

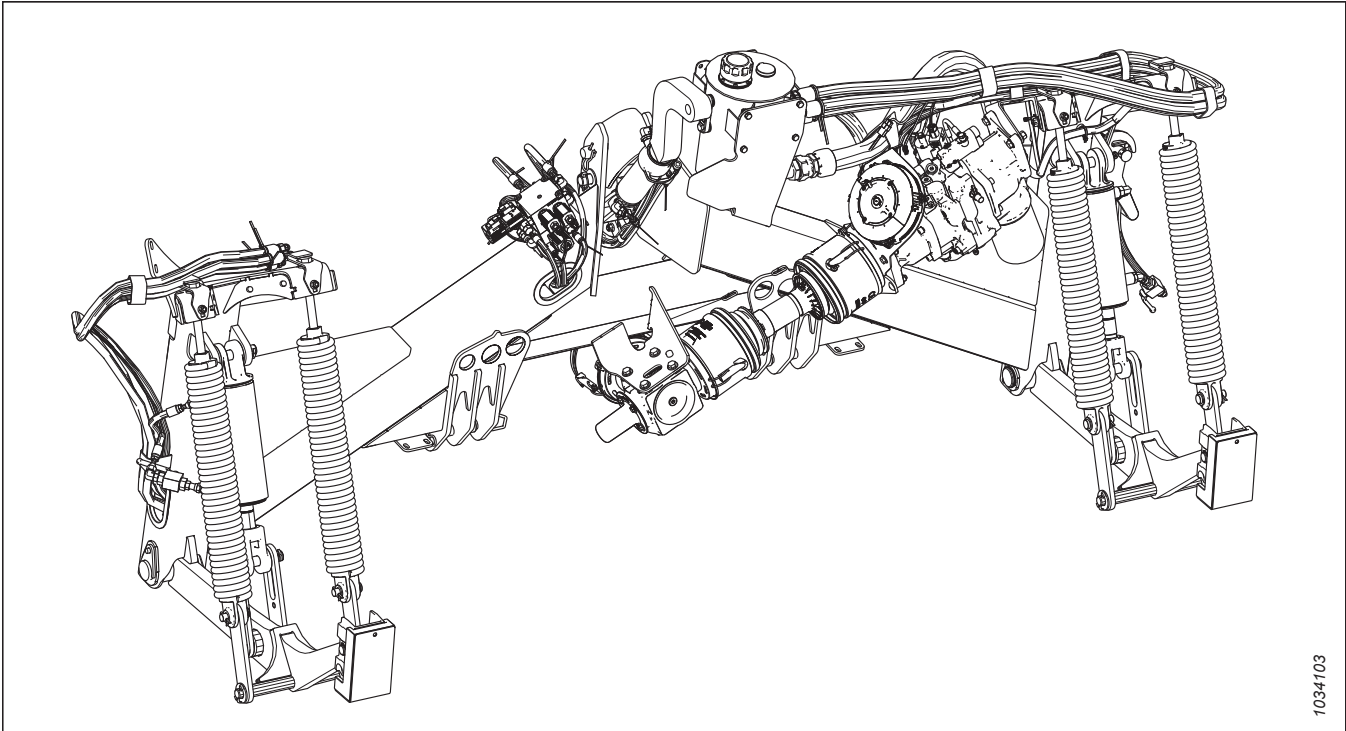
TM100 Tractor Mount Float Module for D1 Series Draper Headers

Setup, Operation, and Parts Manual

262150 Revision A

Original Instruction

This instruction contains the setup procedures, operation instructions, and parts lists for the MacDon TM100 Tractor Mount Float Module for D1 Series Draper Headers.




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Declaration of Conformity

		<h2>EC Declaration of Conformity</h2>	
<p>[1] MacDon MacDon Industries Ltd. 680 Moray Street, Winnipeg, Manitoba, Canada R3J 3S3</p>	<p>[4] As per Shipping Document</p>	<p>[5] November 10, 2022</p>	<p>[6] _____ Daniel Kapu Director of Quality</p>
<p>[2] Tractor Mount Float Module</p>	<p>LINAMAR HUNGARY ZRt, OROS Division H-5900, Oroshaza, Csorvasi ut 27, Hungary</p>		
<p>[3] MacDon TM100</p>			

EN	BG	CZ	DA
<p>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</p>	<p>Ние, [1] декларираме, че следният продукт: Тип машина: [2] Наименование и модел: [3] Серийен 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 Рийдесел Управител, MacDon Europe GmbH Hagenauer Straße 59 65203 Wiesbaden (Германия) bvonriedesel@macdon.com</p>	<p>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</p>	<p>Vi, [1] erklærer, at produktet: Maskintype [2] Navn og model: [3] Serienummer (-numre): [4] Opfylder alle bestemmelser i direktiv 2006/42/EF. Anvendte harmoniserede standarder, som henviser 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</p>

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<p>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</p>	<p>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</p>	<p>Meie, [1] deklareerime, et toode Seadme tüüp: [2] Nimi ja mudel: [3] Seerianumberid: [4] vastab kõigile direktiivi 2006/42/EÜ asjakohastele sätetele. Kasutatud on järgnevald 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</p>	<p>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</p>

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IT	HU	LT	LV
<p>Noi, [1] Dichiaro 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.</p> <p>Utilizzo degli standard armonizzati, come indicato nell'Articolo 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>Mi, [1] Ezennel kijelentjűk, hogy a következő termék: Gép típusa: [2] Név és modell: [3] Szériaszám(ok): [4] teljesíti a következő irányelv összes vonatkozó előírásait: 2006/42/EK.</p> <p>Az alábbi harmonizált szabványok kerültek alkalmazásra a 7(2) cikkely szerint:</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>Mes, [1] Pareiškiamė, kad šis produktas: Mašinos tipas: [2] Pavadinimas ir modelis: [3] Serijos numeris (-iai): [4] atitinka taikomus reikalavimus pagal Direktyvą 2006/42/EB.</p> <p>Naudojami harmonizuoti standartai, kai nurodoma straipsnyje 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>Deklaracijos vieta ir data: [5] Asmens tapatybės duomenys ir parašas asmens, įgaliojoto sudaryti šią deklaraciją: [6] Vardas ir pavardė asmens, kuris įgaliojotas sudaryti šį techninį failą: Benedikt von Riedesel Generalinis direktorius, MacDon Europe GmbH Hagenauer Straße 59 65203 Wiesbaden (Vokietija) bvonriedesel@macdon.com</p>	<p>Mēs, [1] Deklarējam, ka produkts: Mašīnas tips: [2] Nosaukums un modelis: [3] Sērijas numurs(-i): [4] Atbilst visām būtiskajām Direktīvas 2006/42/EK prasībām.</p> <p>Piemēroti šādi saskaņotie standarti, kā minēts 7. pantā 2. punktā:</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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 Rīdzelis Generāldirektors, MacDon Europe GmbH Hagenauer Straße 59 65203 Wiesbaden (Vācija) bvonriedesel@macdon.com</p>
<p>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.</p> <p>Geharmoniseerde normen toegepast, zoals vermeld in Artikel 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>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.</p> <p>Zastosowaliśmy następujące (zharmonizowane) normy zgodnie z artykulem 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>Nós, [1] Declarámos, 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.</p> <p>Normas harmonizadas aplicadas, conforme referido no Artigo 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>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.</p> <p>Au fost aplicate următoarele standarde armonizate conform articolului 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>
<p>Mi, [1] Izjavljujem da proizvod Tip mašine: [2] Naziv i model: [3] Serijski broj(ovi): [4] Ispunjava sve relevantne odredbe direktive 2006/42/EC.</p> <p>Korišćeni su usklađeni standardi kao što je navedeno u članu 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>Datum i mesto izdavanja deklaracije: [5] Identitet i potpis lica ovlašćenog za sastavljanje deklaracije: [6] Ime i adresa osobe ovlašćene za sastavljanje tehničke datoteke: Benedikt von Riedesel Generalni direktor, MacDon Europe GmbH Hagenauer Straße 59 65203 Wiesbaden (Nemačka) bvonriedesel@macdon.com</p>	<p>Mi, [1] Intygat att produkten: Maskintyp: [2] Namn och modell: [3] Serienummer: [4] uppfyller alla relevanta villkor i direktivet 2006/42/EG.</p> <p>Harmonierade standarder används, såsom anges i artikel 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>	<p>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.</p> <p>Uporabljeni usklajeni standardi, kot je navedeno v členu 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>Kraj in datum izjave: [5] Istovetnost in podpis osebe, opolnomočene za pripravo izjave: [6] Ime in naslov osebe, pooblaščenca za pripravo tehnične datoteke: Benedikt von Riedesel Generalni direktor, MacDon Europe GmbH Hagenauer Straße 59 65203 Wiesbaden (Nemčija) bvonriedesel@macdon.com</p>	<p>My, [1] týmto prehlasujeme, že tento výrobok: Typ zariadenia: [2] Názov a model: [3] Výrobné číslo: [4] splňa príslušné ustanovenia a základné požiadavky smernice č. 2006/42/ES.</p> <p>Použitie harmonizovaných noriem, ktoré sa uvádzajú v článku č. 7(2):</p> <p style="text-align: center;">EN ISO 4254-1:2013 EN ISO 4254-7:2009</p> <p>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</p>



UK Declaration of Conformity

[1] **MacDon**

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[5] November 10, 2022

LINAMAR HUNGARY ZRt, OROS Division
H-5900, Oroshaza, Csorvasi ut 27,
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Daniel Kapu
Director of Quality

[2] Tractor Mount Float Module

[3] MacDon TM100

We, [1]

Declare, that the product:

Machine Type: [2]

Name & Model: [3]

Serial Number(s): [4]

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

Designated standards used are :

EN ISO 4254-1:2015

EN ISO 4254-7:2017

Place and date of declaration: [5]

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

Introduction

Your machine

The TM100 Tractor Mount Float Module allows a MacDon rigid draper header to be mounted on a conventional farm tractor equipped with a front three-point hitch or rear three-point hitch with reverse drive capability.

NOTE:

The TM100 is compatible with only 4.6–10.7 m (15–35 ft.) timed double-knife headers.

NOTE:

The TM100 Tractor Mount Float Module (C2080) must be ordered with one of the three driveline options:

- B7327 (1 3/8 in. 21T driveline)
- B7328 (1 3/4 in. 20T driveline)
- B7329 (1 3/8 in. 6T driveline)

Your warranty

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

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

Your manual

Carefully read all the material provided before attempting to use the machine.

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

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

The following conventions are used in this manual:

- 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 TM100 and tractor.
- Unless otherwise noted, use the standard torque values provided in Chapter *8.2 Torque Specifications, page 165* of this document.

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.

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

NOTE:

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

This manual is available in English, French, and German. These manuals can be ordered from MacDon, downloaded from our Dealer-only site (<https://portal.macdon.com>) (login required), or downloaded from the MacDon website (www.macdon.com).

Summary of Changes

At MacDon, we're continuously making improvements: occasionally these improvements impact product documentation. The following list provides an account of major changes from the previous version of this document.

Section	Summary of Change	Internal Use Only
<i>Declaration of Conformity, page i</i>	Updated the Declaration of Conformity documents.	Technical Publications
<i>3.3 Unpacking the Tractor Mount Float Module, page 24</i>	Removed SAE hardware from hose guide hardware bag.	Engineering
<i>Engaging Reel Safety Props, page 83</i>	Modified the instructions and images to improve the understanding of how to correctly engage the safety props.	ECN 63501
<i>7.4 Float Springs, page 124</i>	MD #333081 was MD #333491.	ECN 62809
<i>7.5 Header Drive, page 126</i>	MD #333594 was MD #333532.	ECN 63383

Serial Number Location

The serial number helps identify your machine and ensures you get the best information quickly when working with MacDon for Product Support or Parts.

Record the serial number of the TM100 Tractor Mount Float Module in the space provided.

TM100 serial number: _____

The serial number plate (A) is located on the rear face of the frame, above the power take-off (PTO) driveline.

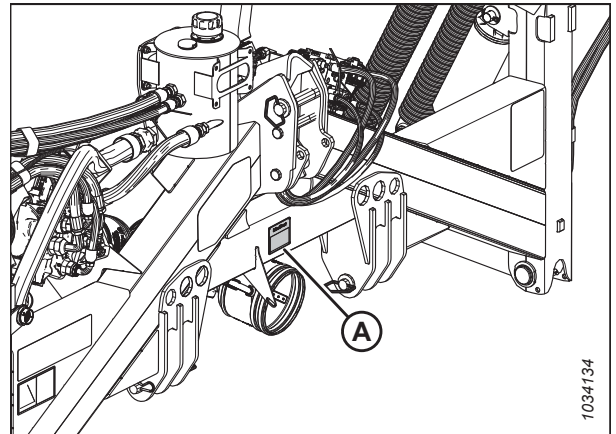


Figure 1: Serial Number Location

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Chapter 1: Safety

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

1.1 Safety Alert Symbols

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

This symbol means:

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

Carefully read and follow the safety message accompanying this symbol.

Why is safety important to you?

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



Figure 1.1: Safety Symbol

1.2 Signal Words

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

Signal words are selected using the following guidelines:

DANGER

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

WARNING

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

CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

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

CAUTION

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

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

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

In addition, take the following precautions:

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



Figure 1.2: 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. Familiarize yourself with its use.
- Keep young children away from machinery at all times.
- Be aware that accidents often happen when Operators are fatigued or in a hurry. Take time to consider the safest way to accomplish a task. **NEVER** ignore the signs of fatigue.

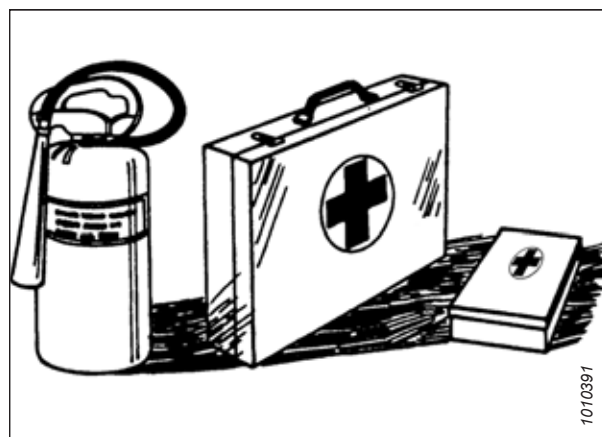


Figure 1.4: Safety Equipment

SAFETY

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



Figure 1.5: Safety around Equipment

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

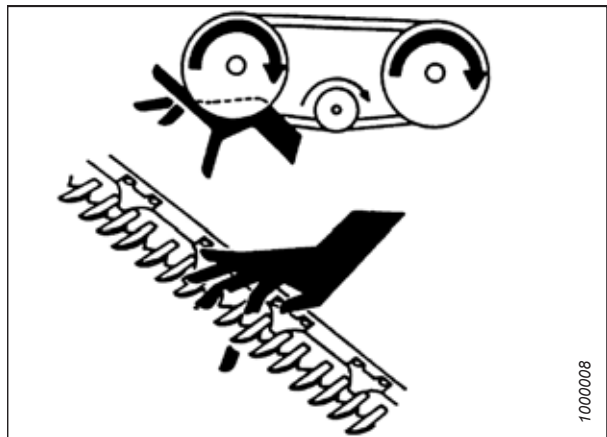


Figure 1.6: Safety around Equipment

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



Figure 1.7: Safety around Equipment

1.4 Maintenance Safety

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

To ensure your safety while maintaining the machine:

- Review the operator's manual and all safety items before operating or performing maintenance on the machine.
- Place all controls in Neutral, stop the engine, set the parking brake, remove the ignition key, and wait for all moving parts to stop before servicing, adjusting, or repairing the machine.
- Follow good shop practices:
 - Keep service areas clean and dry
 - Ensure that electrical outlets and tools are properly grounded
 - Keep the work area well lit
- Relieve pressure from hydraulic circuits before servicing and/or disconnecting the machine.
- Ensure that all components are tight and that steel lines, hoses, and couplings are in good condition before applying pressure to hydraulic systems.
- Keep hands, feet, clothing, and hair away from all moving and/or rotating parts.
- Clear the area of bystanders, especially children, when carrying out any maintenance, repairs, or adjustments.
- Install the transport lock or place safety stands under the frame before working under the machine.
- If more than one person is servicing the machine at the same time, be aware that rotating a driveline or another mechanically driven component by hand (for example, accessing a lubricant fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.



Figure 1.8: Wet Floors Present Safety Risks

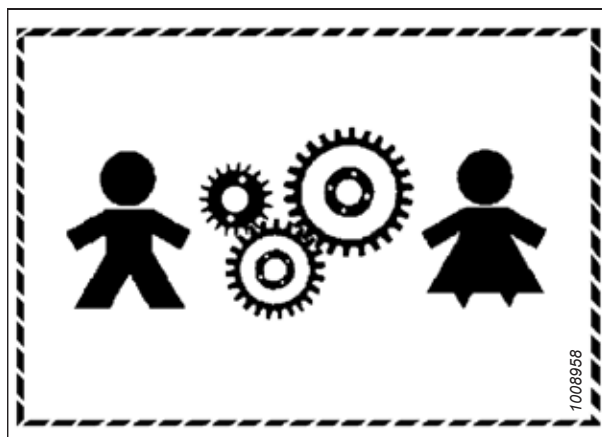


Figure 1.9: Equipment is NOT Safe for Children

SAFETY

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



Figure 1.10: Personal Protective Equipment

1.5 Hydraulic Safety

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

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

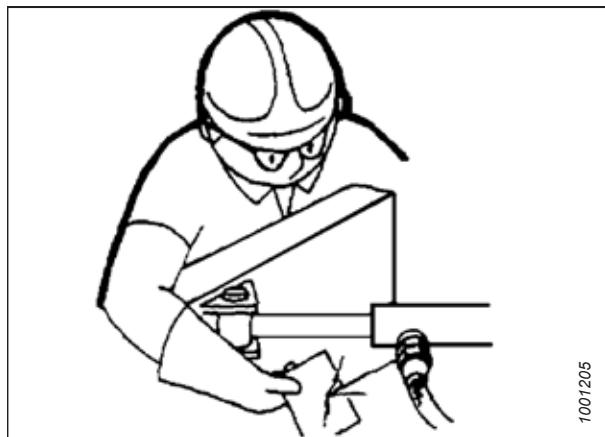


Figure 1.11: Testing for Hydraulic Leaks

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



Figure 1.12: Hydraulic Pressure Hazard

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

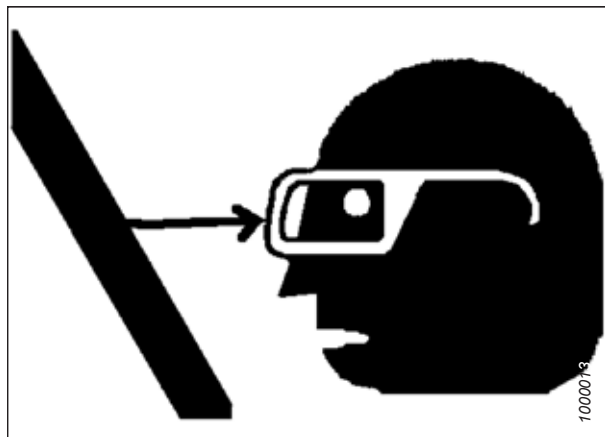


Figure 1.13: Safety around Equipment

1.6 Welding Precaution

Welding should never be attempted on the header while it is connected to the tractor.



WARNING

Severe damage to sensitive, expensive electronics can result from welding on the header while it is connected to the tractor. It can be impossible to know what effect high current could have with regard to future malfunctions or shorter lifespan. It is very important that welding on the header is not attempted while the header is connected to the tractor.

If you need to do any welding on the header, it should first be disconnected and removed from the tractor.

If it is unfeasible to disconnect the header from the tractor before attempting welding, refer to the tractor's technical manual for welding precautions detailing all electrical components that must be disconnected first for safe welding.

1.7 Safety Signs

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

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

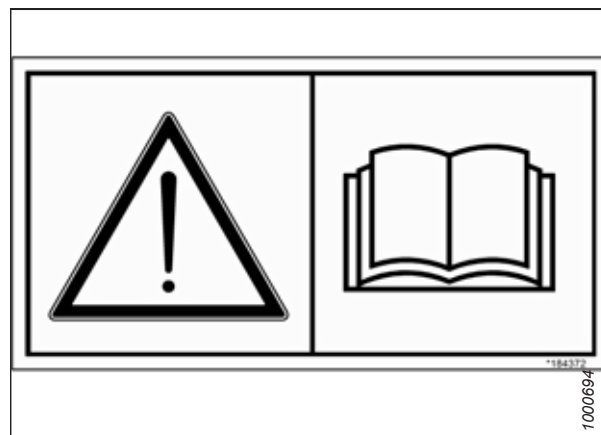


Figure 1.14: Operator's Manual Decal

1.7.1 Installing Safety Decals

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

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

1.8 Safety Decal Locations

Safety signs are usually yellow decals, and are placed on the machine where there is a risk of personal injury, or where the operator has to take extra precaution before operating controls.

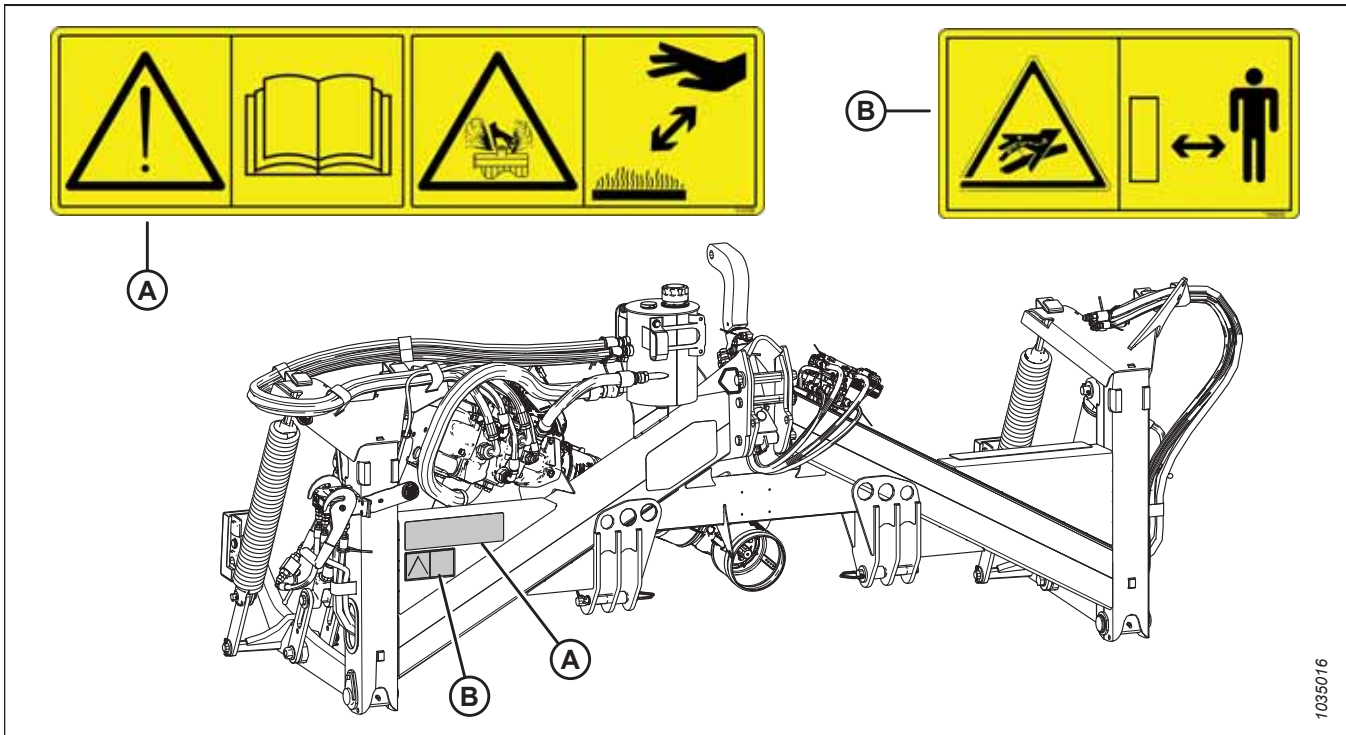


Figure 1.15: TM100 Safety Decal Locations

A - MD #313728 – Hot Fluid Spray Hazard, Read Operator's Manual

B - MD #166832 – High Pressure Oil Hazard

1.9 Understanding Safety Signs

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

MD #158289

Driveline entanglement hazard

DANGER

- A rotating driveline contact can cause death—keep away!

Do **NOT** operate without:

- All driveline guards and equipment shield in place.
- Driveline guards that turn freely on the driveline.
- Stopping the engine and removing the key before opening the shield.
- Drivelines securely attached at both ends.
- Reading the operator's manual and follow all safety instructions. If you do not have a manual, obtain one from your Dealer.
- Making certain everyone is clear of the machine before starting engine and during operation.



Figure 1.16: MD #158289

MD #166832

High-pressure hydraulic fluid hazard

WARNING

To prevent serious injury, gangrene, or death:

- Hydraulic fluid emitted from a pinhole leak can easily puncture skin. Hydraulic oil penetrating the skin can result in serious injury, gangrene, or death.
- Do **NOT** approach hydraulic oil leaks.
- Do **NOT** use any part of your body to check for oil leaks.
- Relieve the pressure in the hydraulic system before you loosen any fittings.
- If hydraulic oil penetrates the skin, seek emergency medical help. Immediate surgery is required to remove the oil which has penetrated the skin to prevent the occurrence of gangrene.



Figure 1.17: MD #166832

SAFETY

MD #171287

Crushing hazard

DANGER

To prevent injury or death from the fall of a raised pull-type:

- Fully raise the pull-type, stop the engine, remove the key, and engage the hydraulic safety lock before going under the pull-type.
- Alternatively, rest the pull-type on the ground, stop the engine, and remove the key before servicing the machine.



Figure 1.18: MD #171287

MD #247130

Driveline entanglement hazard

DANGER

- A rotating driveline contact can cause death—keep away!

Do **NOT** operate without:

- Stopping the engine and removing the key before opening the shield.
- All driveline guards and equipment



Figure 1.19: MD #247130

SAFETY

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 the machine before starting the engine and during operation.
- Keep riders off of the machine.
- Keep all shields in place and stay clear of moving parts.
- Disengage the header drive, put the transmission in Neutral, and wait for all movement to stop before leaving the operator's position.
- Stop the engine and remove the key from the ignition before servicing, adjusting, lubricating, cleaning, or unplugging the machine.
- Engage safety locks to prevent the lowering of a raised unit before servicing it in the raised position.
- Use a slow moving vehicle emblem and flashing warning lights when operating on roadways unless prohibited by law.

CAUTION

To prevent injury from hot fluids:

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

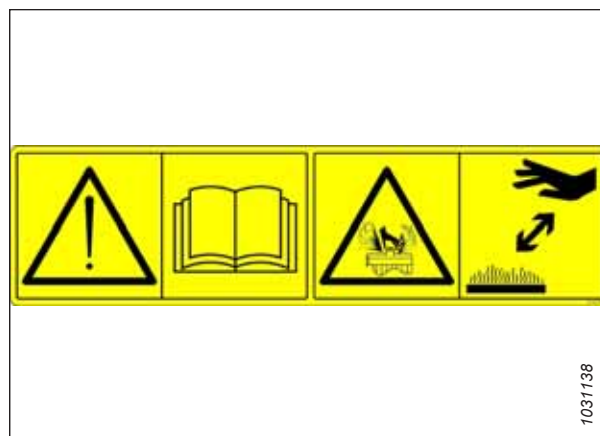


Figure 1.20: MD #313728

Chapter 2: Product Overview

In this chapter, terms used in this manual are defined and basic information about the machine is provided including product specifications and images of the main machine components.

2.1 Definitions

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

Table 2.1 Definitions

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener designed to be paired with a nut
Center-link	A hydraulic cylinder or manually adjustable turnbuckle type connection between the header and the vehicle, which is used to change the angle of the header relative to the vehicle
CGVW	Combined gross vehicle weight
DWA	Double Windrow Attachment
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position in which the given sealing surfaces or components are making contact with each other and the fitting has been tightened by hand to a point where the fitting is no longer loose and cannot be tightened further by hand
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in the head (internal-wrenching hexagon drive); also known as an Allen key
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-Ring Seal
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread when inserted into a mating part
Soft joint	A flexible joint made by use of a fastener in which the joining materials compress or relax over a period of time
SST	Slow speed transport
Tension	An axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.). This term can also be used to describe the force a belt exerts on a pulley or sprocket
TFFT	Turns from finger tight
Torque	The product of a force * the length of a lever arm, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)

PRODUCT OVERVIEW

Table 2.1 Definitions (continued)

Term	Definition
Torque angle	A tightening procedure in which a fitting is assembled to a specified tightness (usually finger tight) and then the nut is turned farther by a specified number of degrees until it achieves its final position
Torque-tension	The relationship between the assembly torque applied to a piece of hardware and the axial load it induces in a bolt or screw
Washer	A thin cylinder with a hole or a slot located in the center, used as a spacer, a load distribution element, or a locking mechanism

2.2 Specifications

Specifications and design are subject to change without notice or obligation to revise previously sold units.

Table 2.2 Specifications

TM100 Front Mount Float Module	
Three-point hitch compatibility	Category 2/3/3N
Header compatibility	D115, D120, D125, D130, and D135 double knife
Width	1186 mm (47 in.)
Height	1306 mm (51 in.)
Length	2991 mm (118 in.)
Weight	631 kg (1391 lb.)
PTO driveline	1000 rpm 1 3/8 in. Z6, 1 3/8 in. Z21, or 1 3/4 in. Z20
Oil capacity	12.6 L (3.3 US gallons)
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
Standard features	Reel positioning Hydraulic header tilt Draper speed control Hydraulic deck shift Integrated header lift and flotation
In-cab header controls	Side draper speed Reel height and fore-aft positioning Deck shift position Hydraulic header tilt
Tractor Requirements	
Power take-off (PTO) power	30 kw (40 hp)
Hydraulic pressure	17,237 kPa (2500 psi)
Hydraulic flow	57 L/min (15 gpm)
Hydraulic remotes	3 required

2.3 Dimensions

When transporting or operating a TM100, it is important to know the dimensions of the machine.

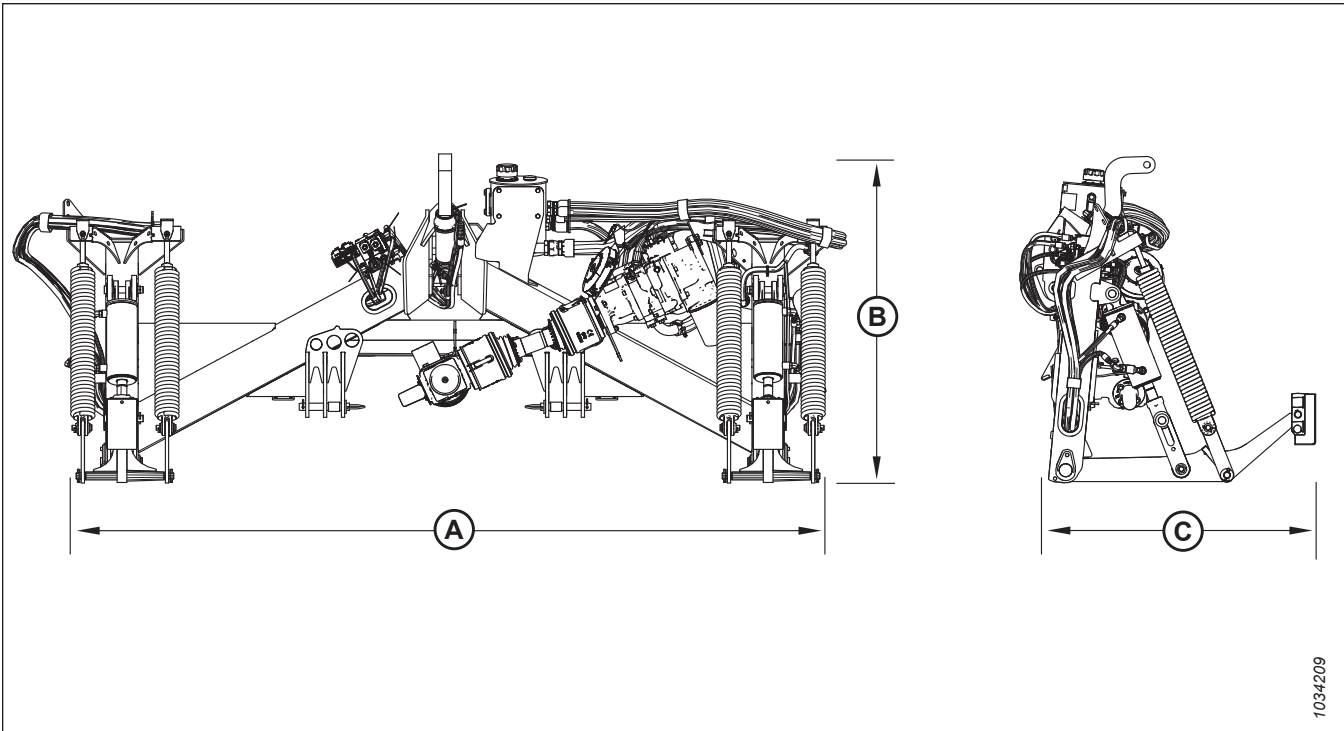


Figure 2.1: TM100 Dimensions

A - 2991 mm (118 in.)

B - 1306 mm (51 in.)

C - 1186 mm (47 in.)

1034209

2.4 Component Identification

Operating and maintaining the machine is easier if you are familiar with the location of the float module's main components.

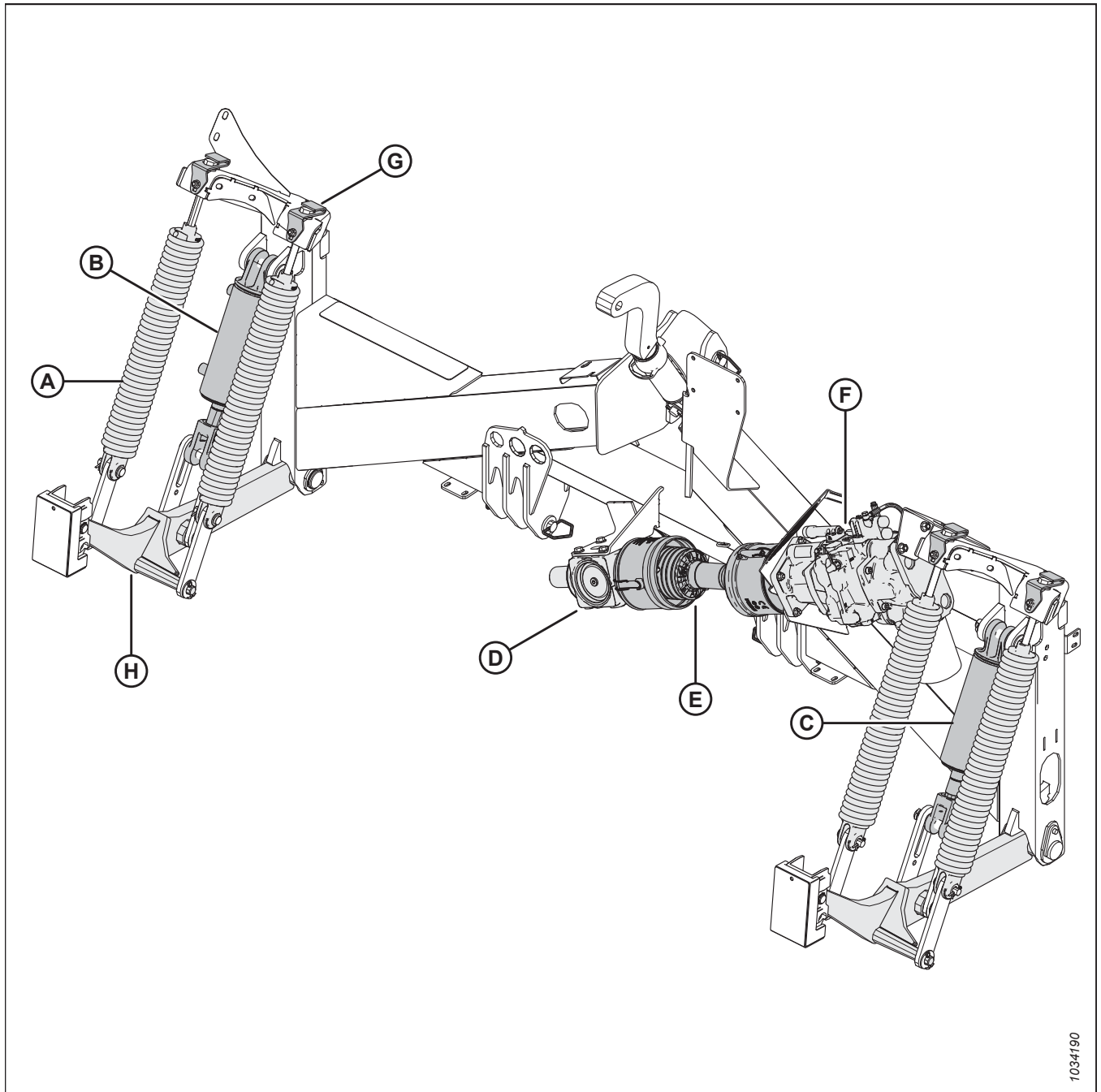


Figure 2.2: Header Side of TM100

A - Float Springs (2 Per Side)

D - Drive Gearbox¹

G - Float Spring Adjustment Locks (2 Per Side)

B - Lift Cylinder, Slave

E - Driveline, Gearbox to Pump

H - Lift Arms (1 per side)

C - Lift Cylinder, Master

F - Header Drive and Draper Drive Pump

1. Factory setting is for counterclockwise PTO. Rotate gearbox for clockwise PTO. For instructions, refer to [3.8 Repositioning Gearbox, page 40](#).

PRODUCT OVERVIEW

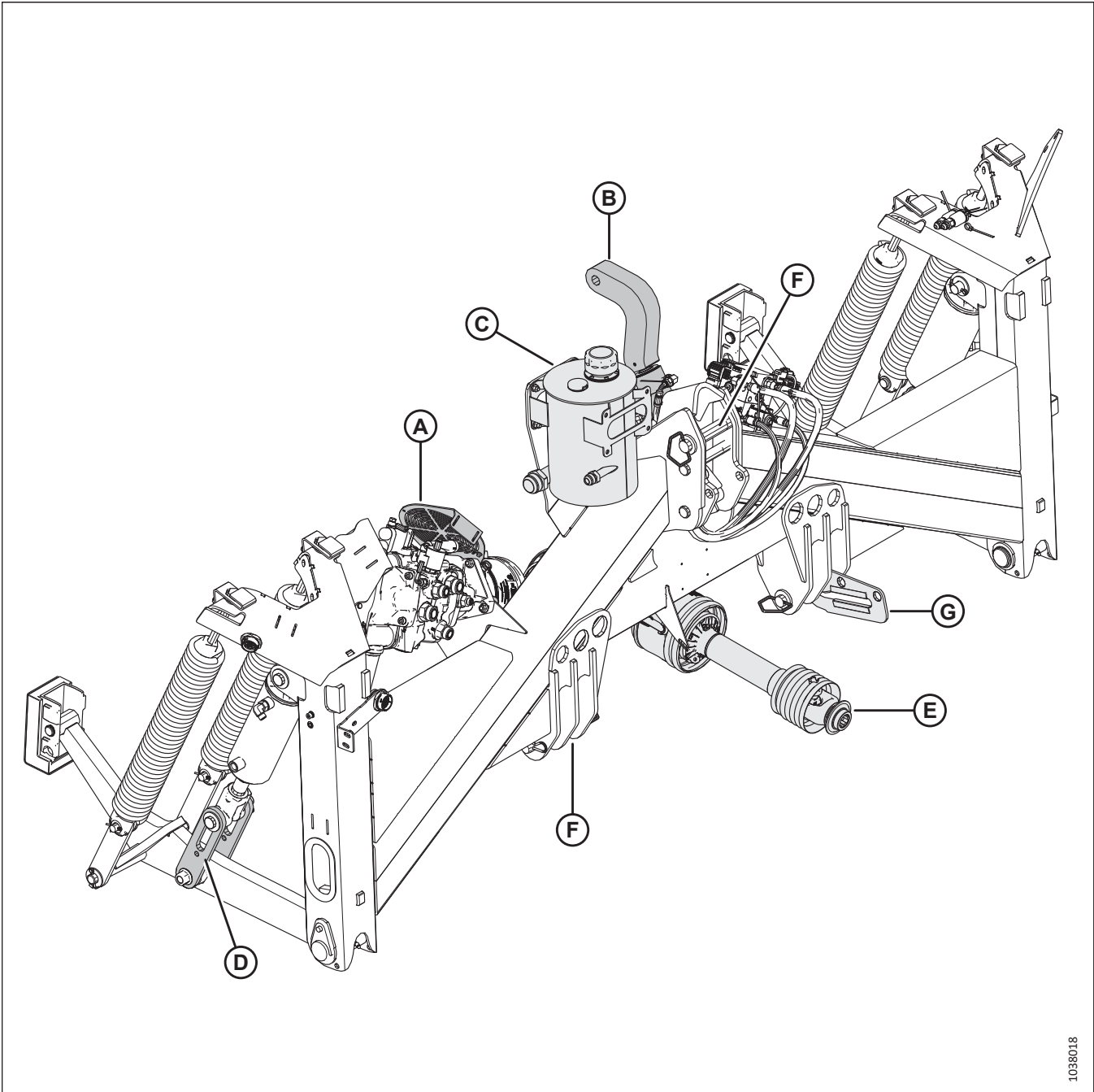


Figure 2.3: Tractor Side of TM100

A - Cooling Fan

D - Float Links (2 per side)

G - PTO Driveline Holder (Shown in Storage Position)

B - Header Tilt Cylinder

E - PTO Driveline²

C - Hydraulic Reservoir

F - Tractor Pick-Up, Categories 2/3N/3

2. Three options: 1 3/8 in. Z6, 1 3/8 in. Z21, or 1 3/4 in. Z20.

Chapter 3: Unloading and Assembling Tractor Mount Float Module

Unload and unpack all TM100 parts before beginning assembly. Carefully follow these procedures in the order in which they are presented.

3.1 Unloading Tractor Mount Float Module

Familiarize yourself with the procedure and prepare the equipment necessary to remove the TM100 from the shipping container.

⚠ DANGER

To prevent injury to bystanders caused by being struck by machinery, do NOT allow people to stand in the unloading area.

⚠ DANGER

The equipment used for loading or unloading a header must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage or bodily harm to operators or bystanders.

IMPORTANT:

Two forklifts or suitable lifting vehicles are required for this procedure; one to hold the lifting platform and the other to pull the float module out from the container.

IMPORTANT:

Forklifts are normally rated with the load centered 610 mm (24 in.) from the back end of forks. To obtain forklift capacity for a load centered at 1220 mm (48 in.), check with your forklift distributor.

Table 3.1 Lifting Vehicle Requirements

Minimum Lifting Capacity	1815 kg (4000 lb.) load center (A) at 1220 mm (48 in.) (B) from back of forks
Minimum Fork Length (C)	1981 mm (78 in.)

Table 3.2 Lifting Chain Requirements

Type	Overhead lifting quality (1/2 in.)
Minimum Lifting Capacity	1815 kg (4000 lb.)

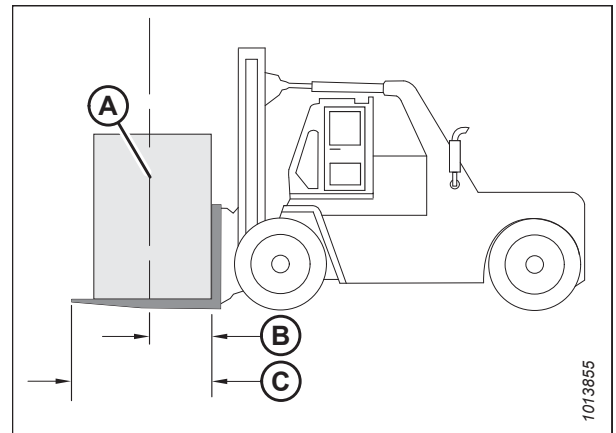


Figure 3.1: Minimum Lifting Capacity

- A - Load Center of Gravity
- B - Load Center 1220 mm (48 in.) from Back of Forks
- C - Minimum Fork Length 1981 mm (78 in.)

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

1. Move the trailer into position and block the wheels.
2. Lower the trailer storage stands.
3. Open the container doors and remove the materials that brace the load.
4. Check the container floor. Remove nails and other obstructions if necessary.
5. Position lifting platform (A) at the container opening using the lifting vehicle.

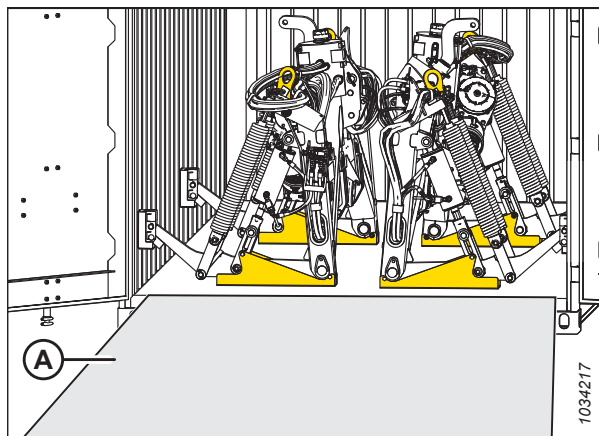


Figure 3.2: Container

6. Loop the chain around float module leg (A) and float links (B). Connect the chain to the forks on a the second lifting vehicle.
7. Pull the float module from the container onto the platform.
8. Repeat Steps 6, [page 22](#) and 7, [page 22](#) for the remaining float modules.
9. Lift the platform slightly to take the weight off the container.
10. Drive the truck and container forward slowly until the container is clear from the float modules. Watch all clearances and reposition the float modules as required.
11. When the container is clear of the float modules, lower the platform and float modules to the ground.

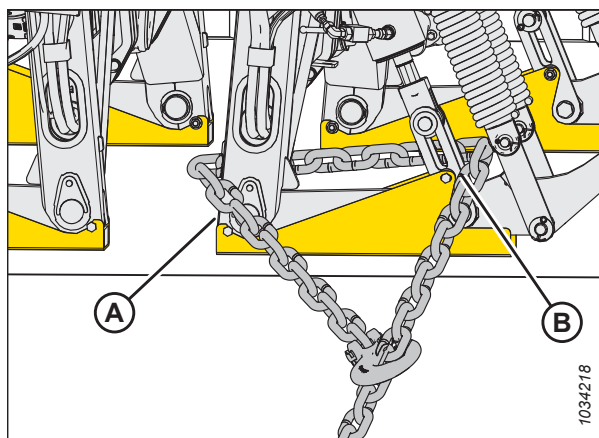


Figure 3.3: Chain Location

3.2 Moving Tractor Mount Float Module to Assembly Area

Safely move the TM100 to an area to complete assembly and attach to the tractor.

DANGER

The equipment used for loading or unloading a float module must meet or exceed the requirements specified in this document. Using inadequate equipment may result in chain breakage, vehicle tipping, machine damage, or bodily harm to operators or bystanders.

1. Approach the rear of the float module with the lifting vehicle.
2. Attach chains to lift hooks (A) and the forklift forks. If chains are not available, slide the forklift forks into shipping channels (B).

IMPORTANT:

Set the maximum possible width on the forklift forks to reduce the angle on the lifting chains and to reduce the risk of damaging the float module.

3. Move the float module to the assembly area, and carefully lower it to the ground.

NOTE:

Lift the load only as high as necessary to move it.

4. Remove the chains, if attached.

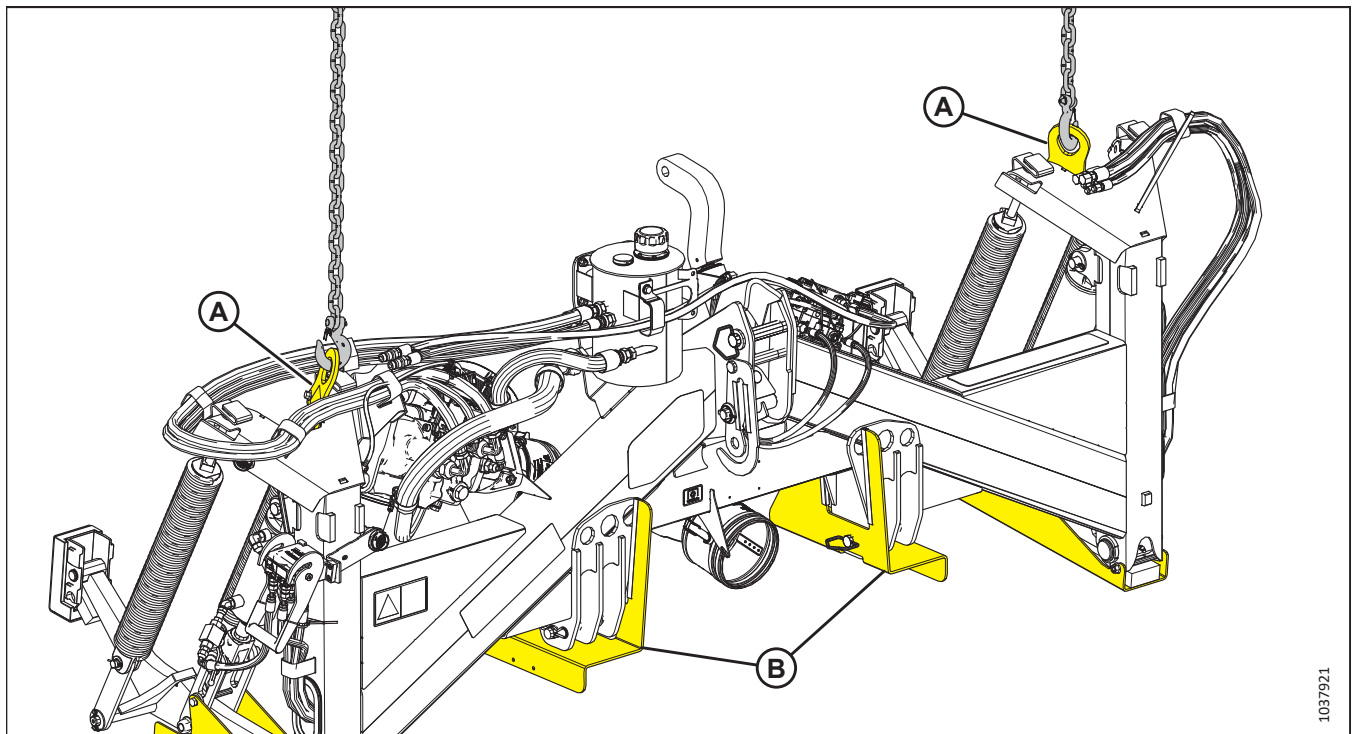


Figure 3.4: Lifting Chain Attachment Points

3.3 Unpacking the Tractor Mount Float Module

Shipping wires and packaging must be removed in order to complete the assembly of the TM100.

1. Cut the shipping wire and remove the parts bags from the shipping position on each lift cylinder at the front of the TM100.

NOTE:

One bag is secured to each lift cylinder. The big bag contains three separate parts bags.

2. Remove shipping wire and foam padding (A) securing the hydraulic hoses at both sides of the float module. Do **NOT** remove the shipping wire that secures center-link tilt cylinder (B) to the frame. This will be removed later when attaching the float module to a header.

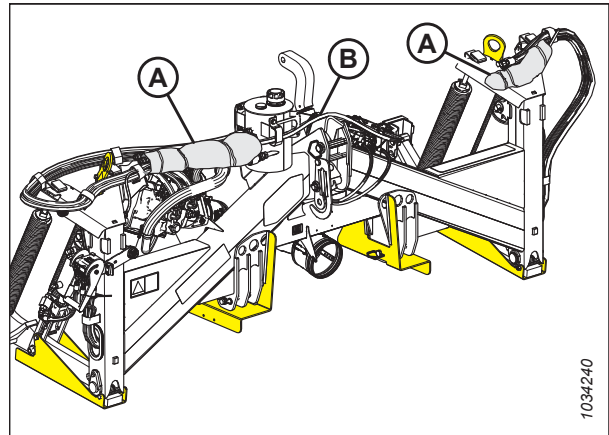


Figure 3.5: Shipping Foam

The sealed bags removed from the lift cylinder contain the following parts:

Hydraulic Hoses Bag

- Four 3000 mm hoses (A) (MD #333421)

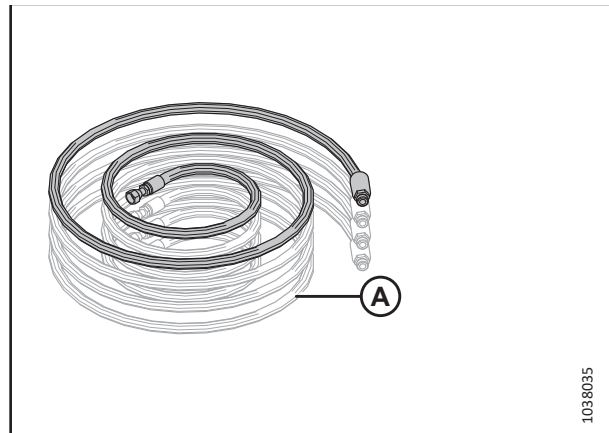


Figure 3.6: Parts in Hydraulic Hoses Bag

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

Hose Guide and Hardware Bag

- Hose guide (A) (MD #333378)
- Two carriage bolts – M10 x 30 mm (B) (MD #184662)
- Two center lock flange nuts (C) (MD #135799)

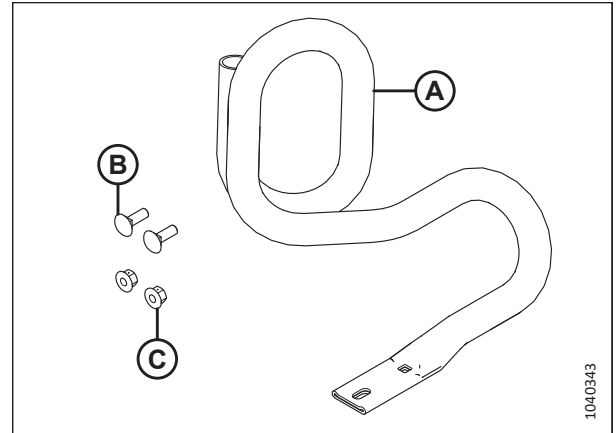


Figure 3.7: Parts in Hose Guide and Hardware Bag

Lift Arm Locking Brackets and Hardware Bag

- Two locking brackets (A) (MD #333522)
- Four retaining rings (B) (MD #135385)
- Two pins (C) (MD #333536)
- Four M20 x 30 mm hex bolts (D) (MD #252891)
- Eight hardened washers (E) (MD #21540)
- Four flat washers (F) (MD #18601)

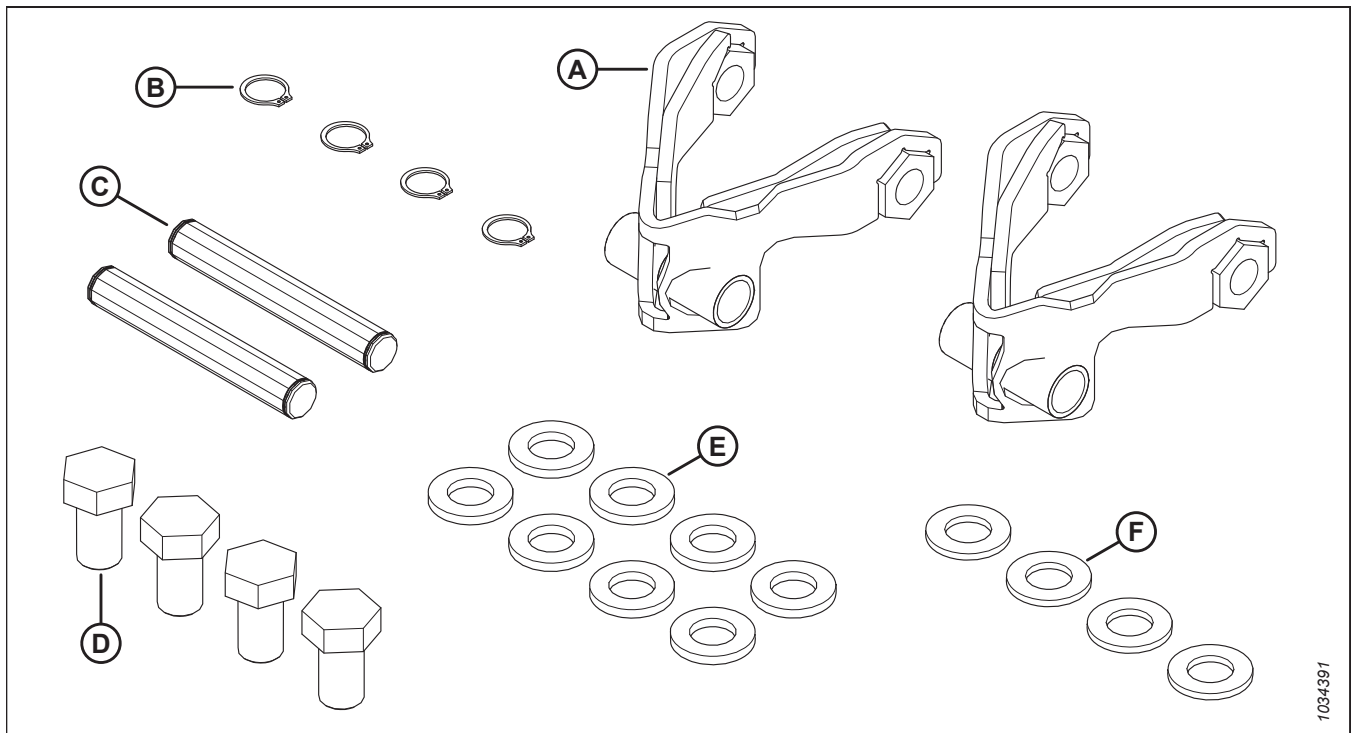


Figure 3.8: Parts in Lift Arm Locking Brackets and Hardware Bag

Electrical and Hydraulic Connections Bag

- Harness – TM100 to header (A) (MD #333181)

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

- Control console (B) (MD #333571)
- Multicoupler with fittings (C) (MD #333422)
- Four #8 ORB fittings (D) (MD #135563)
- Suction cup base (E) (MD #287859)
- Harness – TM100 power (F) (MD #333266)
- Harness – TM100 power (G) (MD #333265)
- Harness – TM100 to cab (H) (MD #333569)

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

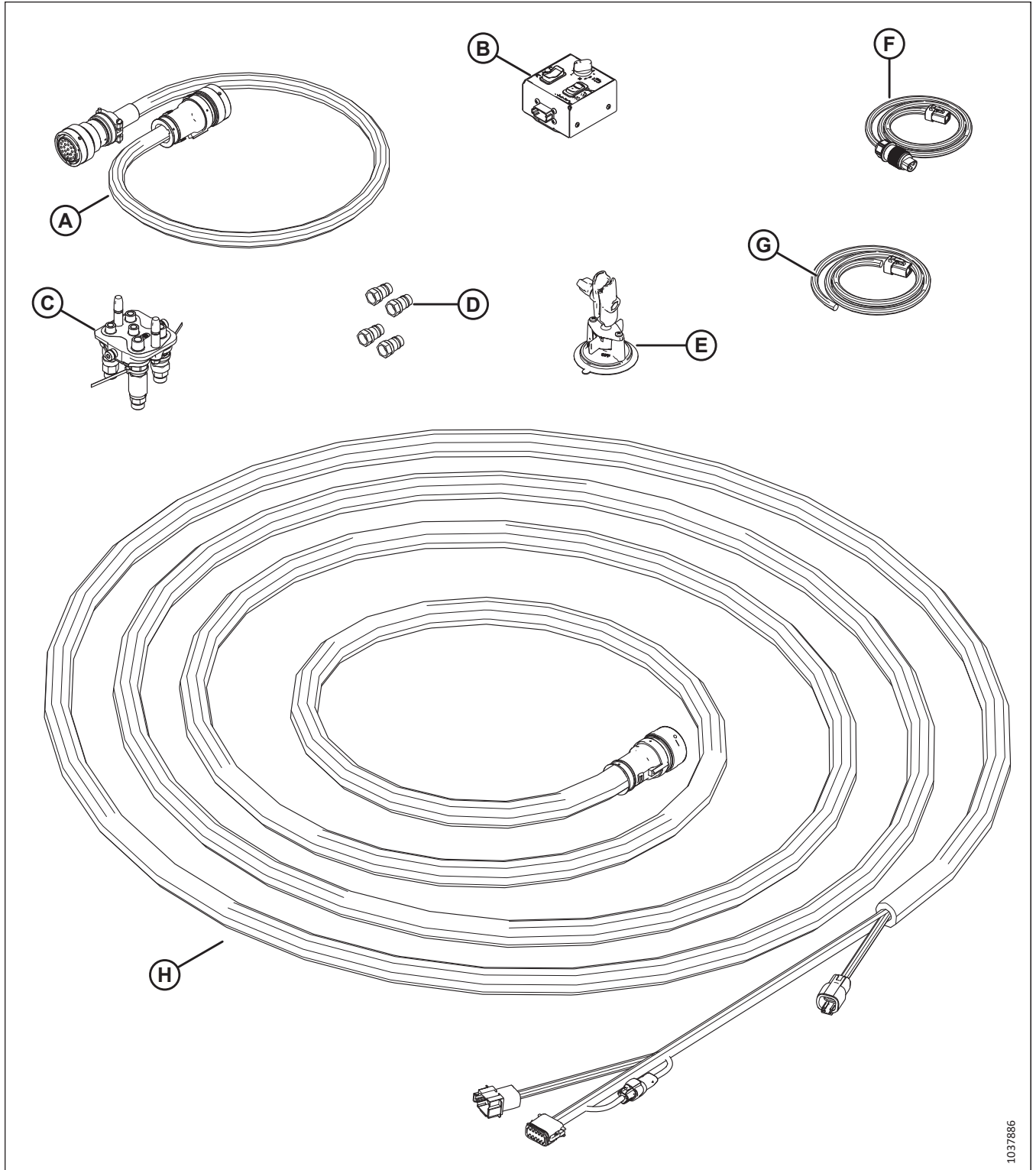


Figure 3.9: Parts in Electrical and Hydraulic Connections Bag

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UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

Hydraulic Hoses Bag

- Four 9000 mm hoses (A) (MD #333420)

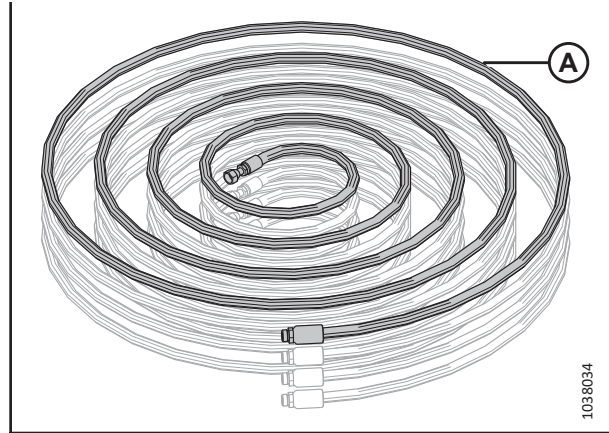


Figure 3.10: Parts in Hydraulic Hoses Bag

3.4 Removing Shipping Stands

Shipping stands help protect equipment and assist with transport, but they must be removed before operation in the field.

NOTE:

Unless otherwise specified, discard stands, shipping material, and hardware. The removable stands are painted yellow or unpainted.

NOTE:

Two inboard shipping channels (B) should be removed prior to attaching the TM100 to the tractor. Two outboard shipping channels (C) can be removed after the TM100 is attached to the tractor. If attached to a tractor, raise the tractor's three-point linkage sufficiently to remove the shipping channels located under the TM100 lift arms.

NOTE:

If the TM100 is not attached to a tractor, use chains at lugs (A) and a lifting device to lift the TM100 high enough to remove shipping channels (C).

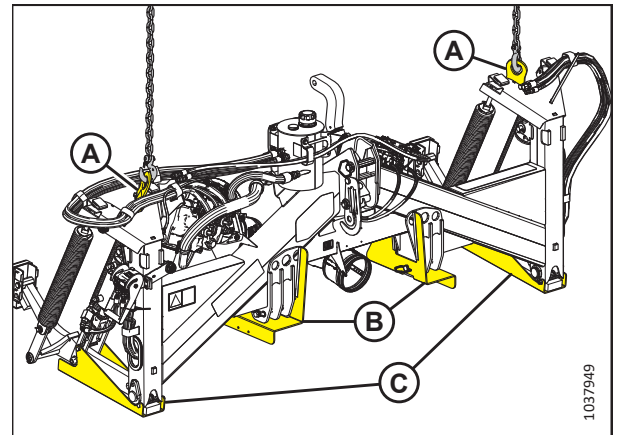


Figure 3.11: Shipping Channels

Remove hairpins (A) and three-point linkage pins (B) that secure shipping channels (C) to rear plates (D).

Remove and discard shipping channels (C).

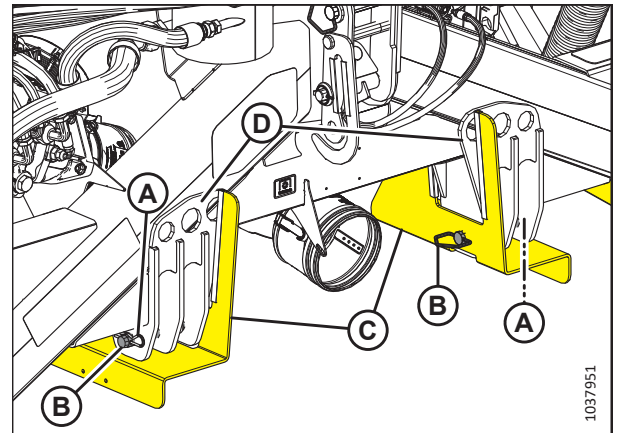


Figure 3.12: Inboard Shipping Channel

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

Reinstall three-point linkage pins (B) and secure them with hair pins (A).

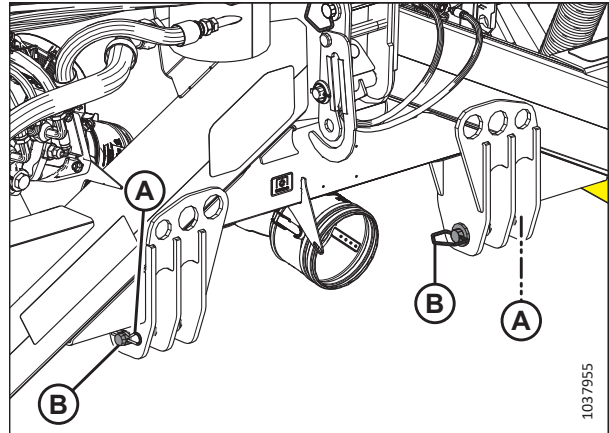


Figure 3.13: Inboard Shipping Channel

Remove two M12 bolts (A) and nuts that secure shipping channel (C) under the lift arm.

Remove nail (B).

Remove shipping channel (C) and block of wood (D).

Repeat Step , [page 30](#) to Step , [page 30](#) for shipping channel on opposite lift arm.

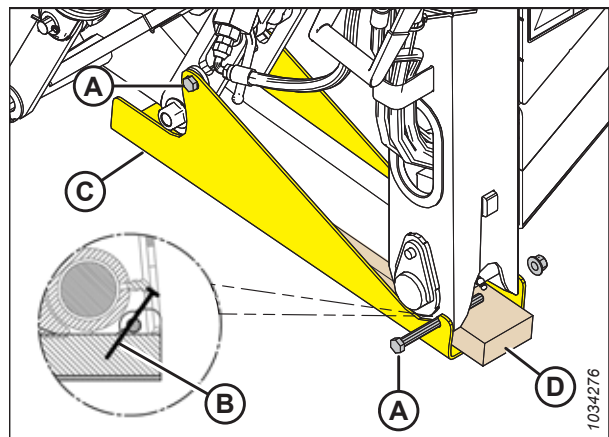


Figure 3.14: Shipping Channel – Left Side

Lower the TM100 to the ground. If chains were used, remove the chains from lift lugs (B).

Remove two M12 bolts (A) and nuts, and remove lift lug (B). Repeat this step on the opposite side.

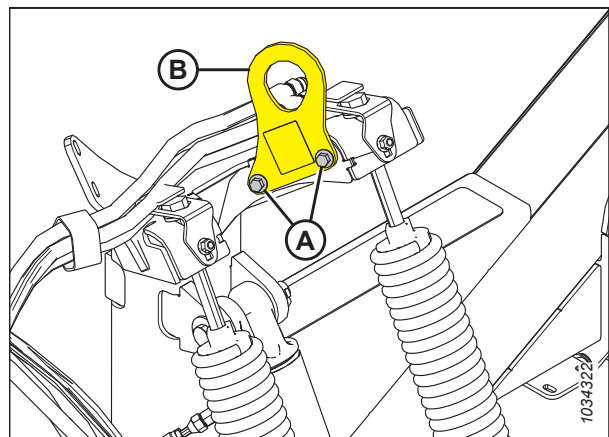


Figure 3.15: Lift Lug – Right Side

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

Remove shipping wire and wood block (A) that secure rubber block (B) in place. Repeat this step on the opposite lift arm.

NOTE:

To attach the TM100 to a header, rubber block (B) must pivot freely.

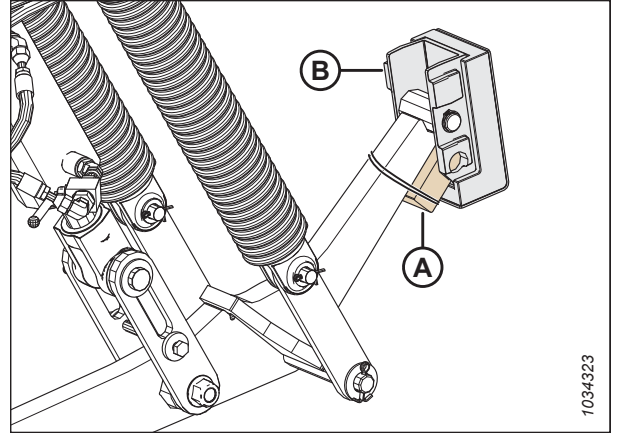


Figure 3.16: Lift Arm – Right Side

3.5 Installing Hose Guide

A new hose guide (MD #333378) is provided that replaces the existing hose guide on the left side of the header. The existing hose guide on the header is reused for the hoses on the right side of the TM100.

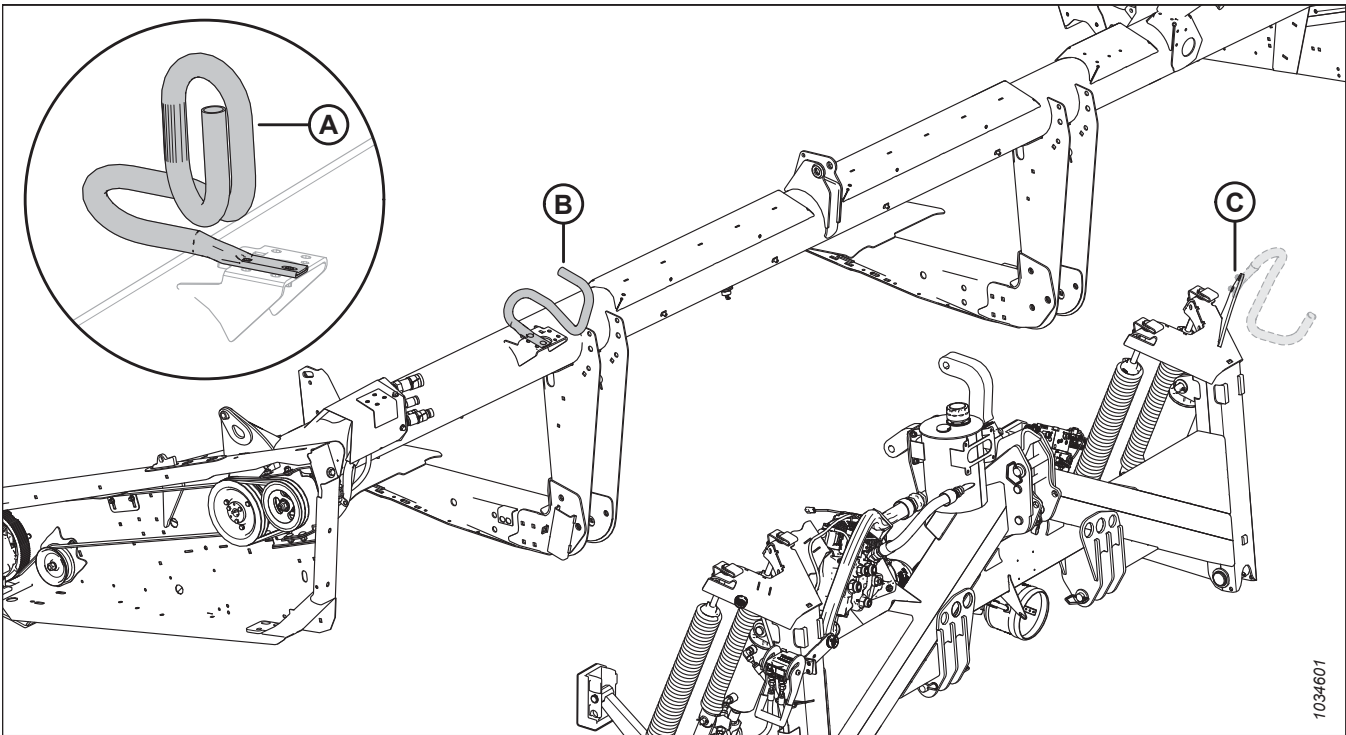


Figure 3.17: Hose Guides

A - New Hose Guide (MD #333378) – Install in Place of Existing Hose Guide (B)

B - Existing Hose Guide – Remove from Header and Install at Location (C) on the TM100

1. Remove and retain existing hose guide (A) from the header. Retain hardware (B) for installing the new hose guide in this location.

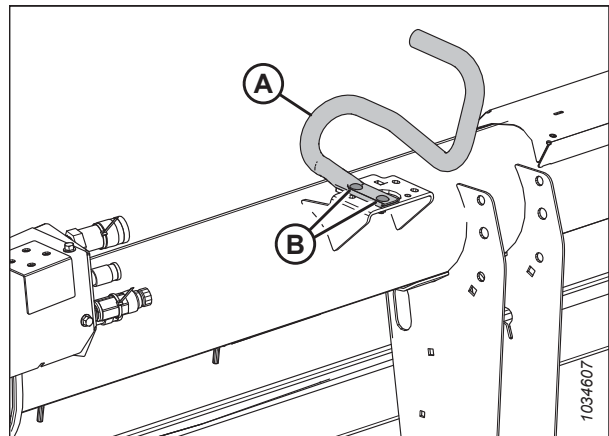


Figure 3.18: Existing Hose Guide on Header

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

2. Install hose guide (A) removed from the header onto the right side of the TM100 using two M10 x 30 mm carriage bolts (MD #184662) and center lock flange nuts (MD #135799) (B).

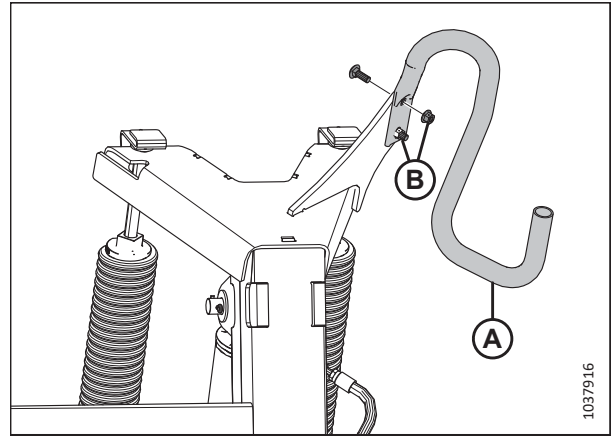


Figure 3.19: Hose Guide installed on TM100

3. Install new hose guide (A) on the header where the existing hose guide was removed using retained hardware (B).

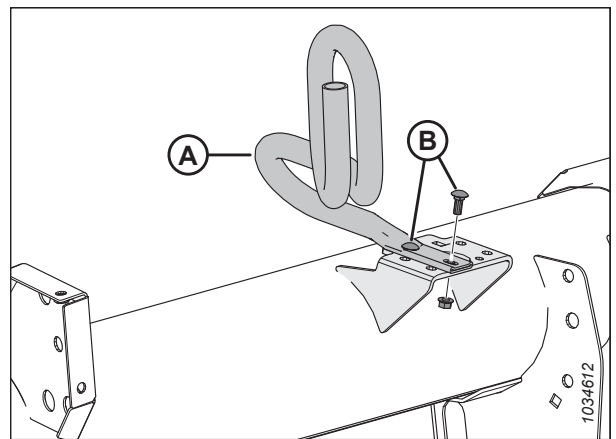


Figure 3.20: New Hose Guide installed on Header – D115 and D120 Double Knife

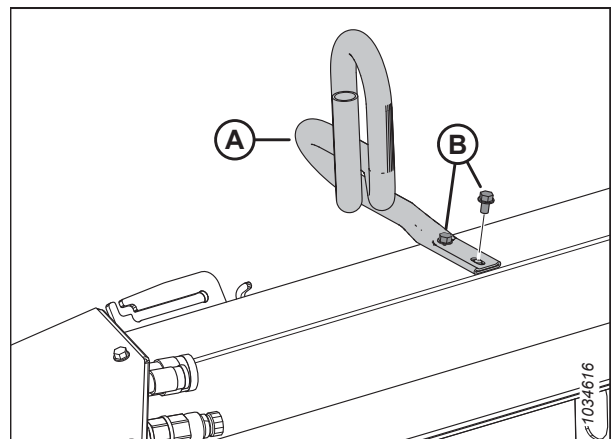


Figure 3.21: New Hose Guide installed on Header – All D1 Headers Except D115 and D120 Double Knife

3.6 Installing Power Take-Off Driveline

The power take-off (PTO) driveline is shipped as a separate bundle.

The three driveline options are:

- 1 3/8 in., 21T (B7327)
- 1 3/4 in., 20T (B7328)
- 1 3/8 in., 6T (B7329)

CAUTION

To prevent injury to the installer and damage to the driveline, hold the driveline so that it doesn't fall to the floor or ground.

To install the PTO driveline onto the float module, follow these steps:

1. Identify which end of the driveline attaches to the TM100 gearbox. The end with taper pin (A) attaches to the gearbox, and the end with quick-disconnect collar (B) attaches to the tractor PTO.

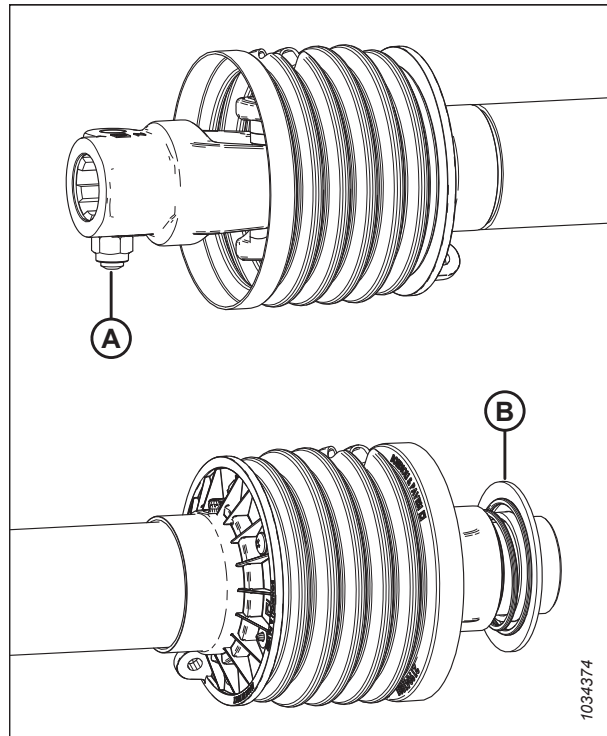


Figure 3.22: PTO Driveline

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

2. Remove lock nut (A) and washer (B), and tap out pin (C).

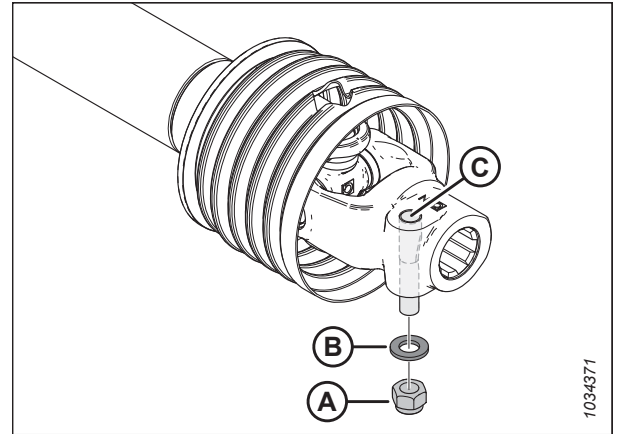


Figure 3.23: Retaining Pin – Gearbox End

3. Unlatch driveline cover (A) from the gearbox.

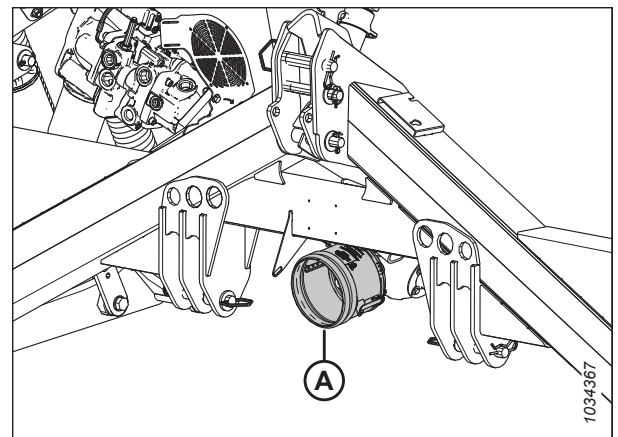


Figure 3.24: Driveline Cover

4. Slide the cover over the driveline. Align the splines on driveline yoke (A) with gearbox shaft (B), and slide the yoke onto the shaft.

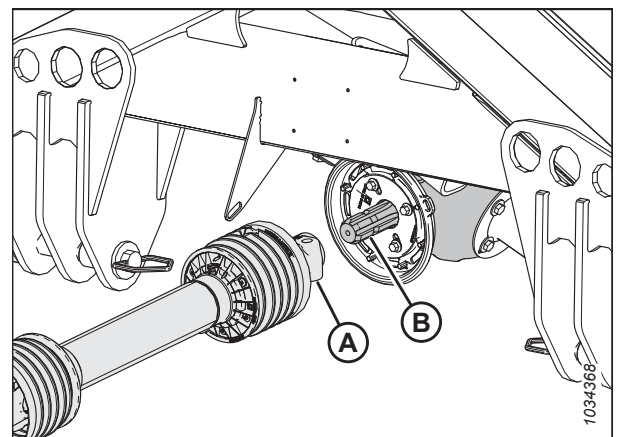


Figure 3.25: Driveline – Gearbox End

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

5. Install taper pin (A) as follows:
 - a. Ensure tapered side of pin is facing gearbox shaft (B).
 - b. Tap the pin into driveline yoke (C) until the pin end is flush with the yoke.

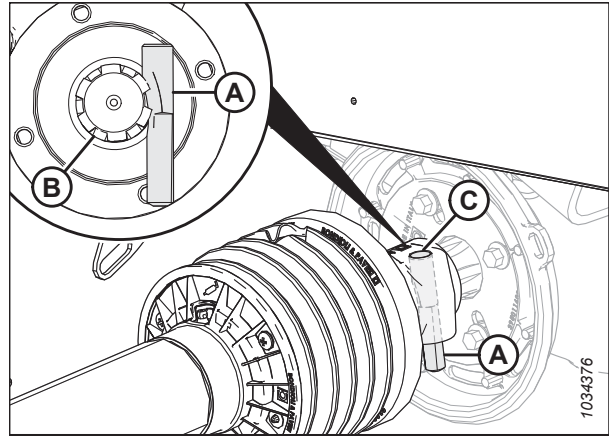


Figure 3.26: Taper Pin

6. Install washer (B) and nut (C). Tighten the nut to 150 Nm (111 lbf-ft). When tightened, pin (A) will draw into the yoke a few millimeters.

IMPORTANT:

After tightening the nut, the pin **MUST** be recessed into the yoke 2–4 mm, otherwise driveline and gearbox damage may occur.

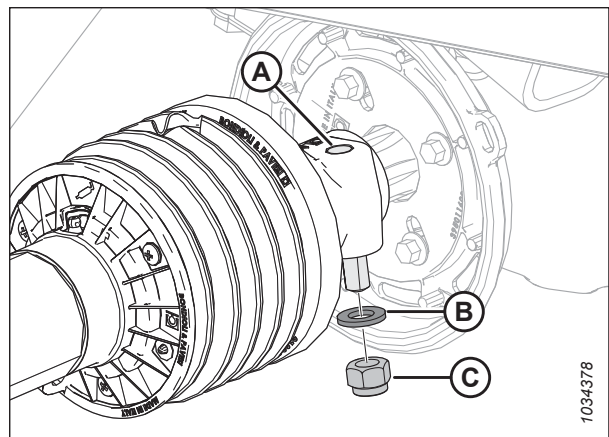


Figure 3.27: Taper Pin

7. Latch driveline cover (A) back onto the gearbox.
8. Attach the driveline chain to plate (B) on the frame.

IMPORTANT:

Shorten the chain if necessary. Ensure the chain is short enough to prevent wrapping around the driveline during operation.

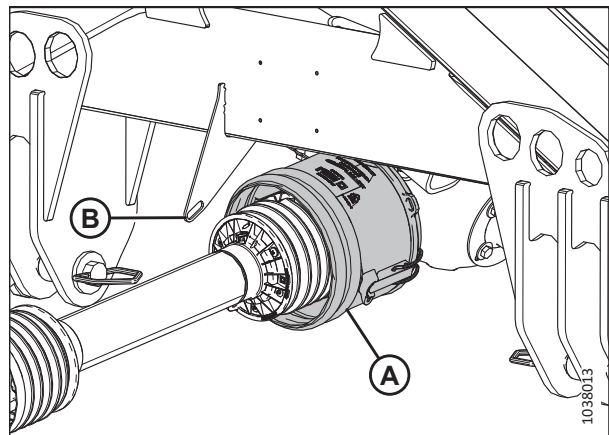


Figure 3.28: Driveline Cover

If putting the PTO driveline into storage position, proceed as follows:

NOTE:

The TM100 must be detached from the tractor before moving the storage bracket into the storage position.

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

- Remove pin (A) securing storage bracket (C) to the float module frame.

IMPORTANT:

Keep lower pin (B) installed because it secures the center-link to the frame. Remove only the lynch pin and washer to access the storage bracket.

- Reinstall pin (A).

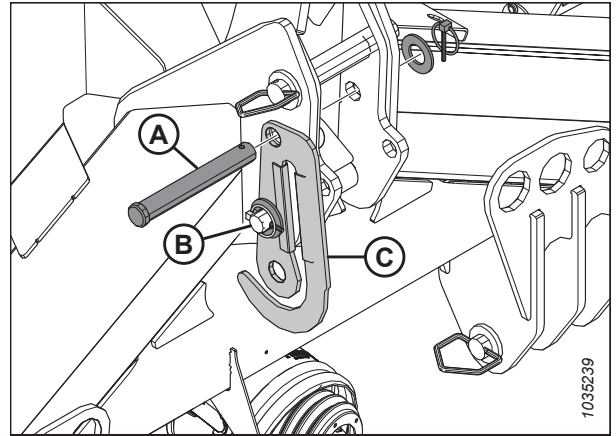


Figure 3.29: Driveline Storage Bracket – Field Operation Position

- Slide storage bracket (A) onto driveline yoke (B).

IMPORTANT:

Ensure seal trim (C) stays attached to the yoke. The seal trim protects the yoke from damage during transport.

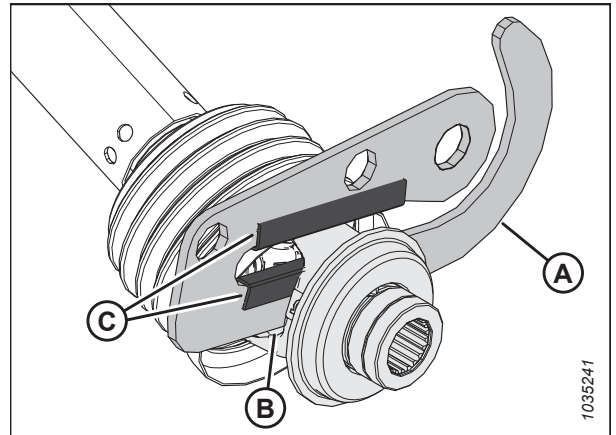


Figure 3.30: Driveline Storage Bracket

- Undo clips (A) on both sides to unlatch driveline cover (B).

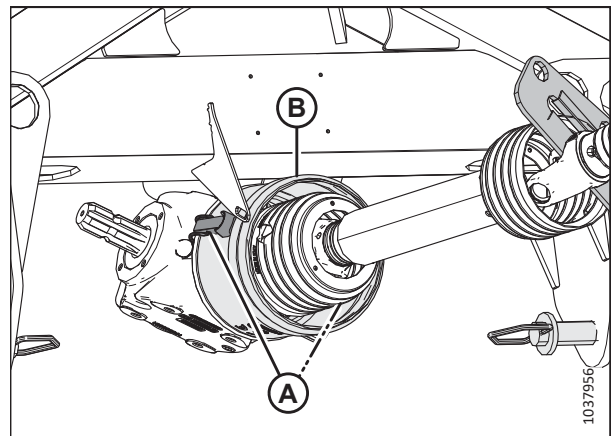


Figure 3.31: Driveline Cover

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

13. Remove hair pin (A), and slide out hitch pin (B) enough to allow room to install the storage bracket at location (C).

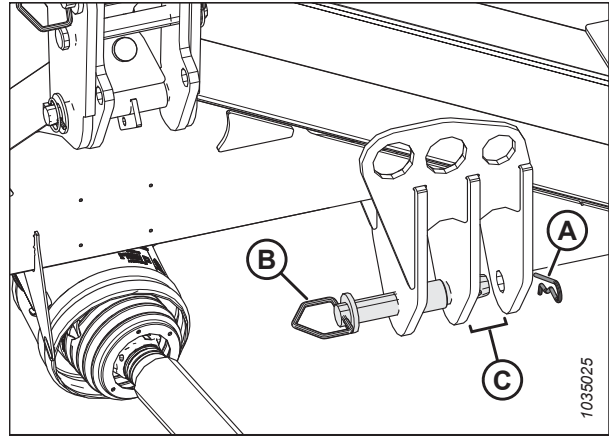


Figure 3.32: Three-Point Hitch Pin

14. Secure storage bracket (B) to the frame using three-point linkage pin (A). Reinstall the hair pin.

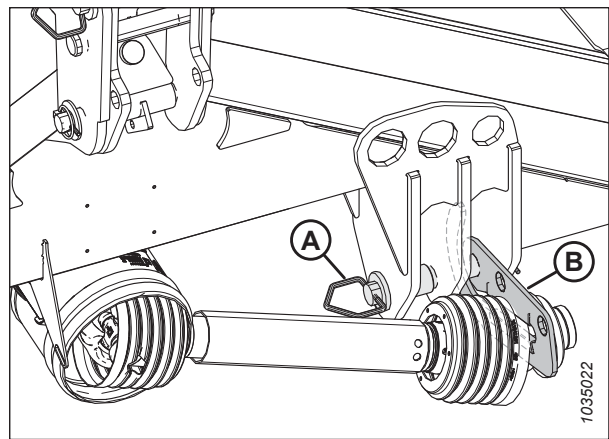


Figure 3.33: Driveline in Storage Position

3.7 Confirming Correct Gearbox Rotation

The TM100 gearbox is factory-set for counterclockwise power take-off (PTO) rotation. If the tractor has clockwise PTO rotation, the TM100 gearbox needs to be rotated 180°.

1. Confirm the PTO's direction of rotation as indicated by arrow (A) near the PTO shaft.

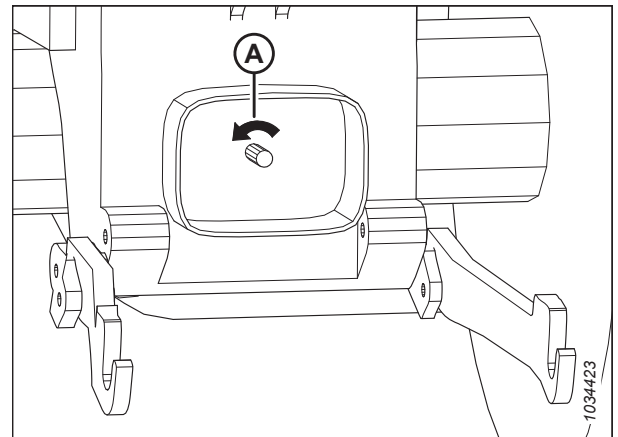


Figure 3.34: Tractor PTO

2. Manually rotate gearbox input shaft (A) in the same direction the tractor PTO rotates. Looking in direction (B) at the pump input shaft, driveline (C) rotation must be clockwise. The correct rotation is indicated by an arrow on the mounting bracket. You may need to remove cone shield (E) attached to the pump to be able so see the rotation.

IMPORTANT:

Incorrect gearbox rotation will damage drive pump (D).

3. If the pump input shaft is rotating in the wrong direction, the TM100 gearbox needs to be rotated 180°. For instructions, refer to [3.8 Repositioning Gearbox, page 40](#).

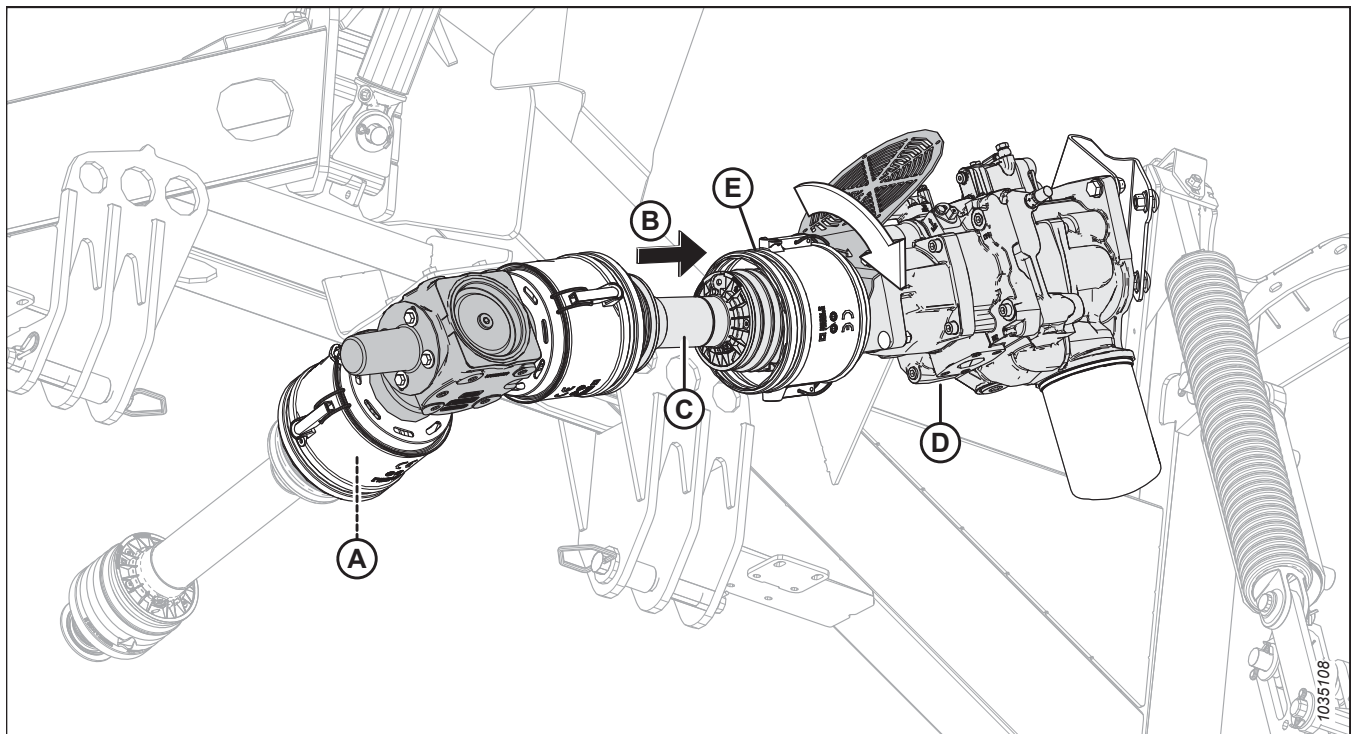


Figure 3.35: Correct Gearbox Rotation

3.8 Repositioning Gearbox

The TM100 gearbox is factory-set for counterclockwise power take-off (PTO) rotation. If the tractor has clockwise PTO rotation, the TM100 gearbox needs to be rotated 180°.

To reposition the gearbox, follow these steps:

1. Unlatch driveline shield (A) from shield back plate (B) on the gearbox.

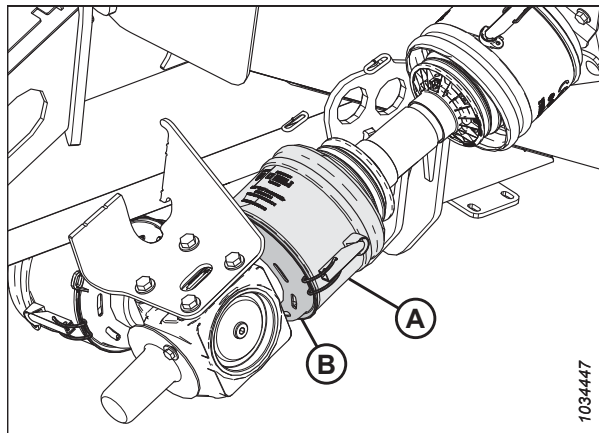


Figure 3.36: TM100 Driveline Cover

2. Remove nut (B) and washer.
3. Tap out the pin retaining the driveline yoke onto the gearbox shaft.

NOTE:

There isn't enough room to slide the yoke off the gearbox shaft until the gearbox is detached from the mounting bracket.

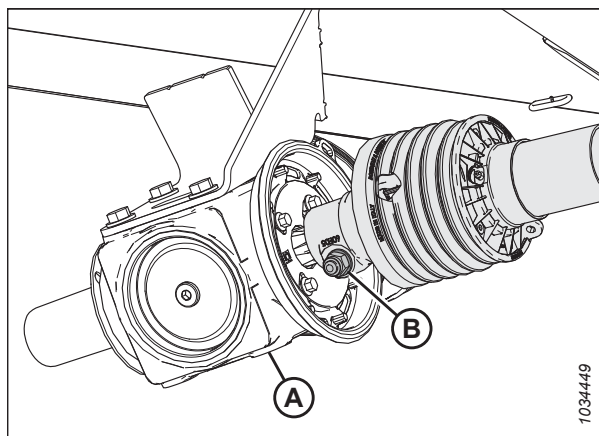


Figure 3.37: TM100 Driveline Pin

4. Remove and retain four bolts (A) and washers securing the gearbox to mount bracket (B), and set the gearbox on the ground.
5. Pull the driveline off the gearbox shaft.

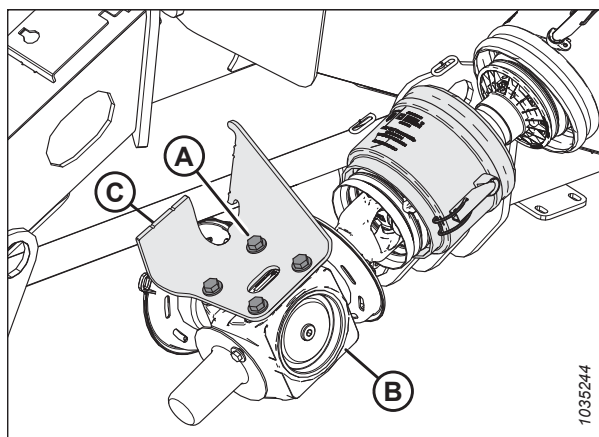


Figure 3.38: Gearbox Mount Bracket

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

- Note the orientation of both back plates (A) and (B). After repositioning the gearbox, the back plates need to be installed in their original orientation to minimize the chain length hanging below the gearbox.

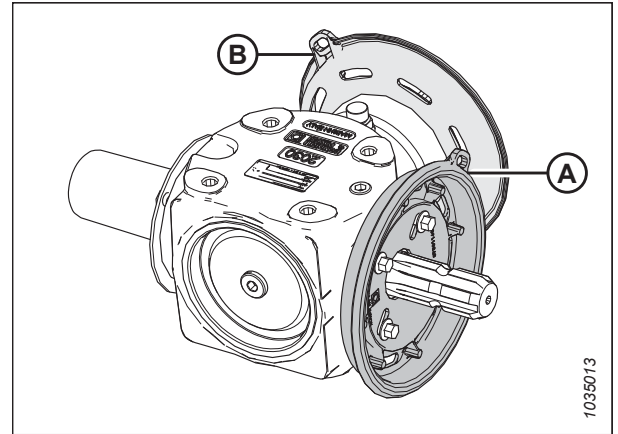


Figure 3.39: Back Plates

- Remove and retain four bolts (A) and back plate (B) from the gearbox.

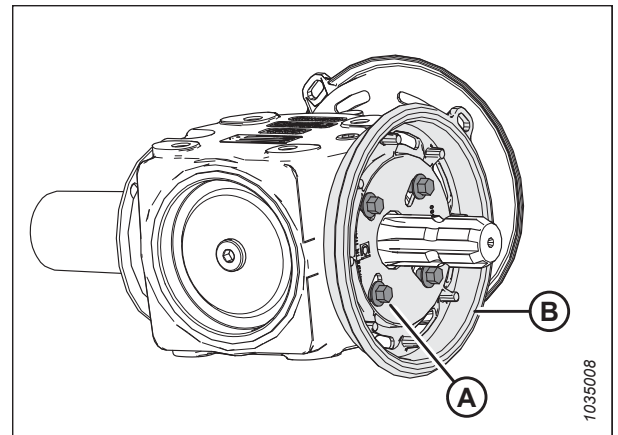


Figure 3.40: Back Plate

- Remove bolts and washers (A), shield clamp plate (B), and cover (C) from the gearbox shaft.

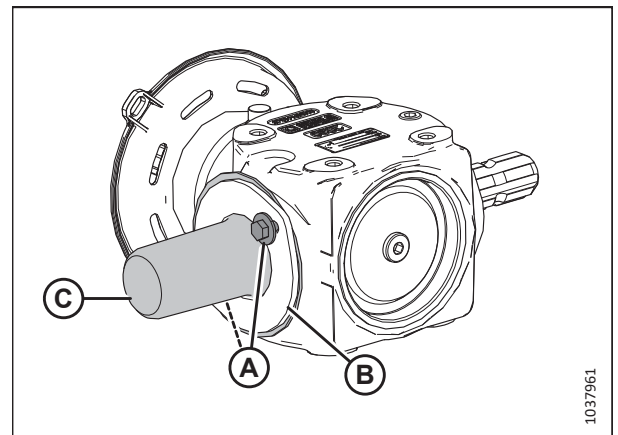


Figure 3.41: Gearbox Shaft Cover

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

- Set the gearbox onto the ground upside down to prevent oil spillage when removing breather (A).

IMPORTANT:

Breather (A) must be facing up when the gearbox is installed.

- Remove four bolts (B) securing plate (C) to the rear of the gearbox.

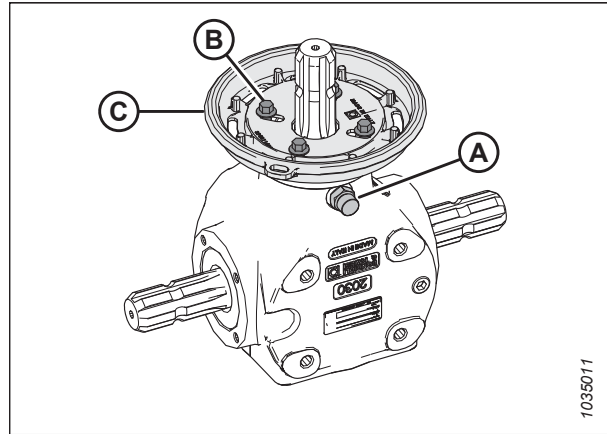


Figure 3.42: Back Plate

- Remove breather (A) and swap it with plug (B) at the opposite side of the gearbox. Apply Teflon tape or pipe thread sealant, and tighten both the plug and breather to 25 Nm (18 lbf-ft).

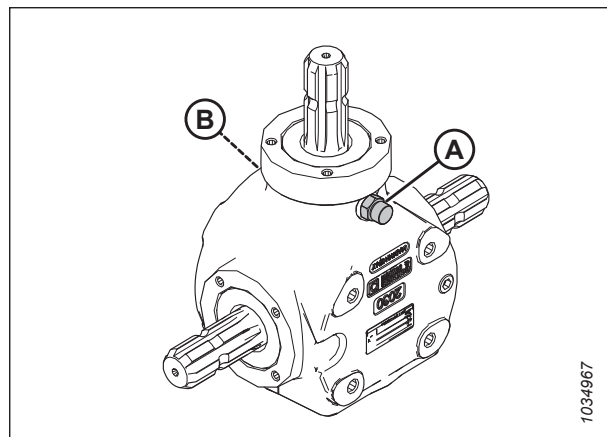


Figure 3.43: Gearbox on the Ground

- Rotate gearbox 180° so that shaft (A) is facing the opposite direction and can be connected to the driveline.

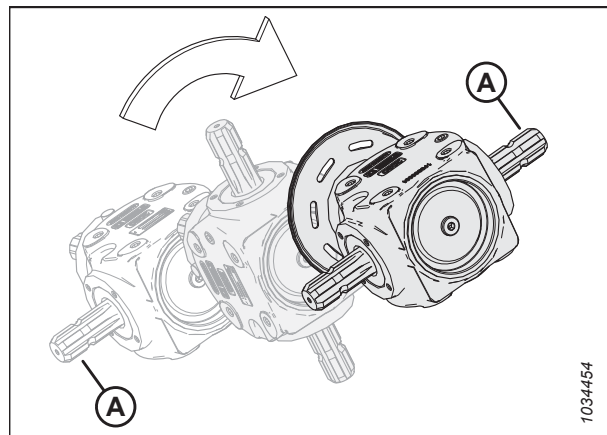


Figure 3.44: Repositioning Gearbox

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

13. Reinstall the back plate to the rear of the gearbox using retained bolts (B). Ensure tab (A) where the chain attaches is positioned as shown. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads and tighten the bolts to 20 Nm (15 lbf·ft).

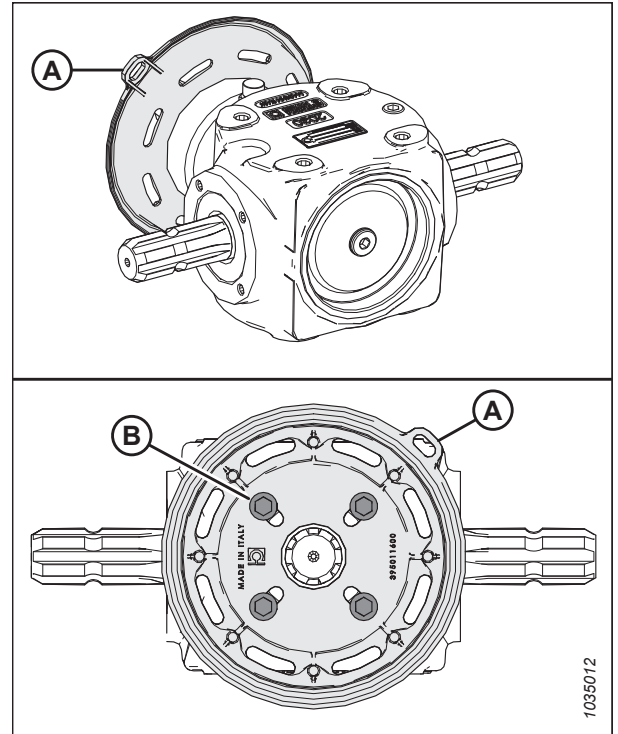


Figure 3.45: Back Plate

14. Apply anti-seize lubricant all around exposed shaft (A).

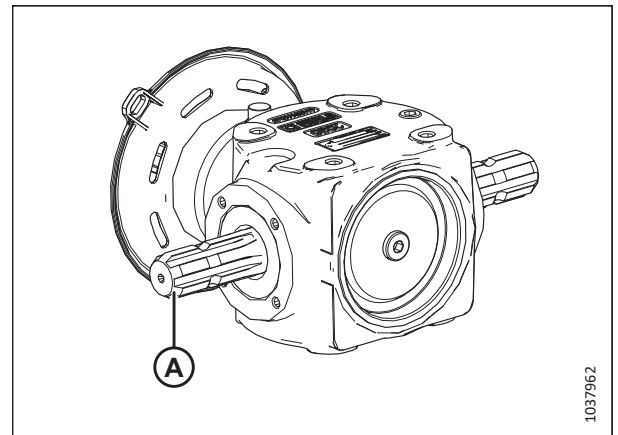


Figure 3.46: Gearbox Shaft

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

15. Apply medium-strength threadlocker (Loctite 243® or equivalent) on bolts (A).
16. Install gearbox shaft cover (C) and shield clamp plate (B) using retained bolts (A) and washers. Tighten the bolts to 17 Nm (12.5 lbf-ft).

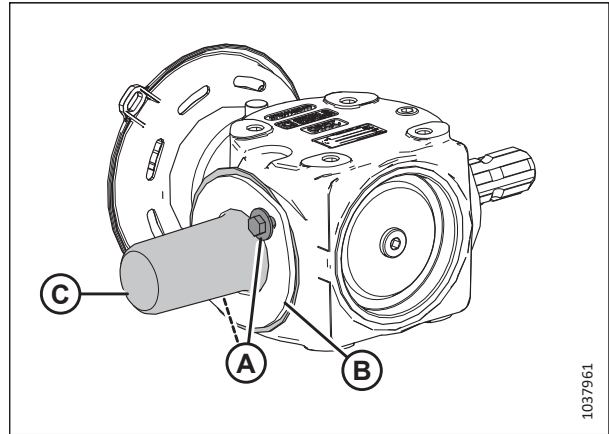


Figure 3.47: Gearbox Shaft Cover

17. Attach back plate (B) using four retained bolts (A). Ensure the tab where the chain attaches is positioned as shown. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads and tighten the bolts to 20 Nm (15 lbf-ft).

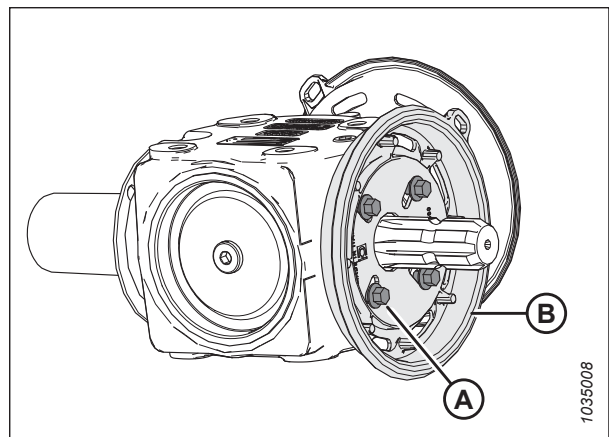


Figure 3.48: Back Plate

18. Slide the shield cone over the driveline.
19. Align the splines and slide the driveline yoke onto the gearbox shaft.
20. Attach gearbox (B) to mount bracket (C) using retained four bolts (A) and washers. Apply high-strength threadlocker (Loctite® 262 or equivalent) to bolts (A) and tighten the bolts to 69 Nm (51 lbf-ft).

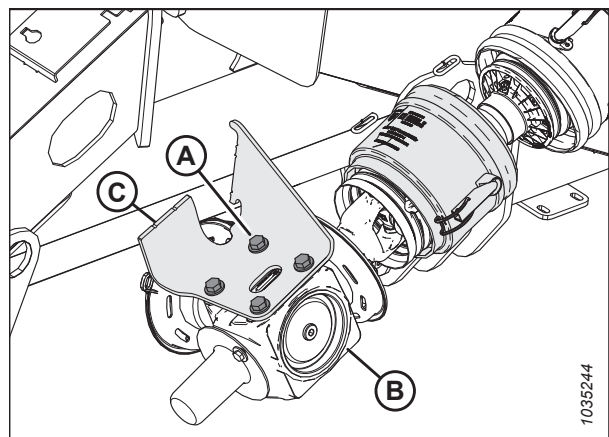


Figure 3.49: Gearbox Mount Bracket

UNLOADING AND ASSEMBLING TRACTOR MOUNT FLOAT MODULE

21. Install taper pin (A) as follows:
 - a. Ensure tapered side of the pin is facing gearbox shaft (B).
 - b. Tap the pin into the driveline yoke until the pin end is flush with the yoke.

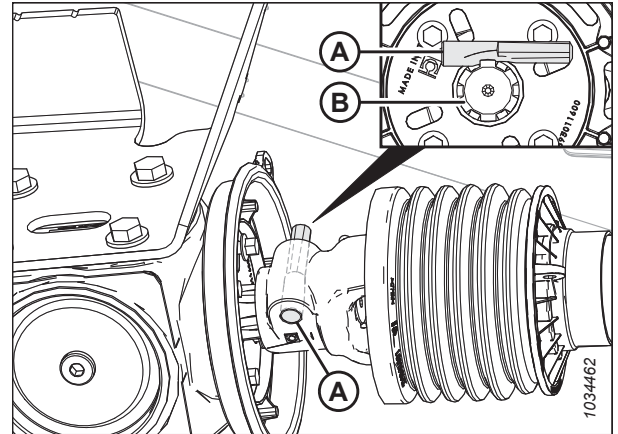


Figure 3.50: Taper Pin

22. Install washer and nut (A). Tighten the nut to 150 Nm (111 lbf-ft). When tightened, pin (B) will draw into the yoke a few millimeters.

IMPORTANT:

After tightening, the pin **MUST** be recessed into the yoke 2–4 mm, otherwise driveline and gearbox damage may occur.

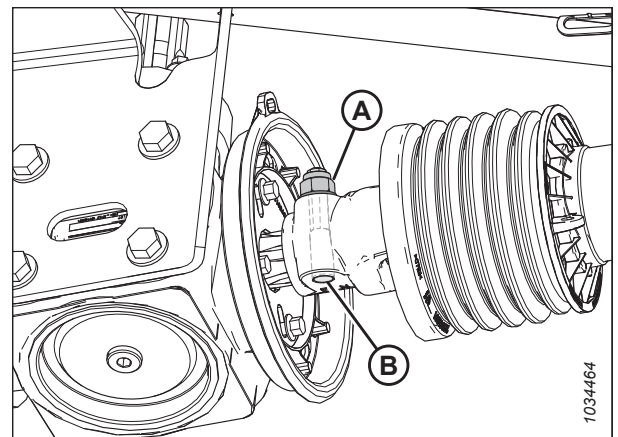


Figure 3.51: Taper Pin

23. Latch driveline shield (A) back onto back plate (B) on the gearbox.

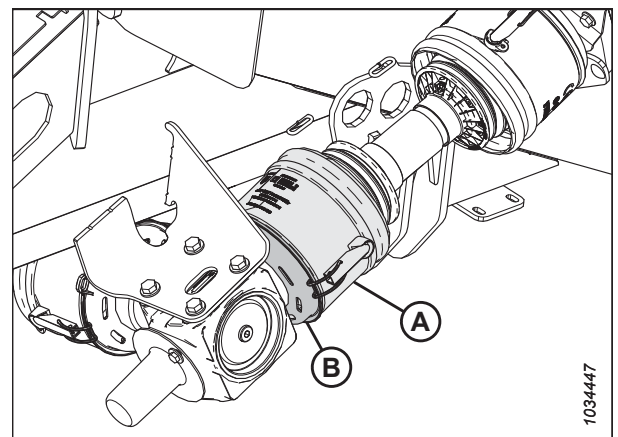


Figure 3.52: TM100 Driveline Cover

Chapter 4: Attaching and Detaching Tractor Mount Float Module

This chapter includes instructions for attaching and detaching the TM100 to and from the tractor and header.

4.1 Attaching Tractor Mount Float Module to a Tractor

The TM100 allows attachment of D1 Series Draper Headers to three-point hitch categories 2, 3N, and 3.

1. Attach the float module to the tractor's three-point linkage. Refer to the illustration below for the mounting points for categories 2, 3, and 3N. Pins and hardware are supplied with the float module.

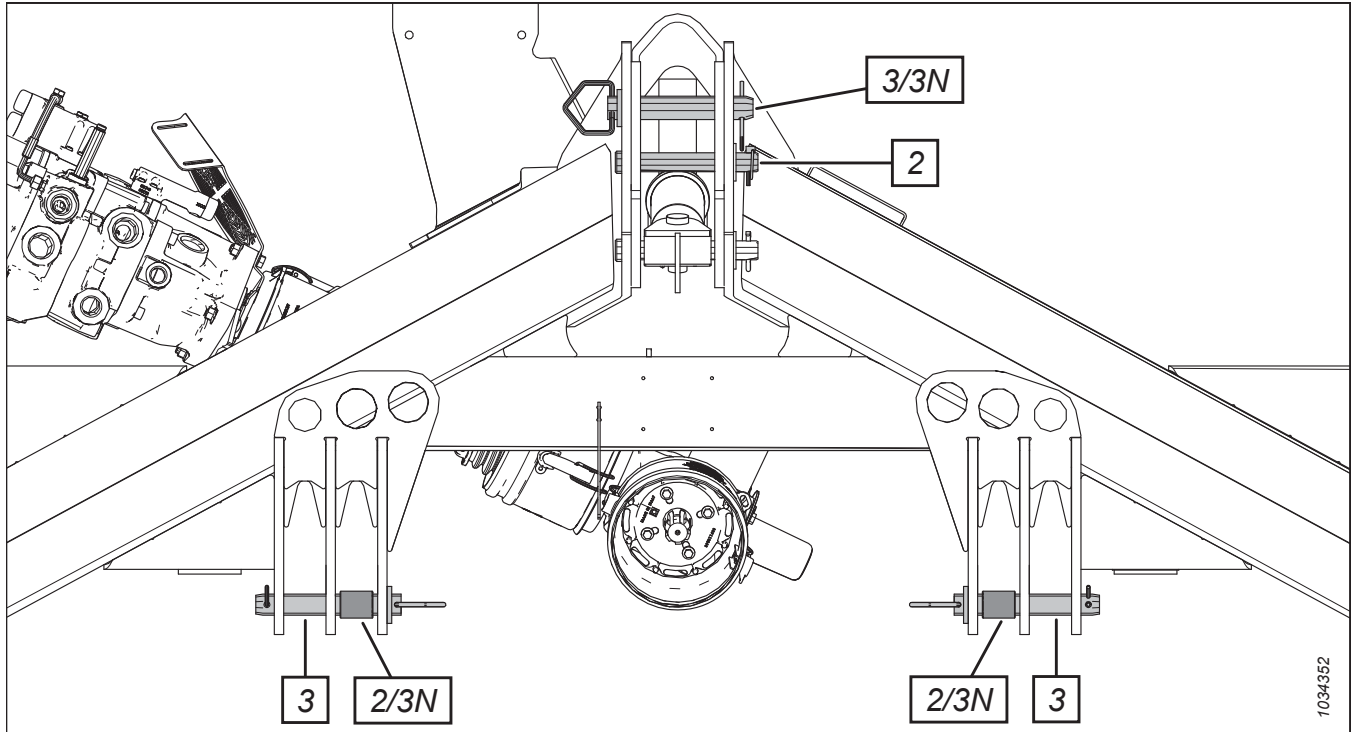


Figure 4.1: Three-Point Hitch Attachment Points – Categories 2/3/3N

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

2. Position the tractor's three-point linkage as follows:
 - Adjust the upper link arm so that the float module frame is positioned forward 10 degrees.
 - Adjust the lower link arms so that the float module height is set to 400 mm (15 3/4 in.).

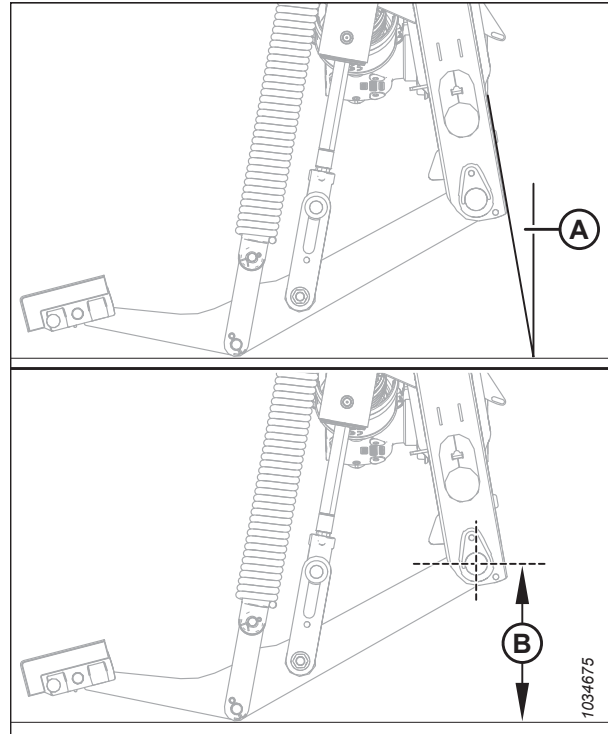


Figure 4.2: Linkage Position

A - 10 Degrees

B - 400 mm (15 3/4 in.)

3. Confirm the power take-off (PTO)'s direction of rotation as indicated by arrow (A) near the PTO shaft. The TM100 gearbox is factory-set for counterclockwise PTO rotation. If the tractor has clockwise PTO rotation, rotate the TM100 gearbox 180°. For instructions, refer to [3.8 Repositioning Gearbox, page 40](#) and [3.7 Confirming Correct Gearbox Rotation, page 39](#).

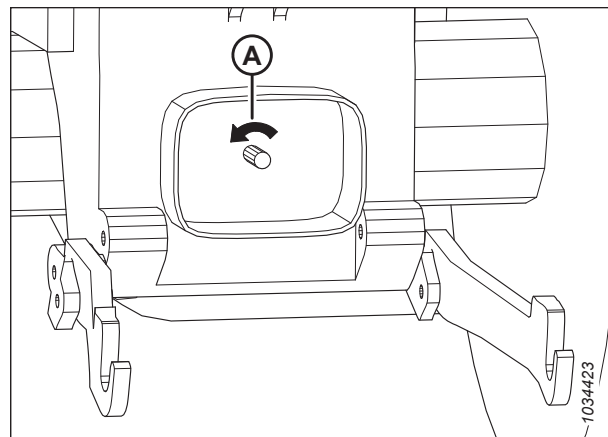


Figure 4.3: Tractor PTO

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

4. Remove PTO driveline (A) and storage bracket (B) from the storage position.

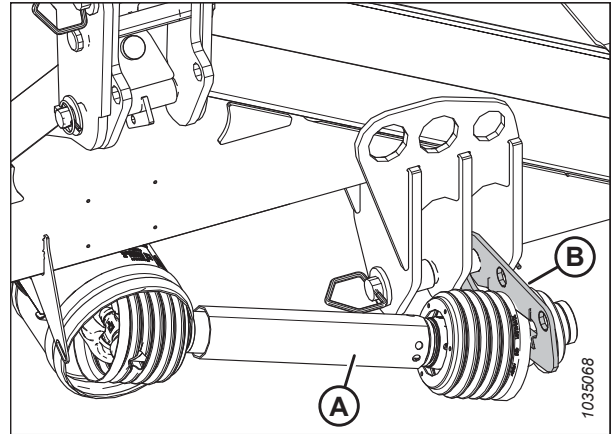


Figure 4.4: PTO Driveline in Storage Position

5. Secure storage bracket (C) to the float module frame as shown using existing pin (A).

IMPORTANT:

Do **NOT** remove lower pin (B) because it secures the center-link to the frame. Remove only the lynch pin and washer to install the storage bracket on pin (B), and then reinstall the washer and lynch pin.

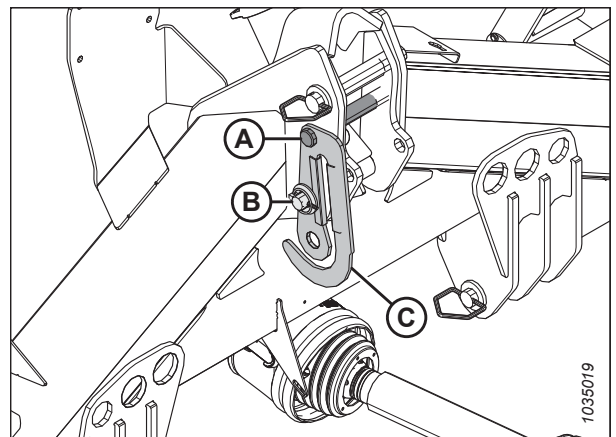


Figure 4.5: Driveline Storage Bracket in Field Position

IMPORTANT:

- If connecting this driveline to the tractor's PTO for this first time, the driveline may need to be shortened first to ensure correct operation and to prevent damage to the float module and tractor. For instructions, refer to [4.1.1 Shortening the Power Take-Off Driveline, page 51](#).
- If this is not the first time connecting this driveline to the tractor's PTO and you are sure the driveline is the correct length, proceed to [Step 6, page 50](#).

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

6. Clean and grease tractor PTO and implement shaft before installing the driveline.
7. Pull back collar (B) on the driveline, and slide the driveline onto tractor's PTO shaft (A) until it locks in place. Release the collar and ensure the yoke is locked onto the shaft.

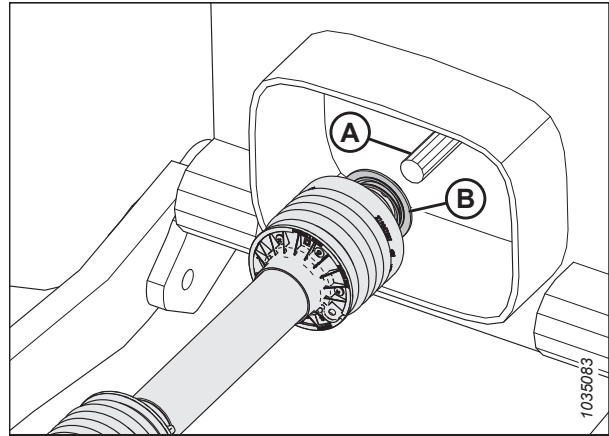


Figure 4.6: Tractor PTO

8. With the linkage in field position as per Step 2, page 48, check to make sure grease fitting (A) on the sliding element is accessible.
9. If the grease fitting is not accessible, cut a 25.4 mm (1 in.) access hole in the driveline's outer shield.

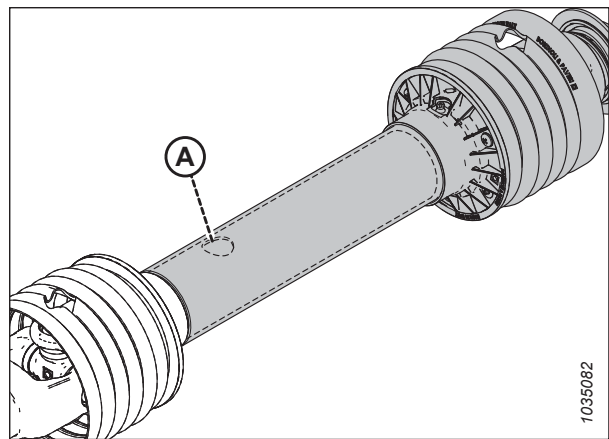


Figure 4.7: Grease Point

10. Find a suitable location to attach driveline chain (B) to the tractor.

IMPORTANT:

To avoid safety shield failure, ensure plastic driveline guard (A) is chained to the tractor.

IMPORTANT:

Allow some slack in the chain to avoid damage to the shield when the three-point linkage is lowered or raised. Ensure the slack in the chain does not allow for the chain to wrap around the shield during operation.

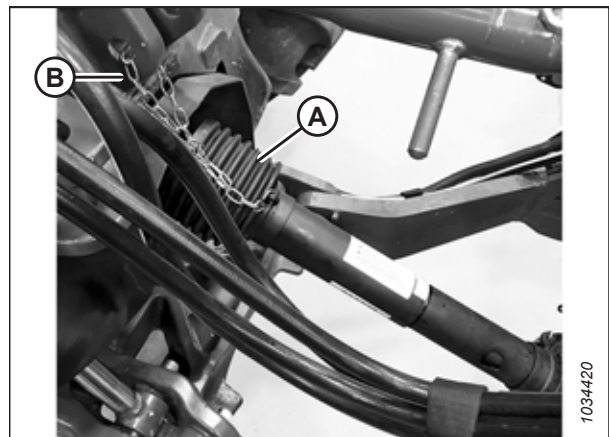


Figure 4.8: Tractor PTO

4.1.1 Shortening the Power Take-Off Driveline

It may be necessary to shorten the power take-off (PTO) driveline so that it does not bottom out when the three-point linkage is fully raised and to ensure that there is enough room to remove the driveline's quick disconnect from the tractor PTO shaft.

1. Ensure the float module is set to operating height and angle (10 degrees forward and 400 mm [15 3/4 in.] above the ground).
2. Separate driveline halves (A) and (B).

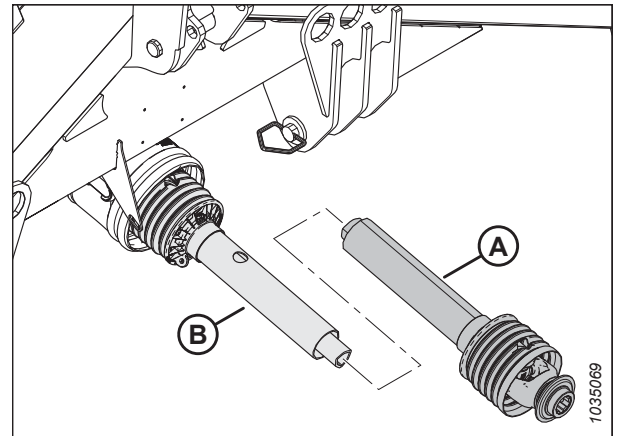


Figure 4.9: Driveline Halves

3. Clean and grease the tractor PTO and implement shaft before installing the driveline.
4. Pull back collar (B) on the driveline half, and slide the driveline onto tractor's PTO shaft (A) until it locks in place. Release the collar and ensure the yoke is locked onto the shaft.
5. Fully raise the tractor's three-point linkage.

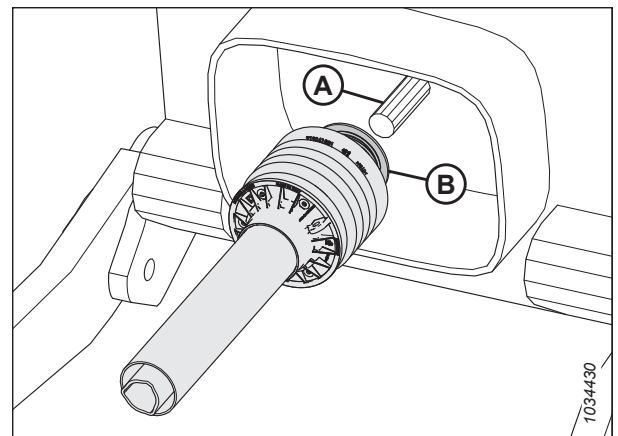


Figure 4.10: Tractor PTO

6. Align the two drivelines halves so they are parallel to each other. Check that PTO half (A) is short enough that it will not bottom out when the three-point linkage is fully raised, and there is enough room to remove the driveline's quick-disconnect from the tractor PTO shaft.

IMPORTANT:

Ensure you cut only as much as necessary to meet the above conditions. Telescoping tubes must always overlap by at least 1/2 of their length in normal operation and at least 1/3 of their length in all working conditions in order to keep the tubes aligned and allow them to slide freely.

7. If driveline half (A) needs to be shortened, measure the length (L) that needs to be removed.

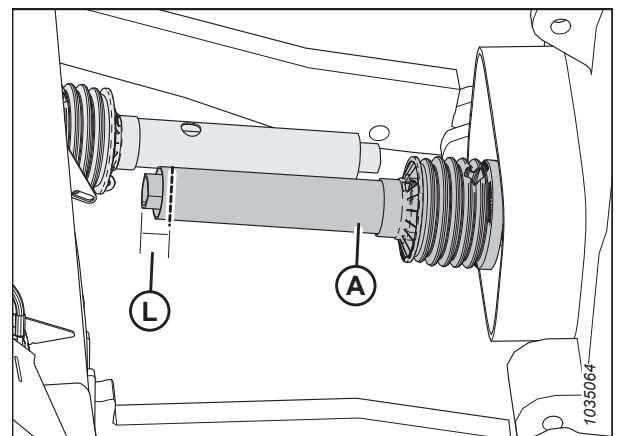


Figure 4.11: PTO Driveline Halves

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

8. Remove driveline (A) from the tractor's PTO shaft.
9. Remove three Phillips head screws (A) from the shielding.

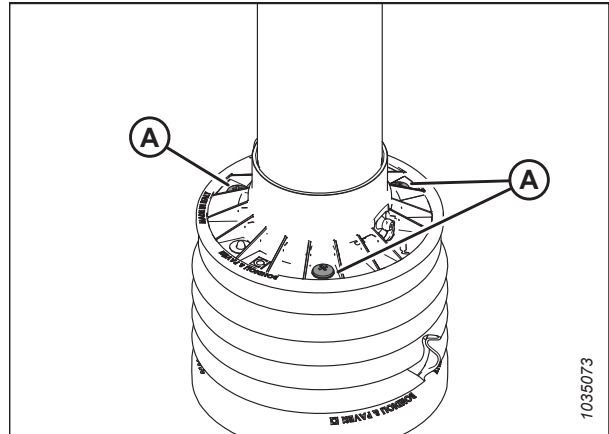


Figure 4.12: Removing Shielding

10. Remove shield tube (A) from driveline shaft (B).

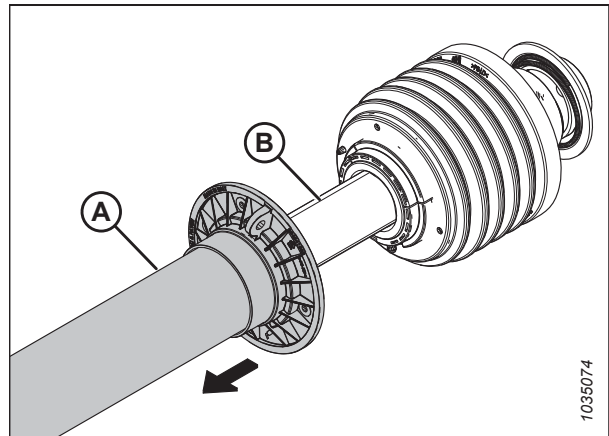


Figure 4.13: Removing Shielding

11. Remove grease collar (A) by using a large punch and gently tapping around the circumference.

IMPORTANT:

The grease collar is fitted over small barbs in the metal tube so it may take some effort to remove. Be careful to not damage the collar when removing it.

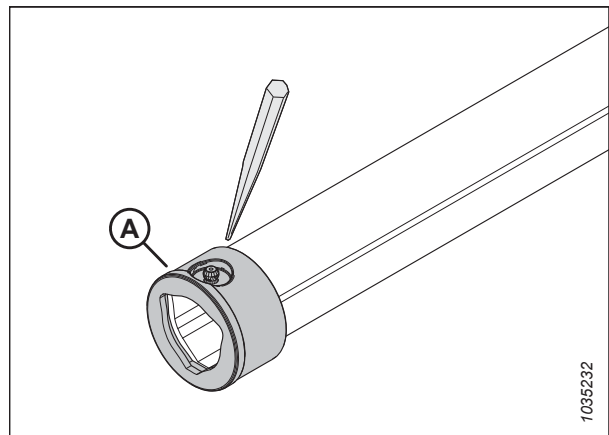


Figure 4.14: Grease Collar

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Secure the driveline shaft in a vise. Using measurement (L) taken in Step 7, page 51, mark shaft (A) and cut to the required length.

IMPORTANT:

Carefully file away burrs from the end of the tube, and remove all filings.

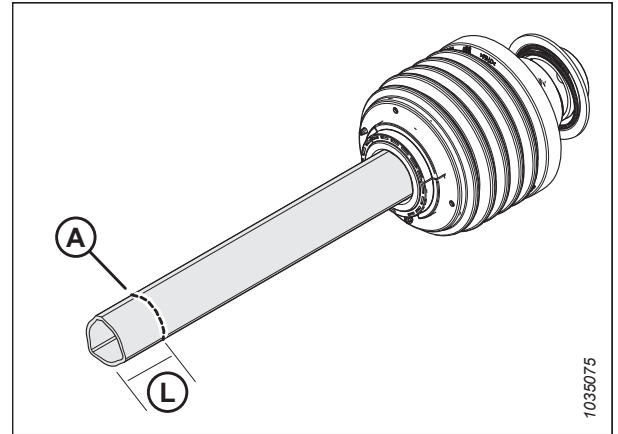


Figure 4.15: Driveline Shaft

- Cut shield tube (A) using the same measurement (L) used for cutting the driveline shaft.

NOTE:

This will ensure the shaft extends out of the shield tube as it did previously. If the shield tube is flush with the shaft, it will be difficult to align the driveline halves together when joining them.

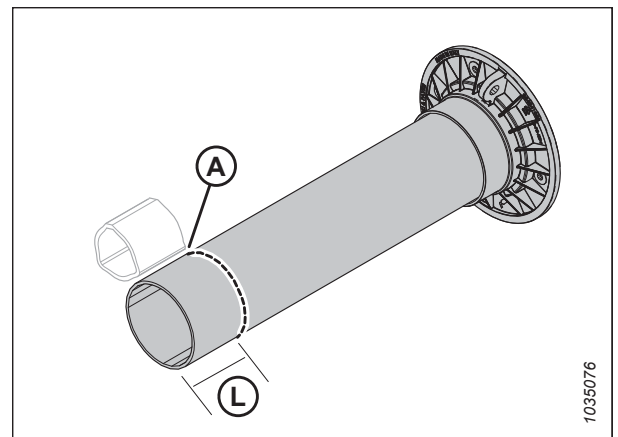


Figure 4.16: Shield Tube

- Before reinstalling the grease collar, make three small indentations at a 45° angle on each of the three rounded surfaces (A) of shaft (B). This is to raise a small burr of metal to ensure the grease collar will stay in position.

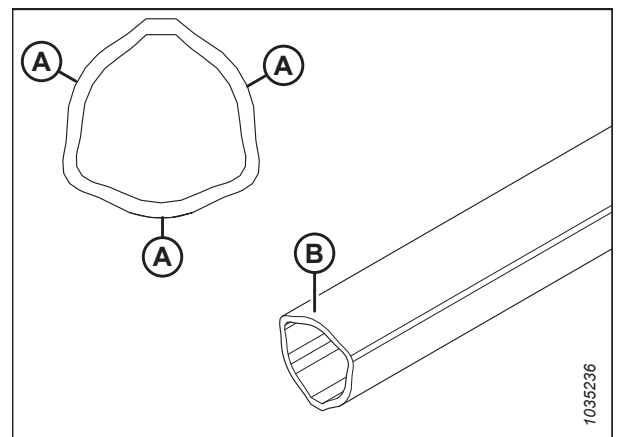


Figure 4.17: Driveline Shaft

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Line up flat notch (A) with the shape of the shaft tube to ensure proper fit, and use a rubber mallet or block of wood to drive the grease collar back onto the shaft.

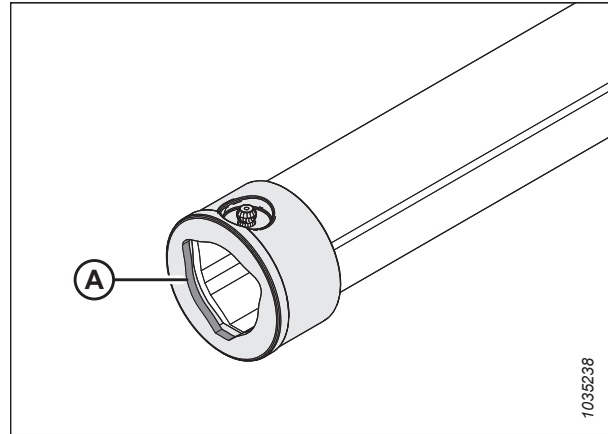


Figure 4.18: Grease Collar

- Grease the internal drive tube and reattach outer cone (A) and shield tube (B) using three screws (C).

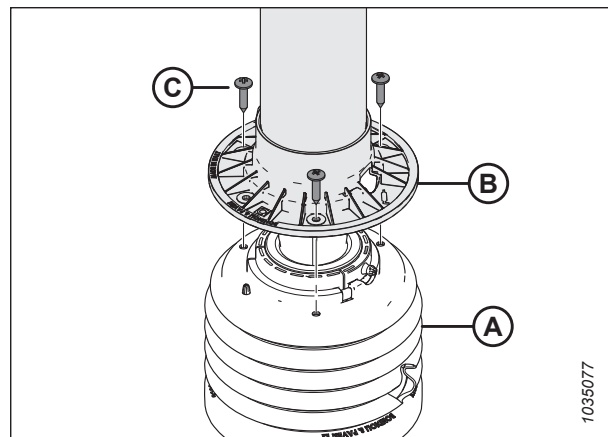


Figure 4.19: Installing Shielding

- Remove the other driveline half from the TM100 gearbox as follows:
 - Remove nut (C) and washer (B).
 - Tap out pin (A) retaining the yoke onto the shaft.
 - Pull the driveline off the gearbox shaft.
- Cut the inner half of the driveline, using the same measurement used to cut the outer half.

NOTE:

The steps involving the grease collar do not apply to the inner half of the driveline.

- Join the two driveline halves together, and connect the PTO driveline to the TM100 gearbox and the tractor's PTO. For instructions, refer to [3.6 Installing Power Take-Off Driveline, page 34](#).
- Check the length of the driveshaft at its minimum and maximum extensions.

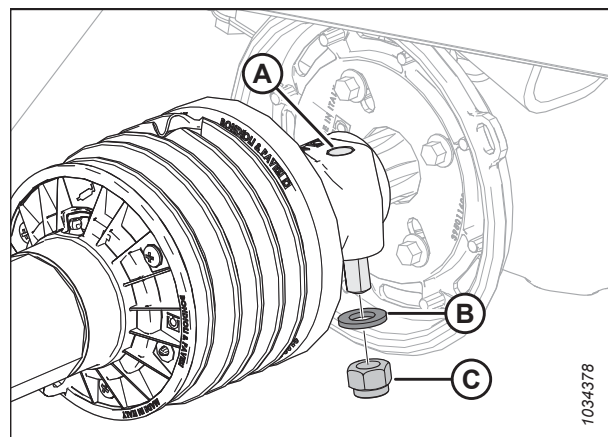


Figure 4.20: Installing Shielding

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

21. With the linkage in field position as per Step 1, page 51, check to make sure grease fitting (A) on the sliding element is accessible.
22. If the grease fitting is not accessible, cut a 25.4 mm (1 in.) access hole in the driveline's outer shield.

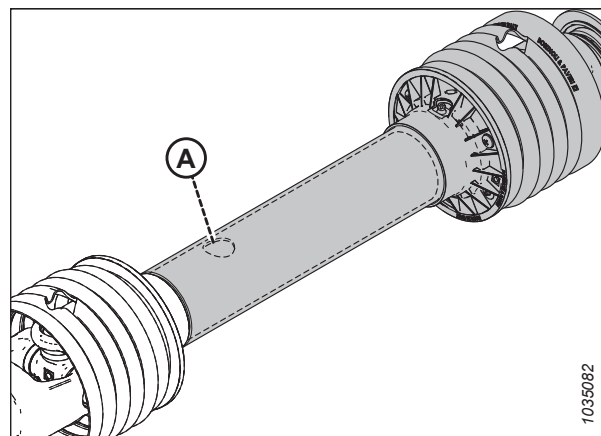


Figure 4.21: Grease Point

23. Find a suitable location to attach driveline chain (B) to the tractor.

IMPORTANT:

To avoid safety shield failure, ensure plastic driveline guard (A) is chained to the tractor.

IMPORTANT:

Allow some slack in the chain to avoid damage to the shield when the three-point linkage is lowered or raised. Ensure the slack in the chain does not allow for the chain to wrap around the shield during operation.

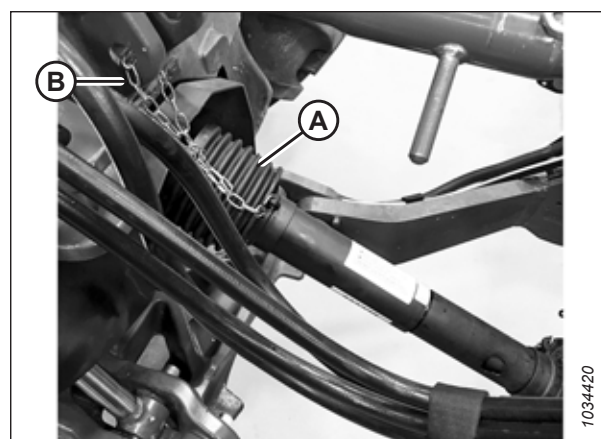


Figure 4.22: Tractor PTO

4.1.2 Connecting Hydraulic Hoses to the Tractor Selective Control Valve Remotes

Hydraulic hoses are used to connect the TM100 to the selective control valve (SCV) on the tractor.

1. Locate pressure and return hoses (A) on the selector valve:
 - Port P – Pressure (blue tie)
 - Port T – Return (orange tie)
2. Remove the shipping foam and wire at the opposite end of pressure/return hoses (B). The hoses are secured at the left side of the tilt cylinder.

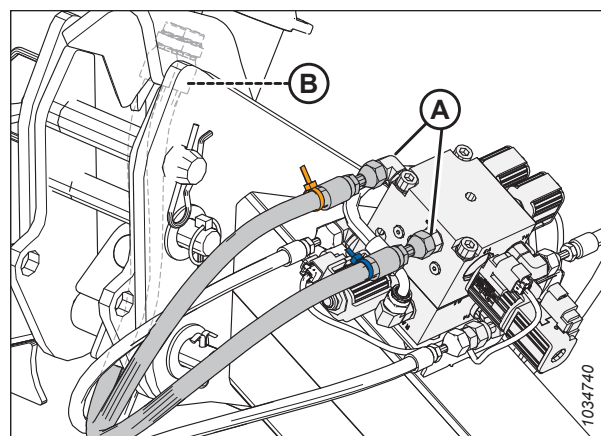


Figure 4.23: Selector Valve – Pressure and Return Hoses

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

3. Connect the selector valve's pressure hose (A) (blue tie) and return hose (B) (orange tie) to the tractor's front SCV. Ensure the hoses are connected to the same remote set.

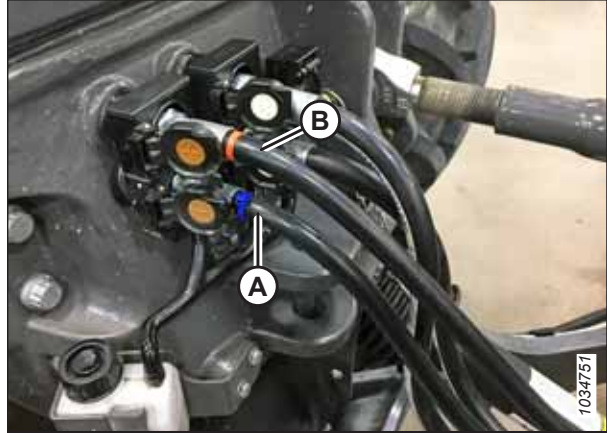


Figure 4.24: Tractor Front SCV

4. Locate the eight hydraulic hoses—four 9000 mm (30 ft.) (A) and four 3000 mm (10 ft.) (B)—provided with the TM100. Four of the eight hoses are required. Choose the correct hose length for each connection depending on which end of the tractor the SCV is located.

IMPORTANT:

The hoses for each function need to be connected to the same SCV remote set; that is, reel pressure/return need to be connected to the same remote set, and the lift hoses connected to another remote set.

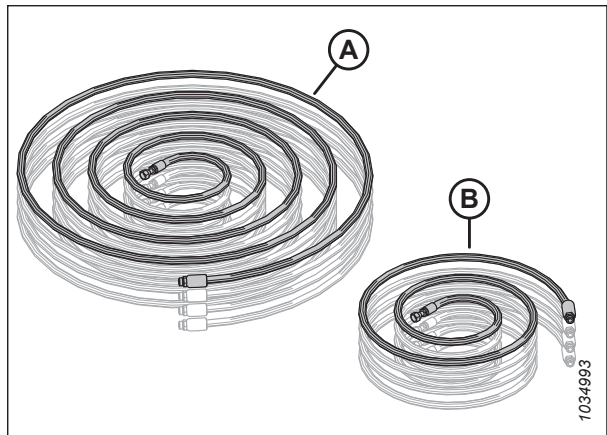


Figure 4.25: Hoses Supplied with TM100

5. Determine which combination of hose lengths are required, and then connect #8 ORB fitting (A) (provided in the parts bag) to the male end of each hose.

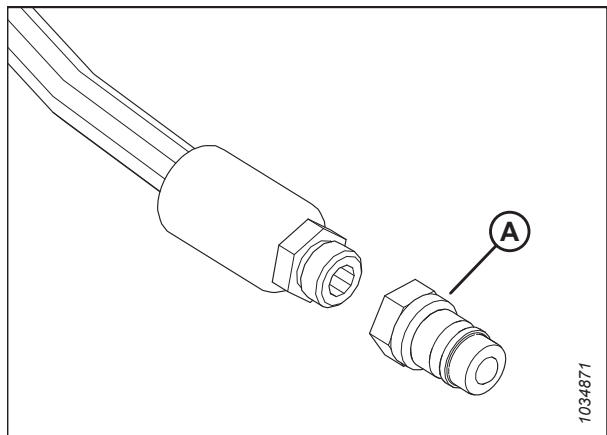


Figure 4.26: Installing Fitting MD #135563

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

6. If routing hoses (A) from a front SCV, secure the hoses using strap (B) on the hydraulic tank.

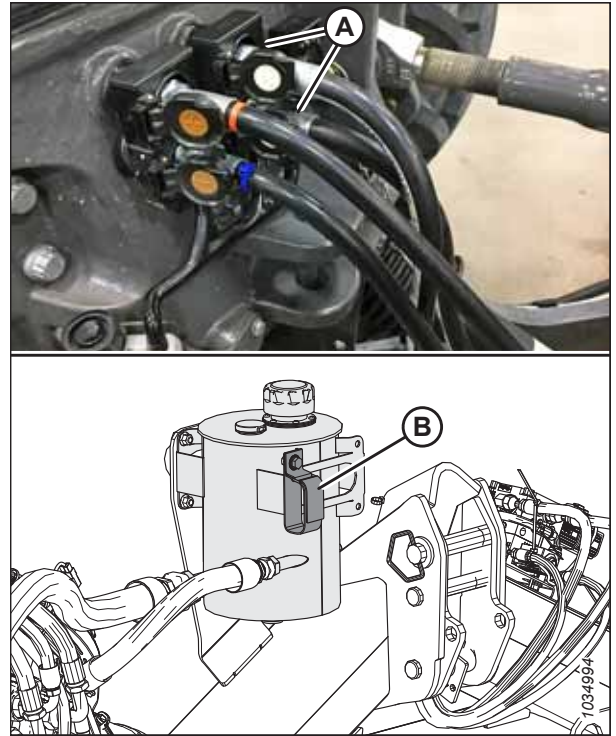


Figure 4.27: Front SCV Hose Routing

7. For hoses routed from the rear SCV, route hoses (A) to the front of the tractor, along the left side of the three-point hitch toward the multicoupler receptacle.

IMPORTANT:

When routing the hoses, avoid pinch points on the tractor. Consider any points that could lengthen/shorten if the float module moves up or down relative to the tractor, and allow for extra extension to avoid damage to the hoses.

IMPORTANT:

Ensure the hoses are not hanging below the frame because stubble can cause wear and damage.

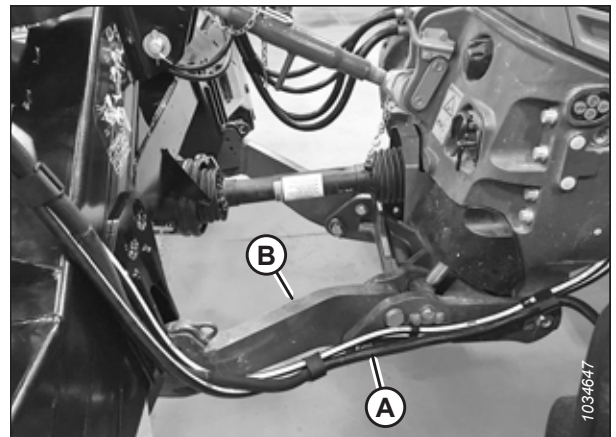


Figure 4.28: Harness Routing

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

8. Locate the multicoupler in the parts bag. This multicoupler is required to connect the reel pressure/return and header lift hoses to the float module.
9. Connect the appropriate hoses to the multicoupler as follows:
 - Reel return (A) (yellow tie)
 - Reel pressure (B) (white tie)
 - Header lift (C) and (D) (no ties)

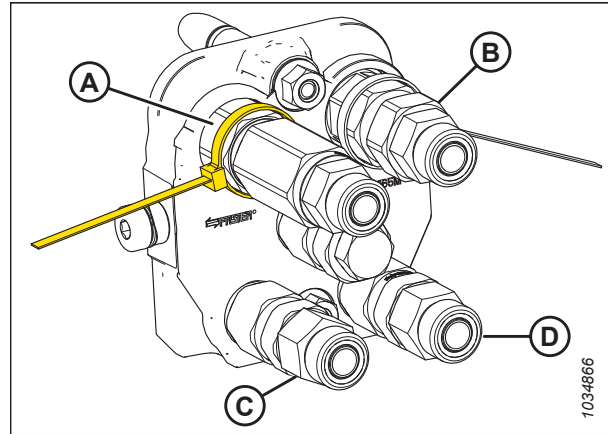


Figure 4.29: Multicoupler

10. Open the cover on receptacle (A) located on the left side of the float module.
11. Press lock button (B) and pull handle (C) to the fully-open position.
12. Clean the receptacle mating surfaces.

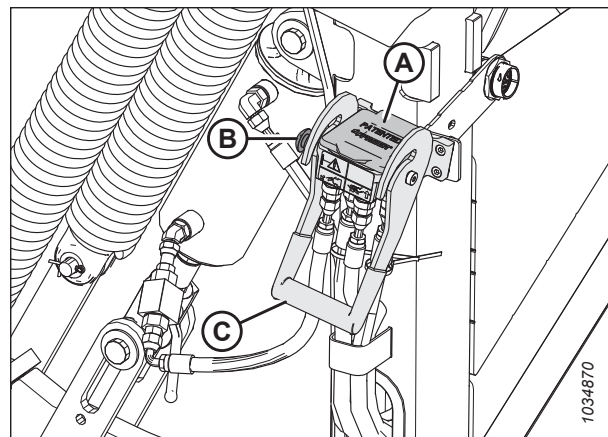


Figure 4.30: Multicoupler Receptacle

13. Position multicoupler (A) onto the receptacle and push the handle to engage the multicoupler pins into the receptacle.
14. Push the handle to the closed position until the lock button snaps out.

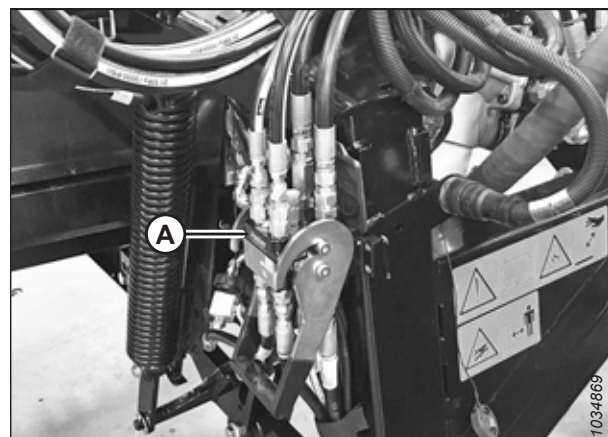


Figure 4.31: Multicoupler Connected to TM100

4.1.3 Installing Control Console

The control console allows for in-cab control of header functions such as draper speed, deck shift, reel position, and header tilt.

Control console (A) and suction cup base (B) are provided with the TM100.

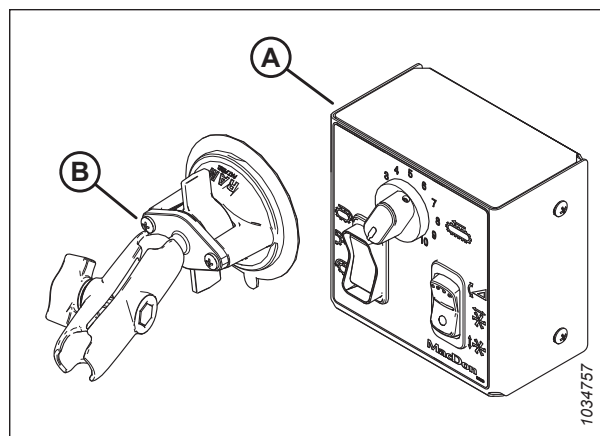


Figure 4.32: Control Console and Base

1. Attach suction cup base (B) to ball mount (A) on the back of the control console. Tighten using knob (C).

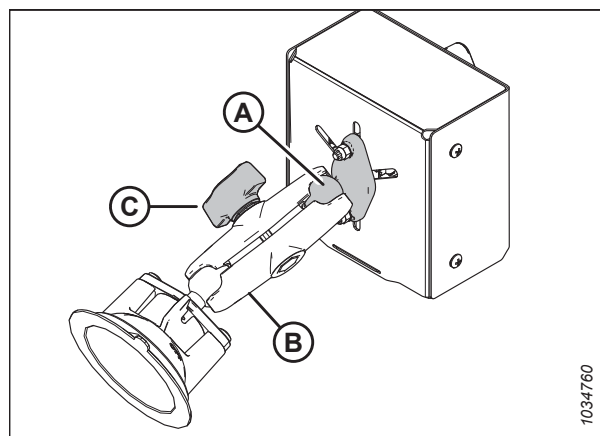


Figure 4.33: Control Console and Base

2. Install the control console inside the cab by attaching suction cup (A) to the window glass or a smooth surface on the console. Secure it by locking tab (B) on the panel base.

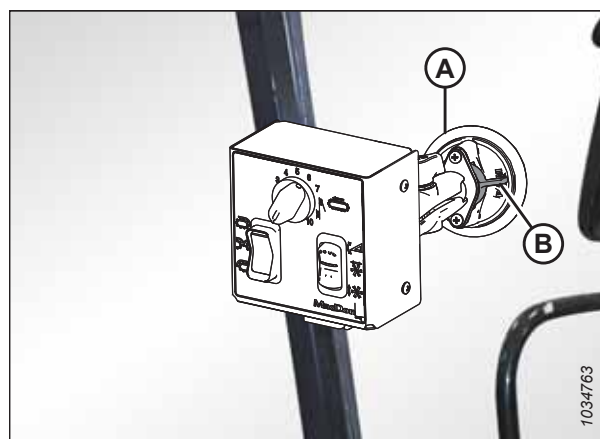


Figure 4.34: Control Console Installed

4.1.4 Installing Electrical Harness – TM100 to Cab

Electrical harness MD #333569 connects the TM100 to the tractor cab.

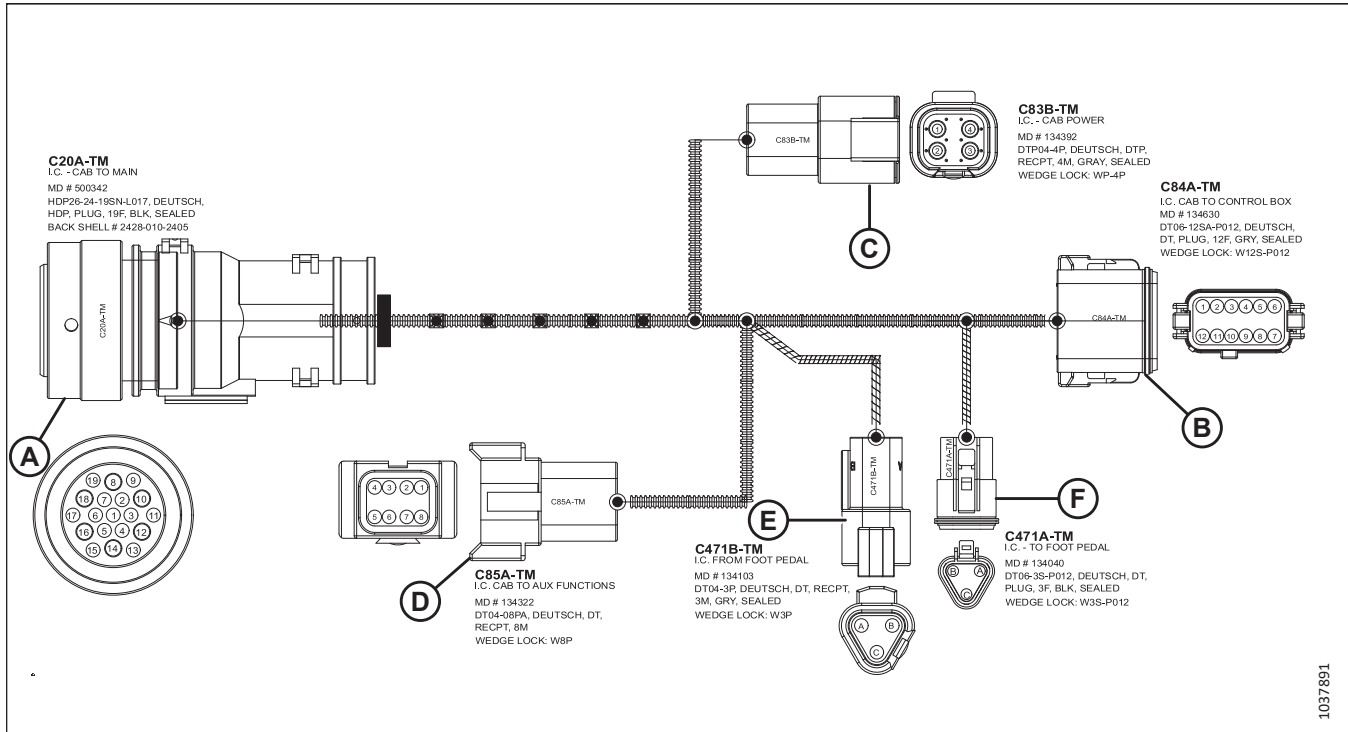


Figure 4.35: Harness MD #333569

A - C20A-TM – Connects to TM100

B - C84A-TM – Connects to Control Box in Cab

C - C83B-TM – Connects to Cab Power Harness (MD #333265/333266)

D - C85A-TM – Unused³

E - C471B-TM – Connects to C471A-TM of MD #333568 Optional Foot Pedal Harness

F - C471A-TM – Connects to C471B-TM of MD #333568 Optional Foot Pedal Harness

1. Locate the electrical harness MD #333569 in the kit.
2. Align the lugs on connector C20A-TM (B) with the slots in receptacle (A). Push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

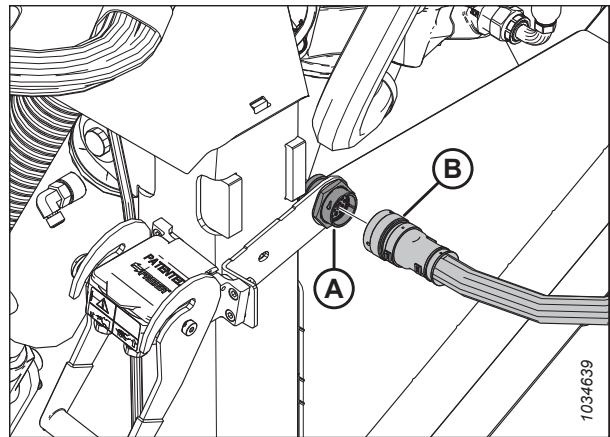


Figure 4.36: Connector C20A-TM

3. Included for future options.

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Starting at the TM100, route harness (A) along the left side of three-point hitch (B) and under the left side of the cab.

IMPORTANT:

When routing the harness, avoid pinch points on the tractor, and avoid hot surfaces that could damage the harness. Consider any points that could lengthen/shorten if the float module moves up or down relative to the tractor, and allow for extra extension to avoid damage to the harness.

IMPORTANT:

Ensure the harness isn't hanging below the frame because stubble can cause wear and damage.

NOTE:

Ensure any slack in the harness is taken up at the cab end.

- Secure the harness to the hoses that run along the three-point hitch.
- Continue routing harness (A) under the left side of the cab, toward the rear of the tractor.

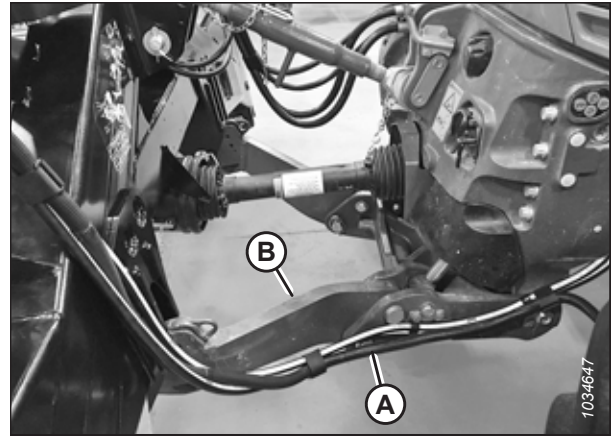


Figure 4.37: Harness Routing

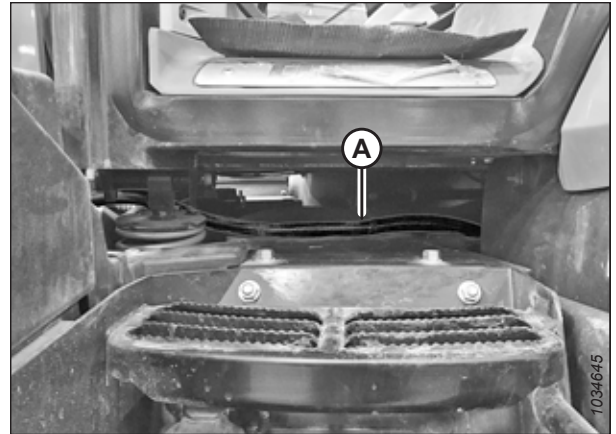


Figure 4.38: Harness Routing – Under Cab

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

8. If an optional foot pedal is installed, connect C471B-TM (A) to C471A-TM (B) of foot pedal harness (E) (MD #333568), and C471A-TM (C) to C471B-TM (D) of foot pedal harness (E) (MD #333568).

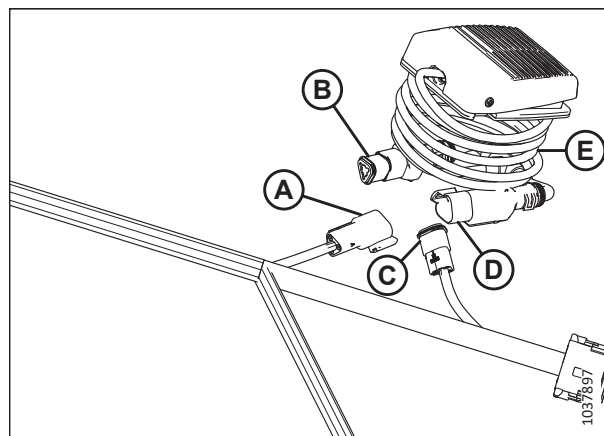


Figure 4.42: Electrical Harness (MD #333569) and Foot Pedal Harness (MD #333568)

9. If there is no optional foot pedal installed, plug C471B-TM (A) to C471A-TM (B) of electrical harness (MD #333569).
10. Coil excess harness (C) inside the cab and secure it in place.

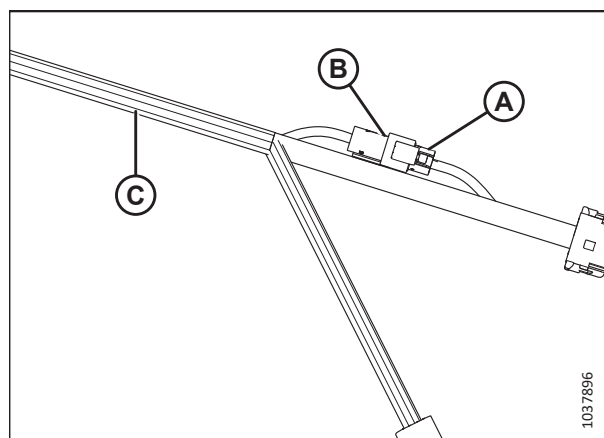


Figure 4.43: Connectors C471B-TM and C471A-TM

4.1.5 Installing Electrical Harness – Cab Power

An electrical harness must be installed to connect the TM100 to the tractor's power supply.

Two electrical harness options are provided:

- MD #333265 (A) – Terminated with flying leads (C). These can be spliced/connected to whatever the cab has for a power outlet, such as a circular cigarette lighter power plug.
- MD #333266 (B) – Hella power connector (D).

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

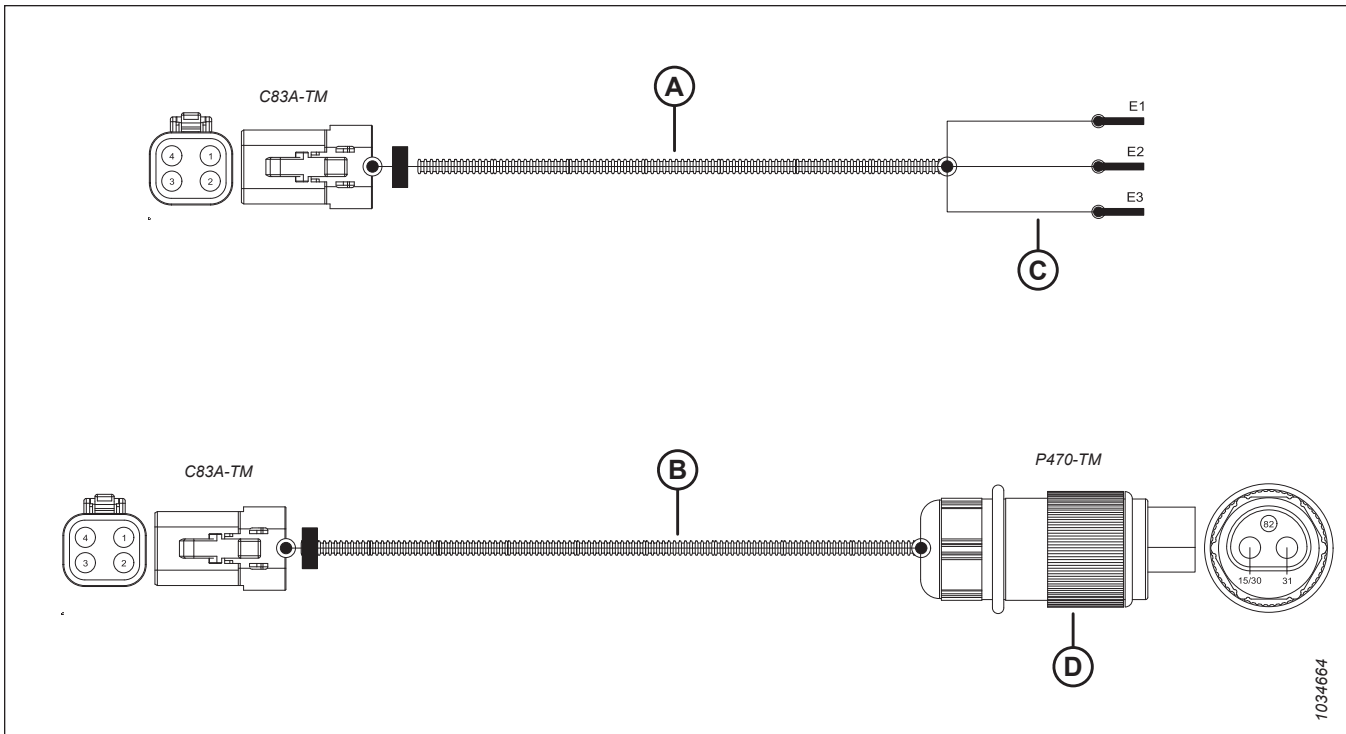


Figure 4.44: Electrical Harnesses – Cab Power

1. Locate the tractor's power plugs, and determine which harness would be the best option for this install. Power sources are usually located in the console area. Use a keyed power source instead of a battery power source to avoid draining the battery when not in use.

IMPORTANT:

The tractor end of the circuit must be capable of handling the 25 amp draw requirement and must be fused for 25 amps.

2. Connect C83A-TM (A) to plug C83B-TM (B) on TM100 harness (MD #333569).

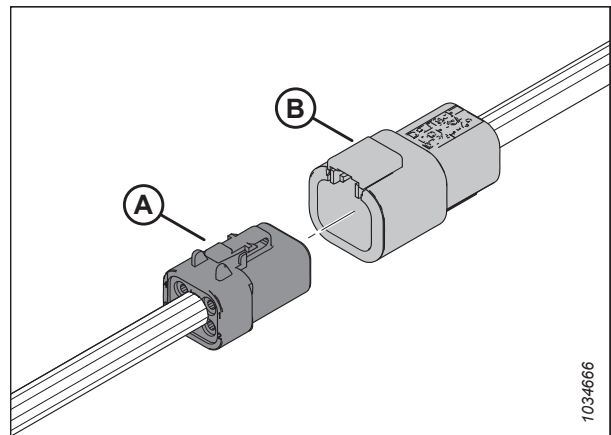


Figure 4.45: Connecting Cab Power Harness to TM100 Harness

A - C83A-TM – Cab Power Harness (MD #333265/333266)

B - C83B-TM – TM100-Harness (MD #333569)

4.2 Attaching Header to Tractor Mount Float Module

Follow this procedure to ensure the header is attached correctly to the TM100.

DANGER

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

1. Fully loosen the float springs as follows:
 - a. Loosen bolts (B) and rotate spring locks (C) out of the way.
 - b. Turn both adjustment bolts (A) counterclockwise until no spring tension is applied to the lift arms and they are free to rotate and slide on the float links.

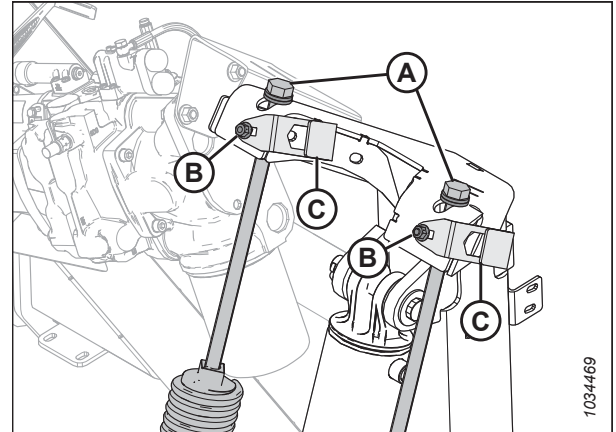


Figure 4.46: Float Springs

2. Using the tractor selective control valve (SCV) controls, fully extend lift cylinders (A).

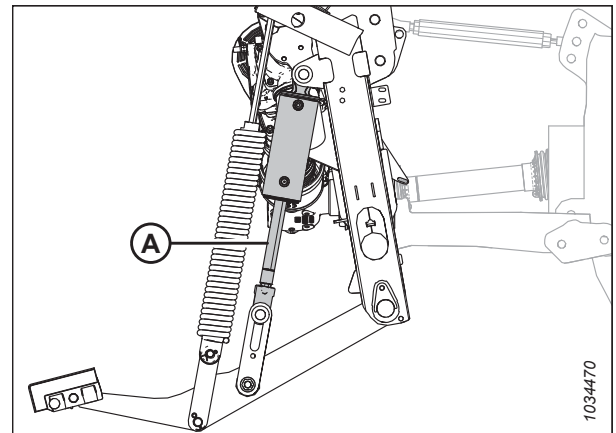


Figure 4.47: TM100 Lift Cylinder

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

3. Ensure rubber block (B) and locking bracket (A) are in place on each lift arm. Secure locking bracket using pin (C), two flat washers (D) (one per side), and two retaining rings (E) (one per side). The locking bracket and hardware are provided with the TM100.

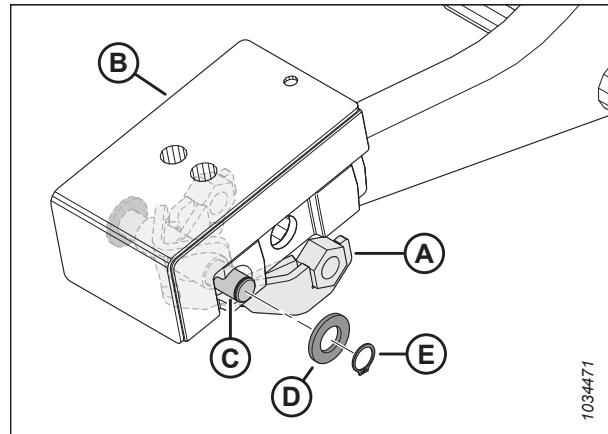


Figure 4.48: Lift Arm Locking Bracket

4. Remove header stand (A) from the header leg.



Figure 4.49: Header Stand

5. Place 203 mm (8 in.) blocks (A) under each lift leg. When the lift legs are 203 mm (8 in.) off the ground, the cutterbar should be 102 mm (4 in.) off the ground with a header angle of 15°.
6. Remove ring (A) from pin (B), and remove the pins from the header legs at the delivery opening.

DANGER

Ensure that all bystanders have cleared the area.

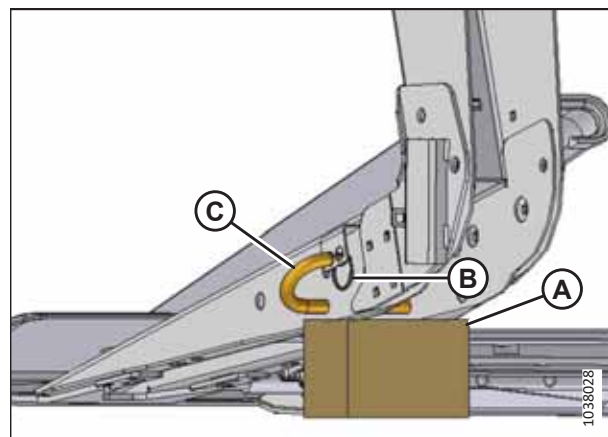


Figure 4.50: Header Leg

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

7. Start the engine, and lower the three-point linkage as needed so lift arms (A) are aligned with header legs (B).
8. While maintaining alignment between lift arms (A) and header legs (B), drive slowly forward until lift arms (A) contact stops (C) in the header legs.

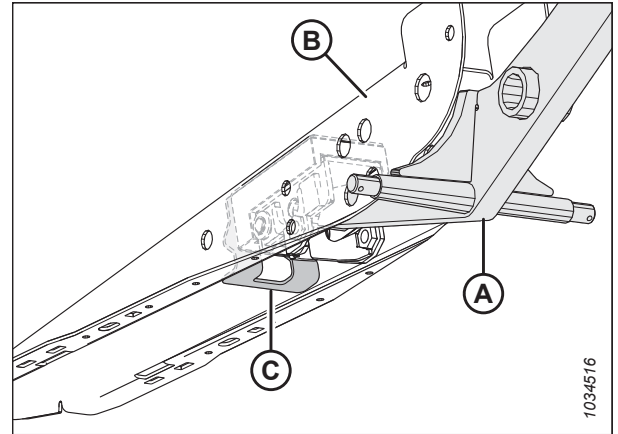


Figure 4.51: Lift Arm in Header Leg

9. Rotate locking bracket (A) into position, and secure with two M20 bolts (B) and four hardened washers (C) (two washers per bolt) as shown. Apply medium-strength threadlocker (Loctite® 243 or equivalent) to the bolt threads, and tighten the hardware to 485 Nm (358 lbf-ft). Repeat this step on the opposite header leg.

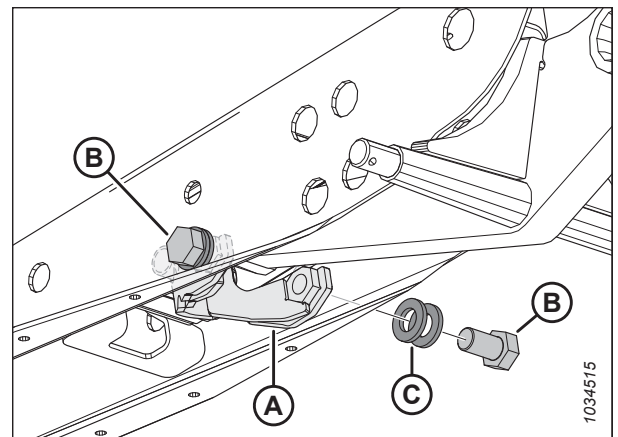


Figure 4.52: Lift Arm Locking Bracket

10. Remove lynch pin and cotter pin (A) from the header bracket.

CAUTION

Center-link (B) is very heavy. The end of the rod is solid steel.

11. Remove the shipping wire securing center-link (B) in shipping position.

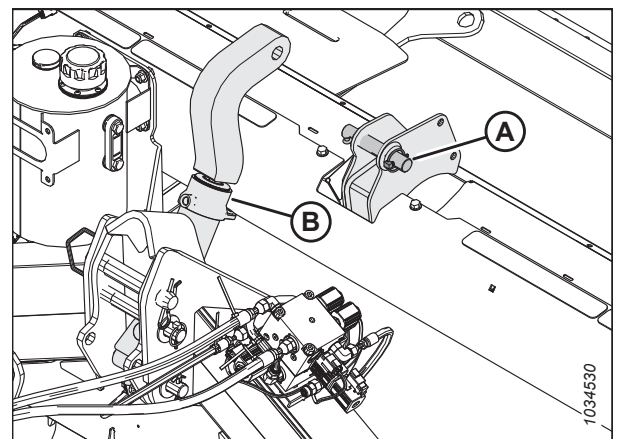


Figure 4.53: Center-Link

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Using the tractor SCV controls, adjust the length of center-link (B) so the attachment hole aligns with the header bracket hole.

NOTE:

This operation will work only if power is connected to the console in the cab.

- Shut down the engine, and remove the key from the ignition.
- Secure the front of center-link (B) with retained clevis pin (A). Secure clevis pin (A) with the lynch pin.

CAUTION

Always connect the center-link before fully raising the header.

DANGER

Ensure that all bystanders have cleared the area.

- Start the engine and slowly raise the float module using the tractor SCV controls while ensuring the float module arms engage the header legs.
- Raise the header to its full height, stop the engine, and remove the key from the ignition.
- If the header is uneven when lifting, rephase the cylinders as follows:
 - Extend lift cylinders (A) and hold the SCV control until both cylinders reach maximum and equal extension.
 - Retract lift cylinders (A) and hold the SCV control as necessary until both cylinders reach equal retracted length.

NOTE:

This procedure allows the cylinders to rephase to ensure even lift in operation.

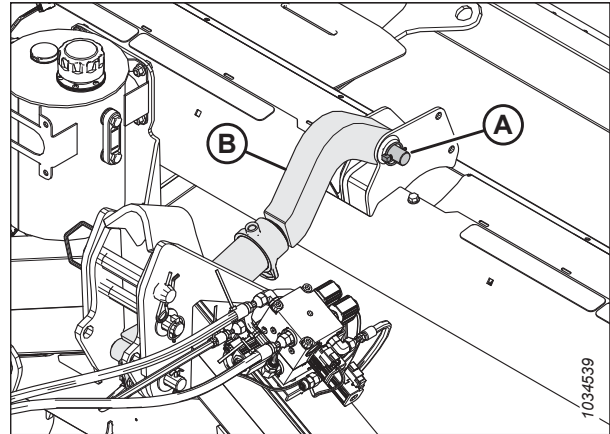


Figure 4.54: Center-Link

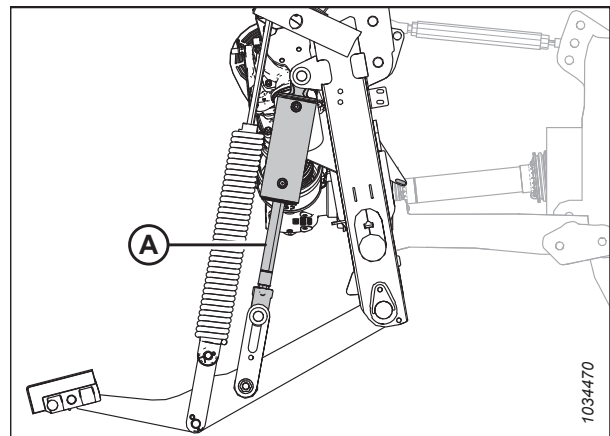


Figure 4.55: TM100 Lift Cylinder

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Engage both safety props on the float module lift cylinders. The lift cylinders are locked when handle (A) is oriented 90 degrees to valve (B) and the hydraulic lines.

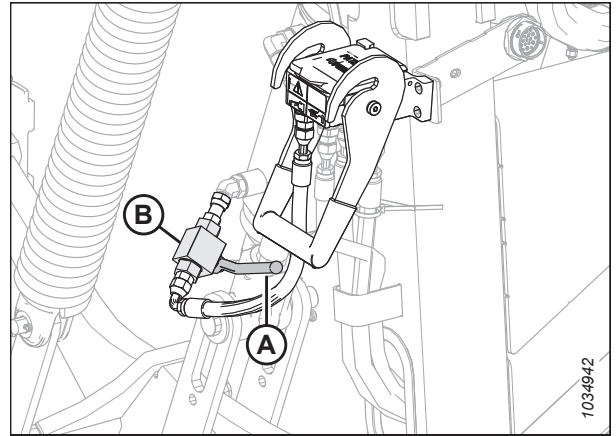


Figure 4.56: TM100 Lift Cylinder Lockout Valve – Left Side

- On the right side of the float module, route hose bundle (A) over hose support (B).
- Matching the colored ties, connect the reel drive and reel position hoses to header hoses (C).

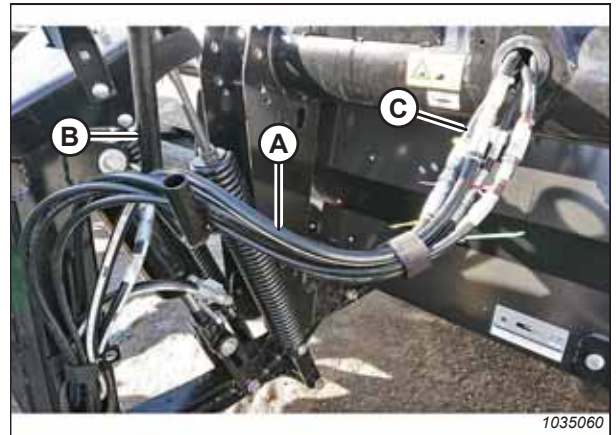


Figure 4.57: Reel Hydraulics

- On the left side of the float module, route hose bundle (A) through hose support (B).
- If installed, remove the quick couplers from bulkhead (C).
- Matching the colored ties, connect the knife and draper drive hoses to bulkhead (C).

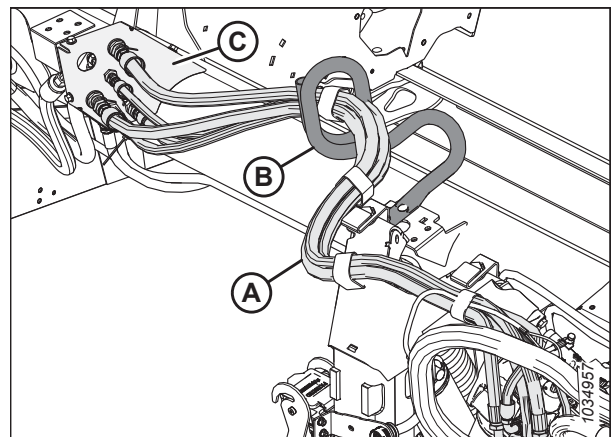


Figure 4.58: Knife and Draper Drive Hoses

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

24. Locate electrical harness (A) (MD #333181) provided with the float module.
25. Remove the cover from receptacle (B) at the left side of the float module. Ensure the receptacle is clean and not damaged.
26. Connect C20D-TM (C) to receptacle (B). Align the lugs on the connector with the slots in the receptacle, push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

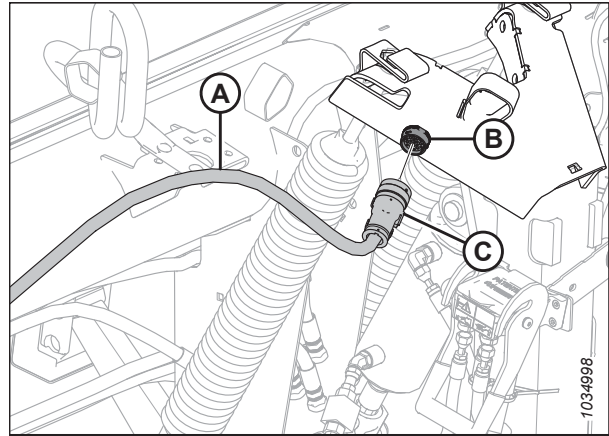


Figure 4.59: Harness MD #333181

27. Remove the cover from the receptacle on header bulkhead (B). Ensure the receptacle is clean and not damaged.
28. Connect C20E-TM (A) to the bulkhead receptacle. Align the lugs on the connector with the slots in the receptacle, push the connector onto the receptacle, and turn the collar on the connector to lock it in place.

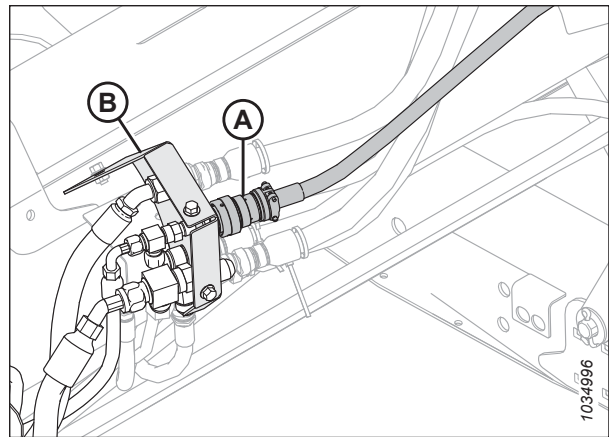


Figure 4.60: Harness MD #333181

29. Unlock both lift cylinders. The lift cylinders are unlocked when handle (A) is parallel with valve (B).
30. Lower the header to the ground.

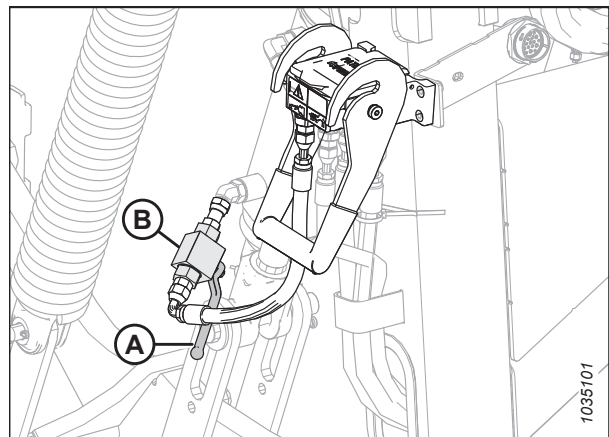


Figure 4.61: TM100 Lift Cylinder Lockout Valve – Left Side

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

31. Set the header float as follows:

NOTE:

The recommended float setting for cutting on the ground is when there is approximately 34 kg (75 lb.) weight on each side of the header at the cutterbar. Readjust as needed for the given field conditions.

NOTE:

Set the center-link and reel fore-aft to the mid position.

IMPORTANT:

Turn each bolt pair equally.

- To increase float (decrease header weight), turn both adjustment bolts (A) clockwise. Repeat the adjustment at the opposite side of the float module.
- To decrease float (increase header weight), turn both adjustment bolts (A) counterclockwise. Repeat the adjustment at the opposite side of the float module.

32. Lock the adjustment bolts with spring locks (B). Ensure the bolt heads are engaged in the spring lock cutouts.

33. Tighten bolts (A) to secure the spring locks in place.

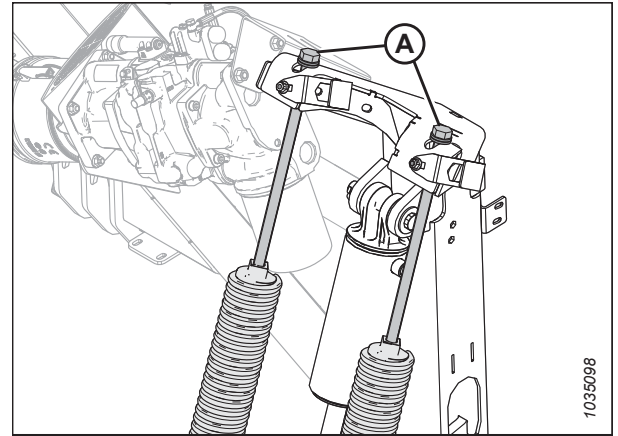


Figure 4.62: Float Springs

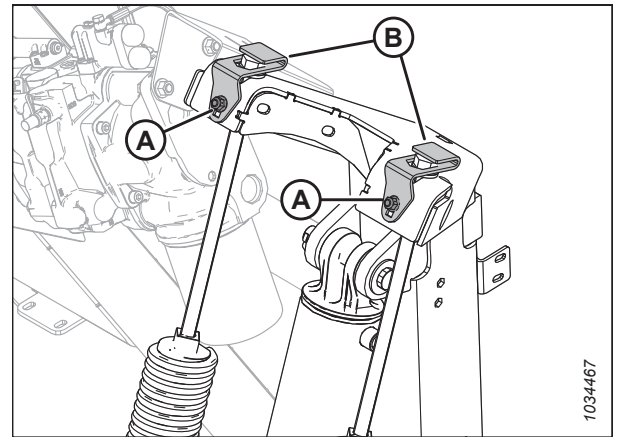


Figure 4.63: Float Spring Locks

⚠ DANGER

Ensure that all bystanders have cleared the area.

34. Start the tractor, engage the PTO, and perform the following inspections:

- Raise and lower the reel to ensure the hoses are properly connected.
- Engage reel drive on the tractor SCV. Ensure the SCV flow is turned down to prevent overspeeding the reel.
- Run the header to ensure the hoses are properly connected.

35. Check for hydraulic leaks.

4.3 Running up the Header

Operate the header and check for any problems.

DANGER

Ensure that all bystanders have cleared the area.

1. Start the tractor and engage the power take-off (PTO).
2. Raise and lower the reel to ensure the hoses are properly connected.
3. Engage reel drive on the tractor's selective control valve (SCV). Ensure the SCV flow is turned down to prevent overspeeding the reel.

NOTE:

Reels, knives, and drapers will not operate until hydraulic oil fills the lines.

4. Run the header to ensure the hoses are properly connected.

NOTE:

The pump may be louder but it should clear after 10–15 minutes of running.

5. Shut down the engine, and remove the key from the ignition.
6. Check the oil level during the initial run-up, and fill it as needed.

IMPORTANT:

Oil may run out during the initial run-up due to the tank size. To avoid damage to the pump, ensure that there is enough oil.

7. Check for hydraulic leaks.
8. Perform the final checks as listed on the Predelivery Checklist (yellow sheet attached to this instruction – [Predelivery Checklist, page 181](#)) to ensure the machine is field-ready. You may need to add oil to the hydraulic reservoir after running up the header. The completed Checklist should be retained by either the Operator or the Dealer.

4.4 Detaching Tractor Mount Float Module from Tractor

To detach the TM100 from the tractor, follow the recommended procedure provided here.

DANGER

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

1. Park the tractor on a level surface.
2. Lower the header to the ground.
3. Lower the reel fully.
4. Shut down the engine, and remove the key from the ignition.
5. Disconnect electrical connector (B) by turning the collar counterclockwise and pulling on the connector to disengage. Replace the cover on receptacle (A).

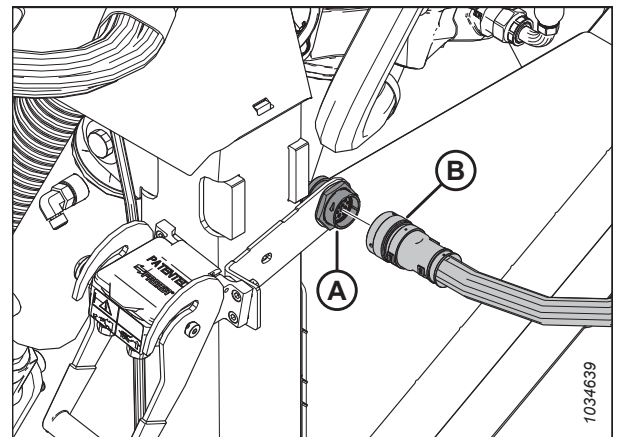


Figure 4.64: Connector C20A-TM

6. Disconnect the selector valve's pressure and return hoses (A) and (B) from the tractor's front selective control valve (SCV).



Figure 4.65: Tractor Front SCV

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

7. Push in the lock button and pull the handle to release multicoupler (A) from the receptacle.

NOTE:

If a set of multicoupler hoses is connected to the front of the tractor, remove the hoses from the strap on the hydraulic tank.

8. Store the multicoupler and hoses with the tractor.

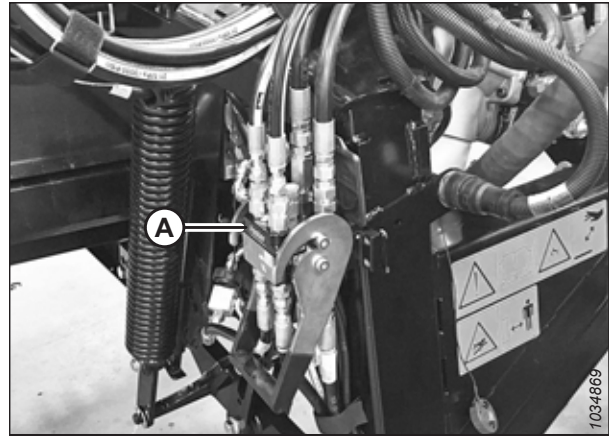


Figure 4.66: Multicoupler Connected to TM100

9. Detach the three-point linkage from the float module. Ensure all pins (A) are replaced and secured on the float module frame.

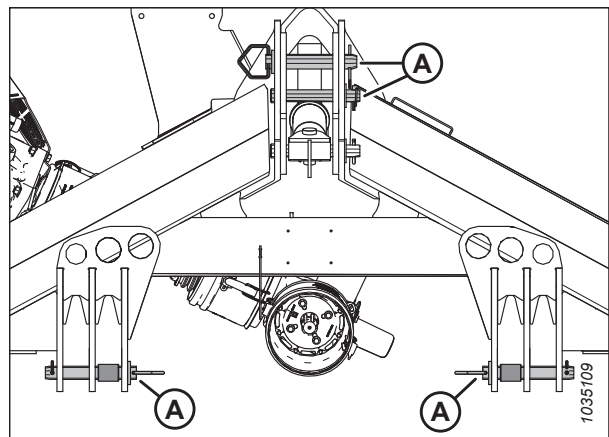


Figure 4.67: Three-Point Hitch Attachment Points

10. Remove the power take-off (PTO) driveline chain from the tractor.
11. Push back quick-disconnect collar (B) on the end of the driveline to release the driveline yoke from tractor shaft (A).

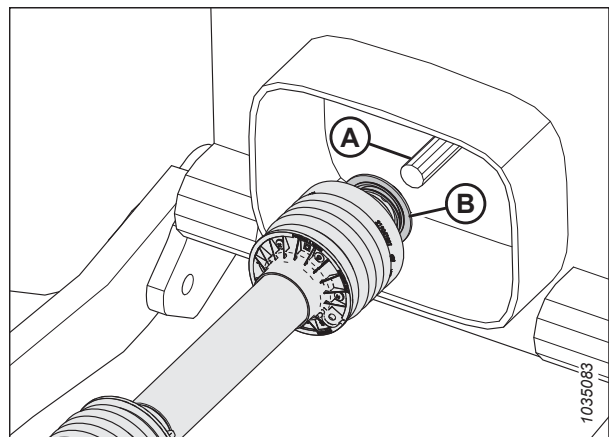


Figure 4.68: Tractor PTO

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Remove pin (A) securing storage bracket (C) to the float module frame.

IMPORTANT:

Keep lower pin (B) installed because it secures the center-link to the frame. Remove only the lynch pin and washer to access the storage bracket.

- Reinstall pin (A).

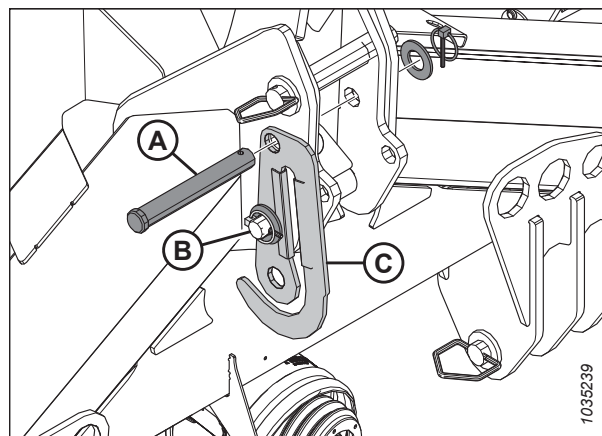


Figure 4.69: Driveline Storage Bracket – Field Operation Position

- Slide storage bracket (A) onto driveline yoke (B).

IMPORTANT:

Ensure seal trim (C) stays attached to the yoke. The seal trim protects the yoke from damage during transport.

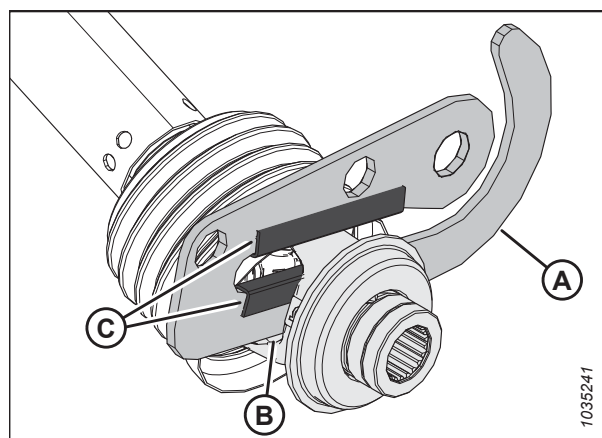


Figure 4.70: Driveline Storage Bracket

- Undo clips (A) on both sides to unlatch driveline cover (B).

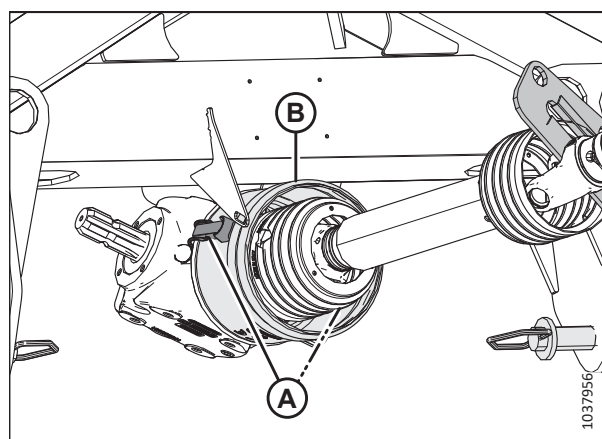


Figure 4.71: Driveline Cover

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

16. Remove hair pin (A), and slide out three-point hitch pin (B) enough to allow room to install the storage bracket at location (C).

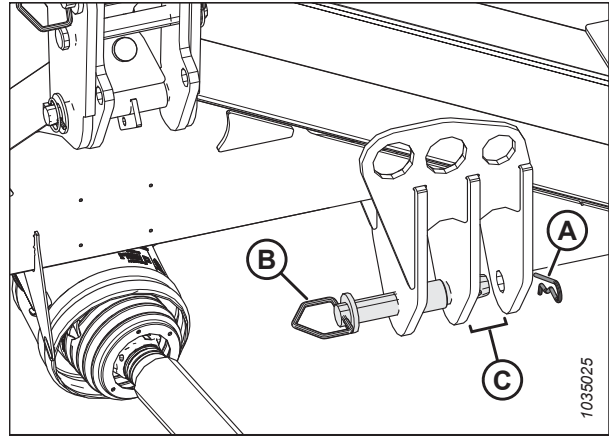


Figure 4.72: Three-Point Hitch Pin

17. Secure storage bracket (B) to the frame using three-point linkage pin (A). Reinstall the hair pin.

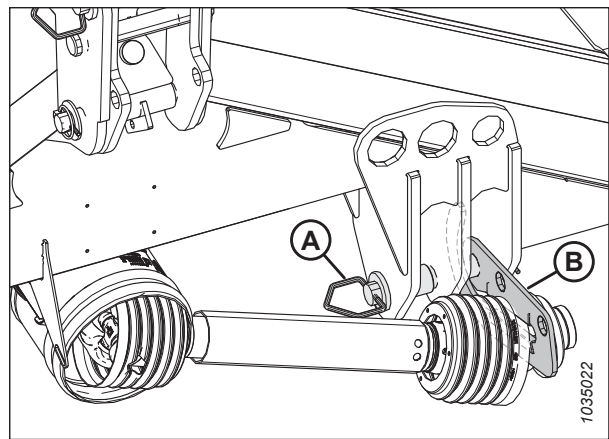


Figure 4.73: Driveline in Storage Position

4.5 Detaching Header from Tractor Mount Float Module

To detach the TM100 from the header, follow the recommended procedure provided here.

Keep the float module attached to the header during transport. Detach the float module only if performing the following tasks:

- Detaching the header for use with a windrower
- Attaching a different header to the float module
- Performing maintenance tasks

DANGER

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

WARNING

Keep hands clear of the area between the guards and knife at all times.

WARNING

Wear heavy gloves when working around or handling knives.

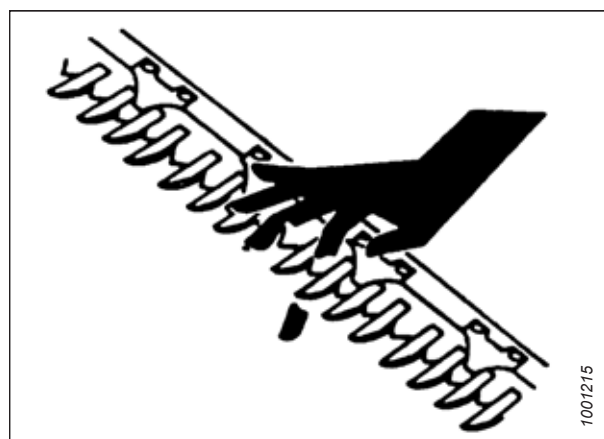


Figure 4.74: Cutterbar Hazard

To detach the header from the float module, follow these steps:

1. Park the tractor on a level surface.
2. Lower the header to the ground.
3. Lower the reel fully.
4. Fully loosen the float springs as follows:
 - a. Loosen bolts (B) and rotate spring locks (C) out of the way.
 - b. Turn both adjustment bolts (A) counterclockwise until no spring tension is applied to the lift arms and they are free to rotate and slide on the float links.

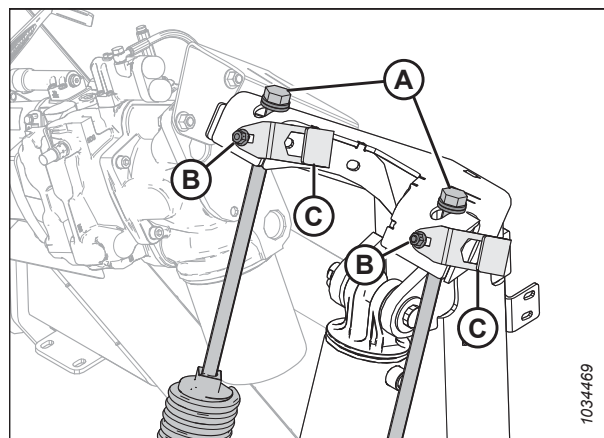


Figure 4.75: Float Springs

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

- Using the tractor selective control valve (SCV) controls, fully extend TM100 lift cylinders (A).
- Shut down the engine, and remove the key from the ignition.

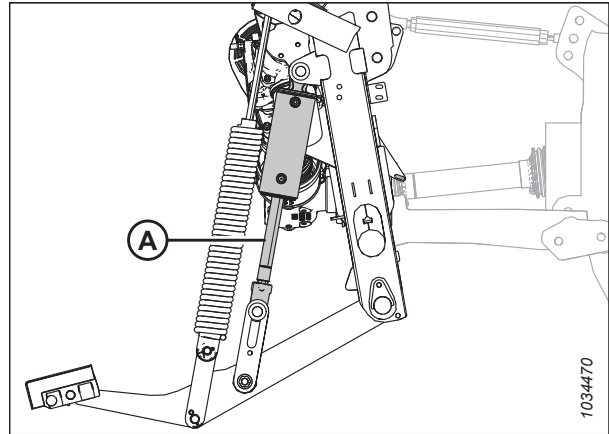


Figure 4.76: TM100 Lift Cylinder

- Engage both safety props on the float module lift cylinders. The lift cylinders are locked when handle (A) is oriented 90 degrees to valve (B) and the hydraulic lines.

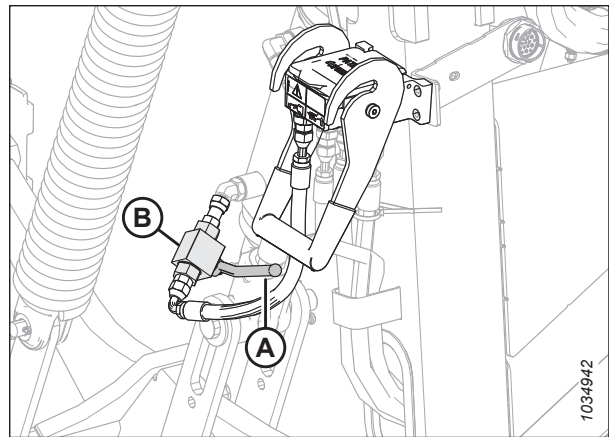


Figure 4.77: TM100 Lift Cylinder Lockout Valve – Left Side

- Remove bolts (B) and washers (C) securing locking bracket (A). Repeat this step on the opposite header leg.

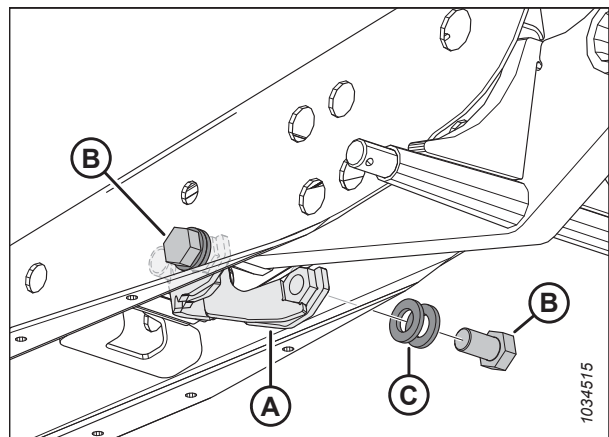


Figure 4.78: Lift Arm Locking Bracket

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

9. Remove lynch pin and clevis pin (A), and disconnect center-link (B). Reinstall pins (A).



CAUTION

Center-link (B) is very heavy. The end of the rod is solid steel.

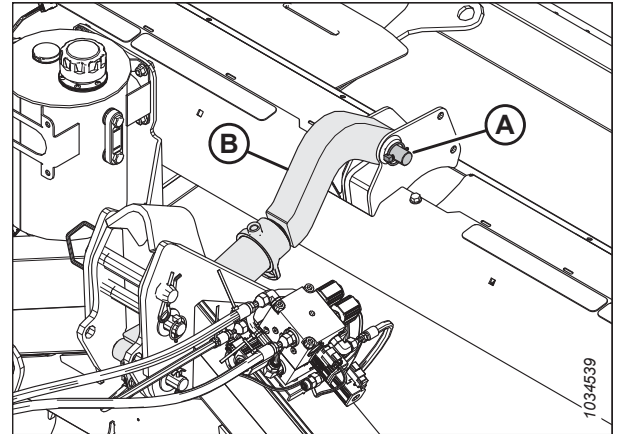


Figure 4.79: Center-Link

10. Disconnect electrical connector (A) from bulkhead (B) by turning the collar counterclockwise and pulling on the connector to disengage.

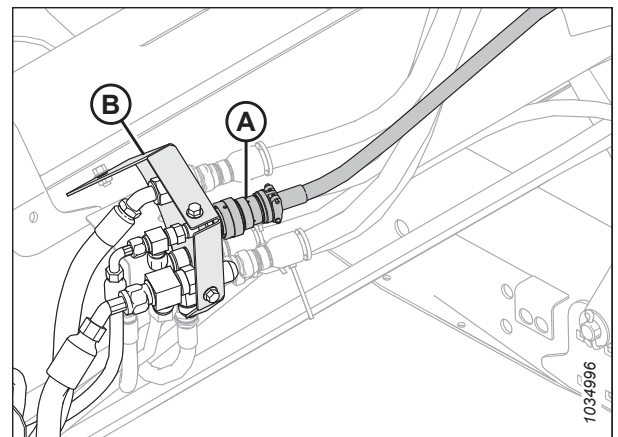


Figure 4.80: Disconnecting Harness

11. Disconnect the knife and draper drive hoses (A) from bulkhead (C).
12. Remove the hose bundle from support (B), and store the hoses on the float module.

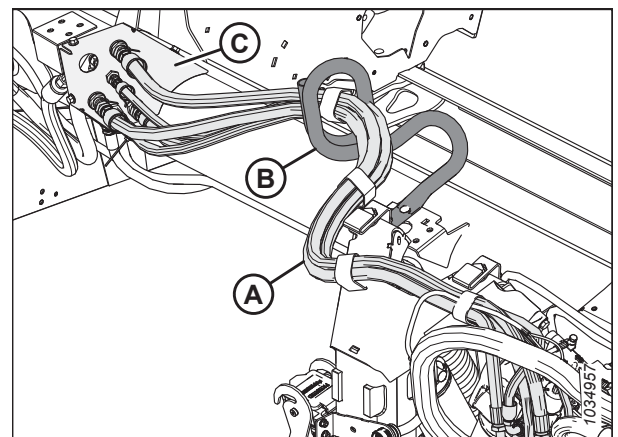


Figure 4.81: Knife and Draper Drive Hoses

ATTACHING AND DETACHING TRACTOR MOUNT FLOAT MODULE

13. At the right side of the float module, disconnect reel drive and reel position hoses (A) from header hoses (C).
14. Remove the hoses from support (B), and store the hoses on the float module.

DANGER

Ensure that all bystanders have cleared the area.

15. Start the engine and slowly back away in a straight line from the header.
16. Stop the engine and remove the key from the ignition.

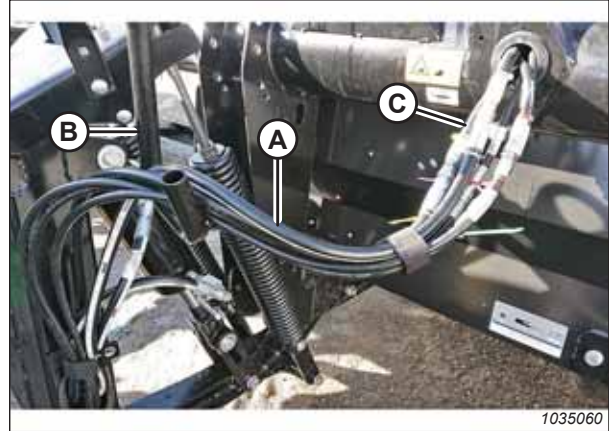


Figure 4.82: Reel Hydraulics

Chapter 5: Operation

Safely operating your machine requires familiarizing yourself with its capabilities.

5.1 Owner/Operator Responsibilities

Familiarize yourself with the responsibilities of operating this machine.



CAUTION

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

5.2 Operational Safety

When operating the machine, follow all the safety and operational instructions provided in this manual.

CAUTION

Adhere to the following safety precautions:

- If you do not have a tractor manual, get one from your Dealer and read it thoroughly.
- Never attempt to start the engine or operate the machine except from the tractor seat.
- Check the operation of all controls in a safe, clear area before starting work.
- Do NOT allow riders on the tractor.

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 the operator's station while the engine is running.
- To avoid bodily injury or death from unexpected startup of a machine, always stop the engine and remove the key before adjusting or removing plugged material from the machine.
- Check for excessive vibration and unusual noises. If there is any indication of trouble, shut down and inspect the machine. Follow proper shutdown procedure. For instructions, refer to [5.4 Shutting down Tractor, page 88](#).
- Operate only in daylight or good artificial light.

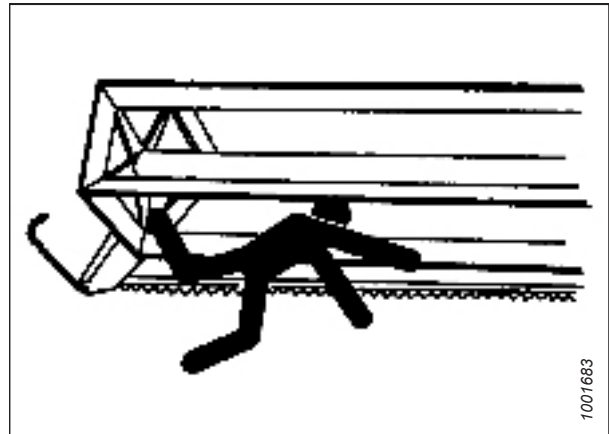


Figure 5.1: Bystander Hazard

5.2.1 Lift Cylinder Safety Props

The TM100 safety props prevent the lift cylinders from unexpectedly retracting and lowering the header.

DANGER

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

OPERATION

1. To engage the TM100 safety props, turn handle (A) so it is oriented 90° to valve (B) and the hydraulic lines. Repeat this step on the opposite lift arm.

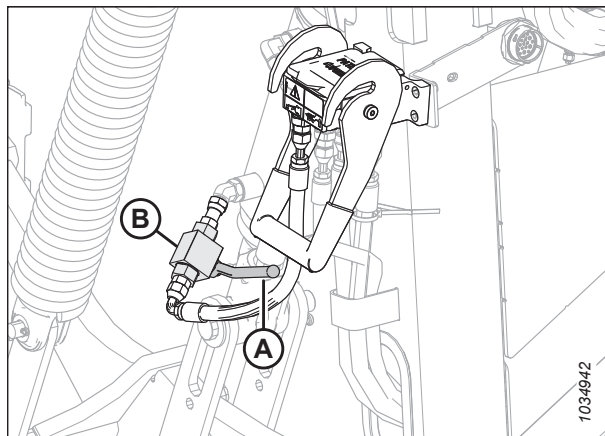


Figure 5.2: TM100 Lift Cylinder Lockout Valve – Left Side

2. To disengage the TM100 safety props, turn handle (A) so it is parallel to valve (B) and the hydraulic lines. Repeat this step on the opposite lift arm.

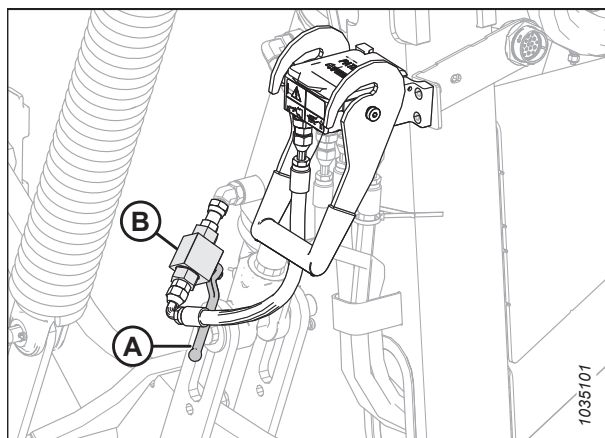


Figure 5.3: TM100 Lift Cylinder Lockout Valve – Left Side

5.2.2 Reel Safety Props

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

IMPORTANT:

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

Engaging Reel Safety Props

Engage the reel safety props whenever you intend to work on or around a raised reel. When engaged, the reel safety props prevent the reel from falling unexpectedly.



DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.



WARNING

To prevent bodily injury from the fall of a raised reel, always engage the reel safety props before going under the raised reel for any reason.

OPERATION

1. Raise the reel fully.
2. Shut down the engine, and remove the key from the ignition.
3. Move reel safety props (A) to the engaged position as shown in Figure 5.4, page 84. The prop **MUST** be placed on the top surface of raised lug (B), making contact with the cylinder mount, to ensure positive engagement.

NOTE:

Keep pivot bolt (C) sufficiently tight so that the prop remains in the stored position when not in use, but can still be engaged using hand force.

4. Repeat Step 3, page 84 on the opposite side of the header.

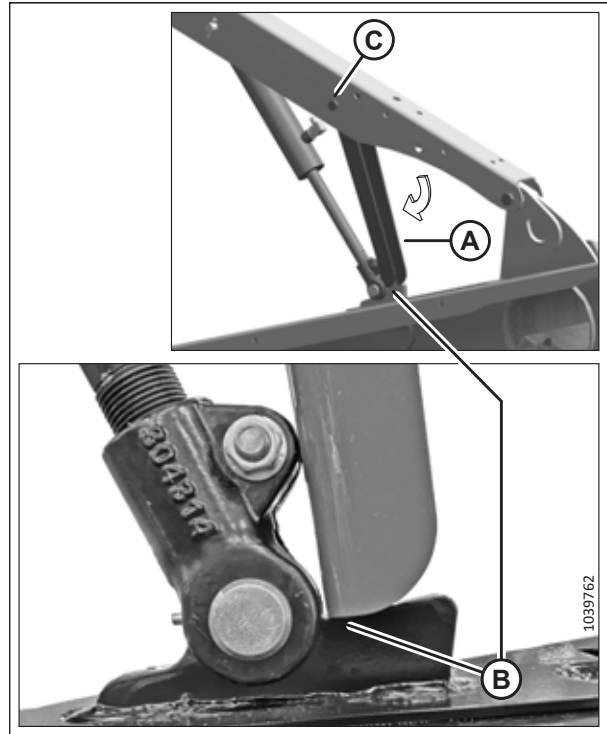


Figure 5.4: Reel Safety Prop – Left Arm Shown

5. **Double-reel header, center arm:** Use handle (A) to move the lock rod to inboard position (B) which engages pin (C) under the prop.
6. Lower the reel until the safety props contact the outer arm cylinder mounts and the center arm pin (the center arm only applies to double-reel headers).

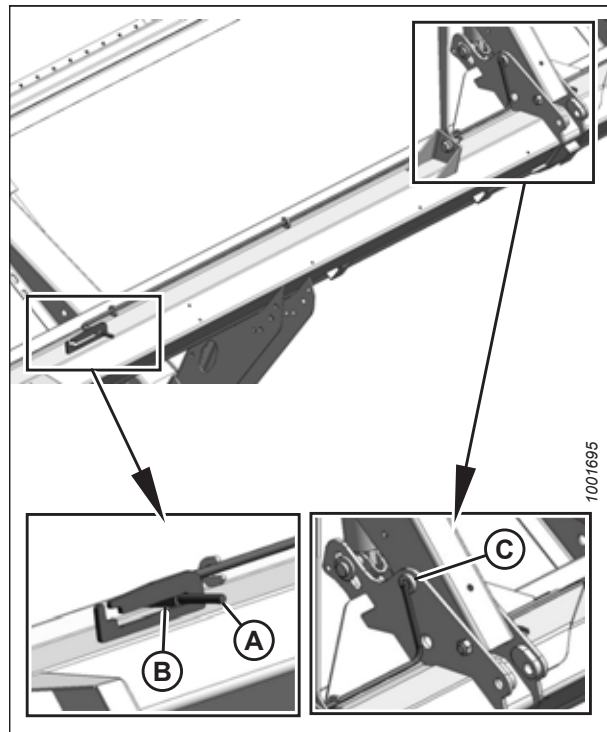


Figure 5.5: Reel Safety Prop – Center Arm

Disengaging Reel Safety Props

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

⚠ DANGER

To prevent bodily injury or death from the unexpected start-up of the machine, always stop the engine and remove the key from the ignition before making adjustments to the machine.

1. Raise the reel to the maximum height.
2. Shut down the engine, and remove the key from the ignition.
3. Move reel safety props (A) back inside the reel arms.
4. Repeat Step 3, page 85 on the opposite end of the reel.

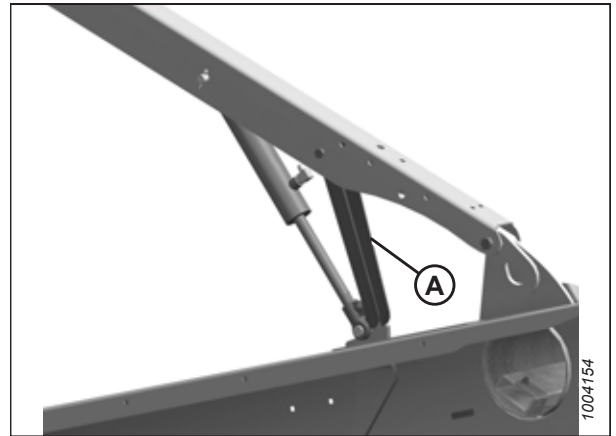


Figure 5.6: Reel Safety Prop – Left Arm Shown

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

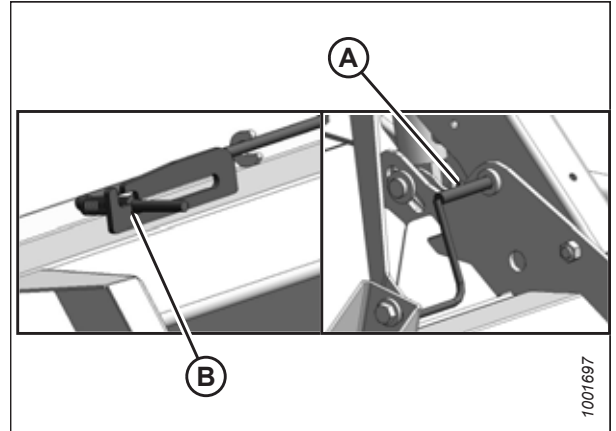


Figure 5.7: Reel Safety Prop – Center Arm

5.2.3 Daily Start-Up Check

Perform these checks daily before attempting to operate the machine.

CAUTION

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



Figure 5.8: Safety Devices

Perform the following checks before starting the machine:

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

IMPORTANT:

Use the proper procedure when searching for pressurized fluid leaks. For instructions, refer to [6.2.3 Checking Hydraulic Hoses and Lines, page 101](#).

2. Clean all the lights and reflectors on the machine.
3. Perform all daily maintenance. For instructions, refer to [6.2.1 Maintenance Schedule/Record, page 100](#).

5.3 Break-in Period

A brand-new machine must be operated gently when it is run for the first time.



CAUTION

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

NOTE:

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

After attaching the float module and header to the tractor for the first time, follow these steps:

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

NOTE:

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

2. Refer to [6.2.2 Break-In Inspection, page 101](#) and perform all the specified tasks.

5.4 Shutting down Tractor

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

DANGER

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

To shut down the tractor, follow these steps:

1. Park on level ground whenever possible.
2. Lower the header fully.
3. Place all controls in PARK.
4. Disengage the front power take-off (PTO).
5. Lower and fully retract the reel.
6. Disengage the hydraulic reel drive selective control valve (SVC).
7. Stop the engine and remove the key from the ignition.
8. Wait for all movement to stop before exiting the vehicle.

5.5 Cab Controls

The tractor cab contains the standard controls provided with your tractor as well as the control console supplied with the TM100.

Refer to your tractor operator's manual for identification of the following in-cab controls:

- Front power take-off (PTO) engage/disengage
- Ground speed
- PTO speed (controls knife speed, factory-set to 1500 spm at 1000 PTO rpm)
- Front three-point linkage height
- Header height
- Reel speed (selective control valve [SCV] flow)

IMPORTANT:

Take care not to overspeed the reel. Ensure reel speed is slow when starting and then increase to the desired speed. Run the reel at a speed that allows consistent feeding without excessive header vibration. Reduce ground speed if necessary to reduce reel speed.

The following controls are available on the control console supplied with the TM100:

- Draper speed
- Deck position (if equipped with hydraulic deck shift)
- Reel height
- Reel fore-aft position
- Header angle

OPERATION

NOTE:

Reel height/fore-aft and header angle controls operate using common SCV controls. Use the in-cab control console to switch between these functions.

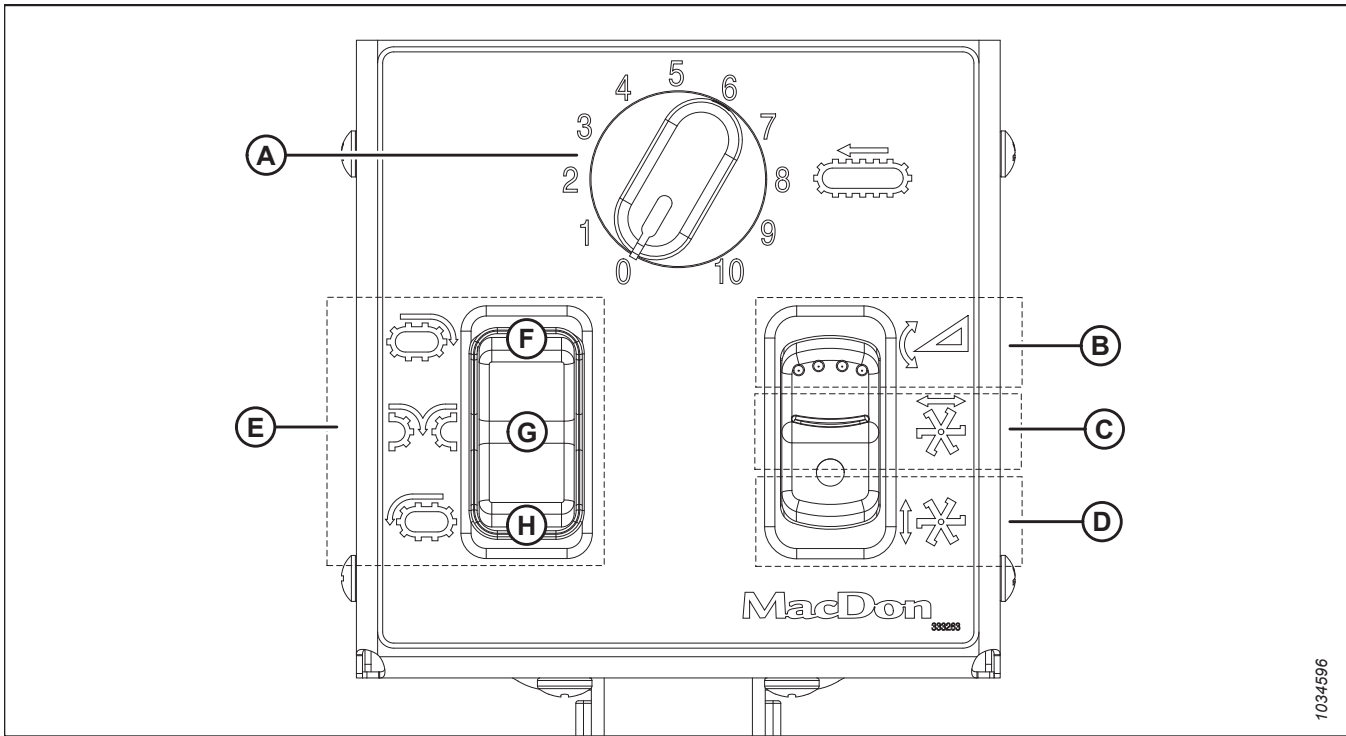


Figure 5.9: TM100 In-Cab Control Box

Table 5.1 TM100 In-Cab Control Box Functions

A	Draper speed	Rotate knob (A) to the desired draper speed setting. Position 6 is for normal crop delivery.
B	Header angle	Set switch to header angle operation (B). Use the tractor SCV to operate the header tilt function.
C	Reel Fore-Aft	Set switch to fore-aft operation (C). Use the tractor SCV to adjust the fore-aft position.
D	Reel Height	Set switch to reel height operation (D). Use the tractor SCV to adjust the reel height.
E	Deck shift controls ⁴	Push deck shift switch (E) to the desired delivery position: right side delivery (F), center delivery (G), or left side delivery (H).

NOTE:

For information on ideal settings for different crop conditions, refer to the header operator’s manual.

4. If header is equipped with hydraulic deck shift.

5.6 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.

D1 Series draper headers perform best with minimum ground pressure under normal conditions. Readjust the float if adding/removing optional attachments to the header that affect header weight.

5.6.1 Checking Header Float

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.

Header float can be gauged by the length of threaded portion (A) of the spring adjustment bolts.

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

The recommended float setting for cutting on the ground is when there is approximately 34 kg (75 lb.) weight on each side of the header at the cutterbar. Readjust as needed for the given field conditions.

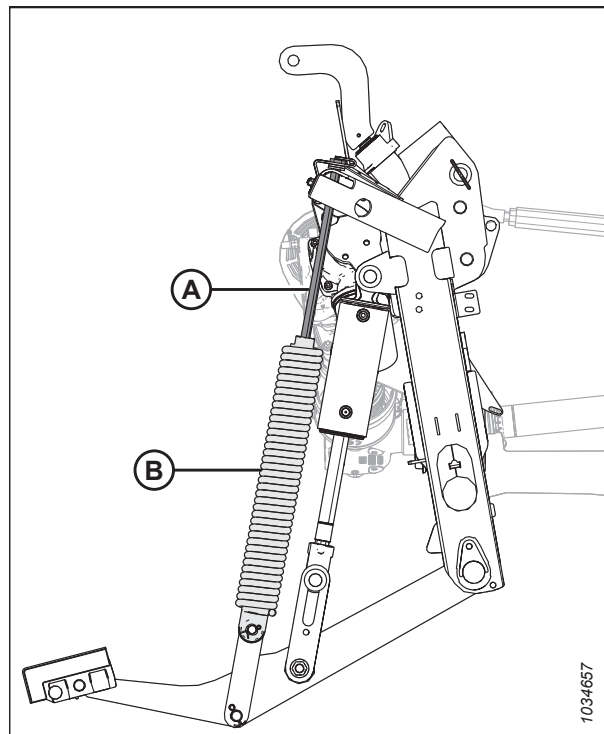


Figure 5.10: Float Springs

5.6.2 Adjusting Header Float

This procedure explains how to adjust the header float so that the header floats over the ground to compensate for ridges, trenches, and other variations in ground contour.

If float adjustment is required, follow these steps:

OPERATION

1. Loosen bolts (B) and rotate spring locks (C) out of the way.
2. Adjust the header float as follows:

IMPORTANT:

Turn each bolt pair equally.

- To increase float (decrease header weight), turn both adjustment bolts (A) clockwise. Repeat the adjustment at the opposite side of the float module.
 - To decrease float (increase header weight), turn both adjustment bolts (A) counterclockwise. Repeat the adjustment at the opposite side of the float module.
3. Adjust the float so the ground pressure is equal on both sides of the header.
 4. Lock the adjustment bolts with spring locks (B). Ensure the bolt heads are engaged in the spring lock cutouts.
 5. Tighten bolts (A) to secure the spring locks in place.

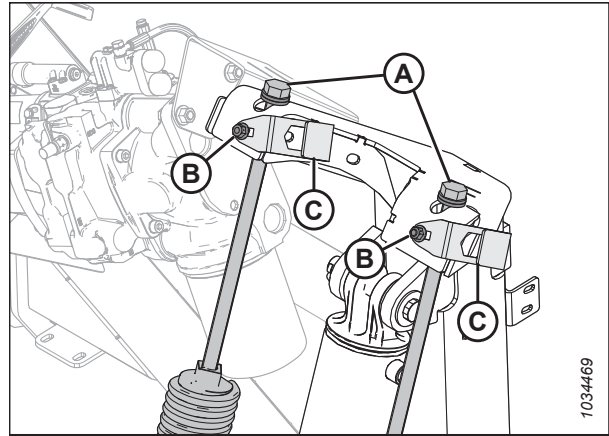


Figure 5.11: Float Springs

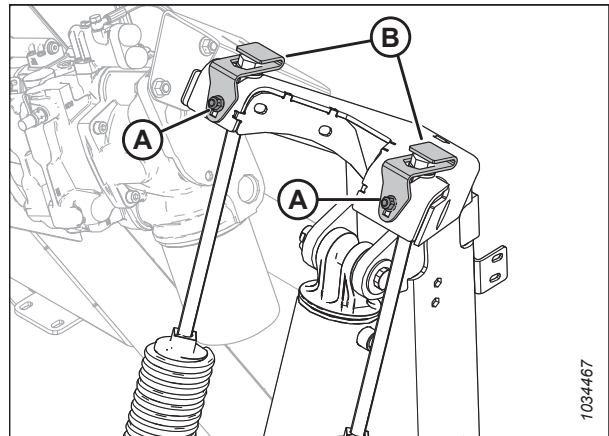


Figure 5.12: Float Spring Locks

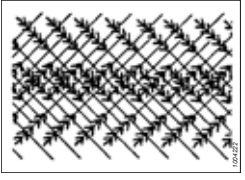
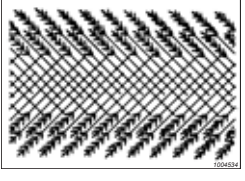
5.7 Windrow Types

Review the qualities that make up a good windrow to better understand how the crop delivery method affects your windrow.

There are three basic criteria by which the quality of a windrow is measured:

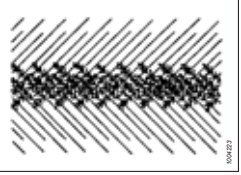
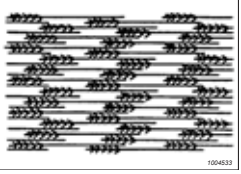
- **Weight Distribution:** Heads and stalks distributed evenly across full width of windrow
- **Good Curing:** A loose, open windrow for better drying
- **Good Weatherability:** A well-formed windrow that supports heads off the ground and holds together in extreme weather conditions

Table 5.2 Windrow Descriptions

Windrow Type	Windrow Descriptions
<p>Herringbone</p> 	<p>Description: The most desirable form of windrow, stalks are crossed and interwoven. Heads are distributed across full width of windrow. This windrow can be formed by center delivery only.</p> <p>Weight Distribution: Good</p> <p>Curing: Good</p> <p>Weatherability: Excellent</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • Reel and ground speed approximately equal • Medium draper speed • Center delivery
<p>Fantail</p> 	<p>Description: The stalks are crossed in the center and the heads are in line along outside edges. This windrow can be formed by center delivery only.</p> <p>Weight Distribution: Fair</p> <p>Curing: Fair</p> <p>Weatherability: Fair</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • Low draper speed • Low header angle • Center delivery

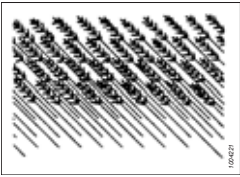
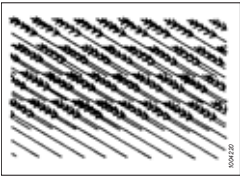
OPERATION

Table 5.2 Windrow Descriptions (continued)

Windrow Type	Windrow Descriptions
<p>Dovetail</p> 	<p>Description: The stalks are lined along outside edges of windrow and heads are crossed in center. This windrow can be formed by center delivery only.</p> <p>Weight Distribution: Poor</p> <p>Curing: Fair</p> <p>Weatherability: Poor</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • High draper speed • High header angle • Center delivery
<p>Parallel</p> 	<p>Description: The stalks are parallel to windrow and heads evenly distributed across width of windrow. This windrow can be formed by center delivery or end delivery.</p> <p>Weight Distribution: Good</p> <p>Curing: Good</p> <p>Weatherability: Good</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • Medium draper speed • Medium header angle • Center or end delivery

OPERATION

Table 5.2 Windrow Descriptions (continued)

Windrow Type	Windrow Descriptions
<p>45° Diagonal</p> 	<p>Description: The stalks are lined along one edge and heads are along opposite edge, 45° to windrow perpendicular. This windrow can be formed by end delivery or by center delivery, if the crop is leaning to one side.</p> <p>Weight Distribution: Poor</p> <p>Curing: Fair</p> <p>Weatherability: Poor</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • Low reel speed • Less aggressive tine pitch • End delivery or center delivery if crop is leaning
<p>75° Diagonal</p> 	<p>Description: The stalks are closer to parallel than the 45° windrow. Stalk tips are lined along one edge with heads opposite, 75° to windrow perpendicular. This windrow can be formed by end delivery or by center delivery, if the crop is leaning to one side.</p> <p>Weight Distribution: Fair</p> <p>Curing: Good</p> <p>Weatherability: Fair</p> <p>Machine Setting Guidelines:</p> <ul style="list-style-type: none"> • Low reel speed • Less aggressive tine pitch • End delivery or center delivery if crop is leaning

5.8 Haying Tips

These tips may be useful when using the header in hay crops

5.8.1 Curing

Curing crops quickly helps maintain the highest quality because for each day that hay lies on the ground, 5% of the protein is lost.

A quick cure will maintain top quality because:

- 5% of the protein is lost for each day hay lies on the ground.
- The sooner the cut hay is off the ground, the earlier the start for new growth.

Leaving the windrow as wide and thin as possible makes for the quickest curing. The cured hay should be baled as soon as possible.

5.8.2 Topsoil Moisture

On wet soil, the general rule of wide and thin does **NOT** apply. A narrower windrow will dry faster than hay left flat on wet ground.

When the ground is wetter than the hay, moisture from the soil is absorbed by the hay above it. Determine topsoil moisture level before cutting. Use a moisture tester or estimate level using the table below.

Level	% Moisture	Condition
Wet	Over 45%	Soil is muddy
Damp	25–45%	Shows footprints
Dry	Under 25%	Surface is dusty

If the ground is wet due to irrigation, wait until soil moisture drops below 45%.

If the ground is wet due to frequent rains, cut when the weather allows and let the forage lie on the wet ground until it dries to the moisture level of the ground. The cut hay will dry no more until the ground under it dries, so consider moving the windrow to drier ground.

5.8.3 Weather and Topography

Cut as much hay as possible by midday, when drying conditions are best.

Fields sloping south get up to 100% more exposure to the sun's heat than the north sloping fields. If hay is baled and chopped, consider baling the south-facing fields and chopping fields facing north.

When relative humidity is high, the evaporation rate is low and hay dries slower.

If there is no wind, saturated air becomes trapped around the windrow. Raking or tedding will expose the hay to fresher, less saturated air.

Cutting hay perpendicular to the direction of the prevailing wind is also recommended.

5.8.4 Windrow Characteristics

Adjust speed and header variables to achieve the ideal windrow characteristics.

Table 5.3 Windrow Characteristics

Configuration	Advantage
High and fluffy	Movement of air through the windrow is more important to the curing process than is direct sunlight.
Consistent formation, not bunched	Permits an even flow of material into the baler, chopper, etc. and allows for more even drying.
Even distribution of material across windrow	Results in even and consistent bales to minimize handling and stacking problems.
Properly conditioned	Prevents excessive leaf damage.

Refer to *5.5 Cab Controls, page 89* and the header operator's manual for instructions on adjusting the header.

5.8.5 Driving on Windrow

Driving on previously cut windrows can lengthen drying time by a full day in hay that will not be raked. If practical, set the opening width of the draper decks for a narrower windrow that can be straddled.

NOTE:

Driving on the windrow in high-yielding crops may be unavoidable if a full width windrow is necessary.

5.8.6 Raking and Tedding

Raking or tedding speeds up drying; however, benefits must be evaluated against additional leaf loss.

There is little or no advantage to raking or tedding if the ground beneath the windrow is dry. Large windrows on damp or wet ground should be turned over when they reach 40–50% moisture.

To avoid excessive yield losses, hay should not be raked or tedded when moisture is less than 25%.

5.8.7 Chemical Drying Agents

Hay drying agents work by removing wax from legume surfaces, so that water can escape and evaporate faster.

However, treated hay lying on wet ground will also absorb moisture faster. Costs and benefits relative to your area should be carefully considered before using a drying agent.

Chapter 6: Maintenance and Servicing

The following instructions provide information about routine service.

Log hours of operation and use the maintenance record provided (refer to [6.2.1 Maintenance Schedule/Record, page 100](#)) to keep track of your scheduled maintenance.

6.1 Preparing Machine for Servicing

Observe all safety precautions before beginning service on the machine.



DANGER

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



CAUTION

To avoid personal injury, follow all the safety precautions listed before servicing the header or opening the drive covers.

1. Lower the header fully. If it is necessary to service the header in the raised position, always engage the safety props.
2. Stop the engine and remove the key from the ignition.
3. Engage the park brake.
4. Wait for all moving parts to stop.

6.2 Maintenance Requirements

Regular maintenance is the best insurance against early wear and untimely breakdowns. Following the maintenance schedule will increase your machine’s life.

Periodic maintenance requirements are organized according to service intervals.

When servicing the machine, refer to the appropriate section in this chapter and use only the fluids and lubricants specified in Recommended Fluids and Lubricants on the inside back cover.

Log hours of operation, use the maintenance record, and keep copies of your maintenance records (refer to [6.2.1 Maintenance Schedule/Record, page 100](#)).

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.).

 **CAUTION**

Carefully follow safety messages. Refer to [6.1 Preparing Machine for Servicing, page 99](#) and [1 Safety, page 1](#).

6.2.1 Maintenance Schedule/Record

Copy this page to continue record.

Maintenance Record	Action:	✓ - Check	☼ - Lubricate	▲ - Change
Hour Meter Reading				
Date				
Serviced by				
First Use, refer to 6.2.2 Break-In Inspection, page 101				
10 Hours or Daily (Whichever Occurs First)				
✓ Hydraulic hoses and lines ⁵				
25 Hours				
✓ Hydraulic oil level at reservoir				
50 Hours or Annually				
☼ Driveline and driveline universals				
☼ Lift arms				
▲ Gearbox lubricant (first 50 hours only)				
▲ Hydraulic oil filter (first 50 hours only)				
100 Hours or Annually (Whichever Occurs First)				
✓ Gearbox lubricant level				
☼ Float spring tensioners				
250 Hours or Annually (Whichever Occurs First)				

5. A record of daily maintenance is not required, but is at the Owner’s/Operator’s discretion.

MAINTENANCE AND SERVICING

- Use a piece of cardboard or paper to search for leaks.

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. The introduction of dust, dirt, water, or foreign material into a hydraulic system is the major cause of damage. Do **NOT** attempt to service hydraulic systems in the field.

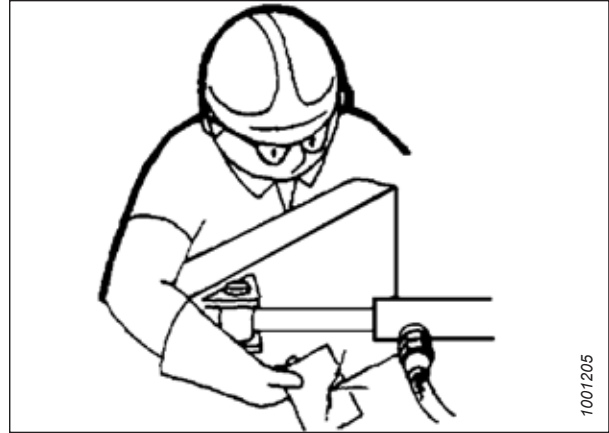


Figure 6.2: Testing for Hydraulic Leaks

6.3 Lubrication and Servicing

Greasing points are marked on the machine by decals showing a grease gun and the grease interval in hours of operation.

CAUTION

To avoid personal injury, before servicing header or opening drive covers, follow procedures in [6.1 Preparing Machine for Servicing, page 99](#).

Refer to the inside back cover for recommended lubricants.

Log hours of operation and use the Maintenance Record provided to keep a record of scheduled maintenance.

6.3.1 Service Intervals

Refer to the illustrations on the following pages to identify the various locations that require lubrication and servicing. Illustrations are organized by the frequency of service.

Every 25 hours

Check oil level (A) in hydraulic reservoir. For instructions, refer to [6.4.1 Checking Oil Level in Hydraulic Reservoir, page 109](#).

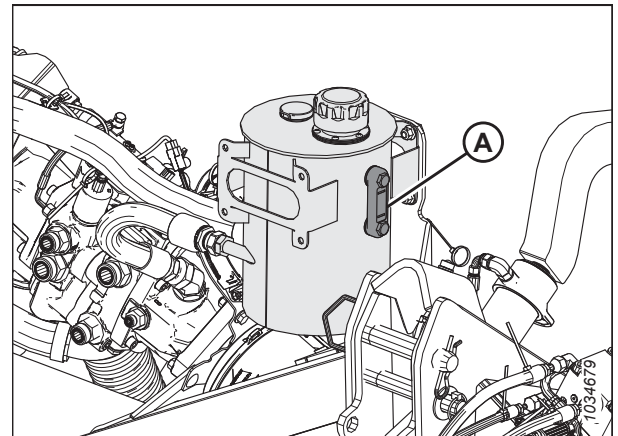


Figure 6.3: Oil Level Sight Glass

First 50 hours

Change the gearbox oil. For instructions, refer to [6.5.2 Changing Oil in Header Drive Gearbox, page 112](#).

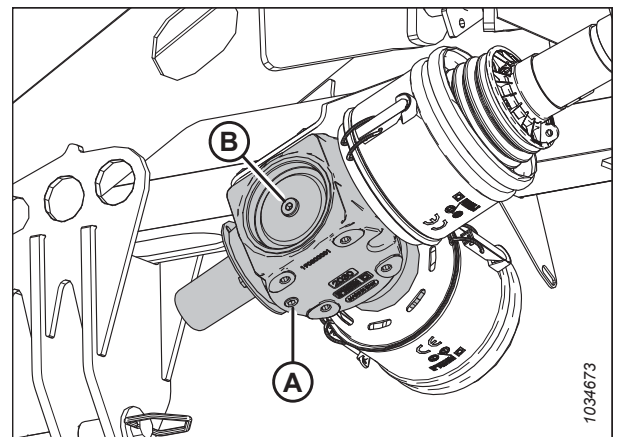


Figure 6.4: Header Drive Gearbox

A - Drain plug

B - Level/fill plug

MAINTENANCE AND SERVICING

First 50 hours

Change hydraulic oil filter (A). For instructions, refer to [6.4.4 Changing Oil Filter, page 110](#).

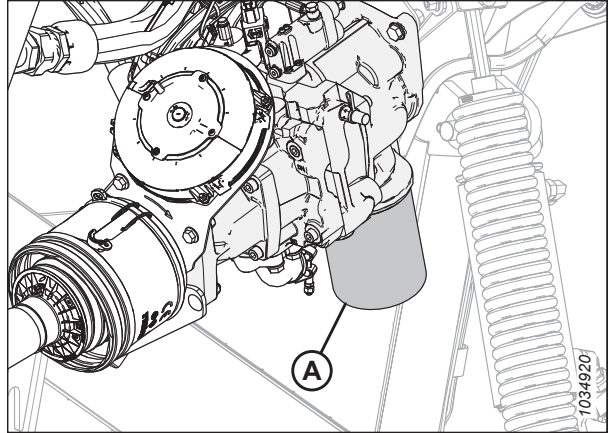


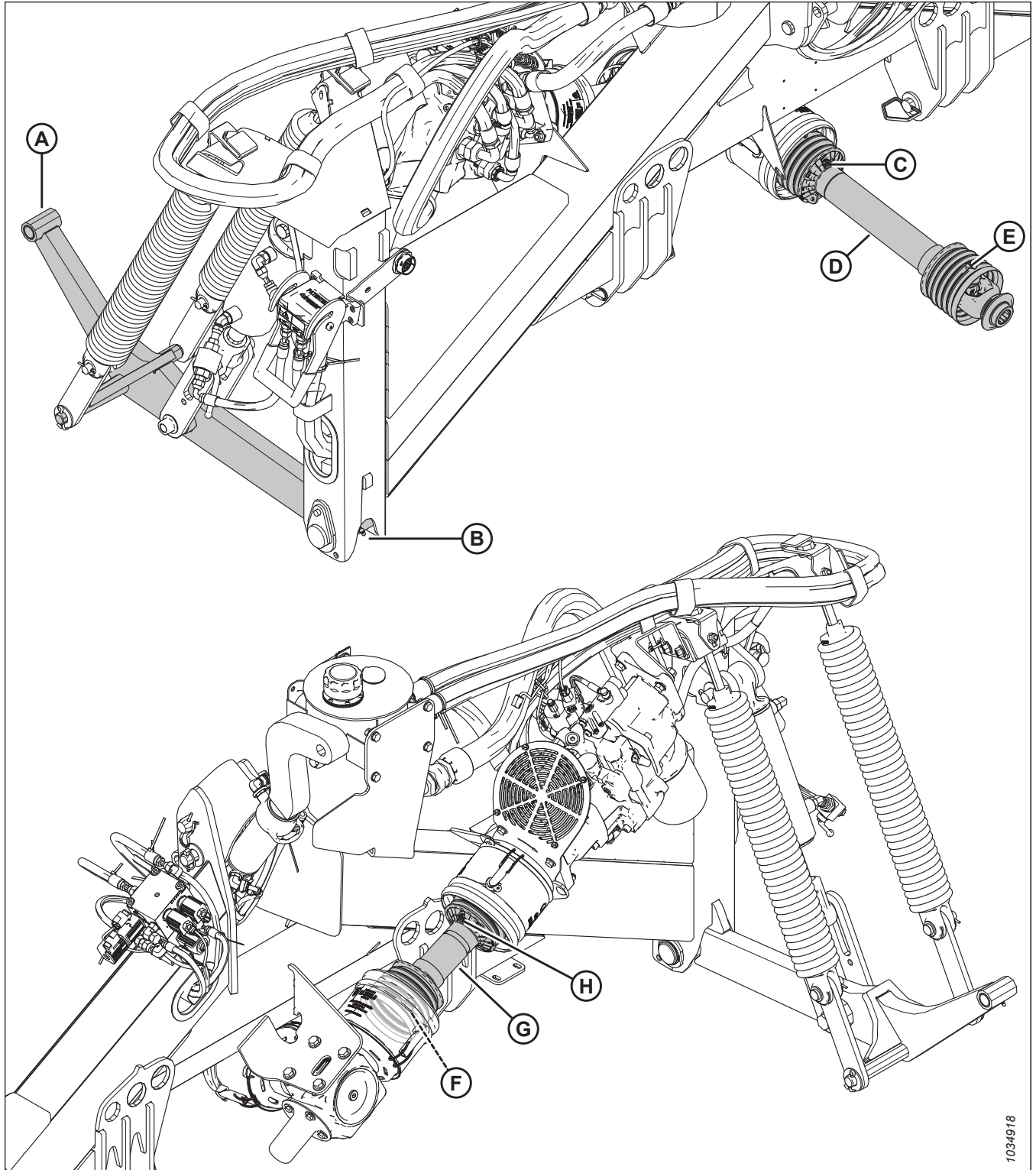
Figure 6.5: TM100 Oil Filter

Every 50 hours

Apply grease every 50 hours of operation to the grease points shown in [Figure 6.6, page 105](#).

Use high temperature extreme pressure (EP2) performance grease with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

MAINTENANCE AND SERVICING



1034918

Figure 6.6: Grease Points – Every 50 Hours

A - Lift Arm Pivot (x2)

C - PTO Driveline Universal (x2)

E - PTO Driveline Guard (x2)

G - Driveline Slip Joint

B - Lift Arm Pivot (x2)

D - PTO Driveline Slip Joint

F - Driveline Universal (x2)

H - Driveline Guard (x2)

MAINTENANCE AND SERVICING

Every 100 hours

Check main drive gearbox oil level (A). For instructions, refer to [6.5.1 Checking Oil Level in Header Drive Gearbox, page 112](#).

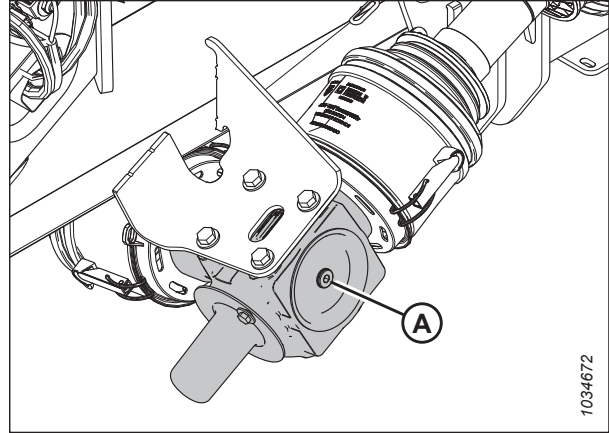


Figure 6.7: Header Drive Gearbox

Every 250 hours

Change hydraulic oil filter (A). For instructions, refer to [6.4.4 Changing Oil Filter, page 110](#).

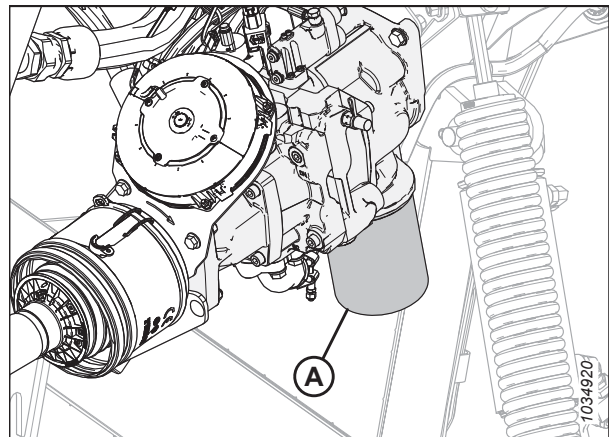


Figure 6.8: TM100 Oil Filter

Every 500 hours

Change the gearbox oil. For instructions, refer to [6.5.2 Changing Oil in Header Drive Gearbox, page 112](#).

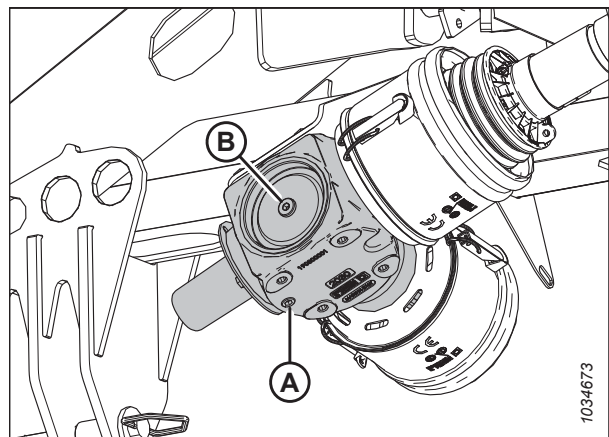


Figure 6.9: Header Drive Gearbox

A - Drain plug

B - Level/fill plug

Every 500 hours

Change the hydraulic oil. For instructions, refer to [6.4.3 Changing Oil in Hydraulic Reservoir, page 110](#).

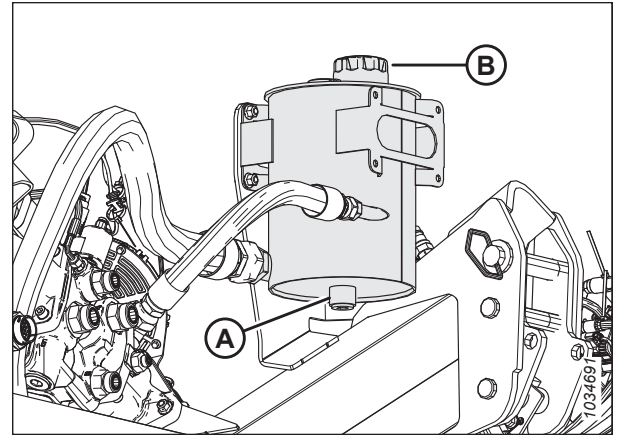


Figure 6.10: Hydraulic Reservoir

A - Drain plug

B - Filler cap

6.3.2 Lubricating the Tractor Mount Float Module

Greasing points are marked on machine by decals showing a grease gun and grease interval in hours of operation. The grease point location decal is located on the back of the tractor mount float module.

 DANGER

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

Refer to the 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 [6.2.1 Maintenance Schedule/Record, page 100](#).

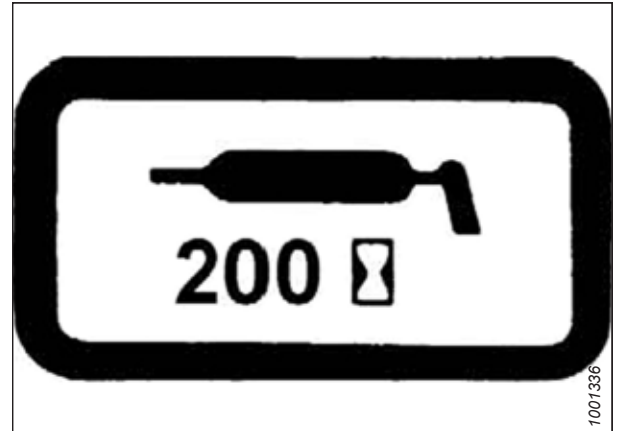


Figure 6.11: Greasing Interval Decal

MAINTENANCE AND SERVICING

1. Wipe the grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.

IMPORTANT:

Use clean high temperature, extreme pressure (EP2) performance with 1% max molybdenum disulphide (NLGI Grade 2) lithium base unless otherwise specified.

2. Inject grease through the fitting with the grease gun until the grease overflows the fitting (except where noted).
3. Leave excess grease on the 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 the lubricant passageway. Replace fittings if necessary.

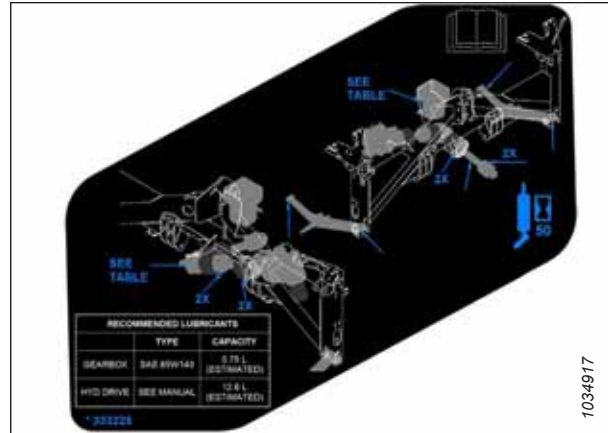


Figure 6.12: TM100 Grease Point Decal

6.4 Hydraulics

The TM100 Tractor Mount Float Module's hydraulic system drives the header drapers and knife drives. The tractor's hydraulic system drives the reel hydraulics and header tilt.

The oil reservoir is located at the center of the float module frame. Refer to the inside back cover for oil requirements.

6.4.1 Checking Oil Level in Hydraulic Reservoir

Check the hydraulic oil level in the reservoir every 25 hours.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Check the oil level using sight glass (A) with the float module set to operating height and angle (10 degrees forward and 400 mm [15 3/4 in.] above the ground).

NOTE:

Check the level when the oil is cold.

3. Ensure the hydraulic oil level is between the low and full indicator marks.

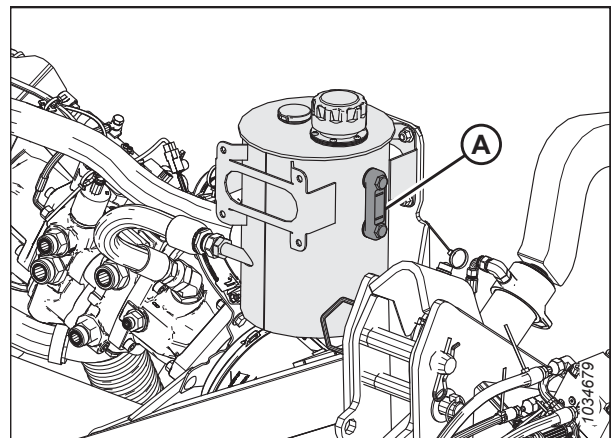


Figure 6.13: Oil Level Sight Glass

6.4.2 Adding Oil to Hydraulic Reservoir

Top up the oil in the hydraulic reservoir if the oil level is below the low indicator mark.

To change the hydraulic oil, refer to [6.4.3 Changing Oil in Hydraulic Reservoir, page 110](#).

DANGER

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

1. Set the tractor mount float module to operating height and angle (400 mm [15 3/4 in.] above the ground and 10 degrees forward).
2. Shut down the engine, and remove the key from the ignition.
3. Allow hydraulic oil to cool down before attempting to add fluid.

MAINTENANCE AND SERVICING

4. Clean any dirt or debris from filler cap (A).
5. Loosen and remove filler cap (A) by turning it counterclockwise.
6. Add warm oil (approximately 21°C [70°F]) and fill to the required level. Refer to the 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.

7. Reinstall filler cap (A).
8. Recheck the oil level. For instructions, refer to [6.4.1 Checking Oil Level in Hydraulic Reservoir, page 109](#).

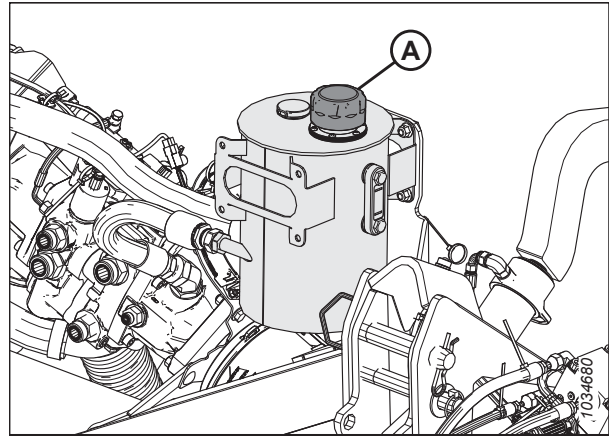


Figure 6.14: Oil Reservoir Filler Cap

6.4.3 Changing Oil in Hydraulic Reservoir

Change the hydraulic oil in the reservoir every 1000 hours or 3 years (whichever comes first).

DANGER

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

1. Engage the header to warm up the oil.
2. Shut down the engine, and remove the key from the ignition.
3. Place a suitably sized container (at least 20 liters [5 US gallons]) under a funnel and drain hose. Secure the funnel under the tank's drain port (A).
4. Remove oil drain plug (A) and allow the oil to drain.
5. Replace oil drain plug (A) when the reservoir is empty.
6. If required, change the oil filter. For instructions, refer to [6.4.4 Changing Oil Filter, page 110](#).
7. Add approximately 12 liters (3.17 US gallons) of oil to the reservoir. For instructions, refer to [6.4.2 Adding Oil to Hydraulic Reservoir, page 109](#).

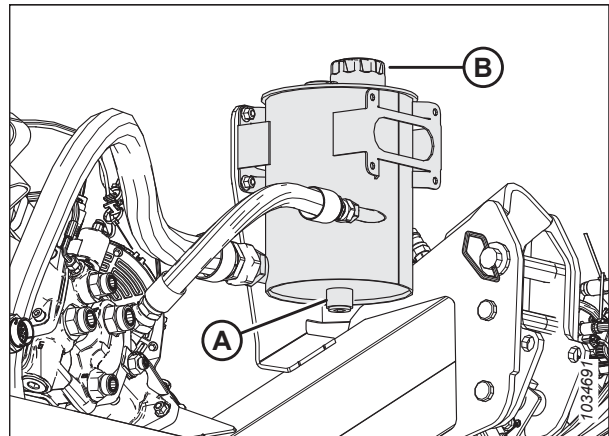


Figure 6.15: Hydraulic Reservoir

6.4.4 Changing Oil Filter

Change the oil filter after the first 50 hours of operation and every 250 hours thereafter.

DANGER

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

MAINTENANCE AND SERVICING

1. Clean around the mating surfaces of oil filter (A) and pump (B).
2. Place a suitably sized container under the filter to collect oil runoff.
3. Remove spin-off filter (A) and clean the exposed filter port in the pump.
4. Apply a thin film of clean oil to the O-ring provided with the new filter.

IMPORTANT:

Do **NOT** use a filter wrench to install the new filter. Overtightening can damage the O-ring and filter.

5. Turn the new filter into the pump until the O-ring contacts the mating surface. Hand-tighten the filter an additional 1/2 to 3/4 turn.

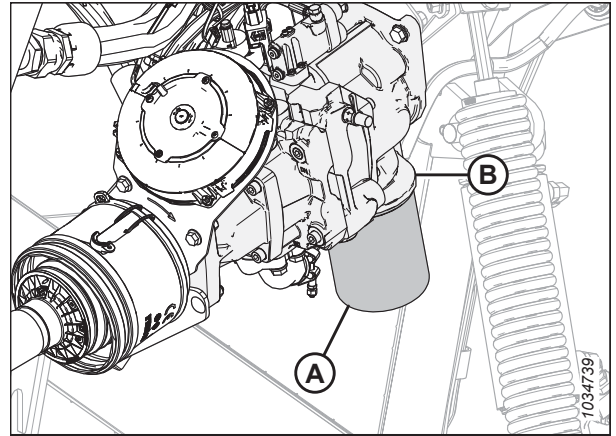


Figure 6.16: TM100 Oil Filter

6.5 Header Drive

6.5.1 Checking Oil Level in Header Drive Gearbox

Check the header drive gearbox oil level every 100 hours.

DANGER

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

1. Lower the header to the ground and ensure the gearbox is in working position.
2. Shut down the engine, and remove the key from the ignition.
3. Remove oil level plug (A) and check that the oil level is up to the bottom of the hole.
4. If required, add oil through the level plug hole (A) until the oil level is up to the bottom of the hole. Use SAE 85W-140 gear lubricant.
5. Reinstall the oil level plug, and tighten to 25 Nm (18 lbf-ft).

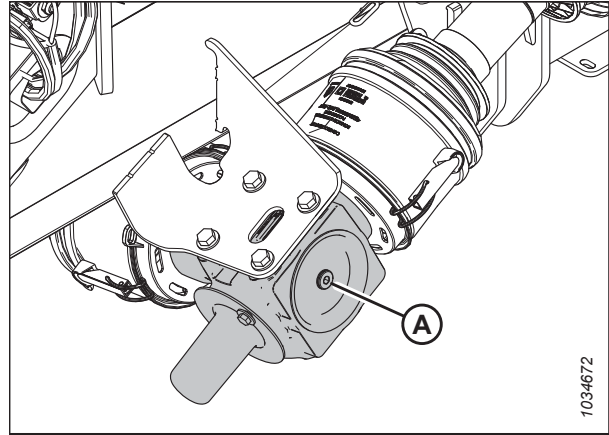


Figure 6.17: Header Drive Gearbox

6.5.2 Changing Oil in Header Drive Gearbox

Change the header drive gearbox oil after the first 50 hours of operation and every 500 hours (or 2 years) thereafter.

DANGER

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

1. Start the engine.
2. Engage the front power take-off (PTO) to warm up the oil.

MAINTENANCE AND SERVICING

3. Raise or lower the header to position oil drain plug (A) at its lowest point.
4. Disengage the PTO, shut down the engine, and remove the key from the ignition.
5. Place a suitably sized container (approximately 2 liters [0.5 US gal]) underneath the gearbox drain to collect the oil.
6. Remove oil drain plug (A) and oil level plug (B), and allow the oil to drain.
7. Replace oil drain plug (A), and tighten to 25 Nm (18 lbf·ft).

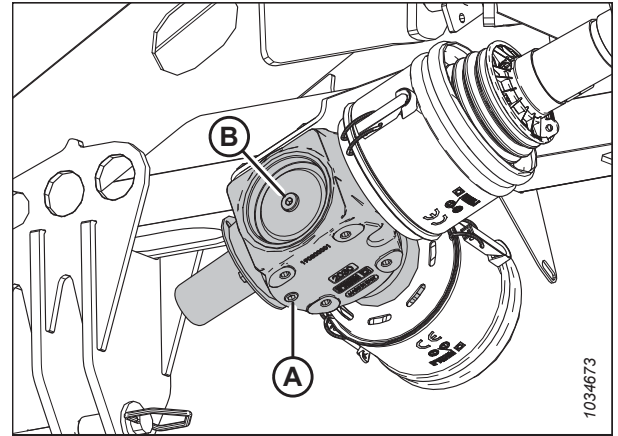


Figure 6.18: Header Drive Gearbox

8. Ensure the gearbox is in working position, and the three-point linkage is set as follows:
 - Adjust the top link so that the float module frame is positioned forward 10 degrees.
 - Adjust the linkage height so that the float module is 400 mm (15 3/4 in.) above the ground.

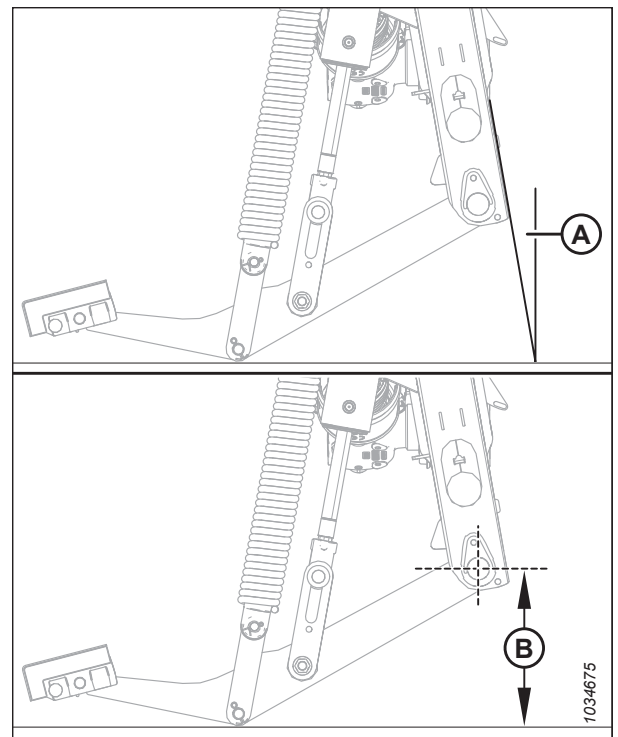


Figure 6.19: Linkage Position

A - 10 Degrees

B - 400 mm (15 3/4 in.)

MAINTENANCE AND SERVICING

9. Add oil through level plug hole (B) until oil level is up to the bottom of the hole. Use SAE 85W-140 gear lubricant.

NOTE:

The header drive gearbox holds approximately 0.8 liters (0.83 quarts) of oil.

10. Replace oil level plug (B), and tighten to 25 Nm (18 lbf-ft).

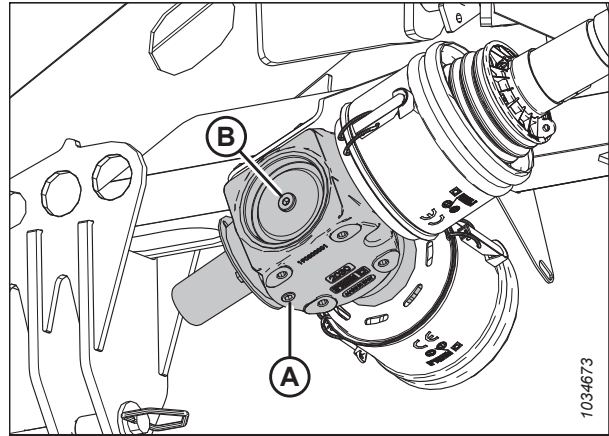


Figure 6.20: Header Drive Gearbox

6.6 Selector Valve Manifold

The selector valve manifold enables the tractor to share one hydraulic circuit between three header functions: header tilt, reel height, and reel fore-aft. The Operator can switch between these three functions using the provided cab control console.

6.6.1 Selector Valve Manifold – Electrical Connections

In order to aid with the service or repair of the selector manifold, this topic describes the electrical components, connections, and their functions.

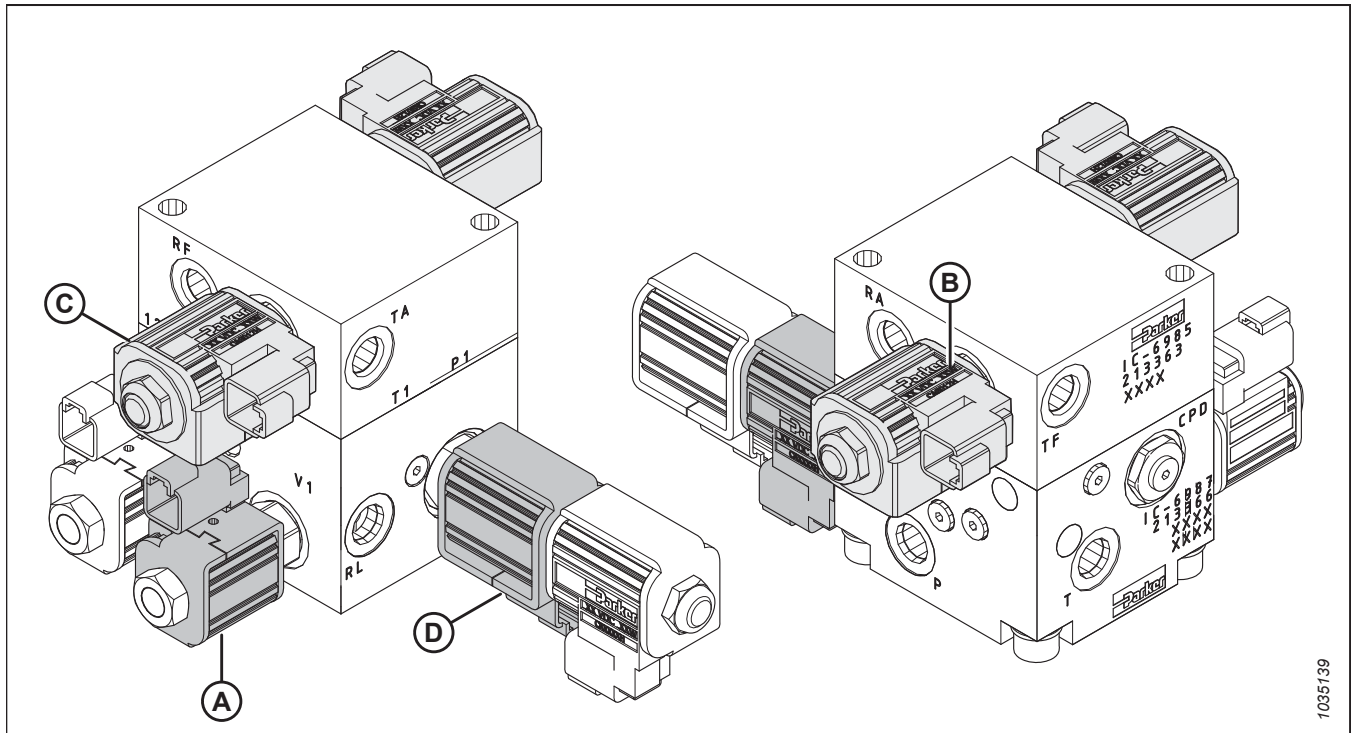


Figure 6.21: Selector Valve Manifold Electrical Connections

Table 6.1 Selector Valve Manifold Electrical Connections

Ref.	Valve	Electrical Connection
A	V1S1	P446
B	SV1	P443
C	SV2	P442
D	V3S1	P447

Table 6.2 Selector Valve Functions

Function	Energized Valve
Reel lift/lower	V1S1
Reel fore/aft	V3S1
Center-link fore/aft	SV1, SV2, and V3S1

6.6.2 Selector Valve Manifold – Hydraulic Connections

In order to aid with the service or repair of the selector manifold, this topic describes the hydraulic ports and their functions.

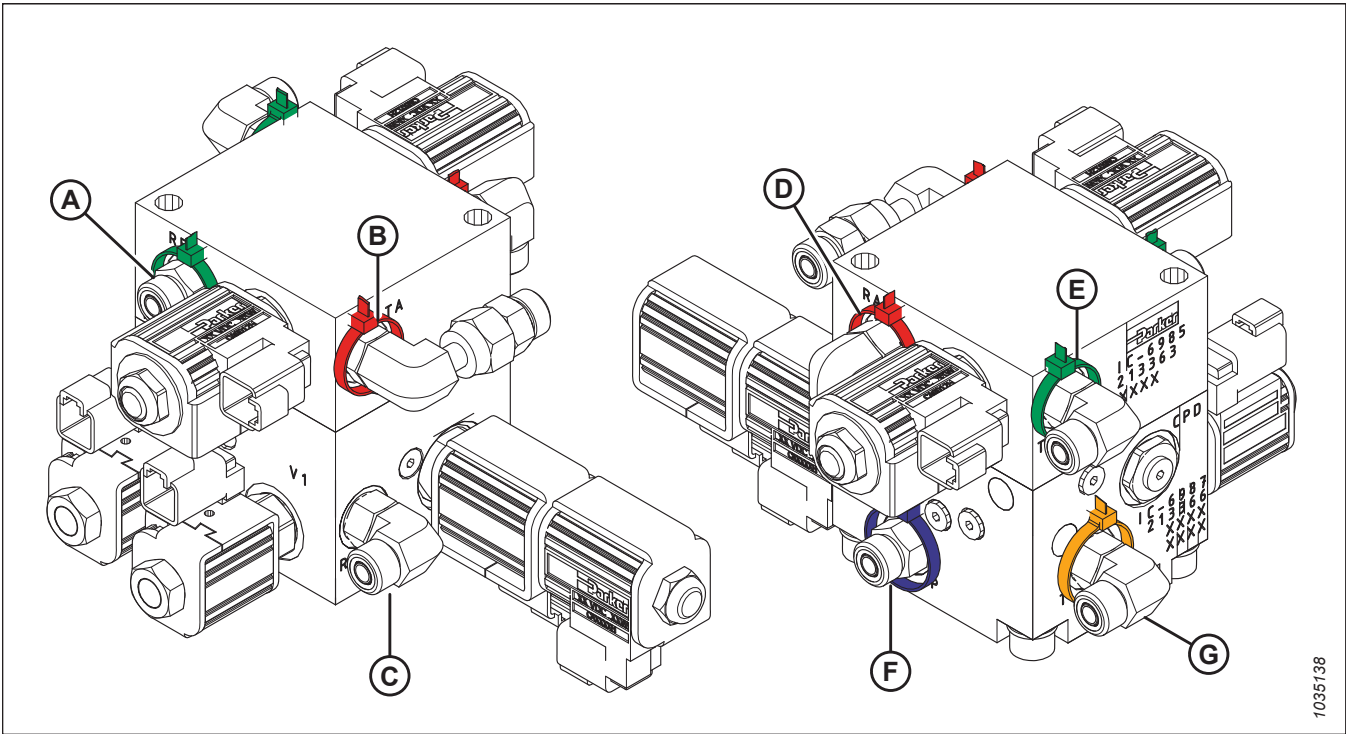


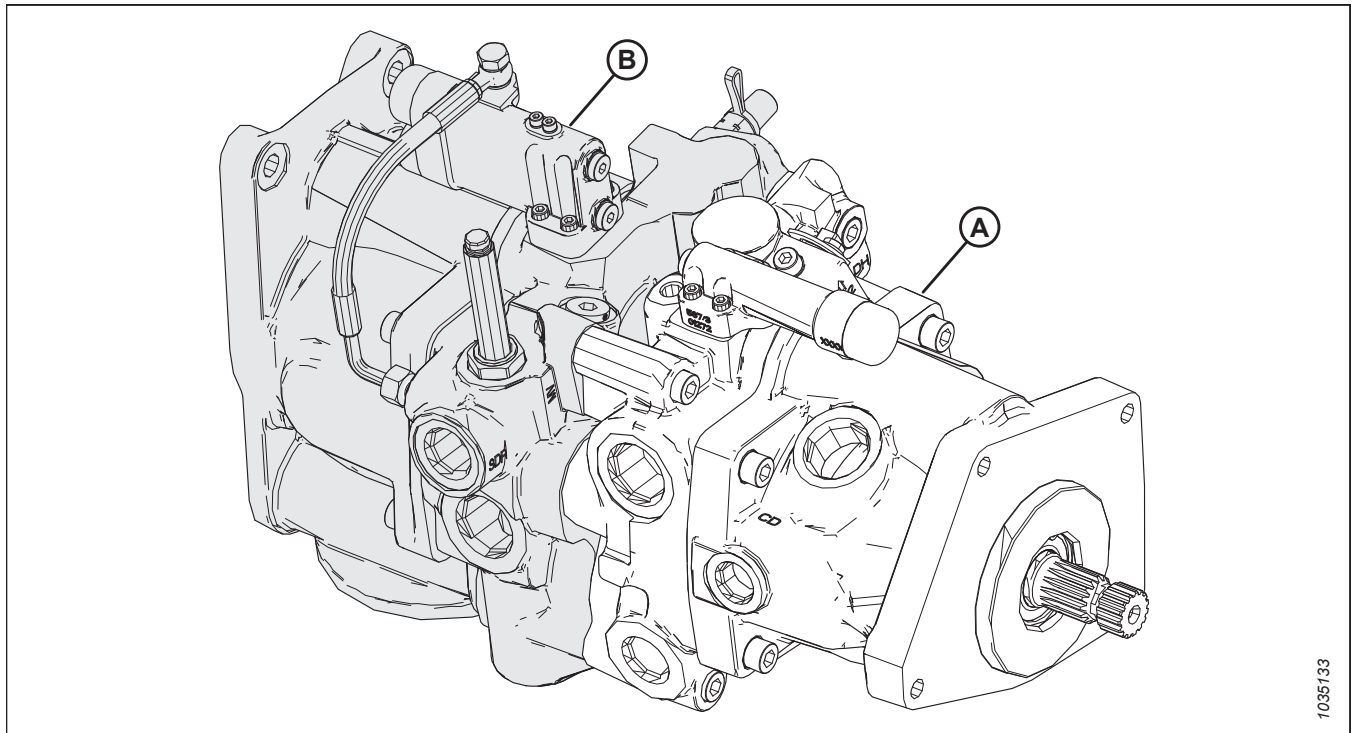
Figure 6.22: Selector Valve Manifold Hydraulic Connections

Table 6.3 Selector Valve Manifold Hydraulic Connections

Ref.	Port	Function	Cable Tie Color
A	RF	Reel fore	Green
B	TA	Tilt aft	Red
C	RL	Reel lift/lower	—
D	RA	Reel aft	Red
E	TF	Tilt fore	Green
F	P	Pressure	Blue
G	T	Return	Orange

6.7 Integrated Pump

The knife and side draper drives are powered by a hydraulic pump. The required relief and flow settings are integrated within the pump.



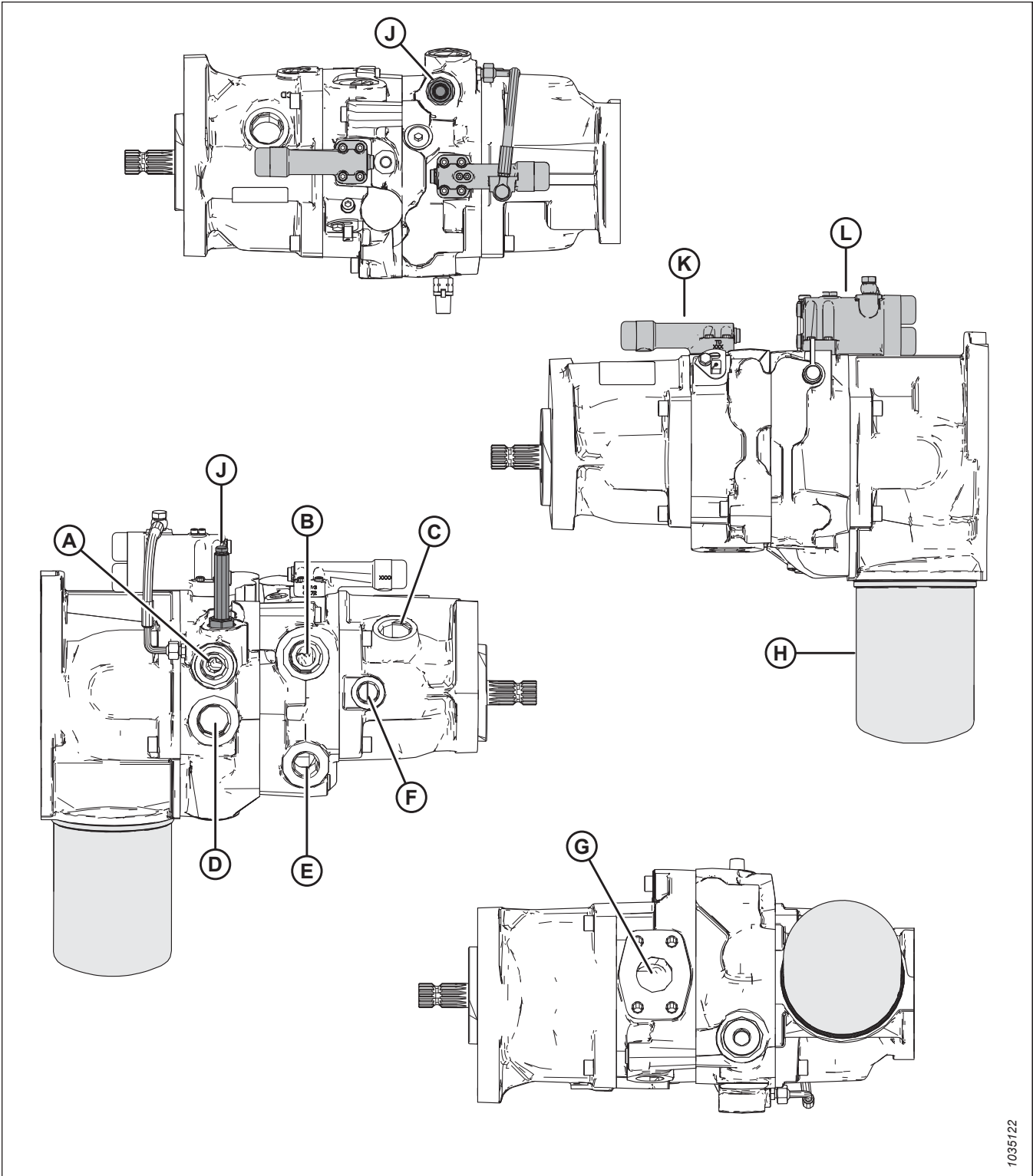
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Figure 6.23: Integrated Pump (MD #333086)

A - Knife Drive

B - Side Draper Drive

MAINTENANCE AND SERVICING



1035122

Figure 6.24: Integrated Pump (MD #333086)

- | | |
|--|--------------------------------------|
| A - Port SDP | B - Port KP |
| C - Port T | D - Port KR |
| E - Port SDR | F - Port D |
| G - Port KS | H - Filter |
| J - Flow Control Valve | K - Knife Drive Pressure Compensator |
| L - Draper Flow and Pressure Compensator | |

Chapter 7: Repair Parts

This chapter lists all the replacement parts that can be ordered for a TM100 Tractor Mount Float Module.

7.1 Abbreviations

A/R – as required (quantity varies)	ASSY – assembly	BHRN – button head rib neck
BV – ball valve	CCW – counterclockwise	CON – conical (spring washer)
CSK – countersink	C/W – complete with	CW – clockwise
DBLE – double	DK – double knife	DR – double reel
DT – distorted thread	FLG – flange	GA – gauge
GR – grade	GS – grass seed	HD – head
HDR – header	HFA – hydraulic fore-aft	HH – hex head
HNBR – hydrogenated nitrile butadiene rubber	HYD – hydraulic	I.D. – inside diameter
IP – internal plus (torx plus)	KP – knife pressure	KR – knife return
LG – long	LH – left hand (determined from Operator's position, facing forward)	LK – lock
MACH – machine	MD – MacDon	MFA – manual fore-aft
MY – model year	NC – national coarse thread	NF – national fine thread
NSS – not sold separately	NT – narrow transport	O.D. – outside diameter
OPT – optional	PO – pilot operated	PT – pull-type (mower conditioner)
RC – roller chain	REF – reference, part number called up elsewhere in catalog	REG – regular
RH – right hand (determined from Operator's position, facing forward)	RHSN – round head, square neck or square neck carriage bolt	RHSSN – round head, short, square neck
RTD – rotating tine drum	SAE – Society of Automotive Engineers (part produced to comply with)	SD – side draper
SER – serrated	SK – single knife	SKT HD – socket head
SMTH – smooth	SMV – slow moving vehicle	SOCK – socket
SP – self-propelled (windrower) header	SPCL – special	SPH – spherical
SPI – serrations per inch (knife Sections)	SR – single reel	STL – steel (stainless)
STR – standard	STVR – Stover	TFL – thread full length
THD – thread	TR – triple reel	UCA – upper cross auger
UDK – untimed double knife	UNC – unified coarse thread	UNEF – unified extra fine thread
UNF – unified fine thread	UNS – unified special thread series	VK – vertical knife
WF – wide frame	ZP – zinc plated	

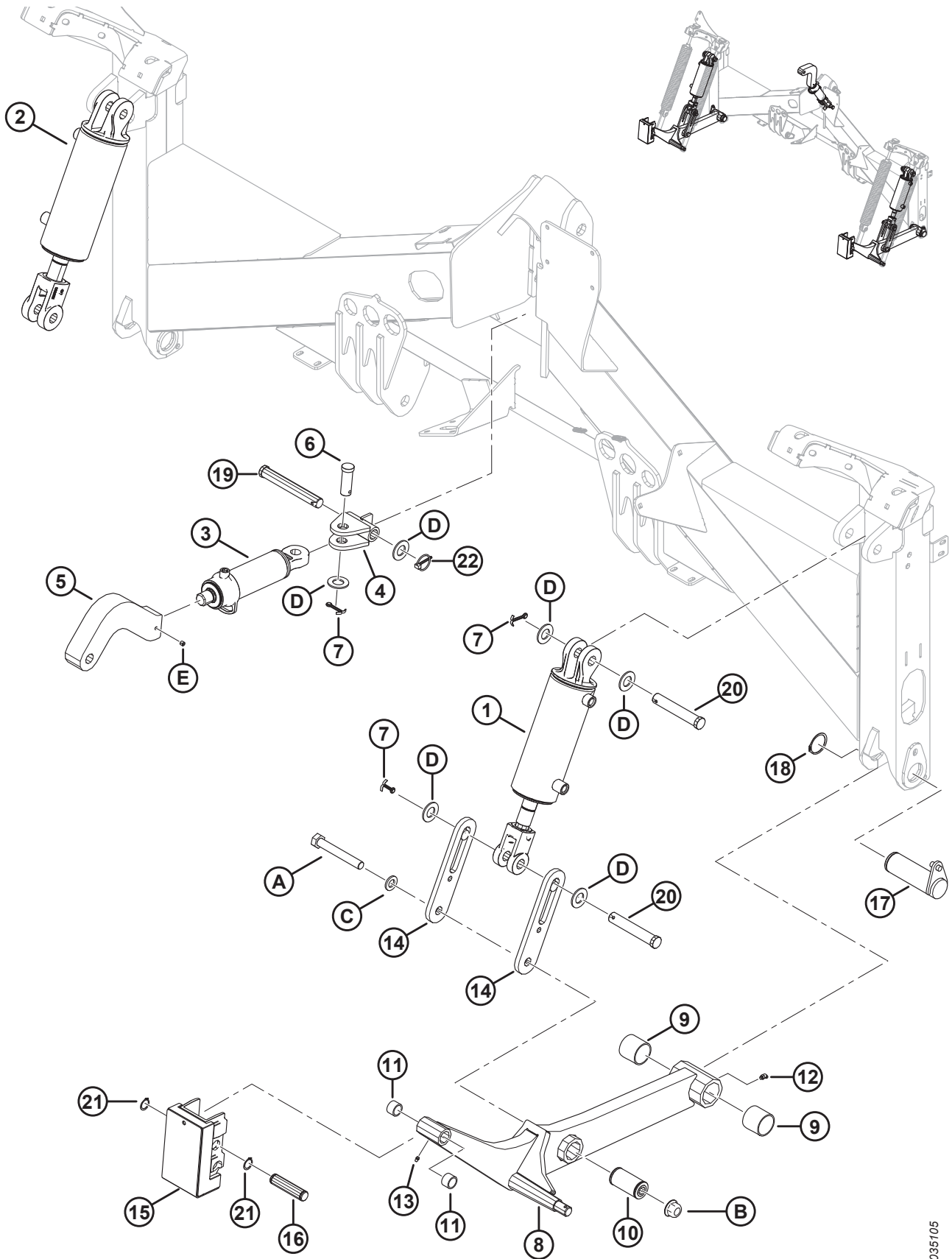
7.2 Serial Number Breaks

The side of the serial number on which the dash (–) appears determines whether the part is used "up to" or "after" the serial number given.

Example:

- –451189 Used on machines up to and including serial number 451189
- 451190– Used on machines including and after serial number 451190

7.3 Lift Arms and Center-Link



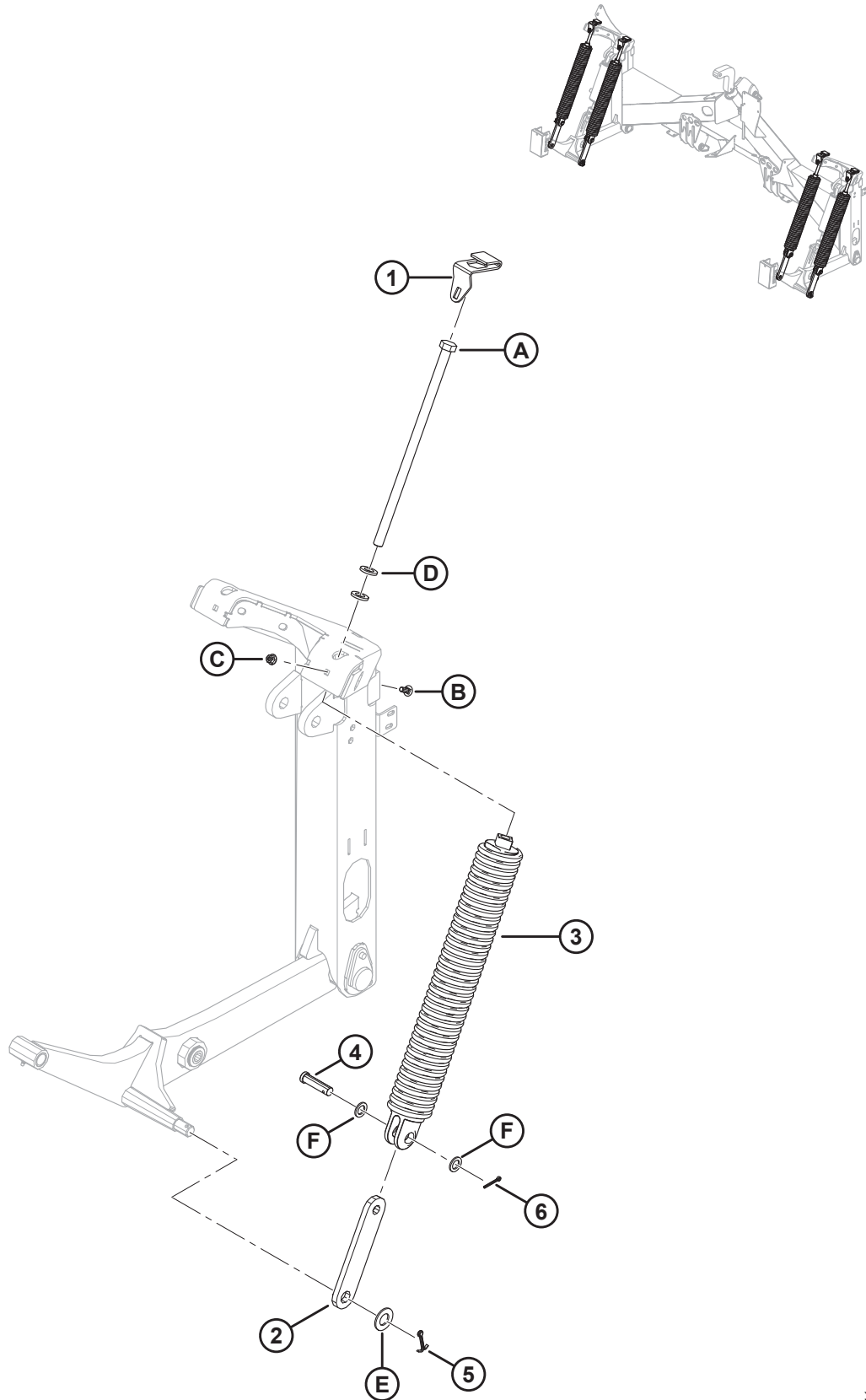
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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333425	CYLINDER – LIFT, MASTER	1	
	333361	SEAL KIT		
2	333426	CYLINDER – LIFT, SLAVE	1	
	333362	SEAL KIT		
3	333336	CYLINDER – TOP LINK	1	
	123978	SEAL KIT		
4	333494	CLEVIS – WELDMENT	1	
5	333490	LINK – TILT, MACHINED	1	
6	135995	PIN – CLEVIS	1	
7	18609	PIN – COTTER 1/4 DIA X 2 ZP	5	
8	333538	KIT – LIFT ARM ⁶	2	
9	327600	BUSHING – COMPOSITE	4	
10	246198	BUSHING – RUBBER	2	
11	49904	BEARING – NEEDLE	4	
12	21301	FITTING – LUBRICATION	2	
13	18671	FITTING – LUBRICATION 1/4 - 28 UNF	2	
14	333488	PLATE – FLOAT LINK	4	
15	258703	ASSEMBLY – RUBBER BLOCK	2	
16	258318	PIN – PIVOT	2	
17	247801	PIN – WELDMENT, WHEEL ARM	2	
18	247111	RING – EXT RETAINING PLATED	2	
19	163921	PIN – CLEVIS	1	
20	49341	PIN – CLEVIS	4	
21	18898	RING – EXT RETAINING	4	
22	102264	PIN – LYNCH 3/16 X 1 9/16 IN	1	
A	136420	BOLT – HEX HD M20 X 2.5 X 140-8.8-AA3L		
B	136122	NUT – HEX FLG CTR LOC M20 X 2.5-10-AA1J		
C	112130	WASHER – HARD ASTM F4363/4 IN. NOM. ID ABOC		
D	18603	WASHER – FLAT SAE1 1/16 ID X 2.0 IN OD AA1J		
E	132451	SCREW – SET HEX SOCKET KNURL CUP PT 3/8 NC X 3/8 LG		

6. Assembly includes fittings (MD #18671 and 21301), rubber bushing (MD #246198), two needle bearings (MD #49904), and two wheel arm bushings (MD #327600).

7.4 Float Springs

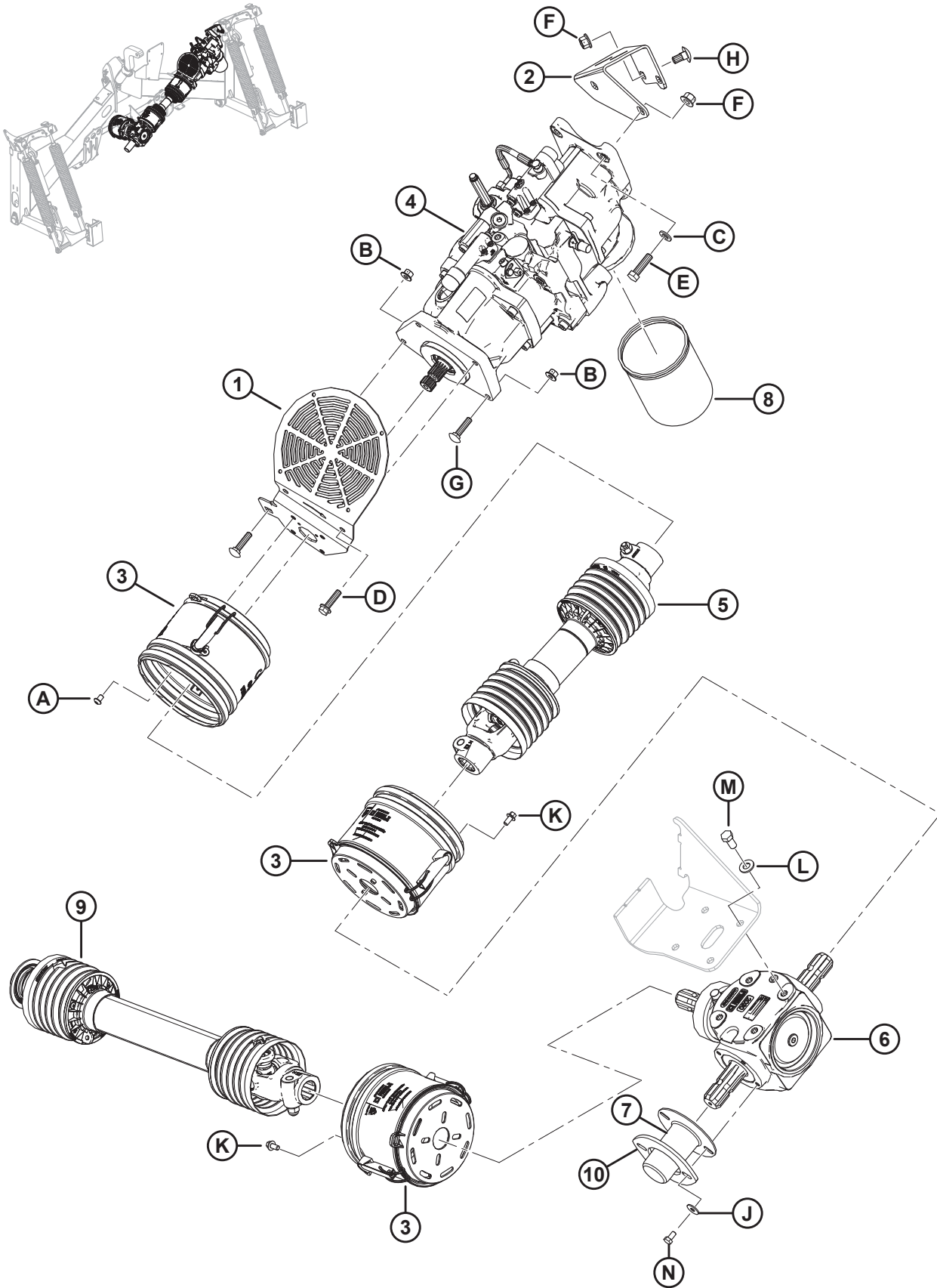


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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333081	PLATE – SPRING LOCKS	4	
2	333484	ARM – LINK	4	
3	304034	SPRING ASSEMBLY	4	
4	30463	PIN – CLEVIS	4	
5	18609	PIN – COTTER 1/4 DIA X 2 ZP	4	
6	18608	PIN – COTTER 3/16 DIA X 1.5 ZP	4	
A	136088	BOLT – HEX HD TFL M20 X 2.5 X 450 X SPCL-8.8-AA1J		
B	136506	BOLT – RHSSN M10 X 1.5 X 25-8.8-AA1J		
C	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
D	21540	WASHER – HARD ASTM F436M20-340HV-AB2C		
E	18603	WASHER – FLAT SAE1 1/16 ID X 2.0 IN OD AA1J		
F	1709	WASHER – FLAT		

7.5 Header Drive



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333594	BRACKET – FAN MOUNT, WELDED	1	
2	333533	BRACKET – PUMP MOUNT	1	
3	333128	SHIELD – DRIVELINE	3	
4	333086	PUMP – INTEGRATED ⁷	1	
5	333545	DRIVELINE – GEARBOX TO PUMP	1	
	158284	CROSS JOURNAL KIT		
	333557	YOKE – 1 3/8 IN. Z6 TAPER PIN		
	333563	PIN – ROLL, DOUBLE		
	333564	YOKE – 1 IN. Z15		
	333558	SUPPORT – OUTER SHIELD G3–G4		
	247128	SCREW		
	333559	SUPPORT – INNER SHIELD G3–G4		
	247130	DECAL – DANGER		
	158289	DECAL – OUTER		
	247133	KIT – TAPER PIN		
	333565	KIT – YOKE HARDWARE		
	333566	SHIELD – KIT, B&P DRIVELINE		
	6	333546	GEARBOX – T	1
333548		BEARING – TAPERED ROLLER		
246084		BEARING – BALL		
247082		RETAINING RING – INTERNAL		
247094		RETAINING RING – EXTERNAL		
247084		SHIM – M72 OD		
247091		SHIM – M45 OD		
333549		RETAINING RING – EXTERNAL		
333550		CAP – B&P GEARBOX		
333551		SEAL		
333552		PLUG		
7	333540	COVER – SHAFT	1	
8	202986	ELEMENT – HYDRAULIC FILTER	1	
9	REF	DRIVELINE – PTO ⁸		
10	333534	PLATE – SHIELD CLAMP	1	
A	252292	SCREW – HEX SOC BTN HD M8 X 1.25 X 12-10.9-AA1J		
B	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
C	184714	WASHER – FLAT REG M12-300HV		
D	152947	BOLT – HEX FLG HD TFLM 10 X 1.5 X 40-10.9-AA1J		
E	136881	BOLT – HEX HD M12 X 1.75 X 45-10.9-AA1J		
F	136431	NUT – HEX FLG CTR LOC M12 X 1.75-10		
G	136421	BOLT – RHSN M10 X 1.5 X 45-8.8-AA1J		
H	135903	BOLT – RHSN M12 X 1.7 5 X 25-8.8-ZINC		
J	184709	WASHER – FLAT LARGE M8-200HV		
K	136485	BOLT – HEX FLG HD TFL M8 X 1.25 X 16-8.8-AA1J		

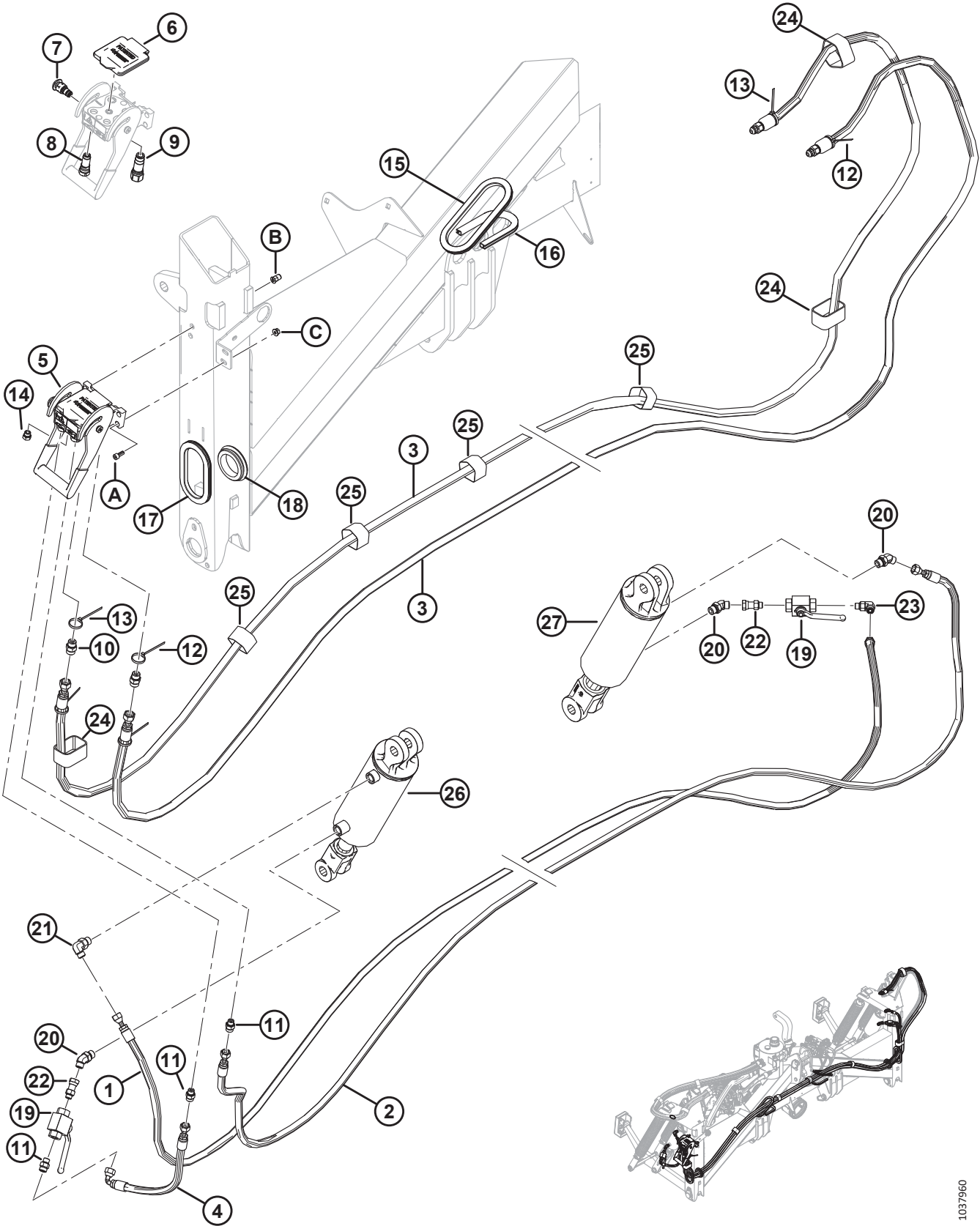
7. For service parts, refer to Section *7.11 Integrated Pump – Service Parts*, page 142.

8. Refer to Section *7.15 TM100 to Three-Point Hitch*, page 150.

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
L	135369	WASHER – HARDENED ASTM F436 1/2		
M	50155	BOLT – HEX HD TFL M12 X 1.75 X 25-8.8-AA1J		
N	50139	BOLT – HEX HD TFL M8 X 1.25 X 16-8.8-AA1J		

7.6 Hydraulics – Header Lift and Reel Drive

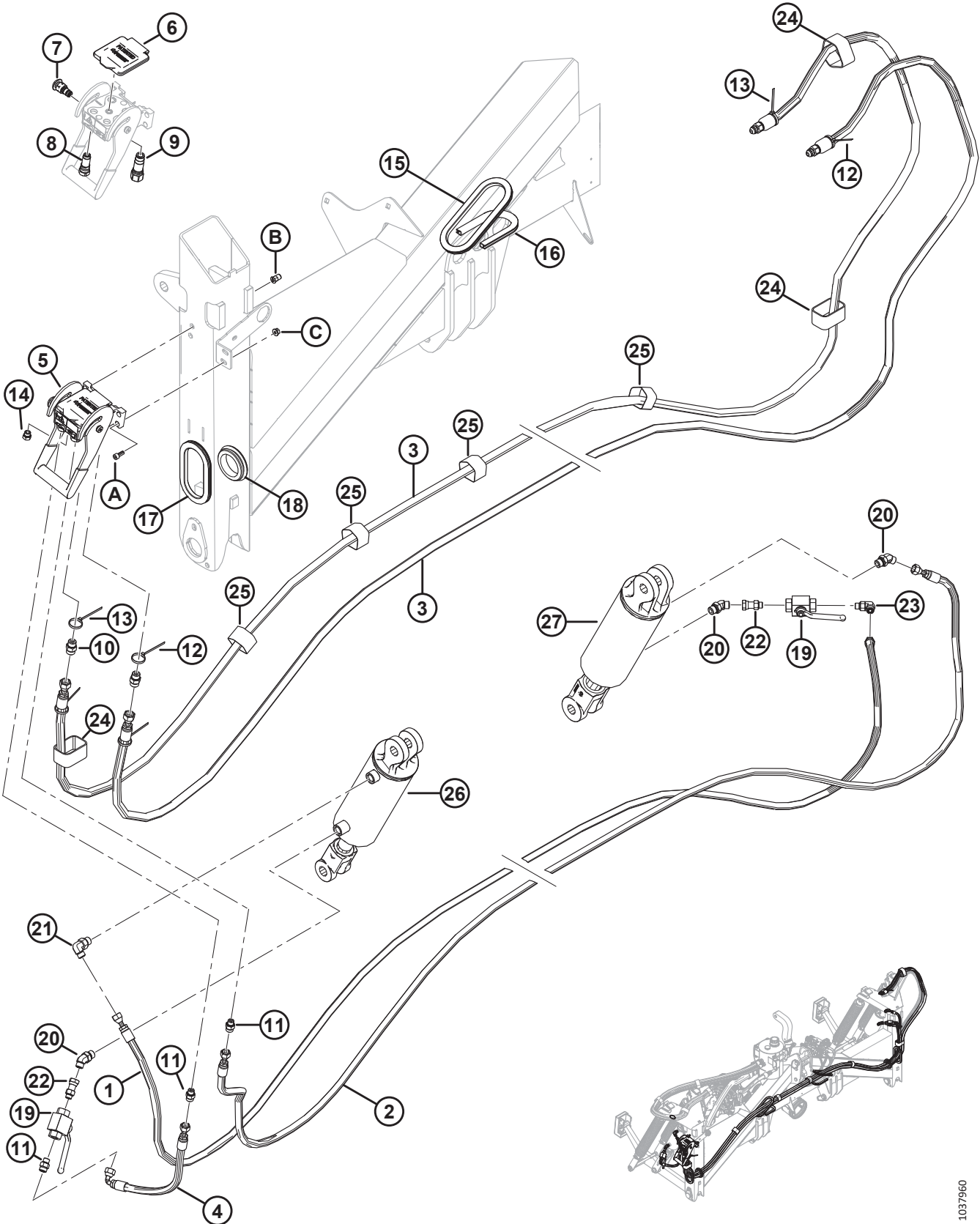


REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333412	HOSE – LIFT CYLINDER W/TAPE	1	
2	333411	HOSE – LIFT CYLINDER W/TAPE	1	
3	333512	HOSE – HYD HOSE W/ TAPE	2	
4	333189	HOSE – HYDRAULIC, LIFT CYLINDER	1	
5	153151	COUPLING – MULTI ⁹	1	
6	129800	KIT – COVER, MULTI-COUPLER	1	
7	129801	KIT – LATCH BUTTON	1	
8	129976	COUPLING 1/4 IN.	3	
9	129977	COUPLING 3/8 IN.	2	
10	135780	FITTING – ADAPTER	2	
	44209	O-RING – Ø2.21 X Ø16.36		
	135866	O-RING – Ø1.78 X Ø12.42		
11	135778	FITTING – ADAPTER	3	
	50219	O-RING – Ø1.98 X Ø11.89		
	135865	O-RING – Ø1.78 X Ø9.25		
12	49232	FASTENER – CABLE TIE WHITE	3	
13	40701	FASTENER – CABLE TIE YELLOW	3	
14	30994	FITTING – PLUG HYD -6 ORB HEX HD	1	
15	135704	SEAL – EDGE TRIM	4	
16	333499	SEAL – EDGE TRIM	2	
17	333257	SEAL – EDGE TRIM	2	
18	172877	GROMMET – 2.38 IN. I.D.	2	
19	247875	VALVE – BALL	2	
20	136154	FITTING – ELBOW 45° HYD	3	
	44209	O-RING – Ø2.21 X Ø16.36		
	135865	O-RING – Ø1.78 X Ø9.25		
21	136149	FITTING – ELBOW 90°HYD	1	
	44209	O-RING – Ø2.21 X Ø16.36		
	135865	O-RING – Ø1.78 X Ø9.25		
22	136147	FITTING – CONNECTOR HYD	2	
	50219	O-RING – Ø1.98 X Ø11.89		
23	136095	FITTING – ELBOW 90° HYD	1	
	135865	O-RING – Ø1.78 X Ø9.25		
	50219	O-RING – Ø1.98 X Ø11.89		
24	293184	CINCH STRAP 8 IN. LG, HEAVYDUTY	3	
25	135444	CINCH STRAP 6 IN. LG	4	
26	REF	CYLINDER – LIFT, MASTER ¹⁰		
27	REF	CYLINDER – LIFT, SLAVE ¹¹		

9. Service multicoupler with cover kit (MD #129800), latch button kit (MD #129801), 1/4 in. coupling (MD #129976), and 3/8 in. coupling (MD #129976).
10. Refer to Section [7.3 Lift Arms and Center-Link](#), page 122.
11. Refer to Section [Lift Arms and Center-Link](#).

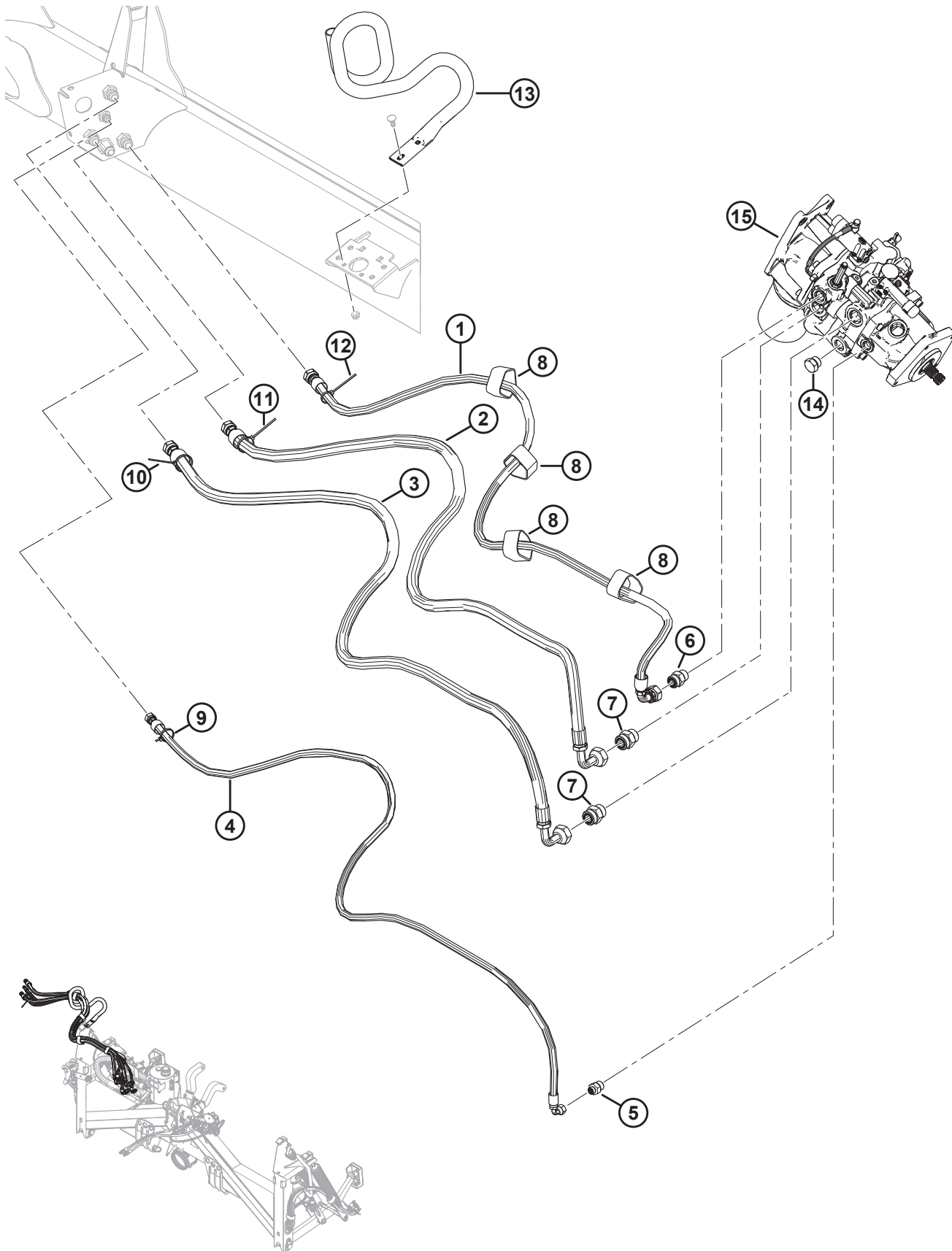
REPAIR PARTS



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
A	167307	SCREW – HEX SOC HD M8 X 1.25 X 20-8.8-AA1J		
B	320181	RIVNUT – M8 X 1.25 HEX 3.8-7.9		
C	135337	NUT – HEX FLG CTR LK M8 X 1.25-8-AA1J		

7.7 Hydraulics – Knife Drive and Draper Drive

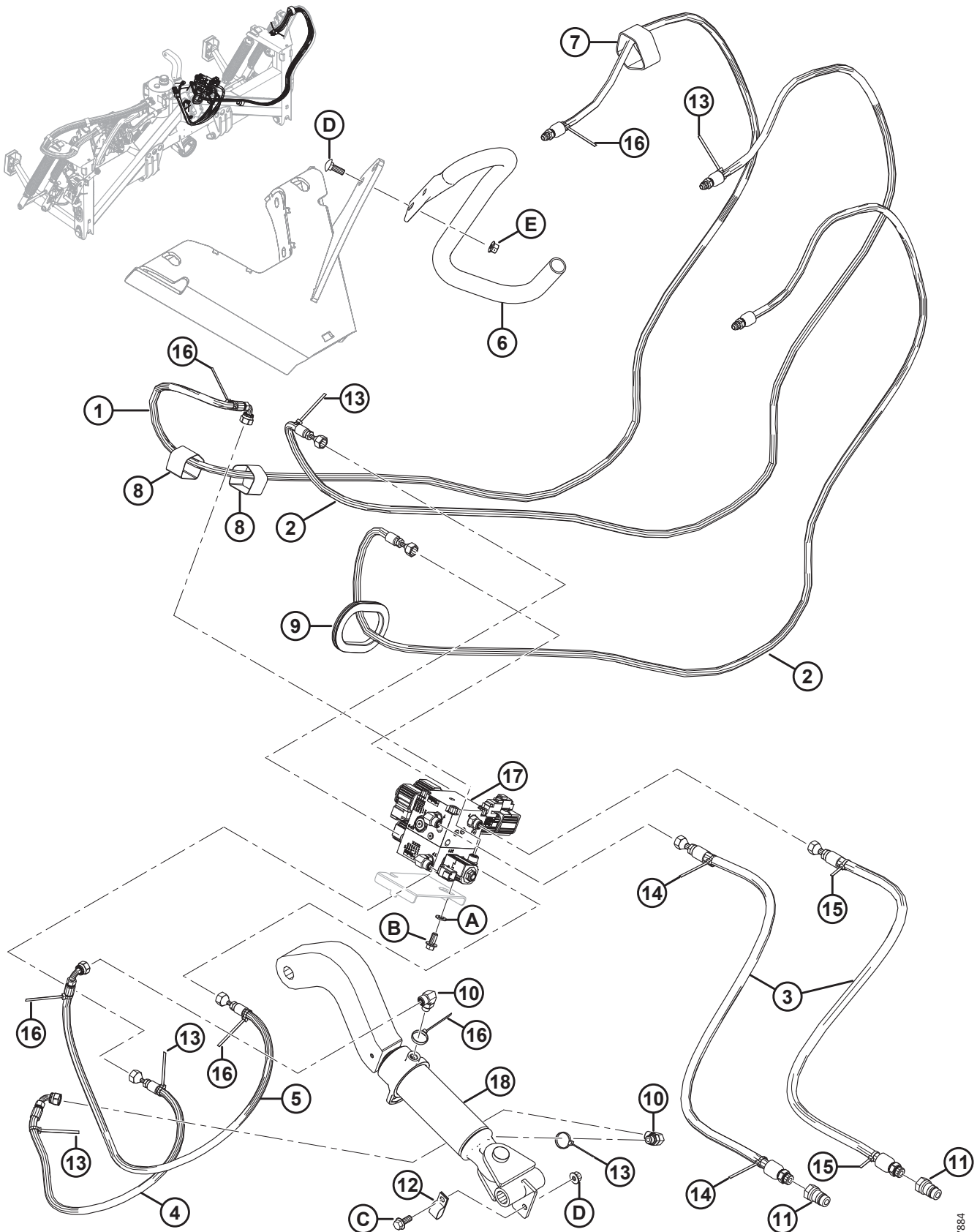


REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333205	HOSE – HYDRAULIC, SIDE DRAPER PRESSURE	1	
2	333208	HOSE – HYDRAULIC, KNIFE RETURN	1	
3	333207	HOSE – HYDRAULIC, KNIFE PRESSURE	1	
4	333209	HOSE – HYDRAULIC, CASE DRAIN	1	
5	184462	FITTING – ADAPTER HYD	1	
	44210	O-RING – Ø2.46 X Ø19.18		
	135865	O-RING – Ø1.78 X Ø9.25		
6	135788	FITTING – ADAPTER	1	
	30971	O-RING – Ø2.95 X Ø23.47		
	135868	O-RING – Ø1.78 X Ø18.77		
7	135791	FITTING – ADAPTER	2	
	50220	O-RING – Ø2.95 X Ø29.74		
	135554	O-RING – 1.78 X 23.52		
8	293184	CINCH STRAP – 8 IN. LG, HEAVY DUTY	4	
9	252794	FASTENER – CABLE TIE, PURPLE	1	
10	40704	FASTENER – CABLE TIE, ORANGE	1	
11	40703	FASTENER – CABLE TIE, BLUE	1	
12	49227	FASTENER – CABLE TIE, GREEN	1	
13	333378	GUIDE – HOSE	1	
14	103575	FITTING – PLUG HYD 12 ORB HEX HD	1	
15	REF	PUMP – INTEGRATED ¹²	1	

12. Refer to Section [7.5 Header Drive](#), page 126.

7.8 Hydraulics – Reel Positioning and Header Tilt



1037884

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333513	ASSY – HYD HOSE REEL AFT	1	
2	333514	ASSY – HYD HOSE REEL FORE	2	
3	333567	HOSE – HYDRAULIC, RETURN/PRESSURE ¹³	2	
4	333204	HOSE – HYDRAULIC, TILT FORE	1	
5	333203	HOSE – HYDRAULIC, TILT AFT	1	
6	220758	GUIDE – HOSE	1	
7	293184	CINCH STRAP 8 IN. LG, HEAVYDUTY	3	
8	135444	CINCH STRAP 6 IN. LG	4	
9	333261	SEAL – EDGE TRIM	1	
10	136095	FITTING – ELBOW 90° HYD	1	
	135865	O-RING – Ø1.78 X Ø9.25		
	50219	O-RING – Ø1.98 X Ø11.89		
11	135563	FITTING – COUPLING HYD	2	
12	135234	CLAMP – DOUBLE HOSE INSULATED	1	
13	49227	FASTENER – CABLE TIE, GREEN		
14	40704	FASTENER – CABLE TIE, ORANGE		
15	40703	FASTENER – CABLE TIE, BLUE		
16	40702	FASTENER – CABLE TIE, RED		
17	REF	ASSEMBLY – SELECTOR MANIFOLD ¹⁴		
A	184711	WASHER – FLAT REG M10-200HV-AA1J		
B	152655	BOLT – HEX FLG HD M10 X 1.5 X 20-8.8-AA1J		
C	135783	BOLT – HEX FLG HD TFLM 10 X 1.5 X 25-10.9-AA1J		
D	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
E	184662	BOLT – RHSN TFL M10 X 1.5 X 30-8.8-AA1J		

13. Hydraulic return hose connects to Port T and hydraulic pressure hose connects to Port P of the selector valve.

14. Refer to Section [7.10 Selector Valve Assembly, page 140](#).

REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333282	TANK – HYDRAULIC	1	
2	333405	HOSE – HYDRAULIC, RETURN	1	
3	333401	HOSE – HYDRAULIC, SUCTION	1	
4	314537	KIT – SPLIT FLANGE, 1.5 IN. CD61-1 ¹⁵	1	
5	333400	FITTING – HYD ELBOW CODE61	1	
6	245753	CLAMP – T BOLT	1	
7	163585	CINCH STRAP – HANGING, 8 IN. LG	1	
8	252814	FITTING – ELBOW 45° HYD	1	
9	136106	FLANGE – HALF SPLIT 1.5 IN.	2	
10	REF	PUMP – INTEGRATED ¹⁶	1	
11	135400	O-RING – 3.53 X 47.22		
A	30627	BOLT – HEX HD TFL M10 X 1.5 X 25-8.8-A3L		
B	184711	WASHER – FLAT REG M10-200HV-AA1J		
C	135799	NUT – HEX FLG CTR LOC M10 X 1.5-10		
D	184714	WASHER – FLAT REG M12-300HV		
E	152730	BOLT – HEX HD TFL M12 X 1.75 X 35-10.9-AA1J		

15. Kit includes O-ring (MD #135400), two flange halves (MD 136106), four bolts (MD #152730), and four washers (MD #184714).

16. Refer to Section [7.5 Header Drive](#), page 126.

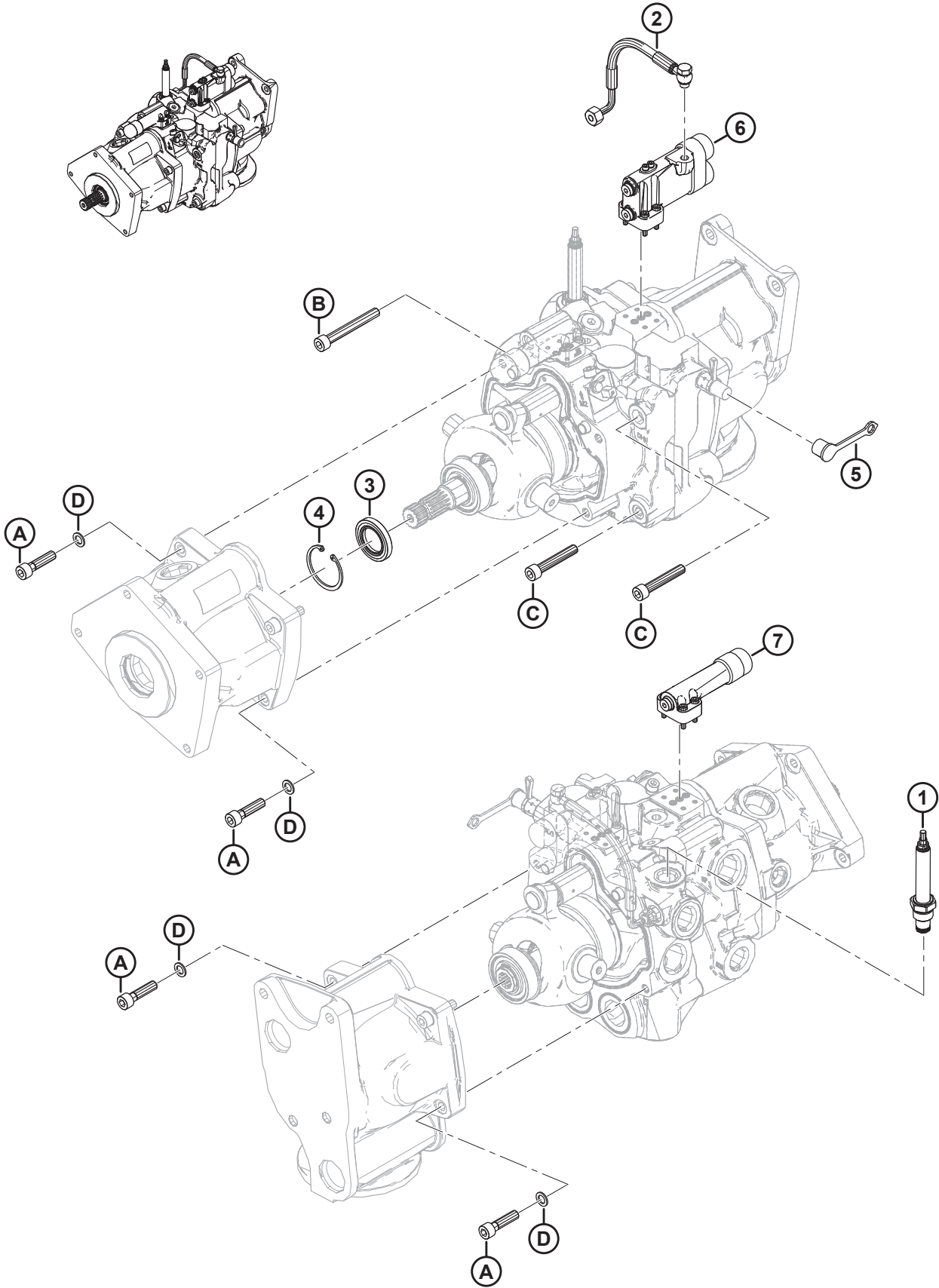
REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	335341	VALVE – SELECTOR ¹⁷	1	
2	320284	O-RING – 2.38 X 20.64	2	
3	279228	VALVE – CARTRIDGE, PO CHECK	1	
4	287462	COIL – 12VDC-.625 IN.	2	
5	287461	COIL – 12VDC-.500 IN.	2	
6	287460	VALVE – NC POPPET	2	
7	287456	VALVE – 3-POS 4-WAY	1	
8	213363	MANIFOLD – SELECTOR VALVE ¹⁸	1	
9	287450	VALVE – POPPET	2	
10	287449	COIL – 12VDC-.625IN	2	
11	136781	FITTING – ELBOW HYD	1	
	50219	O-RING – Ø1.98 X Ø11.89		
12	136219	FITTING – UNION SAE -6 ORFS	1	
	135865	O-RING – Ø1.78 X Ø9.25		
13	136095	FITTING – ELBOW 90° HYD	4	
	135865	O-RING – Ø1.78 X Ø9.25		
	50219	O-RING – Ø1.98 X Ø11.89		
14	135778	FITTING – ADAPTER	2	
	135865	O-RING – Ø1.78 X Ø9.25		
	50219	O-RING – Ø1.98 X Ø11.89		
15	252693	RESTRICTOR – #6 ORB X .052 IN.	1	
16	49227	FASTENER – CABLE TIE, GREEN	2	
17	40704	FASTENER – CABLE TIE, ORANGE	1	
18	40703	FASTENER – CABLE TIE, BLUE	1	
19	40702	FASTENER – CABLE TIE, RED	2	
A	136108	SCREW – HEX SOC HD M10 X 1.5 X 80-12.9-AA1J		
B	184711	WASHER – FLAT REG M10-200HV-AA1J		

17. Selector valve includes two O-rings (MD #320284), cartridge valve (MD #279228), two coils (MD #287461), two coils (MD #287462), two poppet valves (MD #287460), 4-way valve (MD #287456), and screws (MD #136108).

18. Manifold includes two poppet valves (MD #287450) and two coils (MD #287449).

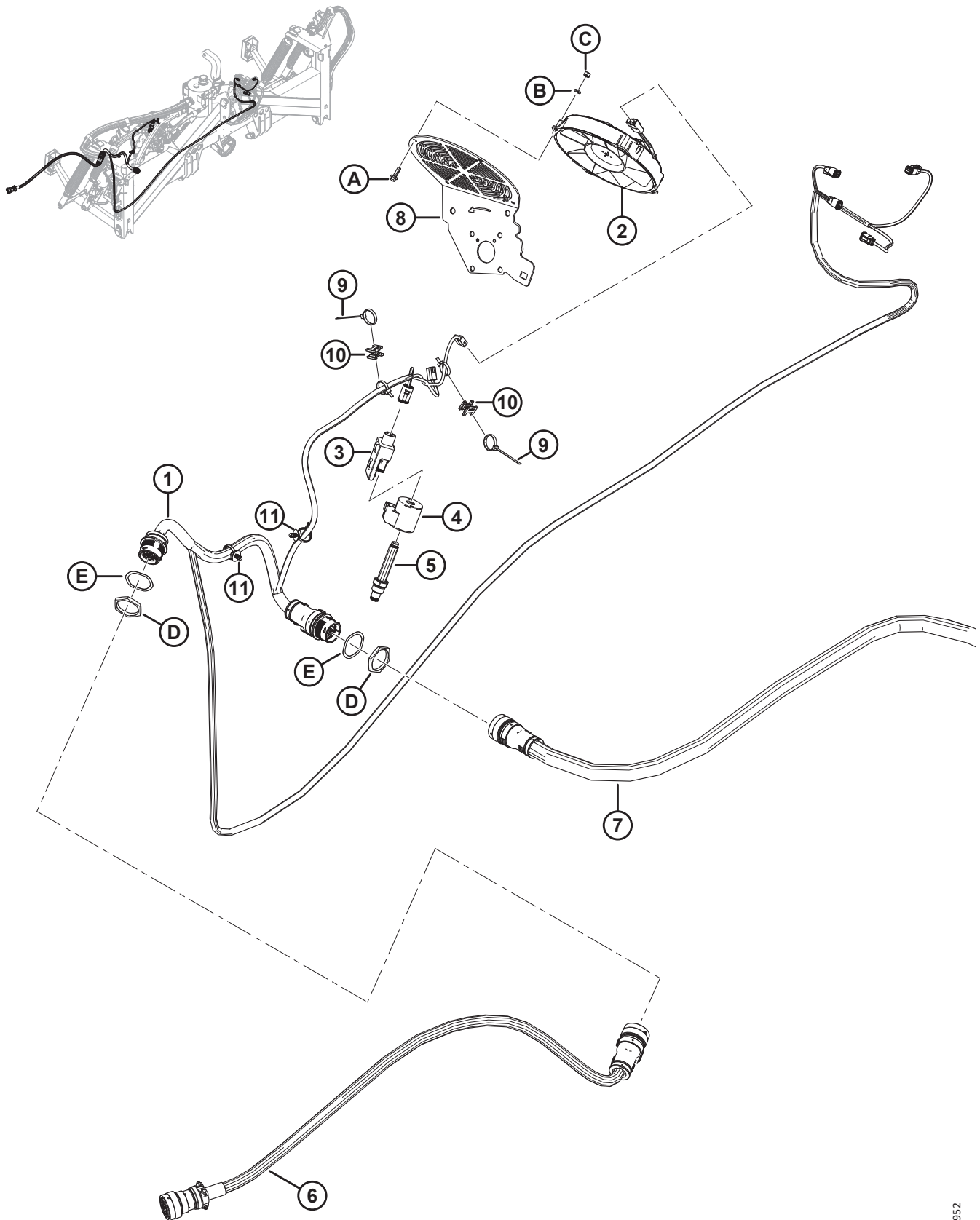
7.11 Integrated Pump – Service Parts



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	328261	VALVE – FLOW CONTROL	1	
2	276790	KIT – LOAD SENSING HOSE AND HARDWARE	1	
3	322142	SEAL – SHAFT	1	
4	328178	RING – RETAINING INTERNAL	1	
5	136900	CAP – DUST	1	
6	328307	KIT – COMPENSATOR, LOAD SENSING	1	
7	328306	KIT – COMPENSATOR	1	
A	337430	BOLT – SOC HD M10 X 40 GR12.9		
B	337431	BOLT – SOC HD M10 X 80 GR12.9		
C	337432	BOLT – SOC HD M10 X 60 GR12.9		
D	337433	WASHER – M10 SPECIAL		

7.12 Electrical

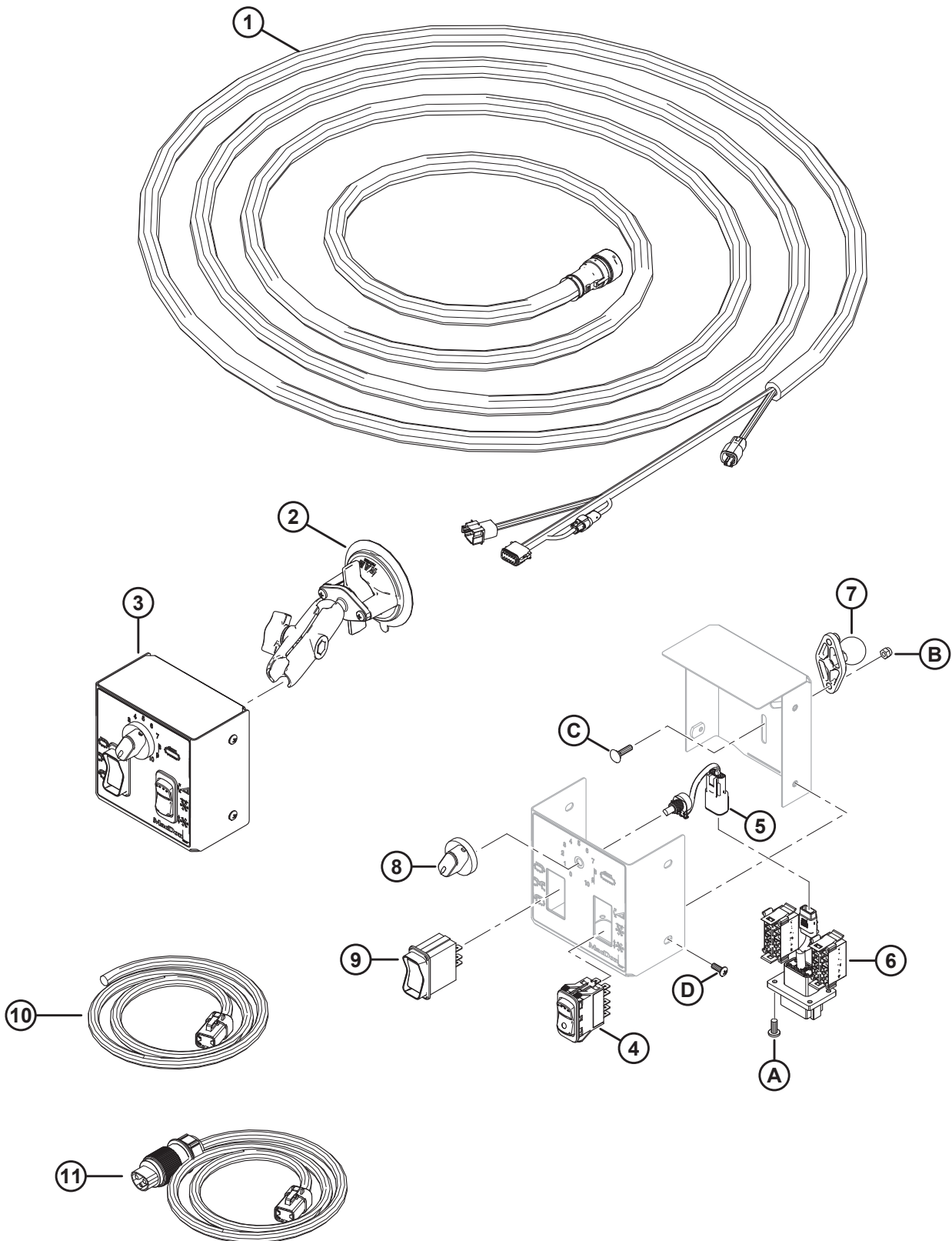


REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333183	HARNESS – TM100, MAIN	1	
2	333235	FAN – COOLING	1	
3	328411	MODULE – VALVE DRIVER	1	
4	209045	COIL – SOLENOID	1	
5	REF	VALVE – FLOW CONTROL ¹⁹	1	
6	333181	HARNESS – TM100 TO HEADER, D1	1	
7	REF	HARNESS – TM100 TO CAB ²⁰	1	
8	REF	BRACKET – FAN MOUNT ²¹	1	
9	21763	FASTENER – CABLE TIE BLACK	4	
10	134442	SPACER – DUAL SWIVEL SADDLE	2	
11	136655	FASTENER – FIR TREE MT W/ TIE	2	
A	136324	BOLT – HEX FLG HD TFLM6 X 1 X 20-10.9-AA1J		
B	184705	WASHER – FLAT M6-200HV-AA1J		
C	030637	NUT – HEX M6 X 1-10-AA1J		
D	134728	NUT – PANEL, HDP20, SIZE 24		
E	134730	WASHER – LOCK, HDP20, SIZE 24		

19. Refer to Section *7.11 Integrated Pump – Service Parts*, page 142.
 20. Refer to Section *7.13 Electrical – TM100 to Tractor Cab*, page 146.
 21. Refer to Section *7.5 Header Drive*, page 126.

7.13 Electrical – TM100 to Tractor Cab



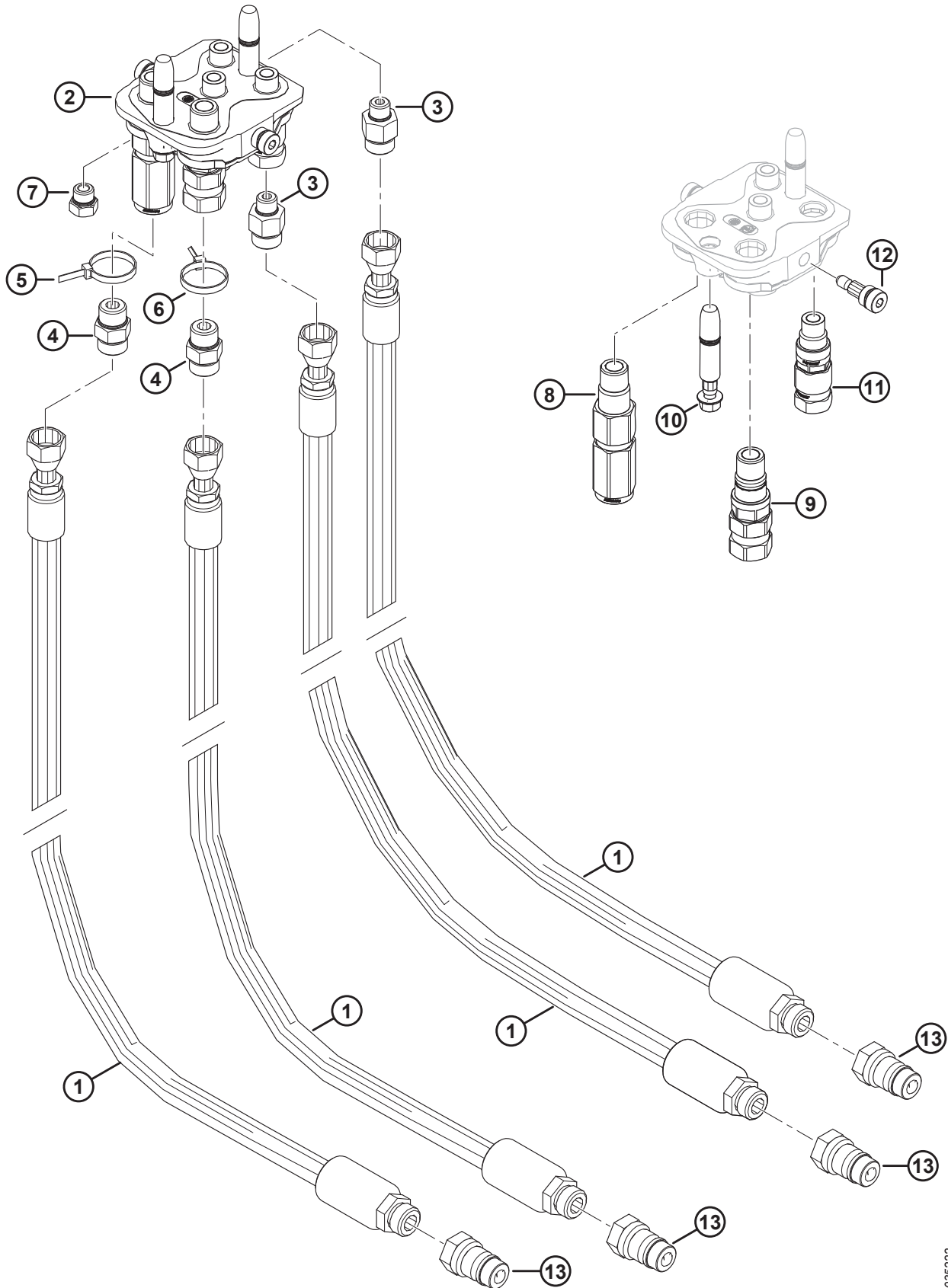
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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333569	HARNESS – TM100 TO CAB	1	
2	287859	BASE – SUCTION CUP WITH ARM	1	
3	333571	ASSEMBLY – CONTROL CONSOLE ²²	1	
4	333264	SWITCH – ROCKER, ON-ON-ON	1	
5	333262	CONTROL POTENTIOMETER	1	
6	333570	HARNESS – TM100 CAB CONTROLS	1	
7	287749	BASE – BALL MOUNT	1	
8	109773	KNOB – PLASTIC	1	
9	109574	SWITCH – ROCKER, ON-OFF-ON	1	
10	333265	HARNESS – POWER, TM100	1	
11	333266	HARNESS – POWER, TM100, HELLA	1	
A	252247	SCREW – PAN HD #12-14 X 1/2-RC45-AF0C		
B	197230	NUT – HEX NYLOC M5 X 0.8-8-AA1J		
C	197225	BOLT – RHSN M5 X 0.8 X 20-4.6-AA1J		
D	42284	SCREW – MCH PHL #10-24 X 1/2-GR2-AA1J		

22. Assembly includes switches (MD #333264 and 109574), potentiometer (MD #333262), harness (MD #333570), base (MD #287749), knob (MD #109773), two bolts (MD #197225), two nuts (MD #197230), four screws (MD #252247), four screws (MD #42284), and decal (MD #333263). For decals, refer to Section [7.18 Decals, page 156](#).

7.14 Hydraulics – Multicoupler and Hoses

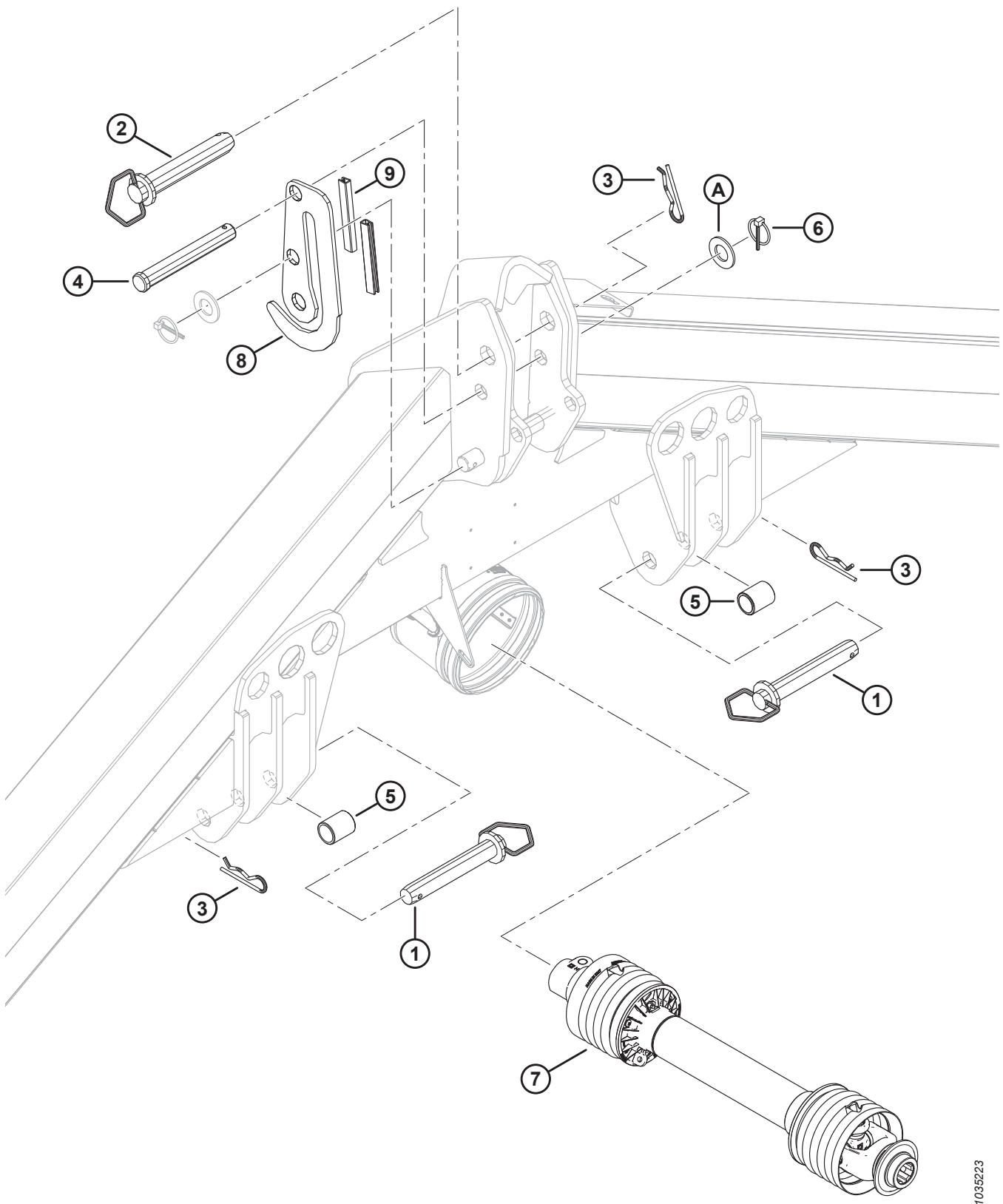


REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333421	HOSE – HYDRAULIC, 3000 MM ²³	4	
	333420	HOSE – HYDRAULIC, 9000 MM ²³	4	
2	135238	MULTICOUPLER ²⁴	1	
3	135779	FITTING – ADAPTER	2	
	135866	O-RING – Ø1.78 X Ø12.42		
	50219	O-RING – Ø1.98 X Ø11.89		
4	135780	FITTING – ADAPTER	2	
	44209	O-RING – Ø2.21 X Ø16.36		
	135866	O-RING – Ø1.78 X Ø12.42		
5	40701	FASTENER – CABLE TIE YELLOW	1	
6	49232	FASTENER – CABLE TIE WHITE	1	
7	30994	FITTING – PLUG HYD -6 ORB HEX HD	1	
8	111985	COUPLER – 3/8 IN.	1	
9	294350	COUPLER – 3/8 IN.	1	
10	111984	KIT – DOWEL	2	
11	111986	COUPLER – 1/4 IN.	3	
12	111983	KIT – SCREW	2	
13	135563	FITTING – COUPLING, 3/4 IN.	4	

-
23. Four hoses are required for multicoupler (MD #135238). The required hose length depends on whether the tractor connections will be made at the front or rear of the tractor.
24. Multicoupler includes coupler (MD #111985), coupler (MD #294350), three couplers (MD #111986), two dowels (MD #111983), and two screws (MD #111983).

7.15 TM100 to Three-Point Hitch



1035223

REPAIR PARTS

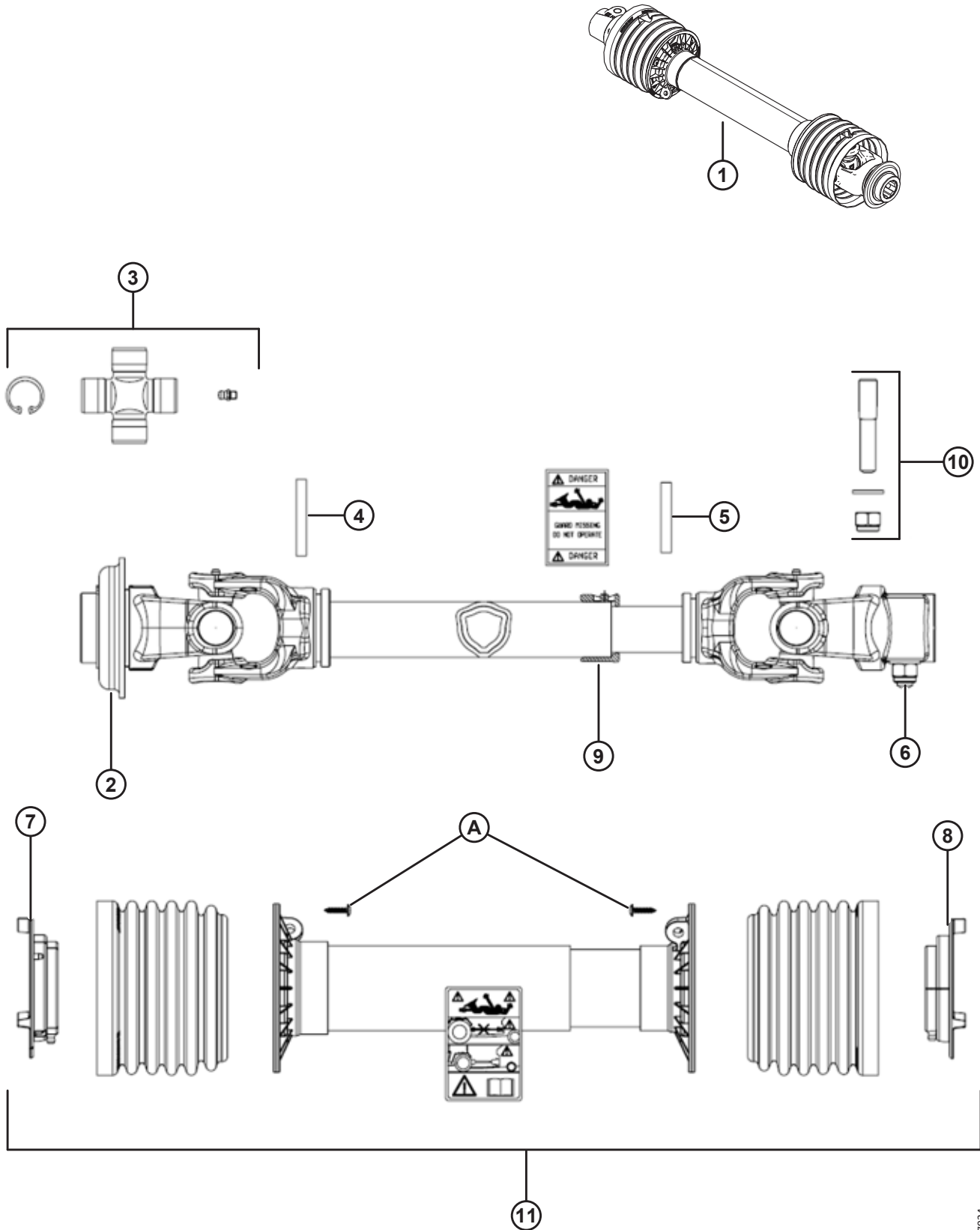
Ref	Part Number	Description	Qty	Serial Number
1	320309	PIN – HITCH ²⁵	2	
2	320308	PIN – HITCH ²⁵	1	
3	NSS	PIN – HAIR	3	
4	163921	PIN – CLEVIS	1	
5	224322	BUSHING – CAT II TO III	2	
6	102264	PIN – LYNCH 3/16 X 1 9/16 IN	1	
7	333543	DRIVELINE – Z21 PTO TO GEARBOX ²⁶	1	
	333544	DRIVELINE – Z20 PTO TO GEARBOX ²⁶	1	
	333542	DRIVELINE – Z6 PTO TO GEARBOX ²⁶	1	
8	333506	PLATE – PTO DRIVELINE HOLDER ²⁷	1	
9	176334	SEAL – EDGE TRIM	2	
A	18603	WASHER – FLAT SAE1 1/16 ID X 2.0 IN OD AA1J		

25. Includes hair pin (NSS).

26. For list of serviceable parts, refer to *Driveline – Power Take-Off to Gearbox Service Parts*.

27. Includes two edge trim seals (MD #176334).

7.16 Driveline – Power Take-Off to Gearbox Service Parts



1037934

REPAIR PARTS

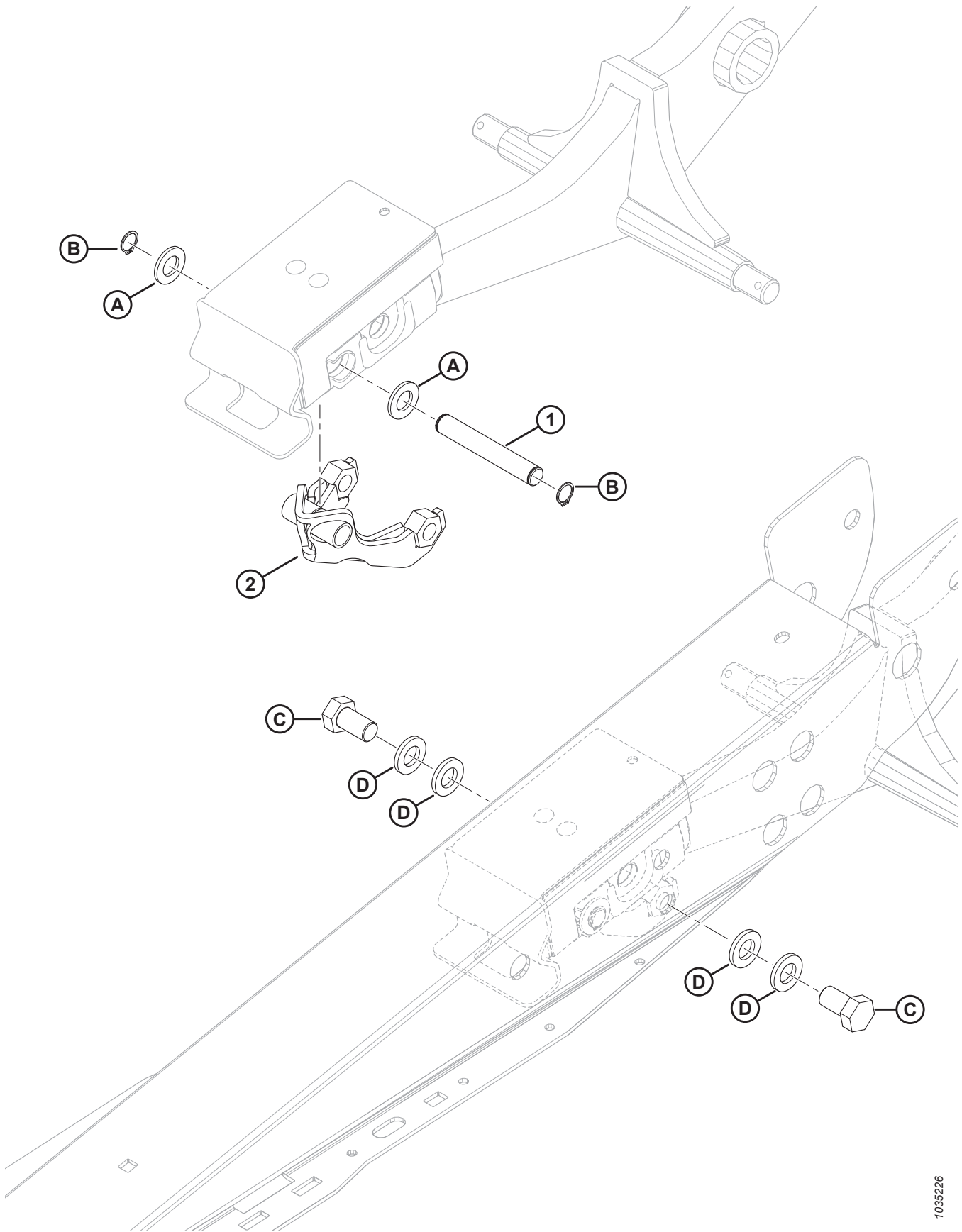
Ref	Part Number	Description	Qty	Serial Number
1	333542	DRIVELINE – Z6 PTO TO GEARBOX	1	
	333543	DRIVELINE – Z21 PTO TO GEARBOX	1	
	333544	DRIVELINE – Z20 PTO TO GEARBOX	1	
2	158283	YOKE – 6T	1	
	111227	YOKE – 21T	1	
	333561	YOKE – 1 3/4 IN. Z20 SPRING LOCK	1	
3	158284	CROSS JOURNAL ASSEMBLY ²⁸	1	
4	333555	PIN – ROLL, B AND P 8 X 60	1	
5	333556	PIN – ROLL, B AND P 8 X 55	1	
6	333557	YOKE – 1 3/8 IN. Z6 TAPERED PIN	1	
7	333558	SUPPORT – OUTER SHIELD G3-G4	1	
8	333559	SUPPORT – INNER SHIELD G3-G4	1	
9	333384	COLLAR – GREASING, B AND P	1	
10	247133	KIT – TAPER PIN	1	
11	333560	SHIELD – KIT	1	
	REF	DECAL – DANGER ²⁹	1	
	REF	DECAL – OUTER ³⁰	1	
A	247128	SCREW	2	

28. Includes clips and lube fitting.

29. Refer to [7.18 Decals, page 156](#) for decal information.

30. Refer to [Decals](#) for decal information.

7.17 TM100 to Header – Attaching Parts

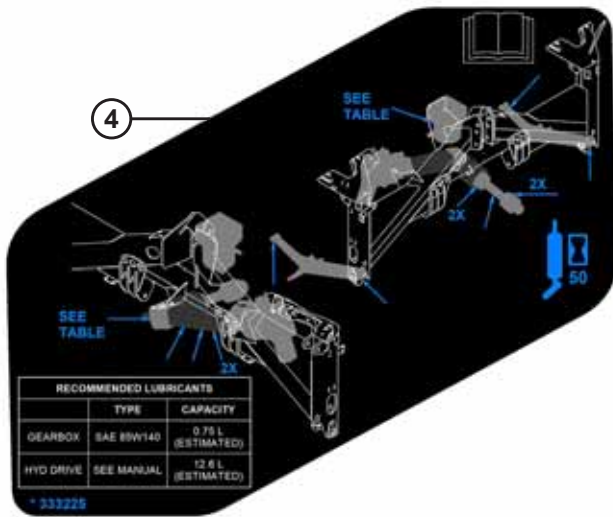
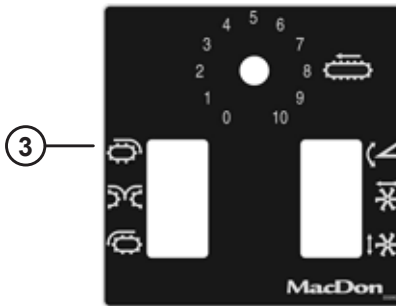
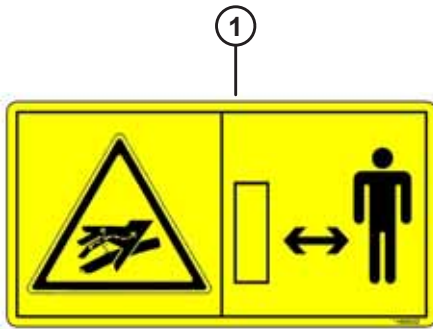


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REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	333536	PIN – LOCK	2	
2	333522	BRACKET – D1 LOCK WELDMENT	2	
A	18601	WASHER – FLAT SAE		
B	135385	RING – EXT RETAINING FOR 0.750 IN. SHAFT		
C	252891	BOLT – HEX HD TFL M20 X 2.5 X 35-8.8-AA1J		
D	21540	WASHER – HARD ASTM F436 M20-340HV-AB2C		

7.18 Decals



REPAIR PARTS

Ref	Part Number	Description	Qty	Serial Number
1	166832	DECAL – HIGH PRESSURE FLUID	1	
2	313728	DECAL – READ MANUAL/FLUID SPRAY	1	
3	333263	DECAL – CONTROLS	1	
4	333225	DECAL – SERVICE GREASE	1	
5	132898	STRIP – ANTI SLIP	1	
6	247130	DECAL – DANGER	1	
7	158289	DECAL – OUTER	1	
8	171287	DECAL – INSTALL LOCK PANEL	2	

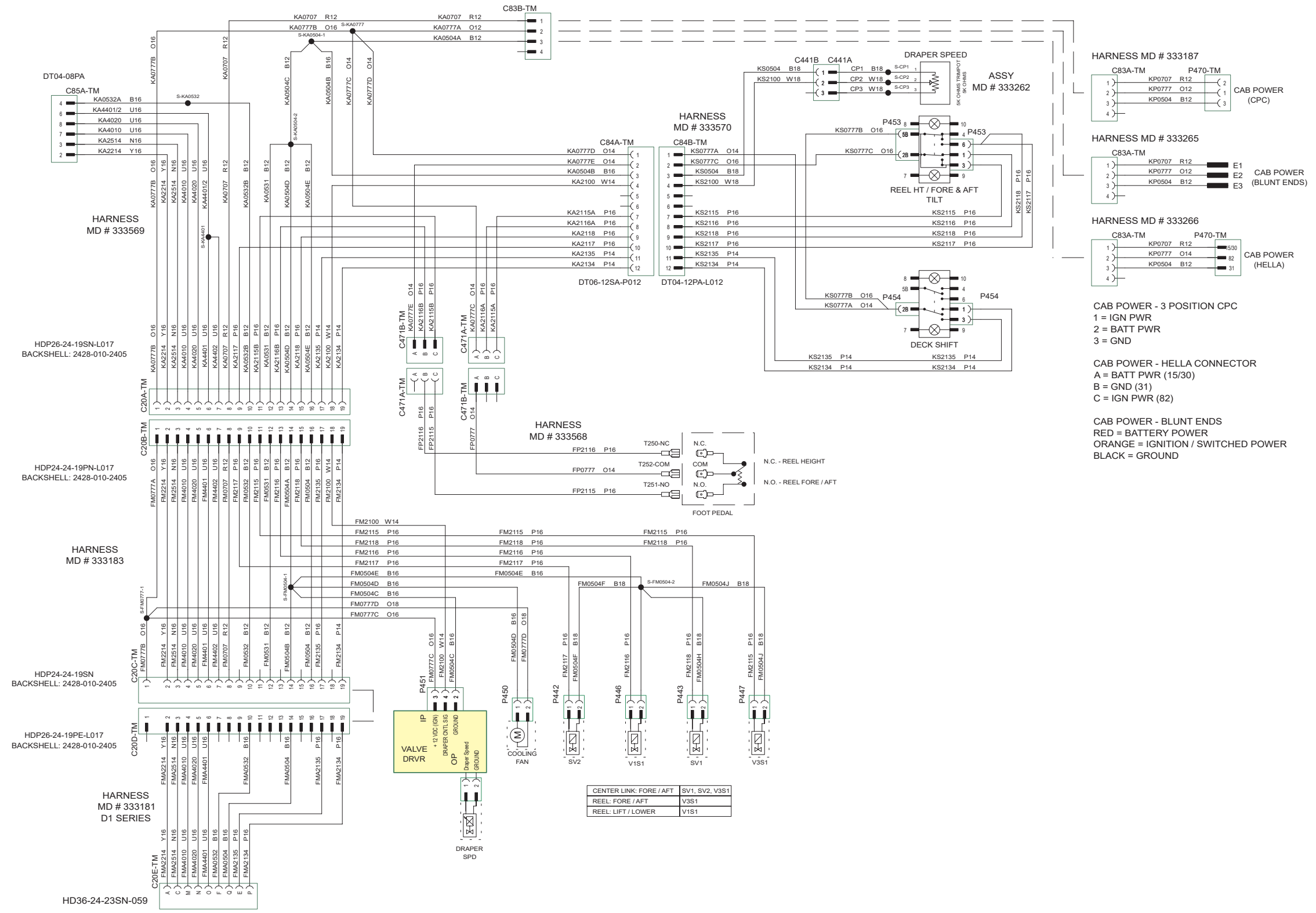
Chapter 8: Reference

The reference chapter provides additional information such as lubricants, fluids, and system capacities, fuel and torque specifications, a unit conversion chart, and a list of acronyms, abbreviations, and terms used in this publication.

8.1 Electrical and Hydraulic Schematics

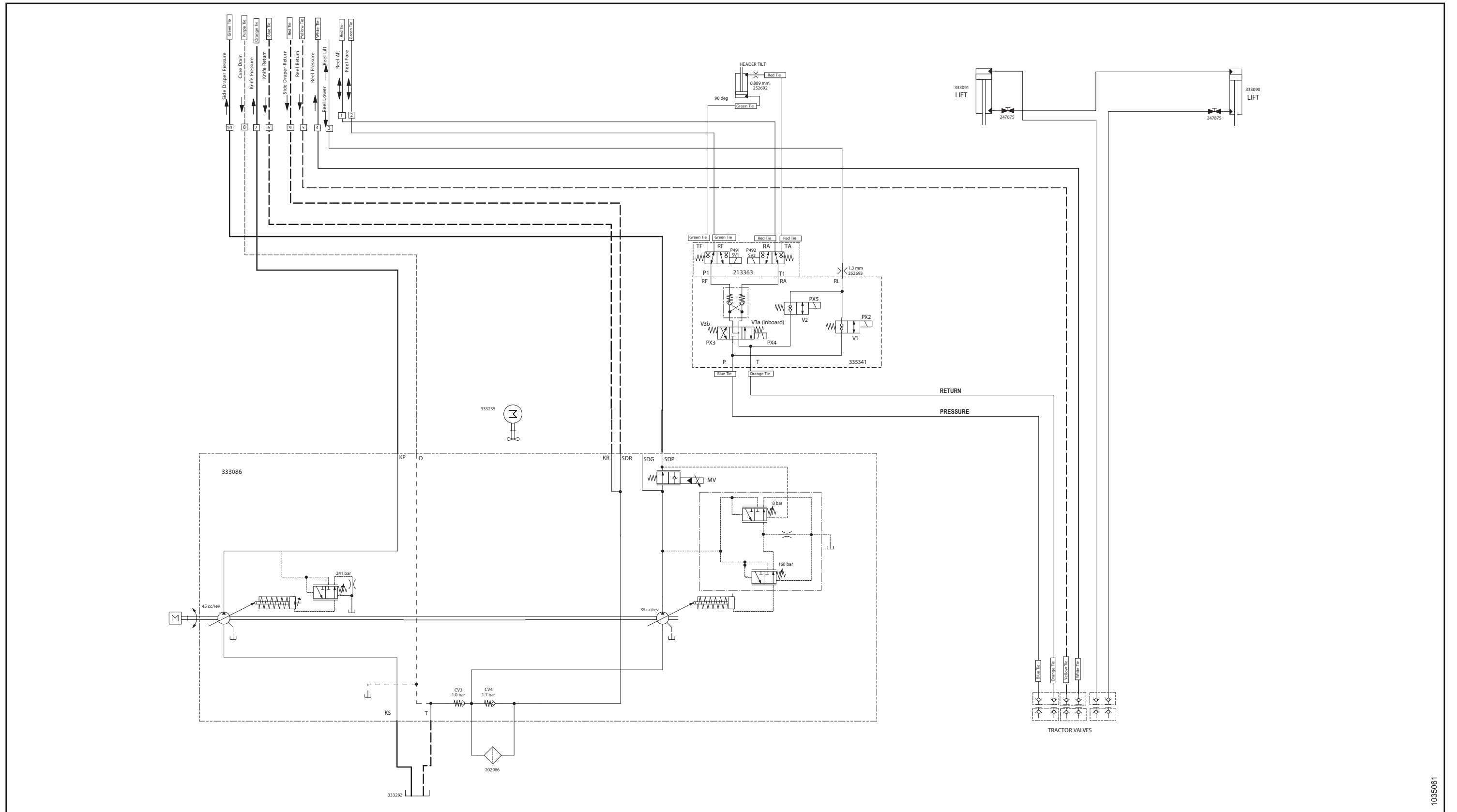
REFERENCE

Electrical Schematic – TM100 Tractor Mount Float Module with D1 Series Header



REFERENCE

Hydraulic Schematic – TM100 Tractor Mount Float Module with D1 Series Header



8.2 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings. Refer to these values only when no other torque value has been specified in a given procedure.

- Tighten all bolts to the torque values specified in the charts below, unless you are directed otherwise in this manual.
- Replace removed hardware with hardware of the same strength and grade.
- Refer to the torque value tables as a guide when periodically checking the tightness of bolts.
- Understand the torque categories for bolts and cap screws by reading the markings on their heads.

Jam nuts

Jam nuts require less torque than nuts used for other purposes. When applying torque to finished jam nuts, multiply the torque applied to regular nuts by 0.65 to obtain the modified torque value.

Self-tapping screws

Refer to the standard torque values when installing the self-tapping screws. Do **NOT** install the self-tapping screws on structural or otherwise critical joints.

8.2.1 Metric Bolt Specifications

Specifications are provided for the appropriate final torque values to secure various sizes of metric bolts.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 8.1 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.4	1.6	*13	*14
3.5-0.6	2.2	2.5	*20	*22
4-0.7	3.3	3.7	*29	*32
5-0.8	6.7	7.4	*59	*66
6-1.0	11.4	12.6	*101	*112
8-1.25	28	30	20	23
10-1.5	55	60	40	45
12-1.75	95	105	70	78
14-2.0	152	168	113	124
16-2.0	236	261	175	193
20-2.5	460	509	341	377
24-3.0	796	879	589	651

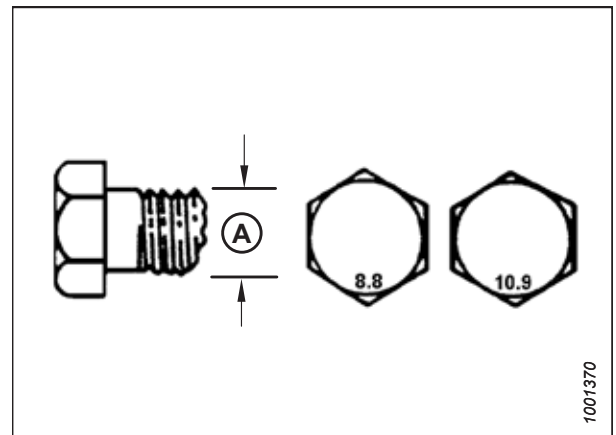


Figure 8.1: Bolt Grades

REFERENCE

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

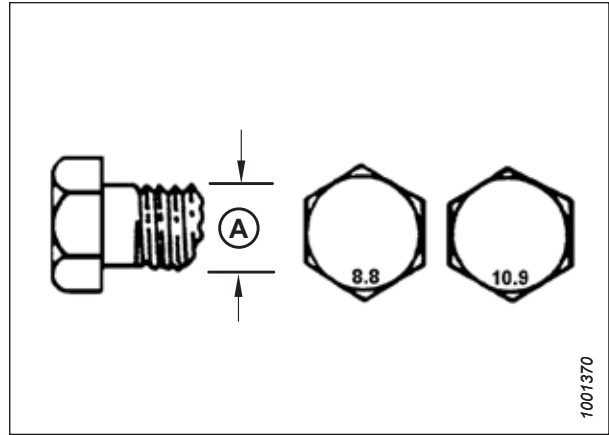


Figure 8.2: Bolt Grades

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

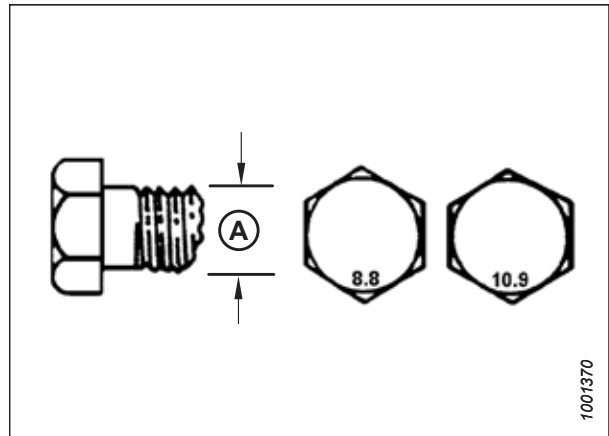


Figure 8.3: Bolt Grades

REFERENCE

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

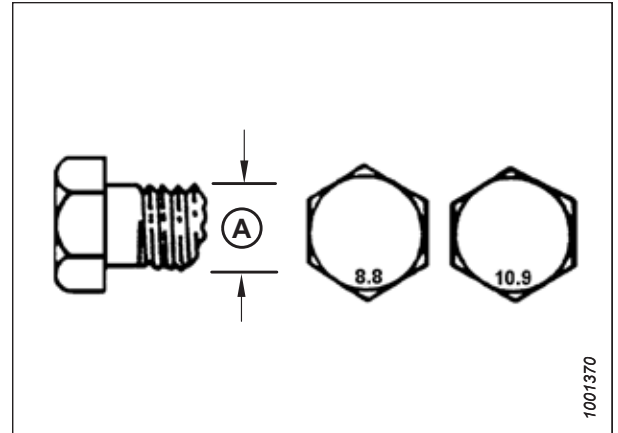


Figure 8.4: Bolt Grades

8.2.2 Metric Bolt Specifications – Cast Aluminum

Specifications are provided for the appropriate final torque values for various sizes of metric bolts in cast aluminum.

NOTE:

The torque values provided in the following metric bolt torque tables apply to hardware installed dry; that is, hardware with no grease, oil, or threadlocker on the threads or heads. Do **NOT** add grease, oil, or threadlocker to bolts or cap screws unless you are directed to do so in this manual.

Table 8.5 Metric Bolt Bolting into Cast Aluminum

Nominal Size (A)	Bolt Torque			
	8.8 (Cast Aluminum)		10.9 (Cast Aluminum)	
	Nm	lbf-ft	Nm	lbf-ft
M3	–	–	–	1
M4	–	–	4	2.6
M5	–	–	8	5.5
M6	9	6	12	9
M8	20	14	28	20
M10	40	28	55	40
M12	70	52	100	73
M14	–	–	–	–
M16	–	–	–	–

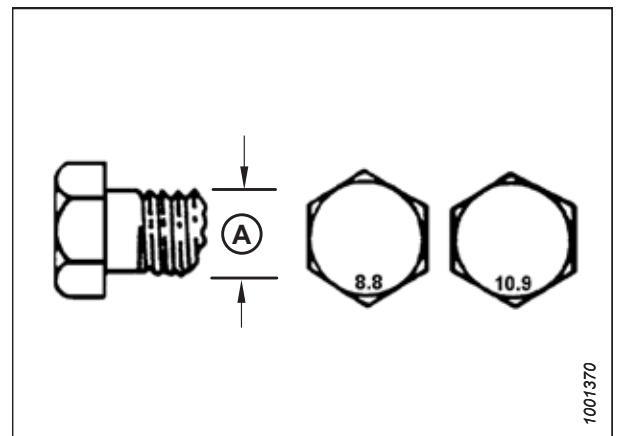


Figure 8.5: Bolt Grades

8.2.3 O-Ring Boss Hydraulic Fittings – Adjustable

The standard torque values are provided for adjustable hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Back off lock nut (C) as far as possible. Ensure that washer (D) is loose and is pushed toward lock nut (C) as far as possible.
3. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
4. Apply hydraulic system oil to O-ring (A).

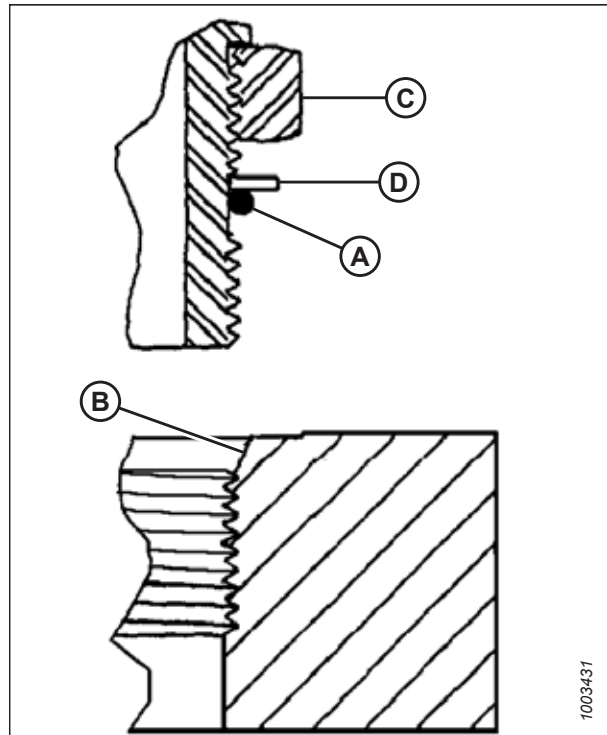


Figure 8.6: Hydraulic Fitting

5. Install fitting (B) into the port until backup washer (D) and O-ring (A) contact part face (E).
6. Position the angle fittings by unscrewing no more than one turn.
7. Turn lock nut (C) down to washer (D) and tighten it to the torque value indicated in the table. Use two wrenches, one on fitting (B) and the other on lock nut (C).
8. Verify the final condition of the fitting.

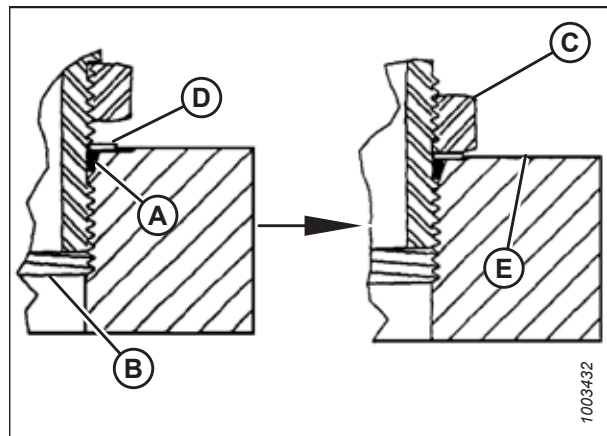


Figure 8.7: Hydraulic Fitting

Table 8.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ³¹	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115

31. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

Table 8.6 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ³²	
		Nm	lbf-ft (*lbf-in)
-4	7/16-20	19-21	14-15
-5	1/2-20	21-33	15-24
-6	9/16-18	26-29	19-21
-8	3/4-16	46-50	34-37
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

8.2.4 O-Ring Boss Hydraulic Fittings – Non-Adjustable

The standard torque values for non-adjustable hydraulic fittings are provided. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, use the value specified in the procedure instead.

1. Inspect O-ring (A) and seat (B) for dirt or defects.
2. Ensure that O-ring (A) is **NOT** on the threads. Adjust O-ring (A) if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into the port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table 8.7, page 169.
6. Verify the final condition of the fitting.

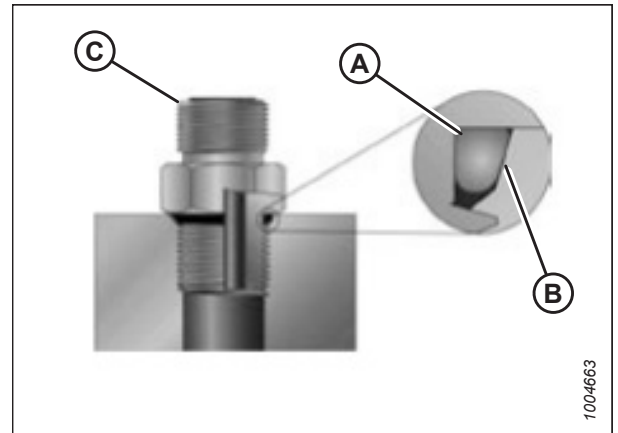


Figure 8.8: Hydraulic Fitting

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value ³²	
		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

32. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

Table 8.7 O-Ring Boss (ORB) Hydraulic Fittings – Non-Adjustable (continued)

SAE Dash Size	Thread Size (in.)	Torque Value ³³	
		Nm	lbf-ft (*lbf-in)
-10	7/8-14	75-82	55-60
-12	1 1/16-12	120-132	88-97
-14	1 3/8-12	153-168	113-124
-16	1 5/16-12	176-193	130-142
-20	1 5/8-12	221-243	163-179
-24	1 7/8-12	270-298	199-220
-32	2 1/2-12	332-365	245-269

8.2.5 O-Ring Face Seal Hydraulic Fittings

The standard torque values are provided for O-ring face seal hydraulic fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Torque values are shown in the Table 8.8, page 171.

1. Ensure that the sealing surfaces and the fitting threads are free of burrs, nicks, scratches, and any foreign material.



Figure 8.9: Hydraulic Fitting

2. Apply hydraulic system oil to O-ring (B).
3. Align the tube or hose assembly so that the flat face of sleeve (A) or (C) comes into full contact with O-ring (B).
4. Thread tube or hose nut (D) until it is hand-tight. The nut should turn freely until it bottoms out.
5. Torque the fittings according to values in Table 8.8, page 171.

NOTE:

If applicable, hold the hex flange on fitting body (E) to prevent the rotation of the fitting body and the hose when tightening fitting nut (D).

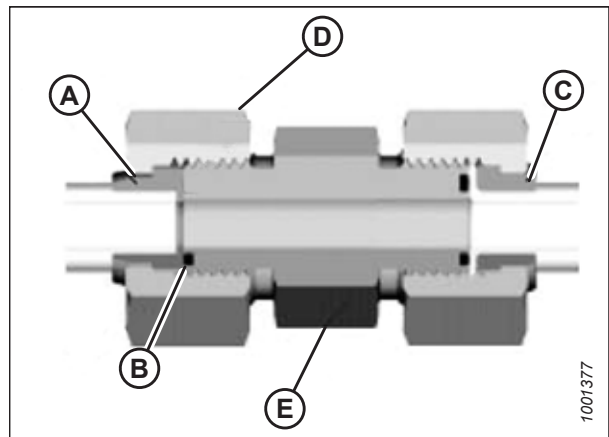


Figure 8.10: Hydraulic Fitting

33. Torque values shown are based on lubricated connections as in reassembly.

REFERENCE

6. Use three wrenches when assembling unions or joining two hoses together.
7. Verify the final condition of the fitting.

Table 8.8 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value ³⁴	
			Nm	lbf-ft
-3	Note ³⁵	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note ³⁵	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 ³⁵	7/8	–	–
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

8.2.6 Tapered Pipe Thread Fittings

The standard torque values are provided for tapered pipe thread fittings. If a procedure specifies a different torque value for the same type and size of fitting found in this topic, refer to the value specified in the procedure instead.

Assemble pipe fittings as follows:

1. Ensure that the fitting and the port threads are free of burrs, nicks, scratches, and any other form of contamination.
2. Apply paste-type pipe thread sealant to the external pipe threads.
3. Thread the fitting into the port until it is hand-tight.
4. Torque the connector to the appropriate torque angle. The turns from finger tight (TFFT) and flats from finger tight (FFFT) values are shown in Table 8.9, page 172. Ensure that the tube end of a shaped connector (typically a 45° or 90° elbow) is aligned to receive the incoming tube or hose assembly. Always finish the alignment of the fitting in the direction of tightening. Never loosen the threaded connectors to achieve alignment.
5. Clean all residue and any excess thread conditioner with an appropriate cleaner.
6. Inspect the final condition of the fitting. Pay special attention to the possibility of cracks in the port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

NOTE:

The failure of fittings due to over-torquing may not be evident until the fittings are disassembled and inspected.

34. Torque values and angles shown are based on lubricated connection as in reassembly.

35. O-ring face seal type end not defined for this tube size.

REFERENCE

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
1 1/4-11 1/2	1.5-2.5	9-15
1 1/2-11 1/2	1.5-2.5	9-15
2-11 1/2	1.5-2.5	9-15

8.3 Conversion Chart

Both SI units (including metric) and US customary units (sometimes referred to as standard units) of measurement are used in this manual. A list of those units along with their abbreviations and conversion factors is provided here for your reference.

Table 8.10 Conversion Chart

Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
Length	meter	m	x 3.2808 =	foot	ft.
Power	kilowatt	kW	x 1.341 =	horsepower	hp
Pressure	kilopascal	kPa	x 0.145 =	pounds per square inch	psi
Pressure	megapascal	MPa	x 145.038 =	pounds per square inch	psi
Pressure	bar (Non-SI)	bar	x 14.5038 =	pounds per square inch	psi
Torque	Newton meter	Nm	x 0.7376 =	pound feet or foot pounds	lbf·ft
Torque	Newton meter	Nm	x 8.8507 =	pound inches or inch pounds	lbf·in
Temperature	degrees Celsius	°C	(°C x 1.8) + 32 =	degrees Fahrenheit	°F
Velocity	meters per minute	m/min	x 3.2808 =	feet per minute	ft/min
Velocity	meters per second	m/s	x 3.2808 =	feet per second	ft/s
Velocity	kilometers per hour	km/h	x 0.6214 =	miles per hour	mph
Volume	liter	L	x 0.2642 =	US gallon	US gal
Volume	milliliter	mL	x 0.0338 =	ounce	oz.
Volume	cubic centimeter	cm ³ or cc	x 0.061 =	cubic inch	in. ³
Weight	kilogram	kg	x 2.2046 =	pound	lb.

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287456	141	333425	123
287460	141	333426	123
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320308	151	333534	127
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Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. The completed checklist should be retained by either the Operator or the Dealer.

 **CAUTION**

Carefully follow the instructions given. Be alert for safety related messages that bring your attention to hazards and unsafe practices.

Tractor Mount Float Module Predelivery Checklist

✓	Item	Reference
	Check for shipping damage or missing parts. Be sure all shipping dunnage is removed.	—
	Check for loose hardware. Tighten to required torque.	<i>8.2 Torque Specifications, page 165</i>
	Check gearbox oil level.	<i>6.5.1 Checking Oil Level in Header Drive Gearbox, page 112</i>
	Check hydraulic reservoir oil level before and after run-up.	<i>6.4.1 Checking Oil Level in Hydraulic Reservoir, page 109</i>
	Grease all bearings and drivelines.	<i>6.3 Lubrication and Servicing, page 103</i>
	Confirm correct gearbox rotation.	<i>3.8 Repositioning Gearbox, page 40</i>
	Check header float.	<i>5.6 Header Float, page 91</i>
	Check for hydraulic leaks.	—

TM100 Serial Number: _____

Date Checked: _____

Checked by: _____

Recommended Lubricants

Table: System Capacities

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	—
Grease	SAE multi-purpose	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)
Gear Lubricant	SAE 85W-140	API service class GL-5	Header drive gearbox	0.8 liters (0.83 quarts)
Hydraulic Oil	Single grade trans-hydraulic oil	Lubricant trans / hydraulic oil	Header drive systems reservoir	12.6 liters (3.3 US gallons)

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