide the yoke off of support bracket (B).
10. Remove driveline (C).

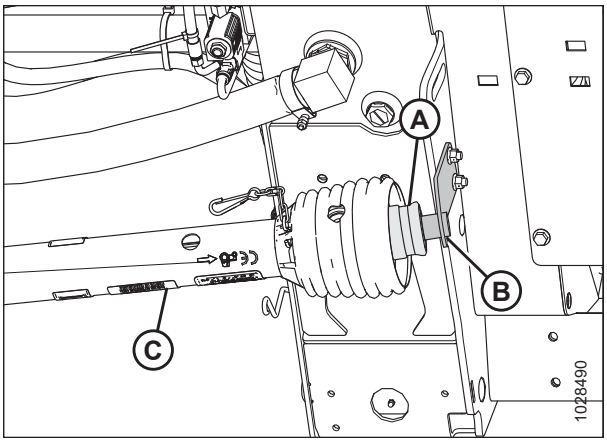


Figure 5.35: Driveline Shield

5.6.2 Installing the Driveline

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the reel fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Slide the driveline through shield (A). Pull back the quick disconnect collar (B).
6. Slide the driveline onto the gearbox shaft until it locks onto the shaft.

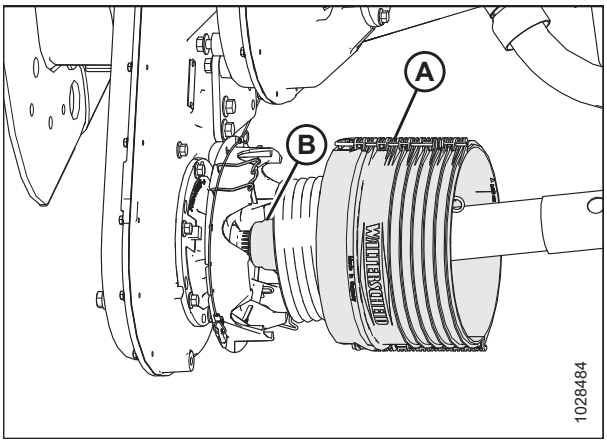


Figure 5.36: Driveline Shield

7. On the opposite end of the driveline, pull back quick disconnect collar (A) and slide it onto support bracket (B).

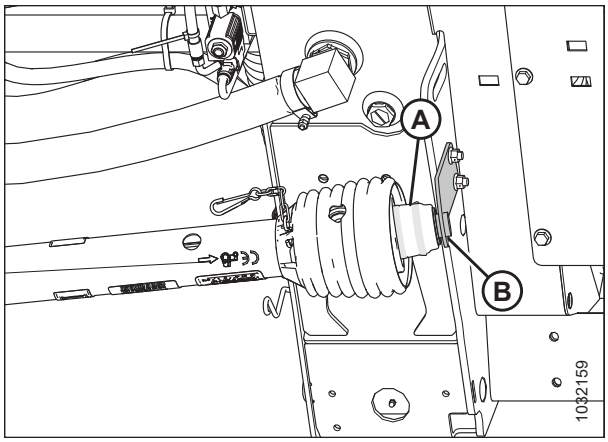


Figure 5.37: Driveline Shield

8. Slide the shield towards the gearbox until clips (A) secure shield (B).

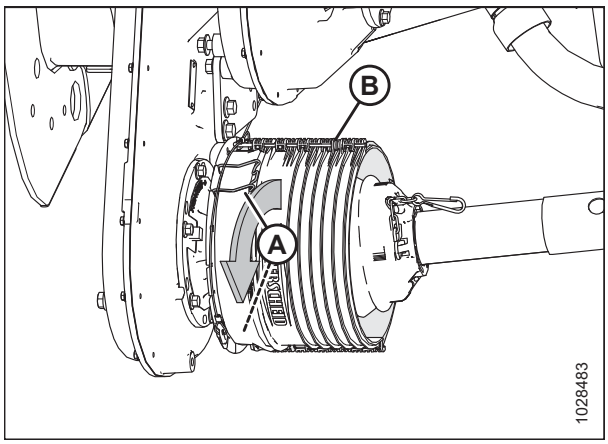


Figure 5.38: Driveline Shield

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.

WARNING

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

NOTE:

The driveline does **NOT** need to be removed from the float module in order to remove the driveline guard.

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

2. Pull driveline collar (A) away from power take-off (PTO) support (B). Slide yoke (C) off support bracket (B), and release collar (A).

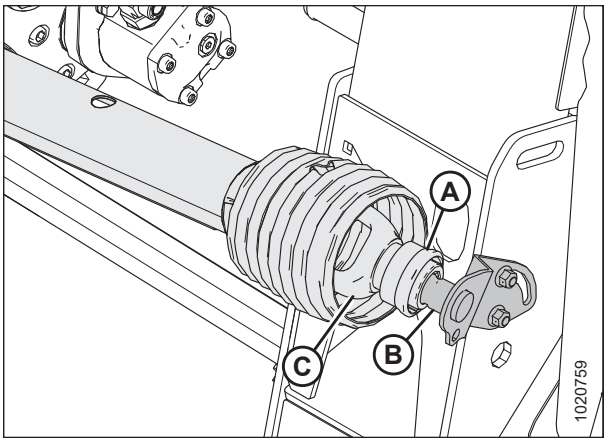


Figure 5.39: Combine End of Driveline

3. Lift the combine end of driveline (A) from the hook, and extend the driveline until it separates. Hold the float module end of driveline (B) to prevent it from dropping and hitting the ground.

Figure 5.40: Separated Driveline

4. Use a slotted screwdriver to release grease fitting/lock (A).

Figure 5.41: Driveline Guard

5. Rotate driveline guard locking ring (A) counterclockwise using a screwdriver until lugs (B) line up with the slots in the guard.
6. Pull the guard off the driveline.

Figure 5.42: Driveline Guard

5.6.4 Installing Driveline Guard

1. Slide the guard onto the driveline, and line up the slotted lug on locking ring (A) with arrow (B) on the guard.

Figure 5.43: Driveline Guard

2. Push the guard onto the ring until the locking ring is visible in slots (A).

Figure 5.44: Driveline Guard

3. Use a slotted screwdriver to rotate ring (A) clockwise and lock ring in guard.

Figure 5.45: Driveline Guard

4. Push grease fitting (A) back into the guard.

Figure 5.46: Driveline Guard

5. Assemble the driveline.

   IMPORTANT:

   The splines are keyed to align the universals. Align weld (A) with missing spline (B) when assembling. Failure to align the halves of the shaft can cause excessive vibration and feed auger/gearbox failures.

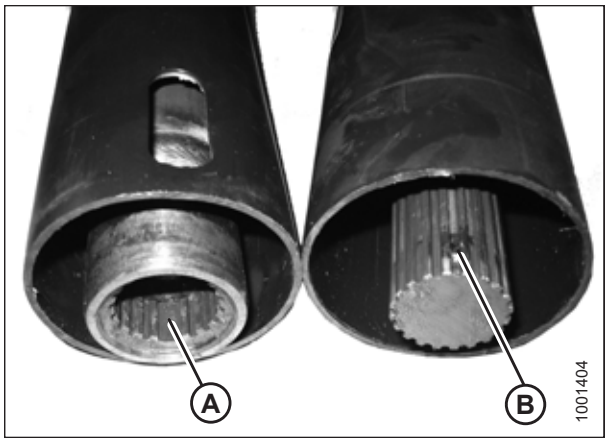


Figure 5.47: Driveline

6. Position the combine end of driveline (A) on power take-off (PTO) storage support (B). Pull back collar (C) on the driveline and slide driveline onto the support until driveline yoke (D) locks onto support. Release collar (C).

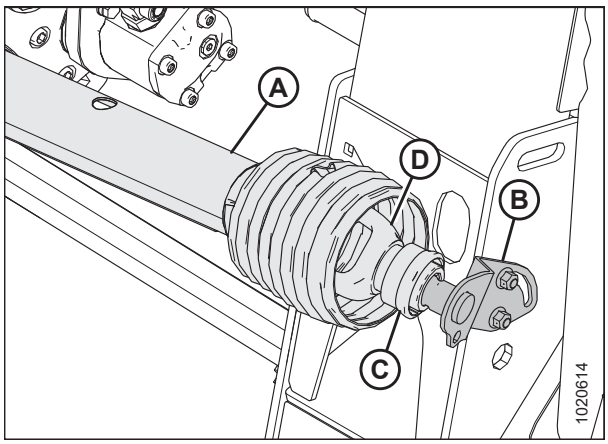


Figure 5.48: Combine End of Driveline

5.6.5 Adjusting Chain Tension – Main Gearbox

The gearbox drive chain tension is factory-set, but tension adjustments are required after the first 50 hours, then every 500 hours or annually (whichever comes first). With the exception of oil changes, the gearbox drive chain requires no other regular maintenance.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Extend the hydraulic center-link fully.
3. Lower the header fully.
4. Shut down the engine, and remove the key from the ignition.

5. Remove four bolts (A), cover (B), and gasket (C) from the main gearbox.

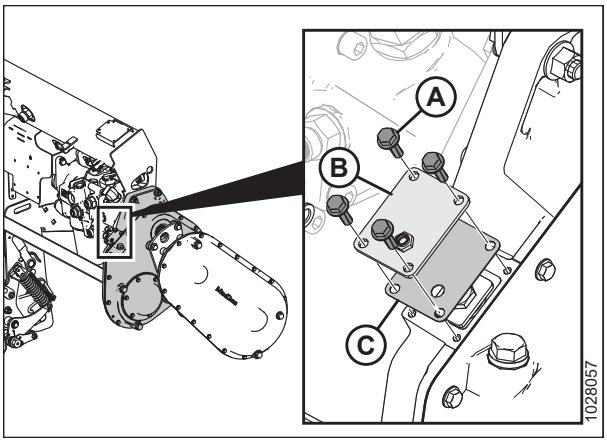


Figure 5.49: Main Gearbox Chain Tensioner Cover

6. Remove retainer plate (A).
7. Tighten bolt (B) to 1.4 Nm (1 lbf·ft).
8. Back off (loosen) bolt (B) 4–5 flats (4/6–5/6 turn).

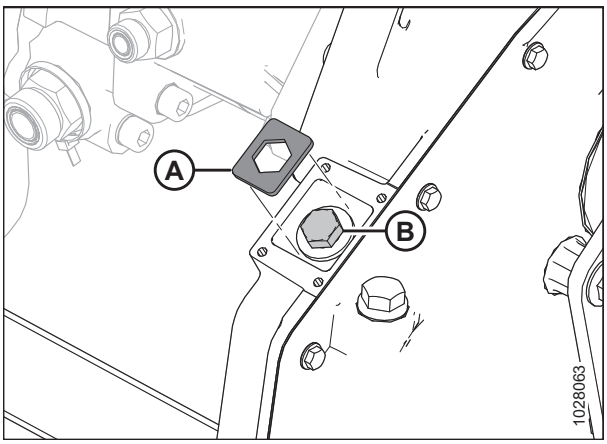


Figure 5.50: Main Gearbox Chain Tensioner

9. If required, turn bolt (B) slightly until retainer plate (A) can be installed.

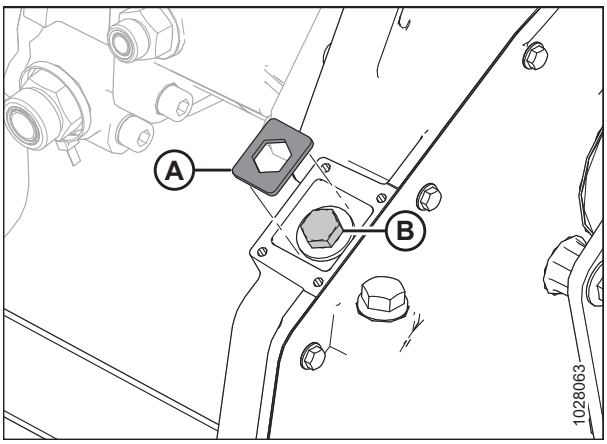


Figure 5.51: Main Gearbox Chain Tensioner

10. Reinstall chain adjusting cover (B) and gasket (C).
11. Install four bolts (A). Torque hardware to 9.5 Nm (84 lbf·in).

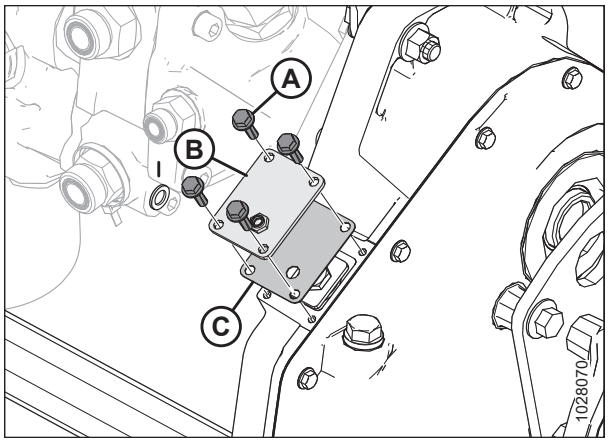


Figure 5.52: Main Gearbox Chain Tensioner Cover

5.6.6 Adjusting Chain Tension – Completion Gearbox

The gearbox drive chain tension is factory-set, but tension adjustments are required after the first 50 hours, then every 500 hours or annually (whichever comes first). With the exception of oil changes, the gearbox drive chain requires no other regular maintenance.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the header fully.
3. Shut down the engine, and remove the key from the ignition.
4. Pry clips (A) up to release shield (B).

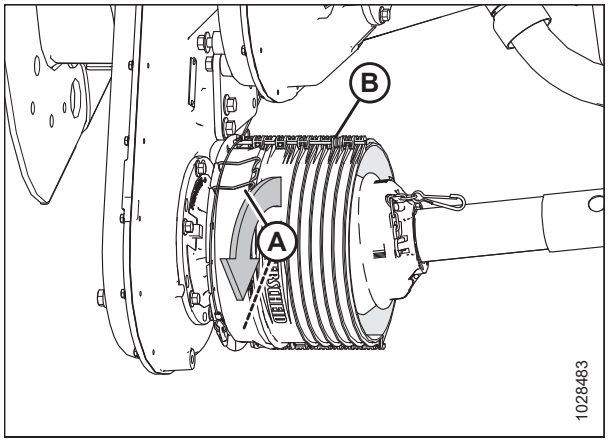


Figure 5.53: Driveline Shield

5. Slide shield (A) along driveline to access quick disconnect collar (B).

   NOTE:

   If the cover does not slide, use a prying tool.

6. Slide the driveline through the shield, then lower it to the ground.

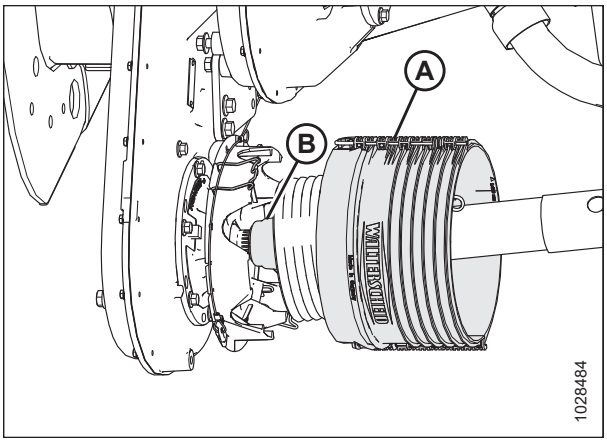


Figure 5.54: Driveline Shield

7. Remove three bolts (A) that secure input driveline guard base (B).

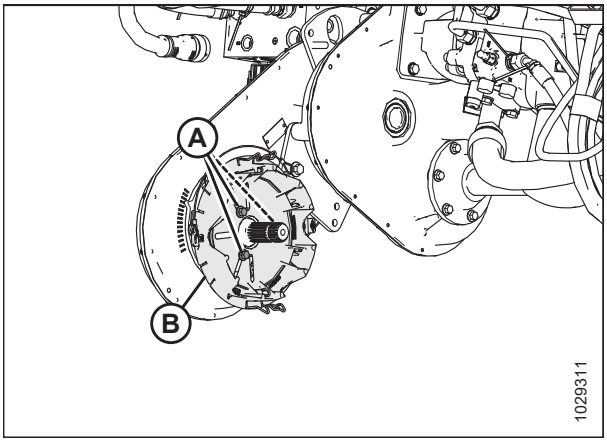


Figure 5.55: Completion Gearbox Chain Tensioner Cover

8. Loosen six bolts (B), that secure chain tension hub (A) to the gearbox.
9. Locate machined feature (C). Using a wrench, turn hub (A) clockwise to tighten the chain.
10. With light pressure on the wrench, determine which mark (D) on the gearbox housing aligns with the indicator pointer on the hub.
11. Set proper chain tension by slightly turning hub (A) back one mark.
12. Tighten six bolts (B), that secure cover (A). Torque bolts to 23–26 Nm (17–19 lbf·ft).

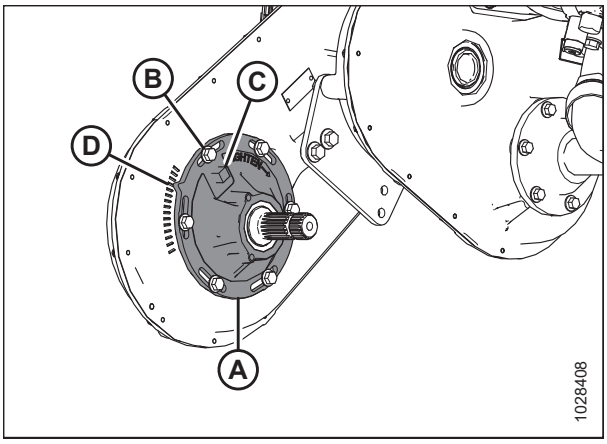


Figure 5.56: Completion Gearbox Chain Tensioner Cover

5.7 Auger

The FM200 Float Module auger feeds the cut crop from the draper decks into the combine feeder house.

5.7.1 Adjusting Feed Auger to Pan Clearance

WARNING

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

IMPORTANT:

Maintain an appropriate distance between the feed auger and the feed auger pan. Too little clearance may result in the fingers or flighting contacting and damaging the feed draper or pan when operating the header at certain angles. Look for evidence of contact when greasing the float module.

1. Extend the center-link to the steepest header angle, and position the header 150–254 mm (6–10 in.) off the ground.
2. Lock the header wings. Refer to *Lock/Unlock Header Wings , page 72*.
3. Shut down the engine, and remove the key from the ignition.
4. Check that the float lock linkage is on the down stops (washer [A] cannot be moved) at both locations.

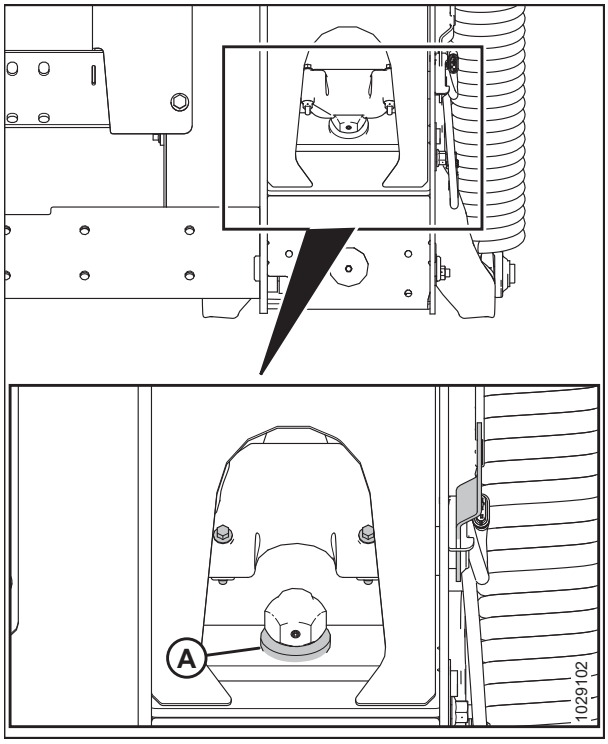


Figure 5.57: Down Stop Washer

5. Before adjusting the auger to pan clearance, check the auger float position to determine how much clearance is required:

   - If bolt head (A) is closest to floating symbol (B), the auger is in the floating position.

   IMPORTANT:

   Make sure bolts (A) are set at the same location on both ends of the header to prevent damaging the machine during operation.

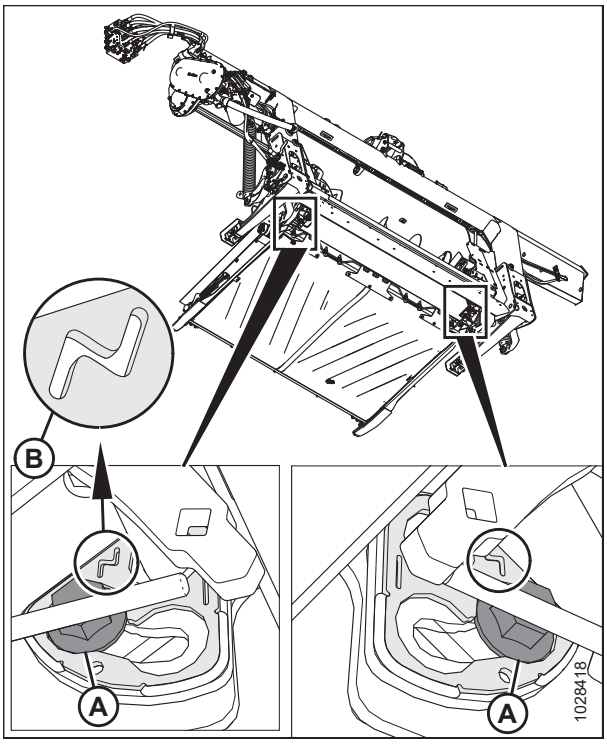


Figure 5.58: Floating Position

   - If bolt head (A) is closest to fixed symbol (B), the auger is in the fixed position.

   IMPORTANT:

   Make sure bolts (A) are set at the same location on both ends of the header to prevent damaging the machine during operation.

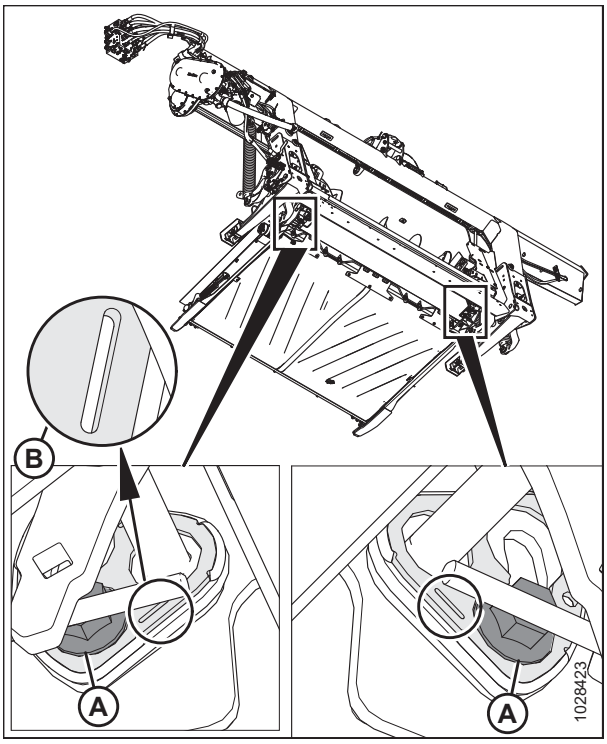


Figure 5.59: Fixed Position

6. Loosen two nuts (B) and rotate the auger to position the flighting over the feed pan.
7. Turn bolt (A) clockwise to increase clearance (C); turn bolt (A) counterclockwise to decrease clearance (C).
   - If the feed auger is in the fixed position, set clearance to 24–28 mm (15/16–1 1/8 in.).
   - If the feed auger is in the floating position, set clearance to 11.5–15.5 mm (7/16–5/8 in.).

   NOTE:

   The clearance increases between 25–40 mm (1–1 1/2 in.) when the center-link is fully retracted.
8. Repeat Steps *6, page 422* and *7, page 422* for the opposite end of the auger.

   IMPORTANT:

   Adjusting one side of the auger can affect the other side. Always double-check both sides of the auger after making final adjustments.
9. Tighten nuts (B) on both ends of the feed auger. Torque the nuts to 93–99 Nm (68–73 lbf·ft).
10. Rotate the drum and double-check clearances.

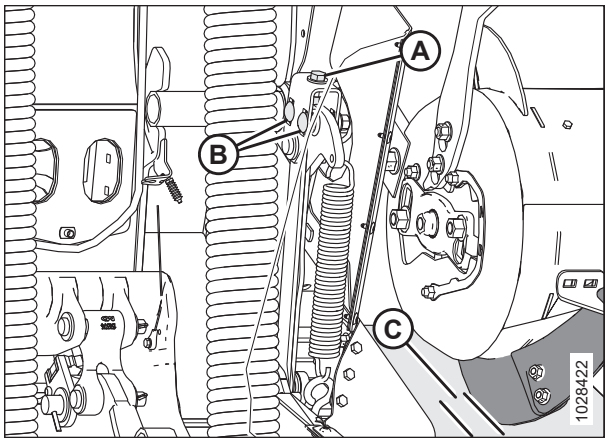


Figure 5.60: Auger Clearance

5.7.2 Checking Feed Auger Drive Chain Tension

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the header fully.
3. Raise the reel fully.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
6. Shut down the engine, and remove the key from the ignition.

7. On the left side of the feed auger, remove four bolts (A) and inspection panel (B).
8. Remove bolts (C) and remove indicator/clamp (D) that holds the two covers together.
9. Remove bolt (E).
10. Remove bolt and washer (H) that secure that bottom cover.
11. Rotate bottom cover (F) forward to remove.

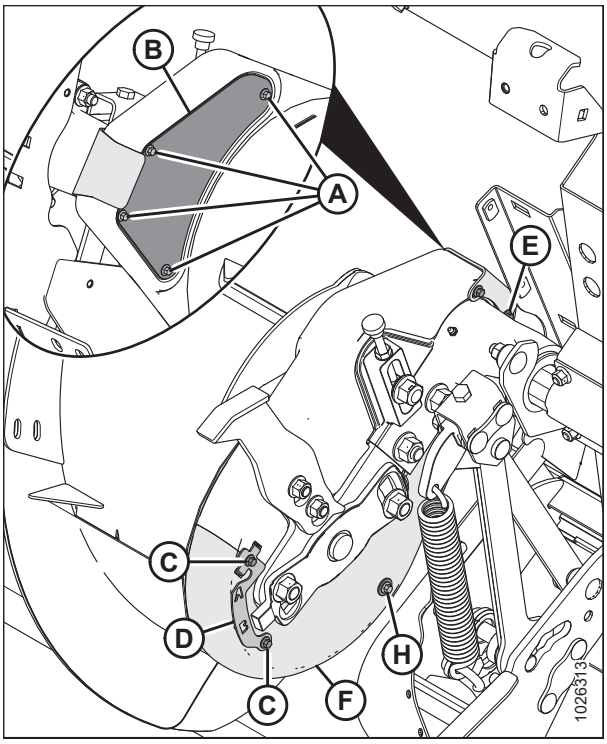


Figure 5.61: Feed Auger Drive – Rear View

12. Check chain at mid span (A). There should be 4 mm (0.16 in.) of deflection. If adjustment is required, refer to *5.7.3 Adjusting Feed Auger Drive Chain Tension, page 424*.

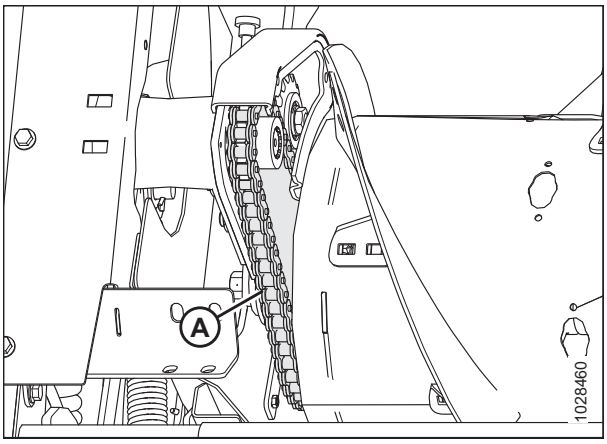


Figure 5.62: Feed Auger Chain – Rear View

13. Position bottom cover (F) and secure with bolt and washer (H).
14. Install bolt (E).
15. Secure bottom cover to the top cover with clamp/ indicator (D) and bolts (C).
16. Install inspection panel (B) and secure with four bolts (A). Tighten bolts (A) and torque to 2.7–4.1 Nm (24–36 lbf·in).

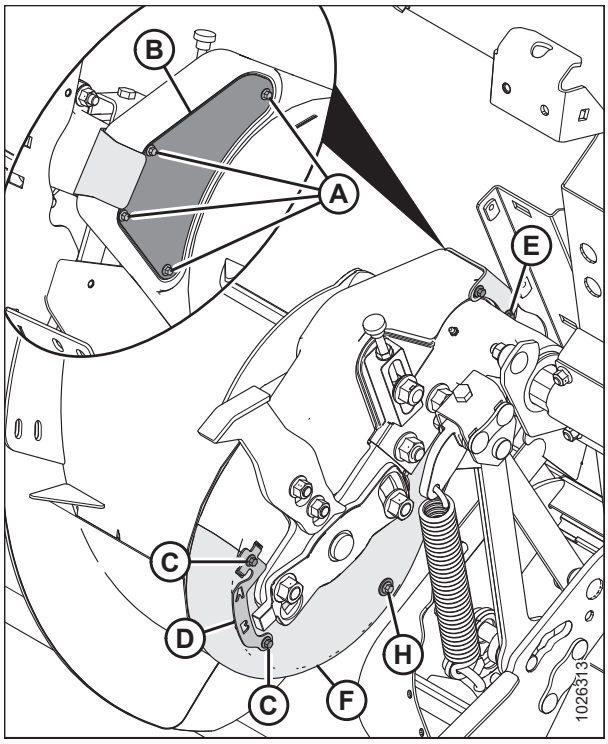


Figure 5.63: Feed Auger Drive – Rear View

5.7.3 Adjusting Feed Auger Drive Chain Tension

The auger is chain-driven by the float module drive system sprocket attached to the side of the auger. Insufficient chain tension can prematurely wear sprockets or damage the chain. To adjust chain tension, follow these steps:

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Lower the header fully.
3. Raise the reel fully.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
6. Shut down the engine, and remove the key from the ignition.

7. Remove four bolts (A) and inspection panel (B) to view chain.

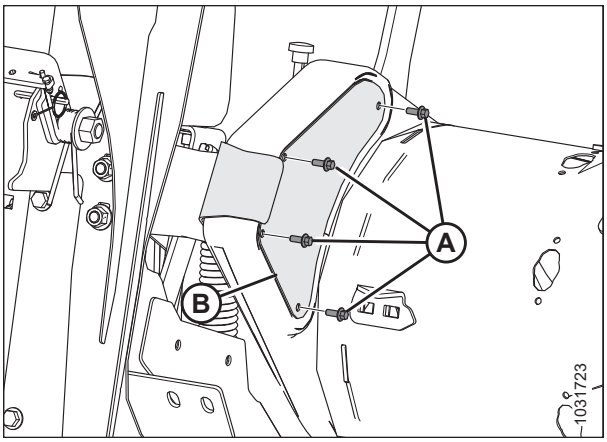


Figure 5.64: Left Side of Auger Drive – Rear View

8. Loosen jam nut (B).
9. Loosen idler nut (A) slightly to allow idler to move by turning adjuster (C).
10. Rotate auger in reverse to take up slack in upper strand of chain.

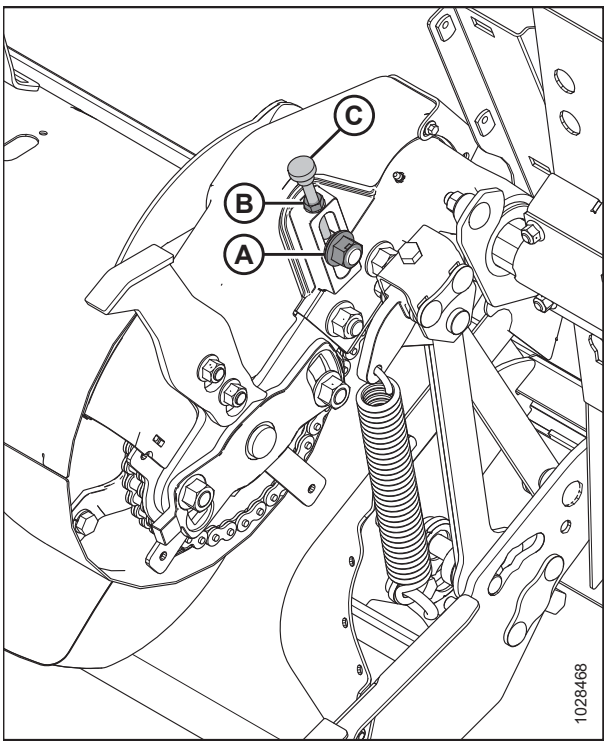


Figure 5.65: Left Side of Auger Drive – Front View

11. Turn adjuster thumbscrew (A) clockwise to increase tension until chain deflection (B) is 4 mm (0.16 in.) at midspan.

    IMPORTANT:

    Do **NOT** overtighten.

    NOTE:

    Covers removed from illustration.

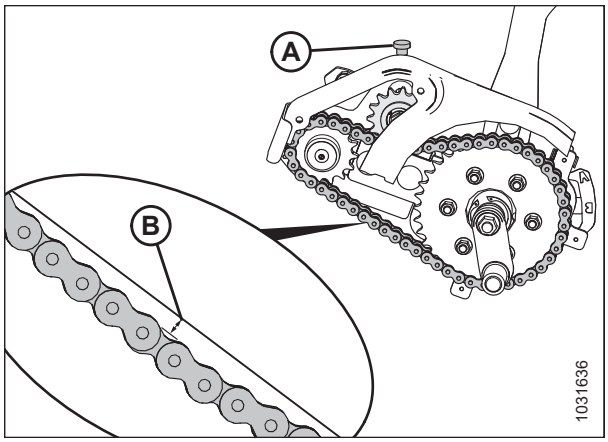


Figure 5.66: Feed Auger Chain Deflection

12. When adjustment is complete, tighten jam nut (A).
13. Tighten the idler nut (B) and torque to 258–271 Nm (190–200 lbf·ft).
14. Recheck midspan chain deflection after tightening idler and jam nut.

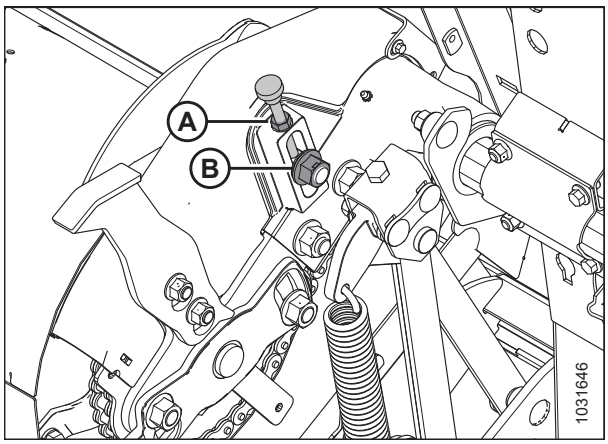


Figure 5.67: Feed Auger Chain – Front View

15. Install inspection panel (B) and secure with four bolts (A).
16. Torque bolts (A) to 2.7–4.1 Nm (24–36 lbf·in).

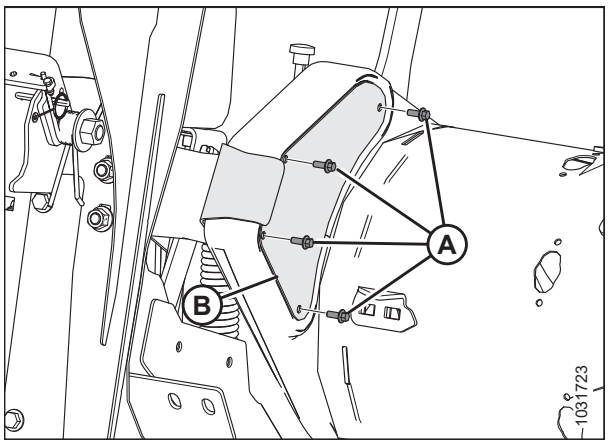


Figure 5.68: Left Side of Auger Drive – Rear View

5.7.4 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.

WARNING

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

NOTE:

Replace chain with endless chain (MD #220317).

NOTE:

Illustrations show the left side of the auger.

1. Tilt the header fully back to maximize space between auger and feed pan.
2. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
3. Loosen two bolts (A) and remove bumper (B) on left side of the auger.

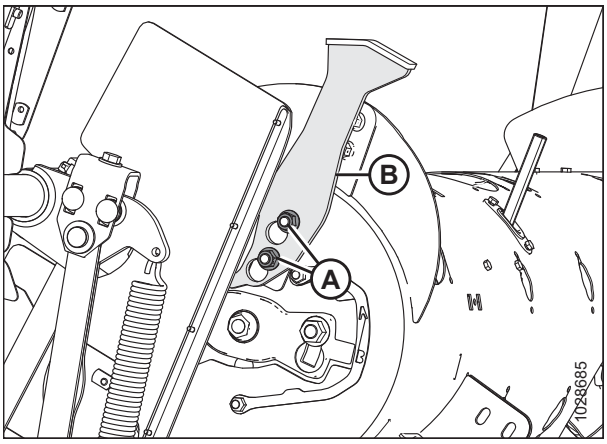


Figure 5.69: Auger Drive – Right

4. On the left side of the auger, remove four bolts (A) and inspection panel (B).
5. Remove bolts (C) and remove indicator/clamp (D) that holds top cover (G) and bottom cover (H) together.
6. Remove bolt and washer (J) that secure bottom cover (H).
7. Remove bolts (E) and remove cover retainer (F).
8. Rotate top cover (G) and bottom cover (H) forward to remove from auger.

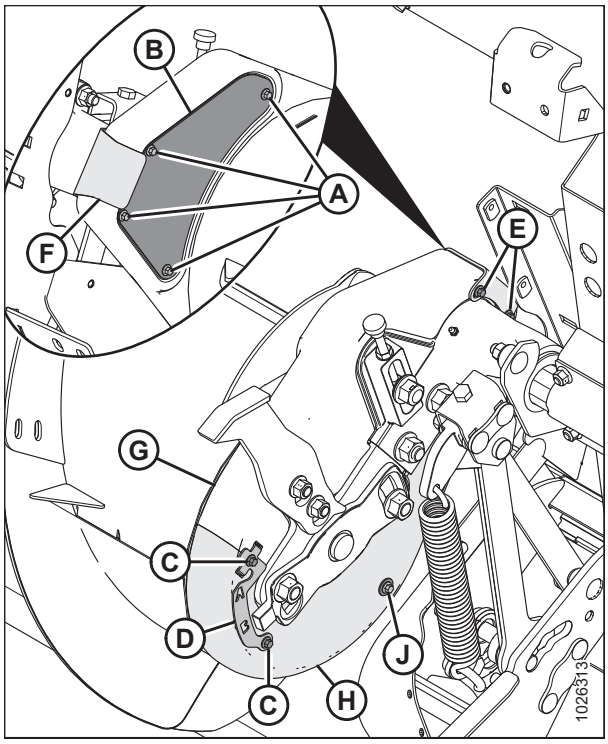


Figure 5.70: Auger Drive

9. Loosen jam nut (C) and turn thumbscrew (D) counterclockwise to release the bolt holding sprocket (B) and preventing it from being raised up to release chain tension.

   IMPORTANT:

   Do **NOT** loosen thin nut (E) on the inboard side of the idler sprocket spindle.

10. Loosen idler sprocket nut (A), and raise sprocket (B) to the uppermost position to release the tension on the chain. Tighten nut (A) to hold sprocket in place.
11. Remove screw (F) and washer (G).

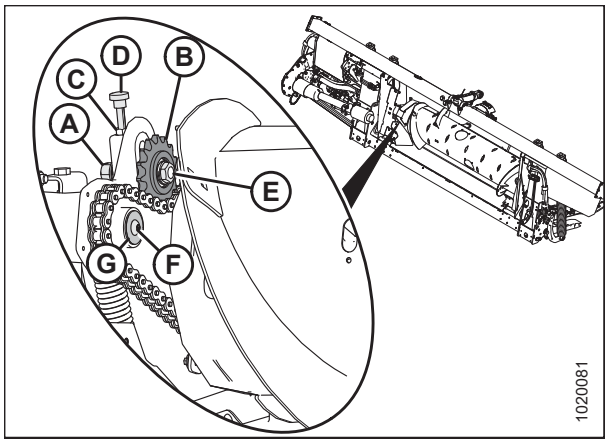


Figure 5.71: Auger Drive

12. Remove two bolts and nuts (A).

    NOTE:

    A second person may be needed to lift or support the auger to completely remove the bolts.

    NOTE:

    The bolts on the left of the auger are longer than the bolts on the right end of the auger.

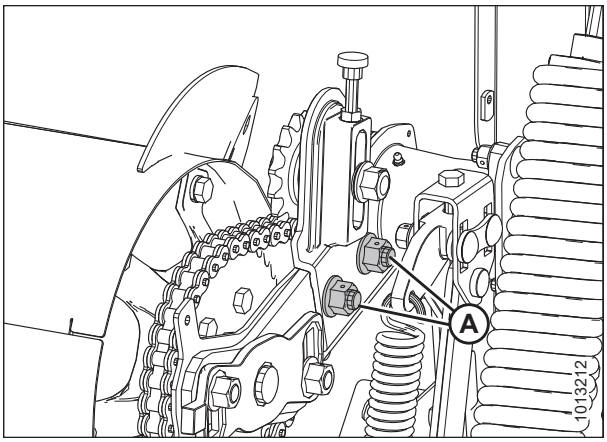


Figure 5.72: Auger Support Arm

13. Place a wooden block under the drive end of auger (B) to prevent the auger from dropping and damaging the feed draper.
14. Use a pry bar (A) to slide the auger to the right.

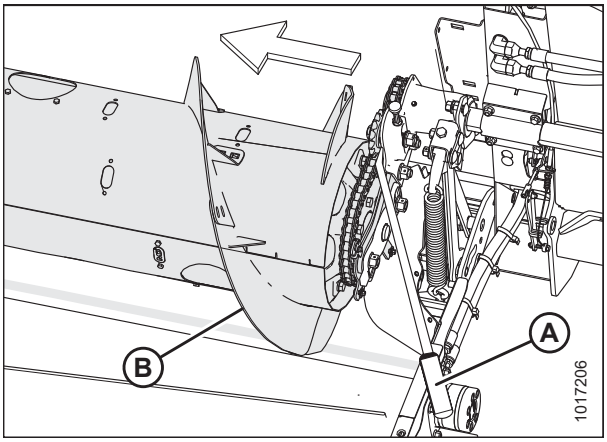


Figure 5.73: Auger

15. Remove drive sprocket (A) and chain (B) from spline shaft.

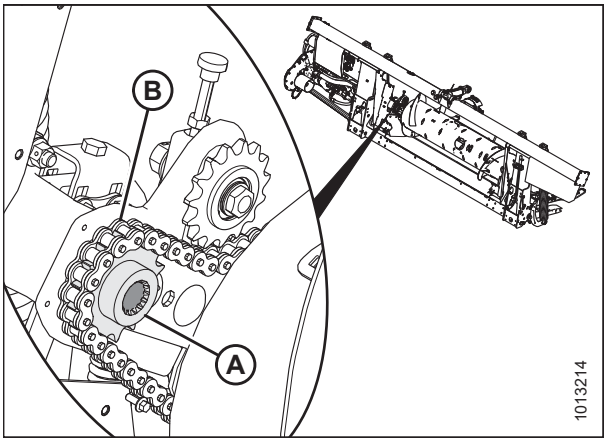


Figure 5.74: Auger Drive

16. Maneuver auger (A) sideways and forward so that endless chain (B) can be removed from the auger.

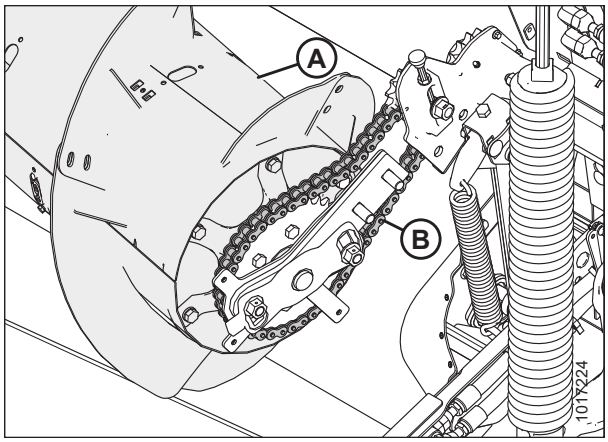


Figure 5.75: Auger Drive

5.7.5 Installing Auger Drive Chain

NOTE:

Illustrations show the left side of the auger.

1. Place drive chain (B) over the sprocket on the drive side of auger (A).

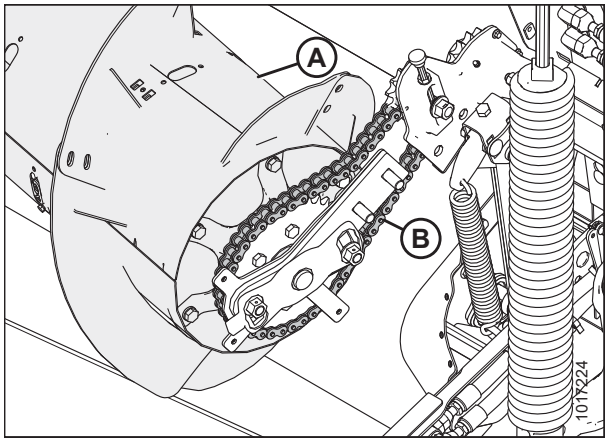


Figure 5.76: Auger Drive

2. Place drive sprocket (A) into chain (B) and align the sprocket onto the shaft.

   NOTE:

   Shoulder of drive sprocket (A) should face the auger.

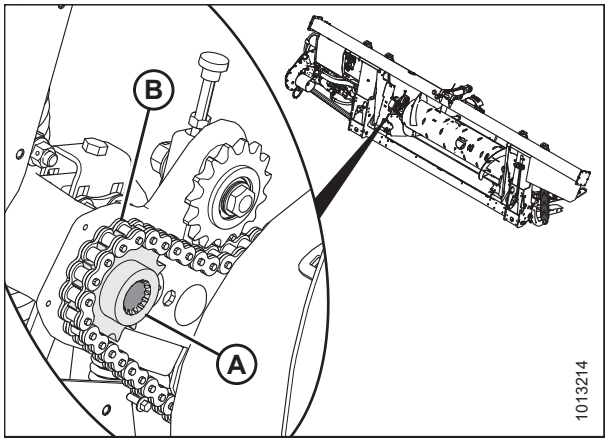


Figure 5.77: Auger Drive

3. Slide the auger drum assembly toward the casting, and then reinstall two bolts and nuts (A).
4. Remove the blocks from under the auger.

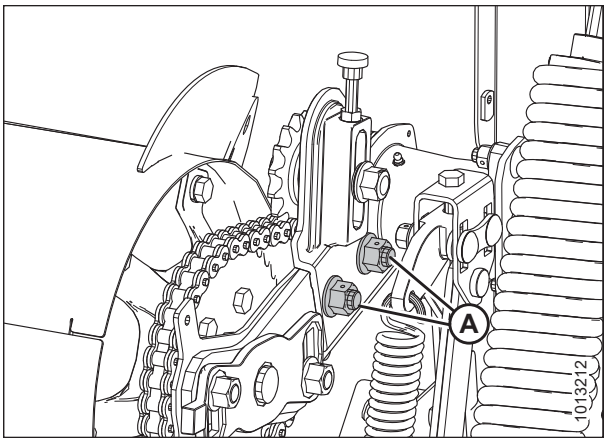


Figure 5.78: Auger Drive

5. Rotate the auger in reverse to take up the slack in the lower strand of the chain.

   IMPORTANT:

   Do **NOT** loosen thin nut (C) on the inboard side of the idler sprocket spindle.

6. Turn adjuster thumbscrew (D) clockwise to move idler sprocket (B) until it is **FINGER TIGHT ONLY.**

   IMPORTANT:

   Do **NOT** overtighten.

7. Tighten idler nut (A) and torque to 258–271 Nm (190–200 lbf·ft).

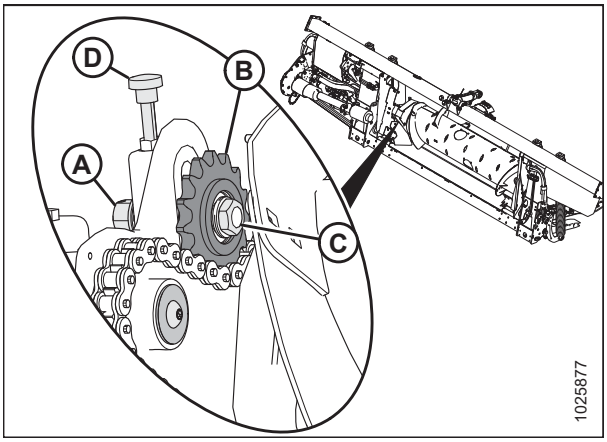


Figure 5.79: Auger Drive

8. Tighten jam nut (A).
9. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to threads of screw (B).
10. Install washer (C) and secure it with screw (B).

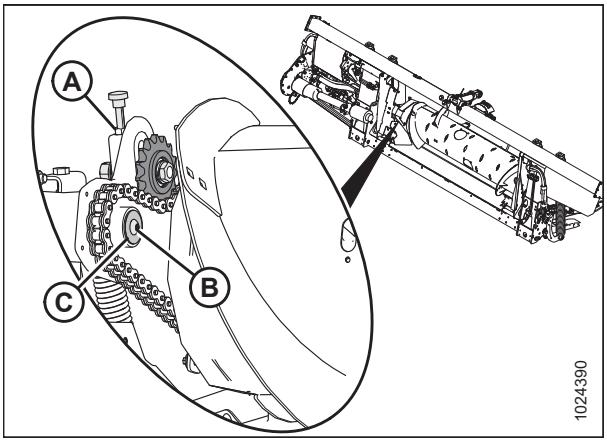


Figure 5.80: Auger Drive

11. Position bottom cover (H) and secure with bolt and washer (J).
12. Position top cover (G). Secure top and bottom covers with clamp/indicator (D) and bolts (C).
13. Install inspection panel (B) and secure with four bolts (A). Tighten bolts (A) and torque to 2.7–4.1 Nm (24–36 lbf·in).
14. Install cover retainer (F) and secure with two bolts (E).

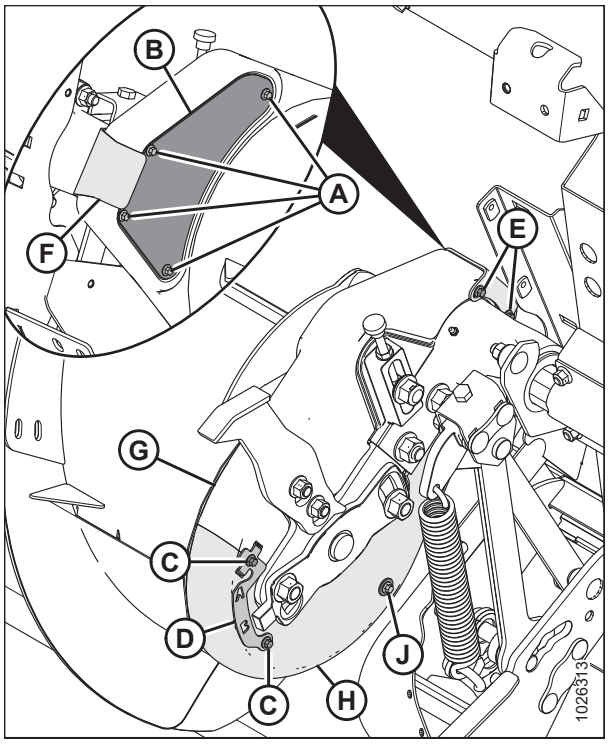


Figure 5.81: Auger

5.7.6 Using Auger Flighting

The auger flighting on the FM200 can be configured for specific combines and crop conditions. For instructions, refer to *4.1 FM200 Feed Auger Configurations, page 299* for combine/crop specific configurations.

5.7.7 Auger Fingers

The FM200 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.

IMPORTANT:

Only install hollow fingers in a FM200. The use of solid fingers will cause severe damage to the machine.

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. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Shut down the engine, and remove the key from the ignition.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

5. Remove bolts (A) and access cover (B) closest to the finger you are removing. Retain parts for reinstallation.

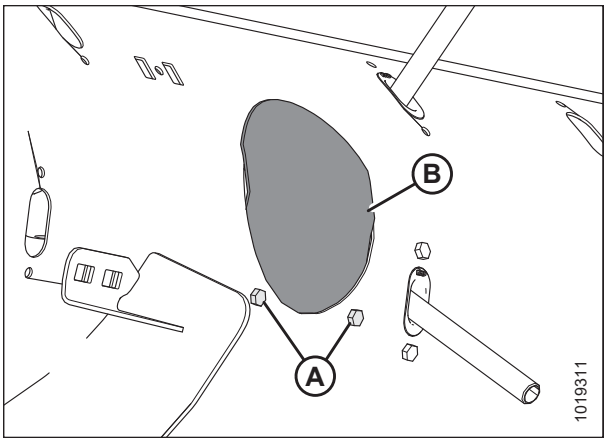


Figure 5.82: Auger Access Hole Cover

6. Remove hairpin (A) and pull finger (B) out of finger holder (C) from inside the auger. Remove the finger from the auger by pulling it out through plastic guide (D).

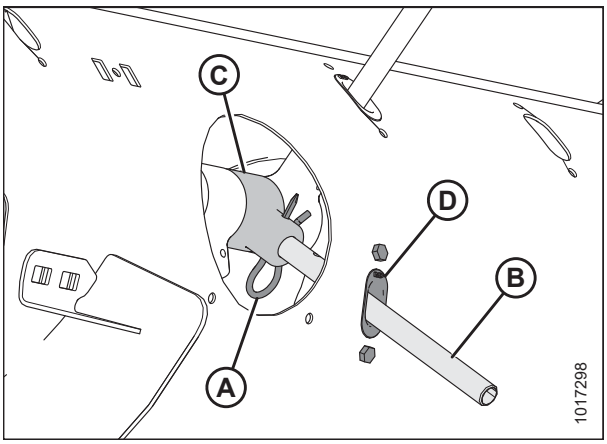


Figure 5.83: Auger Finger

7. Remove bolts (A) and tee nuts securing plastic guide (B) to the auger, and remove the guide from inside the auger.

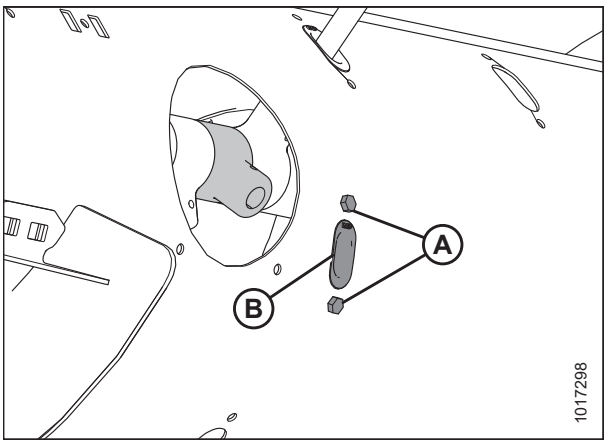


Figure 5.84: Auger Finger Hole

8. Coat bolts (B) with medium-strength threadlocker (Loctite® 243 or equivalent), and then position plug (A) into the hole from inside the auger. Secure with two M6 hex head bolts (B) and tee nuts. Torque to 9 Nm (80 lbf·in).

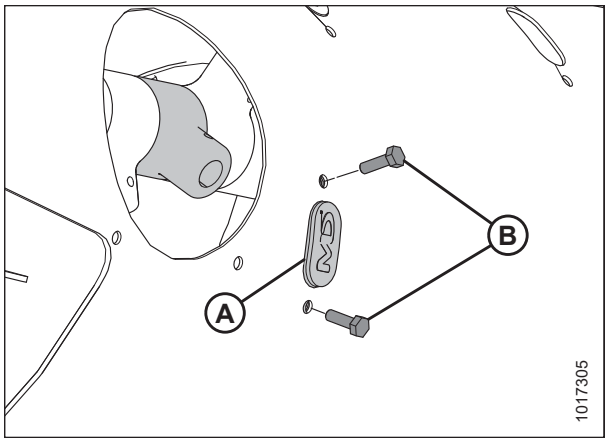


Figure 5.85: Plug

9. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent) and reinstall access cover (B). Secure the access cover in place with bolts (A). Torque bolts to 9 Nm (80 lbf·in).

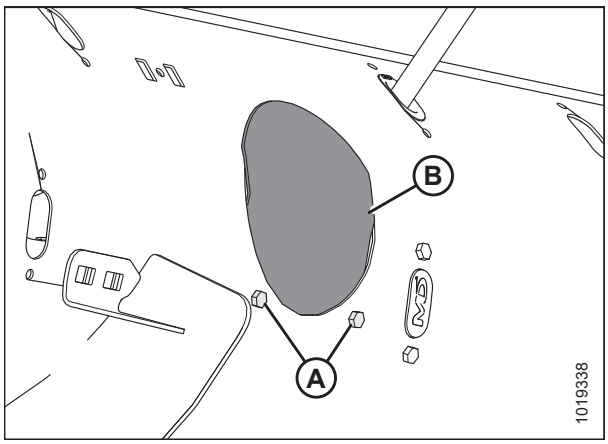


Figure 5.86: Auger Access Hole Cover

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 fully.
2. Shut down the engine, and remove the key from the ignition.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.

4. Remove bolts (A) and access cover (B) closest to the finger that needs to be installed or replaced.

   If you are replacing an existing auger finger, refer to Step *5, page 435*, otherwise proceed to Step *7, page 436* for installation instructions for new auger fingers.

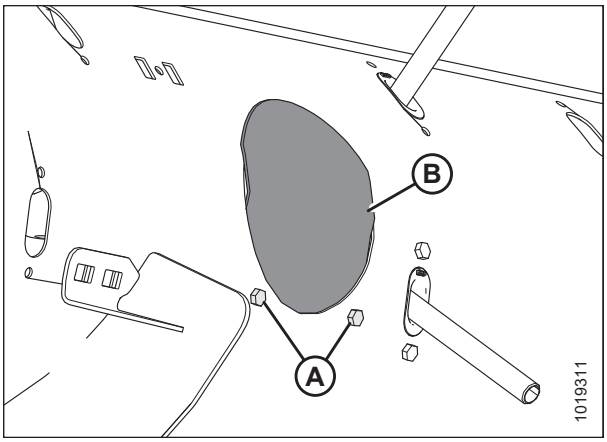


Figure 5.87: Access Hole Cover

5. Remove the existing auger finger as follows:

   a. Remove hairpin (A), pull finger (B) out of bushing (C) from inside the auger.

   b. Remove the finger from the auger by pulling it through plastic guide (D).

   If you are replacing the plastic finger guide before installing the auger finger, refer to Step *6, page 435*, otherwise refer to Step *9, page 436*.

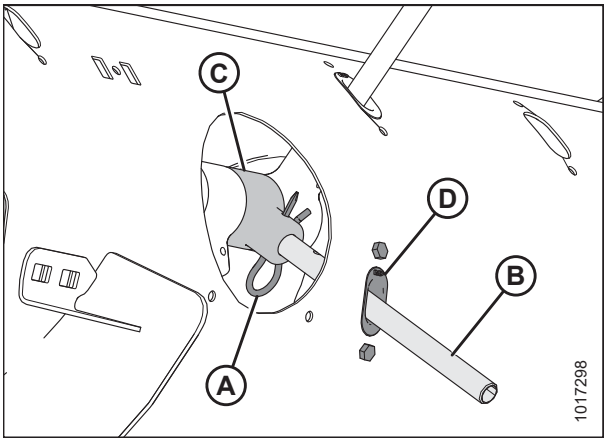


Figure 5.88: Auger Finger

6. Remove plastic finger guide as follows:

   a. Remove bolts (A) securing plastic finger guide (B) to the auger.

   b. Remove guide (B) from inside the auger, and proceed to Step *8, page 436*.

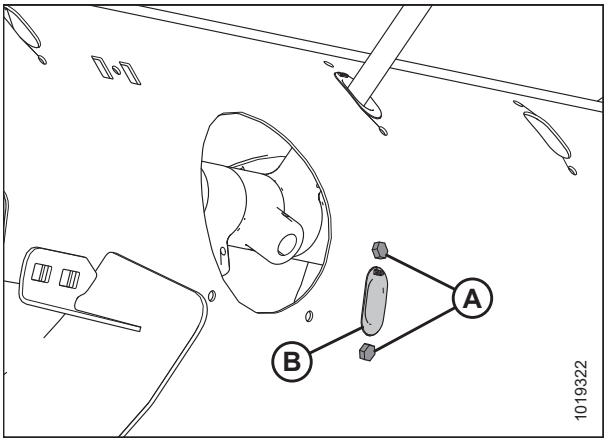


Figure 5.89: Auger Finger Hole

7. Remove two bolts (B), tee nuts, and plug (A).

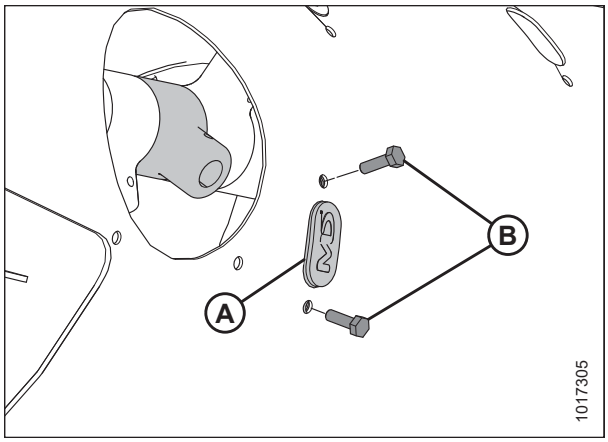


Figure 5.90: Auger Finger Hole

8. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent), and then insert plastic finger guide (B) from inside the auger and secure it with bolts and tee nuts. Torque bolts to 9 Nm (80 lbf·in).

   NOTE:

   When installing additional fingers, ensure you install an equal number on each side of the auger.

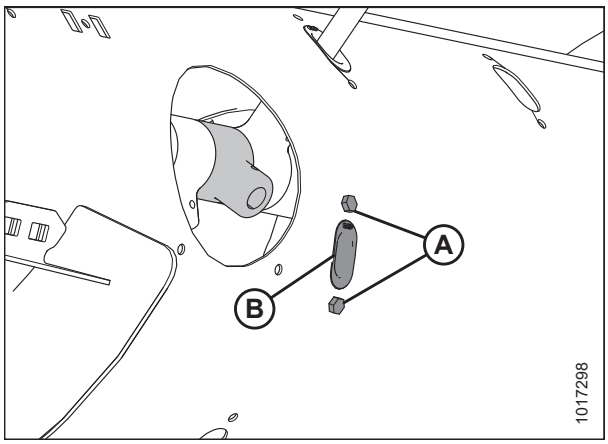


Figure 5.91: Auger Finger Hole

9. From inside the auger, insert new auger finger (B) through plastic guide (D).
10. Insert finger (B) into finger holder (C) and secure with hairpin (A).

    NOTE:

    Note orientation of hairpin (A). The round part should face the direction of auger rotation; the formed side (that is, the S-shaped side) must face the chain drive side of the auger.

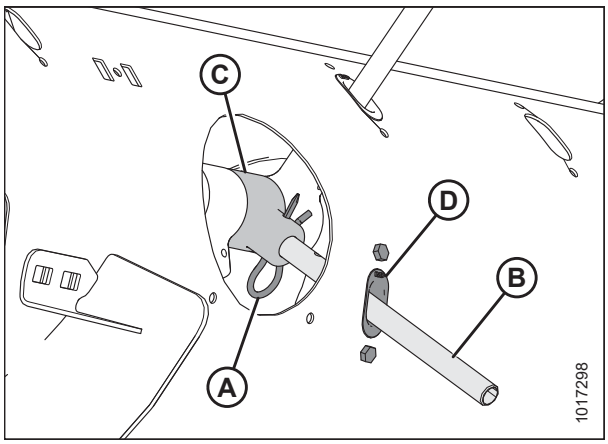


Figure 5.92: Auger Finger

11. Coat bolts (A) with medium-strength threadlocker (Loctite® 243 or equivalent), then reinstall access cover (B) and secure with bolts. Torque to 9 Nm (80 lbf·in).

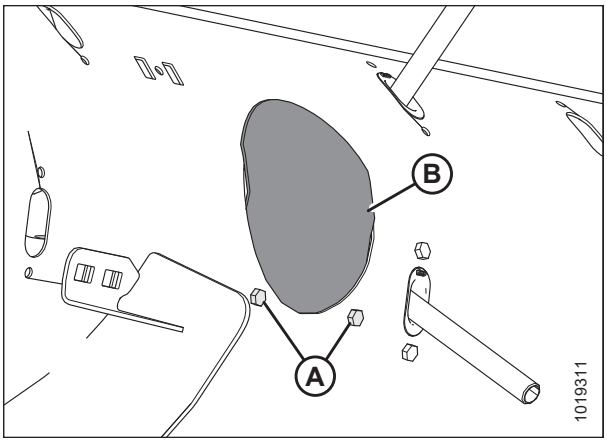


Figure 5.93: Access Hole Cover

Checking Auger Finger Timing

This procedure is for checking the setting that determines where the fingers are fully extended from the auger.

NOTE:

Left side of auger shown.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
4. Shut down the engine, and remove the key from the ignition.
5. Check that indicator (C) is set to the same position at each end of the auger.

   NOTE:

   There are two different auger tine extension positions: **A** and **B**. Position **A** is used for canola and position **B** is used for grains. The factory setting for the indicator is position **B**.

   IMPORTANT:

   To avoid damaging the auger beyond repair, it is extremely important that both sides are at the same setting.
6. To adjust the indicator position, refer to *Adjusting Auger Finger Timing, page 438*.
7. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.

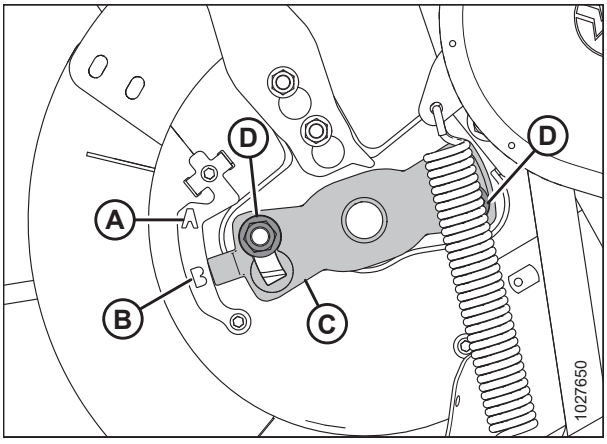


Figure 5.94: Auger Tine Timing – Left Side of Auger Shown

Adjusting Auger Finger Timing

To adjust auger finger timing, follow these steps:

NOTE:

Left side of auger shown.

WARNING

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

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
4. Shut down the engine, and remove the key from the ignition.
5. Locate finger timing indicator (C) at the end of the auger. There are two auger tine extension positions: Position **A** and position **B**.
6. Loosen nuts (D) and adjust finger timing indicator (C) to the desired position.

   IMPORTANT:

   The timing indicator on both ends of the auger must be set at the same position; if not, the auger will be damaged beyond repair.

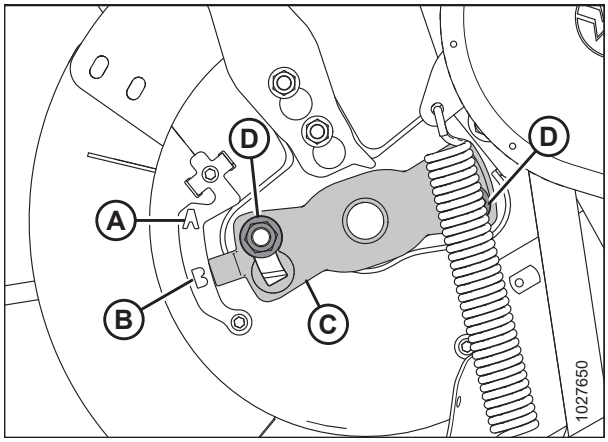


Figure 5.95: Auger Tine Timing Indicator

NOTE:

If the finger timing indicator is pointing at position **A**, it indicates that at that point the auger fingers will be fully extended. This allows the crop to be engaged and released earlier before entering the feeder house. This setting is best used for canola or bushy crops.

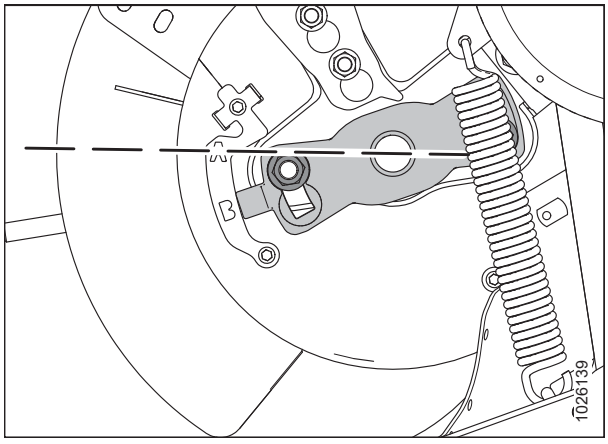


Figure 5.96: Auger Position A

NOTE:

If the indicator is pointing at position **B**, it indicates that at that point the auger fingers will be fully extended. This allows the crop to be engaged and released later before entering the feeder house. This setting is best used for grains or beans.

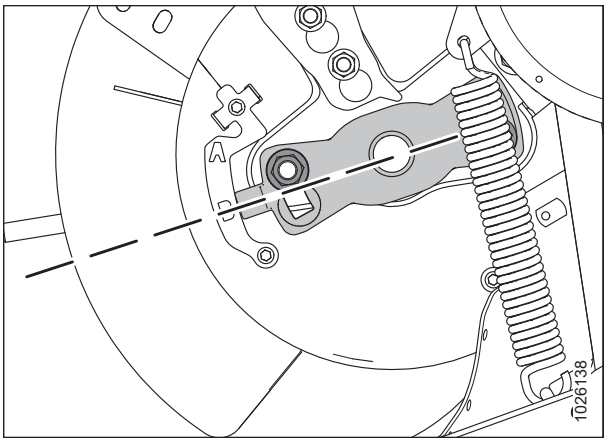


Figure 5.97: Auger Position B

9. Tighten nuts (A) once adjustment is complete. Torque nuts to 92–138 Nm (68–102 lbf·ft).
10. Disengage the reel safety props. For instructions, refer to *Disengaging Reel Safety Props, page 32*.

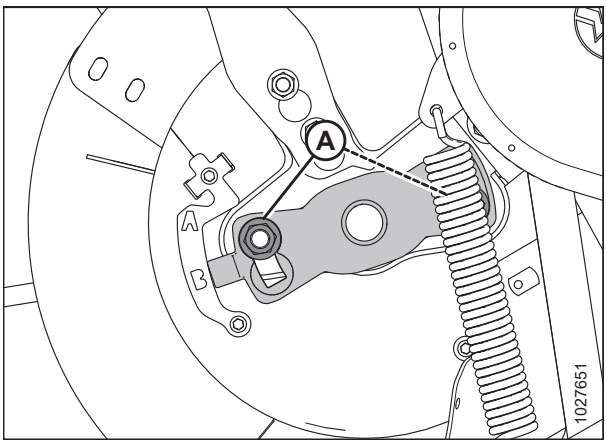


Figure 5.98: Auger Tine Timing Indicator

5.8 Knife

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 383*.

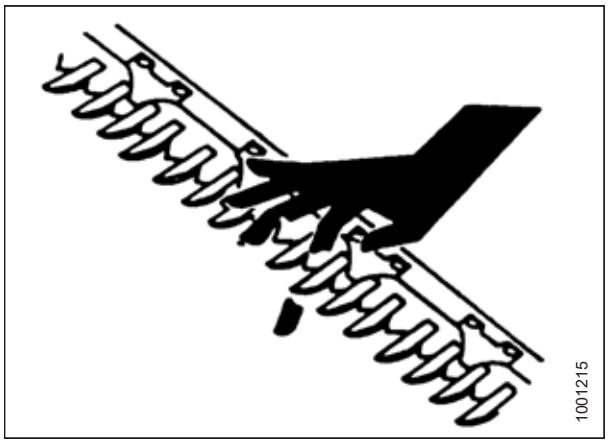


Figure 5.99: Cutterbar Hazard

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.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

WARNING

Exercise caution when working around the cutterbar. Knife sections are sharp and can cause serious injury. Wear heavy gloves when working around or handling knife sections or the knife.

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

   IMPORTANT:

   Cut quality may be affected, if fine and coarsely serrated knife sections are used on the same knife.

2. If a hold-down is present, remove nuts (A) and hold-down (B) to access the knife section.

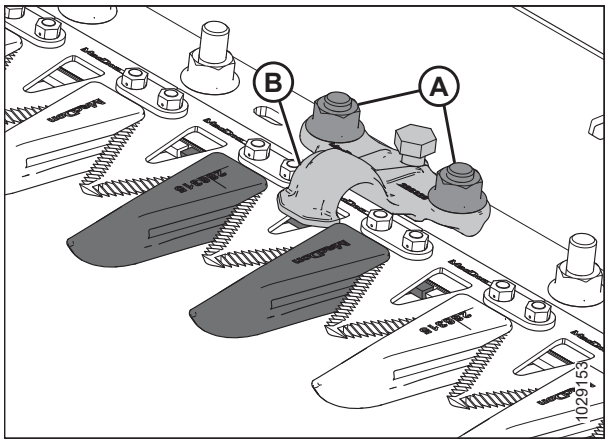


Figure 5.100: Cutterbar

3. Remove bolts and nuts (B). Retain hardware.

   NOTE:

   Stroke the knife as required to access the hardware.

4. Remove bars (C) and lift knife section (A) off the knife back bar.
5. Clean dirt off the knife back bar, and position the new knife section onto the knife back bar.
6. Reposition bars (C) and install bolts and nuts (B).

   NOTE:

   Rotate bolt until it engages with the oblong hole on the knife back bar.

   NOTE:

   Ensure bolts are fully inserted. Do **NOT** use nuts to draw bolts into the knife back bar.

7. Torque nuts to 12 Nm (9 lbf·ft).

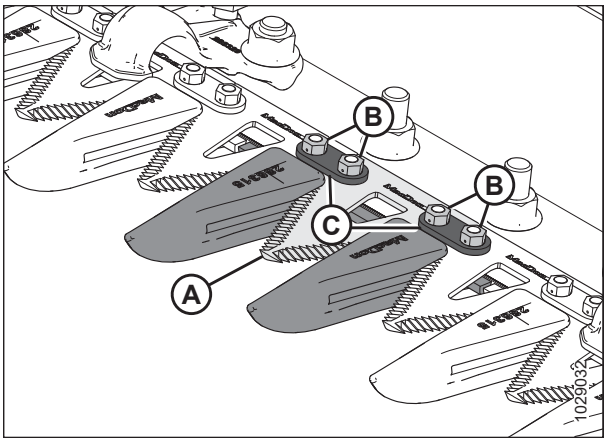


Figure 5.101: Cutterbar

5.8.2 Removing Knife

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke the knife to its outer limit.
3. Clean the area around the knifehead.
4. Remove grease fitting (A) from the pin.

   NOTE:

   Removing the grease fitting will make it easier to reinstall the knifehead pin later.

5. Remove bolt and nut (B).
6. Use a screwdriver or chisel in slot (C) to release the load on the knifehead pin.

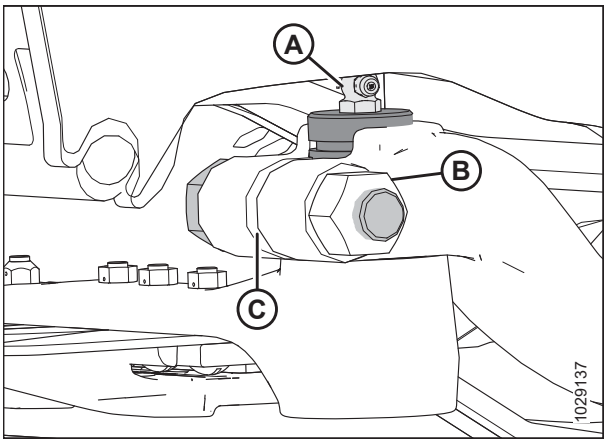


Figure 5.102: Knifehead

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 to keep out dirt and debris unless it is being replaced.

10. Wrap a chain around the knifehead and pull out the knife.

5.8.3 Removing Knifehead Bearing

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the knife. For instructions, refer to *5.8.2 Removing Knife, page 441*.

   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 pin (A). Tap seal (B), bearing (C), plug (D), and O-ring (E) from the underside of the knifehead.

   NOTE:

   Seal (B) can be replaced without removing the bearing. When changing the seal, check the pin and needle bearing for wear and replace if necessary.

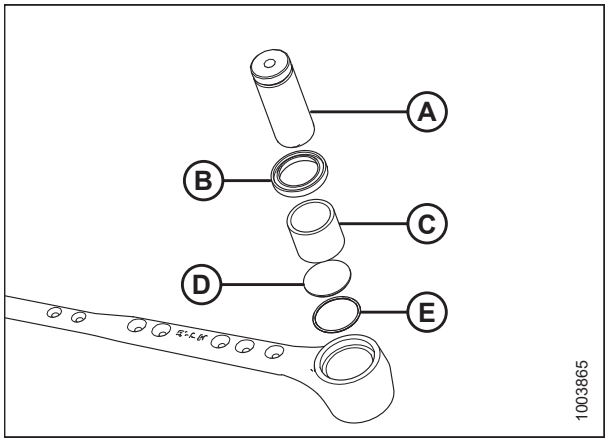


Figure 5.103: Knifehead Bearing Assembly

5.8.4 Installing Knifehead Bearing

1. Place O-ring (E) and plug (D) into the 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 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 the knifehead with the lip facing outwards.

   IMPORTANT:

   To prevent premature knifehead or knife drive box failure, ensure there is a tight fit between the knifehead pin and the needle bearing, and between the knifehead pin and the output arm.

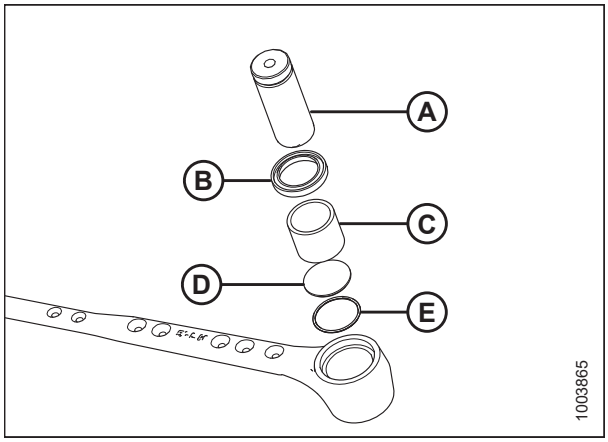


Figure 5.104: Knifehead Bearing Assembly

4. Install the knife. For instructions, refer to *5.8.5 Installing Knife, page 443*.

5.8.5 Installing Knife

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

WARNING

Stand to the rear of the knife during removal to reduce the risk of injury from cutting edges. Wear heavy gloves when handling the knife.

1. Shut down the engine, and remove the key from the ignition.
2. Slide the knife into place and align the knifehead with drive arm (A).
3. Ensure bearing cavity (B) is filled with grease prior to installing the knifehead pin to prevent any air from getting trapped in the cavity.

   NOTE:

   For easier installation of the knifehead pin, remove the grease fitting from the pin first.
4. Install knifehead pin (C) through the drive arm and into the knifehead.
5. Position the pin so that groove (D) is 2 mm (5/64 in.) above the drive arm.
6. Position drive arm (A) so that there is 0.2–1.2 mm (1/64–3/64 in.) clearance (E) between drive arm and the knifehead.
7. Secure pin with M16 x 85 mm hex bolt (A) and hex nut (B). Install the bolt from the inboard side of the arm, and the washer between the nut and the arm. Torque bolt to 170 Nm (125 lbf·ft).

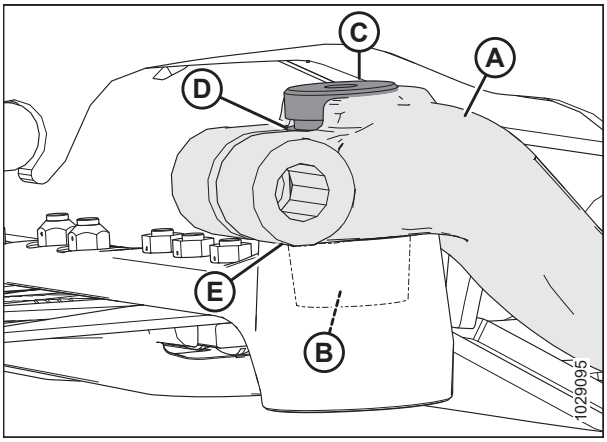


Figure 5.105: Knifehead

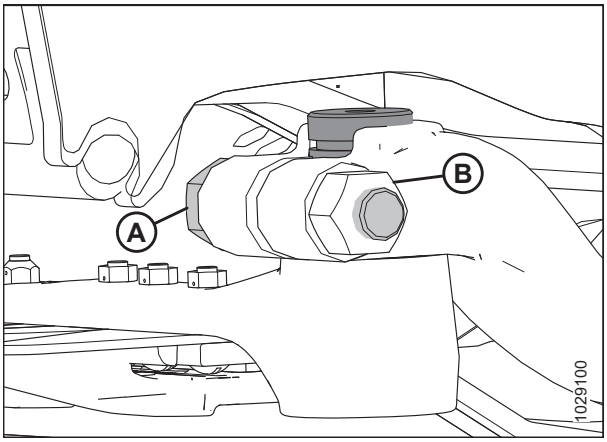


Figure 5.106: Knifehead

8. Reinstall grease fitting (A) (if previously removed), and slowly apply grease to the knifehead until slight downward movement of the knifehead is observed.

   NOTE:

   If air is trapped in the bearing cavity, the knifehead will begin to move down before it's filled with grease.

   IMPORTANT:

   Do **NOT** overgrease the knifehead. Overgreasing leads to knife misalignment causing excessive heating of guards and overloading of drive systems. If overgreasing occurs, remove the grease fitting to release pressure.

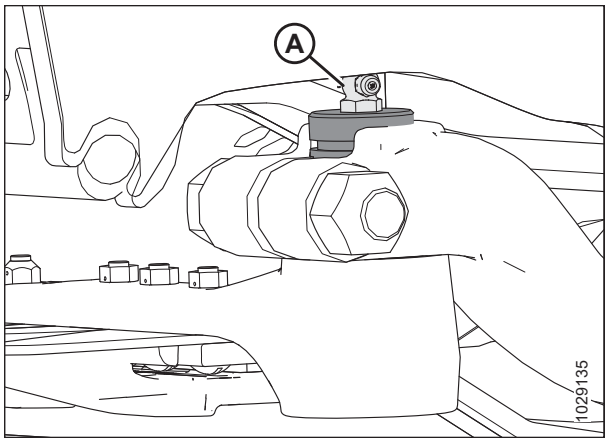


Figure 5.107: Knifehead

5.8.6 Spare Knives

Two spare knives (A) can be stored in the header backtube at the right end. Ensure the spare knives are secured in place with latch (B) and hairpin (C).

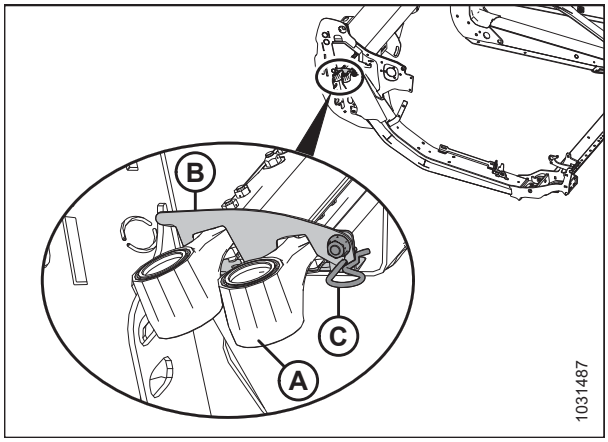


Figure 5.108: Spare Knives

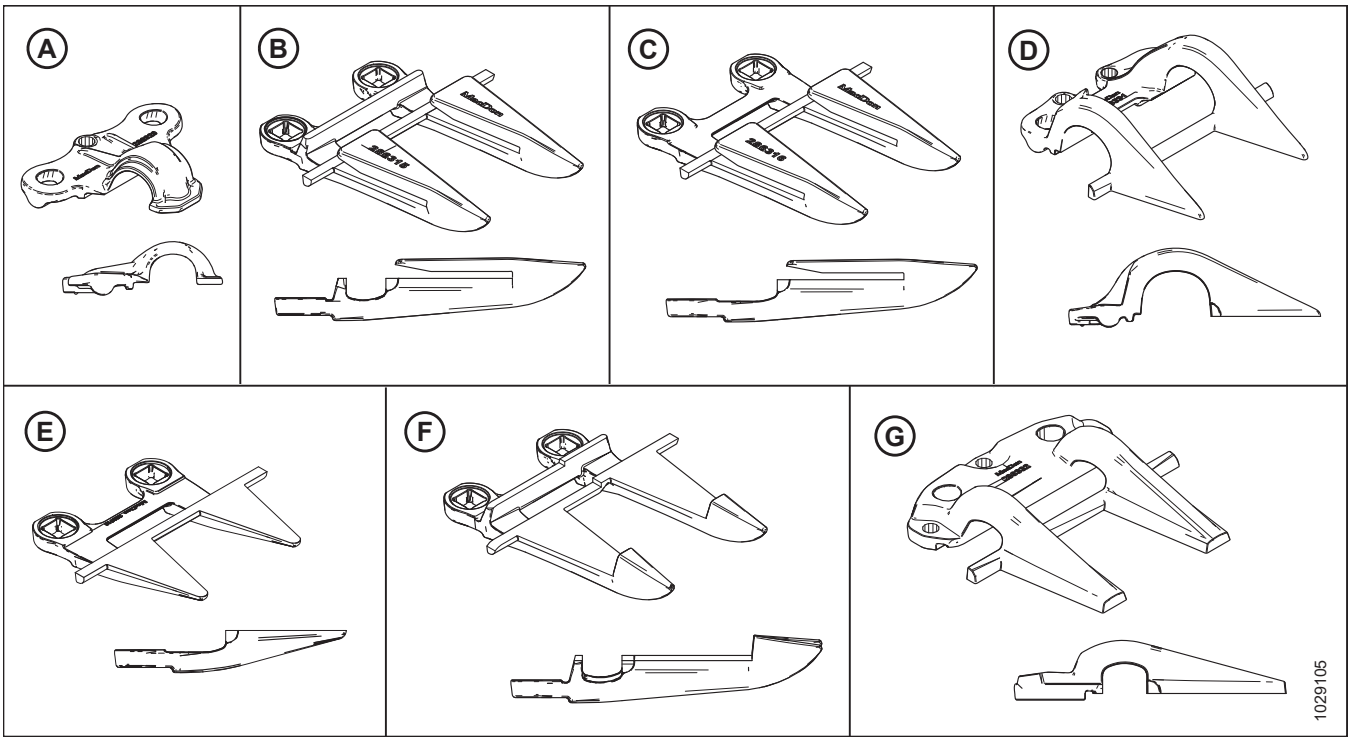
5.8.7 Pointed Knife Guards and Hold-Downs

The following knife guards and hold-downs are used in pointed guard configurations:

NOTE:

Pointed knife guard configurations require two PlugFree™ end hold-downs; one at each end of the cutterbar.

Figure 5.109: Guard and Hold-Down Types used in Pointed Knife Guard Configurations



A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed End Knife Guard (without Wear Bar)[49] (MD #286316)
D - PlugFree™ End Hold-Down (MD #286331)
E - PlugFree™ End Knife Guard (without Ledger Plate)[50] (MD #286319)
F - Pointed Center Knife Guard[51] (MD #286317)
G - Pointed Center Hold-Down (MD #286332)[51]

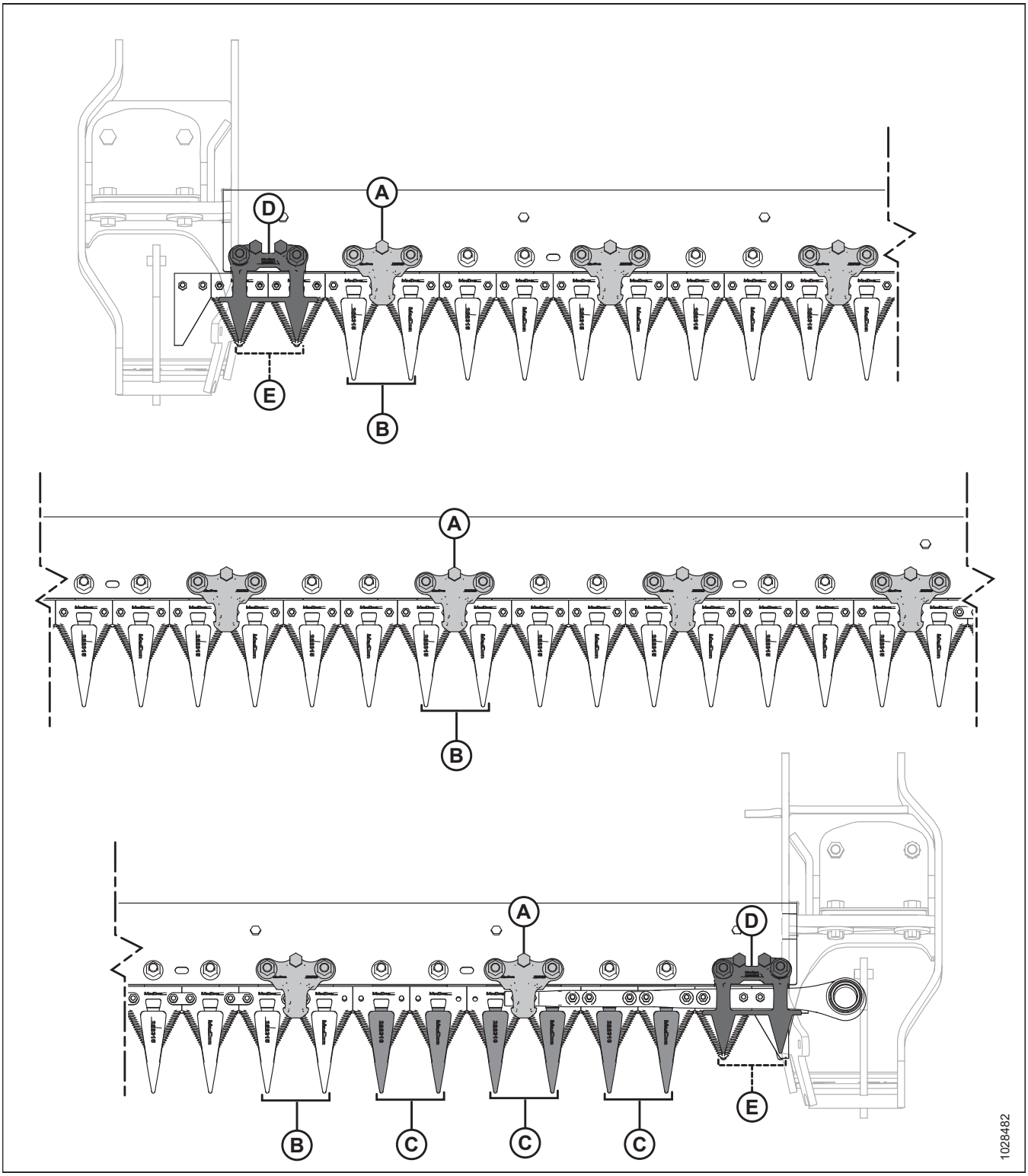
Guards are configured differently on different headers. When replacing pointed guards and hold-down, ensure you use the correct sequence for your header. The following will guide you to the different configurations:

- *Pointed Knife Guards on Single-Knife Headers, page 446*
- *Pointed Knife Guards on FD240 Double-Knife Header, page 447*
- *Pointed Knife Guards on FD241 Double-Knife Header, page 448*
- *Pointed Knife Guards on FD250 Double-Knife Header, page 449*

49. Installed in positions 2, 3, and 4 on drive side(s).
50. Installed in position 1 at both ends of the header.
51. Double-knife headers only.

Pointed Knife Guards on Single-Knife Headers

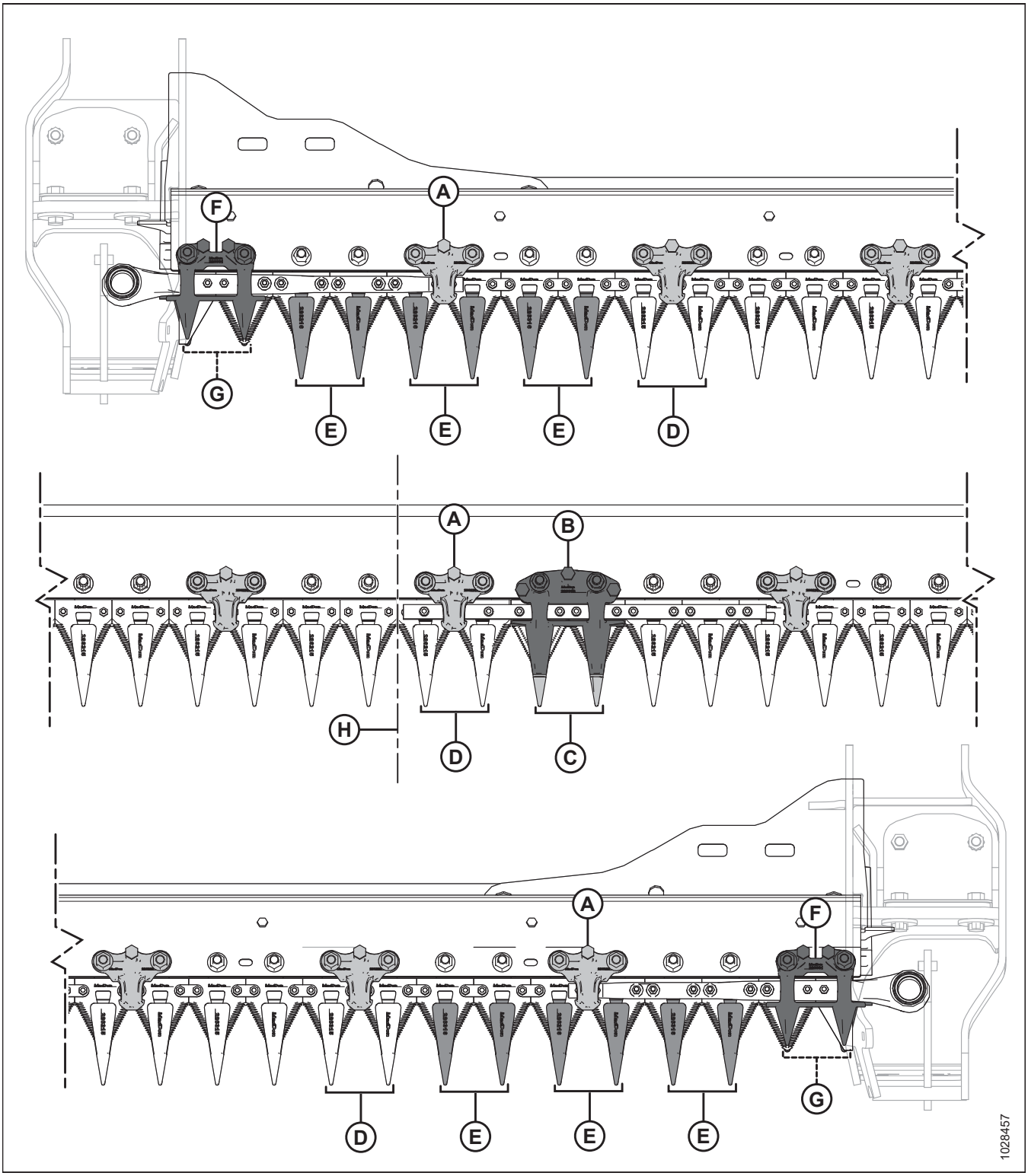
Figure 5.110: Pointed Knife Guard and Hold-Down Locations – Single-Knife Headers



A - Pointed Hold-Down (MD #286329)
B - Pointed Knife Guard (MD #286315)
C - Pointed End Knife Guard (without Wear Bar) (MD #286316)
D - PlugFree™ End Hold-Down (MD #286331)
E - PlugFree™End Knife Guard (without Wear Bar) (MD #286319)

Pointed Knife Guards on FD240 Double-Knife Header

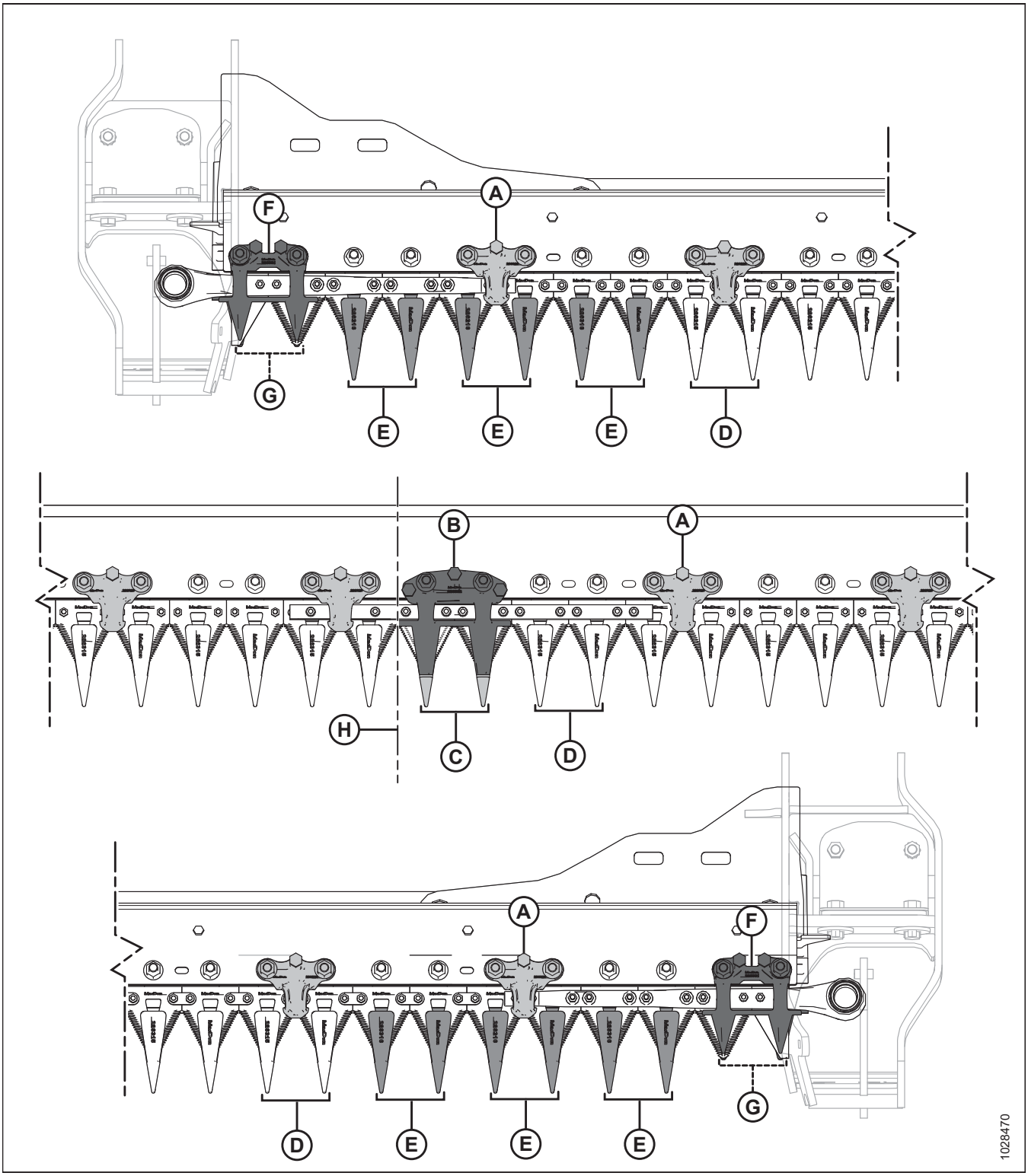
Figure 5.111: Pointed Knife Guard and Hold-Down Locations – FD240 Double-Knife Header



A - Pointed Hold-Down (MD #286329)
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - PlugFree™ End Hold-Down (MD #286331)
G - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)
H - Center of Header

Pointed Knife Guards on FD241 Double-Knife Header

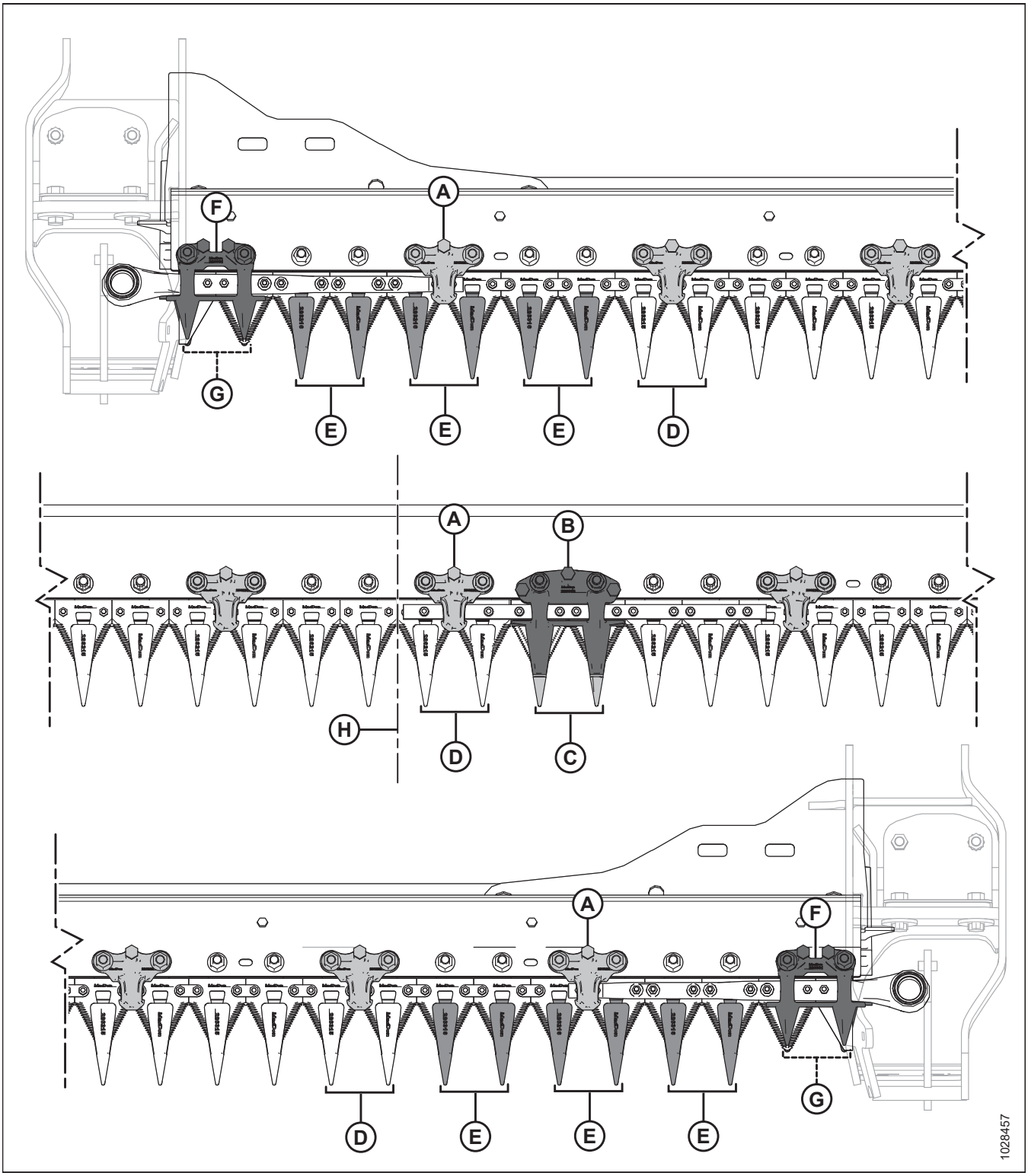
Figure 5.112: Pointed Knife Guard and Hold-Down Locations – FD241 Double-Knife Header



A - Pointed Hold-Down (MD #286329)
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D - Pointed Knife Guard (MD #286315)
E - Pointed End Knife Guard (without Wear Bar) (MD #286316)
F - PlugFree™ End Hold-Down (MD 286331)
G - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)
H - Center of Header

Pointed Knife Guards on FD250 Double-Knife Header

Figure 5.113: Pointed Knife Guard and Hold-Down Locations – FD250 Double-Knife Header



A - Pointed Hold-Down (MD #286329)
B - Pointed Center Hold-Down (MD #286332)
C - Pointed Center Knife Guard (MD #286317)
D- Pointed Knife Guard (MD #286315)
E - Pointed End Guard (without Wear Bar) (MD #286316)
F - PlugFree™ End Hold-Down (MD #286331)
G - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)
H - Center of Header

Adjusting 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.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

NOTE:

Use guard straightening tool (MD #140135) available from your MacDon Dealer.

1. Position tool (A) as shown, and pull up to adjust the guard tips upwards.

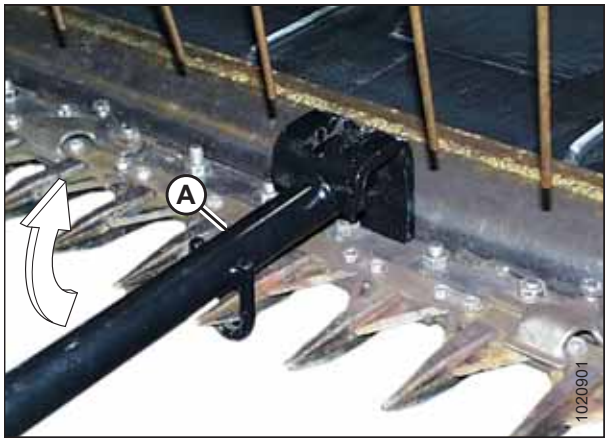


Figure 5.114: Upward Adjustment

2. Position tool (A) as shown, and push down to adjust the guard tips downwards.

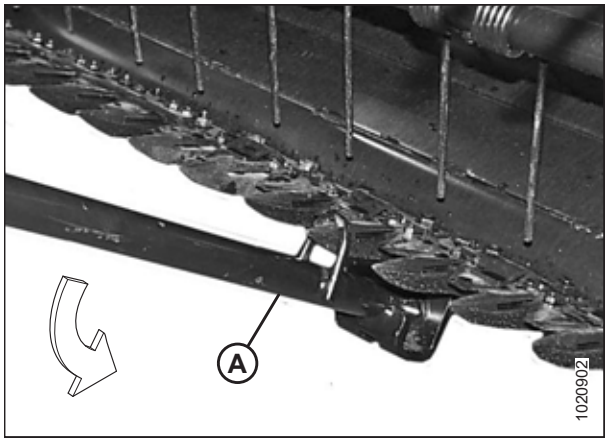


Figure 5.115: Downward Adjustment

Replacing Pointed Knife Guards

This procedure is for replacing standard and drive side guards.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

IMPORTANT:

When replacing pointed knife guards, ensure the hold-down sequence is correct for your header type and width. Refer to *5.8.7 Pointed Knife Guards and Hold-Downs, page 445*.

IMPORTANT:

On both ends of the header, position 1 (outboard guard) is a PlugFree™ end knife guard. On the drive side(s) of the header, positions 2, 3, and 4 are pointed end knife guards (without wear bar). Starting at position 5, the remaining guards are pointed knife guards. Ensure proper replacement guards are installed at these locations.

IMPORTANT:

Double-knife headers have a pointed center knife guard installed where the two knives overlap. The pointed center knife guard has a slightly different replacement procedure. For instructions, refer to *Replacing Pointed Center Knife Guard – Double-Knife, page 454*.

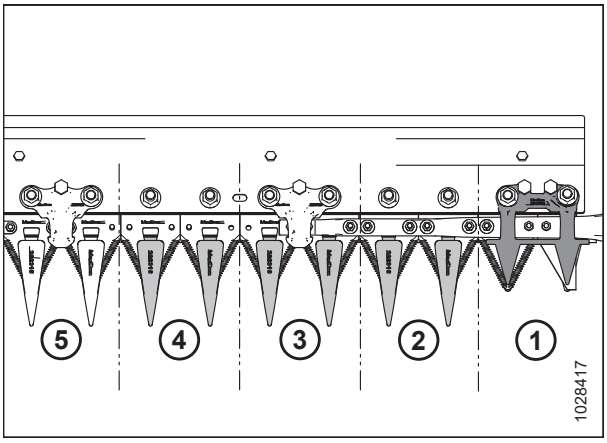


Figure 5.116: Drive Side Pointed Knife Guards

To replace a pointed knife guard, follow these steps:

1. Shut down the engine, and remove the key from the ignition.
2. Stroke the knife manually until the knife sections are spaced midway between the guards.
3. Remove two nuts (B) and bolts attaching pointed knife guard (A) and hold-down (C) (if applicable) to the cutterbar.
4. Remove pointed knife guard (A), hold-down (C), and the plastic wearplate.

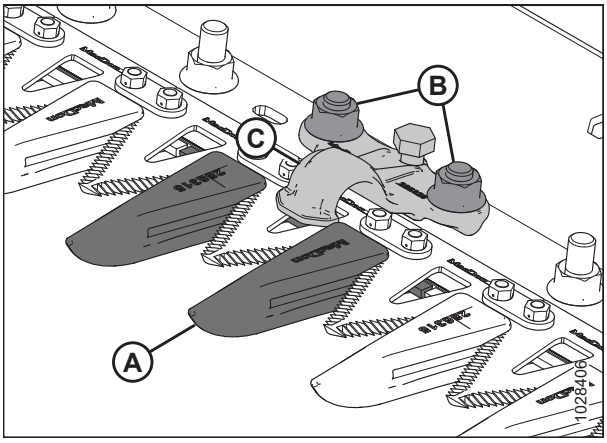


Figure 5.117: Pointed Knife Guards

5. Position plastic wearplate (A) and replacement pointed knife guard (B) under the cutterbar.

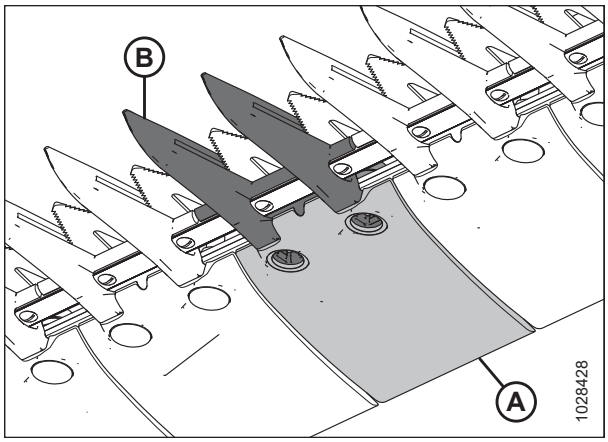


Figure 5.118: Pointed Knife Guard and Wearplate

6. Position hold-down (A) (if applicable), and loosen adjustment bolt (C) so that it is not protruding from the bottom of the hold down.
7. Secure pointed knife guard, wearplate, and hold-down with two bolts and nuts (B). Tighten nuts to 100 Nm (74 lbf·ft).
8. If there is a hold-down at this location, check the clearance between the hold-down and the knife. For instructions, refer to *Checking Hold-Down – Pointed Knife Guards, page 452*.

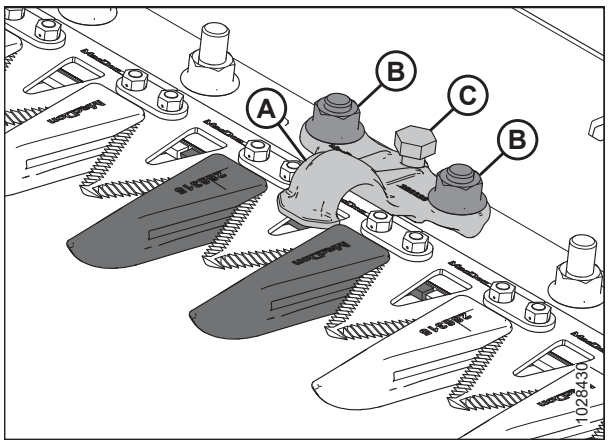


Figure 5.119: Pointed Knife Guards

Checking Hold-Down – Pointed Knife Guards

Perform **DAILY** inspections to ensure the knife hold-down are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding.

This procedure is for standard hold-down. To check the center hold-down on double-knife headers, refer to *Checking Pointed Center Hold-Down, page 456*.

NOTE:

Align guards prior to adjusting the hold-down. Refer to *Adjusting Knife Guards, page 450*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

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

2. Manually stroke the knife to position knife section (A) under hold-down (B).
3. Push knife section (A) down against guard (C) and use a feeler gauge to measure the clearance between hold-down (B) and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).
4. If adjustment is required, refer to *Adjusting Hold-Down – Pointed Knife Guards, page 453*.

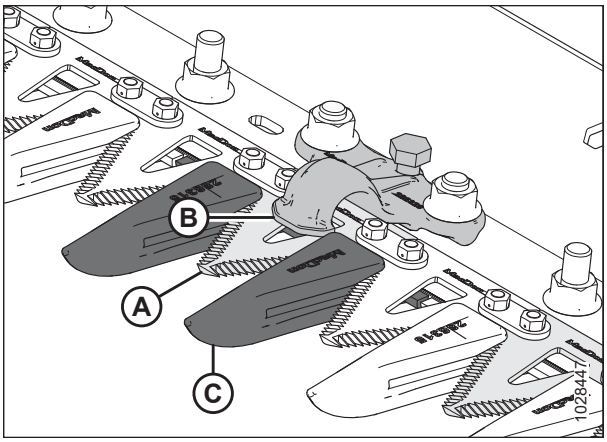


Figure 5.120: Standard Hold-Down

Adjusting Hold-Down – Pointed Knife Guards

This procedure is for standard hold-down. To adjust the center hold-down on double-knife headers, refer to *Adjusting Pointed Center Hold-Down, page 457*.

NOTE:

Align guards prior to adjusting the hold-down. Refer to *Adjusting Knife Guards, page 450*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Adjust the hold-down clearance as follows:
   a. To lower the front of hold-down (A) and decrease clearance, turn adjuster bolt (B) clockwise.
   b. To raise the front of hold-down (A) and increase clearance, turn adjuster bolt (B) counterclockwise.

      NOTE:

      For larger adjustments, it may be necessary to loosen nuts (C) before turning adjuster bolt (B). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).
2. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

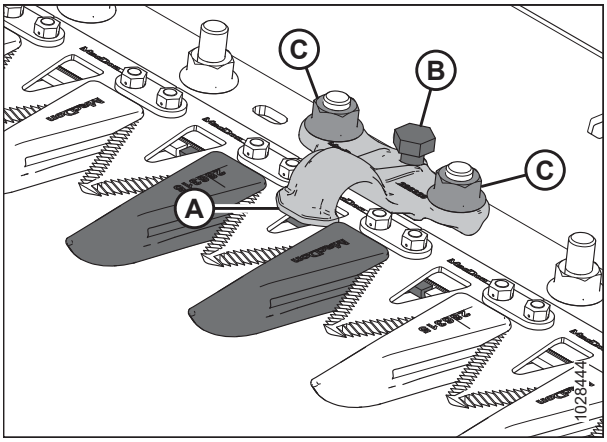


Figure 5.121: Pointed Hold-Down

Replacing Pointed Center Knife Guard – Double-Knife

The guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure than a pointed knife guard.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Remove two nuts and bolts (C) attaching guard (A) and hold-down (B) to the cutterbar.
3. Remove guard (A), plastic wearplate, and hold-down (B).

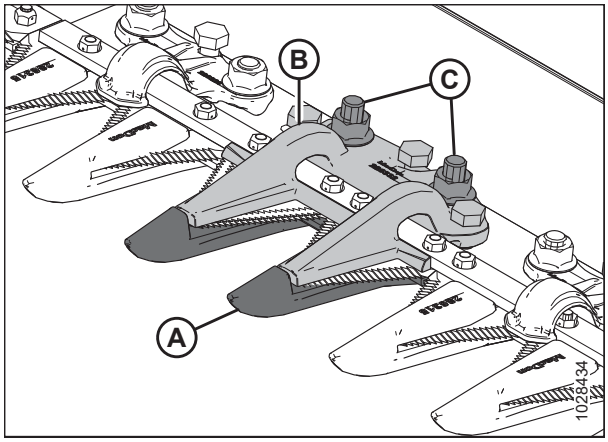


Figure 5.122: Pointed Center Knife Guard

IMPORTANT:

Ensure the replacement guard is the correct guard with offset cutting surfaces (A).

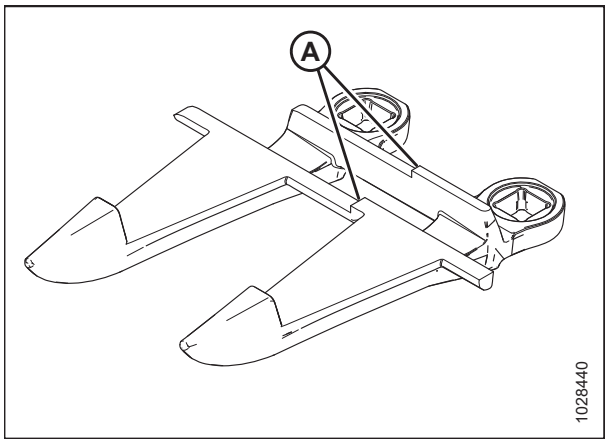


Figure 5.123: Pointed Center Knife Guard

IMPORTANT:

Before installing the new pointed center knife guard, ensure overlap shim (A) is present under the cutterbar, and the thick end of the shim is positioned under the center guard.

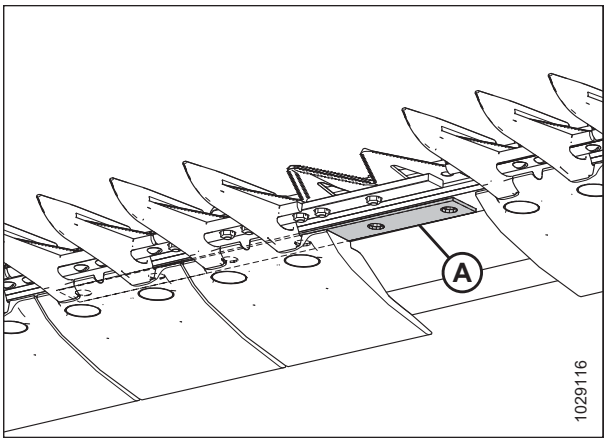


Figure 5.124: Cutterbar

4. Position plastic wearplate (A) and new guard (B) under the cutterbar.

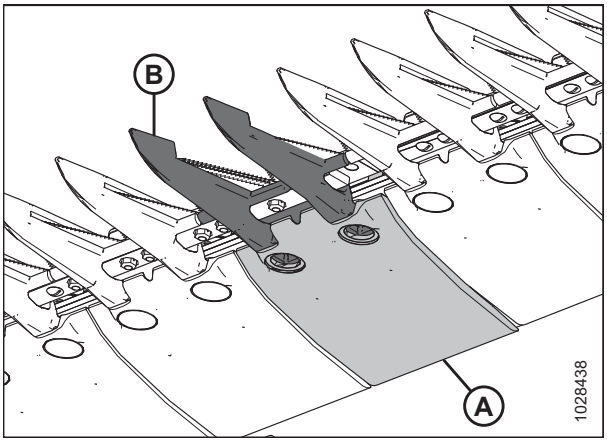


Figure 5.125: Pointed Center Knife Guard and Wearplate

5. Thread three adjustment bolts (A) so they are protruding 4 mm (5/32 in.) from the bottom of pointed center hold-down (B).
6. Position center hold-down (B) onto the cutterbar.

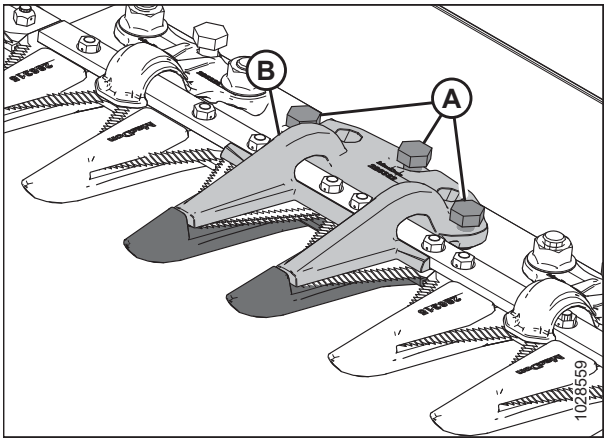


Figure 5.126: Pointed Center Knife Guard

7. Attach pointed center hold-down (A) with two bolts and nuts (B), but do **NOT** tighten at this time.

   IMPORTANT:

   Hold-down (A) must accommodate the two overlapping knives at the center guard location. Ensure the proper replacement guard is installed at this location.

8. Check the clearance between the pointed center hold-down and the knife. Refer to *Checking Pointed Center Hold-Down, page 456*.

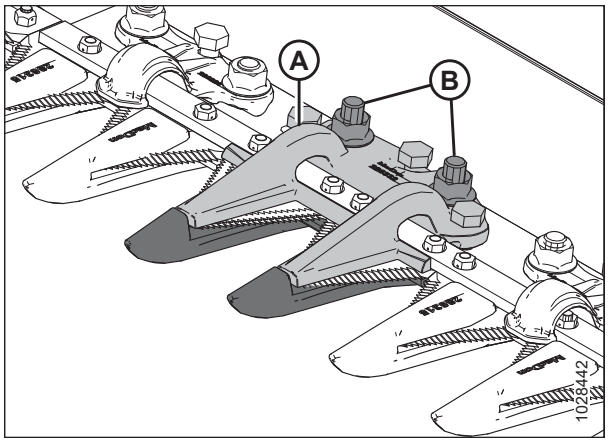


Figure 5.127: Pointed Center Knife Guard

Checking Pointed Center Hold-Down

Perform **DAILY** inspections to ensure the knife hold-down are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke the knives to position both knife sections under hold-down (A).
3. Use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure the clearance is as follows:
   - **At tip (B) of hold-down:** 0.1–0.5 mm (0.004–0.020 in.)
   - **At rear (C) of hold-down:** 0.1–1.0 mm (0.004–0.040 in.)
4. If adjustment is required, refer to *Adjusting Pointed Center Hold-Down, page 457*.
5. If no adjustment is required, tighten nuts (D) to 100 Nm (74 lbf·ft).

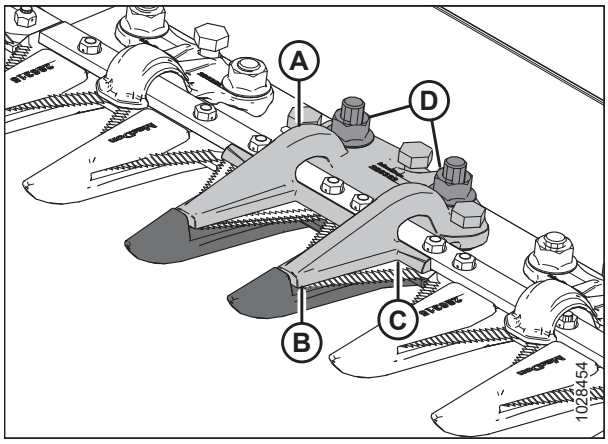


Figure 5.128: Pointed Center Hold-Down

Adjusting Pointed Center Hold-Down

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. If increasing the clearance, loosen mounting hardware (B) before adjusting bolts (A).
2. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise (tighten).
   b. To increase clearance, turn adjuster bolts (A) counterclockwise (loosen).

   NOTE:

   To adjust clearance at tip only, adjust using only center (rear) adjustment bolt.
3. Tighten nuts (B) to 100 Nm (74 lbf·ft).
4. Recheck clearances, and make further adjustments if necessary.

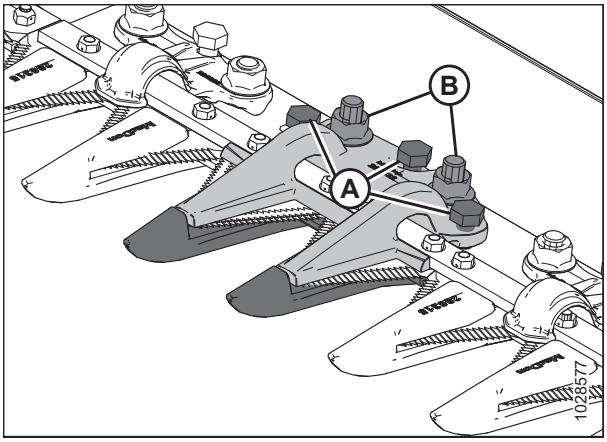


Figure 5.129: Pointed Center Hold-Down

5. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

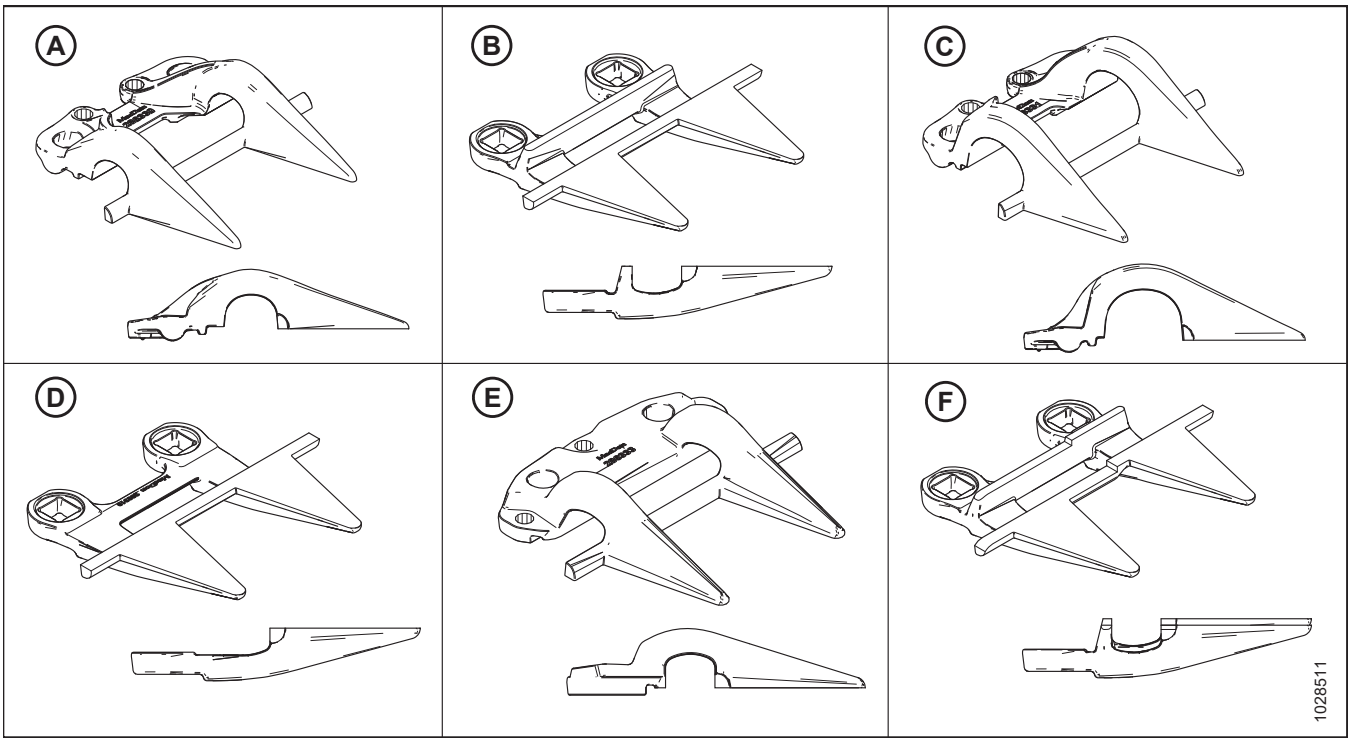
   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

5.8.8 PlugFree™ Short Knife Guards and Hold-Downs

The following knife guards and hold-downs are used in short knife guard configurations:

Figure 5.130: Guard and Hold-Down Types used in Short Knife Guard Configurations



A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Short Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down[52] (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (MD #286319)[53]
E - PlugFree™ Center Hold-Down[54] (MD #286333)
F - PlugFree™ Center Knife Guard [54] (MD #286320)

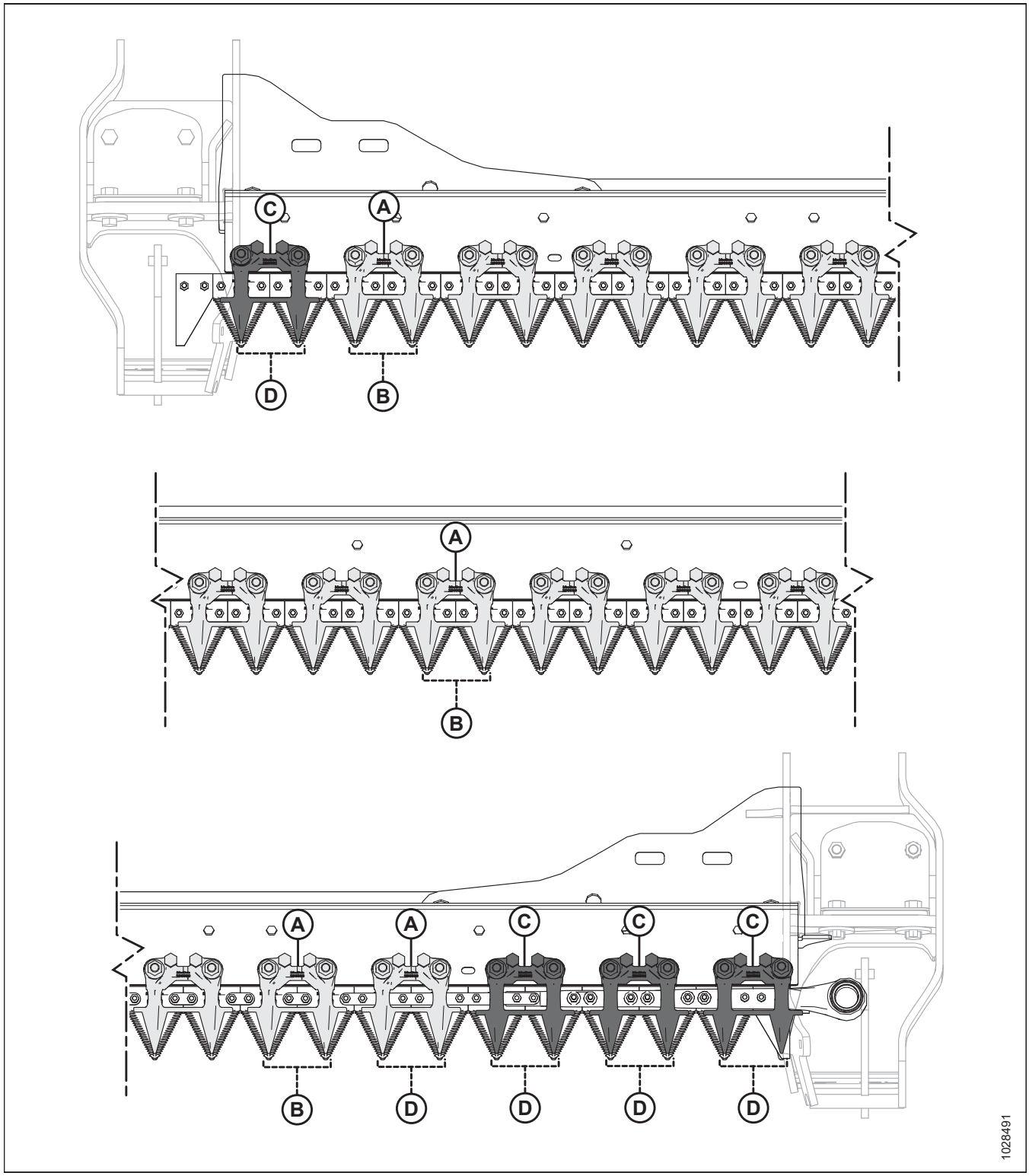
Guards are configured differently on different headers. When replacing short knife guards and hold-downs, ensure you use the correct sequence for your header. The following will guide you to the different configurations:

- *PlugFree™ Short Knife Guards on Single-Knife Headers, page 459*
- *PlugFree™ Short Knife Guards on Double-Knife Headers – All Sizes Except FD241, page 460*
- *PlugFree™ Short Knife Guards on FD241 Double-Knife Header, page 461*

52. Installed in positions 1–3 on drive side(s); installed in position 1 at right end of single-knife headers.
53. Installed in positions 1–4 on drive side(s); installed in position 1 at right end of single-knife headers.
54. Double-knife headers only.

PlugFree™ Short Knife Guards on Single-Knife Headers

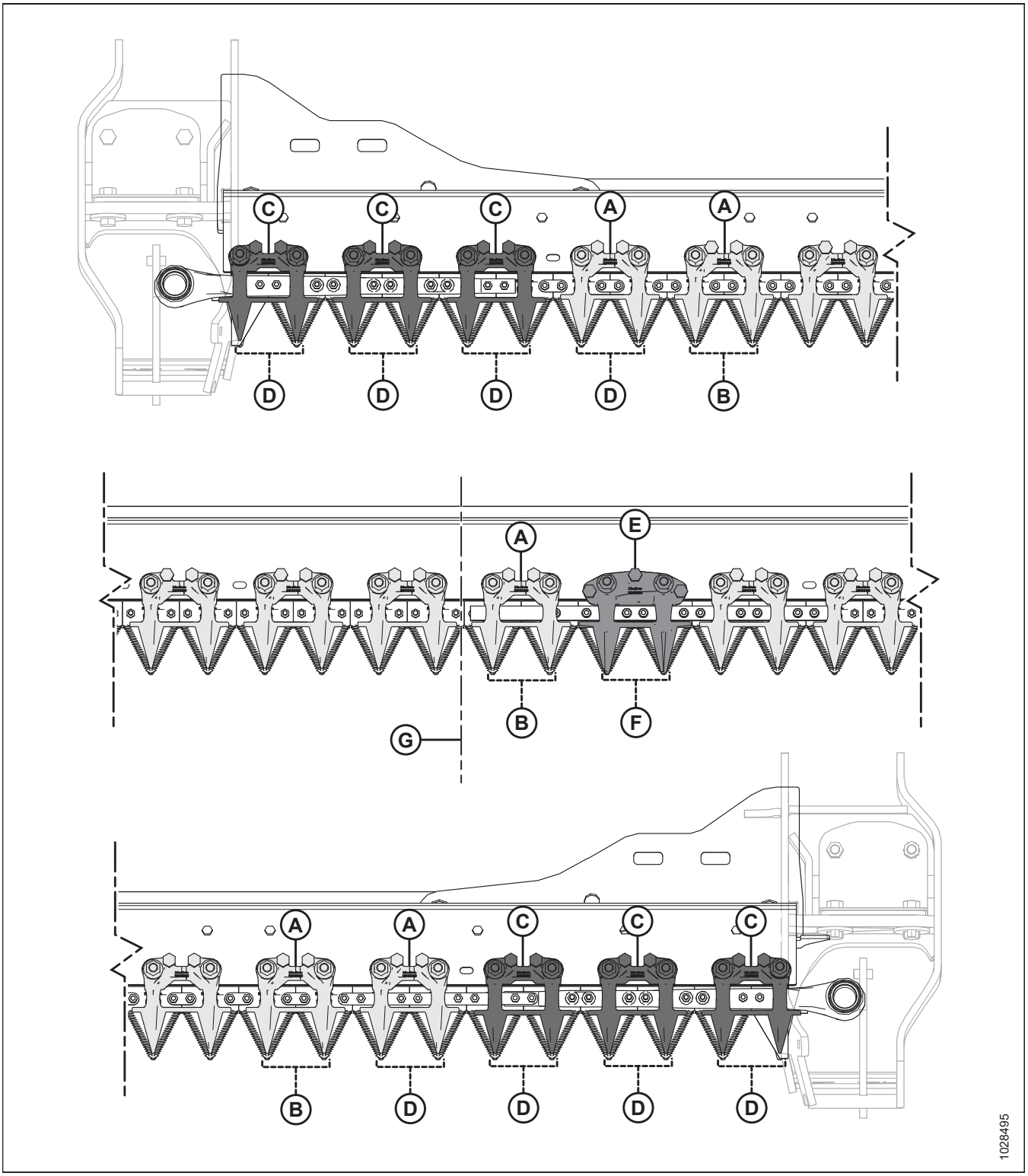
Figure 5.131: Short Knife Guard and Hold-Down Locations– Single-Knife Headers



A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Short Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down (x4) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x5) (MD #286319)

PlugFree™ Short Knife Guards on Double-Knife Headers – All Sizes Except FD241

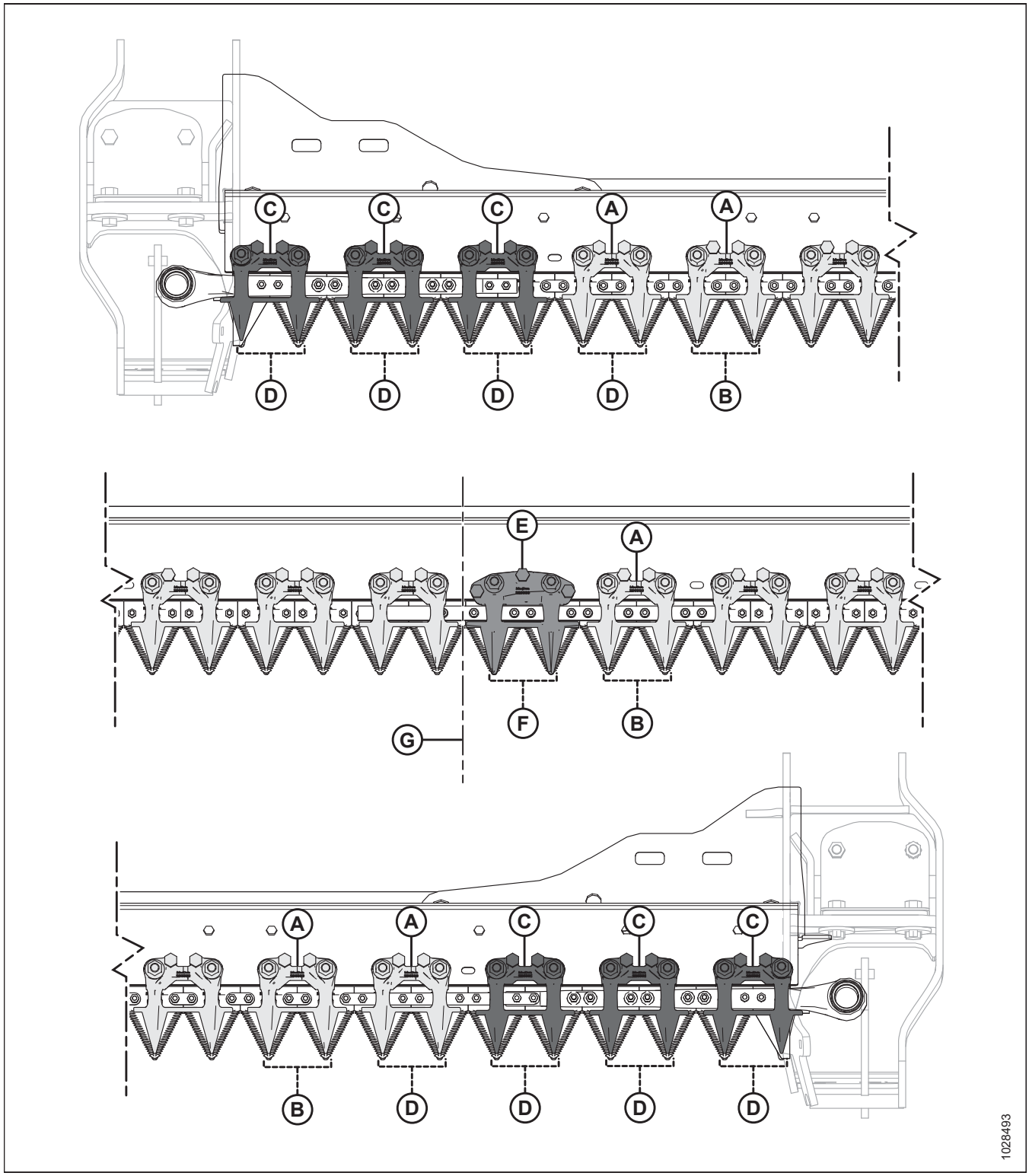
Figure 5.132: Short Knife Guard and Hold-Down Locations – Double-Knife Headers



A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Short Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down (x6) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x8) (MD #286319)
E - PlugFree™ Center Hold-Down (MD #286333)
F - PlugFree™ Center Knife Guard (MD #286320)
G - Center of Header

PlugFree™ Short Knife Guards on FD241 Double-Knife Header

Figure 5.133: Stub Guard and Hold-Down Locations – FD241 Double-Knife Header



A - PlugFree™ Hold-Down (MD #286330)
B - PlugFree™ Short Knife Guard (MD #286318)
C - PlugFree™ End Hold-Down (x6) (MD #286331)
D - PlugFree™ End Knife Guard (without Wear Bar) (x8) (MD #286319)
E - PlugFree™ Center Hold-Down (MD #286333)
F - PlugFree™ Center Knife Guard (MD #286320)
G - Center of Header

Replacing PlugFree™ Short Knife Guards or End Knife Guards

Self-cleaning short knife guards or end knife guards are less likely to plug the knife in tough crops such as grasses and canola, and are factory-installed. This procedure is for replacing short knife guards or end knife guards.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

IMPORTANT:

Double-knife headers have an offset center knife guard installed where the two knives overlap. The center knife guard has a slightly different replacement procedure. For instructions, refer to *Replacing Center Knife Guard – Double-Knife, page 465*.

To replace a short knife guard or end knife guard, follow these steps:

1. Shut down the engine, and remove the key from the ignition.
2. Remove two nuts (A) and bolts attaching short knife guard (B) and hold-down (C) to the cutterbar.
3. Remove short knife guard (B), hold-down (C) and the plastic wearplate.

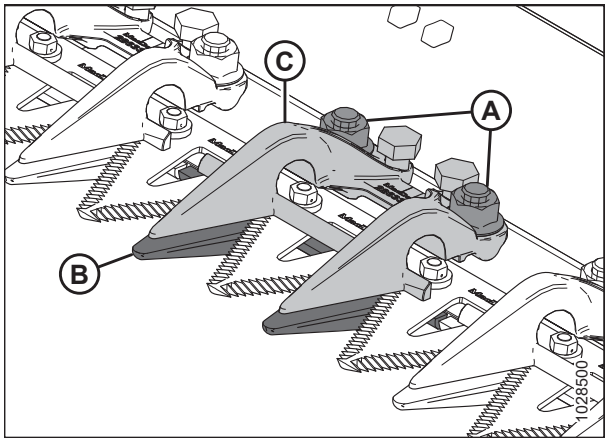


Figure 5.134: Short Knife Guards

IMPORTANT:

The first four knife guards (A) on the drive sides of the header are called end knife guards and do **NOT** have ledger plates. Ensure the proper replacement knife guards are installed at these locations.

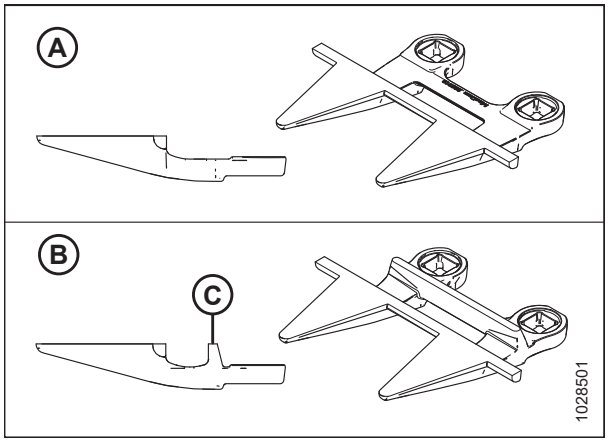


Figure 5.135: End Knife Guard and Short Knife Guards

A - PlugFree™ End Knife Guard (MD #286319)
B - PlugFree™ Short Knife Guard (with Ledger Plate [C]) (MD #286318)

4. Position plastic wearplate (A) and replacement short knife guard (B) under the cutterbar.

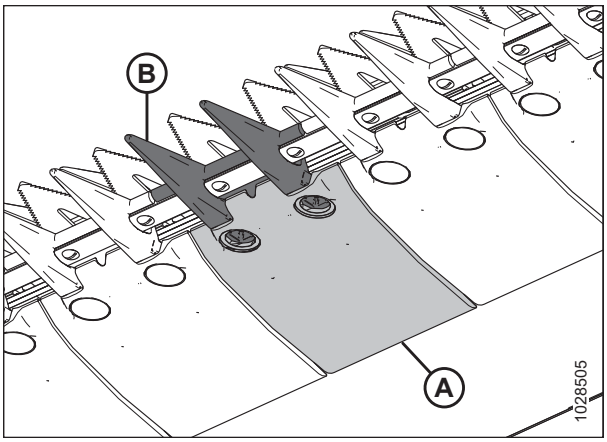


Figure 5.136: Short Knife Guard and Wearplate

5. Position hold-down (A), and loosen the two adjustment bolts so that they are not protruding from the bottom of the hold down.
6. Secure short knife guard, wearplate, and hold-down with two bolts and nuts (B). Tighten nuts to 100 Nm (74 lbf·ft).
7. Check the clearance between the hold-downs and the knife. For instructions, refer to *Checking Hold-Down – Short Knife Guards or End Knife Guards, page 463*.

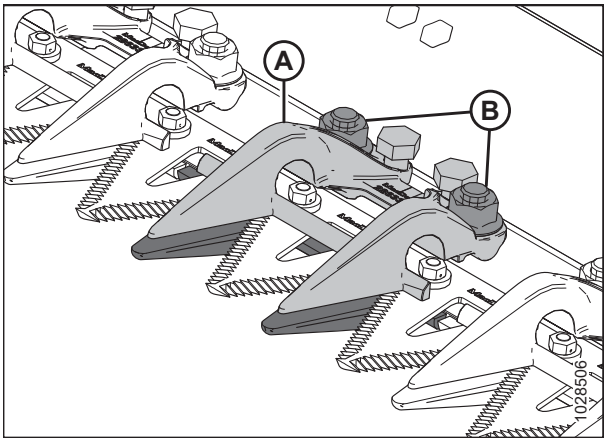


Figure 5.137: Short Knife Guard

Checking Hold-Down – Short Knife Guards or End Knife Guards

Perform **DAILY** inspections to ensure the knife hold-down are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding.

To check the center hold-down on double-knife headers, refer to *Checking Center Hold-Down – Short Knife Guards, page 467*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

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

2. Manually stroke knife to locate section under hold-down (A).
3. Use a feeler gauge to measure the clearance between the tip of hold-down (B) and the knife section. Ensure the clearance is 0.1–0.5 mm (0.004–0.020 in.).
4. If adjustment is required, refer to *Adjusting Hold-Down – Short Knife Guards, page 464*.

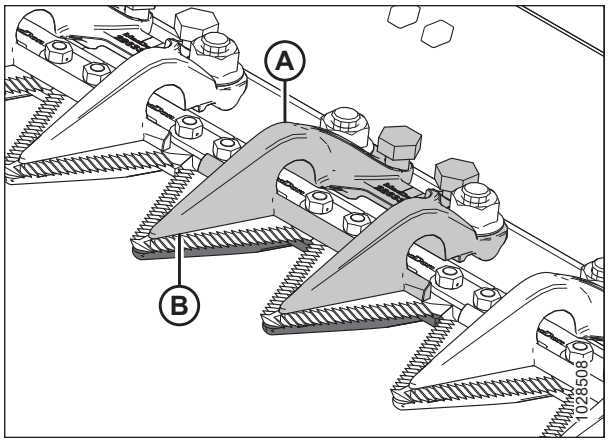


Figure 5.138: Short Knife Guards

Adjusting Hold-Down – Short Knife Guards

To adjust the center hold-down on double-knife headers, refer to *Adjusting Center Hold-Down – Short Knife Guards, page 468*.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Shut down the engine, and remove the key from the ignition.
2. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise.
   b. To increase clearance, turn adjuster bolts (A) counterclockwise.

   NOTE:

   For larger adjustments, it may be necessary to loosen nuts (B) before turning adjuster bolts (A). After adjustment, retighten nuts to 100 Nm (74 lbf·ft).
3. Recheck clearances, and make further adjustments if necessary.

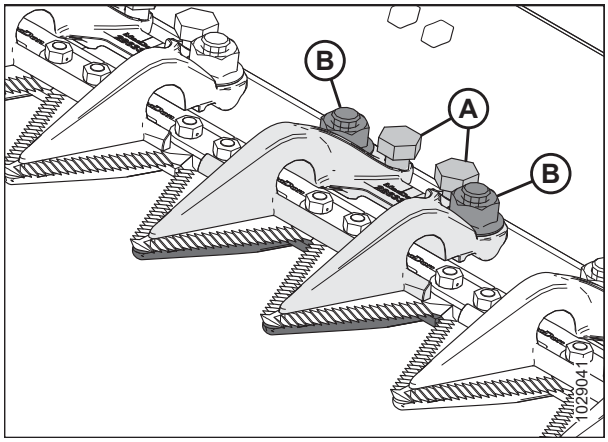


Figure 5.139: Short Knife Guard Hold-Down

4. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

Replacing Center Knife Guard – Double-Knife

The offset guard at the center of a double-knife header (where the two knives overlap) requires a slightly different replacement procedure than a standard guard.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Remove two nuts and bolts (C) attaching center knife guard (A) and hold-down (B) to the cutterbar.
3. Remove center knife guard (A), plastic wearplate, and hold-down (B).

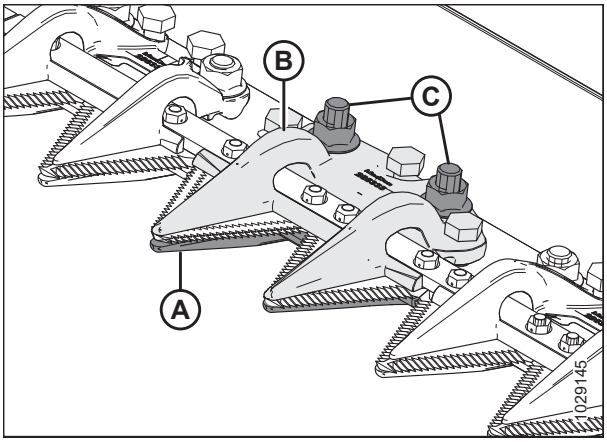


Figure 5.140: Center Knife Guard

IMPORTANT:

Ensure the replacement center knife guard is the correct guard with offset cutting surfaces (A).

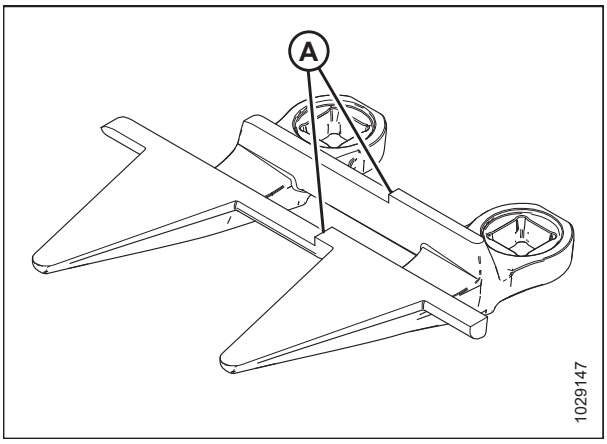


Figure 5.141: Center Knife Guard

IMPORTANT:

Before installing the new center knife guard, ensure overlap shim (A) is present under the cutterbar, and the thick end of the shim is positioned under the center knife guard.

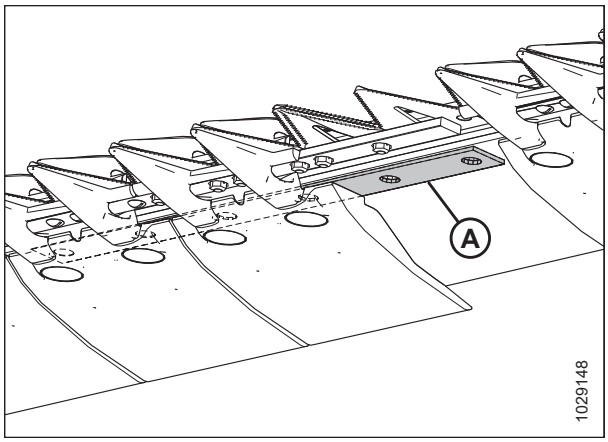


Figure 5.142: Cutterbar

4. Position plastic wearplate (A) and new center knife guard (B) under the cutterbar.

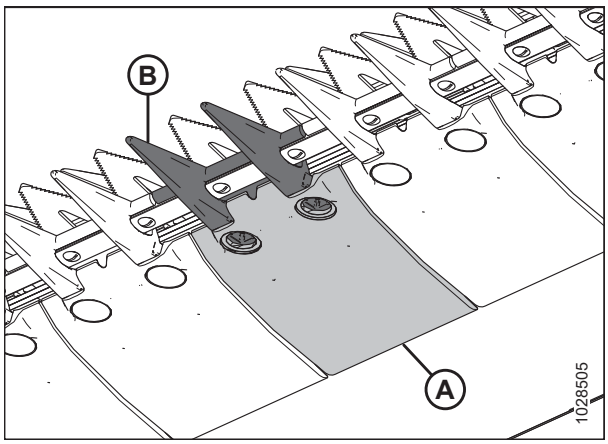


Figure 5.143: Center Knife Guard and Wearplate

5. Thread three adjustment bolts (A) so they are protruding 4 mm (5/32 in.) from the bottom of center hold-down (B).
6. Position center hold-down (B) onto the cutterbar.

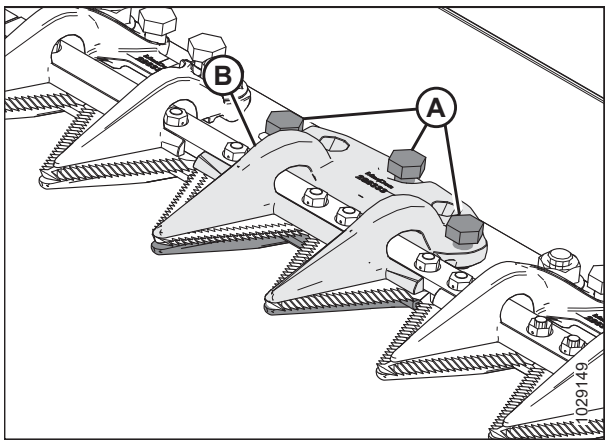


Figure 5.144: Center Knife Guard

7. Attach center hold-down (A) with two bolts and nuts (B), but do **NOT** tighten at this time.

   IMPORTANT:

   Hold-down (A) must accommodate the two overlapping knives at the center knife guard location. Ensure the proper replacement center knife guard is installed at this location.

8. Check the clearance between the center hold-down and the knife. Refer to *Checking Center Hold-Down – Short Knife Guards, page 467*.

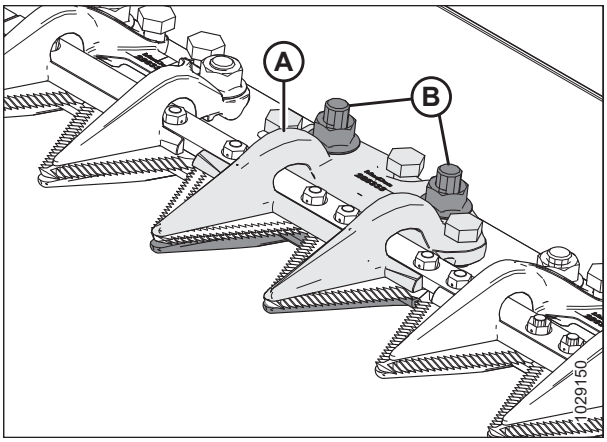


Figure 5.145: Center Knife Guard

Checking Center Hold-Down – Short Knife Guards

Perform **DAILY** inspections to ensure the knife hold-down are preventing the knife sections from lifting off the guards while permitting the knife to slide without binding.

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Shut down the engine, and remove the key from the ignition.
2. Manually stroke the knives to position both knife sections under hold-down (A).
3. Use a feeler gauge to measure the clearance between hold-down (A) and the knife section. Ensure the clearance is as follows:
   - **At tip (B) of hold-down:** 0.1–0.5 mm (0.004–0.020 in.)
   - **At rear (C) of hold-down:** 0.1–1.0 mm (0.004–0.040 in.)
4. If adjustment is required, refer to *Adjusting Center Hold-Down – Short Knife Guards, page 468*.
5. If no adjustment is required, tighten nuts (D) to 100 Nm (74 lbf·ft).

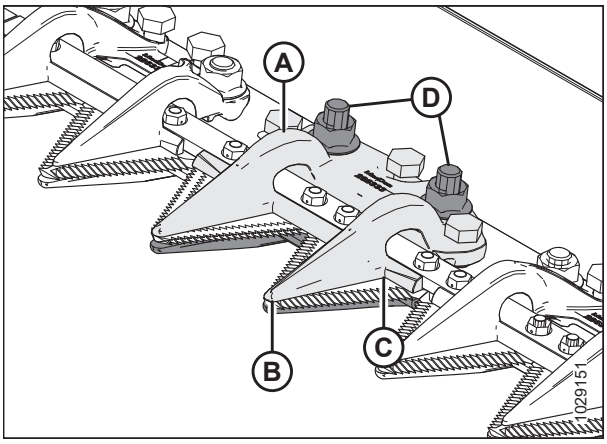


Figure 5.146: Center Knife Guard Hold-Down

Adjusting Center Hold-Down – Short Knife Guards

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Shut down the engine, and remove the key from the ignition.
2. If increasing the clearance, loosen the mounting hardware (B) before adjusting bolts (A).
3. Adjust the hold-down clearance as follows:
   a. To decrease clearance, turn adjuster bolts (A) clockwise (tighten).
   b. To increase clearance, turn adjuster bolts (A) counterclockwise (loosen).

   NOTE:

   To adjust clearance at tip only, adjust using only center (rear) adjustment bolt.
4. Tighten nuts (B) to 100 Nm (74 lbf·ft).
5. Recheck clearances, and make further adjustments if necessary.

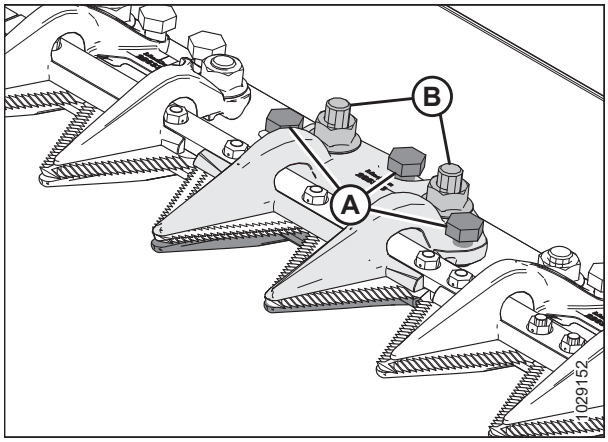


Figure 5.147: Center Hold-Down

6. After making the hold-down adjustments, run the header at low engine speed, and listen for noise caused by insufficient clearance.

   IMPORTANT:

   Insufficient hold-down clearance will result in overheating of the knife and guards—readjust as necessary.

5.8.9 Knifehead Shield

The knifehead shield attaches to the endsheet and reduces the knifehead opening to prevent cut crop from accumulating in the knifehead cut-out.

The shields and mounting hardware are available from your MacDon Dealer.

IMPORTANT:

Remove the shields when using the cutterbar on the ground in muddy conditions. Mud may pack into the cavity behind the shield which could result in knife drive box failure.

Installing Knifehead Shield

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 safety props.
4. Place knifehead shield (A) against the endsheet as shown. Align the shield so the cutout matches the profile of the knifehead and/or hold-downs.
5. Align the mounting holes and secure with two M10 x 30 hex head bolts, washers (B), and nuts.
6. Tighten bolts (B) just enough to hold knifehead shield (A) in place while allowing it to be adjusted as close to the knifehead as possible.
7. Manually rotate the knife drive box pulley to move the knife and check for areas of contact between the knifehead and knifehead shield (A). Adjust the shield to eliminate interference with the knife if necessary.
8. Tighten bolts (B).

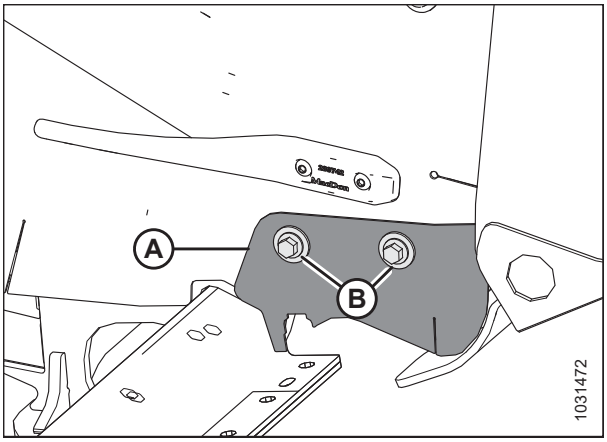


Figure 5.148: Knifehead Shield

5.9 Knife Drive System

The knife drive system transforms pumped hydraulic pressure into a mechanical motion that stokes a series of serrated knife blades at the front of the header back and forth to cut a variety of crops.

5.9.1 Knife Drive Box

Knife drive box (A) is driven by a hydraulic motor (B), and converts rotational motion into the reciprocating motion of the knife. Double-knife headers have a knife drive box and motor at each end.

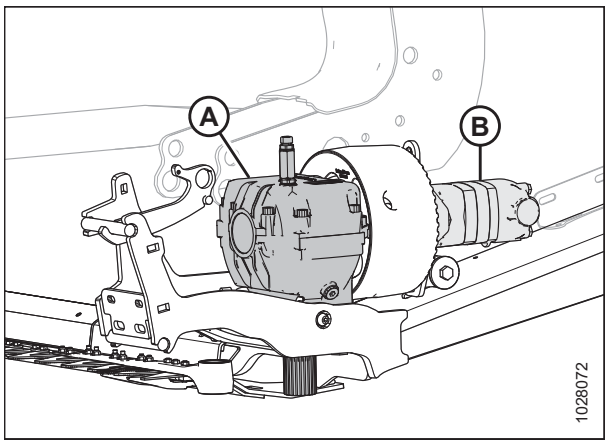


Figure 5.149: Left Side Knife Drive Box Shown – Right Side Similar

Checking Oil Level in Knife Drive Box

Single-knife headers have one knife-drive box and double-knife headers have two knife-drive boxes. To access the knife drive box(es), the endshield(s) must be fully opened.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 33*.
3. Remove oil level dipstick (A) and check the oil level. The oil level must be within range (B).

   NOTE:

   Check the oil level with the top of the knife drive box horizontal and with oil level dipstick (A) screwed in.
4. Reinstall oil level dipstick (A), and tighten to 15–30 Nm (11–22 lbf·ft).

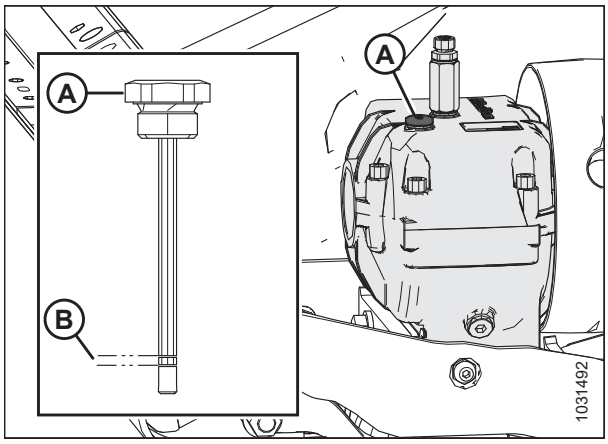


Figure 5.150: Knife Drive Box

Checking Mounting Bolts

Check the torque on the four knife drive box mounting bolts (A) and (B) after the first 10 hours of operation and every 100 hours thereafter.

1. Torque side bolts (A) first, then torque bottom bolts (B). Torque all bolts to 343 Nm (253 lbf·ft).

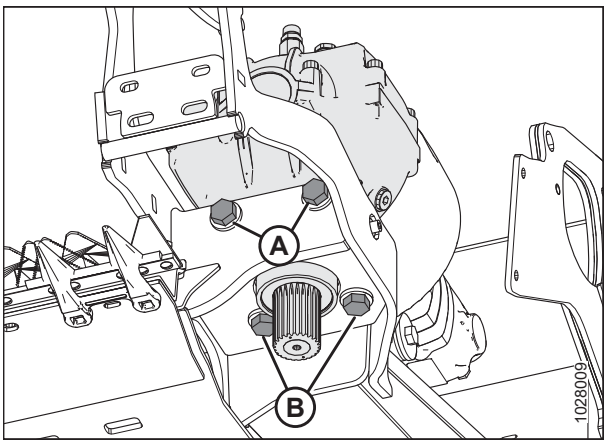


Figure 5.151: Knife Drive Box

Removing Knife Drive Box

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

NOTE:

The procedure is the same for both ends of a double-knife header. Images shown are for the left end—the right end is opposite.

NOTE:

Unless otherwise noted, retain all hardware for reassembly.

1. Shut down the engine, and remove the key from the ignition.
2. Open the endshield. For instructions, refer to *Opening Header Endshields, page 33*.
3. Clean the area around the knifehead.
4. Remove grease fitting (A) from the pin.

   NOTE:

   Removing the grease fitting will make it easier to reinstall the knifehead pin later.
5. Remove bolt and nut (B).
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. Manually stroke the knife to its outer limit.
9. Push the knife assembly inboard until it is clear of the drive arm.

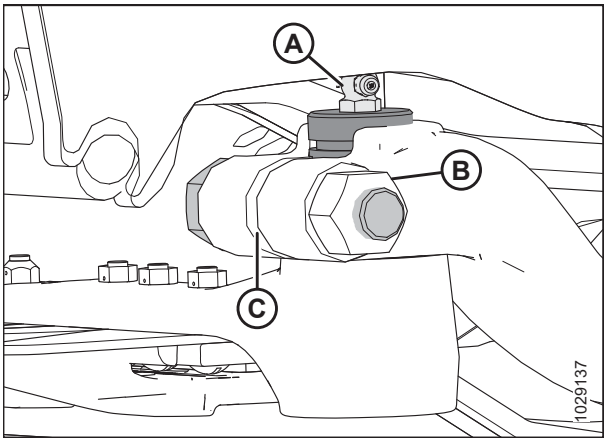


Figure 5.152: Knifehead

10. Seal the knifehead bearing with plastic or tape to keep out dirt and debris unless it is being replaced.
11. Remove bolt and nut (A) that clamps knife drive arm (B) to knife drive box output shaft (C).
12. Remove knife drive arm (B) from knife drive box output shaft (C).
13. Loosen outer jam nut and set screw (D).

    NOTE:

    There is a second set screw on the opposite side of the knife drive box. Loosening only the outer set screw will allow you to maintain correct knife alignment after reinstallation.

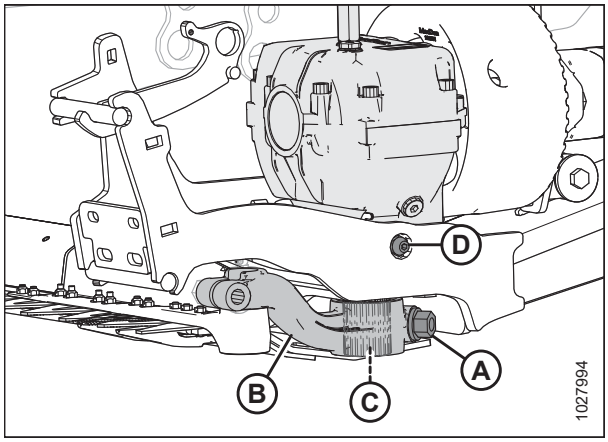


Figure 5.153: Knife Drive Box

14. Remove three bolts (A) that secure flywheel (B) to the motor hub.

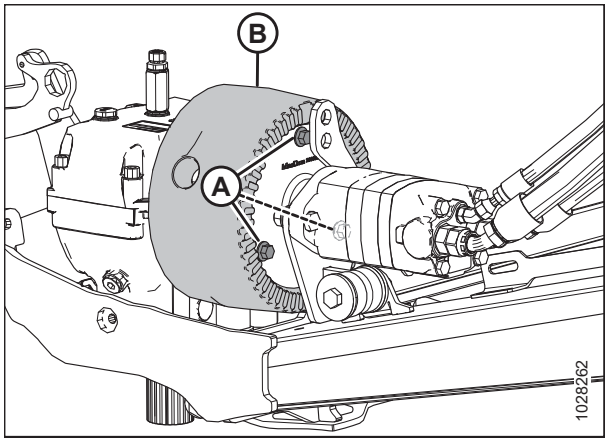


Figure 5.154: Knife Drive Assembly

15. Remove bolt (A) at rubber isolator (B). Note the orientation of the washers and retain all hardware.

    NOTE:

    It is not necessary to disconnect the hydraulic hoses from the motor.

16. Separate motor assembly (C) from the flywheel and set motor assembly out of the way.

    NOTE:

    The motor needs to be moved aside to allow enough clearance to lift up the knife drive box and flywheel.

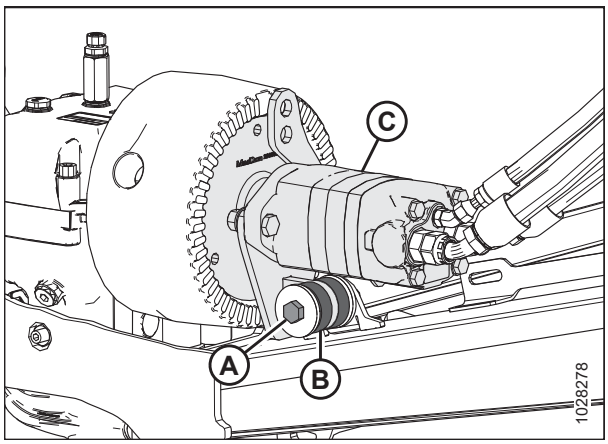


Figure 5.155: Knife Drive Assembly

17. Remove four knife drive box mounting bolts (A) and (B).

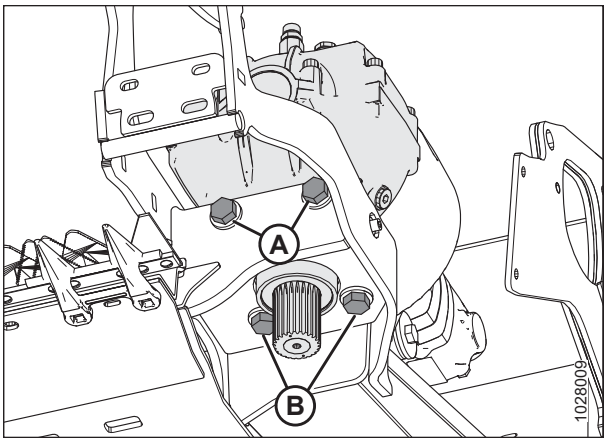


Figure 5.156: Knife Drive Box – View from Below

18. Note how many shims (A) are installed between knife drive box (B) and mounting plate (C). Retain the shims for reassembly.

    NOTE:

    Shims (A) are used to achieve correct clearance between knife guards and knife back bar.

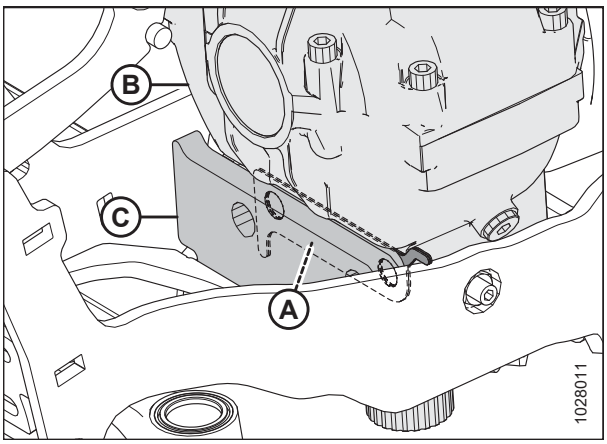


Figure 5.157: Knife Drive Box Shims

19. Hook a strap through hole (A) in flywheel (B), and use a lifting device to remove the knife drive box and flywheel from the header.

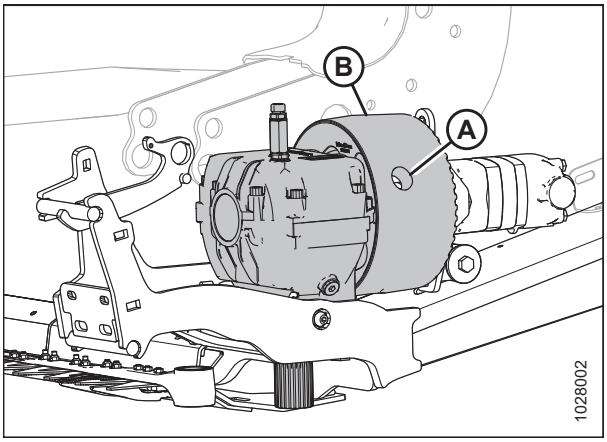


Figure 5.158: Knife Drive

Removing Knife Drive Box Flywheel

Before separating the flywheel from the knife drive box, remove the knife drive box from the header. Refer to *Removing Knife Drive Box, page 471*.

1. Loosen nut (A) and bolt (B) that clamp flywheel (C) to the knife drive box. Access nut (A) through hole (D) in flywheel.
2. Remove bolt, nut, and washer. Retain hardware for reassembly.
3. Using a three-jaw puller, remove the flywheel from the knife drive box.

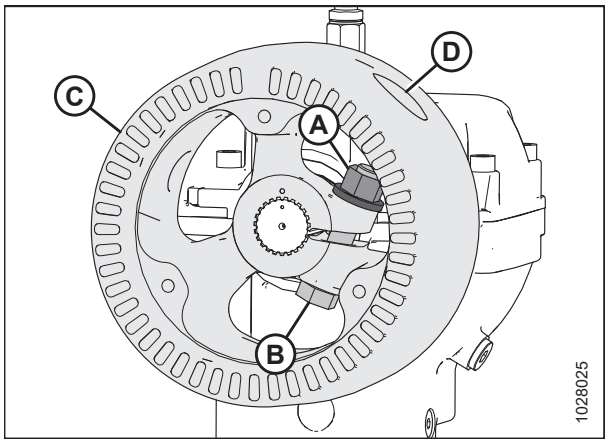


Figure 5.159: Knife Drive Box and Flywheel

NOTE:

If a three-jaw puller is not available, another method is to put a chisel or screwdriver in clamp slot (A) to open it slightly, and then tap the back of the flywheel to remove.

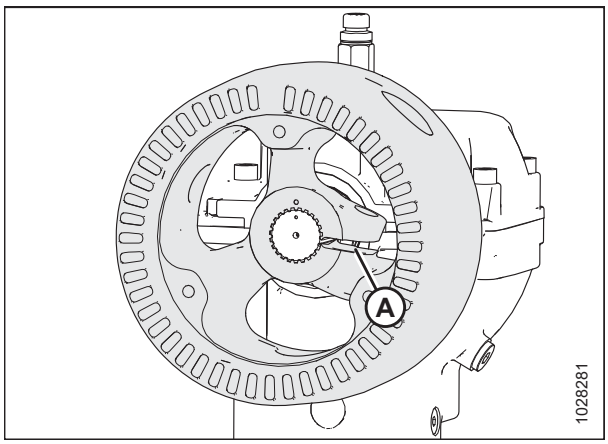


Figure 5.160: Knife Drive Box and Flywheel

Installing Knife Drive Box Flywheel

1. Ensure the splines and bores on input shaft and flywheel are free of paint, oil, and solvents.
2. Apply two bands (A) of medium-strength threadlocker (Loctite® 243 or equivalent) to the knife drive box input shaft as shown (one band at the end of the shaft and the second band in the middle).

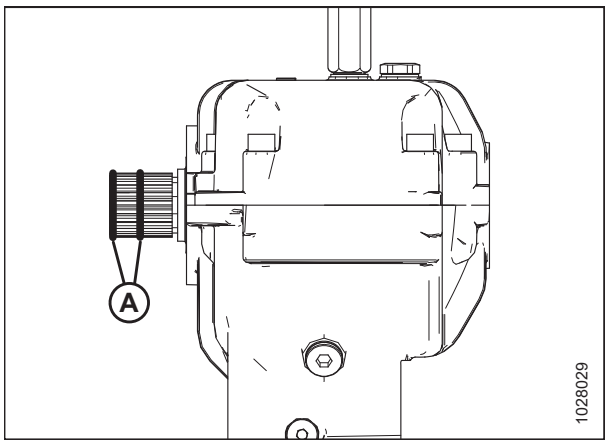


Figure 5.161: Knife Drive Box

3. Line up index mark (A) on the flywheel with index mark (B) on the knife drive box.
4. Press flywheel onto input shaft (C) until flywheel is flush with the end of the shaft.

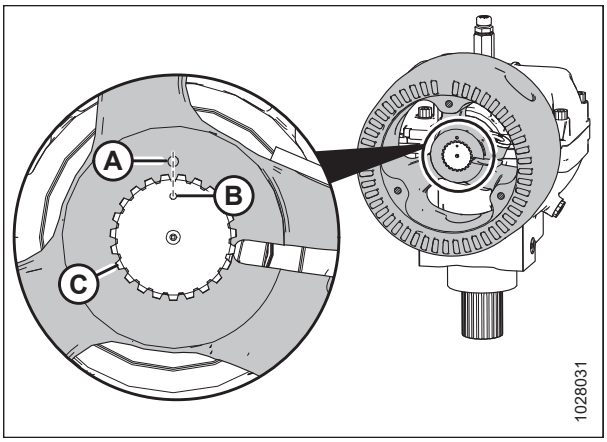


Figure 5.162: Flywheel Alignment

5. Secure flywheel (C) to the knife drive box with a M16 x 85 mm hex bolt (A), 5/8 in. hard washer, and M16 center lock hex nut (A). Torque bolt to 170 Nm (125 lbf·ft). Use access hole (D) in flywheel to tighten the hardware.

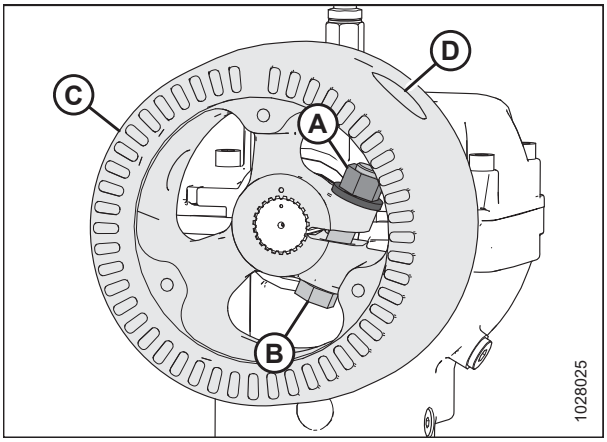


Figure 5.163: Knife Drive Box and Flywheel

Installing Knife Drive Box

1. Install knife drive box (A) onto flywheel (B). For instructions, refer to *Installing Knife Drive Box Flywheel, page 474*.

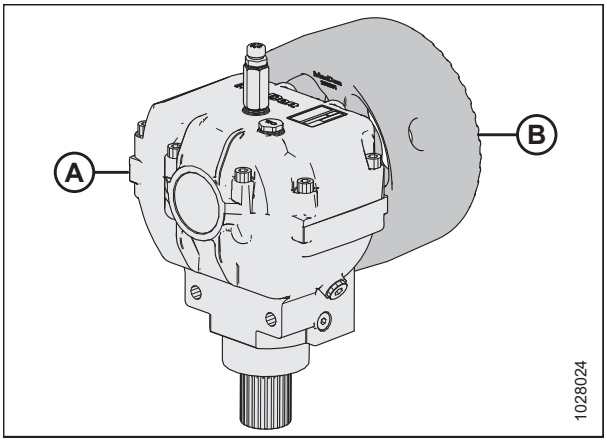


Figure 5.164: Knife Drive Box and Flywheel

2. Hook a strap through hole (A) in flywheel (B), and use a lifting device to position the knife drive box and flywheel onto the header mount.

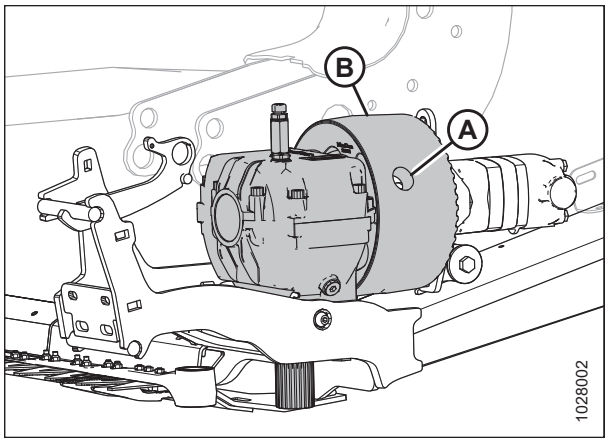


Figure 5.165: Knife Drive Box and Flywheel

3. Position retained shims (A) between knife drive box (B) and mounting plate (C). Install the same number of shims used before disassembly.

   NOTE:

   Shims (A) are used to achieve correct clearance between knife guards and knife back bar.

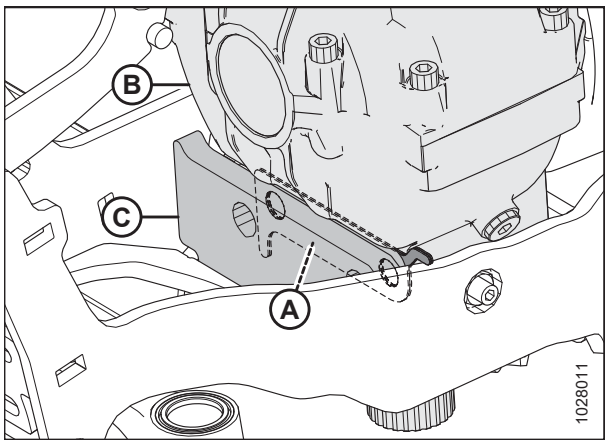


Figure 5.166: Knife Drive Box Shims

4. Attach the knife drive box to the frame using four M16 x 55 mm hex bolts and washers (two bolts [B] on the front, and two bolts [A] on the bottom). Snug bottom bolts first to ensure proper contact with bottom mounting surface, then snug the front bolts.
5. Before torquing the bolts, snug set screw (C) to ensure the knife drive box is in the correct position.
6. Torque hardware in the following order:
   a. Bottom bolts (A) to 343 Nm (253 lbf·ft)
   b. Front bolts (B) to 343 Nm (253 lbf·ft)
   c. Set screw (C) to 60 Nm (44 lbf·ft)
   d. Jam nut (D) to 50 Nm (37 lbf·ft)

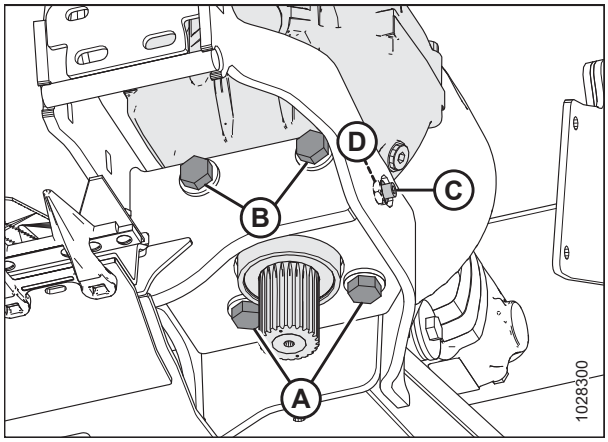


Figure 5.167: Knife Drive Box – Bottom View

7. Attach the motor hub to flywheel (B) using three M10 x 30 mm hex flange bolts (A). Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads.
8. Torque bolts (A) to 75 Nm (55 lbf·ft).

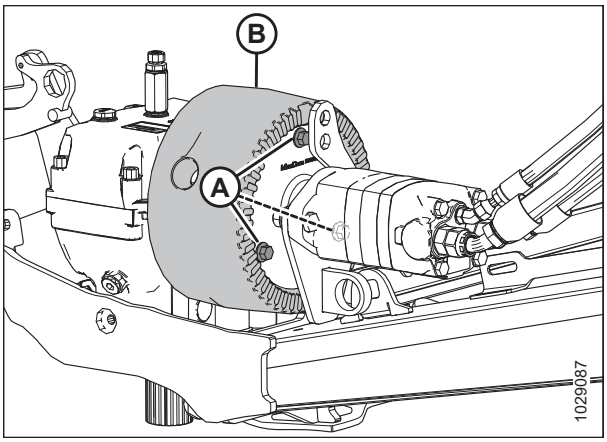


Figure 5.168: Knife Drive Motor

9. Attach motor assembly (A) to the header using retained bolt (B), rubber isolator (C), two washers (D), washer (E) and nut (F). Ensure the hardware is installed in the correct sequence as shown in the illustration. Install the large half of the rubber isolator on the inboard side.
10. Torque bolt (B) to 95 Nm (70 lbf·ft).

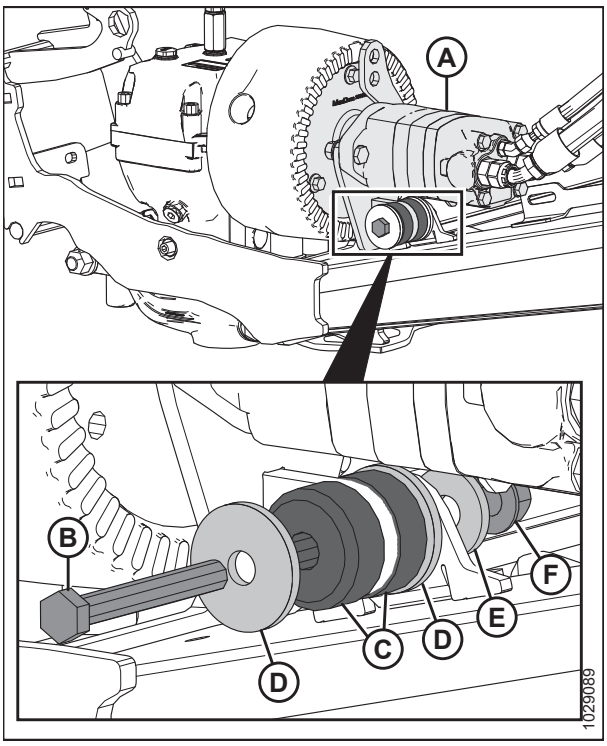


Figure 5.169: Knife Drive Motor

11. Apply two bands (A) of medium-strength threadlocker (Loctite® 243 or equivalent) to the output shaft as shown (one band at the end of the output shaft and the second band in the middle).
12. Line up the index marks on drive arm (B) and the output shaft, and slide the arm onto the output shaft. Rotate the flywheel to ensure the splines are properly aligned and the drive arm clears the frame on the inboard stroke.

    NOTE:

    Knife drive arm (B) is shown transparent in illustration.

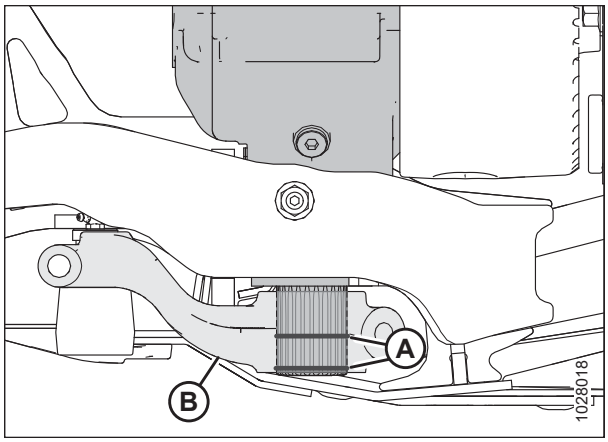


Figure 5.170: Knife Drive Box

13. Position drive arm (A) to the farthest outboard position.
14. Move drive arm (A) up or down on the splined shaft until it is almost contacting knifehead (B) (exact clearance [C] is set during the knifehead pin installation).

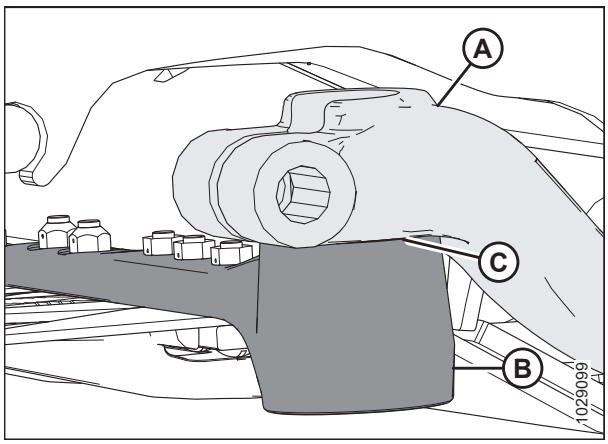


Figure 5.171: Knifehead

15. Slide the knife into place and align the knifehead with drive arm (A).
16. Ensure bearing cavity (B) is filled with grease prior to installing the knifehead pin to prevent any air from getting trapped in the cavity.

    NOTE:

    For easier installation of the knifehead pin, remove the grease fitting from the pin first.
17. Install knifehead pin (C) through the drive arm and into the knifehead.
18. Position the pin so that groove (D) is 2 mm (5/64 in.) above the drive arm.
19. Position drive arm (A) so that there is 0.2–1.2 mm (1/64–3/64 in.) clearance (E) between drive arm and the knifehead.

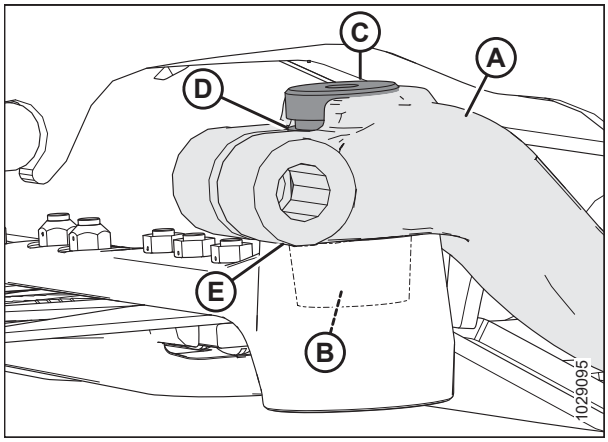


Figure 5.172: Knifehead

20. Secure pin with M16 x 85 mm hex bolt (A) and hex nut (B). Install the bolt from the inboard side of the arm, and the washer between the nut and the arm. Torque bolt to 220 Nm (162 lbf·ft).

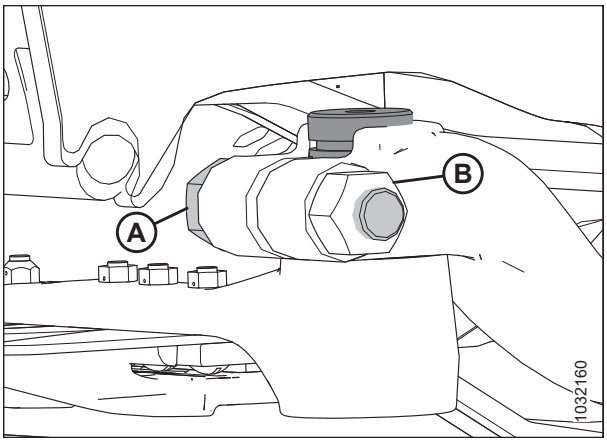


Figure 5.173: Knife Drive Arm

21. Install M16 x 100 mm hex bolt (A) and hex nut (B). Install the bolt from the inboard side of the arm, and the washer between the nut and the arm. Torque bolt to 220 Nm (162 lbf·ft).

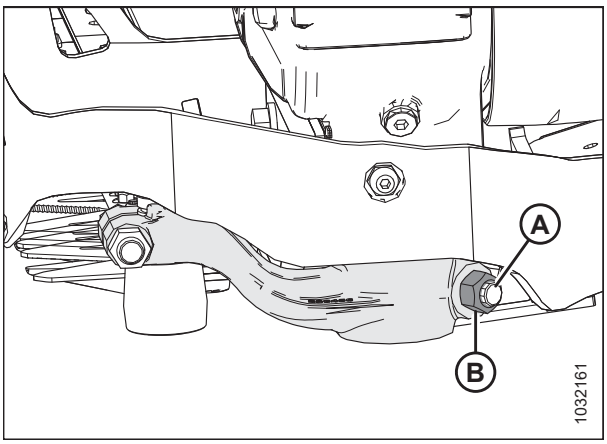


Figure 5.174: Knife Drive Arm

22. Reinstall grease fitting (A) (if previously removed), and slowly apply grease to the knifehead until slight downward movement of the knifehead is observed.

    NOTE:

    If air is trapped in the bearing cavity, the knifehead will begin to move down before it's filled with grease.

    IMPORTANT:

    Do **NOT** overgrease the knifehead. Over greasing leads to knife misalignment, causing excessive heating of guards and overloading of drive systems. If over greasing occurs, remove the grease fitting to release pressure.

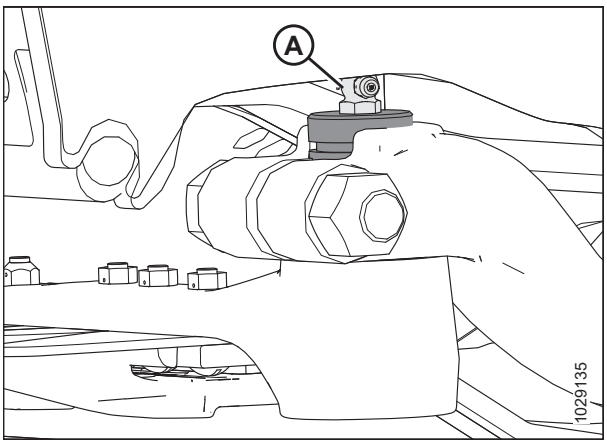


Figure 5.175: Knifehead

23. Move the knife drive arm to the mid-stroke position, and ensure the knife back bar doesn't contact the front of first guard (A).
24. If the knife back bar contacts the front of the first guard, remove bolts (B), reposition the guard forward, and reinstall the bolts. Torque bolts to 100 Nm (74 lbf·ft). If clearance is not achieved, then additional shims are required between the knife drive box and the mounting plate. Contact your MacDon Dealer.

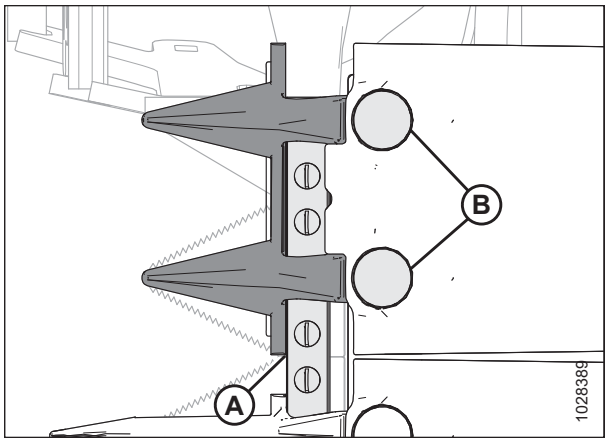


Figure 5.176: First Knife Guard – View from below Knife

Changing Oil in Knife Drive Box

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

Change the knife drive box lubricant after the first 50 hours of operation and every 1000 hours (or 3 years) thereafter.

1. Shut down the combine, and remove the key from the ignition.
2. Raise the header and place a container large enough to hold approximately 1.5 L (0.4 US gal) under the knife drive box to collect the oil.
3. Open the endshield. Refer to *Opening Header Endshields, page 33*.
4. Remove dipstick (A) and drain plug (C).
5. Allow the oil to drain from the knife drive box and into the container placed below it.
6. Reinstall drain plug (C).
7. Add 1.5 L (0.4 US gal) of oil to the knife drive box. Refer to the inside back cover for recommended fluids and lubricants.

   NOTE:

   Check oil level with top of knife drive box horizontal and with the oil level dipstick (A) screwed in.
8. Check that oil level is within range (B).
9. Close the endshield. Refer to *Closing Header Endshields, page 34*.

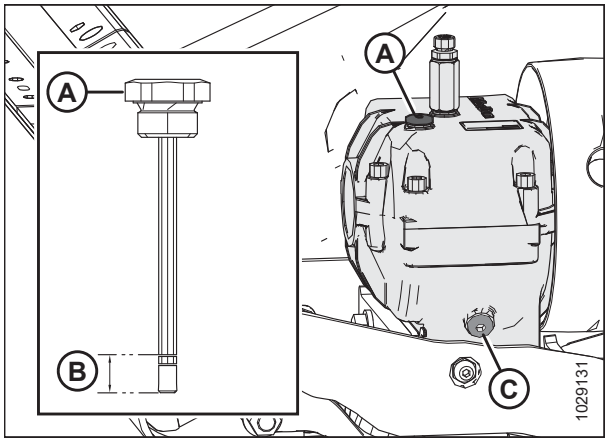


Figure 5.177: Knife Drive Box

5.9.2 Knife Drive Motor

Removing Knife Drive Motor

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Lower the header to the ground.
2. Shut down the engine and remove the key from the ignition.
3. Open the endshield. Refer to *Opening Header Endshields, page 33*.
4. Disconnect the hydraulic hoses and remove fittings from the back of knife drive motor (A). Mark hose locations for reassembly and plug the hoses.

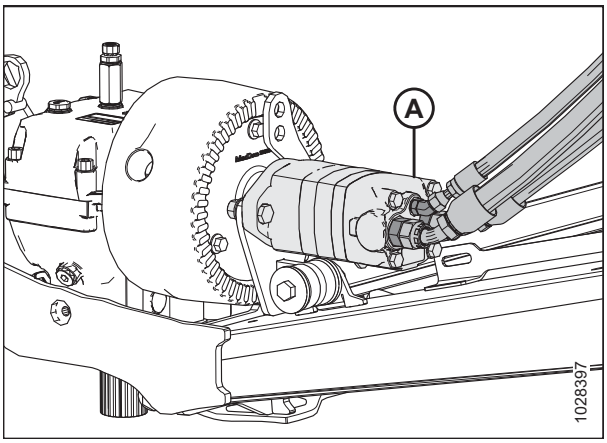


Figure 5.178: Knife Drive Motor

5. Remove three bolts (A) that secure the motor hub to flywheel (B).

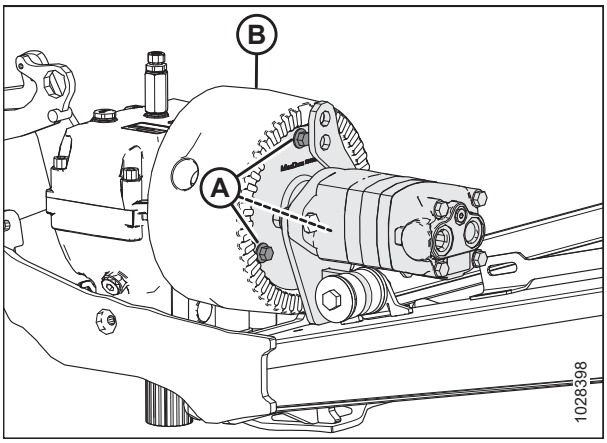


Figure 5.179: Knife Drive Motor

6. Remove bolt (A) at rubber isolator (B). Note the orientation of the washers and retain all hardware.
7. Remove motor assembly (C) from the flywheel.

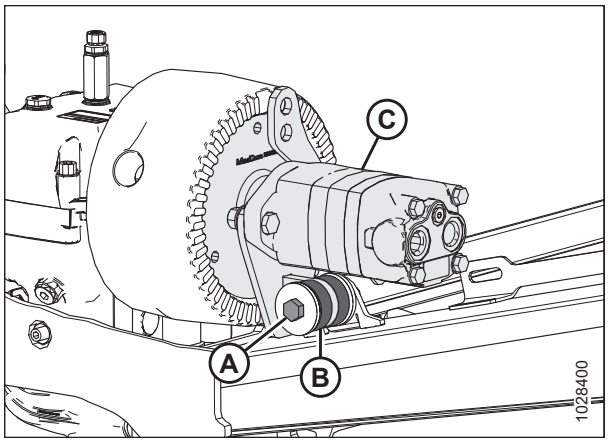


Figure 5.180: Knife Drive Motor

8. Remove two bolts (A) that secure the motor to bracket (B).

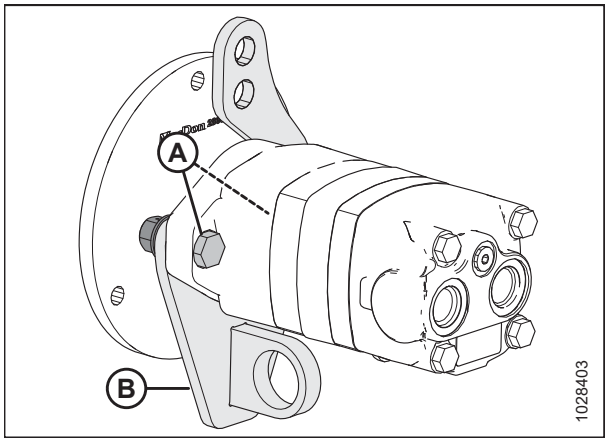


Figure 5.181: Knife Drive Motor

9. Remove cotter pin (A).
10. Remove castle nut (B) that secures the motor to hub (C).
11. Use a gear puller to remove hub (C) from the motor.

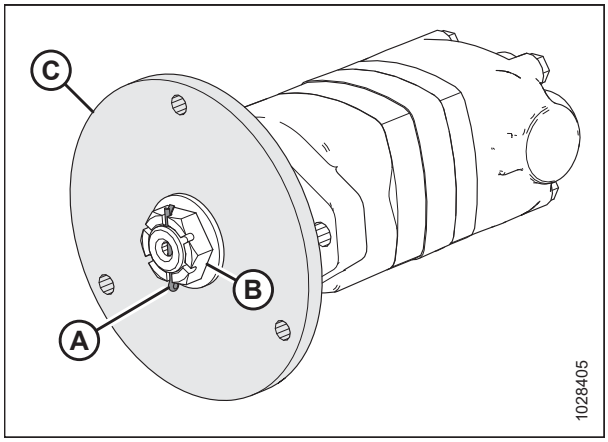


Figure 5.182: Knife Drive Motor

Installing Knife Drive Motor

1. Install washer (A) and castle nut (B) to secure the knife drive motor to hub (C). Torque castle nut to 200 Nm (148 lbf·ft).
2. Install cotter pin (A) to secure castle nut.

   NOTE:

   The castle nut can be tightened to the next hole if unable to install cotter pin (A).

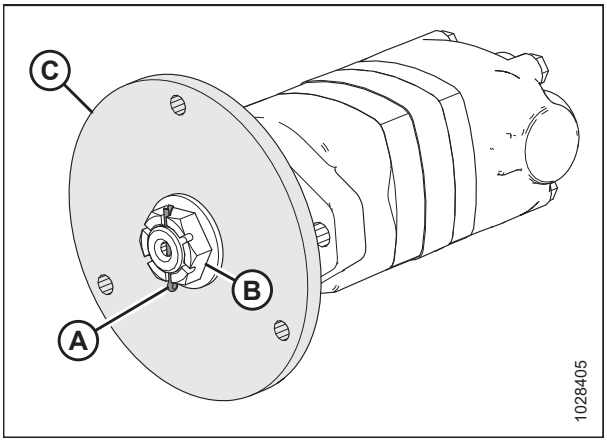


Figure 5.183: Knife Drive Motor

3. Install motor onto bracket (A) using two bolts (B) and nuts. Ensure bracket (A) and motor ports are oriented as shown in illustration.

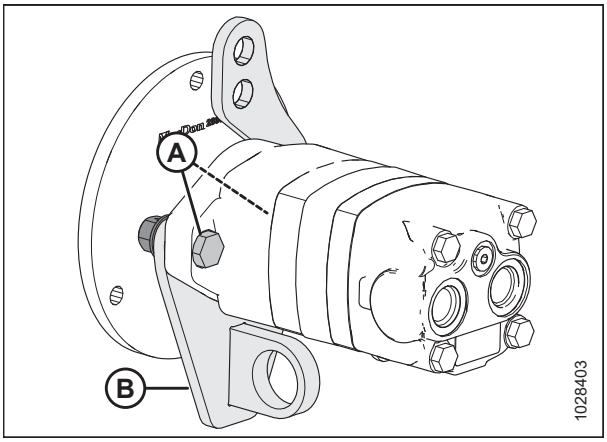


Figure 5.184: Knife Drive Motor

4. Attach the motor hub to flywheel (B) using three M10 x 30 mm hex flange bolts (A). Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads.
5. Torque bolts (A) to 75 Nm (55 lbf·ft).

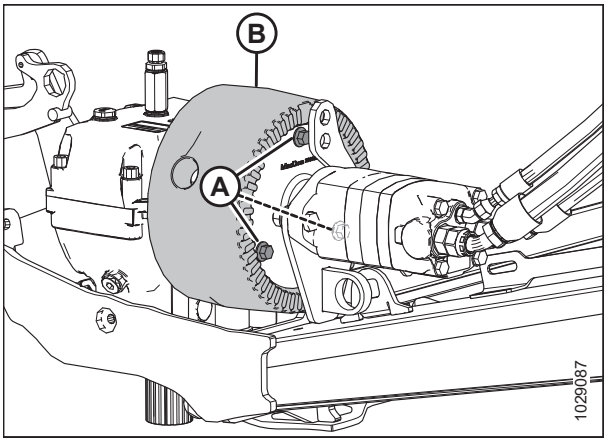


Figure 5.185: Knife Drive Motor

6. Attach motor assembly (A) to the header using retained bolt (B), rubber isolator (C), two washers (D), washer (E) and nut (F). Ensure the hardware is installed in the correct sequence as shown in the illustration. Install the large half of the rubber isolator on the inboard side.
7. Torque bolt (B) to 95 Nm (70 lbf·ft).
8. Install fittings and connect the hydraulic hoses to the back of the motor. Ensure the hoses are connected to the correct ports.
9. Close the endshield. For instructions, refer to *Closing Header Endshields, page 34*.

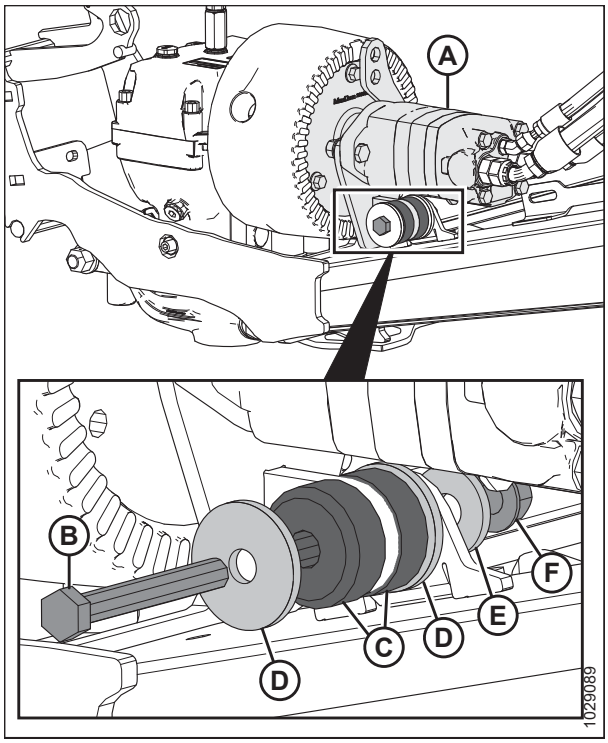


Figure 5.186: Knife Drive Motor

5.10 Feed Draper

The feed draper is located on FM200 Float Module and conveys cut crop to the auger.

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 383*.

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. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
7. Remove five screws (A), retainer (B), and draper seal (C) to access the draper. Repeat on the opposite side of the feed deck.

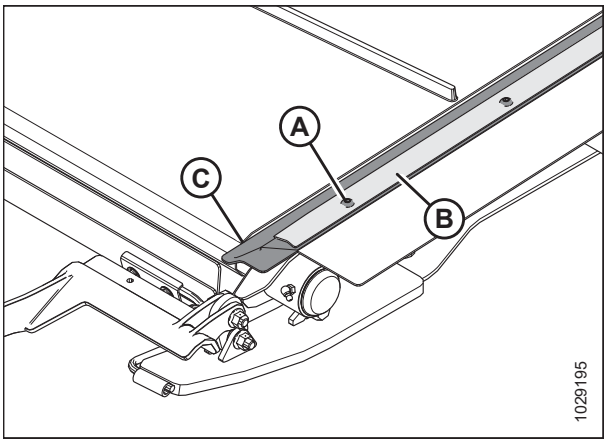


Figure 5.187: Draper Seal

8. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

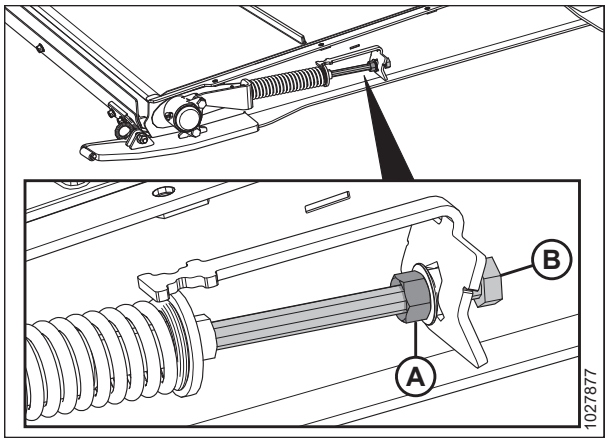


Figure 5.188: Feed Draper Tensioner

9. Remove bolt (A) from idler roller casting (B) on both sides of the feed deck.
10. Move the idler roller back within the cutout in the frame to aid in draper replacement.

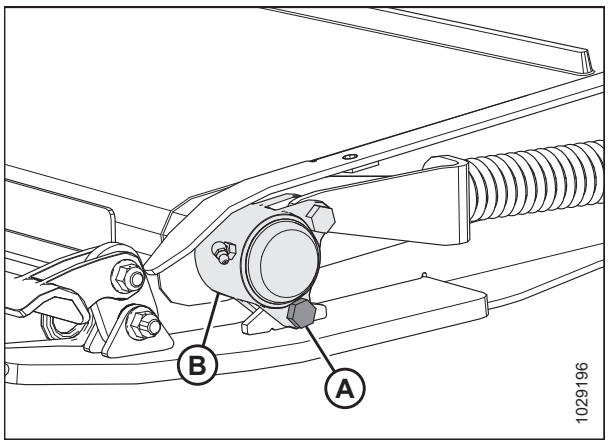


Figure 5.189: Idler Roller

11. Unlatch feed deck pan handle (A) from handle latch supports (B) on both sides of the feed deck. This will drop the door down and allow access to feed deck draper and rollers.

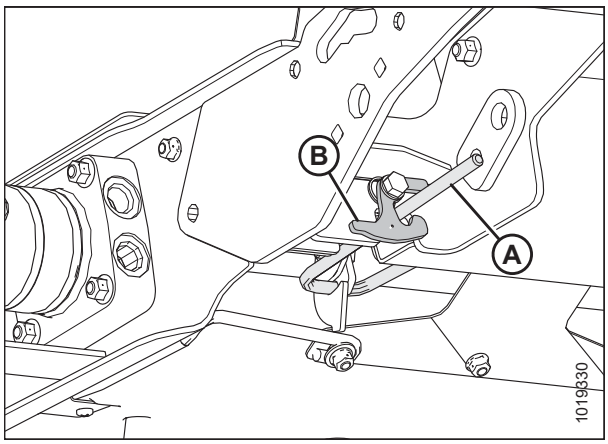


Figure 5.190: Feed Deck Pan Handle and Left Side Pan Handle Latch

12. Remove nuts and screws (A), and remove draper connector straps (B).
13. Pull the draper from the deck.

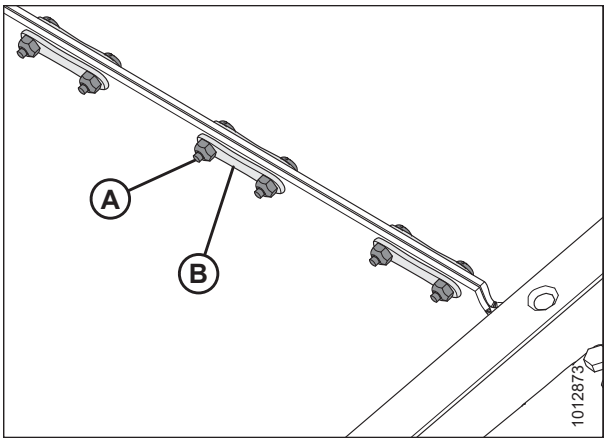


Figure 5.191: Draper Connector

14. Install the new draper over drive roller (A). Make sure the draper guides fit into drive roller grooves (B).
15. Pull draper along bottom of feed deck and over idler roller (C).

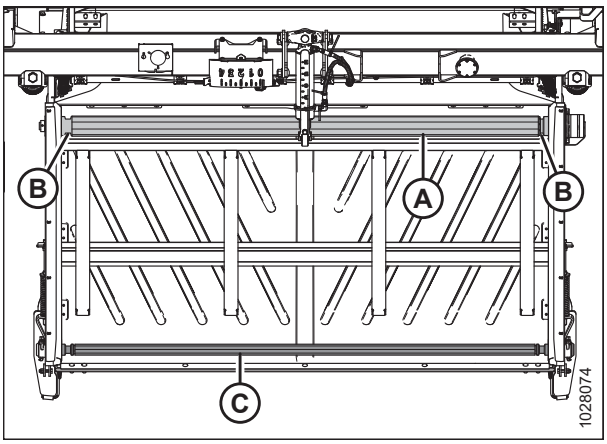


Figure 5.192: Float Module Feed Draper

16. Connect the draper joint with connector straps (B) and secure with nuts and screws (A). Ensure the screw heads face towards the rear of the deck, and tighten only until the end of the screws are flush with the nuts.

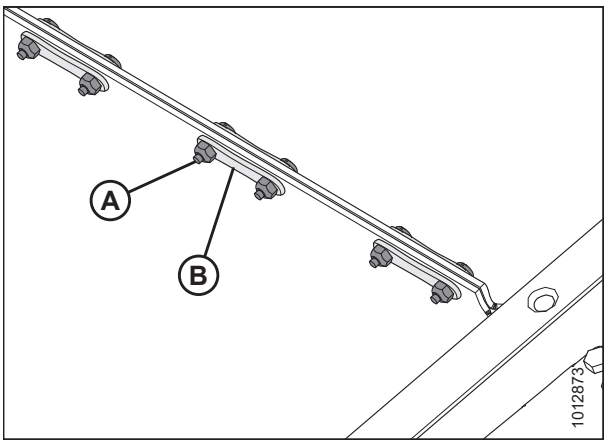


Figure 5.193: Draper Connector Straps

17. Move idler back to operating position and reinstall bolt (A) to secure idler roller casting (B) to the frame. Repeat on opposite side of the feed deck.
18. Adjust the draper tension. Refer to *5.10.2 Checking and Adjusting Feed Draper Tension, page 489*.

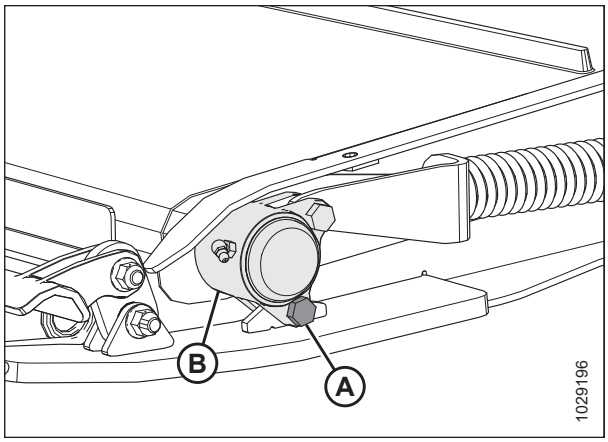


Figure 5.194: Idler Roller

19. Close the feed deck by latching pan handle latch support (B) to feed deck pan handle (A) at both sides of the feed deck.

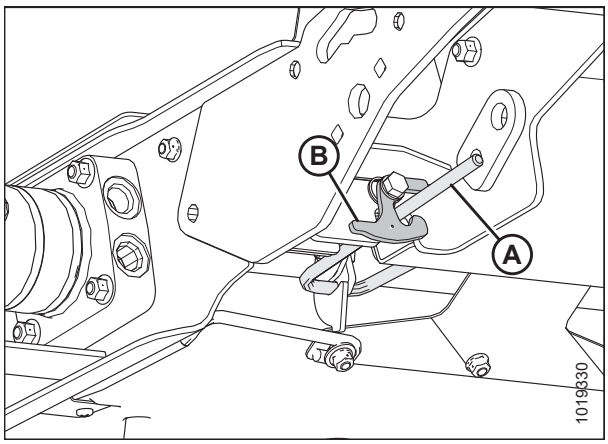


Figure 5.195: Feed Deck Pan Handle and Left Side Pan Handle Latch

20. Reinstall draper seal (C), and secure with retainer (B) and five screws (A). Repeat on the opposite side of the feed deck.

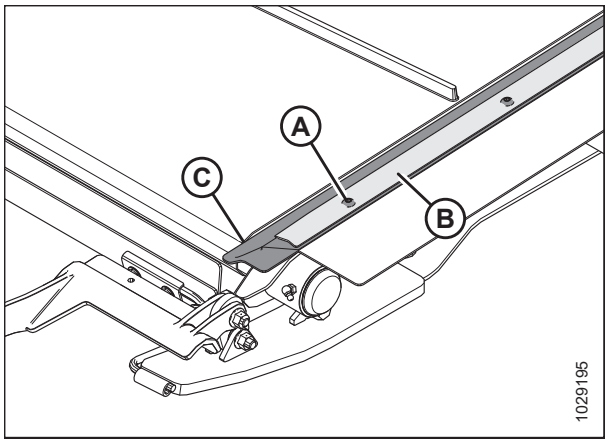


Figure 5.196: Draper Seal

5.10.2 Checking and 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. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the header fully.
3. Engage the header safety props.
4. Shut down the engine, and remove the key from the ignition.
5. Ensure the draper guide (the rubber track on the underside of the draper) is properly engaged in the groove on the drive roller and the idler roller is between the guides.

   NOTE:

   Illustrations show the left side of the float module. The right side is opposite.

   NOTE:

   The default position of spring retainer disc (A) is centered in the U shape on indicator (B); however, the position of the disc varies with draper tracking adjustment at the factory.

6. Check the position of spring retainer disc (A). If the feed draper tracks properly and the spring retainers on both sides of the draper are correctly positioned, then no adjustment is necessary.
7. If adjustment is necessary, proceed to Step *8, page 489*.

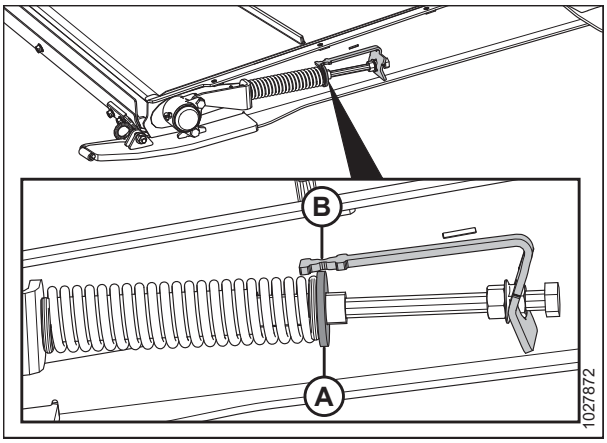


Figure 5.197: Feed Draper Tensioner

Adjusting draper tension:

8. Adjust the draper tension by loosening jam nut (A) and turning bolt (B) clockwise to increase draper tension or counterclockwise to decrease draper tension. Draper tension can be adjusted so that retainer disc (C) is within the following range:
   - Loosened to 3 mm (1/8 in.) aft of the U shape on indicator (D).
   - Tightened to 6 mm (1/4 in.) forward of the U shape on indicator (D).

   IMPORTANT:

   For small tension adjustments, you may need to only adjust one side of the draper. For larger tension adjustments and to avoid uneven draper tracking, you may need to adjust both sides of the draper an equal amount.
9. Tighten jam nut (A). Ensure flange nut (E) is tight against the indicator bracket.

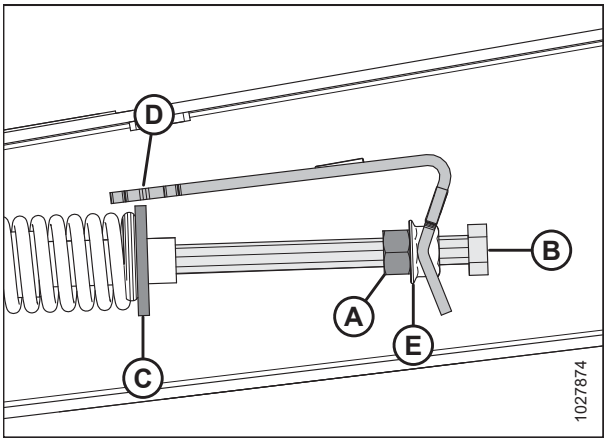


Figure 5.198: Feed Draper Tensioner – Left Side

5.10.3 Feed Draper Drive Roller

This roller is powered and moves the draper on the float module, conveying crop to the auger.

Removing Feed 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.

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
5. Engage the header safety props.
6. Shut down the engine, and remove the key from the ignition.
7. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

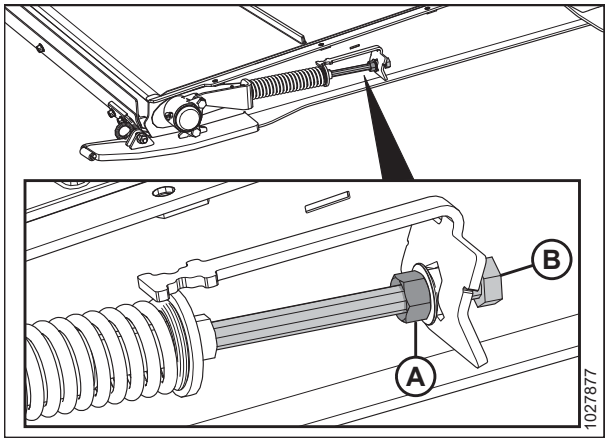


Figure 5.199: Feed Draper Tensioner

8. Remove nuts and screws (A), and remove draper connector straps (B).

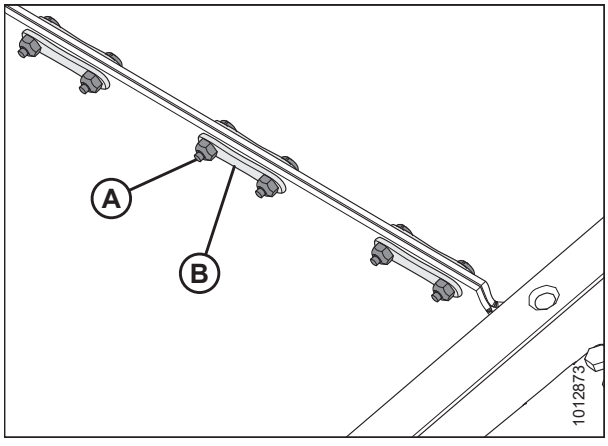


Figure 5.200: Draper Connector

9. On the right side of the deck, remove two nuts (B) and bolts from drive roller cover (A).

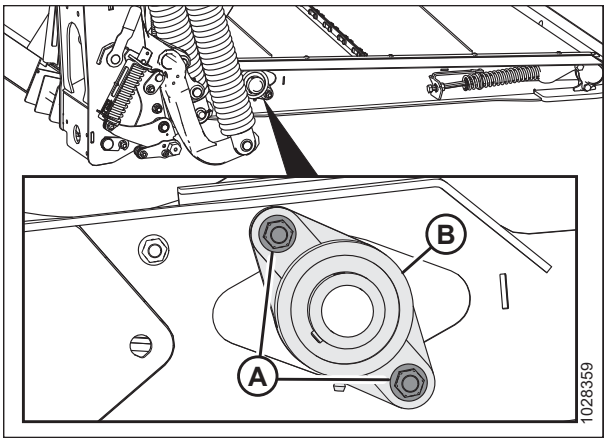


Figure 5.201: Drive Roller Bearing

10. Move drive roller cover plate (A) to the left.

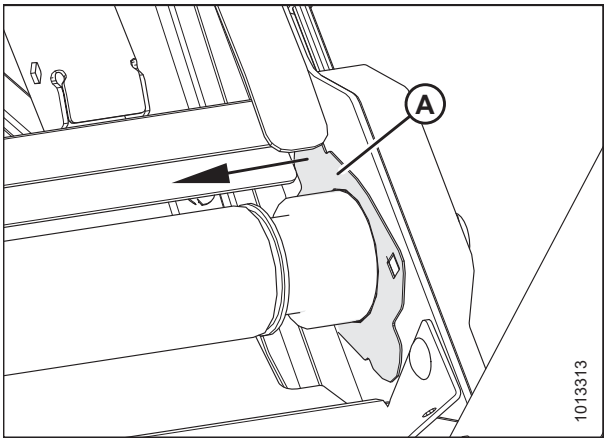


Figure 5.202: Drive Roller

11. Slide drive roller (A) with bearing assembly (B) to the right until left end comes off of spline.

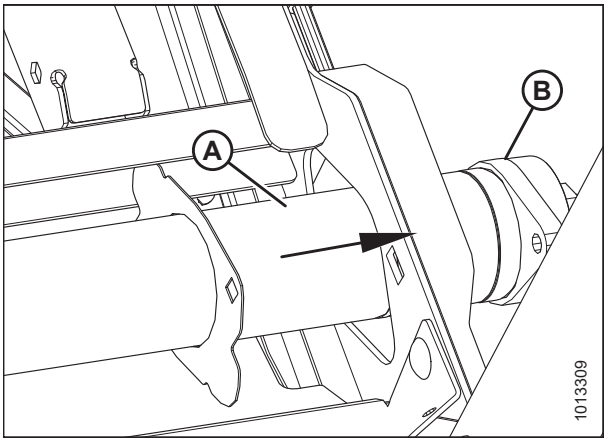


Figure 5.203: Drive Roller

12. Lift left end out of the frame.
13. Slide assembly (A) to the left, guiding bearing housing (B) through frame opening (C).
14. Remove roller (A).

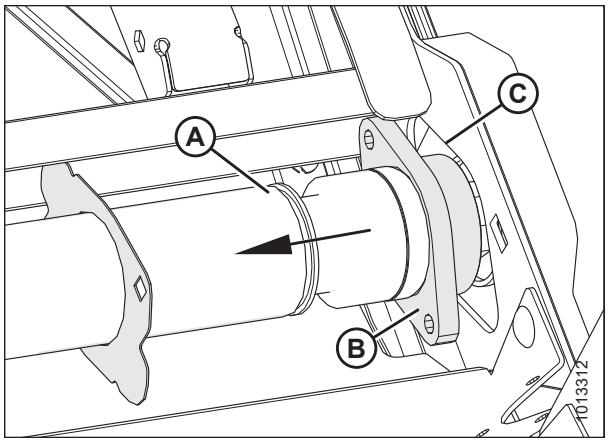


Figure 5.204: Drive Roller

Installing Feed Draper Drive Roller

1. Apply grease to the motor spline.
2. Slide drive roller cover plate (A) onto right end of roller (B).
3. Guide bearing end (C) of drive roller through frame opening (D).

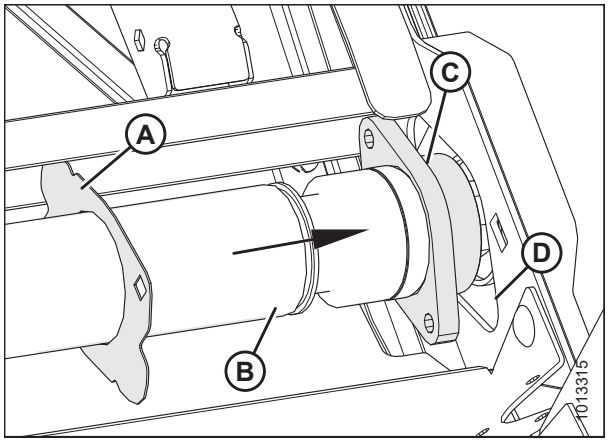


Figure 5.205: Drive Roller – Bearing End

4. Slide left end of drive roller (A) onto spline of motor (B).

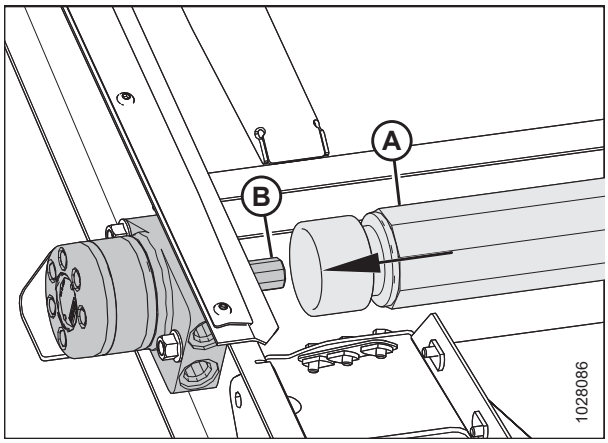


Figure 5.206: Motor

5. Secure the bearing and housing (B) with the drive roller cover plate on the frame using two bolts and nuts (A).
6. Install the feed deck draper. For instructions, refer to *5.10.1 Replacing Feed Draper, page 485*.
7. Tension the feed draper. For instructions, refer to *5.10.2 Checking and Adjusting Feed Draper Tension, page 489*.

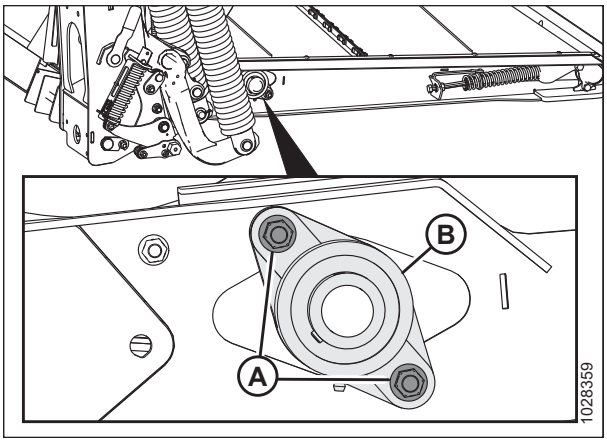


Figure 5.207: Drive Roller Bearing

Removing Feed Draper Drive Roller Bearing

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 and reel to full height.
2. Stop the engine and remove the key from the ignition.
3. Engage the reel safety props and header safety props.
4. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

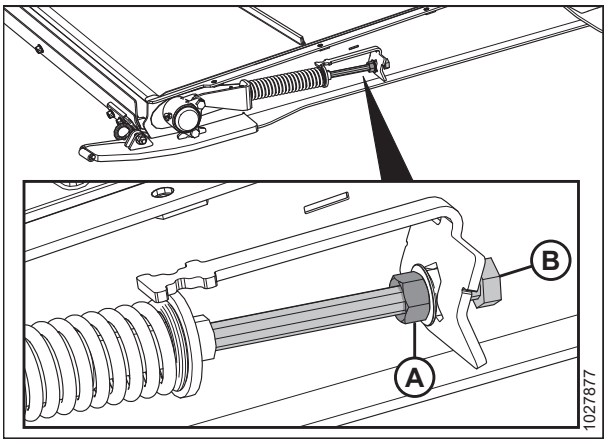


Figure 5.208: Feed Draper Tensioner

5. Loosen set screw (B) on bearing lock (A).
6. Using a hammer and punch, tap bearing lock (A) in the direction opposite to the auger rotation to release the lock.

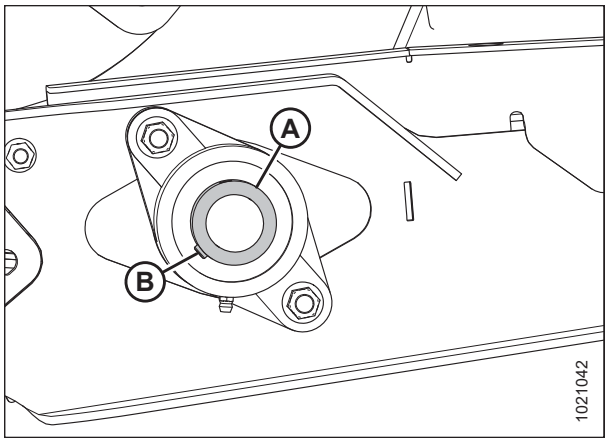


Figure 5.209: Feed Draper Drive Roller Bearing

7. Remove two nuts (A).

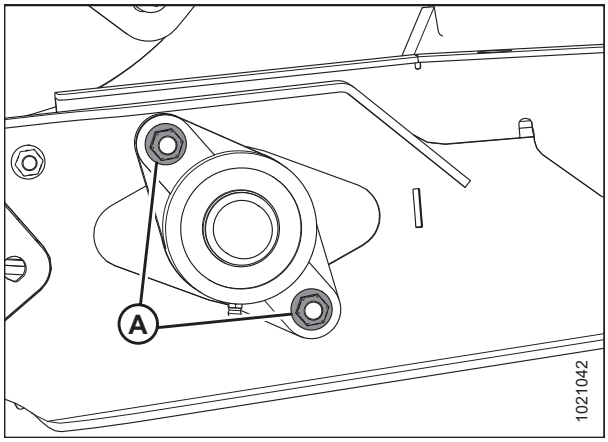


Figure 5.210: Feed Draper Drive Roller Bearing

8. Remove bearing housing (A).

   NOTE:

   If the bearing is seized on the shaft, it may be easier to remove the drive roller assembly. For instructions, refer to *Removing Feed Draper Drive Roller, page 490*.

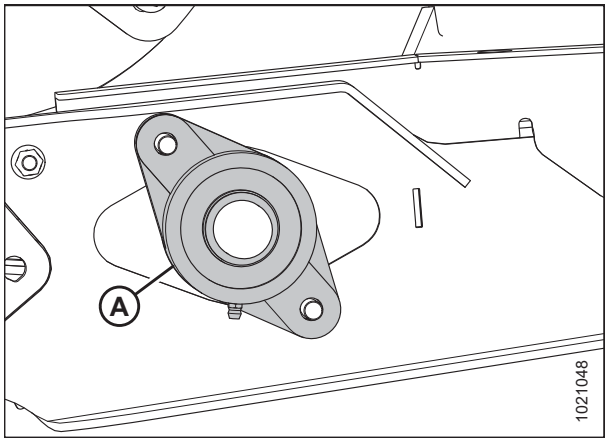


Figure 5.211: Feed Draper Drive Roller Bearing

Installing Feed Draper Drive Roller Bearing

1. Install drive roller bearing housing (A) onto shaft (B), and secure with two bolts and nuts (C).

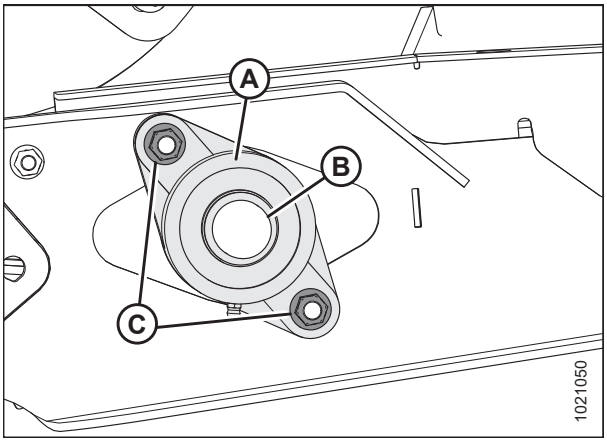


Figure 5.212: Feed Draper Drive Roller Bearing

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).
5. Tension the feed draper. For instructions, refer to *5.10.2 Checking and Adjusting Feed Draper Tension, page 489*.

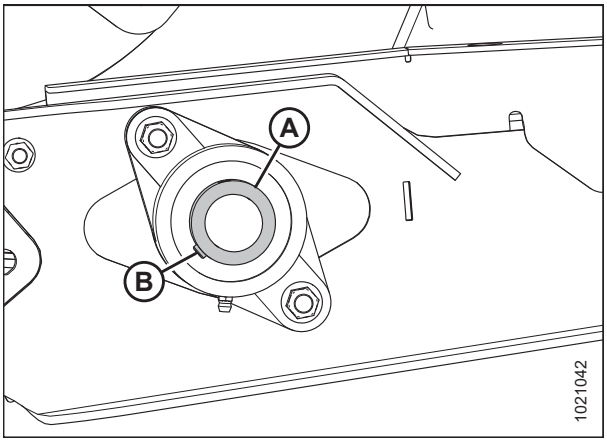


Figure 5.213: Feed Draper Drive Roller Bearing

5.10.4 Feed Draper Idler Roller

This roller is non-powered and driven by the feed draper drive roller. Like the drive roller, it conveys crop across the feed draper to the auger.

Removing Feed Draper Idler Roller

1. Engage the feeder house safety props. For instructions, refer to the combine operator's manual.
2. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

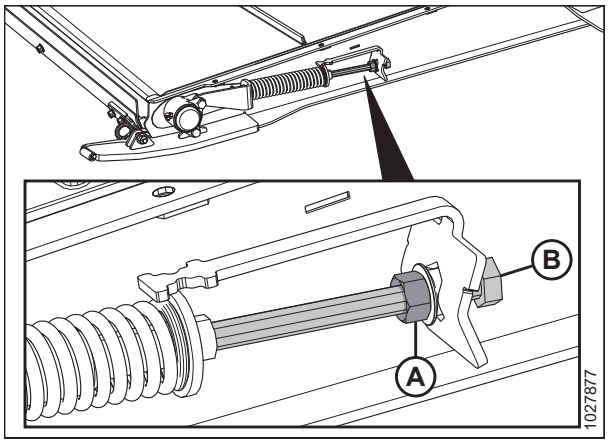


Figure 5.214: Feed Draper Tensioner

3. Remove nuts and screws (A), and remove draper connector straps (B).
4. Open the draper.
5. Lower the front of the feed deck.

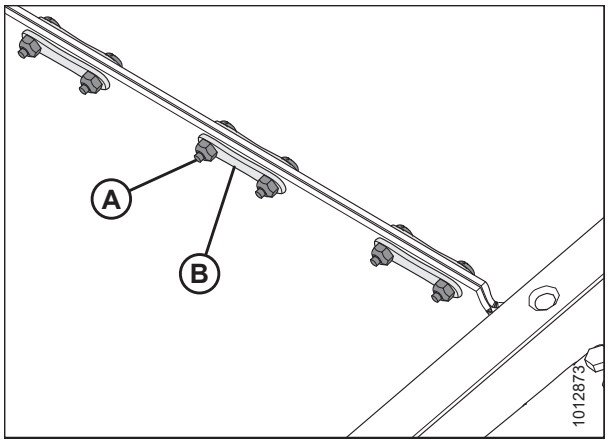


Figure 5.215: Draper Connector

6. Remove dust cap (A) and nut (B) from bearing housing (C).

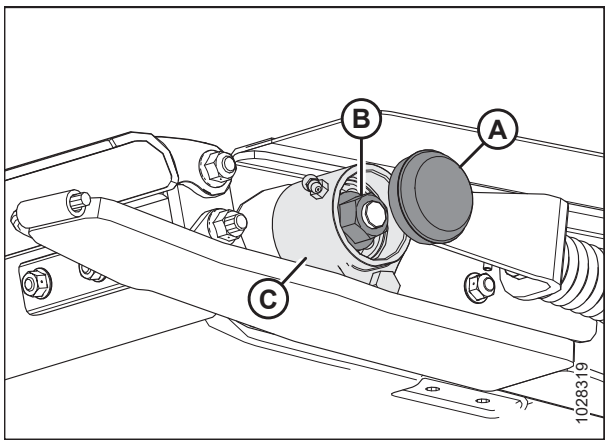


Figure 5.216: Idler Roller Bearing Housing

7. Remove two bolts (A) securing bearing housing (B) to the tensioner and deck skid.
8. Remove bearing housing (B) from the idler roller.
9. Repeat Step *6, page 496* to Step *8, page 497* on opposite side of the feed deck.

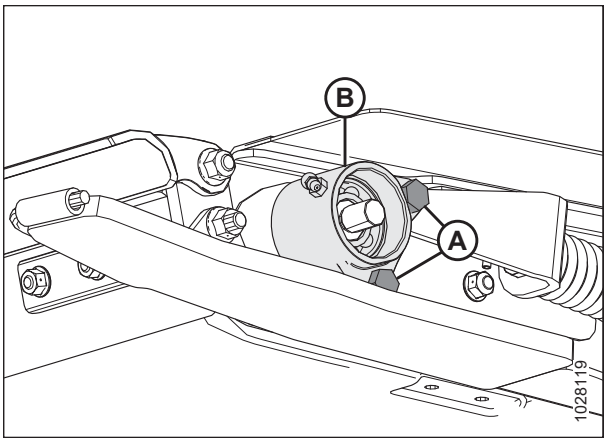


Figure 5.217: Idler Roller Bearing Housing

10. On one side of the deck frame, remove nut (A) and cover (B).

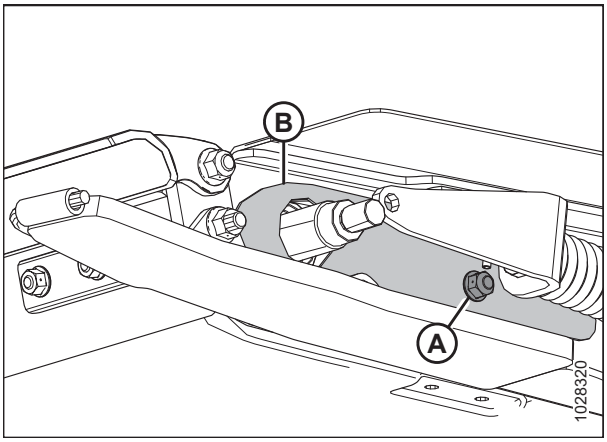


Figure 5.218: Idler Roller Cover

11. Slide idler roller (A) out through the cutout in the deck frame.

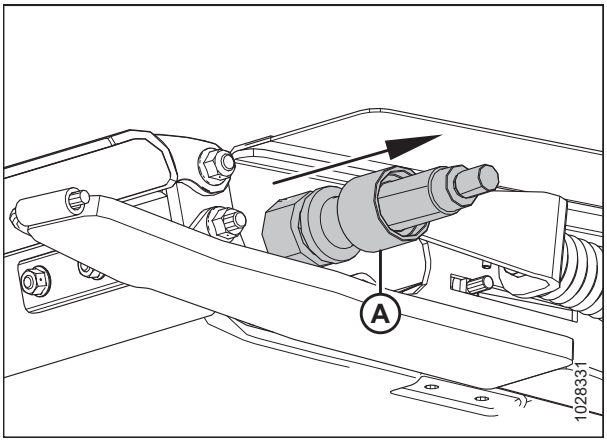


Figure 5.219: Idler Roller

Installing Feed Draper Idler Roller

1. Slide cover (A) over one end of the idler roller.
2. Brush idler roller shaft (B) with oil.
3. Carefully rotate bearing assembly (C) onto the shaft by hand to prevent seal damage.

   IMPORTANT:

   Ensure bearing assembly is square to the shaft to prevent seal damage during installation.

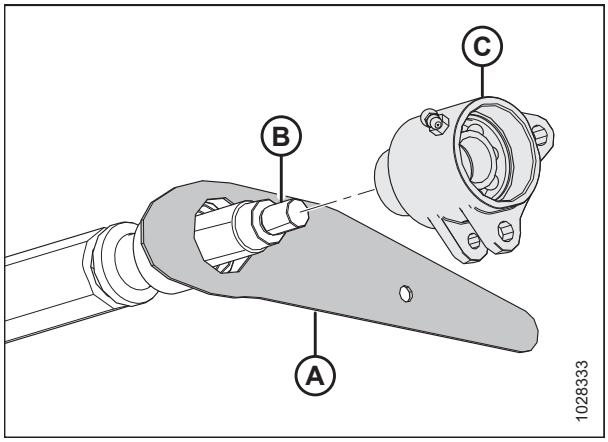


Figure 5.220: Idler Roller

4. After the bearing and both seals are seated around the shaft, install nut (A) and torque to 81 Nm (60 lbf·ft).

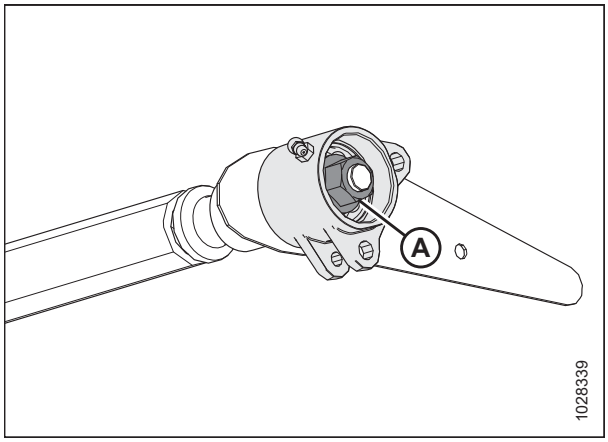


Figure 5.221: Idler Roller

5. Slide idler roller (A) through the cutout in the deck frame.

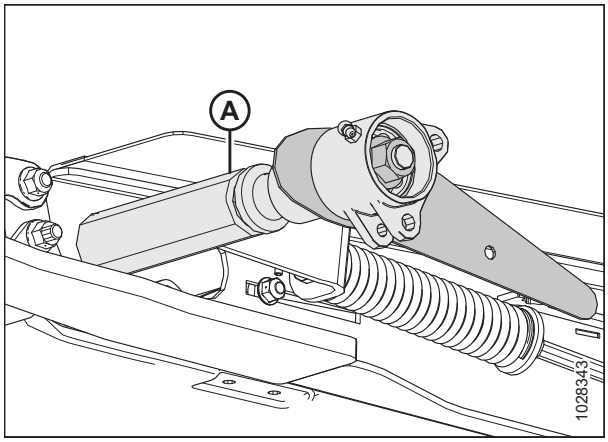


Figure 5.222: Feed Deck – Left Side

6. Slide the idler roller out through the cutout on the opposite side of the deck frame.
7. Brush idler roller shaft (A) with oil.
8. Carefully rotate bearing assembly (B) onto shaft (A) by hand to prevent seal damage.

   IMPORTANT:

   Ensure bearing assembly is square to the shaft to prevent seal damage during installation.

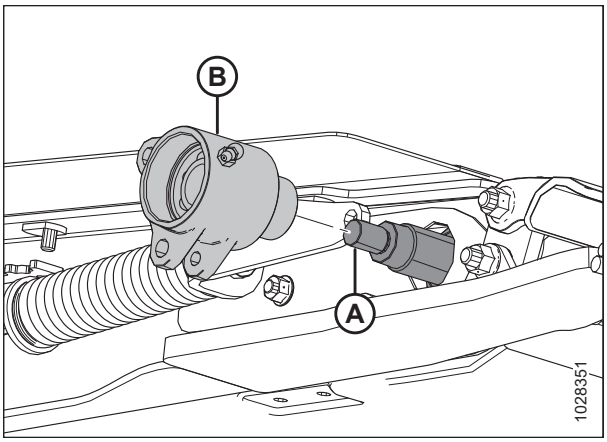


Figure 5.223: Feed Deck – Right Side

9. After the bearing and both seals are seated around the shaft, install nut (A) and torque to 81 Nm (60 lbf·ft).
10. Secure bearing housing to the deck skid and tensioner using two bolts (B) and nuts at both sides of the feed deck.

    IMPORTANT:

    Do **NOT** fully tighten bolts (B). Tighten only until casting ears are clamped.

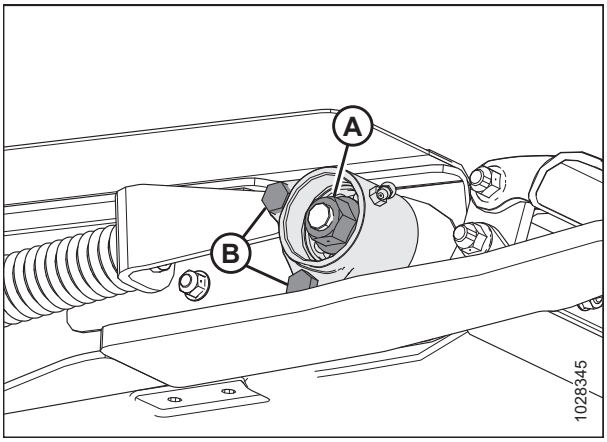


Figure 5.224: Feed Deck – Right Side

11. Fill the bearing cavity with grease, and install dust cap (A) on both ends of the idler roller.
12. Check that grease fittings on both sides are working.

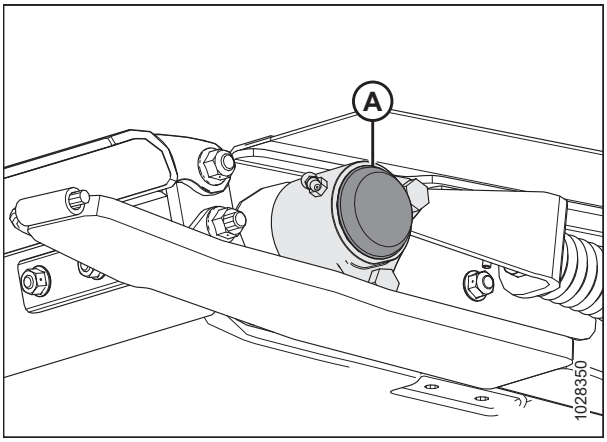


Figure 5.225: Feed Deck – Left Side

13. Close the feed draper and secure with connector straps (B), screws (A), and nuts.
14. Tension the feed draper. For instructions, refer to *5.10.2 Checking and Adjusting Feed Draper Tension, page 489*.

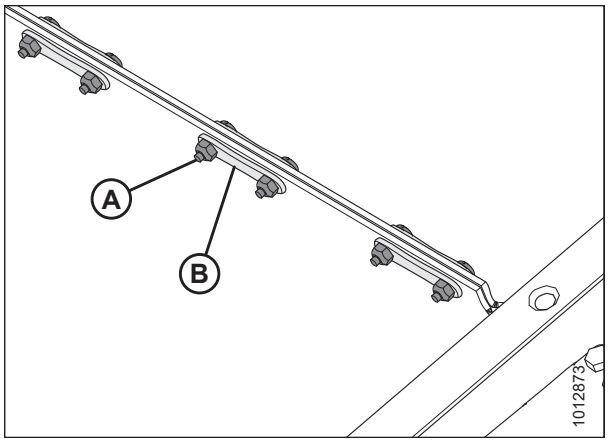


Figure 5.226: Draper Connector

Replacing Feed Draper Idler Roller Bearing

1. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
7. Loosen jam nut (A) and turn bolt (B) counterclockwise to release the draper tension. Repeat at the opposite side of the header.

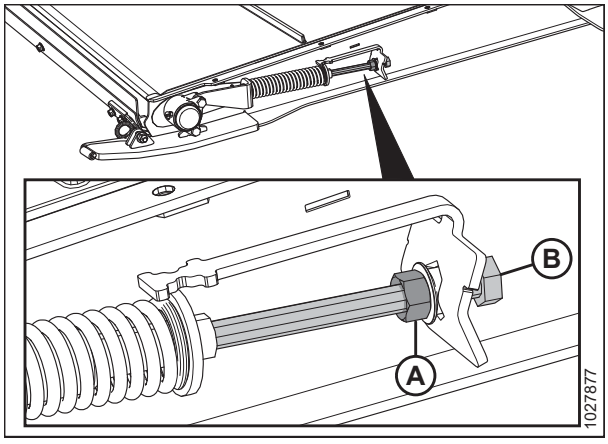


Figure 5.227: Feed Draper Tensioner

8. Unlatch feed deck pan handle (A) from handle latch supports (B) on both sides of the feed deck. This will drop the door down and allow access to feed deck draper and rollers.

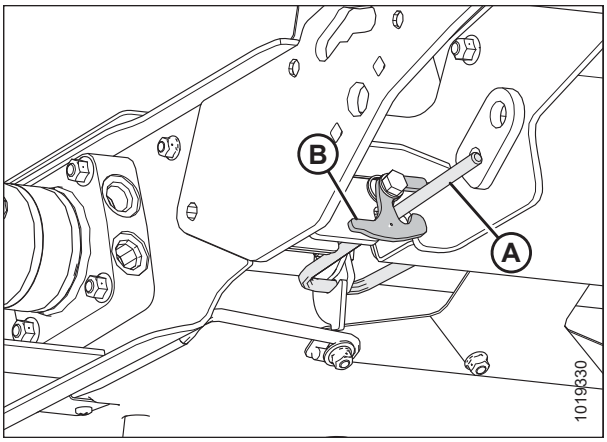


Figure 5.228: Feed Deck Pan Handle and Left Side Pan Handle Latch

9. Remove two bolts (A) and nuts securing the bearing housing to the deck skid and tensioner.
10. Remove dust cap (B).

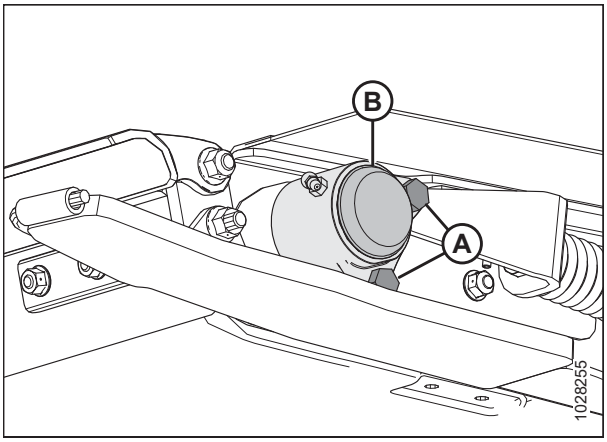


Figure 5.229: Idler Roller Bearing – Left Side

11. Remove nut (A), and remove bearing housing (B) from the deck.

    NOTE:

    If bearing is seized on shaft, it may be easier to remove the drive roller assembly. For instructions, refer to *Removing Feed Draper Idler Roller, page 496*.

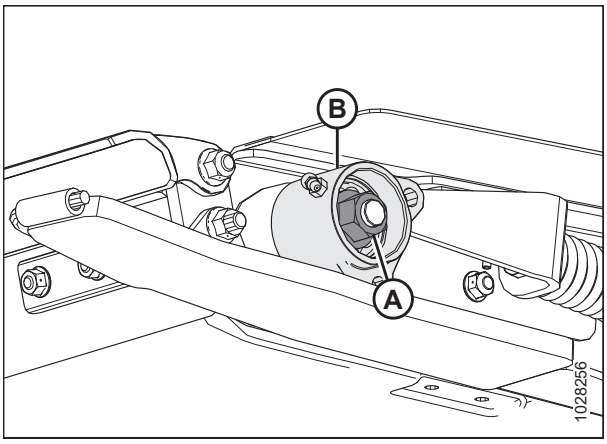


Figure 5.230: Idler Roller Bearing – Left Side

12. Secure housing (D), and remove internal retaining ring (A), bearing (B), and two seals (C).
13. Apply oil to bore before assembly.
14. Install seals (C) into housing (D).

    NOTE:

    Ensure the flat side of the seal is facing inward.

15. Pack bearing (B) with grease and install.
16. Install retaining ring (A).

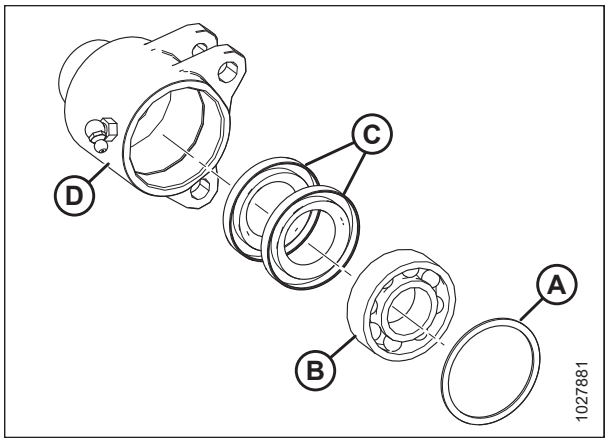


Figure 5.231: Bearing Assembly

17. Brush idler roller shaft (A) with oil.
18. Carefully rotate bearing assembly (B) onto shaft (A) by hand to prevent seal damage.

    IMPORTANT:

    Ensure bearing assembly is square to the shaft to prevent seal damage during installation.

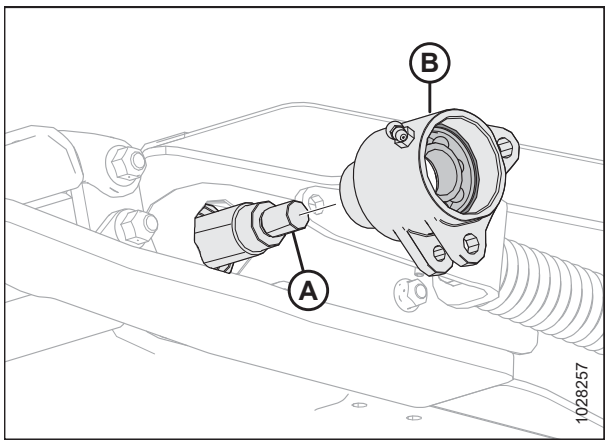


Figure 5.232: Idler Roller Bearing – Left Side

19. After the bearing and both seals are seated around the shaft, install nut (A) and torque to 81 Nm (60 lbf·ft).
20. Fill the bearing cavity with grease, and install dust cap (B).

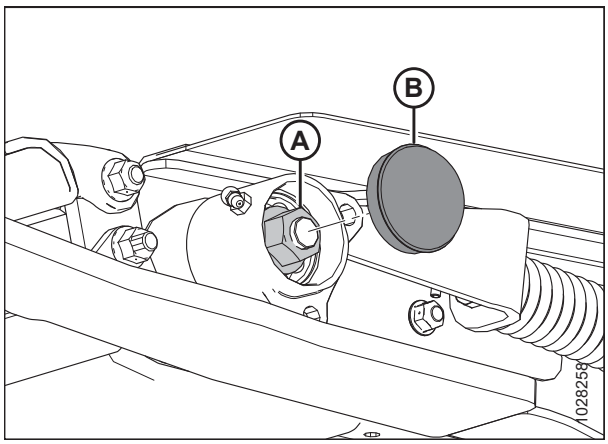


Figure 5.233: Idler Roller Bearing – Left Side

21. Secure bearing housing to the deck skid and tensioner using two bolts (A) and nuts.

    IMPORTANT:

    Do **NOT** fully tighten bolts (A). Tighten only until casting ears are clamped.

22. Check that the grease fitting is working.

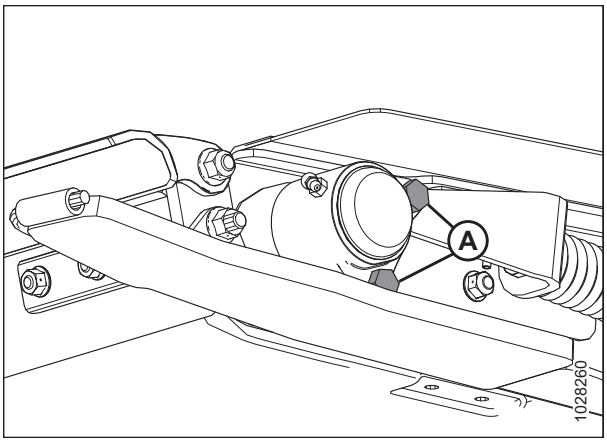


Figure 5.234: Idler Roller Bearing – Left Side

5.11 Lowering Feed Deck Pan

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. Start combine, raise header fully, and engage header lift cylinder locks.
2. Stop the engine, and remove the key from the ignition.
3. On the underside of the feed deck, rotate latch (A) to unlock handle (B). Repeat on opposite end of the feed deck.

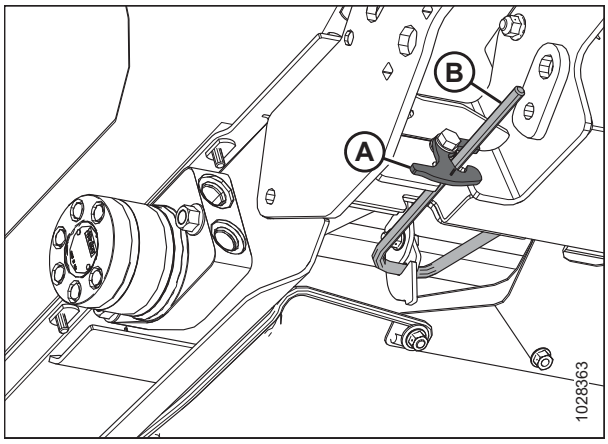


Figure 5.235: Underside of Feed Deck

4. Hold pan (A) and rotate handle (B) downward to release the pan.

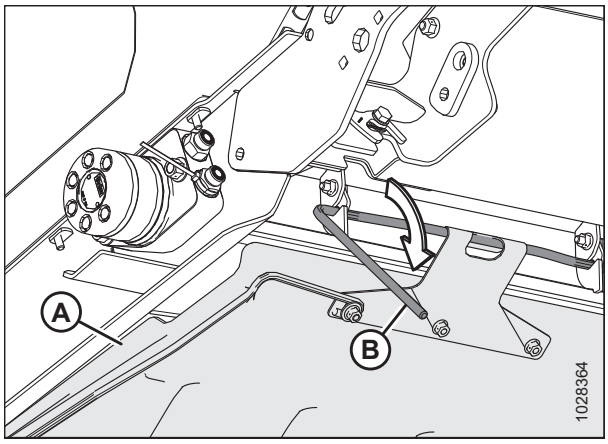


Figure 5.236: Underside of Feed Deck

5. Lower fee deck pan (A).

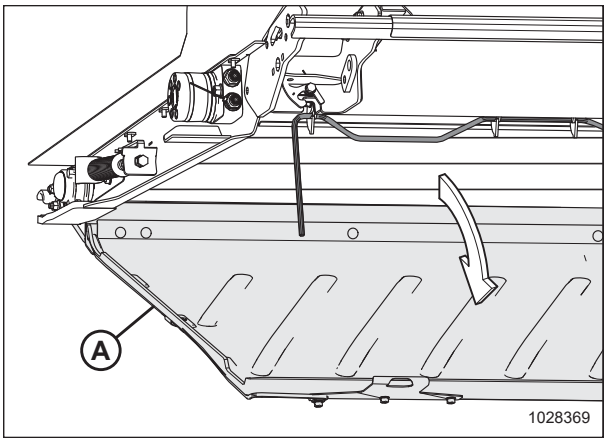


Figure 5.237: Feed Deck Pan

5.12 Raising Feed Deck Pan

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 feed deck pan (A).

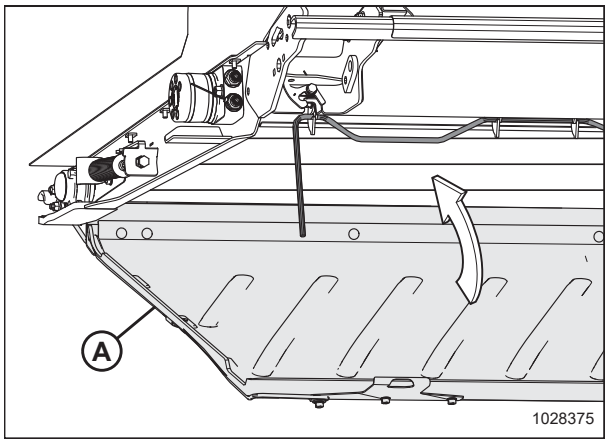


Figure 5.238: Feed Deck Pan

2. Engage lock handle (A) in three feed deck pan hooks (B).

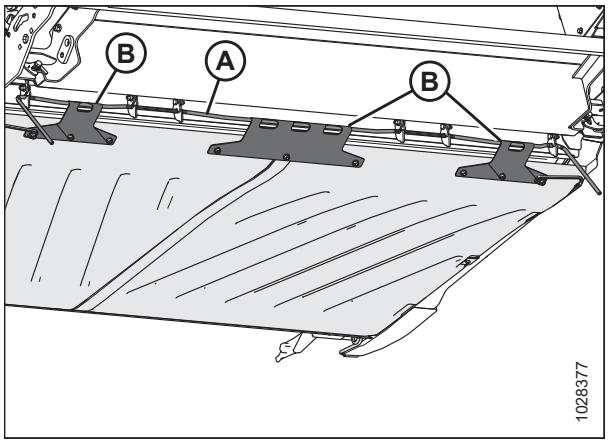


Figure 5.239: Underside of Feed Deck Pan

3. Rotate handles (A) upwards, bringing the feed deck pan into locked position.

   NOTE:

   Ensure that all three deck pan hooks (B) are secured on lock handle.

4. Hold feed deck pan in place, and rotate latches (C) to lock handle (A).

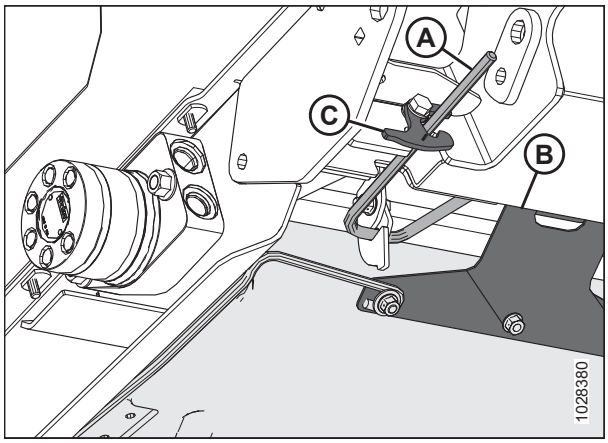


Figure 5.240: Underside of Feed Deck Pan

5.13 Checking Link Holder Hooks

Check the left and right link holder hooks **DAILY** to ensure they are not cracked or broken.

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 from the ignition.

Link holder hooks (A) are located under the feed deck. Before operation, ensure both hooks are engaged on the float module as shown.

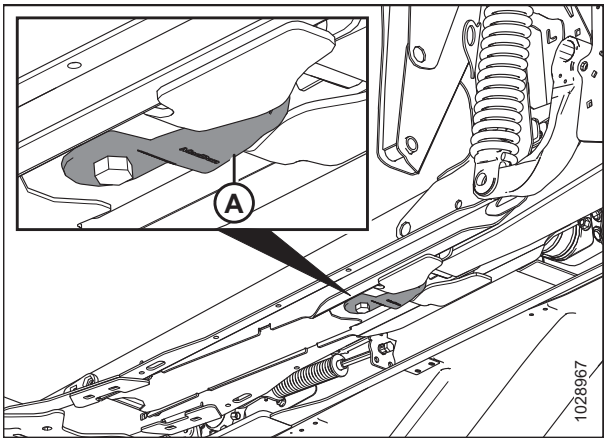


Figure 5.241: Feed Deck – View from Below

- Undamaged link holder hook (A)
- Damaged/broken link holder hook (B)

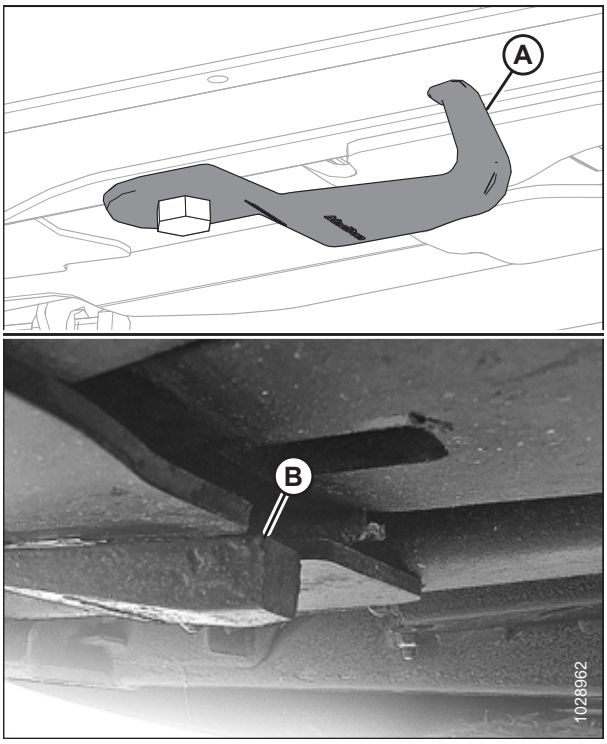


Figure 5.242: Link Holder Hooks

NOTE:

To move hook (A) to storage position, loosen bolt (B) and rotate the hook 90°.

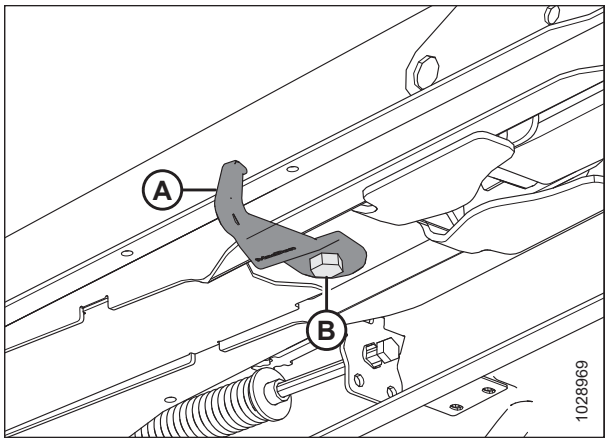


Figure 5.243: Link Holder Hook in Storage Position

5.14 FM200 Stripper Bars and Feed Deflectors

5.14.1 Removing Stripper Bars

1. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove the four bolts and nuts (A) securing stripper bar (B) to the float module frame, and remove the stripper bar.
3. Repeat at the opposite side of the header.

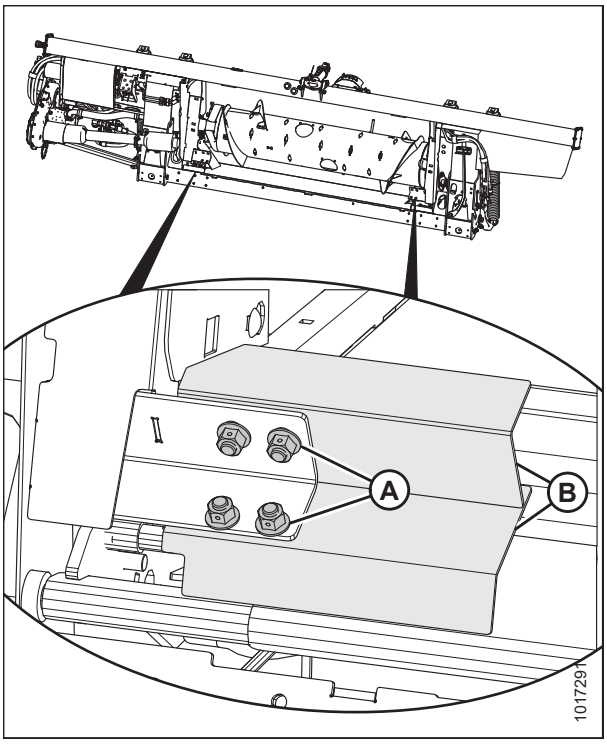


Figure 5.244: Stripper Bar

5.14.2 Installing Stripper Bars

1. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Position stripper bar (B) so the notch is at the corner of the frame.
3. Secure stripper bar (B) to the float module with four bolts and nuts (A). Ensure the nuts are facing the combine.
4. Repeat at the opposite side of the header.

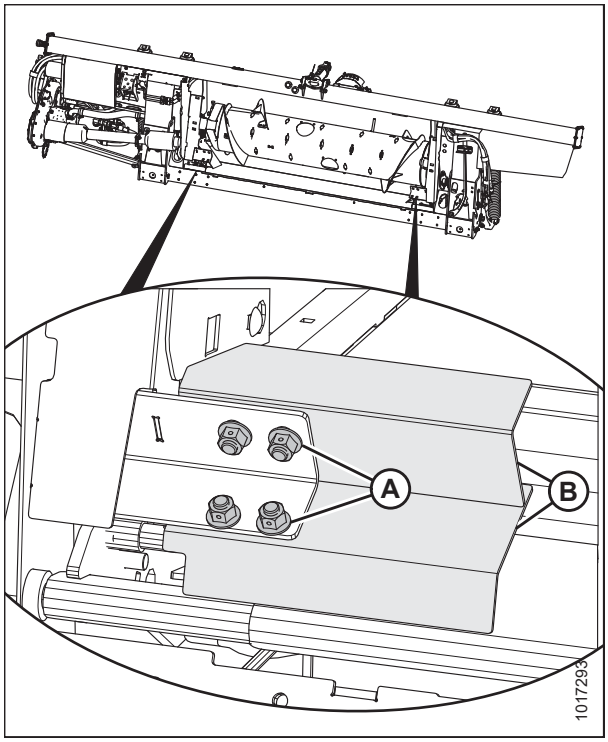


Figure 5.245: Stripper Bar

5.14.3 Replacing Feed Deflectors on New Holland CR Combines

This section is for New Holland CR combines only. If operating a New Holland CX combine, remove feed deflectors.

1. Detach the header from the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
2. Remove two bolts and nuts (B) securing feed deflector (A) to the float module frame, and remove the feed deflector.
3. Position replacement feed deflector (A), and secure with bolts and nuts (B) (ensure the nuts are facing the combine). Do **NOT** tighten nuts.

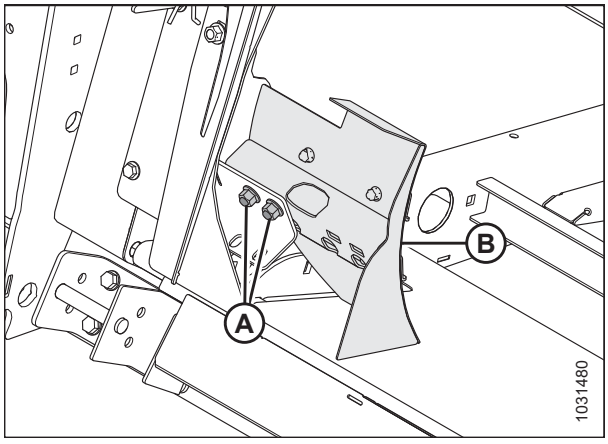


Figure 5.246: Feed Deflector

4. Adjust deflector (A) so that distance (C) between pan and deflector is 4–6 mm (5/32–1/4 in.).
5. Tighten nuts (B).
6. Repeat for opposite deflector.
7. Attach header onto the combine. For instructions, refer to *4 Header Attachment/Detachment, page 299*.
8. After attaching the header to the combine, fully extend the center-link and check the gap between the deflector and pan. Maintain the 4–6 mm (5/32–1/4 in.) gap.

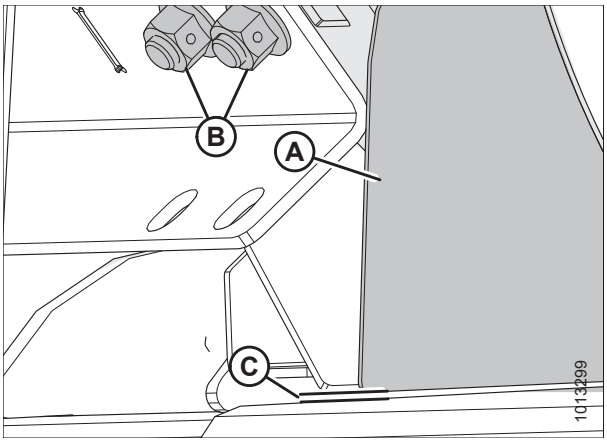


Figure 5.247: Pan and Deflector Distance

5.15 Header Side Drapers

There are two header side drapers. They convey cut crop to the float module feed draper and auger. Replace the drapers if torn, cracked, or missing slats.

5.15.1 Removing Side 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. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
7. Move the draper until the draper joint is in the work area.
8. Shut down the engine, and remove the key from the ignition.
9. Release the tension on the draper. For instructions, refer to *5.15.3 Adjusting Side Draper Tension, page 514*.
10. Remove nuts and screws (A), and tube connectors (B) from the draper joint.
11. Remove screws (C), bridge connector (D), and nuts from the front end of the draper joint.
12. Pull the draper from the deck.

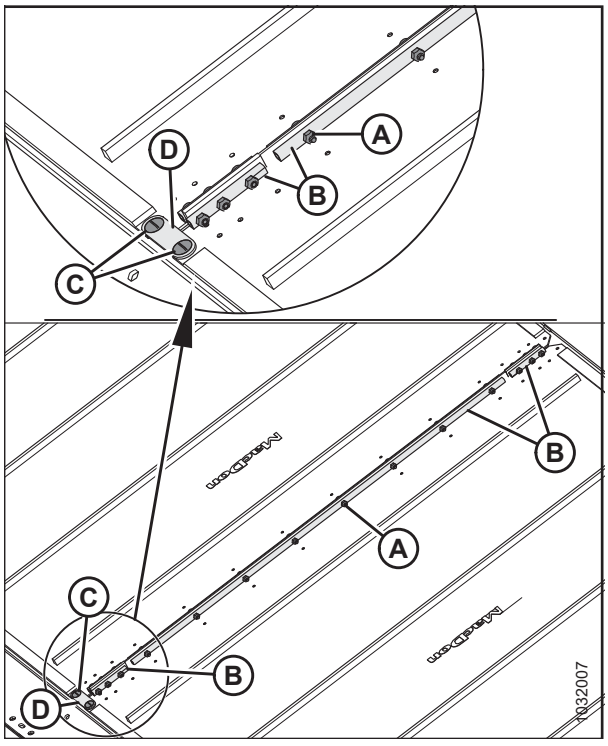


Figure 5.248: Draper Connectors

5.15.2 Installing Side 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. Start the engine. For instructions, refer to the combine operator's manual.
2. Raise the reel fully.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the header safety props.
6. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
7. Apply talc, baby powder, or talc/graphite lubricant mix to the underside of the draper guides and to the draper surface that forms the seal with the cutterbar.
8. Insert the draper into the deck at the inboard end at the drive roller. Pull the draper into the deck while feeding it at the end.
9. Feed in the draper until it can be wrapped around the drive roller.
10. Insert the opposite end of the draper into the deck over the rollers. Pull the draper fully into the deck.
11. Attach the ends of the draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.

    NOTE:

    The two short tube connectors are attached at the front and rear of the draper.
12. Install bridge connector (D), using screws (C), and nuts at the front end of the draper joint.
13. Adjust the draper tension. For instructions, refer to *5.15.3 Adjusting Side Draper Tension, page 514*.
14. Operate the drapers with the engine at idle so the talc or talc/graphite lubricant makes contact and adheres to the draper seal surfaces.

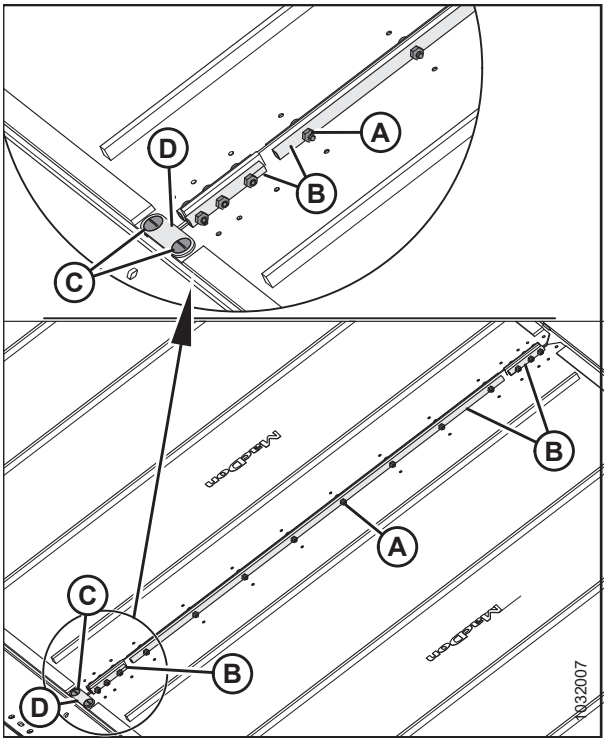


Figure 5.249: Draper Connectors

5.15.3 Adjusting Side Draper Tension

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 machine for any reason.

The drapers are tensioned at the factory and should **NOT** require adjustment. If adjustment is required, draper tension should be just enough to prevent slipping and to keep the draper from sagging below the cutterbar.

1. Ensure tensioner indicator (A) is approximately halfway in the window.

CAUTION

Check to be sure all bystanders have cleared the area.

2. Start engine and raise header.
3. Stop engine, remove key, and engage header safety props.

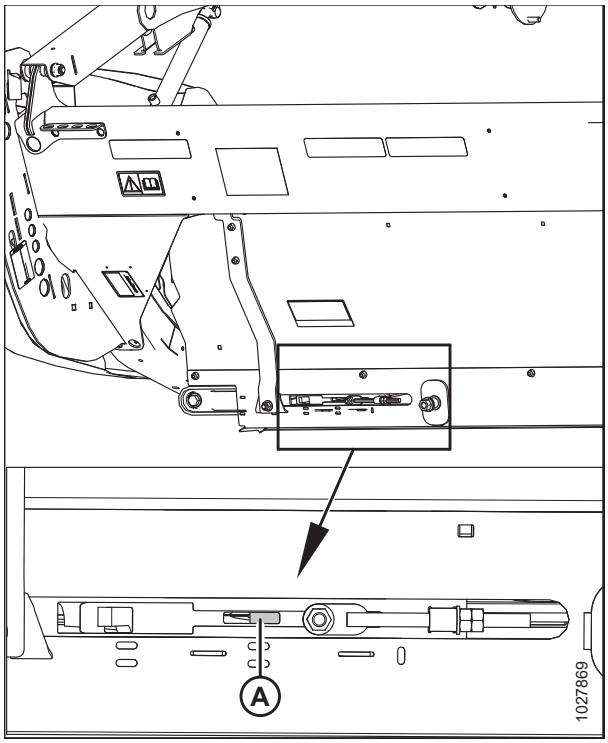


Figure 5.250: Tension Adjuster – Left Side Shown, Right Side Opposite

4. Check that draper guide (rubber track on underside of draper) is properly engaged in groove (A) of drive roller.

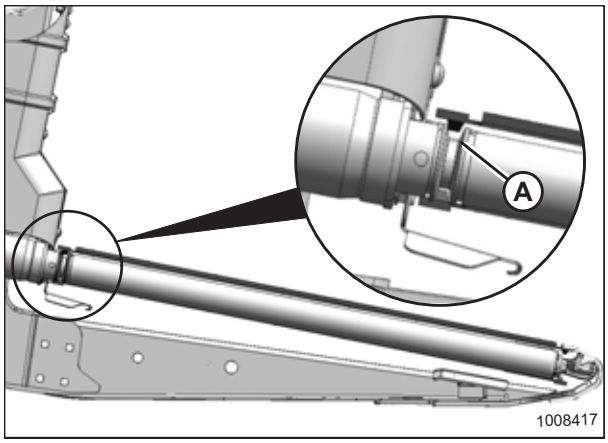


Figure 5.251: Drive Roller

5. Check that idler roller (A) is between guides (B).

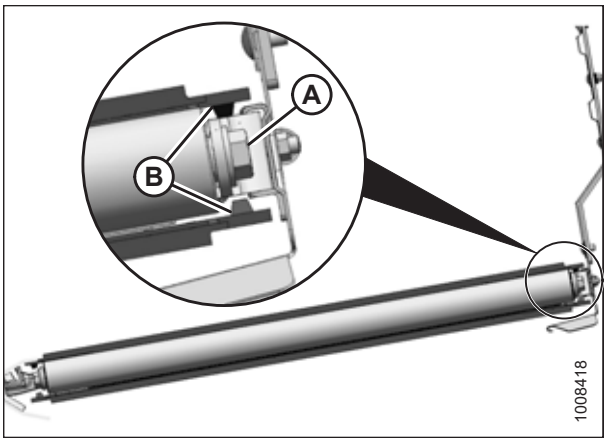


Figure 5.252: Idler Roller

IMPORTANT:

Do **NOT** adjust nut (C). This nut is used for draper alignment only.

6. Turn adjuster bolt (A) counterclockwise to loosen. Loosen until the adjuster bolt runs out of adjustment and hits a hard stop.
7. Turn adjuster bolt (A) clockwise to tighten. Tensioner indicator (B) will move inboard in the direction of arrow (E) to indicate that the draper is tightening. Tighten until the bar is about halfway in the window.

IMPORTANT:

- To avoid premature failure of the draper, draper rollers, and/or tightener components, do not operate with the tensioner indicator not visible.
- To prevent the draper from scooping dirt, ensure the draper is tight enough that it does not sag below the point where the cutterbar contacts the ground.

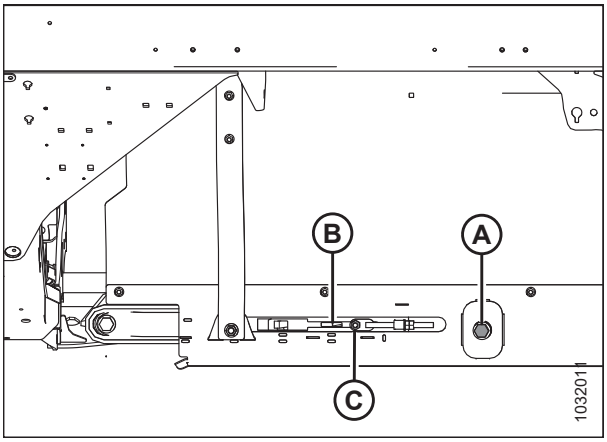


Figure 5.253: Tension Adjuster – Left Side Shown, Right Side Opposite

5.15.4 Adjusting Side Draper Tracking

The side draper tracking is adjusted by aligning the drive and idler draper rollers.

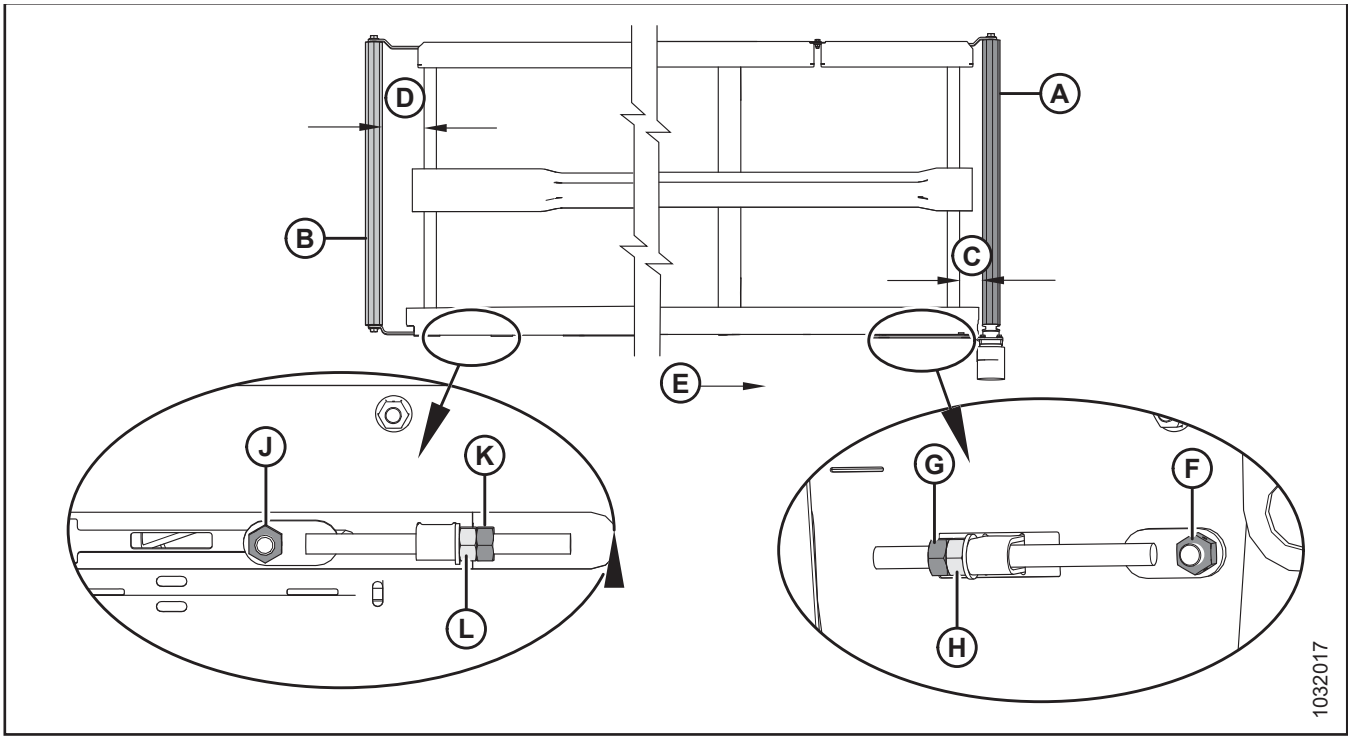
NOTE:

The left draper deck is shown in the illustrations in this procedure. The right deck is opposite.

NOTE:

Some parts were removed from the illustration for clarity.

Figure 5.254: Draper Tracking Adjustments



A - Drive Roller
B - Idler Roller
C - Drive Roller Adjust
D - Idler Roller Adjust
E - Draper Direction
F - Nut on Drive Roller Side
G - Jam Nut for Drive Roller
H - Adjuster Nut for Drive Roller
J - Nut on Idler Roller Side
K - Jam Nut for Idler Roller
L - Adjuster Nut for Idler Roller

1. To determine which roller requires adjustment and which adjustments are necessary, refer to the following table:

Table 5.1 Draper Tracking

Tracking	At Location	Adjustment	Method
Backward	Drive roller	Increase **C**	Tighten adjuster nut (H)
Forward	Drive roller	Decrease **C**	Loosen adjuster nut (H)
Backward	Idler roller	Increase **D**	Tighten adjuster nut (L)
Forward	Idler roller	Decrease **D**	Loosen adjuster nut (L)

2. Adjust drive roller (A) to change **C** (refer to Table *5.1, page 516*) as follows:
   a. Loosen nut (F) and jam nut (G).
   b. Turn adjuster nut (H).
3. Adjust idler roller (B) to change **D** (refer to Table *5.1, page 516*) as follows:
   a. Loosen nut (J) and jam nut (K).
   b. Turn adjuster nut (L).

NOTE:
If the draper does not track at the idler roller end after the idler roller adjustment, the drive roller is likely not square to the deck. Adjust the drive roller, and then readjust the idler roller.

5.15.5 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 3 minutes.
2. Check the temperature of the draper roller bearings at each of roller arms (A), (B), and (C) on each deck. Ensure the temperature does not exceed 44°C (80°F) above the ambient temperature.

   Replace roller bearings that exceed maximum recommended temperature. For instructions, refer to

   - *Replacing Side Draper Deck Idler Roller Bearing, page 519*
   - *Replacing Side Draper Drive Roller Bearing, page 525*

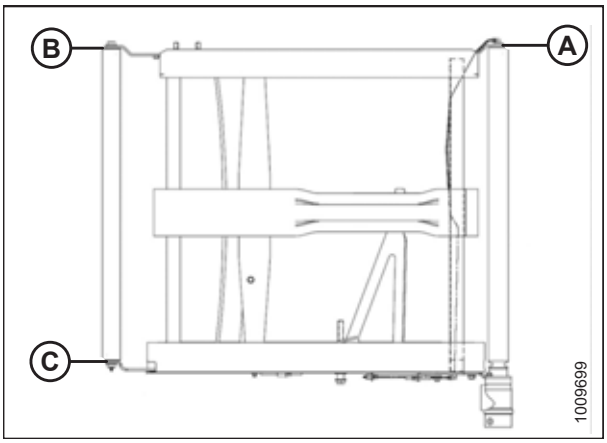


Figure 5.255: Roller Arms

Removing Side Draper Deck 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.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

1. If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).
2. Start the engine.
3. Raise the header fully.
4. Shut down the engine, and remove the key from the ignition.
5. Engage the reel safety props. For instructions, refer to *Engaging Reel Safety Props, page 31*.
6. Engage the header safety props.

7. Loosen the draper by turning adjuster bolt (A) counterclockwise until the adjuster bolt runs out of adjustment and hits a hard stop.

   IMPORTANT:

   Do **NOT** adjust nut (C). This nut is used for draper alignment only.

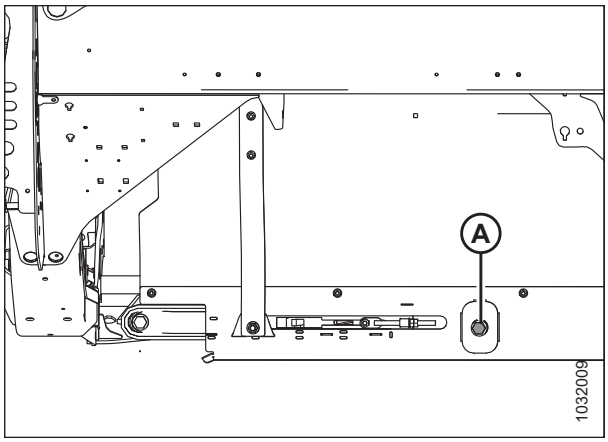


Figure 5.256: Tensioner – Left Side Shown

8. Remove nuts and screws (A) and tube connectors (B) from the draper joint.
9. Remove screws (C), bridge connector (D), and nuts from the front end of the draper joint.
10. Pull the draper off the idler roller.

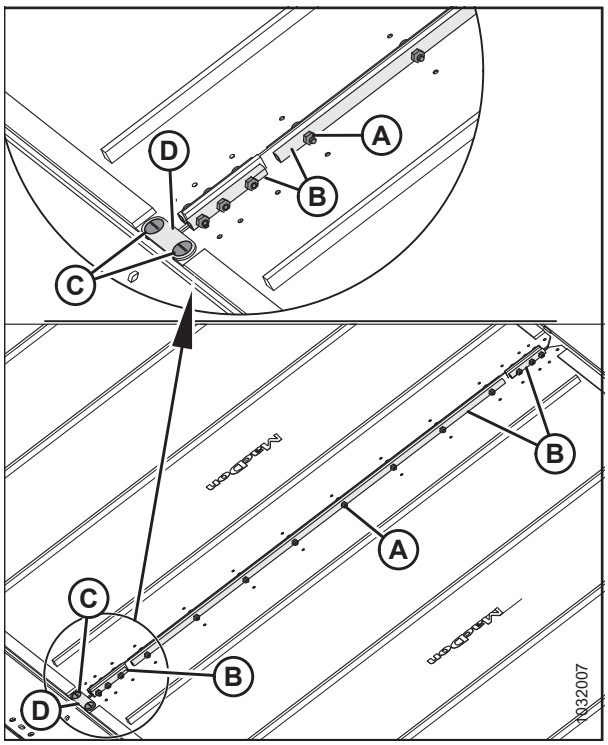


Figure 5.257: Draper Connectors

11. Remove bolt (A) and washer from the idler roller at the back of the header deck.
12. Remove bolt (B) and washer from the idler roller at the front of the header deck.
13. Spread roller arms (C) and (D), and remove the idler roller.

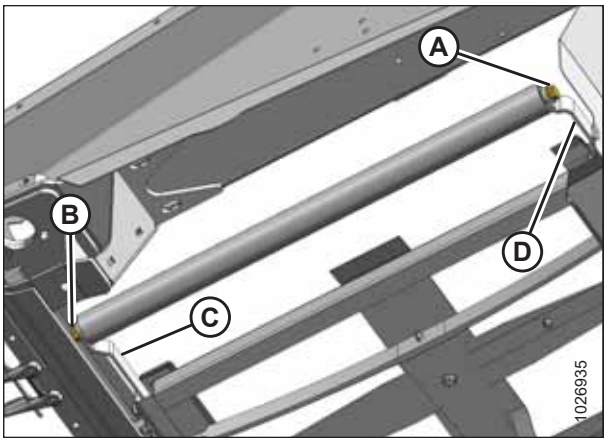


Figure 5.258: Idler Roller

Replacing Side Draper Deck Idler Roller Bearing

1. Remove draper deck idler roller. For instructions, refer to .
2. Clamp idler roller (A) in a vise, with cloth wrapped around the roller to prevent damage to the roller.
3. Use a slide hammer to remove bearing assembly (B) and seal (C) from the roller.

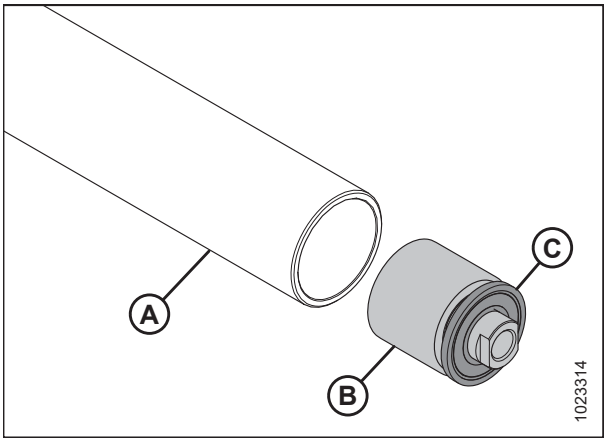


Figure 5.259: Idler Roller Bearing and Seal

IMPORTANT:

When installing the new bearing, do **NOT** place the end of the roller directly onto the ground. Bearing assembly (A) protrudes past roller tube (B), and placing the end on the ground will push the bearing farther into the tube.

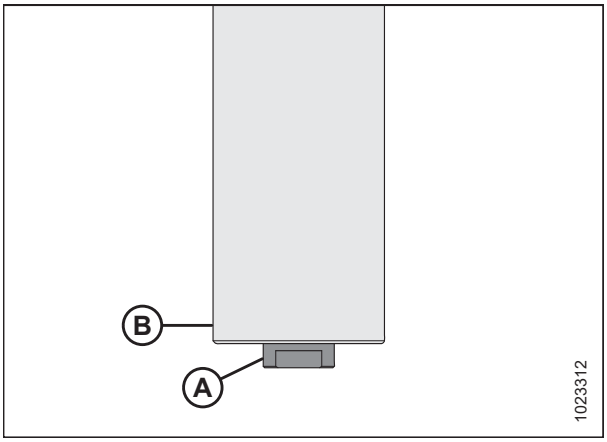


Figure 5.260: Idler Roller

4. Cut a relief (A) into a block of wood.
5. Place the end of idler roller (B) onto the block, with the protruding bearing assembly inside relief (A).

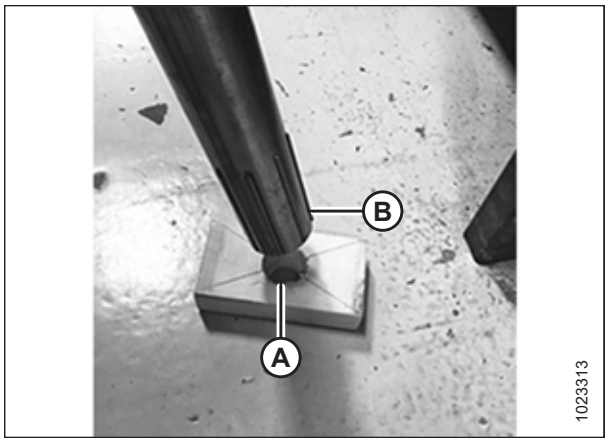


Figure 5.261: Idler Roller

6. Install new bearing assembly (C) by pressing the outer race of the bearing into the tube until it is 14–15 mm (9/16–19/32 in.) (B) from the outside edge of the tube.

   NOTE:

   Before installing new seal, fill area (A) with approximately 8 pumps of grease.

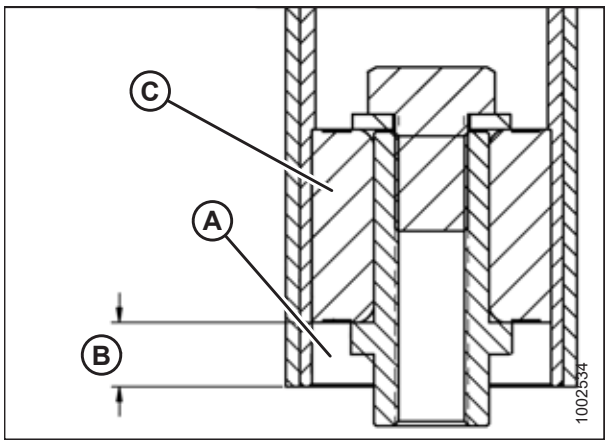


Figure 5.262: Idler Roller Bearing

7. Install new seal (A) by pressing on the inner and outer race of the seal until it is 3–4 mm (1/8–3/16 in.) (B) from the outside edge of the tube.

   NOTE:

   The seal can be oriented in either direction.

8. Reinstall idler roller. For instructions, refer to *Installing Side Draper Deck Idler Roller, page 521*.

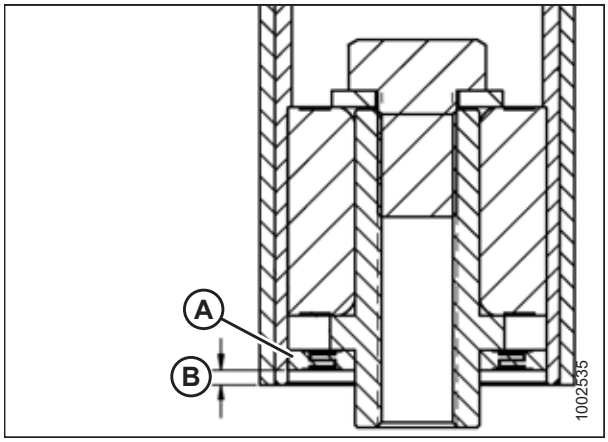


Figure 5.263: Idler Roller Bearing

Installing Side Draper Deck Idler Roller

1. Install idler roller (A) between idler arms (B), and secure with two bolts (C) and washers. Tighten bolts to 95 Nm (70 lbf·ft).

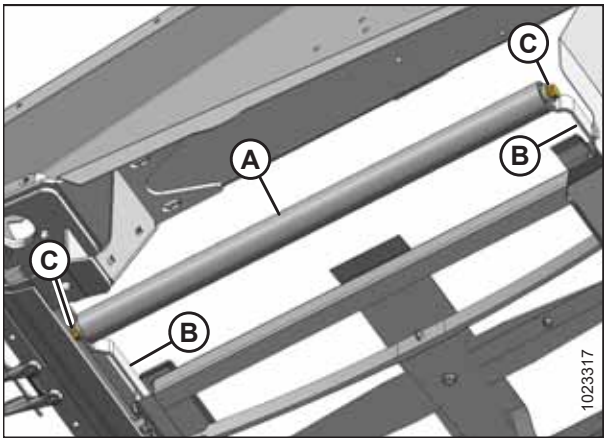


Figure 5.264: Idler Roller

2. Attach the ends of draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.

   NOTE:

   The two short tube connectors are attached at the front and rear of the draper.

3. Install bridge connector (D) using screws (C) and nuts at the front end of the draper joint.

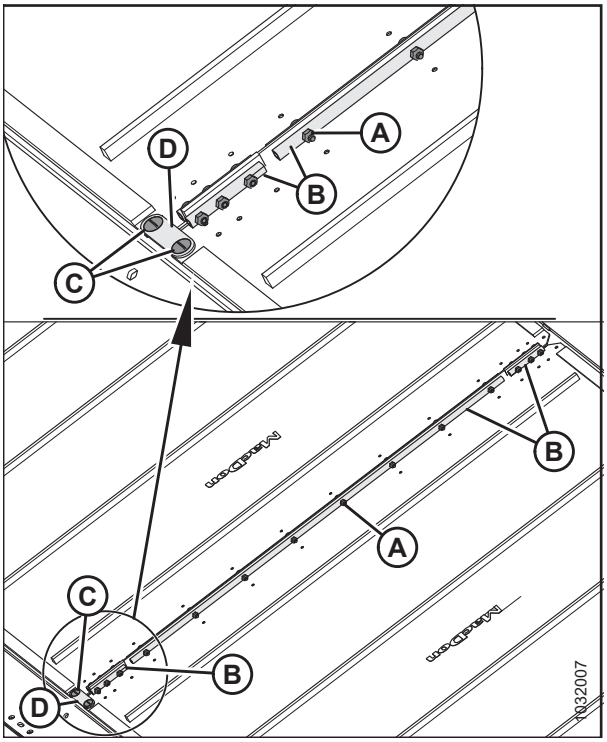


Figure 5.265: Draper Connector

4. Tighten the draper by turning adjuster bolt (A) clockwise. Refer to *5.15.3 Adjusting Side Draper Tension, page 514*.
5. Disengage the reel and header safety props.

CAUTION

Check to be sure all bystanders have cleared the area.

6. Start the engine and lower the header and reel.
7. Run machine to verify that draper tracks correctly. Refer to *5.15.3 Adjusting Side Draper Tension, page 514* if additional adjustment is necessary.

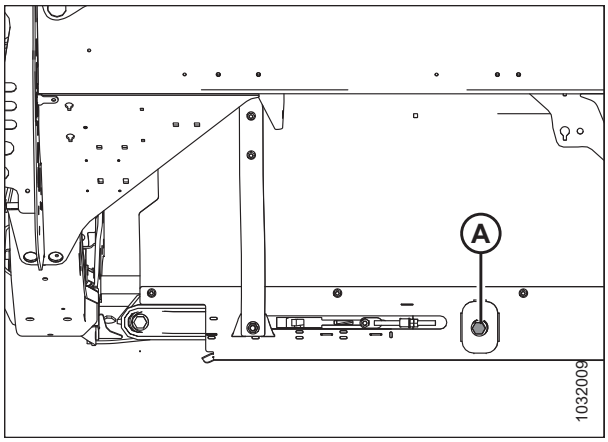


Figure 5.266: Draper Tensioner

Removing Side 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.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

1. If the draper connector is not visible, engage the header until the connector is accessible (preferably close to the outboard end of the deck).
2. Start the engine, raise the header, and raise the reel.
3. Shut down the engine, and remove the key from the ignition.
4. Loosen the draper by turning adjuster bolt (A) counterclockwise until the adjuster bolt runs out of adjustment and hits a hard stop.

   IMPORTANT:

   Do **NOT** adjust nut (B). This nut is used for draper alignment only.

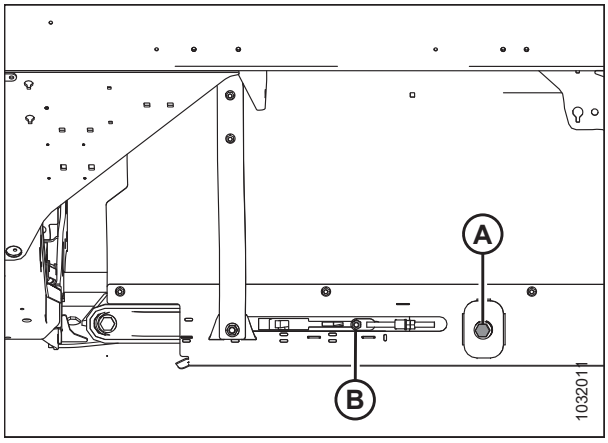


Figure 5.267: Draper Tensioner

5. Remove nuts and screws (A) and tube connectors (B) from the draper joint.
6. Remove screws (C), bridge connector (D), and nuts from the front end of the draper joint.
7. Pull the draper off the drive roller.

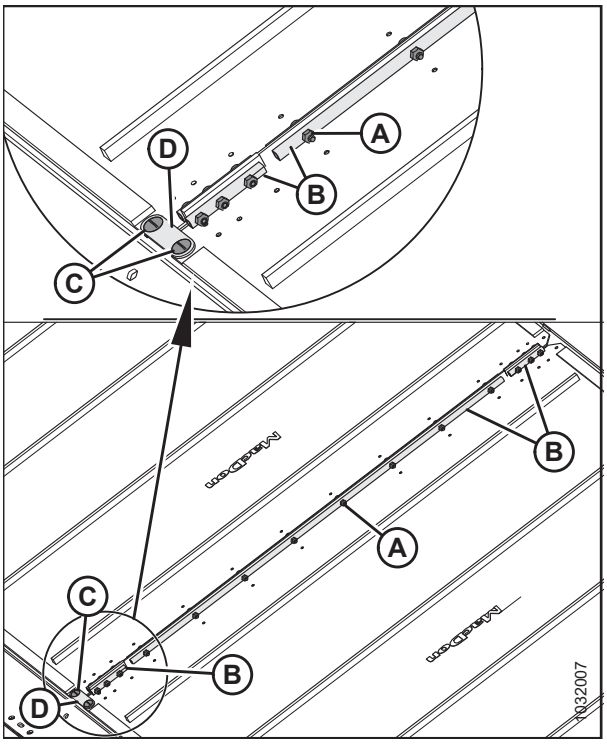


Figure 5.268: Draper Connectors

8. Align set screws with the hole (A) in the guard. Remove the two set screws holding the motor onto the drive roller.

   NOTE:

   The set screws are 1/4 turn apart.

9. Loosen two bolts (B) securing the motor to the drive roller arm.

   NOTE:

   It may be necessary to remove plastic shield (C) to gain access to the top bolt.

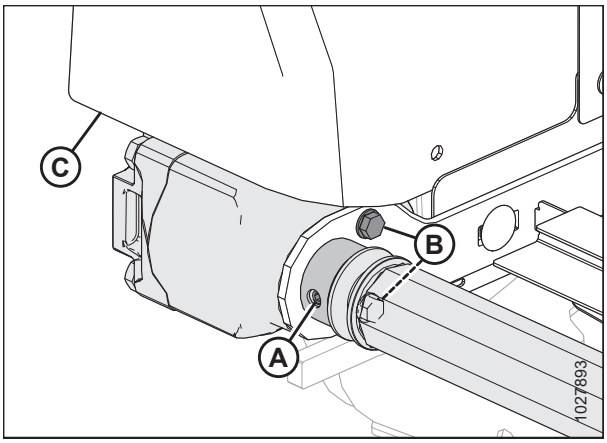


Figure 5.269: Drive Roller

NOTE:

It may be necessary to pry between the roller and bracket (A) to remove the roller from shaft.

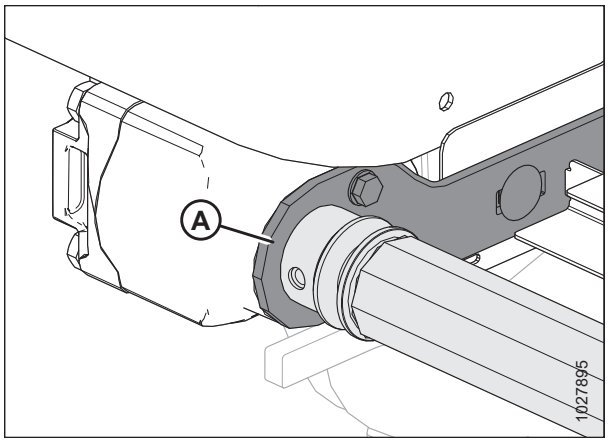


Figure 5.270: Drive Roller

10. Loosen two bolts (A) securing support arm (B).
11. Remove bolt (C) and washer securing the opposite end of the drive roller to support arm (B).
12. Remove drive roller (D).

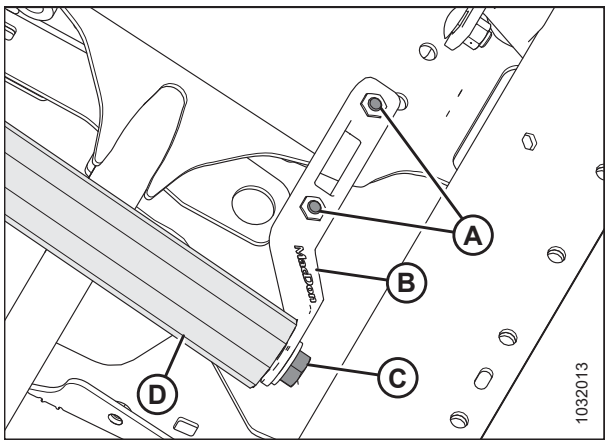


Figure 5.271: Drive Roller

Replacing Side Draper Drive Roller Bearing

1. Remove the draper idler roller assembly. For instructions, refer to *Removing Side Draper Drive Roller, page 522*.
2. Remove bearing assembly (A) and seal (B) from roller tube (C) as follows:
   a. Attach a slide hammer (D) to threaded shaft (E) in the bearing assembly.
   b. Tap out bearing assembly (A) and seal (B).
3. Clean the inside of roller tube (C), check the tube for signs of wear or damage, and replace if necessary.

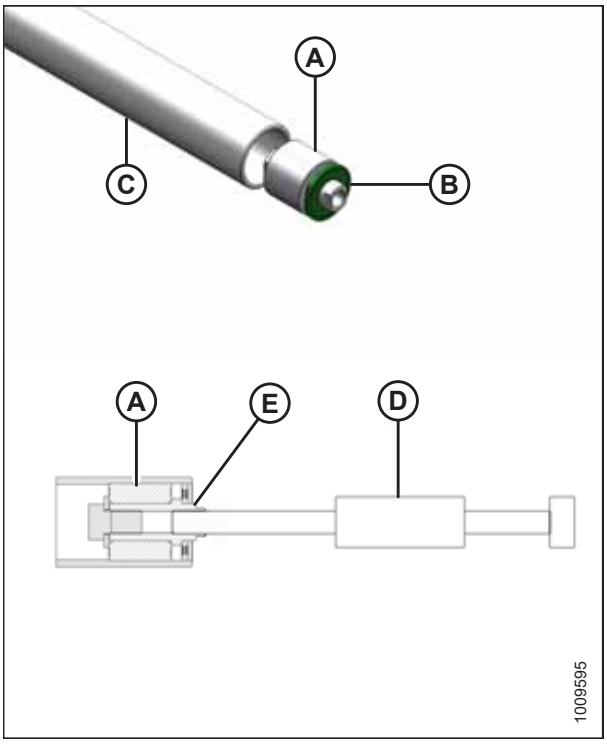


Figure 5.272: Roller Bearing

4. Install new bearing assembly (A) by pressing the outer race of the bearing into the tube until it is 14–15 mm (9/16–19/32 in.) (B) from the outside edge of the tube.
5. Apply grease in front of bearing assembly (A). Refer to the inside back cover of this book for grease specifications.
6. Install 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 seal (C) into the roller opening with a suitably sized socket. Tap the washer and bearing assembly (A) until the seal is 3–4 mm (1/8–3/16 in.) (D) from the outside edge of the tube.

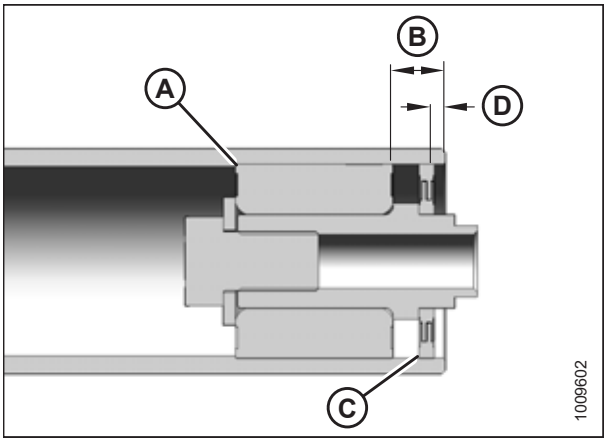


Figure 5.273: Roller Bearing

Installing Side Draper Drive Roller

1. Position drive roller (A) between the roller support arms.
2. Secure drive roller with washer and bolt (B).
3. Tighten bolts (C) on the support arm.
4. Torque bolt (B) to 95 Nm (70 lbf·ft).
5. Grease the motor shaft and insert into the end of drive roller (B).

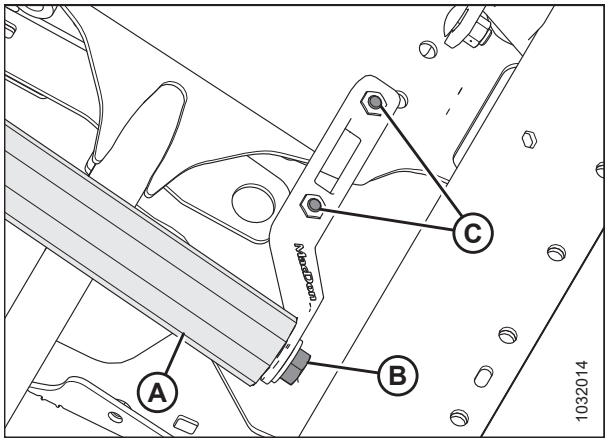


Figure 5.274: Drive Roller

6. Secure the motor to the roller support with two bolts (B). Torque to 27 Nm (20 lbf·ft).
7. Ensure the motor is all the way into the roller, and straight key is still in place when fully inserted.
8. Tighten the two set screws (not shown) through access hole (A).

   NOTE:

   Tighten any loosened bolts and reinstall plastic shield (C) if previously removed.

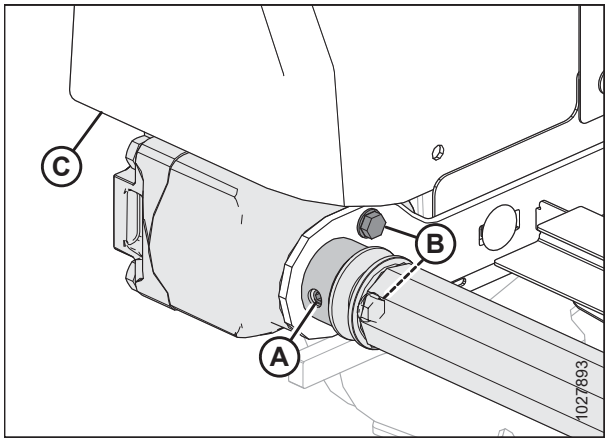


Figure 5.275: Drive Roller

9. Wrap the draper over the drive roller, and attach the ends of draper with tube connectors (B), screws (A) (with the heads facing the center opening), and nuts.

   NOTE:

   The two short tube connectors are attached at the front and rear of the draper.

10. Install bridge connector (D) using screws (C) and nuts at the front end of the draper joint.

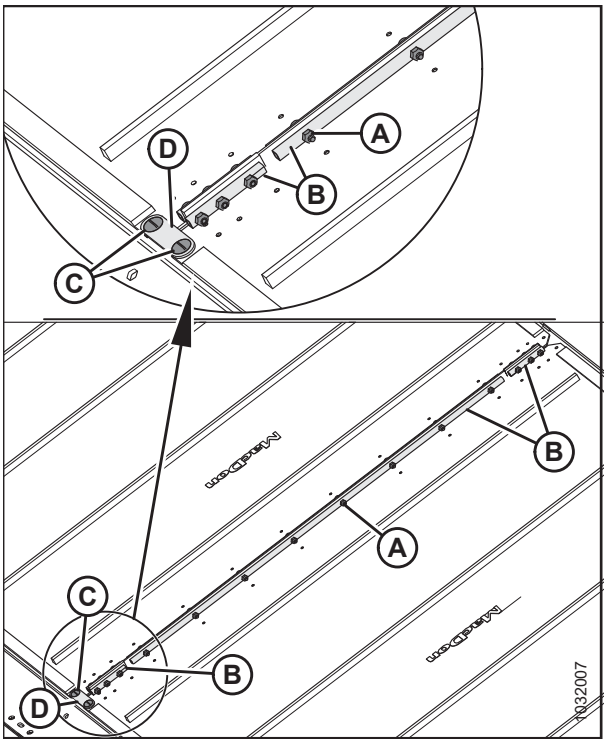


Figure 5.276: Draper Connector

11. Tighten the draper by turning adjuster bolt (A) clockwise. Refer to *5.15.3 Adjusting Side Draper Tension, page 514*.

12. Disengage the reel and header safety props. Refer to *Disengaging Reel Safety Props, page 32*, and *3.2.1 Header Safety Props, page 30*.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

13. Start the engine, and lower the header and reel.

14. Run the machine to verify the draper tracks correctly. If additional adjustment is necessary, refer to .

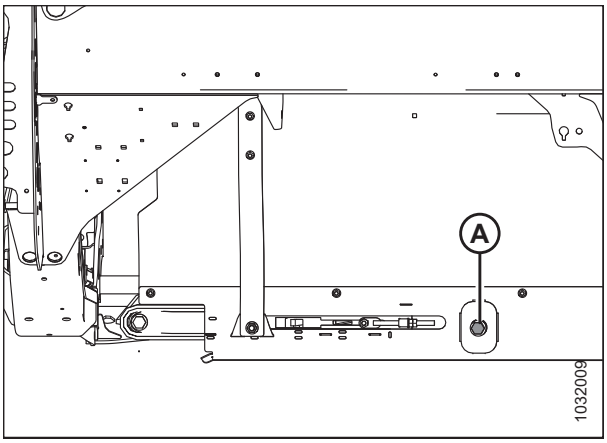


Figure 5.277: Draper Tensioner – Left Side Shown

5.16 Reel

CAUTION

To avoid personal injury, before servicing machine or opening drive covers, refer to *5.1 Preparing Machine for Servicing, page 383*.

5.16.1 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 set at the factory, but some adjustment may be necessary before operation.

The finger to guard/cutterbar clearance (A) is shown in the tables below.

Table 5.2 Finger to Guard/Cutterbar Clearance – Double Reel

Header	End Panels	Beside Center Arm
FD230	292–298 mm (11.5–11.7 in.)	317–323 mm (12.5–12.7 in.)
FD235 FD240 FD241	292–298 mm (11.5–11.7 in.)	292–298 mm (11.5–11.7 in.)

Table 5.3 Finger to Guard/Cutterbar Clearance – Triple Reel

Header	Outer End Panels	Beside Center Arms
FD240 FD241 FD245 FD250	292–298 mm (11.5–11.7 in.)	292–298 mm (11.5–11.7 in.)

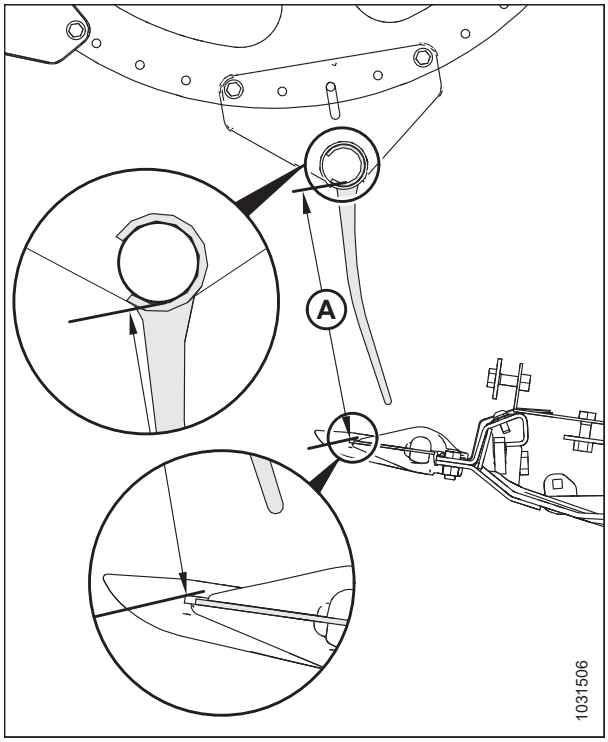


Figure 5.278: Finger Clearance

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.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

1. Park the header on level ground.
2. Shut down the engine, and remove the key from the ignition.

NOTE:

Parts hidden for clarity.

3. Set fore-aft position (A) to 98–118 mm from the bottom edge of front anchor support (B) to the edge of reel support (C).

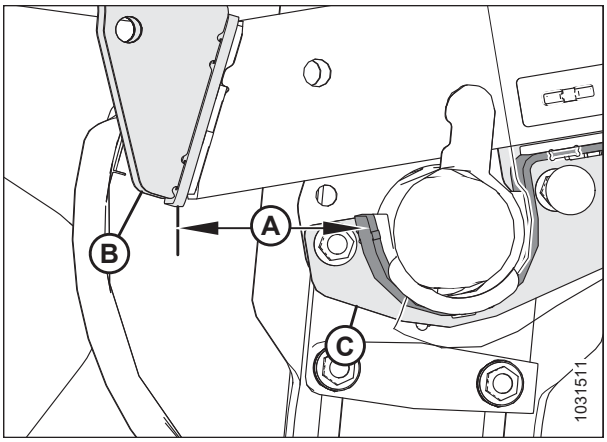


Figure 5.279: Fore-Aft Position

4. Move wing lock spring handles (A) down to UNLOCK position.

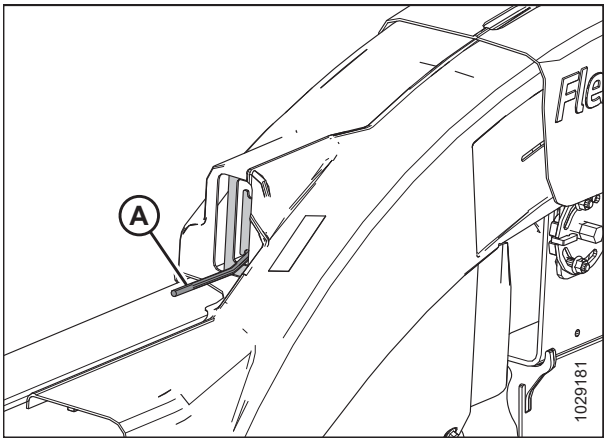


Figure 5.280: Wing Lock in UNLOCK Position

5. Raise header and place two 150 mm (6 in.) blocks (A) under the cutterbar, just inboard of the wing flex points.
6. Lower header fully, allowing it to flex into full frown mode.

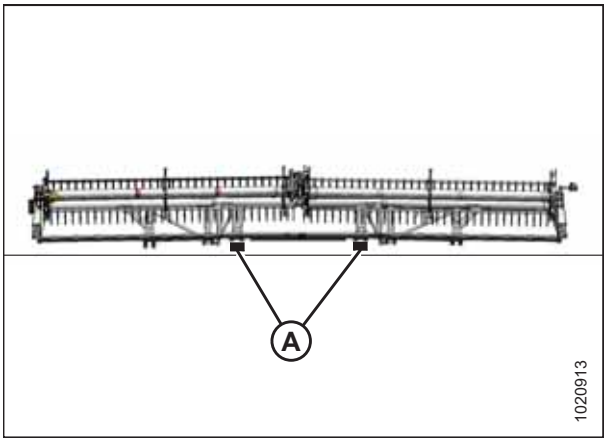


Figure 5.281: FlexDraper® Block Locations

7. Measure clearance (A) between points (B) and (C) at the ends of the reels. For clearance specifications, refer to *5.16.1 Reel Clearance to Cutterbar, page 528*.

   For measurement locations, refer to:

   - Figure *5.283, page 530* – double reel
   - Figure *5.284, page 531* – triple reel

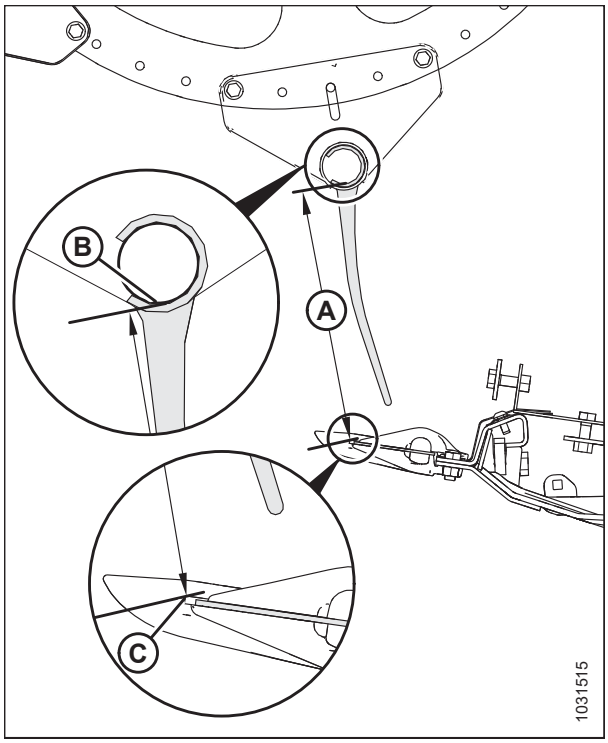


Figure 5.282: Wing Lock in UNLOCK Position

FlexDraper® Measurement location (A): Outer ends of the reels and at both hinge points (four places).

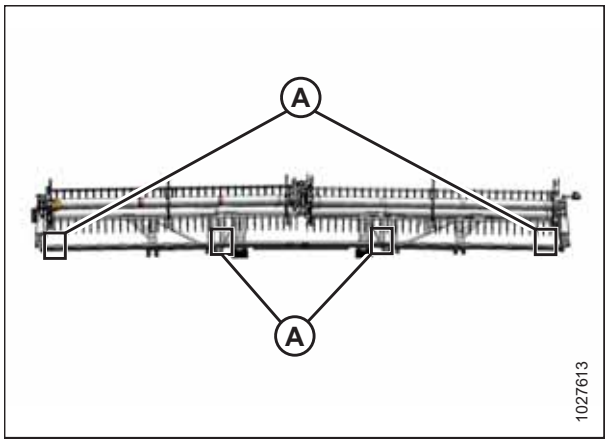


Figure 5.283: FlexDraper® Measurement Locations – Double Reel

Triple reel measurement location (A): Both ends of three reels (six places).

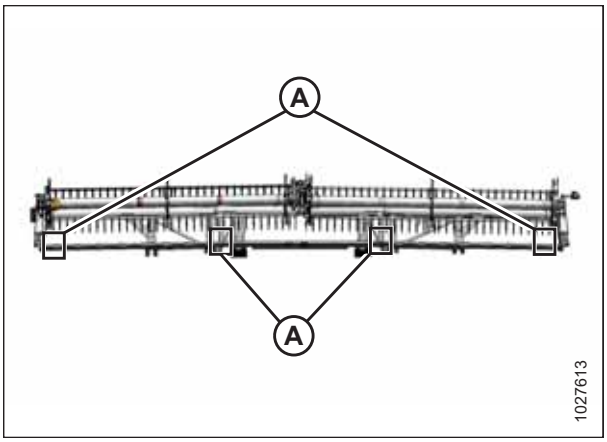


Figure 5.284: FlexDraper® Measurement Locations – Triple Reel

8. Adjust the reel clearance, if required. For instructions, refer to *Adjusting Reel Clearance, page 531*.

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.

Adjust the clearance at the outboard ends of the reel as follows:

1. Shut down the engine, and remove the key from the ignition.
2. Loosen bolt (A).
3. Adjust cylinder rod (B) as required:
   - To increase clearance to the cutterbar, turn cylinder rod (B) out of clevis to raise the reel.
   - To decrease clearance to the cutterbar, turn cylinder rod (B) into clevis to lower the reel.
4. Tighten bolt (A).
5. Repeat at opposite side of the header.

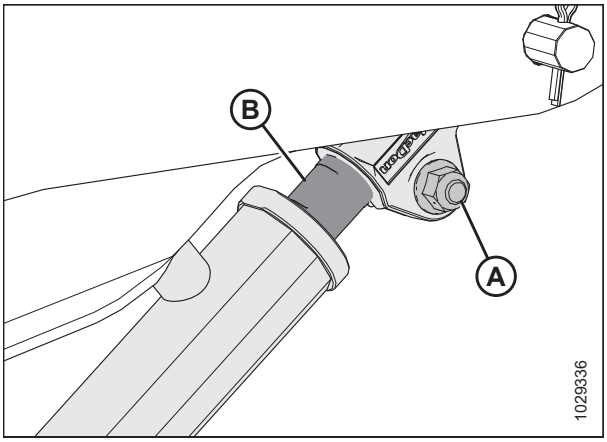


Figure 5.285: Outside Arm Cylinder

Adjust the clearance at the inboard ends of the reels as follows:

6. Loosen bolts (A).
7. Adjust cylinder rods (B) as required:

   IMPORTANT:

   Adjust both cylinder rods equally.

   - To increase clearance to the cutterbar, turn cylinder rods (B) out of clevis to raise the reel.
   - To decrease clearance to the cutterbar, turn cylinder rods (B) into clevis to lower the reel.

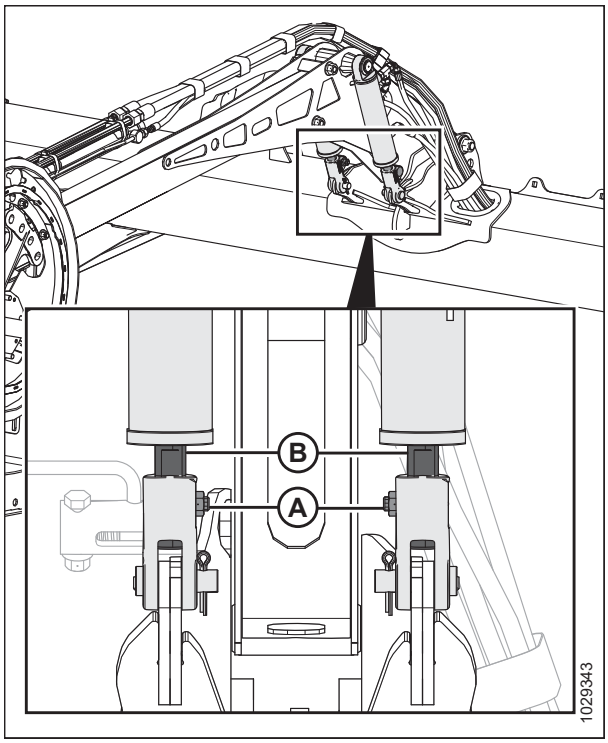


Figure 5.286: Center Arm Cylinders

8. Ensure measurement (A) is equal on both cylinders.
9. Verify that both mounting pins (B) cannot be rotated by hand. If one of the mounting pins is free to rotate, then adjust cylinder rod as required.
10. Tighten bolts (C).

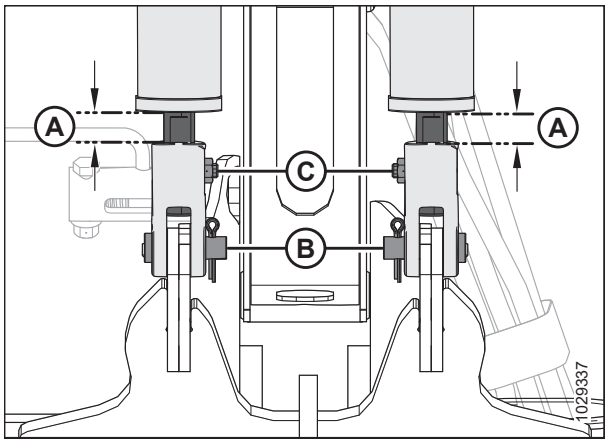


Figure 5.287: Center Arm Cylinders

11. Check measurements and, if necessary, repeat adjustment procedures.
12. Move the reel back to ensure the steel end fingers do not contact the deflector shields.
13. If contact occurs, adjust the reel upward to maintain the clearance at all reel fore-aft positions. If contact cannot be avoided after adjusting the reel, trim the steel end fingers to obtain proper clearance.
14. Periodically check for evidence of contact during operation, and adjust clearance as required.

5.16.2 Reel Frown

The reel is factory-set to frown (providing more clearance at the center of the reel than at the ends) to compensate for reel flexing.

Adjusting Reel Frown

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Position the reel over the cutterbar (between **4** and **5** on fore-aft position indicator [A]) to provide adequate clearance at all reel fore-aft positions. Bracket (B) is the position marker.
2. Record the measurement at each reel disc location for each reel tube.

   NOTE:

   Measure the frown profile before disassembling the reel for servicing so the profile can be maintained during reassembly.
3. Shut down the engine, and remove the key from the ignition.

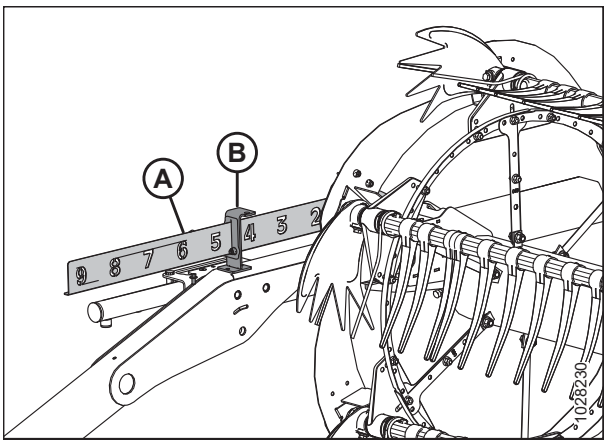


Figure 5.288: Fore-Aft Position Indicator

4. Start with the reel disc closest to the center of the header and proceed outward towards the ends, adjusting the header profile as follows:
   a. Remove bolts (A).
   b. Loosen bolt (B) and adjust arm (C) until the desired measurement is obtained between the reel tube and cutterbar.

      NOTE:

      Allow the reel tubes to curve naturally and position the hardware accordingly.
   c. Reinstall the bolts (A) in the aligned holes and tighten.

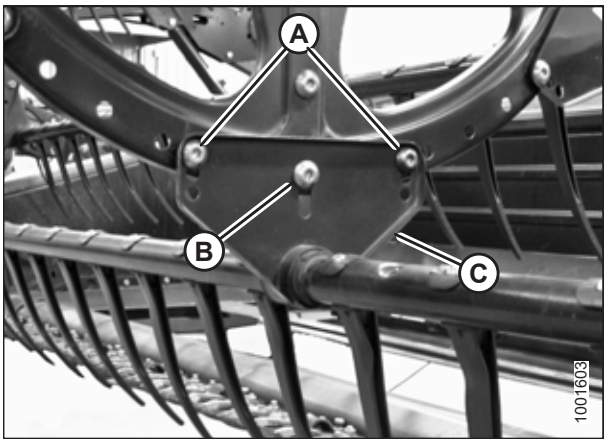


Figure 5.289: Center Reel Disc

5.16.3 Centering Reel

WARNING

To avoid bodily injury or death from unexpected startup of machine, always stop engine and remove key before adjusting machine.

1. Loosen bolt (A) on brace (B) at the center support arm.
2. Move the forward end of reel support arm (C) laterally as required to center the reel.
3. Tighten bolt (A) and torque to 457 Nm (337 lbf·ft).

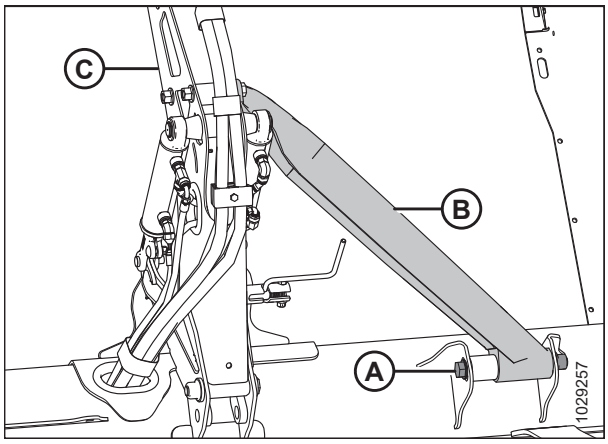


Figure 5.290: Center Support Arm

5.16.4 Reel Fingers

IMPORTANT:

Keep the reel fingers in good condition and straighten or replace them as necessary.

Removing Steel Fingers

WARNING

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

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 damaging it 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. For instructions, refer to *Removing Bushings from Reels, page 538*.

4. Attach tine tube arms (B) 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 *5, page 535* (remove tine tube arms [B] from the tine tubes as necessary).

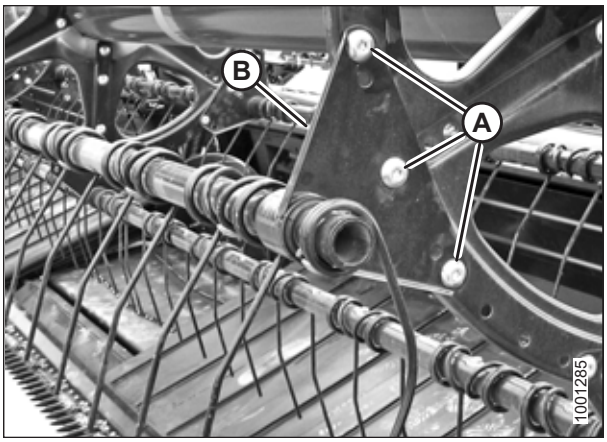


Figure 5.291: Tine Tube Arm

Installing Steel Fingers

WARNING

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

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.

NOTE:

This procedure assumes a finger has already been removed from the machine. For instructions about removing fingers, refer to *Removing Steel Fingers, page 534*.

1. Slide the new finger and tine tube arm (A) onto the end of the tube.
2. Install the tine tube bushings. For instructions, refer to *Installing Bushings onto Reels, page 543*.
3. Attach the fingers to the tine tube with bolts and nuts (B).

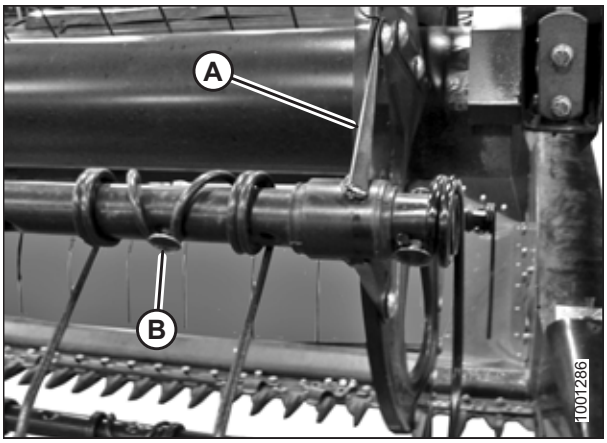


Figure 5.292: Tine Tube

Removing Plastic Fingers

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

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 screw (A) using a Torx® Plus 27 IP socket wrench.

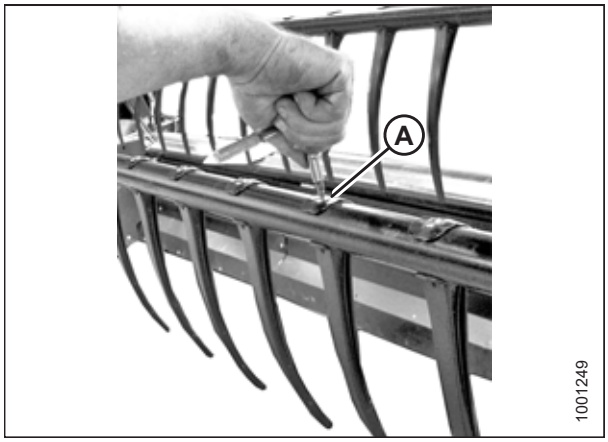


Figure 5.293: Removing Plastic Finger

4. Push the clip at the top of the finger back towards the reel tube as shown and remove the finger from the tube.

Figure 5.294: Removing Plastic Finger

Installing Plastic Fingers

WARNING

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

WARNING

To avoid bodily injury from fall of raised reel, always engage reel safety props before going under raised reel for any reason.

NOTE:

This procedure assumes a finger has already been removed from the machine. Refer to *Removing Plastic Fingers, page 536* for instructions on removing fingers.

1. Position the new finger on the rear of the tine tube. Engage the lug at the bottom of the finger in the lower hole in the tine tube.
2. Lift the top flange gently and rotate the finger as shown until the lug in the top of the finger engages the upper hole in the tine tube.

Figure 5.295: Installing Plastic 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 screw (A) using a Torx® Plus 27 IP socket wrench and torque to 8.5–9.0 Nm (75–80 lbf·in).

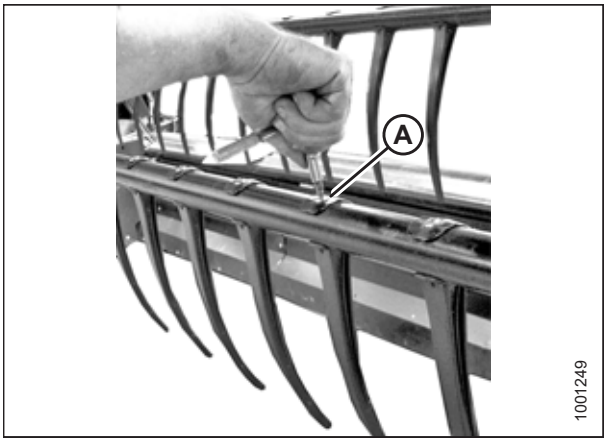


Figure 5.296: Installing Plastic Finger

5.16.5 Tine Tube Bushings

Removing Bushings from Reels

Bushing are located at the point where the reel tine connects to the reel disc.

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

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, proceed to Step *8, page 539*.

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 tine tube arm (B) to the disc.

   IMPORTANT:

   Note the hole locations in the arm and disc and ensure bolts (A) are reinstalled at the original locations.

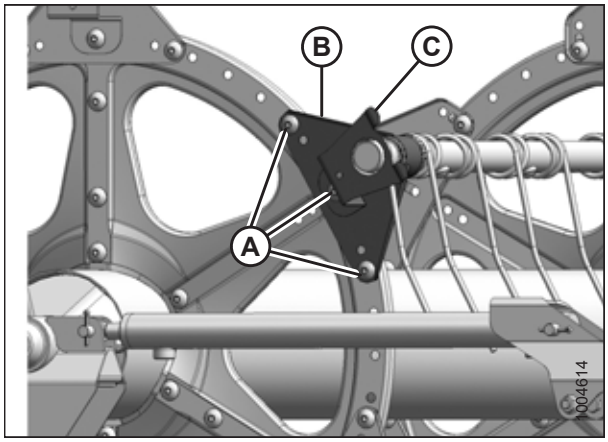


Figure 5.297: Tail End

5. Release bushing clamps (A) using a small screwdriver to separate the serrations. Pull the clamp off the tine tube.

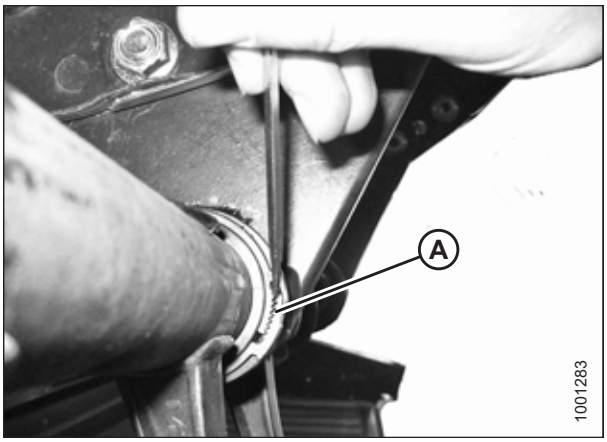


Figure 5.298: Bushing Clamp

6. Rotate tine tube arm (A) until clear of the disc and slide the arm inboard off of bushing (B).
7. Remove bushing halves (B). If required, remove the next steel or plastic finger, so the arm can slide off the bushing. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 536*
   - *Removing Steel Fingers, page 534*

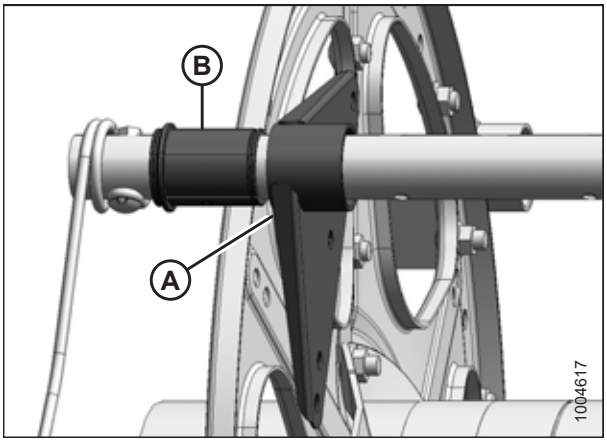


Figure 5.299: Bushing

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 to be moved through the disc arms to expose the bushing.

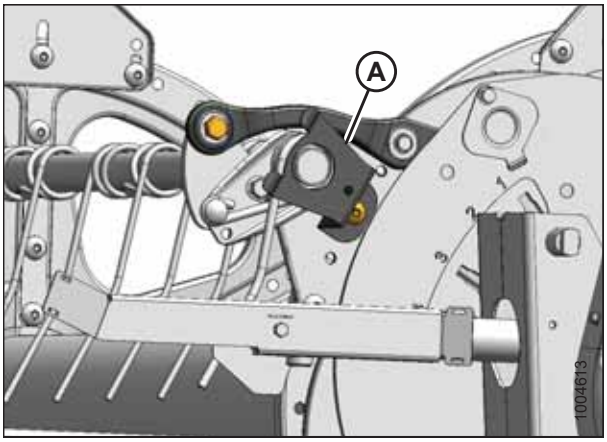


Figure 5.300: Cam End

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 bolts (A) securing tine tube arms (B) to the tail and center discs.

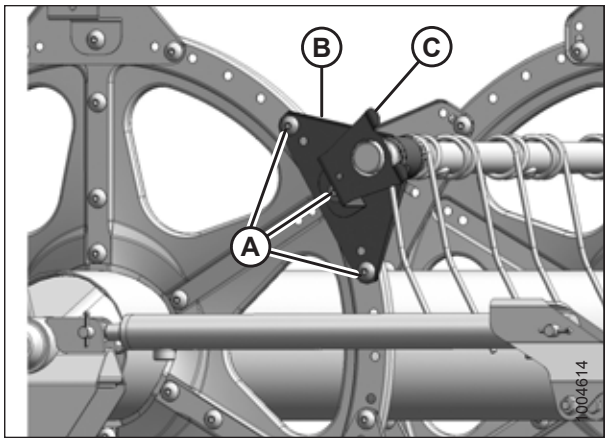


Figure 5.301: Tail End

Tine tube reinforcing kit (option)[55]

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 (A) require channel disconnection and two tine tubes (B) require only bushing clamp removal.

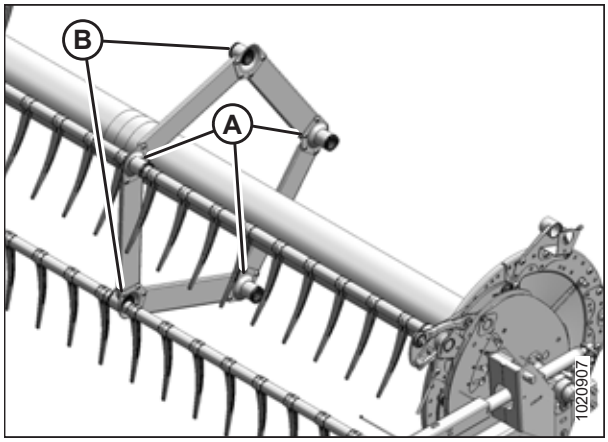


Figure 5.302: Tine Tube Supports

12. Remove bolt (A) from the cam linkage so tine tube (B) is free to rotate.

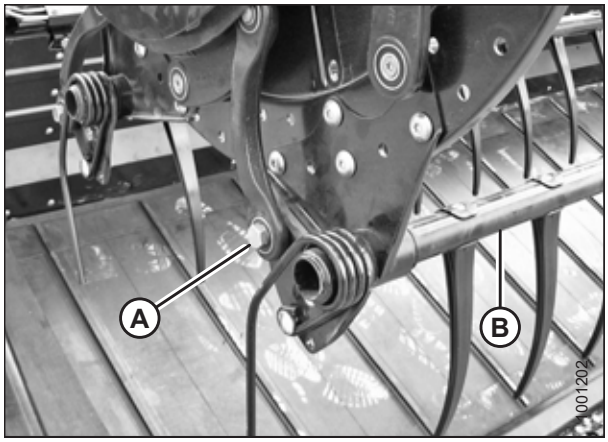


Figure 5.303: Cam End

55. 5-Bat Reel MD #B5825, 6-Bat Reel MD #B5826

13. Release bushing clamps (A) at the cam disc using a small screwdriver to separate the serrations. Move the clamps off the bushings.

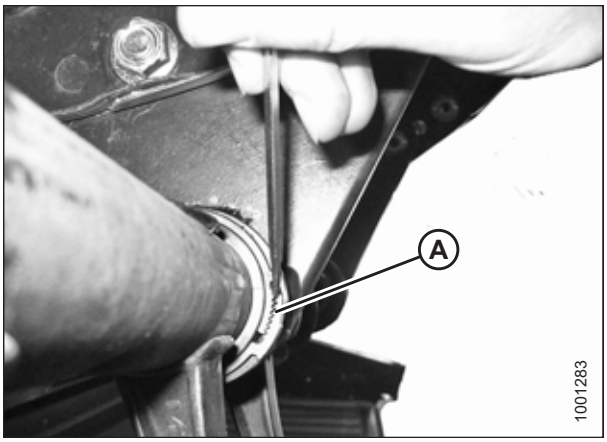


Figure 5.304: Bushing Clamp

14. Slide tine tube (A) outboard to expose bushing (B).
15. Remove bushing halves (B). If required, remove the next steel or plastic finger so the arm can slide off the bushing. Refer to the following procedures if necessary:
    - *Removing Plastic Fingers, page 536*
    - *Removing Steel Fingers, page 534*

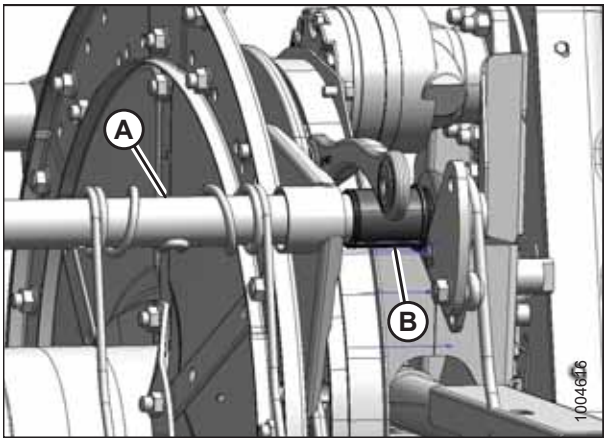


Figure 5.305: Cam End

Tine tube reinforcing kit bushings (option)

16. Locate support (A) that requires a new bushing.
17. Remove four bolts (B) securing channel (C) to support (A).
18. Remove screw (E) and remove finger (D) if it is too close to the support to allow access to the bushing. For instructions, refer to *Removing Plastic Fingers, page 536* or *Removing Steel Fingers, page 534*.

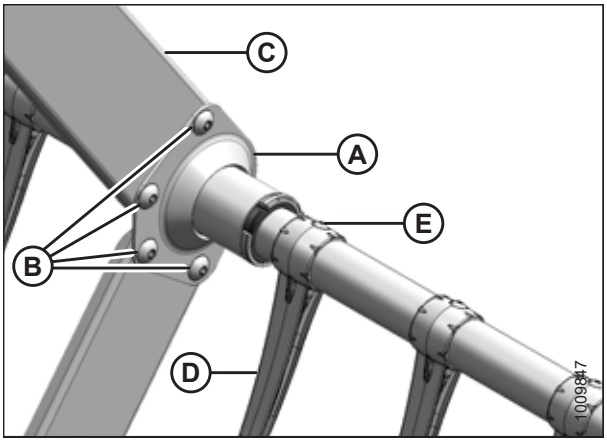


Figure 5.306: Tine Tube Support

19. Release bushing clamps (A) using a small screwdriver to separate the serrations.

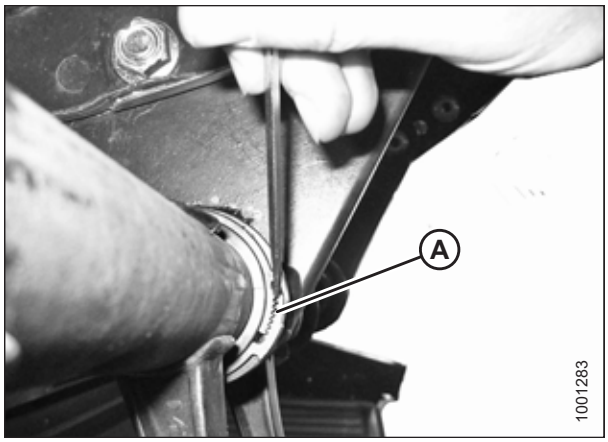


Figure 5.307: Bushing Clamp

20. Move clamps (A) off the bushings.

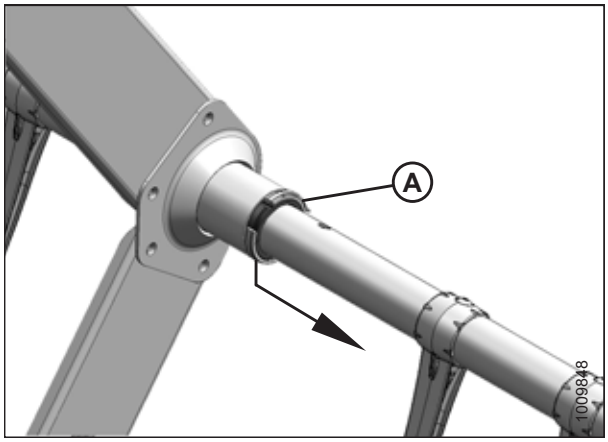


Figure 5.308: Tine Tube Reinforcing Kit Bushing Clamp (Option)

21. On each reel, there are three right-facing supports (A). Slide the support off bushing halves (B).

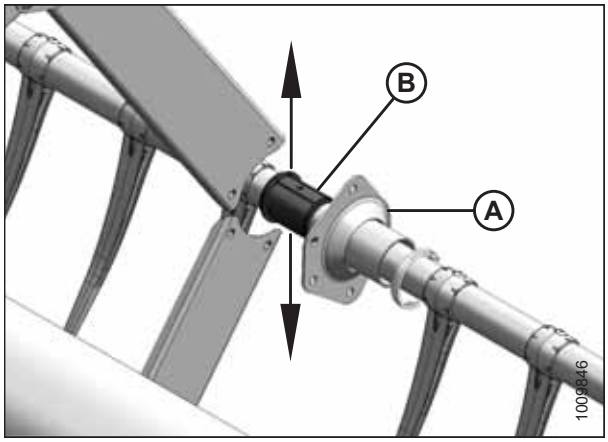


Figure 5.309: Tine Tube Reinforcing Kit Support (Option)

22. On each reel, there are two left-facing supports (A). Rotate the supports until the flanges clear the channels before moving them off bushing (B). Move the tube slightly away from the reel if necessary.
23. Remove bushing halves (B) from the tine tubes.

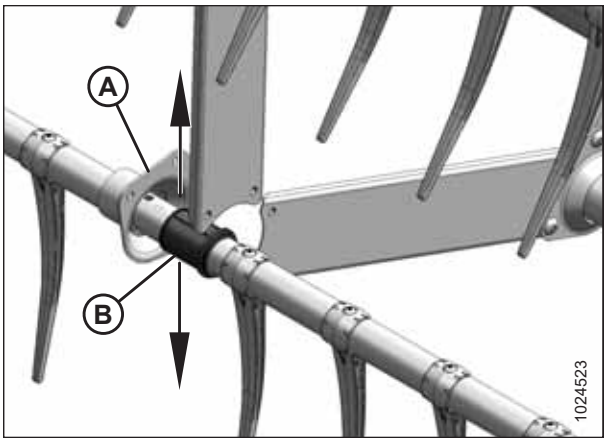


Figure 5.310: Tine Tube Reinforcing Kit Opposite Support (Option)

Installing Bushings onto Reels

NOTE:

This procedure assumes the steps for *Removing Bushings from Reels, page 538* have been completed.

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 or other components.

Use a pair of modified channel lock pliers (A) to install bushing clamps (C). Secure pliers in a vise and grind a notch (B) into the end of each arm to fit the clamp as shown.

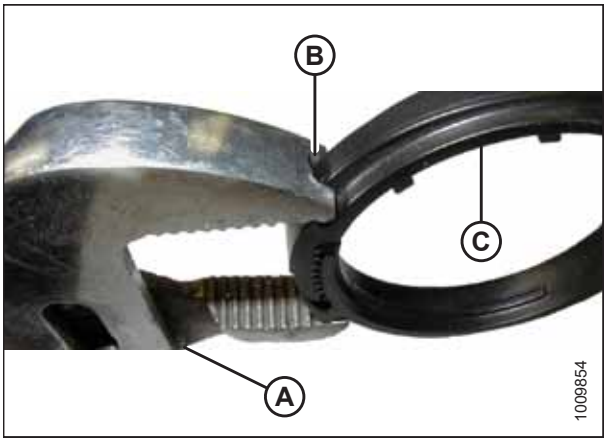


Figure 5.311: Modified Channel Lock Pliers

Cam end bushings

1. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
2. Slide tine tube (A) towards the tail end of the reel to insert bushing (B) into the tine tube arm. If the tine tube supports are installed, ensure the bushings at those locations slide into the support.
3. Reinstall the previously removed fingers. Refer to the following procedures as necessary:
   - *Removing Plastic Fingers, page 536*
   - *Removing Steel Fingers, page 534*

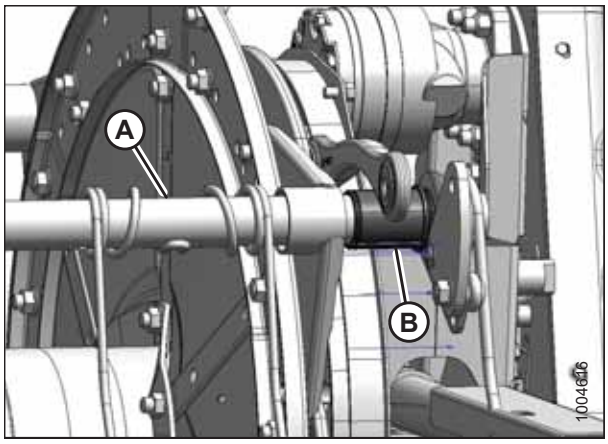


Figure 5.312: Cam End

4. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
5. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

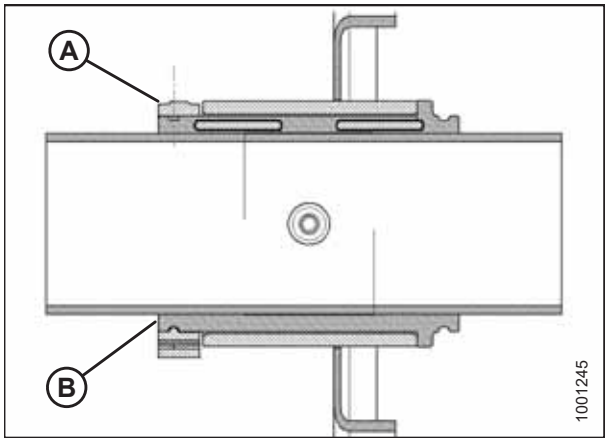


Figure 5.313: Bushing

6. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

   IMPORTANT:

   Overtightening clamp may result in breakage.

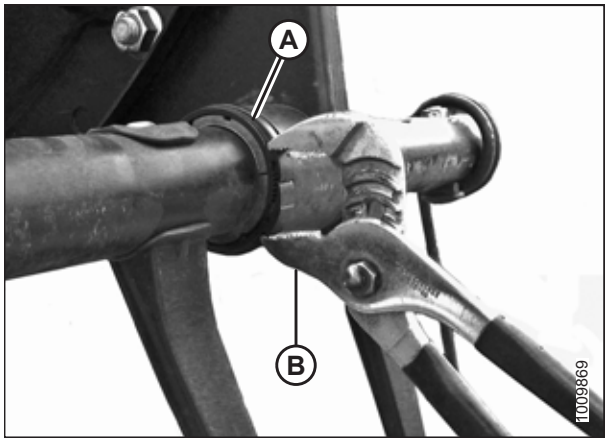


Figure 5.314: Installing Clamp

7. Line up tine tube (B) with the cam arm and install bolt (A). Torque bolt to 165 Nm (120 lbf·ft).

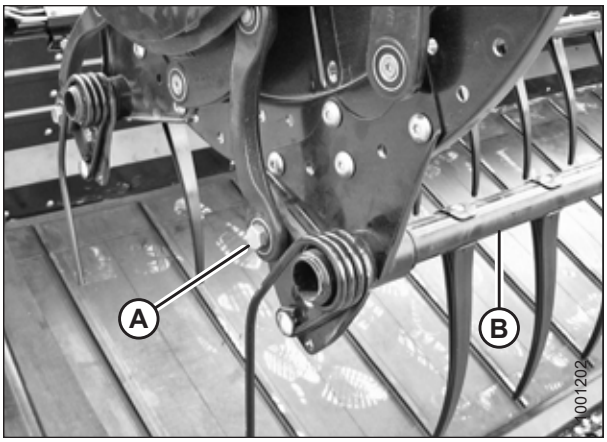


Figure 5.315: Cam End

8. Install bolts (A) securing tine tube arm (B) to the center disc.
9. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

   NOTE:

   There are no endshields on the center discs.

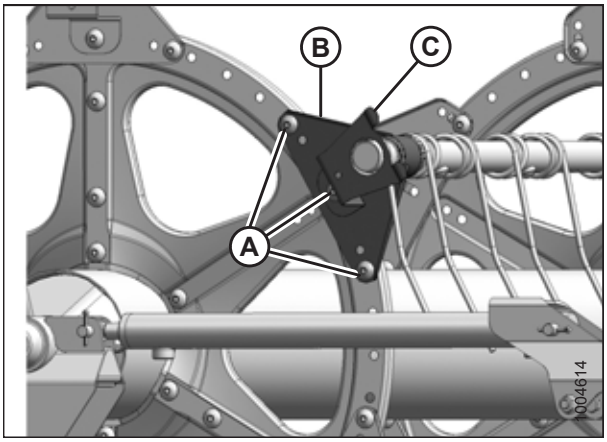


Figure 5.316: Tail End

10. Install endshield support (A) at the applicable tine tube location at the cam end.
11. Reinstall the reel endshields. For instructions, refer to *5.16.6 Reel Endshields, page 550*.

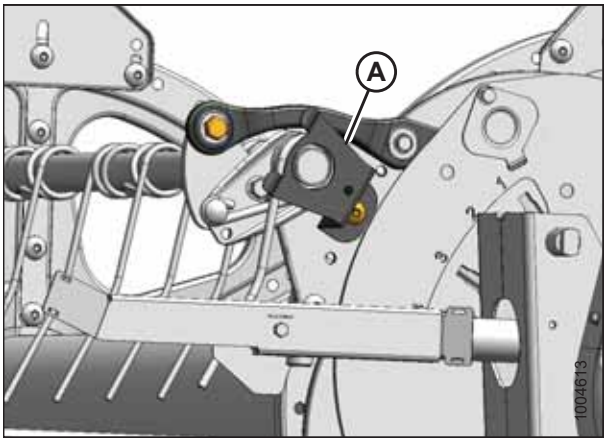


Figure 5.317: Cam End

Center disc and tail end bushings

12. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.
13. Slide tine tube (A) onto bushing (B) and position against the disc at the original location.
14. Reinstall the previously removed fingers. For instructions, refer to:
    - *Removing Plastic Fingers, page 536*
    - *Removing Steel Fingers, page 534*

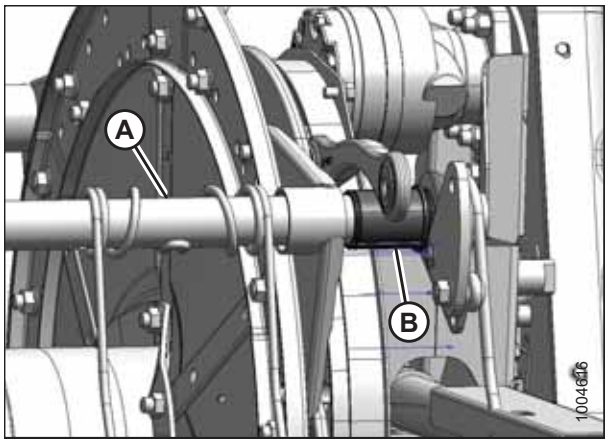


Figure 5.318: Cam End

15. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
16. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

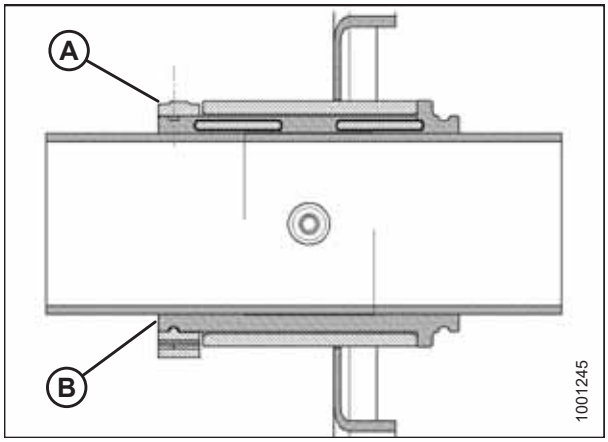


Figure 5.319: Bushing

17. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:

    Overtightening clamp may result in breakage.

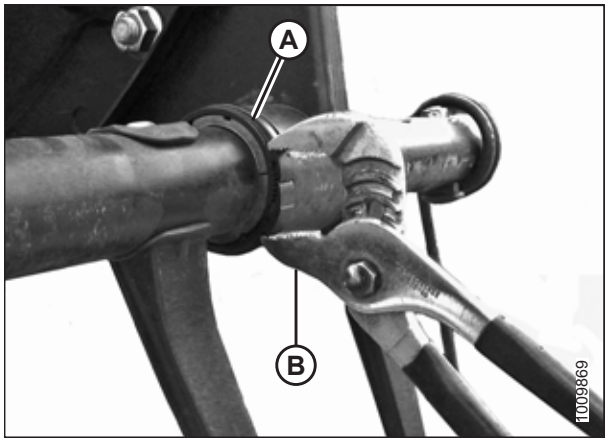


Figure 5.320: Installing Clamp

18. Install bolts (A) securing tine tube arm (B) to the center disc.
19. Install tine tube arm (B) and endshield support (C) to the tail end of the reel at the applicable tine tube location and secure with bolts (A).

    NOTE:

    There are no endshields on the center discs.

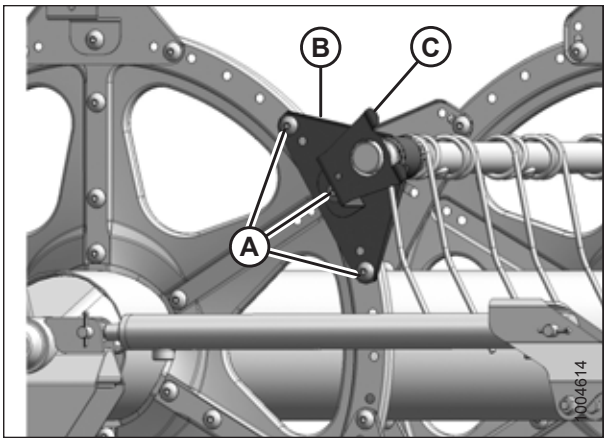


Figure 5.321: Tail End

Tine tube reinforcing kit (option)[56]

20. Position bushing halves (B) on tine tube (A) with the flangeless end adjacent to the tine tube arm, and position the lug in each bushing half into the hole in the tine tube.

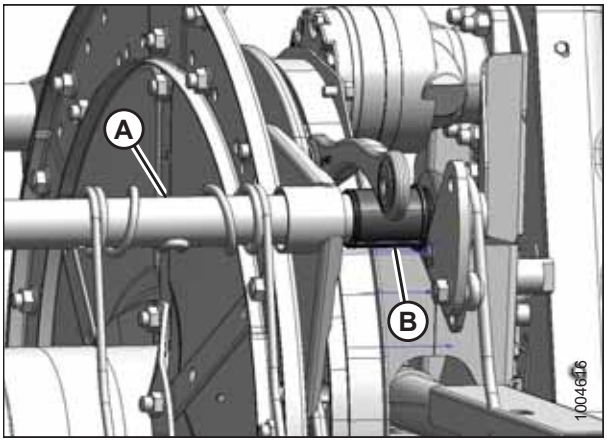


Figure 5.322: Cam End

21. On each reel, there are three right-facing supports (A). Slide the support onto bushing (B).

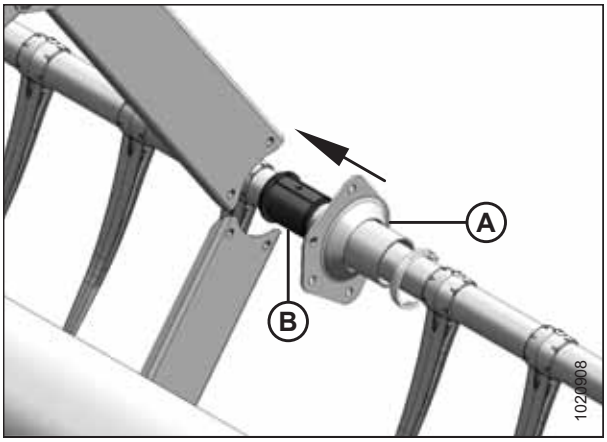


Figure 5.323: Tine Tube Reinforcing Kit Support (Option)

56. 5-bat reel (MD #B5825), 6-bat reel (MD #B5826).

22. On each reel, there are two left-facing supports (A). Rotate support (A) until its flanges clear channels (C) before moving the support onto bushing (B).

    NOTE:

    If necessary, move tine tube (D) slightly away from the reel to allow the support flange enough room to clear the channel.

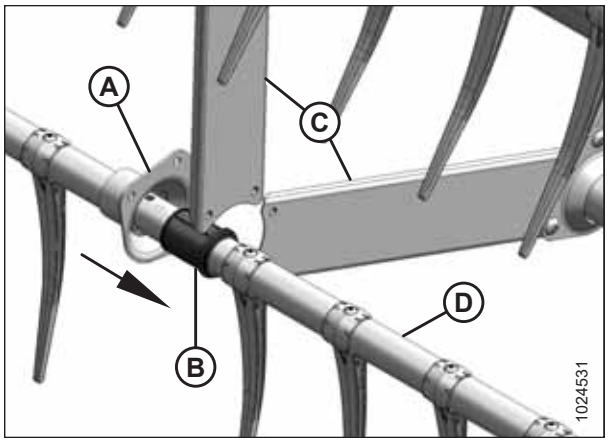


Figure 5.324: Tine Tube Reinforcing Kit Opposite Support (Option)

23. Install bushing clamp (A) onto the tine tube adjacent to the flangeless end of bushing (B).
24. Position clamp (A) on bushing (B) so the edges of the clamp and bushing are flush when the clamp is fit into the groove on the bushing and the lock tabs are engaged.

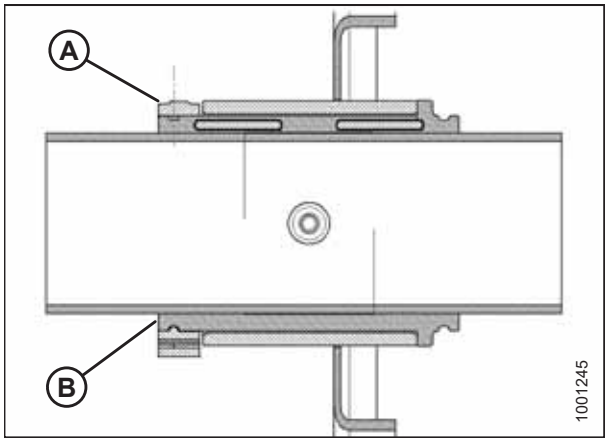


Figure 5.325: Bushing

25. Tighten clamp (A) using modified channel lock pliers (B) until finger pressure will **NOT** move the clamp.

    IMPORTANT:

    Overtightening clamp may result in breakage.

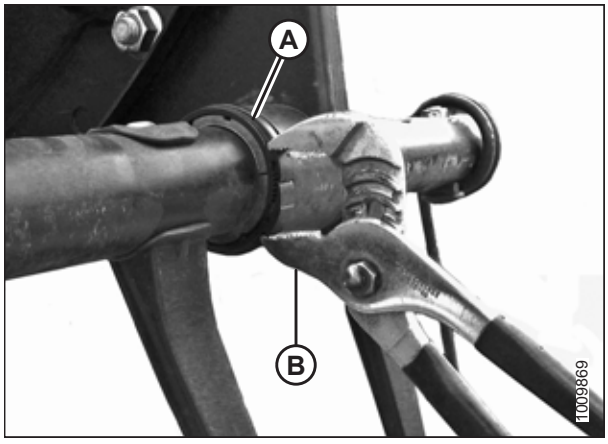


Figure 5.326: Installing Clamp

26. Reattach channels (C) to the three right-facing supports (A) on each reel with screws (B) and nuts. Torque screws to 43 Nm (32 lbf·ft).
27. Using screws (E), reinstall any fingers (D) that were previously removed. Refer to:
    - *Installing Plastic Fingers, page 537*
    - *Installing Steel Fingers, page 535*

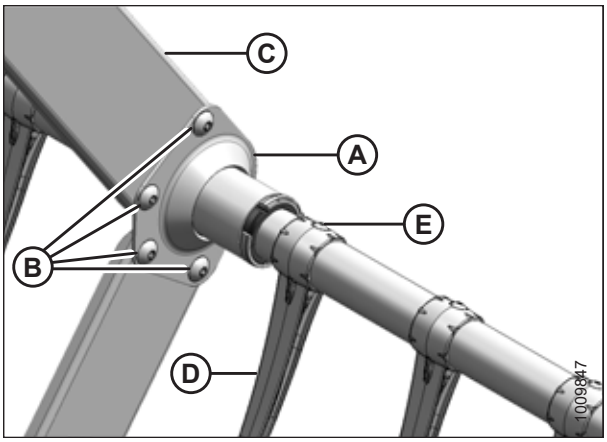


Figure 5.327: Tine Tube Reinforcing Kit Support (Option)

28. Reattach channels (C) to two left-facing supports (A) on each reel with screws (B) and nuts. Torque screws to 43 Nm (32 lbf·ft).
29. Using screws (E), reinstall any fingers (D) that were previously removed. For instructions, refer to:
    - *Installing Plastic Fingers, page 537*
    - *Installing Steel Fingers, page 535*

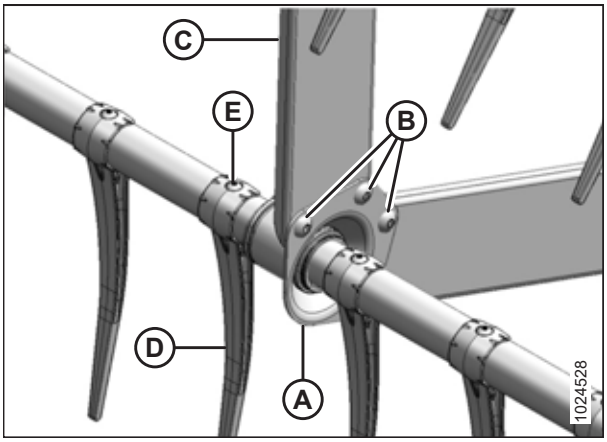


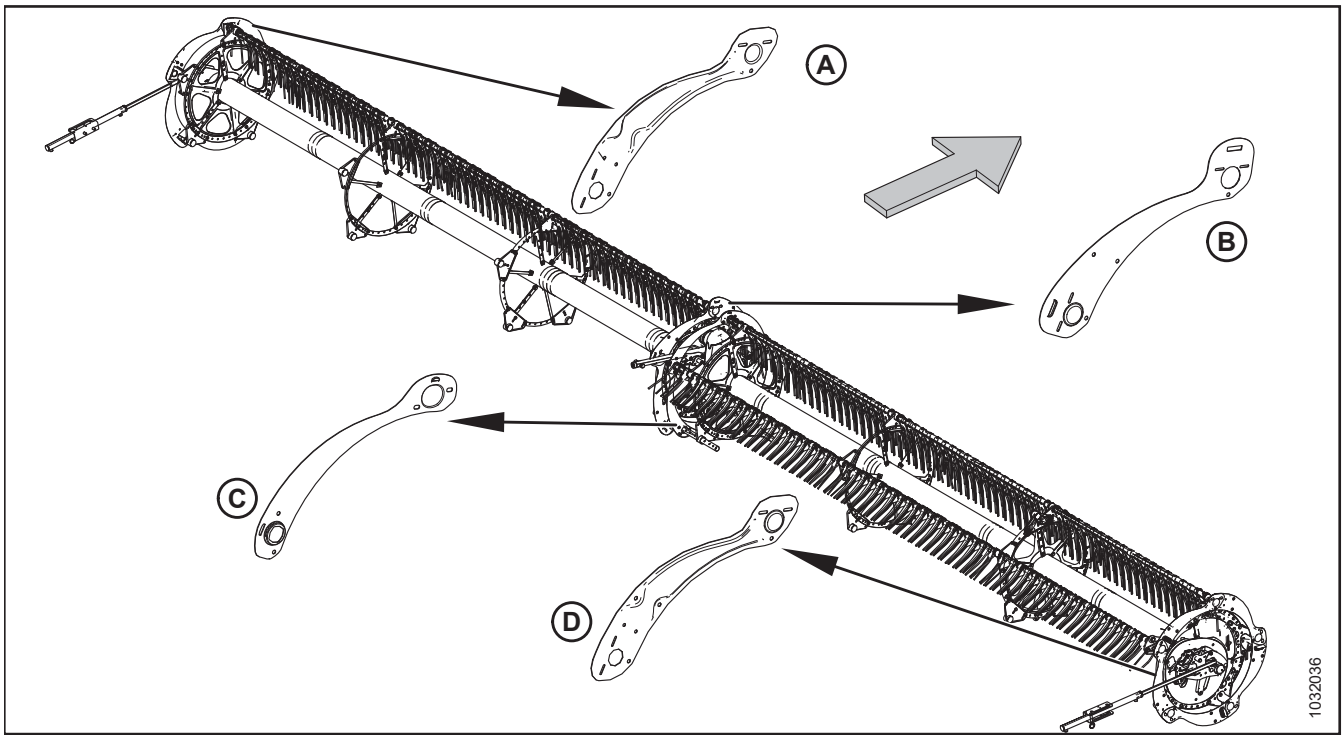
Figure 5.328: Tine Tube Reinforcing Kit Opposite Support (Option)

5.16.6 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.

There are four kinds of endshields. Ensure you are installing the correct endshield to the proper location as shown below.

Figure 5.329: Reel Endshields



A - Tail End, Outboard (MD #311695)
B - Cam End, Inboard (MD #273823)
C - Tail End, Inboard (MD #311621)
D - Cam End, Outboard (MD #311694)

NOTE:

Arrow points to the front of machine.

Replacing Reel Endshields at Outboard Cam End

This is applicable to the inboard and outboard cam end. Exceptions are noted where applicable. Be aware that the endshields are different for inboard and outboard cam end, refer to Figure *5.329, page 550* for reference.

⚠ WARNING

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

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

NOTE:

Arrow points to the front of machine.

3. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
4. Remove three bolts (B).

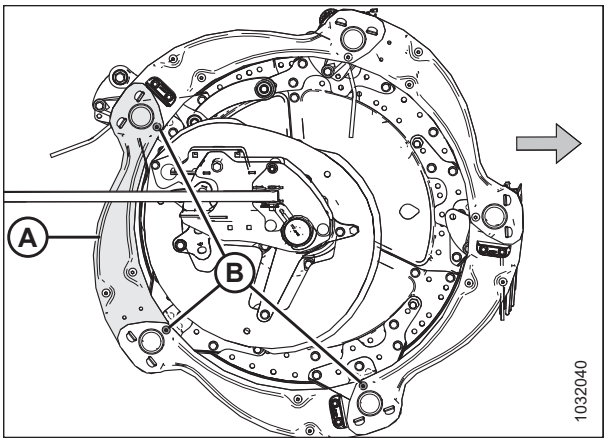


Figure 5.330: Reel Endshields – Outboard Cam End

5. Remove two screws (A), nuts, and outboard cam deflector. Retain for reinstallation.
6. Lift the end of reel endshield (B) off support (C).

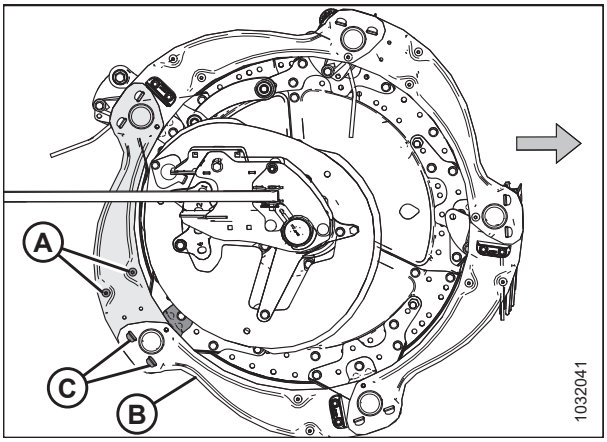


Figure 5.331: Reel Endshields – Outboard Cam End

7. Remove the reel endshield from supports (A).

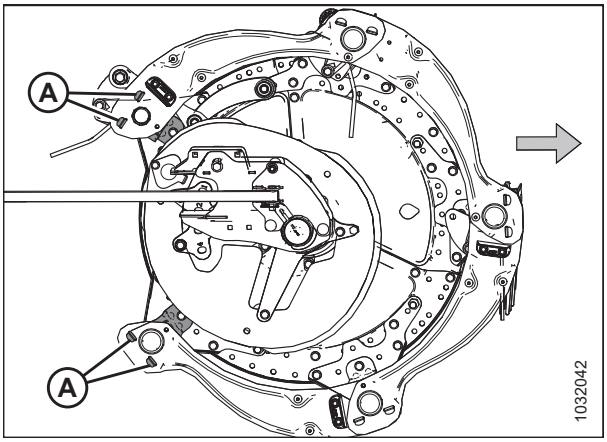


Figure 5.332: Reel Endshield Removed – Outboard Cam End

8. Slightly lift the end of existing reel endshield (A) off of support (B).
9. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
10. Position the other end of new reel endshield (C) onto other support (D) over existing reel endshield (E).
11. Reinstall three bolts (F).
12. Reinstall two screws (G), outboard cam deflector, and nuts (removed in Step *5, page 551*) on the new reel endshield.
13. Tighten all hardware.

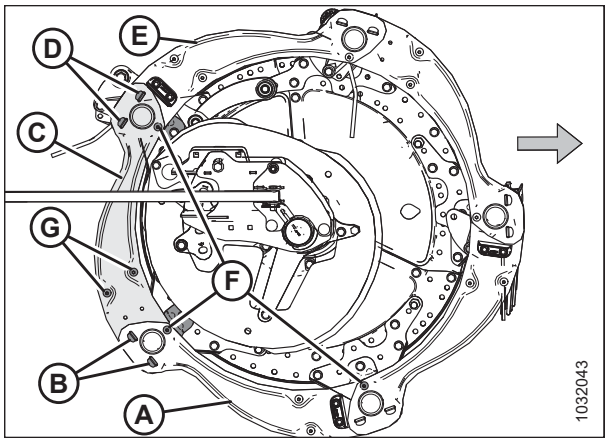


Figure 5.333: Reel Endshields – Outboard Cam End

Replacing Reel Endshields at Inboard Cam End

This is applicable to the inboard and outboard cam end. Exceptions are noted where applicable. Be aware that the endshields are different for inboard and outboard cam end, refer to Figure *5.329, page 550* for reference.

WARNING

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

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

NOTE:

Arrow points to the front of machine.

3. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
4. Remove three bolts (B).

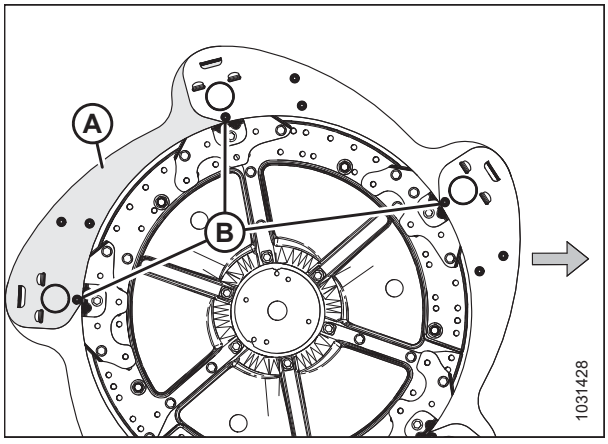


Figure 5.334: Reel Endshields – Inboard Cam End

5. Remove and retain two screws (A), cam deflector, and nuts from the reel endshield.
6. Lift the end of reel endshield (B) off support (C).

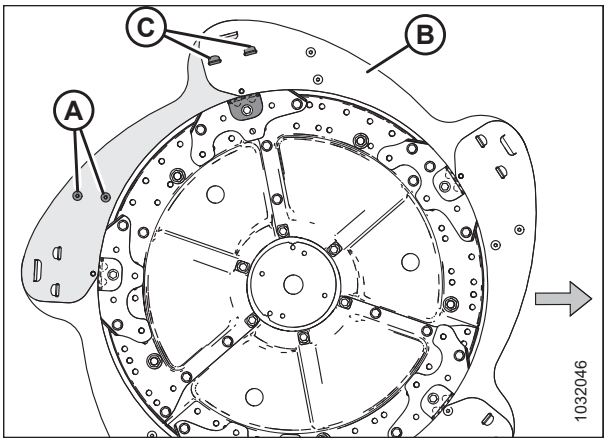


Figure 5.335: Reel Endshields – Inboard Cam End

7. Remove the reel endshield from supports (A).

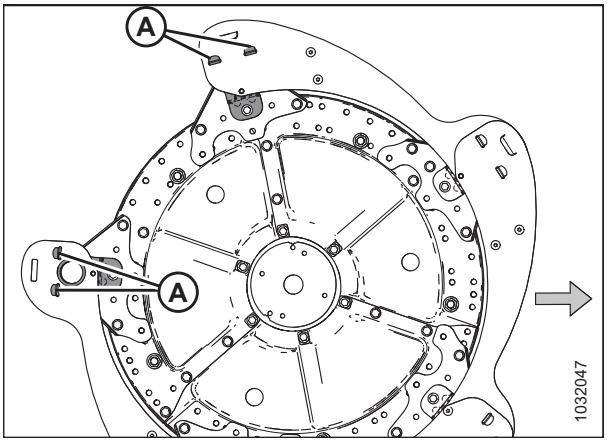


Figure 5.336: Reel Endshield Removed – Inboard Cam End

8. Slightly lift the end of existing reel endshield (A) off of support (B).
9. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
10. Position the other end of new reel endshield (C) onto other support (D) over existing reel endshield (E).
11. Reinstall three bolts (F).
12. Reinstall two screws (G), cam deflector, and nuts (removed in Step *5, page 553*) on the new reel endshield.
13. Tighten all hardware.

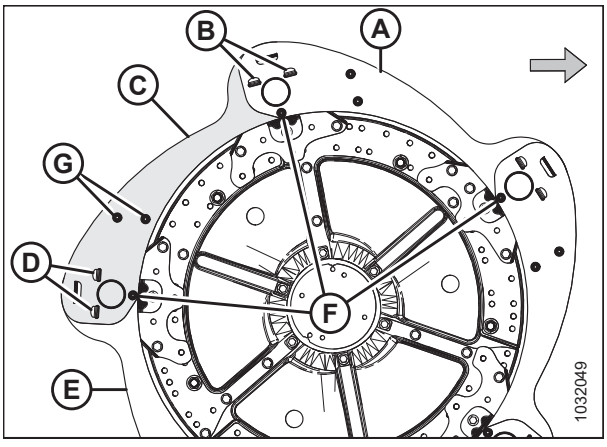


Figure 5.337: Reel Endshields – Inboard Cam End

Replacing Reel Endshields at Outboard Tail End

WARNING

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

1. Lower the header and reel.
2. Shut down the engine, and remove the key from the ignition.
4. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
5. Remove three bolts (B).

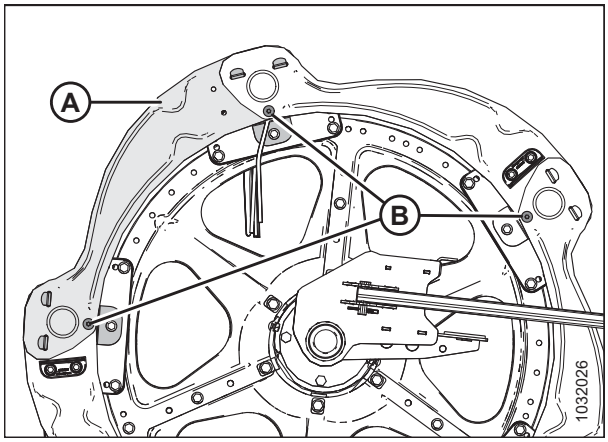


Figure 5.338: Reel Endshields – Outboard Tail End

6. Lift the end of reel endshield (A) off support (B).

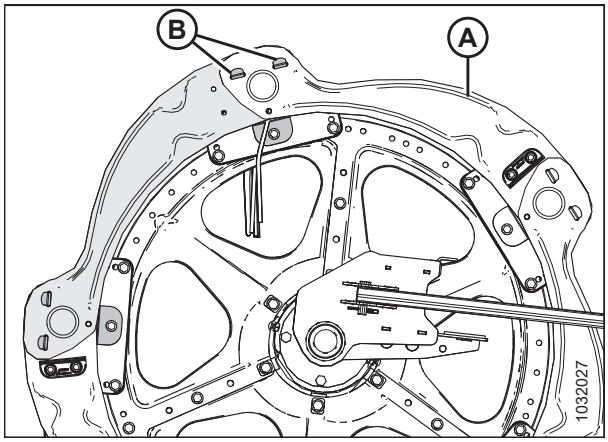


Figure 5.339: Reel Endshields – Outboard Tail End

7. Remove the reel endshield from supports (A).
8. Remove reel paddle if installed on reel endshield.

   NOTE:

   Reel end paddle (B) are installed alternately on reel endshields.

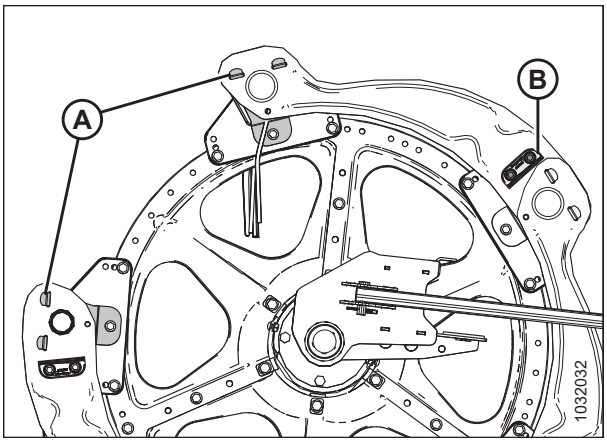


Figure 5.340: Reel Endshield Removed – Outboard Tail End

9. Slightly lift the end of reel endshield (A) off of support (B).
10. Position new reel endshield (C) onto support (B) under existing reel endshield (A).
11. Position the other end of new reel endshield (C) onto other support (E) over the existing reel endshield.
12. Reinstall three bolts (D).
13. Reinstall paddle (removed in Step *8, page 555*) onto the new reel endshield if previously installed.
14. Tighten all hardware.

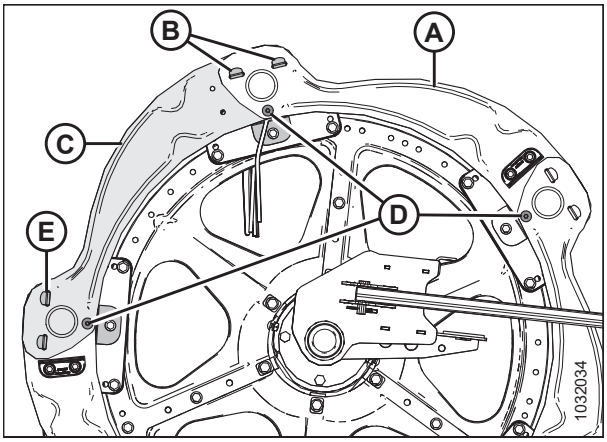


Figure 5.341: Reel Endshields – Outboard Tail End

Replacing Reel Endshields at Inboard Tail End

WARNING

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

IMPORTANT:

Reel endshields are different for inboard and outboard tail end of header. For illustration, refer to *5.329, page 550*.

1. Lower the header and reel.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the reel manually until reel endshield (A) requiring replacement is accessible.
4. Remove six M10 screws (B) and nuts. Retain for reinstallation.

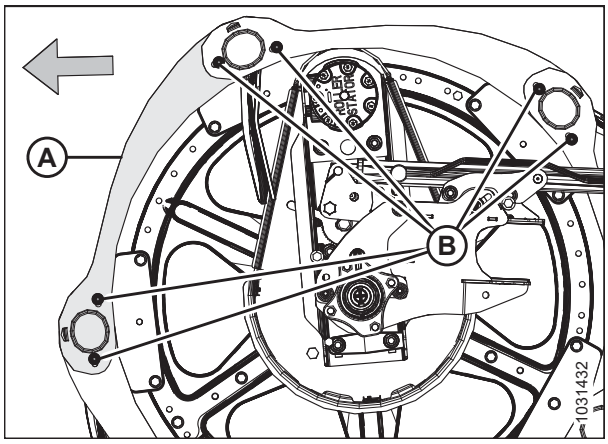


Figure 5.342: Reel Endshields – Inboard Tail End

5. Lift other endshield (A) to disengage the tab from endshield (B).
6. Lift the end of reel endshield (B) off endshield (C), and rotate endshield (B) downward.

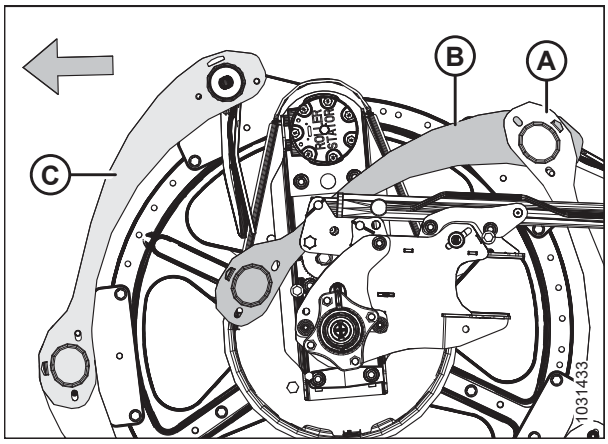


Figure 5.343: Reel Endshields – Inboard Tail End

7. Remove M10 bolt (A), nut (B), and end finger retainer (C) from tine tube that secure the bushing and tail end finger. Retain for reassembly.
8. Slide endshield bushing (D) to remove. Retain for reassembly.
9. Remove and discard damaged reel endshield (E).

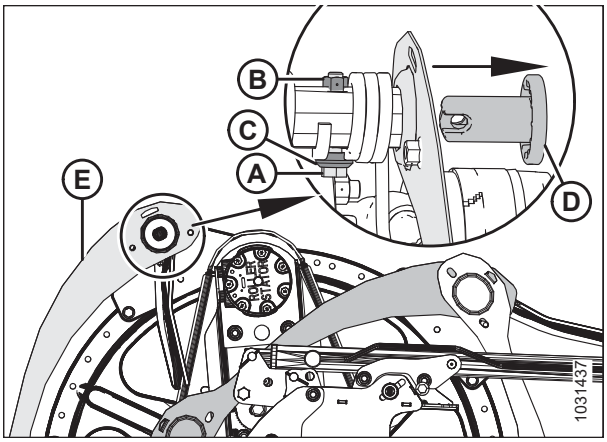


Figure 5.344: Reel Endshields – Inboard Tail End

10. Position new reel endshield (A) engaging tab to another endshield (B).
11. Position the other end of new endshield (A) on tine tube and secure with bushing (C).

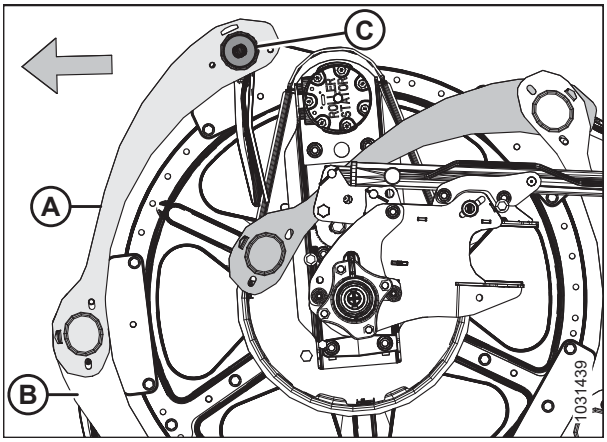


Figure 5.345: Reel Endshields – Inboard Tail End

12. Position tail end finger (A) as shown.
13. Secure tail end finger (A) and bushing (installed in Step *11, page 557*) with M10 bolt (B), end finger retainer (C), and nut (D).

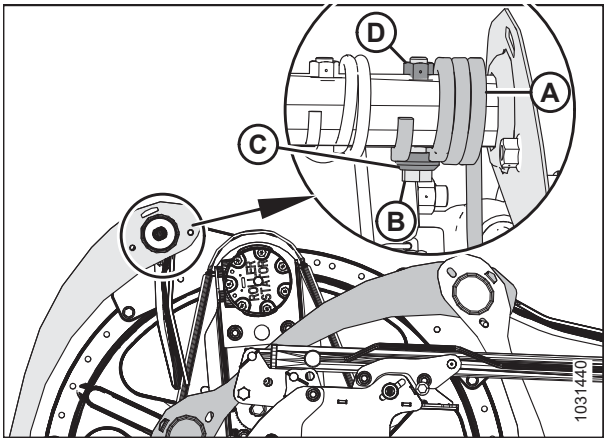


Figure 5.346: Reel Endshields – Inboard Tail End

14. Rotate reel endshield (A) upward and engage tabs (B) on both ends.
15. Secure reel endshields using six M10 screws and nuts (C).
16. Torque nuts (C) to 30–40 Nm (22–30 lbf·ft). Do **NOT** overtighten nut to prevent flattening of tube.

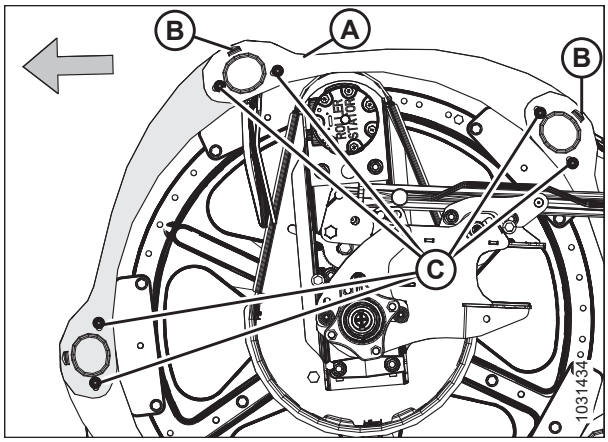


Figure 5.347: Reel Endshields – Inboard Tail End

Replacing Reel Endshield Supports

WARNING

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

NOTE:

All illustrations shown are from the outboard cam end.

1. Lower the header and reel.
2. Shut down the engine, and remove the key from the ignition.
3. Rotate the reel manually until the reel endshield support (A) requiring replacement is accessible.
4. Remove bolt (B) securing reel endshields to support (A).
5. Remove bolts (C) from support (A) and two adjacent supports.

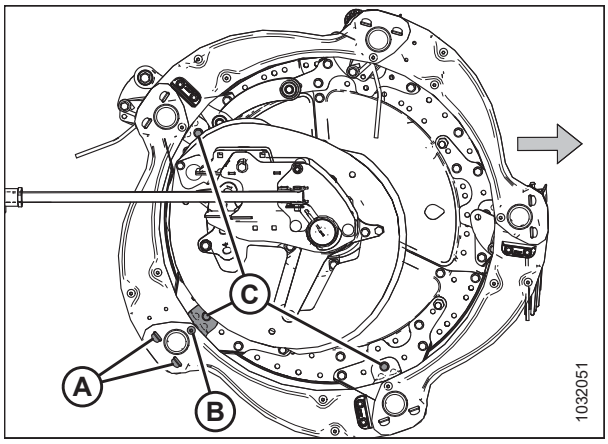


Figure 5.348: Reel Endshield Supports

6. Move reel endshields (A) and support (B) away from the tine tube, then remove support from endshields.
7. Insert tabs of new support (B) into the slots in reel endshields (A). Ensure the tabs engage both reel endshields.

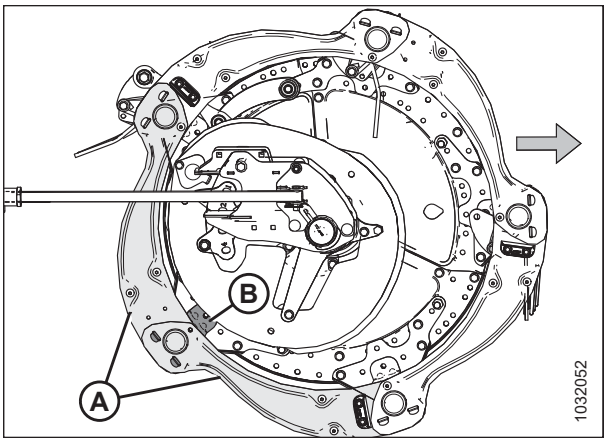


Figure 5.349: Reel Endshield Supports

8. Secure support (A) to the disc sector with bolt (B) and nut. Do **NOT** tighten.
9. Secure reel endshields (C) to support (A) with bolt (D) and nut. Do **NOT** tighten.
10. Reattach the other supports with bolts (E) and nuts.
11. Check the clearance between the tine tube and reel endshield support and adjust if necessary.
12. Torque nuts to 27 Nm (20 lbf·ft).

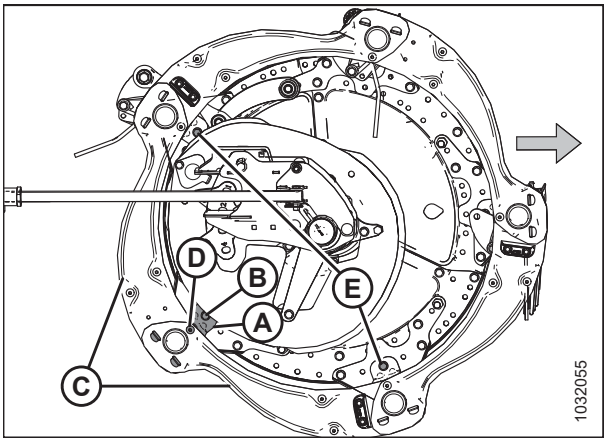


Figure 5.350: Reel Endshield Supports

5.17 Reel Drive

The hydraulically driven reel motor drives the chain that is attached between the reels on a double-reel header.

5.17.1 Reel Drive Chain Tension

Loosening Reel Drive Chain

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Lower the header fully.
2. Adjust the reel to full forward position for easier access to the work area.
3. Stop the engine, and remove the key from the ignition.
4. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
5. Remove hairpin (A) securing tool to bracket on left endsheet.
6. Remove tool (B), and reinstall hairpin to bracket.

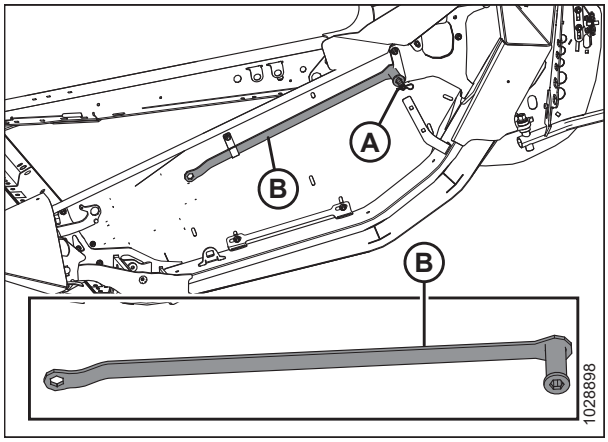


Figure 5.351: Wrench Storage Location

7. Push tension retainer (A) counterclockwise with your thumb, and hold in the unlocked position.
8. Place wrench (B) onto chain tensioner (C), and rotate wrench upwards to loosen the chain tension.

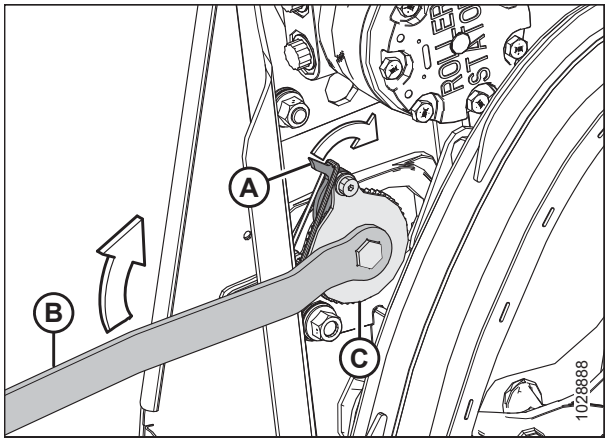


Figure 5.352: Reel Drive

Tightening Reel Drive Chain

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Lower the header fully.
2. Adjust the reel to full forward position for easier access to the work area.
3. Stop the engine, and remove the key from the ignition.
4. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
5. Remove hairpin (A) securing tool to bracket on left endsheet.
6. Remove tool (B), and reinstall hairpin to bracket.

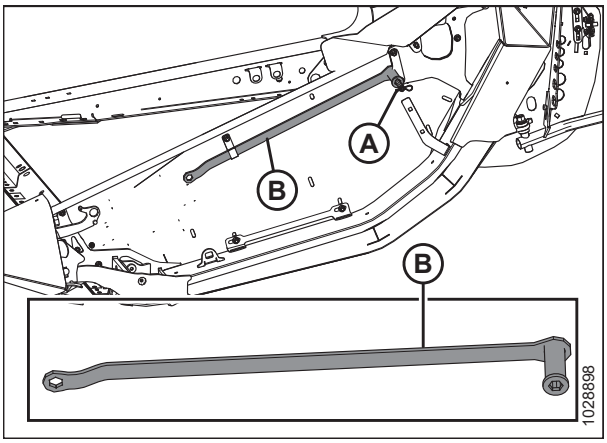


Figure 5.353: Wrench Storage Location

7. Place wrench (A) onto chain tensioner (B).
8. Rotate wrench (A) downward until the chain is tight.

   IMPORTANT:

   Do **NOT** overtighten. The sprockets will put excessive loads on an overtightened chain, causing the motor bearings and/or other components to fail.

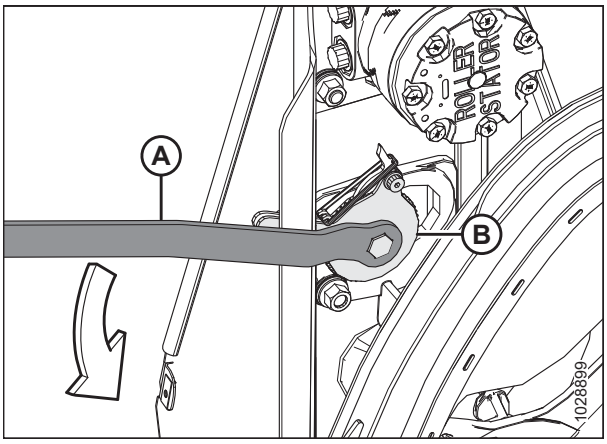


Figure 5.354: Reel Drive

9. Rotate the reel by hand to verify that the chain is still engaged properly on all teeth on lower sprocket (A). To prevent damage to components, ensure the chain does not get too tight as the reel is rotated.

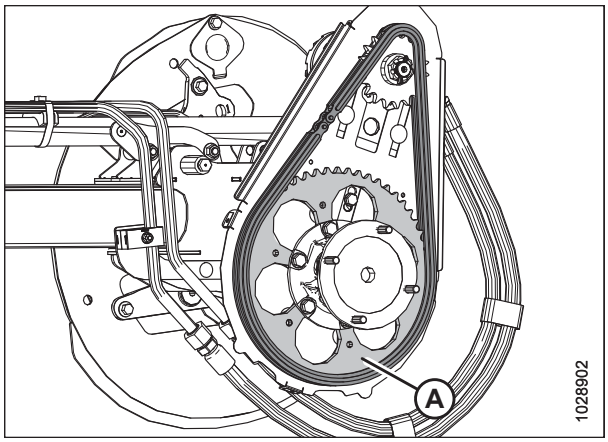


Figure 5.355: Reel Drive

5.17.2 Reel Drive Sprocket

The reel drive sprocket is attached to the motor.

Removing Reel Drive Sprocket

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Loosen reel drive chain (A). For instructions, refer to *Loosening Reel Drive Chain, page 560*.
4. Remove reel drive chain (A) from reel drive sprocket (B).

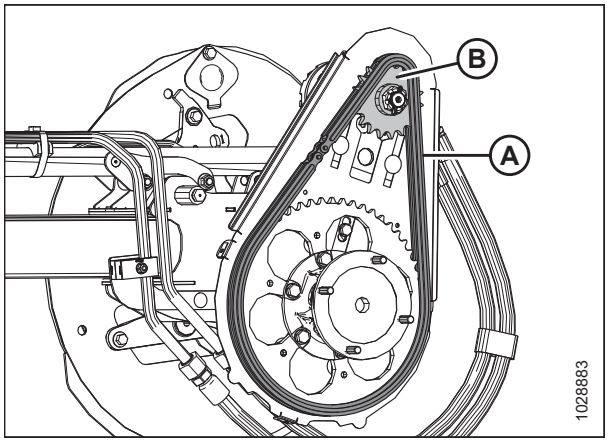


Figure 5.356: Reel Drive Sprocket

5. Remove cotter pin and slotted nut (A) from the motor shaft.
6. Remove reel drive sprocket (B). Ensure the key remains in the shaft.

   IMPORTANT:

   To avoid damaging the motor, use a puller if the drive sprocket (B) does not come off by hand. Do **NOT** use a pry bar and/or hammer to remove the drive sprocket.

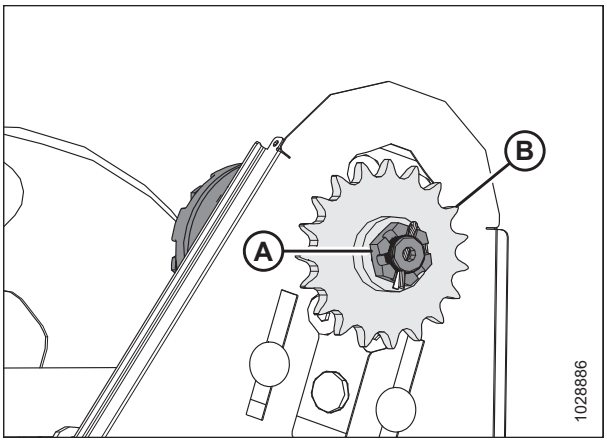


Figure 5.357: Reel Drive Sprocket

Installing Reel Drive Sprocket

WARNING

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

1. Align the keyway in sprocket (B) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure with slotted nut (A).
2. Torque slotted nut (A) to 54 Nm (40 lbf·ft).
3. Install the cotter pin. If necessary, tighten slotted nut (A) to the next slot to install the cotter pin.

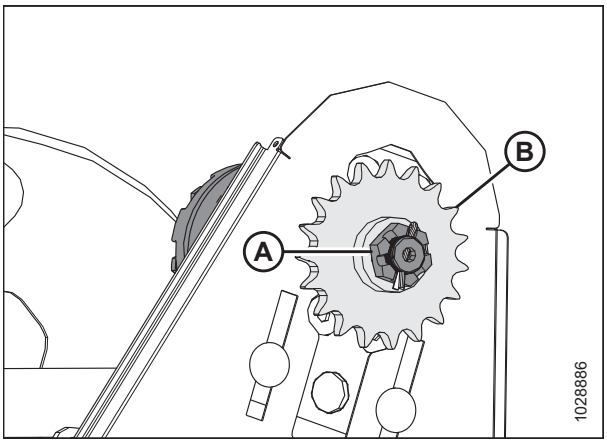


Figure 5.358: Reel Drive

4. Install drive chain (A) onto drive sprocket (B).
5. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 561*.
6. Reinstall the reel drive cover. For instructions, refer to *Tightening Reel Drive Chain, page 561*.

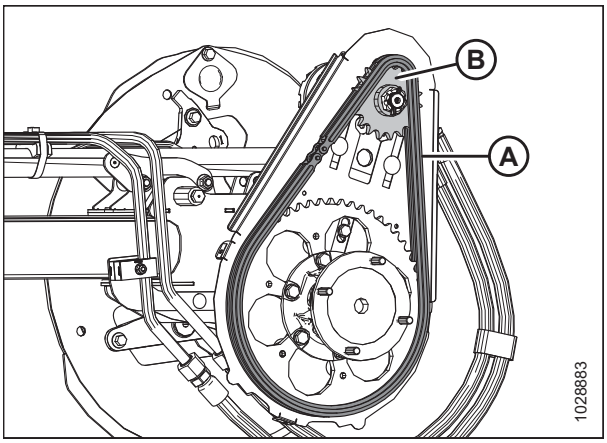


Figure 5.359: Reel Drive

5.17.3 Double-Reel or Triple Reel Drive U-Joint

The double-reel drive U-joint allows each reel to move independently of the other.

Lubricate the U-joint according to the specifications. For instructions, refer to *5.3 Lubrication and Servicing, page 390*.

Replace the U-joint if severely worn or damaged. For instructions, refer to *Removing Double-Reel or Triple Reel Drive U-Joint, page 564*.

Removing Double-Reel or Triple Reel Drive U-Joint

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Support the inboard end of the right reel with a front end loader and nylon slings (A) or equivalent lifting devices.

   IMPORTANT:

   To avoid damaging or denting the center tube, support the reel as close to the end disc as possible.

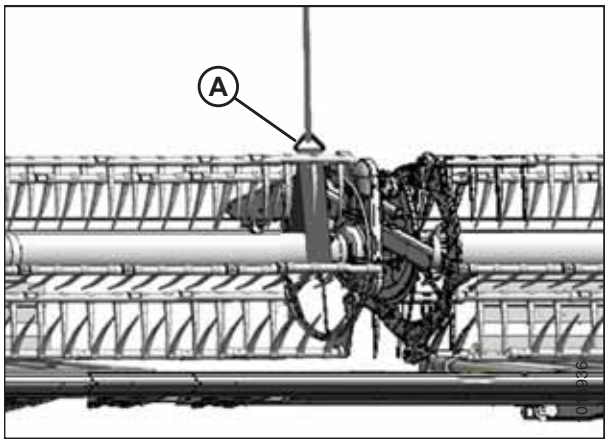


Figure 5.360: Supporting Reel

4. Remove six bolts (A) attaching U-joint flange (B) to driven sprocket (C).
5. Remove the U-joint.

   NOTE:

   It may be necessary to move the right reel sideways so that the U-joint can clear the tube.

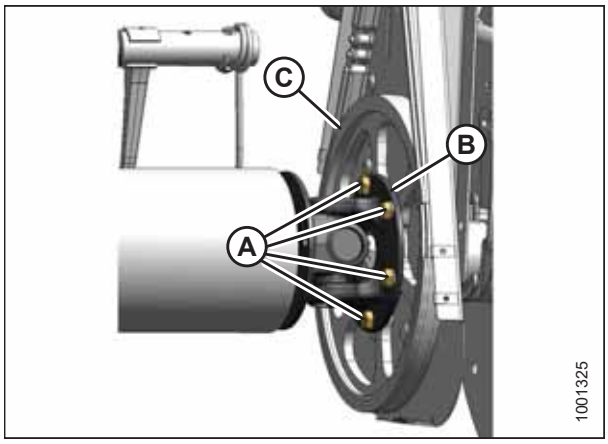


Figure 5.361: U-Joint

Installing Double-Reel or Triple Reel U-Joint

1. Position U-joint flange (B) onto driven sprocket (C) as shown. Install six bolts (A) and hand-tighten. Do **NOT** torque the bolts.

   NOTE:

   Only four bolts (A) are shown in the illustration at right.

   NOTE:

   It may be necessary to move the right reel sideways so that the U-joint can clear the reel tube.

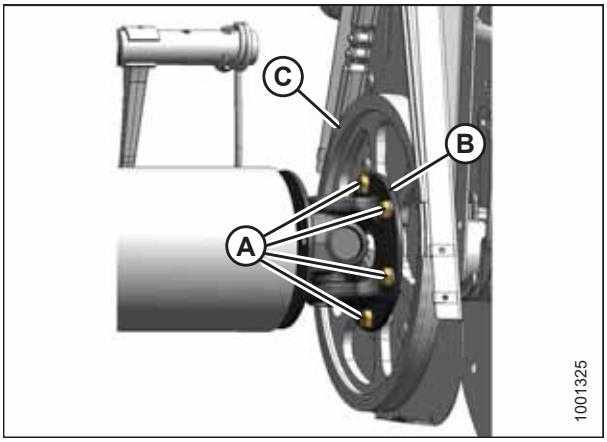


Figure 5.362: U-Joint

2. Position the right 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 medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure in flange with lock washers.
5. Torque to 102–115 Nm (75–85 lbf·ft).

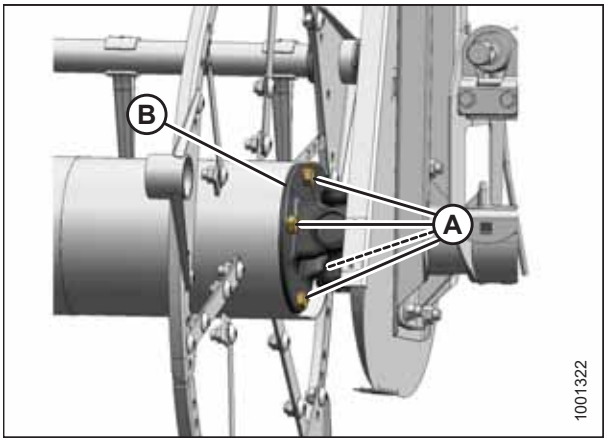


Figure 5.363: U-Joint

6. Remove sling (A) from the reel.
7. Install the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 39*.

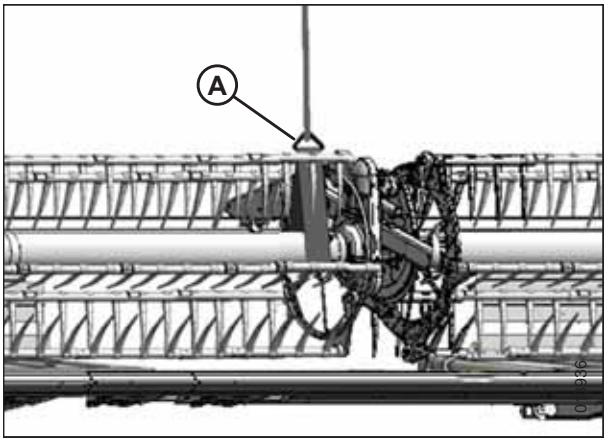


Figure 5.364: Supporting Reel

5.17.4 Reel Drive Motor

The reel drive motor is used on the reel drive system on single-reel and double-reel draper headers. This motor does not require regular maintenance or servicing. If problems occur with the motor, remove it and have it serviced by your MacDon Dealer.

Removing Reel Drive Motor

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 560*.
3. Remove the drive sprocket. For instructions, refer to *Removing Reel Drive Sprocket, page 562*.
4. Mark hydraulic lines (A) and their locations in motor (B) to ensure correct reinstallation.

   NOTE:

   Before disconnecting the hydraulic lines, clean the motor's ports and exterior surfaces.
5. Disconnect hydraulic lines (A) at motor (B). Cap or plug open ports and lines.

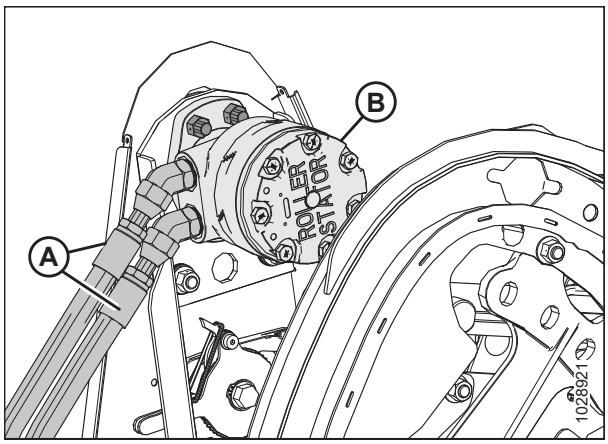


Figure 5.365: Reel Motor and Hoses

6. If countersunk screws (B) are not accessible through the openings in the chain case, loosen the mounting hardware on motor mount (A), and slide the motor mount up or down until the screws are accessible.
7. Remove four countersunk screws (B), and remove motor (C).
8. If the motor is being replaced, remove the hydraulic fittings from the old motor and install them in the new motor using the same orientations.

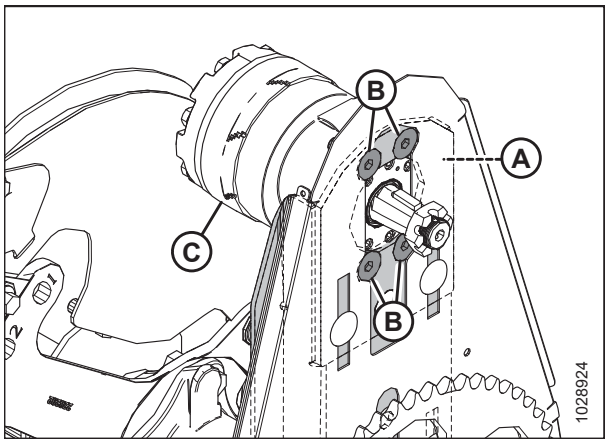


Figure 5.366: Reel Drive Motor Mounting Screws

Installing Reel Drive Motor

1. If mounting holes (B) are not accessible through the openings in the chain case, loosen the mounting hardware on motor mount (A), and slide the motor mount up or down as required.

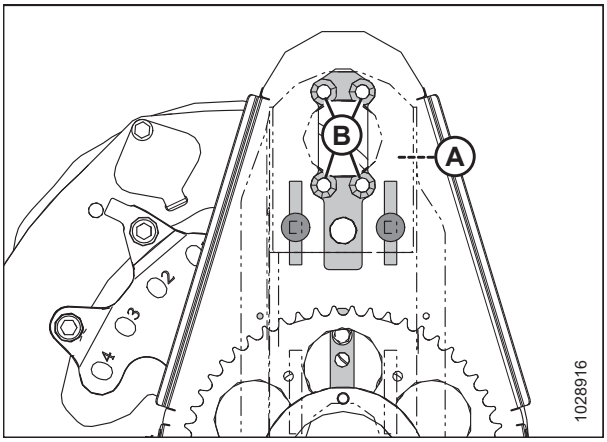


Figure 5.367: Reel Drive Motor Mounting Holes

2. Attach motor (A) to motor mount (B) with four M12 x 40 mm countersunk screws and nuts (C).
3. If installing a new motor, install the hydraulic fittings (not shown) from the original motor.

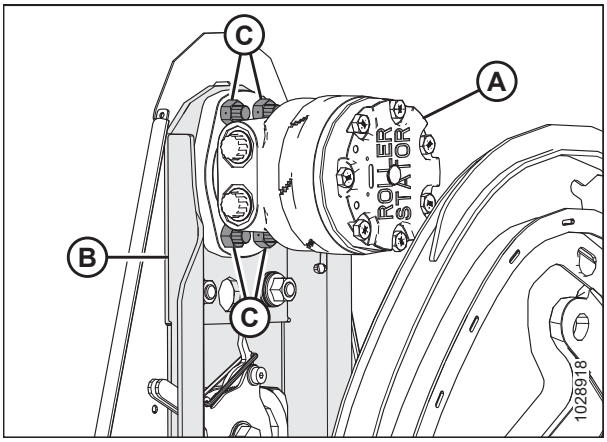


Figure 5.368: Reel Drive Motor

4. Align the keyway in sprocket (B) with the key on the motor shaft, and slide the sprocket onto the shaft. Secure with slotted nut (A).
5. Torque slotted nut (B) to 54 Nm (40 lbf·ft).
6. Install the cotter pin. If necessary, tighten slotted nut (A) to the next slot to install the cotter pin.

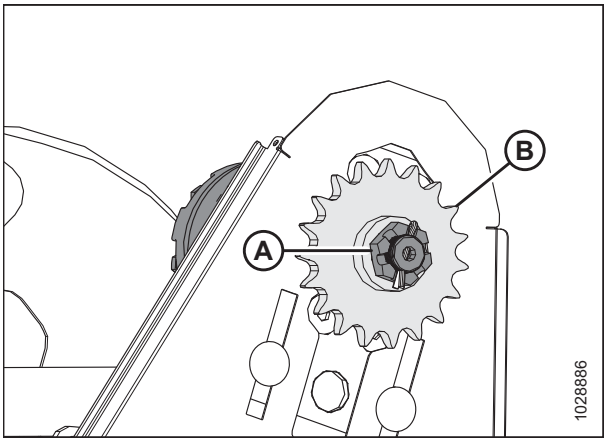


Figure 5.369: Reel Drive

7. Install drive chain (A) onto drive sprocket (B).

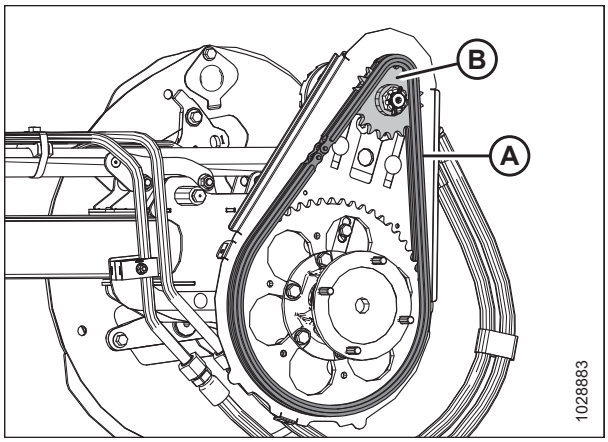


Figure 5.370: Reel Drive

8. If mounting hardware (A) was loosened for this procedure, ensure there are three stacked Belleville washers per bolt (B) before retightening.
9. Orient the Bellville washers so that the outer edge of first washer (C) is against the casting, and the outer edges of the next two washers (D) are facing each other.
10. Tighten nuts (A) until they bottom out (47–54 Nm [35–40 lbf·ft]). Then back off a 3/4 turn.
11. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 561*.

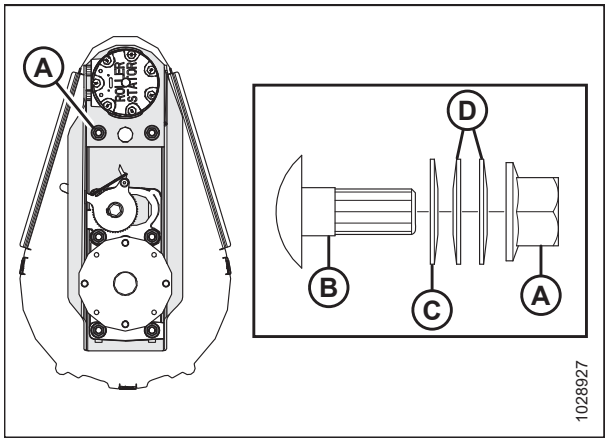


Figure 5.371: Reel Drive Motor Mount

12. Remove the caps or plugs from the ports and lines and connect hydraulic lines (A) to hydraulic fittings (B) on motor (C).

    NOTE:

    Ensure hydraulic lines (A) are installed in their original locations.

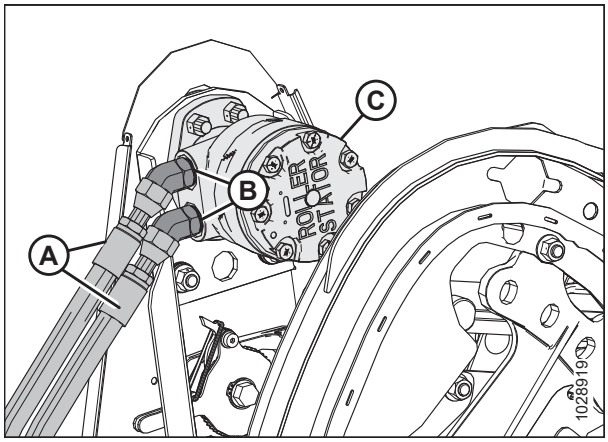


Figure 5.372: Reel Motor and Hoses

5.17.5 Replacing Drive Chain on Double Reel or Triple Reel

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Shut down the engine, and remove the key from the ignition.
2. Remove the reel drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Loosen the drive chain. For instructions, refer to *Loosening Reel Drive Chain, page 560*.
4. Support the inboard end of the right reel with a front end loader and nylon slings (A) or equivalent lifting devices.

   IMPORTANT:

   Avoid damaging or denting the center tube by supporting the reel as close to the end of the reel as possible.

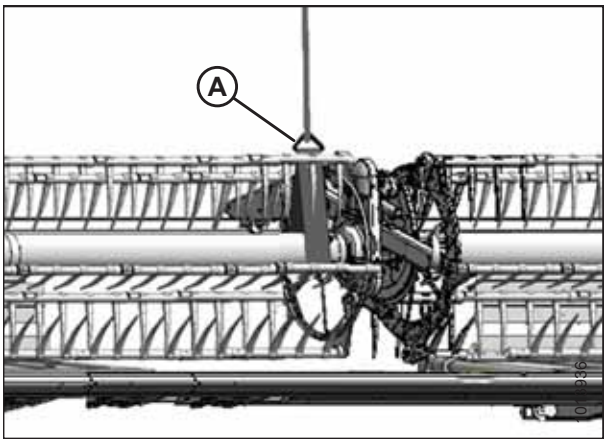


Figure 5.373: Supporting Reel

5. Remove four bolts (A) securing the reel tube to U-joint flange (B).

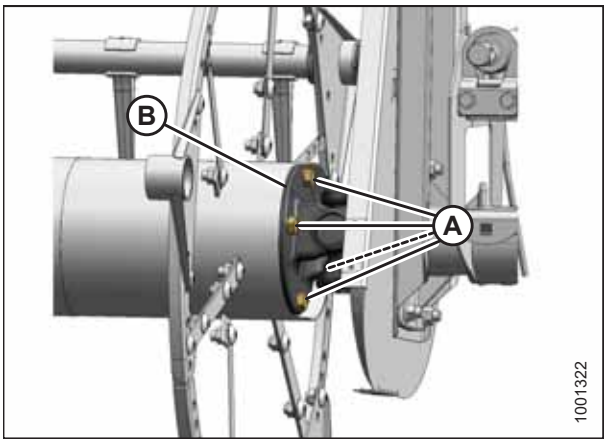


Figure 5.374: U-Joint

6. Move the right reel sideways to separate reel tube (A) from U-joint (B).
7. Remove drive chain (C).
8. Route chain (C) over U-joint (B) and position onto the sprockets.

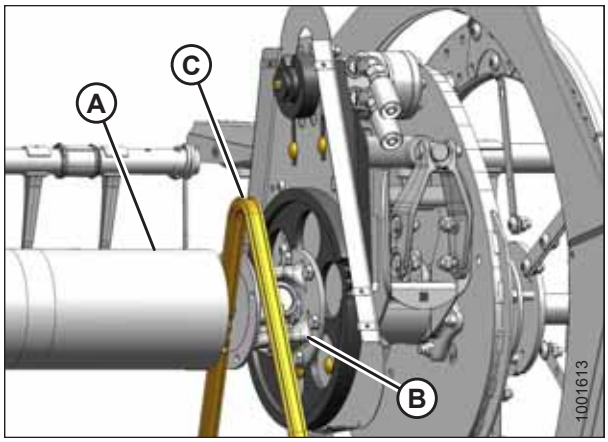


Figure 5.375: Replacing Chain

9. Position the right reel tube against the reel drive and engage the stub shaft into the U-joint pilot hole.
10. Rotate the reel until the holes in end of the reel tube and U-joint flange line up.
11. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to four 1/2 in. bolts (A) and secure to the flange with lock washers.
12. Torque to 102–115 Nm (75–85 lbf·ft.).

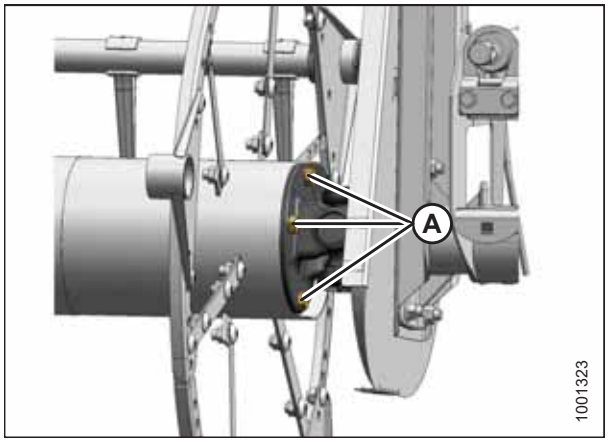


Figure 5.376: U-Joint

13. Remove temporary reel sling (A).
14. Tighten the drive chain. For instructions, refer to *Tightening Reel Drive Chain, page 561*.
15. Reinstall the reel drive cover. For instructions, refer to *Installing Reel Drive Cover, page 39*.

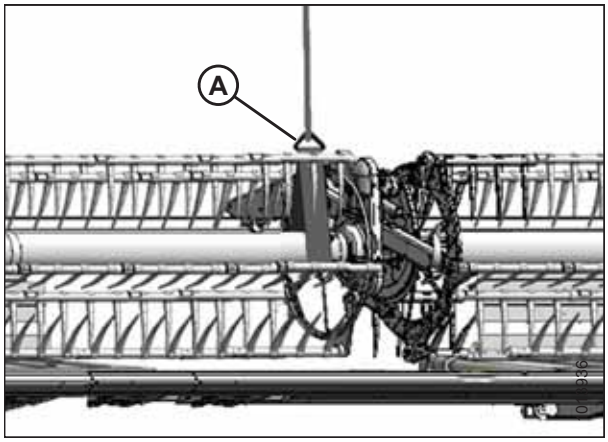


Figure 5.377: Supporting Reel

5.17.6 Replacing Reel Speed Sensor

The reel speed sensors (and the procedures for replacing them) vary with the combine model.

Refer to the following topics depending on your combine model:

- *Replacing Challenger, Gleaner, and Massey Ferguson Reel Speed Sensor, page 571*
- *Replacing John Deere Reel Speed Sensor, page 572*
- *Replacing CLAAS 400 Series Reel Speed Sensor, page 572*
- *Replacing CLAAS 500/700 Series Reel Speed Sensor, page 573*

Replacing Challenger, Gleaner, and Massey Ferguson Reel Speed Sensor

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Disconnect electrical connector (A).

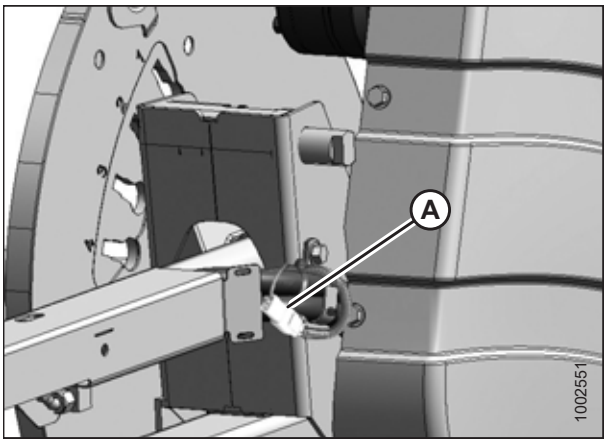


Figure 5.378: Electrical Harness

4. Cut cable tie (A) securing the harness to the cover.
5. Remove two screws (B), sensor (C), and the harness. If necessary, bend cover (D) to remove the harness.
6. Feed the wire of the new sensor behind cover (D) and through the chain case.
7. Locate the new sensor in support (E) and attach with two screws (B).
8. Adjust the gap between sensor disc (F) and sensor (C) to 0.5–1.5 mm (0.02–0.06 in.).

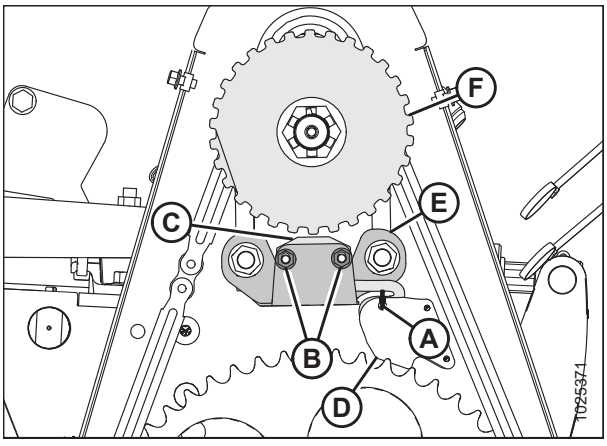


Figure 5.379: Speed Sensor

9. Connect sensor harness with header harness (A).

   IMPORTANT:

   Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.

10. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 39*.

11. Verify proper operation of the sensor.

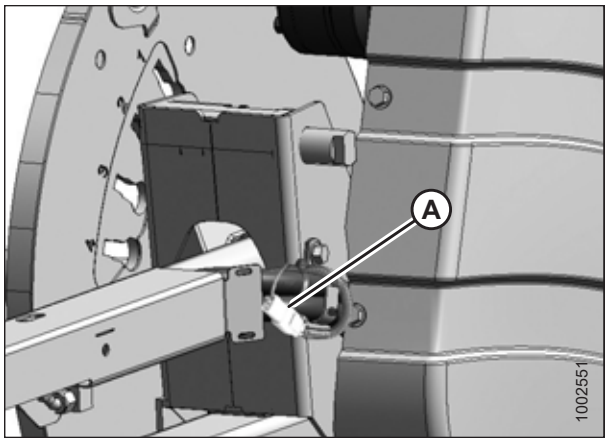


Figure 5.380: Electrical Harness

Replacing John Deere Reel Speed Sensor

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Disconnect electrical connector (D).
4. Remove top nut (C) and remove 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 sensor disc (A) and sensor (B) to 3 mm (1/8 in.) using nut (C).
7. Connect to sensor connector at (D) and to sensor harness (E).

   IMPORTANT:

   Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.

8. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 39*.

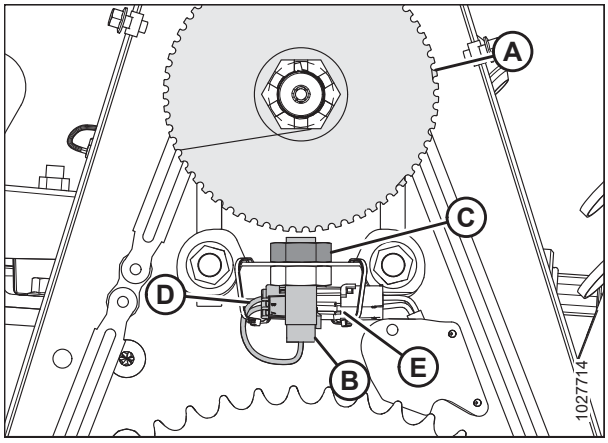


Figure 5.381: Speed Sensor

Replacing CLAAS 400 Series Reel Speed Sensor

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Disconnect electrical connector located behind the chain case.

4. Remove and discard top nut (A) and sensor (B).
5. Remove the top nut from the new sensor, and position new sensor (B) into the support. Secure with top nut (A).
6. Adjust the gap between sensor disc (C) and sensor (B) to 3 mm (1/8 in.) using nuts (A) and (D).
7. Route harness through knockout hole (E) and connect to the harness behind the chain case.

   IMPORTANT:

   Ensure the sensor electrical harness does **NOT** contact the chain or sprocket.
8. Reinstall the drive cover. For instructions, refer to *Installing Reel Drive Cover, page 39*.

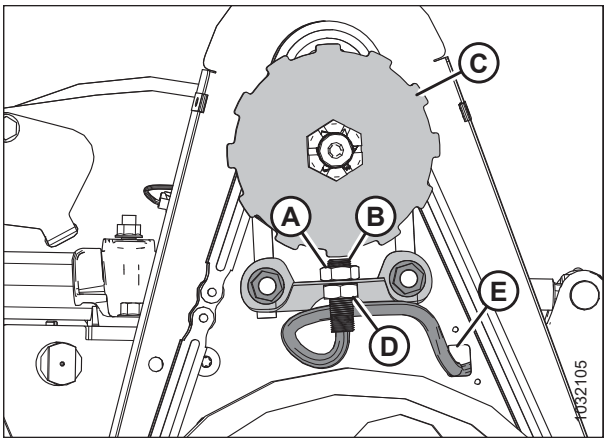


Figure 5.382: Speed Sensor

Replacing CLAAS 500/700 Series Reel Speed Sensor

WARNING

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove the drive cover. For instructions, refer to *Removing Reel Drive Cover, page 38*.
3. Disconnect the electrical connector located behind the chain case from sensor (A).
4. Remove cable ties (B).
5. Remove shield (C) and rivets (D).
6. Remove nut (E) and remove sensor (A).
7. Position new sensor (A) into support (F). Secure with nut (E).
8. Adjust speed sensor to achieve a gap of 1–3 mm (1/16–1/8 in.) from the sensor disc (G).
9. Route harness through knockout hole in panel and connect to sensor (A). Secure harness in place 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. For instructions, refer to *Installing Reel Drive Cover, page 39*.

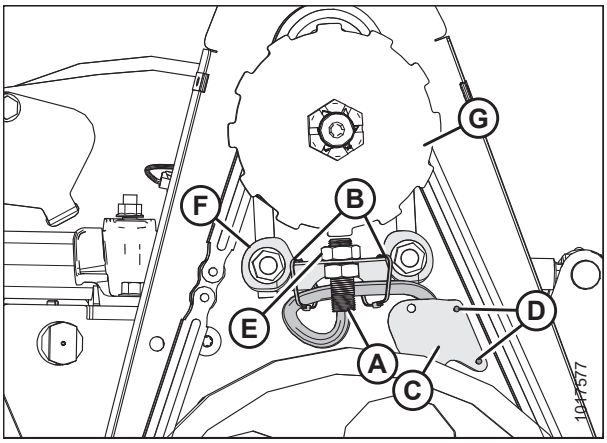


Figure 5.383: Speed Sensor

5.18 Transport System (Optional)

Refer to *Adjusting Stabilizer / Slow Speed Transport Wheels, page 61* for more information.

5.18.1 Checking Wheel Bolt Torque

If a transport system is installed, follow these steps to torque the wheel bolts:

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

1. Turn off the engine and remove the key.
2. Follow the bolt tightening sequence shown, and torque the wheel bolts to 110–120 Nm (80–90 lbf·ft).

   IMPORTANT:

   Whenever a wheel is removed and reinstalled, check the wheel bolt torque after one hour of operation and every 100 hours thereafter.

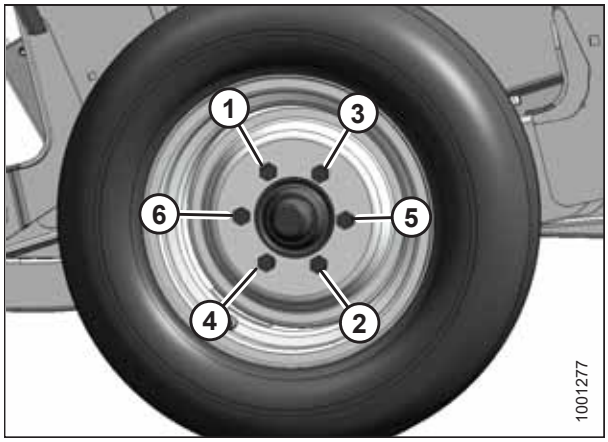


Figure 5.384: Bolt Tightening Sequence

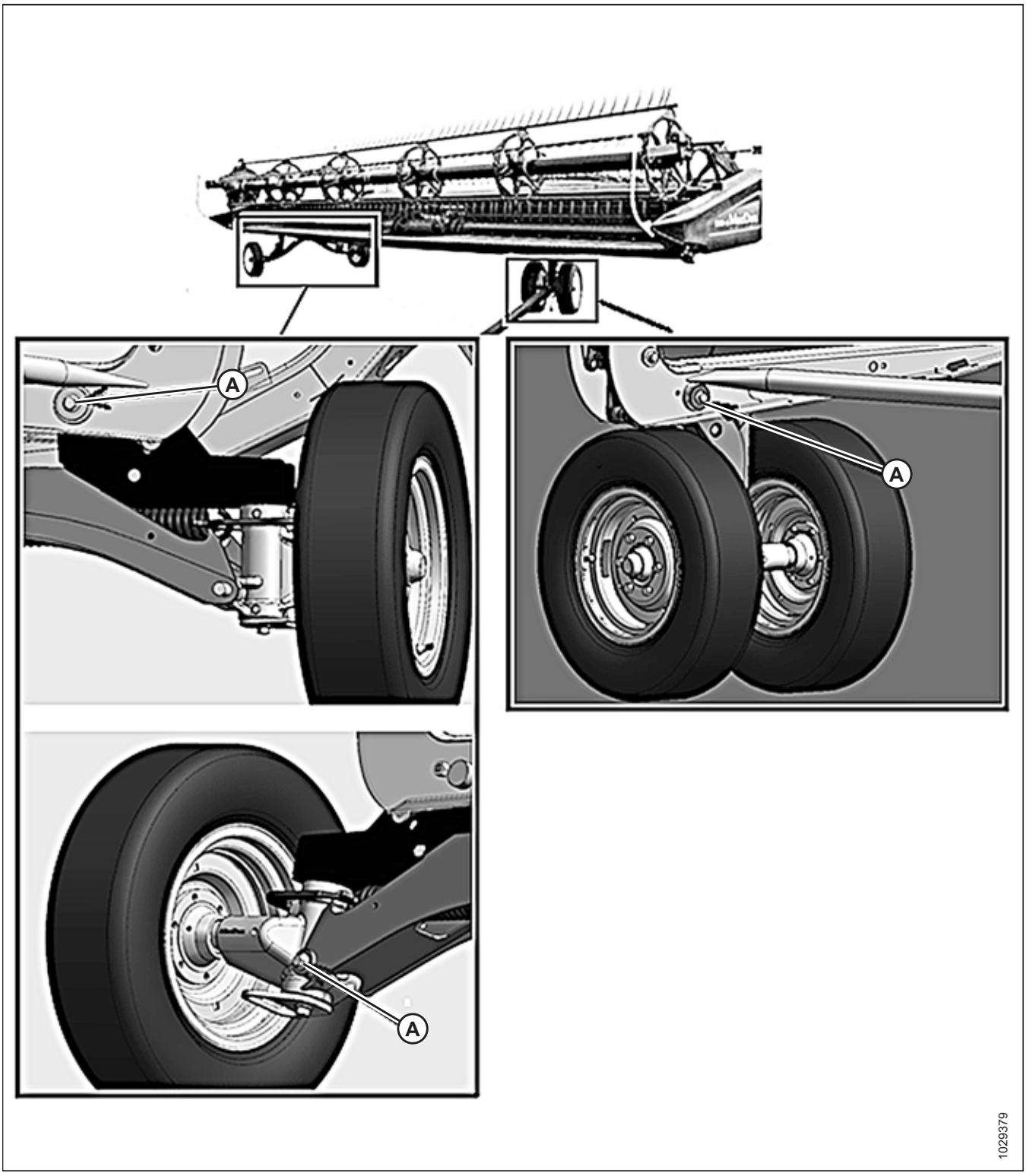
5.18.2 Checking Axle Bolt Torque

If a transport system is installed, do the following steps to torque the axle bolts:

DANGER

To avoid bodily injury or death from unexpected startup of machine, always stop the engine and remove the key before making adjustments to the machine.

Figure 5.385: Axle Bolts



1. Check and tighten axle bolts (A) **DAILY** to 310 Nm (229 lbf·ft)

5.18.3 Checking Tire Pressure

Check the tire inflation pressure and inflate according to the information provided in Table *5.4, page 576*.

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.**
- **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.**

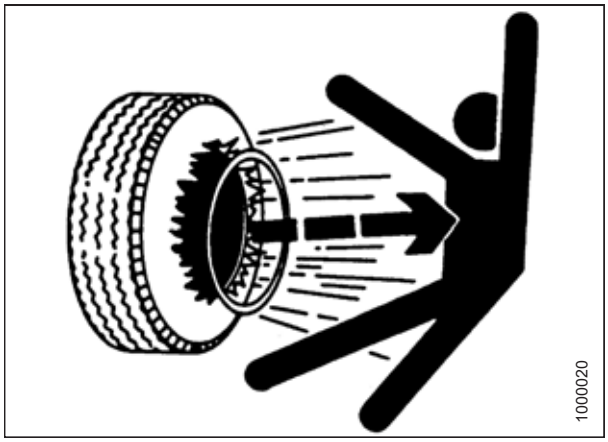


Figure 5.386: Inflation Warning

Table 5.4 Tire Inflation Pressure

Size	Load Range	Pressure
225/75 R15	E	552 kPa (80 psi)

Chapter 6: Options and Attachments

The following options and attachments are available for use with your header. See your MacDon Dealer for availability and ordering information.

6.1 Crop Delivery

6.1.1 Crop Lifter Storage Racks

Crop lifter racks are used to store crop lifters at the rear of the header. FD2 Series headers use two of this kit.

Installation instructions are included in the kit.

MD #B7023

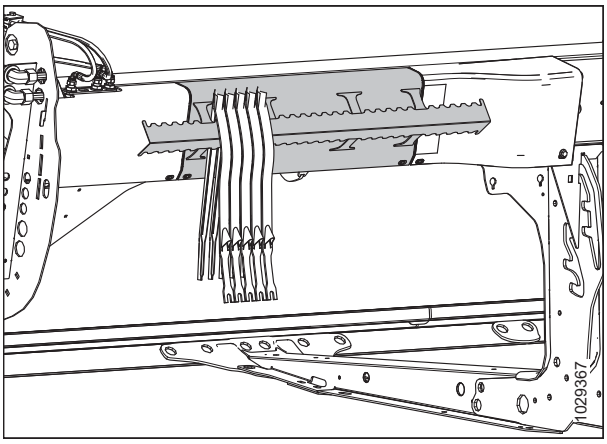


Figure 6.1: Crop Lifter Rack – Left Side

6.1.2 Divider Storage Bracket Kit

For storage of standard divider cones and/or floating crop dividers on header.

Installation instructions are included in the kit.

MD #B7030

6.1.3 Grain Crop Lifters

Grain crop lifters are recommended for severely lodged cereal crops where the operator wants maximum possible stubble height.

Installation instructions are included in the kit.

Each kit (MD #B7022) contains 10 lifters. Order the following number of kits depending on header size:

- FD230 – 3 kits
- FD235, FD240, and FD41 – 4 kits
- FD245 and FD250 – 5 kits

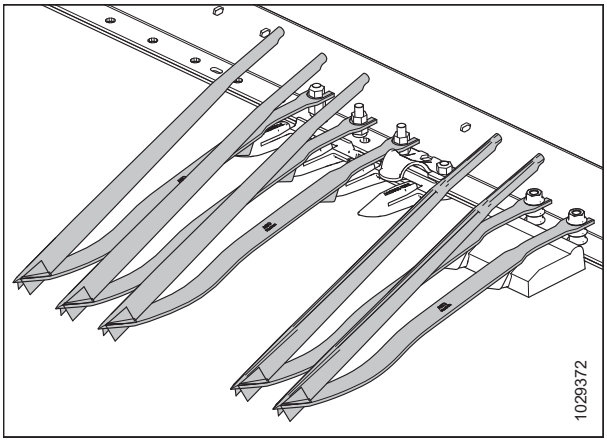


Figure 6.2: Grain Crop Lifters

6.1.4 Rice Divider Rods

Rice divider rods attach to the left and right crop dividers and divide tall and tangled rice crops in a similar manner to standard crop divider rods performing in standing crops.

The kit includes both left and right rods, and storage brackets.

Installation instructions are included in the kit.

MD #B7025

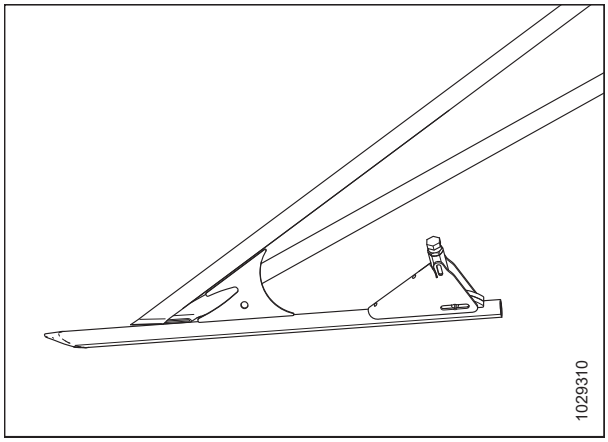


Figure 6.3: Left Rice Divider Rod

6.1.5 Full Interface Filler Kit

The Full Interface Filler Kit provides additional sealing between float module and header.

NOTE:

This kit is only available for European-configured headers.

Installation instructions are included in the kit.

MD #B7031

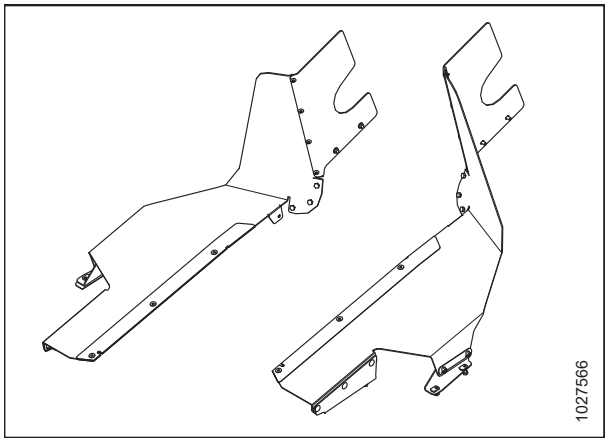


Figure 6.4: Full Interface Filler Kit

6.1.6 Full Length Upper Cross Auger

The upper cross auger (A) 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 the following bundles:

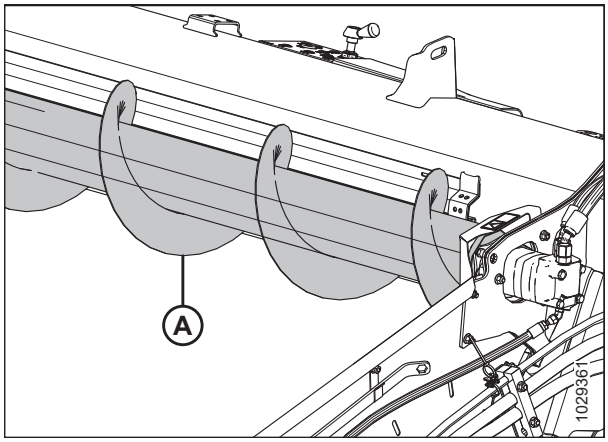


Figure 6.5: Upper Cross Auger

Base Auger Package

Includes auger, mounts, drive, and hydraulic completion plumbing for headers that are upper cross auger ready.

Order from the following list of kits according to your header model:

- FD230 – MD #B6414 (two piece)
- FD235 – MD #B6415 (two piece)
- FD240 – MD #B6417 (three piece)
- FD241 – MD #B6416 (two piece)
- FD250 – MD #B6419 (three piece)

Hydraulic Plumbing Package

Required only for headers without factory installed UCA hydraulics. Includes hydraulic lines to make header UCA ready, if not factory configured.

Order from the following list of kits according to your header model:

- FD230 – MD #B7117 (two piece)
- FD235 – MD #B7118 (two piece)
- FD240 – MD #B7119 (three piece)
- FD241 – MD #B7120 (two piece)
- FD250 – MD #B7121 (three piece)

6.2 Cutterbar

6.2.1 Rock Retarder

Extended height cutterbar lip to help prevent rocks rolling onto the draper decks.

Order bundles by header size:

- FD230, FD235, and FD241 – MD #B7122
- FD240, FD245, and FD250 – MD #B7123

6.2.2 VertiBlade™ Vertical Knife Kit

Installation instructions are included in this kit.

Order the following bundles:

Base VertiBlade™

Includes knives, mounts, drive, and hydraulic completion plumbing to complete installation on power-divider ready header.

MD #B7029

Hydraulic Plumbing Package

Required only for headers without factory-installed power divider hydraulics. Includes hydraulic lines to make header power-divider (VertiBlade™) ready if not factory-configured. Order one of the following based on your header:

- FD230 – MD #B7127
- FD235 – MD #B7128
- FD240 – MD #B7129
- FD241 – MD #B7130
- FD250 – MD #B7131

6.3 FM200 Float Module

6.3.1 FM200 Feed Auger High Wear Flighting Extensions

Flighting extension kit may allow better feeding of crop in green/wet straw conditions (i.e. rice and green cereals). Refer to *4.1 FM200 Feed Auger Configurations, page 299* for a list of flighting combinations.

MD #B6400

6.3.2 Hillside Extension Kit

The Hydraulic Reservoir Fill Extension kit extends breather cap position to prevent leakage when operating on steeper slopes. Recommended if operating on hills exceeding 5°.

Installation instructions are included in the kit.

MD #B6057

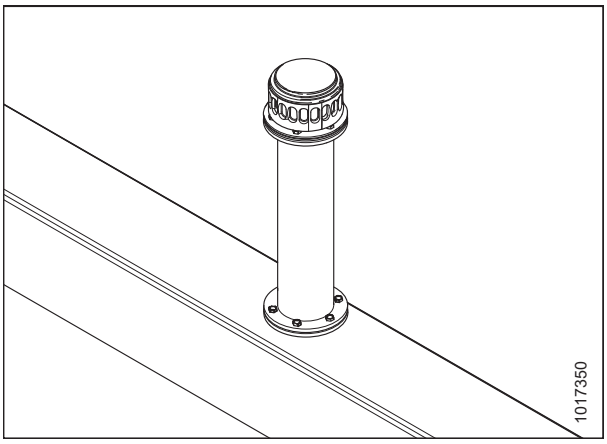


Figure 6.6: Hydraulic Reservoir Fill Extension

6.3.3 Stripper Bars

Stripper bars improve feeding in certain crops such as rice. They are **NOT** recommended in cereal crops.

Instructions are included with the kit.

Select the stripper bar kit based on combine feeder house width. For information, refer to Table *6.1 Stripper Bar Configurations and Recommendations, page 581*.

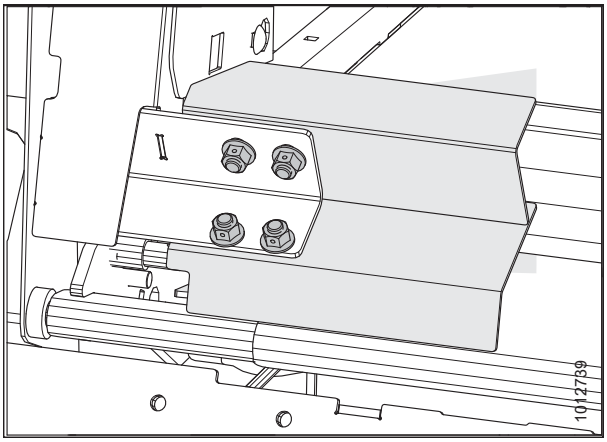


Figure 6.7: Stripper Bar

Table 6.1 Stripper Bar Configurations and Recommendations

Bundle (MD #)	Stripper Bar Length	Opening Width (Installed on FM200)	Recommended Feeder House Width
B6042	265 mm (10 1/2 in.)	1317 mm (52 in.)	1250–1350 mm (49–65 in.)
B6043	265 mm (10 1/2 in.) (with cutout)	1317 mm (52 in.)	For John Deere S Series only
B6045	365 mm (14 1/2 in.)	1117 mm (44 in.)	<1100 mm (<43 1/2 in.) and below

6.4 Header

6.4.1 ContourMax™ Contour Wheels Kit

Provides flex and auto header height control (AHHC) for stubble heights of 0–457 mm (0–18 in.) (standard header provides 0–152 mm [0–6 in.]). Consist of four wheel sets and hydraulic height actuation from combine cab. Installation instructions are included in the kit. Order the following bundles:

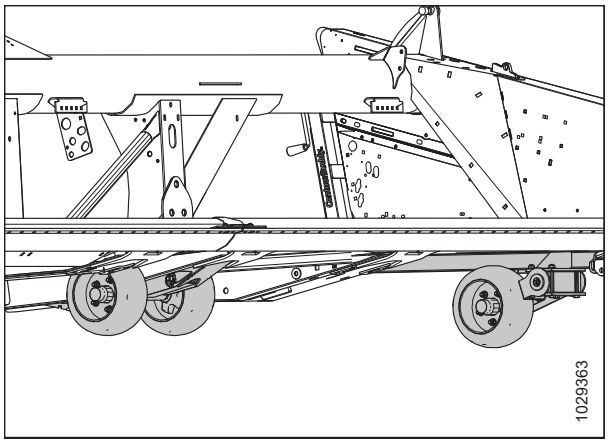


Figure 6.8: ContourMax™ Contour Wheels

Base ContourMax™ Package

Includes wheels, mounts, cylinders, control valve, and hydraulic plumbing to complete installation on ContourMax™ ready header.

MD #B6799

Hydraulic Plumbing Package

Includes hydraulic lines to make header ContourMax™ ready if not factory configured. Order from the following list of ContourMax™ Contour Wheel hydraulic lines according to your header model:

- FD230 – MD #B7082
- FD235 – MD #B7083
- FD240 – MD #B7113
- FD241 – MD #B7114
- FD250 – MD #B7116

6.4.2 EasyMove™ Transport System

Ready to deploy in 2 minutes, MacDon's EasyMove™ Transport System makes it faster than ever to move your FD2 Series FlexDraper® from field to field.

Installation instructions are included in the kit.

In order to complete the installation of this kit, order the three bundles below:

Stabilizer Wheels / Slow Speed Transport Base Kit

MD #B6288

Wheels and Tires – White Rims

MD #B6275

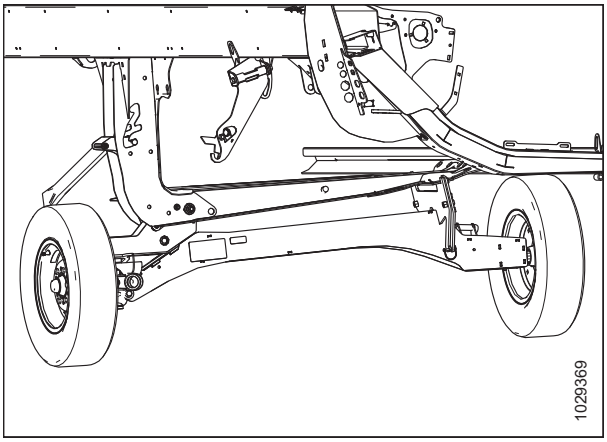


Figure 6.9: EasyMove™ Transport System

Tow Pole

FD240, FD241, and FD250 – Long Tow Pole (MD #B6382)

FD230 and FD235 – Short Tow Pole (MD #B6383)

6.4.3 Header Tilt Footswitch Kit

In-cab footswitch to activate header tilt, alternative to standard rocker switch.

MD #B7040

6.4.4 Side Hill Stabilizer Kit

Recommended for cutting on side hills with a grade steeper than 5 degrees.

Installation instructions are included with kit.

MD #B7028

6.4.5 Stabilizer Wheels

Stabilizes header lateral movement when cutting at heights higher than possible with the standard skid shoes. Installation and adjustment instructions are included in the kit.

MD #C2051

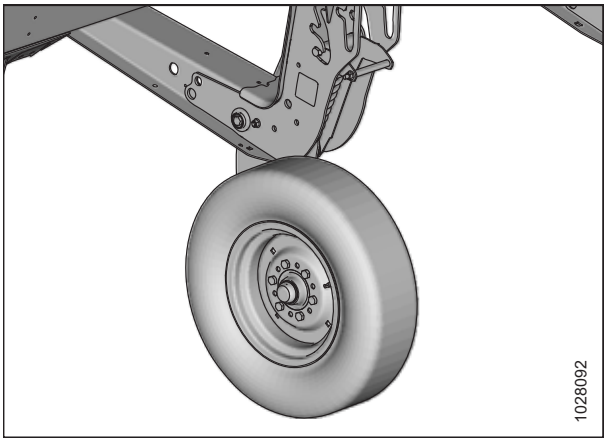


Figure 6.10: Stabilizer Wheel

6.4.6 Steel Skid Shoes Kit

IMPORTANT:

Not recommended for wet mud or conditions prone to sparking.

Steel skid shoes offer extra abrasion resistance.

Contains two skid shoes. For full replacement of standard skid shoes, order three bundles (six shoes total).

Installation instructions are included with kit.

MD #B6801

6.4.7 Stubble Light Kit

Stubble lights are used in low light conditions and allow the operator to see the stubble cut behind the header. The Stubble Light kit is available for MacDon FD130, FD135, FD140, and FD141 headers. This kit is currently compatible with John Deere combines only.

MD #B7027

Chapter 7: Troubleshooting

7.1 Crop Loss at Cutterbar

Table 7.1 Troubleshooting – Crop Loss at Cutterbar

Problem	Solution	Refer to
Symptom: Does not pick up downed crop		
Cutterbar too high	Lower cutterbar	• *3.7.1 Cutting off the Ground, page 61* • *3.7.2 Cutting on the Ground, page 64*
Header angle too low	Increase header angle	*3.7.5 Header Angle, page 81*
Reel too high	Lower reel	*3.7.10 Reel Height, page 93*
Reel too far back	Move reel forward	*3.7.11 Reel Fore-Aft Position, page 98*
Ground speed too fast for reel speed	Increase reel speed or reduce ground speed	• *3.7.6 Reel Speed, page 89* • *3.7.7 Ground Speed, page 90*
Reel fingers not lifting crop sufficiently	Increase finger pitch aggressiveness	*3.7.12 Reel Tine Pitch, page 105*
Reel fingers not lifting crop sufficiently	Install crop lifters	See your MacDon Dealer
Symptom: Heads shattering or breaking off		
Reel speed too fast	Reduce reel speed	*3.7.6 Reel Speed, page 89*
Reel too low	Raise reel	*3.7.10 Reel Height, page 93*
Ground speed too fast	Reduce ground speed	*3.7.7 Ground Speed, page 90*
Crop too ripe	Operate at night when humidity is higher	—
Symptom: Material accumulating in gap between cut-out in endsheet and knifehead		
Crop heads leaning away from knifehead hole in endsheet	Add knifehead shields (except in damp or sticky soils)	*5.8.9 Knifehead Shield, page 468*
Symptom: Strips of uncut material		
Plugging of debris on guards	Install PlugFree™ short knife guards	*5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Broken knife sections	Replace broken sections	*5.8.1 Replacing Knife Section, page 440*
Symptom: Excessive bouncing at normal field speed		
Float set too light	Adjust header float	*3.7.3 Header Float, page 66*
Symptom: Divider rod running down standing crop		
Divider rods too long	Remove divider rod	*3.7.14 Crop Dividers, page 111*

Table 7.1 Troubleshooting – Crop Loss at Cutterbar (continued)

Problem	Solution	Refer to
Symptom: Crop not being cut at ends		
Reel not frowning or not centered in header	Adjust reel horizontal position or reel frown	• *3.7.11 Reel Fore-Aft Position, page 98* • *5.16.2 Reel Frown, page 533*
Knife hold-down not adjusted properly	Adjust hold-down so knife works freely but still keep sections from lifting off guards	• *Adjusting Hold-Down – Pointed Knife Guards, page 453* or • *Adjusting Hold-Down – Short Knife Guards, page 464*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	*5.8 Knife, page 440*
Header is not level	Level header	*3.9 Leveling Header, page 276*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position and/or finger pitch	• *3.7.11 Reel Fore-Aft Position, page 98* • *3.7.12 Reel Tine Pitch, page 105*
Divider runs down thick crop at ends preventing proper feeding due to material bridging the guards	Replace 3–4 end guards with PlugFree™ short knife guard	• *5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458* • See your MacDon Dealer
Symptom: Bushy or tangled crop flows over divider rod, builds up on endsheets		
Divider rods providing insufficient separation	Install long divider rods	*3.7.14 Crop Dividers, page 111*
Symptom: Cut grain falling ahead of cutterbar		
Ground speed too slow	Increase ground speed	*3.7.7 Ground Speed, page 90*
Reel speed too slow	Increase reel speed	*3.7.6 Reel Speed, page 89*
Reel too high	Lower reel	*3.7.10 Reel Height, page 93*
Cutterbar too high	Lower cutterbar	• *3.7.1 Cutting off the Ground, page 61* • *3.7.2 Cutting on the Ground, page 64*
Reel too far forward	Move reel back on arms	*3.7.11 Reel Fore-Aft Position, page 98*
Cutting at speeds over 10 km/h (6 mph) with 10-tooth reel drive sprocket	Replace with 19-tooth reel drive sprocket	*5.17.2 Reel Drive Sprocket, page 562*
Worn or broken knife components	Replace components	*5.8 Knife, page 440*

7.2 Cutting Action and Knife Components

Table 7.2 Troubleshooting – Cutting Action and Knife Components

Problem	Solution	Refer to
Symptom: Ragged or uneven cutting of crop		
Knife hold-down not adjusted properly	Adjust hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 453* • *Adjusting Hold-Down – Short Knife Guards, page 464*
Knife sections or guards are worn or broken	Replace all worn and broken cutting parts	• *Replacing Pointed Center Knife Guard – Double-Knife, page 454* • *Replacing Pointed Knife Guards, page 451* • *Replacing Center Knife Guard – Double-Knife, page 465 Replacing PlugFree™ Short Knife Guards or End Knife Guards, page 4625.8.1 Replacing Knife Section, page 440*
Knife is not operating at recommended speed	Feeder house speed set too low or knife speed not adjusted to proper range	*Checking Knife Speed, page 92*
Ground speed too fast for reel speed	Reduce ground speed or increase reel speed	• *3.7.6 Reel Speed, page 89* • *3.7.7 Ground Speed, page 90*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/finger pitch	• *3.7.11 Reel Fore-Aft Position, page 98* • *3.7.12 Reel Tine Pitch, page 105*
Cutterbar too high	Lower cutting height	*3.7.1 Cutting off the Ground, page 61* or *3.7.2 Cutting on the Ground, page 64*
Header angle too flat	Steepen header angle	*3.7.5 Header Angle, page 81*
Cutting edge of guards not close enough or parallel to knife sections	Align guards	*Adjusting Knife Guards, page 450*
Tangled/tough-to-cut crop	Install PlugFree™ short knife guards	• MacDon Dealer • *Adjusting Hold-Down – Pointed Knife Guards, page 453* or *Adjusting Hold-Down – Short Knife Guards, page 464*
Reel too far back	Move reel forward	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom: Knife plugging		
Reel too high or too far forward	Lower reel or move reel rearward	• *3.7.10 Reel Height, page 93* • *3.7.11 Reel Fore-Aft Position, page 98*

Table 7.2 Troubleshooting – Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Ground speed too high	Decrease ground speed	*3.7.7 Ground Speed, page 90*
Improper knife hold-down adjustment	Adjust hold-down	*Adjusting Hold-Down – Pointed Knife Guards, page 453* or *Adjusting Hold-Down – Short Knife Guards, page 464*
Dull or broken knife section	Replace knife section	*5.8.1 Replacing Knife Section, page 440*
Bent or broken guards	Align or replace guards	*Adjusting Knife Guards, page 450*
Reel fingers not lifting crop properly ahead of knife	Adjust reel position/ finger pitch	• *3.7.11 Reel Fore-Aft Position, page 98* • *3.7.12 Reel Tine Pitch, page 105*
Steel pick-up fingers contacting knife	Increase reel clearance to cutterbar or adjust “frown”	• *5.16.2 Reel Frown, page 533*
Float too heavy	Adjust springs for lighter float	*Checking and Adjusting Header Float, page 67*
Mud or dirt build-up on cutterbar	Raise cutterbar by lowering skid shoes	*3.7.2 Cutting on the Ground, page 64*
Mud or dirt build-up on cutterbar	Flatten header angle	*3.7.5 Header Angle, page 81*
Knife is not operating at recommended speed	Check engine speed of combine or header knife speed	• Combine operator’s manual • *Checking Knife Speed, page 92*
Symptom: Excessive header vibration		
Knife hold-down not adjusted properly	Adjust hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 453* or *Adjusting Hold-Down – Short Knife Guards, page 464*
Excessive knife wear	Replace knife	• *5.8.2 Removing Knife, page 441* • *5.8.5 Installing Knife, page 443*
Knife hold-down not adjusted properly	Adjust hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 453* • *Adjusting Pointed Center Hold-Down, page 457* • *Adjusting Hold-Down – Short Knife Guards, page 464* • *Adjusting Center Hold-Down – Short Knife Guards, page 468*
Excessive knife wear	Replace knife	• *5.8.2 Removing Knife, page 441* • *5.8.5 Installing Knife, page 443*
Loose or worn knifehead pin or drive arm	Tighten or replace parts	*5.8.1 Replacing Knife Section, page 440*

Table 7.2 Troubleshooting – Cutting Action and Knife Components (continued)

Problem	Solution	Refer to
Symptom: Excessive vibration of float module and header		
Incorrect knife speed	Adjust knife speed	*Checking Knife Speed, page 92*
Bent cutterbar	Straighten cutterbar	MacDon Dealer
Symptom: Excessive breakage of knife sections or guards		
Knife hold-down not adjusted properly	Adjust hold-down	• *Adjusting Hold-Down – Pointed Knife Guards, page 453* or • *Adjusting Hold-Down – Short Knife Guards, page 464*
Cutterbar operating too low in stony conditions	Raise cutterbar using skid shoes	*3.7.2 Cutting on the Ground, page 64*
Float is set too heavy	Adjust float springs for lighter float	*Checking and Adjusting Header Float, page 67*
Bent or broken guard	Straighten or replace guard	• *5.8.7 Pointed Knife Guards and Hold-Downs, page 445* or • *5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Header angle too steep	Flatten header angle	*3.7.5 Header Angle, page 81*
Symptom: Knife back breakage		
Bent or broken guard	Straighten or replace guard	• *5.8.7 Pointed Knife Guards and Hold-Downs, page 445* or • *5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Worn knifehead pin	Replace knifehead pin	• *5.8.3 Removing Knifehead Bearing, page 442* and • *5.8.4 Installing Knifehead Bearing, page 442*
Dull knife	Replace knife	• *5.8.2 Removing Knife, page 441* and • *5.8.5 Installing Knife, page 443*
Knife speed too fast	Lower knife speed	Consult your MacDon Dealer
Loose knife section hardware	Check/tighten all knife hardware	—

7.3 Reel Delivery

Use the following tables to determine the cause of reel delivery problems and the recommended repair procedure.

Table 7.3 Troubleshooting – Reel Delivery

Problem	Solution	Refer to
Symptom – Reel not releasing material in normal standing crop		
Reel speed too fast	Reduce reel speed	*3.7.6 Reel Speed, page 89*
Reel too low	Raise reel	*3.7.10 Reel Height, page 93*
Reel tines too aggressive	Reduce cam setting	*3.7.12 Reel Tine Pitch, page 105*
Reel too far back	Move reel forward	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom – Reel not releasing material in lodged and standing crop (reel fully lowered)		
Reel tines too aggressive for standing crop	Reduce cam setting (one or two) or move reel forward	*3.7.12 Reel Tine Pitch, page 105*
Symptom – Wrapping on reel end		
Reel tines too aggressive	Reduce cam setting	*3.7.12 Reel Tine Pitch, page 105*
Reel too low	Raise reel	*3.7.10 Reel Height, page 93*
Reel speed too fast	Reduce reel speed	*3.7.6 Reel Speed, page 89*
Reel not centered in header	Center reel in header	*5.16.3 Centering Reel, page 534*
Symptom – Reel releases crop too quickly		
Reel tines not aggressive enough	Increase cam setting to match reel delivery to reel fore-aft position	*3.7.12 Reel Tine Pitch, page 105*
Reel too far forward	Move reel back to match reel cam setting	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom – Reel will not lift		
Reel lift couplers are incompatible or defective	Change quick coupler	MacDon dealer
Symptom – Reel will not turn		
Quick couplers not properly connected	Connect couplers	*4 Header Attachment/Detachment, page 299*
Reel drive chain disconnected or broken	Connect/replace chain	*5.17.5 Replacing Drive Chain on Double Reel or Triple Reel, page 569*
Symptom – Reel motion uneven under no load		
Excessive slack in reel drive chain	Tighten chain	*Tightening Reel Drive Chain, page 561*

Table 7.3 Troubleshooting – Reel Delivery (continued)

Problem	Solution	Refer to
Symptom – Reel motion is uneven or stalls in heavy crops		
Reel speed too fast	Reduce reel speed	*3.7.6 Reel Speed, page 89*
Reel fingers not aggressive enough	Move to a more aggressive finger pitch notch	*3.7.12 Reel Tine Pitch, page 105*
Reel too low	Raise reel	*3.7.10 Reel Height, page 93*
Relief valve on combine (not on combine float module) has low relief pressure setting	Increase relief pressure to manufacturer's recommendations	Combine operator's manual
Low oil reservoir level on combine **NOTE:** Sometimes there is more than one reservoir	Fill to proper level	Combine operator's manual
Relief valve malfunction	Replace relief valve	Combine operator's manual
Cutting tough crops with standard torque (19-tooth) reel drive sprocket	Replace sprocket with appropriate high torque sprocket to match combine reel circuit pressure	*5.17.2 Reel Drive Sprocket, page 562*
Symptom – Plastic fingers cut at tip		
Insufficient reel to cutterbar clearance	Increase clearance	*5.16.1 Reel Clearance to Cutterbar, page 528*
Symptom – Plastic fingers bent rearward at tip		
Reel digging into ground with reel speed slower than ground speed	Raise header	• *3.7.1 Cutting off the Ground, page 61* • *3.7.2 Cutting on the Ground, page 64*
Reel digging into ground with reel speed slower than ground speed	Decrease header tilt	*3.7.5 Header Angle, page 81*
Reel digging into ground with reel speed slower than ground speed	Move reel aft	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom – Plastic fingers bent forward at tip		
Reel digging into ground with reel speed faster than ground speed	Raise header	• *3.7.1 Cutting off the Ground, page 61* • *3.7.2 Cutting on the Ground, page 64*
Reel digging into ground with reel speed faster than ground speed	Decrease header tilt	*3.7.5 Header Angle, page 81*
Reel digging into ground with reel speed faster than ground speed	Move reel aft	*3.7.11 Reel Fore-Aft Position, page 98*

Table 7.3 Troubleshooting – Reel Delivery (continued)

Problem	Solution	Refer to
Symptom – 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 278*
Excessive plugging at cutterbar with wads of crop accumulating at cutterbar while maintaining reel operation	Stop reel before plugging becomes excessive	*3.10 Unplugging the Cutterbar, page 278*

7.4 Header and Drapers

Table 7.4 Troubleshooting – Header and Drapers

Problem	Solution	Refer to
Symptom: Insufficient header lift		
Low relief pressure	Increase relief pressure	See your MacDon Dealer
Symptom: Insufficient side draper speed		
Speed control set too low	Increase speed control setting	*3.7.8 Draper Speed, page 90*
Combine header drive too slow	Adjust to correct speed for combine model	Combine operator's manual
Symptom: Insufficient feed draper speed		
Relief pressure too low	Test side draper hydraulic system	See your MacDon Dealer
Combine header drive too slow	Adjust to correct speed for combine model	Combine operator's manual
Symptom: Feed draper will not move		
Drapers are loose	Tighten drapers	*5.10.2 Checking and Adjusting Feed Draper Tension, page 489*
Drive or idler roller wrapped with material	Loosen draper and clean rollers	*5.10.2 Checking and Adjusting Feed Draper Tension, page 489*
Slat or connector bar jammed by frame or material	Loosen draper and clear obstruction	*5.10.2 Checking and Adjusting Feed Draper Tension, page 489*
Roller bearing seized	Replace roller bearing	*Replacing Feed Draper Idler Roller Bearing, page 500*
Low hydraulic oil	Fill combine hydraulic oil reservoir to full level	Combine operator's manual
Material not feeding evenly off knife	Lower reel	*3.7.10 Reel Height, page 93*
Material not feeding evenly off knife	Install PlugFree™ short knife guards	*5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Symptom: Hesitation in flow of bulky crop		
Header angle too low	Increase header angle	*3.7.5 Header Angle, page 81*
Material overload on drapers	Increase side draper speed	*3.7.8 Draper Speed, page 90*
Material overload on drapers	Install upper cross auger	*6.1.6 Full Length Upper Cross Auger, page 578*
Material overload on drapers	Add flighting extensions	See your MacDon Dealer
Symptom: Drapers back-feed		
Drapers running too slow in heavy crop	Increase draper speed	*3.7.8 Draper Speed, page 90*
Symptom: Crop is thrown across opening and under opposite side draper		
Drapers running too fast in light crop	Reduce draper speed	*3.7.8 Draper Speed, page 90*

Table 7.4 Troubleshooting – Header and Drapers (continued)

Problem	Solution	Refer to
Symptom: Material accumulating on end deflectors and releasing in bunches		
End deflectors too wide	For headers with manual deck shift only, trim deflector or replace with narrow deflector (MD #172381)	*3.10 Unplugging the Cutterbar, page 278*

7.5 Cutting Edible Beans

Table 7.5 Troubleshooting – Cutting Edible Beans

Problem	Solution	Refer to
Symptom: Plants being stripped and complete or partial plants left behind		
Header off ground	Lower header to ground and run on skid shoes and/or cutterbar	*3.7.2 Cutting on the Ground, page 64*
Float set too light—rides on high spots and does not lower soon enough	Set float to 335–338 N (75–85 lbf). Increase or decrease as necessary to prevent header from bouncing excessively or plowing into soft ground	*3.7.3 Header Float, page 66*
Reel too high with cylinders fully retracted	Adjust reel height	*3.7.10 Reel Height, page 93*
Finger pitch not aggressive enough	Adjust finger pitch	*3.7.12 Reel Tine Pitch, page 105*
Reel too far aft	Move reel forward until the fingertips skim the soil surface with header on the ground and the header angle properly adjusted	*3.7.11 Reel Fore-Aft Position, page 98*
Header angle too shallow	Adjust header angle	*Adjusting Header Angle from Combine, page 83*
Header angle too shallow	Increase header angle by fully retracting lift cylinders (if cutting on ground)	*Adjusting Header Angle from Combine, page 83*
Reel too slow	Adjust reel speed to be marginally faster than ground speed	*3.7.6 Reel Speed, page 89*
Ground speed too fast	Lower ground speed	*3.7.7 Ground Speed, page 90*
Skid shoes too low	Raise skid shoes to highest setting	*3.7.2 Cutting on the Ground, page 64*
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar and raises cutterbar off the ground	Ground too wet – allow soil to dry	—
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar and raises cutterbar off the ground	Float too heavy	*Checking and Adjusting Header Float, page 67*
Dirt packing on bottom of cutterbar with plastic wear strips on cutterbar and raises cutterbar off the ground	Manually clean the bottom of cutterbar when excessive accumulation occurs	—
Header not level	Level header	*3.9 Leveling Header, page 276*
Worn or damaged knife sections	Replace sections or replace knife	*5.8 Knife, page 440*
Parts of vines get caught in pointed guard tip. (Occurs more in row-cropped beans that are hilled from cultivating.)	Install PlugFree™ short knife guard conversion kit	*5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Pushing of crop debris on the ground	Install PlugFree™ short knife guards	*5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*

Table 7.5 Troubleshooting – Cutting Edible Beans (continued)

Problem	Solution	Refer to
Knife speed too low	Increase feeder house speed or check that knife speed is set within recommended range	*3.7.9 Knife Speed Information, page 92* or *Checking Knife Speed, page 92*
Symptom: Excessive losses at dividers		
Divider rod running down crop and shattering pods	Remove divider rod	*3.7.14 Crop Dividers, page 111*
Vines and plants build up on endsheet	Install divider rod	*3.7.14 Crop Dividers, page 111*
Symptom: Plant vines pinched between top of draper and cutterbar		
Cutterbar fills with debris when draper to cutterbar gap is properly adjusted	Raise header fully at each end of field (or as required) and shift decks back and forth to help clean out cutterbar	—
Shifting the decks with header raised does not clean out cutterbar debris.	Manually remove debris from cutterbar cavity to prevent damaging the drapers	—
Symptom: Crop accumulating at guards and not moving rearward onto drapers		
Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.7.12 Reel Tine Pitch, page 105*
Reel too high	Lower reel	*3.7.10 Reel Height, page 93*
Minimum reel clearance to cutterbar setting too high	Adjust minimum reel height with cylinders fully retracted	*5.16.1 Reel Clearance to Cutterbar, page 528*
Reel too far forward	Reposition reel	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom: Crop wrapping around reel		
Reel too low	Raise reel	*3.7.10 Reel Height, page 93*
Symptom: Reel shattering pods		
Reel too far forward	Reposition reel	*3.7.11 Reel Fore-Aft Position, page 98*
Reel speed too high	Reduce reel speed	*3.7.6 Reel Speed, page 89*
Bean pods too dry	Cut at night when heavy dew is present and pods have softened	—
Reel finger pitch not aggressive enough	Increase finger aggressiveness (cam position)	*3.7.12 Reel Tine Pitch, page 105*
Symptom: Cutterbar guards breaking		
Float insufficient (float setting too heavy)	Increase float (adjust to lighter float setting)	*3.7.3 Header Float, page 66*
Excessive number of rocks in field	Consider installing optional PlugFree™ short knife guards **Note:** With the installation of PlugFree™ short knife guards, you are trading guard damage for section damage (although changing sections with PlugFree™ short knife guard is easier)	Order parts

Table 7.5 Troubleshooting – Cutting Edible Beans (continued)

Problem	Solution	Refer to
Symptom: Cutterbar pushing too much debris and dirt		
Header too heavy	Readjust float to make header lighter	*3.7.3 Header Float, page 66*
Header angle too steep	Decrease header angle	*3.7.5 Header Angle, page 81*
Guards plug with debris or and soil	Install PlugFree™ short knife guard	*5.8.8 PlugFree™ Short Knife Guards and Hold-Downs, page 458*
Insufficient support for header	Install center skid shoes on header	*3.7.2 Cutting on the Ground, page 64*
Symptom: Crop wrapping around reel ends		
Uncut crop interfering on reel ends	Add reel endshields	Header parts catalog
Symptom: Cutterbar fills up with dirt		
Excessive gap between draper and cutterbar	Raise header fully at each end of field (or as required) and shift decks back and forth to help clean out cutterbar	—
Symptom: Reel occasionally carries over plants in same location		
Steel fingers bent and hooking plants from drapers	Straighten fingers (steel)	—
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Raise reel	*3.7.10 Reel Height, page 93*
Dirt accumulation on end of fingers preventing plants from falling off fingers onto drapers	Adjust reel fore-aft position to move fingers out of the ground	*3.7.11 Reel Fore-Aft Position, page 98*
Symptom: Cutterbar pushing soil		
Tire tracks or row crop ridges	Cut at angle to crop rows or ridges	—
Rolling terrain along length of field	Cut at 90° to undulations (provided knife floats across without digging in)	—
Symptom: Reel carries over an excessive amount of plants or wads		
Excessive accumulation of crop on drapers (up to reel center tube)	Increase draper speed	*3.7.8 Draper Speed, page 90*
Finger pitch too slow	Increase finger pitch	*3.7.12 Reel Tine Pitch, page 105*

Chapter 8: Reference

8.1 Torque Specifications

The following tables provide correct torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade of bolt.
- Use 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.

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by f=0.65.

Self-tapping screws

Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

8.1.1 Metric Bolt Specifications

Table 8.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

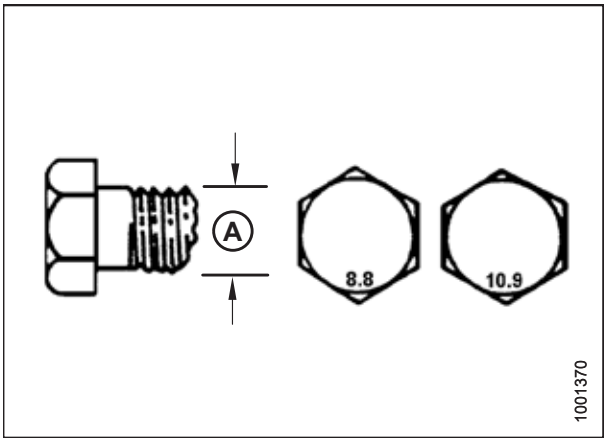


Figure 8.1: Bolt Grades

Table 8.2 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

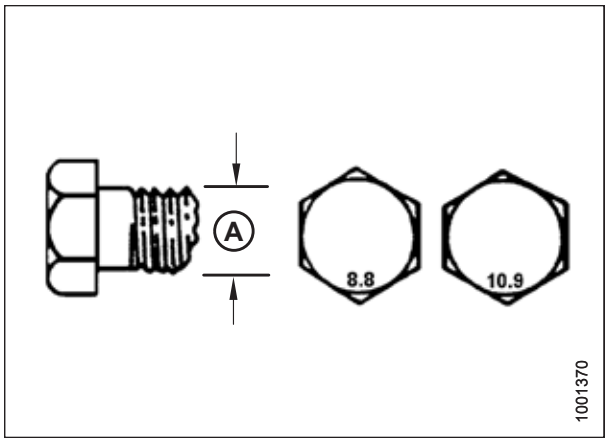


Figure 8.2: Bolt Grades

Table 8.3 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

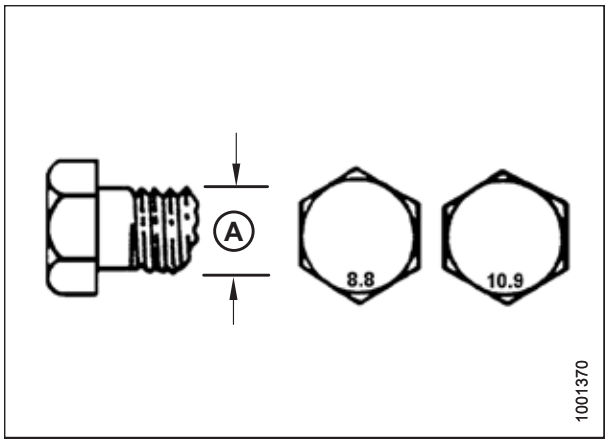


Figure 8.3: Bolt Grades

Table 8.4 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

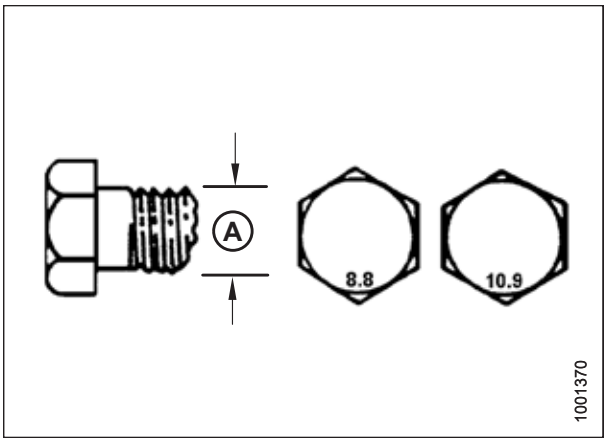


Figure 8.4: Bolt Grades

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)	
	Nm	lbf·ft	Nm	lbf·ft
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

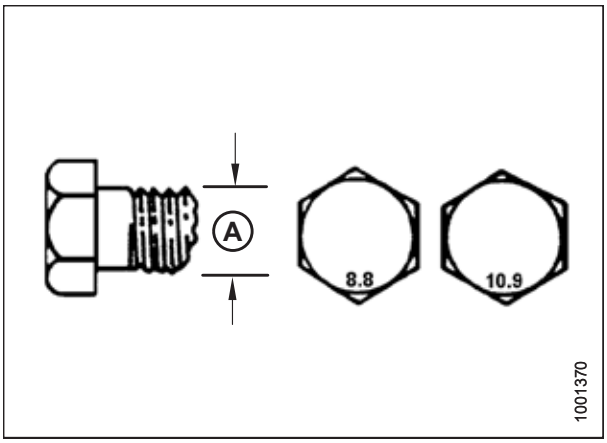


Figure 8.5: Bolt Grades

8.1.3 O-Ring Boss Hydraulic Fittings – Adjustable

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Check that O-ring (A) is **NOT** on threads and adjust if necessary.
4. Apply hydraulic system oil to O-ring (A).

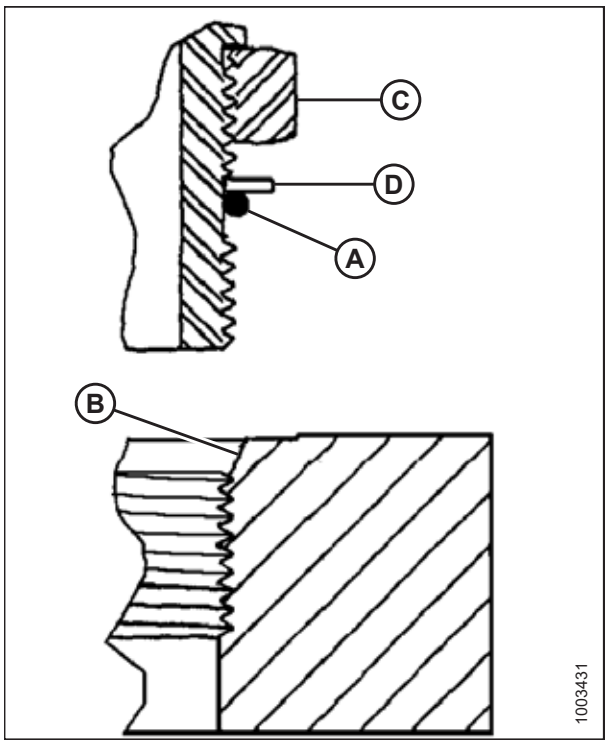


Figure 8.6: Hydraulic Fitting

5. Install fitting (B) into port until backup washer (D) and O-ring (A) contact 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 other on lock nut (C).
8. Check final condition of fitting.

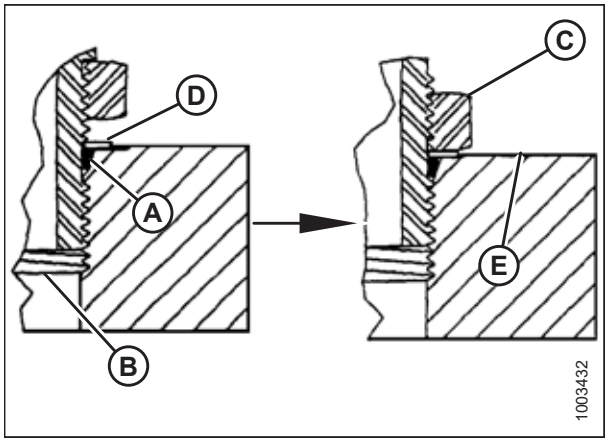


Figure 8.7: Hydraulic Fitting

Table 8.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[57]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

57. Torque values shown are based on lubricated connections as in reassembly.

8.1.4 O-Ring Boss 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 threads and adjust if necessary.
3. Apply hydraulic system oil to O-ring.
4. Install fitting (C) into port until fitting is hand-tight.
5. Torque fitting (C) according to values in Table *8.7, page 604*.
6. Check final condition of fitting.

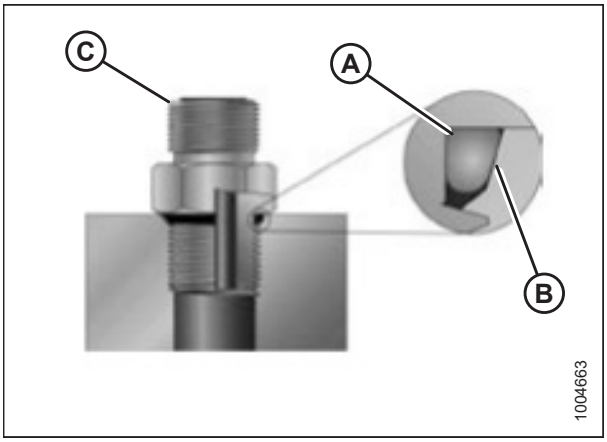


Figure 8.8: Hydraulic Fitting

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[58]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

58. Torque values shown are based on lubricated connections as in reassembly.

8.1.5 O-Ring Face Seal Hydraulic Fittings

1. Check components to ensure that sealing surfaces and fitting threads are free of burrs, nicks, scratches, or any foreign material.

Figure 8.9: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align tube or hose assembly so that flat face of 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 values in Table *8.8, page 605*.

   NOTE:

   If applicable, hold hex on fitting body (E) to prevent rotation of fitting body and hose when tightening fitting nut (D).
6. Use three wrenches when assembling unions or joining two hoses together.
7. Check final condition of fitting.

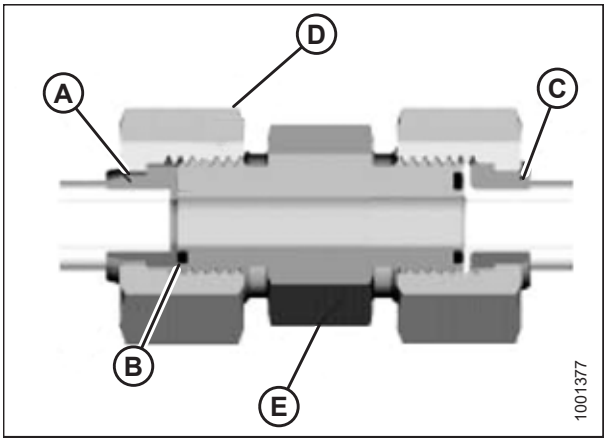


Figure 8.10: Hydraulic Fitting

Table 8.8 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[59]	
			Nm	lbf·ft
-3	Note[60]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[60]	5/16	–	–
-6	11/16	3/8	40–44	29–32
-8	13/16	1/2	55–61	41–45
-10	1	5/8	80–88	59–65
-12	1 3/16	3/4	115–127	85–94
-14	Note[60]	7/8	–	–

59. Torque values and angles shown are based on lubricated connection as in reassembly.
60. O-ring face seal type end not defined for this tube size.

Table 8.8 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[61]	
			Nm	lbf·ft
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

8.1.6 Tapered Pipe Thread Fittings

Assemble pipe fittings as follows:

1. Check components to ensure that fitting and port threads are free of burrs, nicks, scratches, or any form of contamination.
2. Apply pipe thread sealant (paste type) to external pipe threads.
3. Thread fitting into port until hand-tight.
4. Torque connector to appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table *8.9, page 606*. Make sure that tube end of a shaped connector (typically 45° or 90°) is aligned to receive incoming tube or hose assembly. Always finish alignment of fitting in tightening direction. Never back off (loosen) pipe threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with appropriate cleaner.
6. Assess final condition of fitting. Pay special attention to possibility of cracks to port opening.
7. Mark final position of fitting. If a fitting leaks, disassemble fitting and check for damage.

NOTE:

Overtorque failure of fittings may not be evident until fittings are disassembled.

Table 8.9 Hydraulic Fitting Pipe Thread

Tapered Pipe Thread Size	Recommended TFFT	Recommended FFFT
1/8–27	2–3	12–18
1/4–18	2–3	12–18
3/8–18	2–3	12–18
1/2–14	2–3	12–18
3/4–14	1.5–2.5	12–18
1–11 1/2	1.5–2.5	9–15
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61. Torque values and angles shown are based on lubricated connection as in reassembly.

8.2 Conversion Chart

Table 8.10 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
Length	meter	m	x 3.2808 =	foot	ft.
Power	kilowatt	kW	x 1.341 =	horsepower	hp
Pressure	kilopascal	kPa	x 0.145 =	pounds per square inch	psi
Pressure	megapascal	MPa	x 145.038 =	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	x 14.5038 =	pounds per square inch	psi
Torque	Newton meter	Nm	x 0.7376 =	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	x 8.8507 =	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	(°C x 1.8) + 32 =	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	x 3.2808 =	feet per minute	ft/min
Velocity	meters per second	m/s	x 3.2808 =	feet per second	ft/s
Velocity	kilometers per hour	km/h	x 0.6214 =	miles per hour	mph
Volume	liter	L	x 0.2642 =	US gallon	US gal
Volume	milliliter	mL	x 0.0338 =	ounce	oz.
Volume	cubic centimeter	cm^3 or cc	x 0.061 =	cubic inch	$in.^3$
Weight	kilogram	kg	x 2.2046 =	pound	lb.

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. The instruction part numbers are shown in the following table:

Shipping Destination	Header Description	MacDon Instruction Part Number
North America	FD2 Series FlexDraper® Header and FM200 Float Module	MD #214835
Export (anywhere other than North America)	FD2 Series FlexDraper® Header and FM200 Float Module	MD #214836

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Recommended Fluids and Lubricants

Ensure your machine operates at top efficiency by using clean fluids and lubricants only.

- Use clean containers to handle all fluids and lubricants.
- Store fluids and lubricants in an area protected from dust, moisture, and other contaminants.

Table .11 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	2.2 liters (2.3 quarts)
			Main gearbox	2.5 liters (2.6 quarts)
			Completion gearbox	2.5 liters (2.6 quarts)
Hydraulic Oil	Single grade trans-hydraulic oil. Recommend viscosity: • 60.1 cSt @ 40° C • 9.5 cSt @ 100° C 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	85 liters (22.5 US gallons)

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