MacDon

HC10
Hay Conditioner

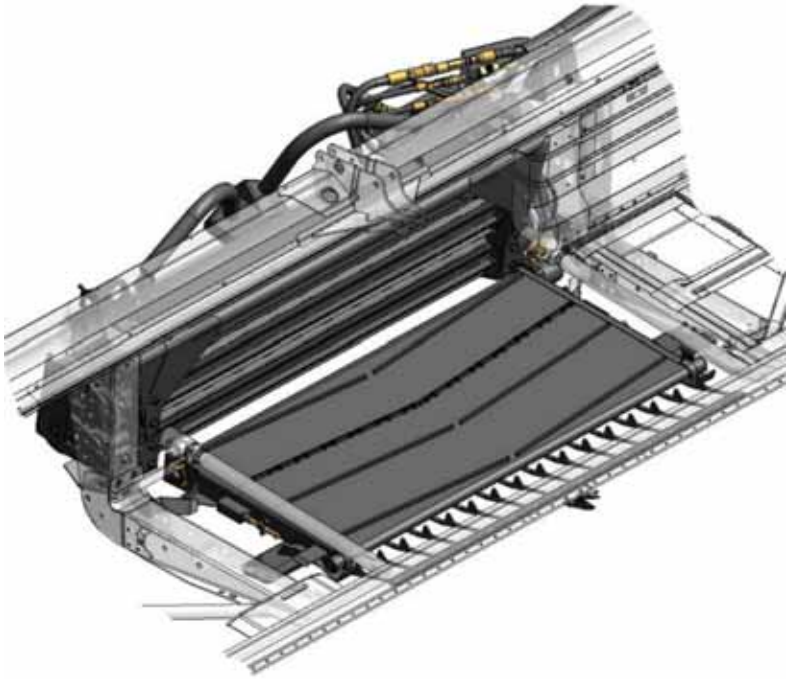
Setup, Operation, and Parts Manual

215593 Revision A

Original Instruction

The Harvesting Specialists.

MacDon HC10 Hay Conditioner



Published June 2021.

Introduction

This manual contains safety information, setup instructions, operating and maintenance procedures, and parts information for the MacDon HC10 Hay Conditioner.

Conditioning or crimping cut hay releases moisture for quicker drying and earlier processing. When teamed with an M Series or M1 Series Windrower and a timed double-knife drive D60, D65, or D1 Series Draper Header, the HC10 will lay conditioned crop into uniform, fluffy windrows.

NOTE:

The HC10 is **ONLY** compatible with D60, D65, and D1 Series Headers that are 4.6–9.1 m (15–30 ft.) in length and equipped with a timed double-knife. To avoid excessive vibration and poor performance, the HC10 Hay Conditioner should **NOT** be attached to single-knife drive headers.

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

The HC10 Hay Conditioner is NOT intended for use with the M205 Self-Propelled Windrower. Refer to the following table to determine if the HC10 Hay Conditioner is compatible with your windrower in your market:

Windrower Region	MacDon M Series	MacDon M1 Series
North America only	M150, M155, M155*E4*, and M200	M1170 (must be equipped with compatibility kit MD #B6978)
Export only	M100, M105, M150, M155, M155*E4*, and M200	M1170 (must be equipped with compatibility kit MD #B6978)[1]

If the shipment is damaged or is missing parts, contact shortageanddamage@macdon.com.

CAREFULLY READ ALL THE MATERIAL PROVIDED BEFORE ATTEMPTING TO UNLOAD, ASSEMBLE, OR USE THE MACHINE.

Use this manual as your first source of information about the machine. If you follow the instructions given in this manual, your hay conditioner will work well for many years. Use this manual in conjunction with your windrower and draper header manuals.

Use the Table of Contents and Index to guide you to specific topics. Review the Table of Contents to familiarize yourself with how the material is organized.

Keep this manual handy for frequent reference and to pass on to new Operators or Owners. Call your Dealer if you need assistance, information, or additional copies of this manual.

Warranty information

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

Conventions

1. The HC10's forming shield is not compatible with M1170 NT (narrow transport).

- Right and left are determined from the operator's position. The front of the header and of the hay conditioner is the side that faces the crop; the back is the side that connects to the windrower.
- Unless otherwise noted, use the standard torque values provided in this book. Refer to *7.1 Torque Specifications, page 135*.

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 document is available in English and Russian.

Summary of Changes

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

Section	Summary of Change	Internal Use Only
Introduction, page i	Added contact email in case shipment is damaged or missing parts. Added M1170 with B6978 to the table of compatible windrowers.	Product Support
Throughout	Add or modify short descriptions to conform with new standards.	Tech Pubs
3.4 Installing Mounting Brackets, page 19	Modified title to better describe the topic. Subtopics install more than just deck brackets.	Tech Pubs
3.6.1 Installing Conditioner – Lifting Method, page 27	Moved connecting hydraulics content to Attaching Hydraulics topics.	Tech Pubs
3.6.2 Installing Conditioner – Windrower Method, page 29	Moved connecting hydraulics content to Attaching Hydraulics topics.	Tech Pubs
3.9 Installing the Forming Shield, page 42	Merged procedures for attaching forming shield to HC10 and windrower and deleted the redundant topic.	Tech Pubs
3.11.4 Activating the Hay Conditioner - M Series Cab Display Module, page 49	Added a topic for activating the HC10 on M Series Windrowers.	Product Support
4.7 Preseason Check, page 66	Removed bullet point to adjust roll drive belt because that procedure is already requested in the recommended annual maintenance.	Tech Pubs
Predelivery Checklist, page 173	Added contact email in case shipment is damaged or missing parts.	Product Support

Serial Numbers

If product support is required, serial numbers help representatives provide the correct information.

Record the serial number of the hay conditioner in the space below.

Hay Conditioner Serial Number: _____

Serial number plate (A) is located on the rear cover of the conditioner frame as shown below.

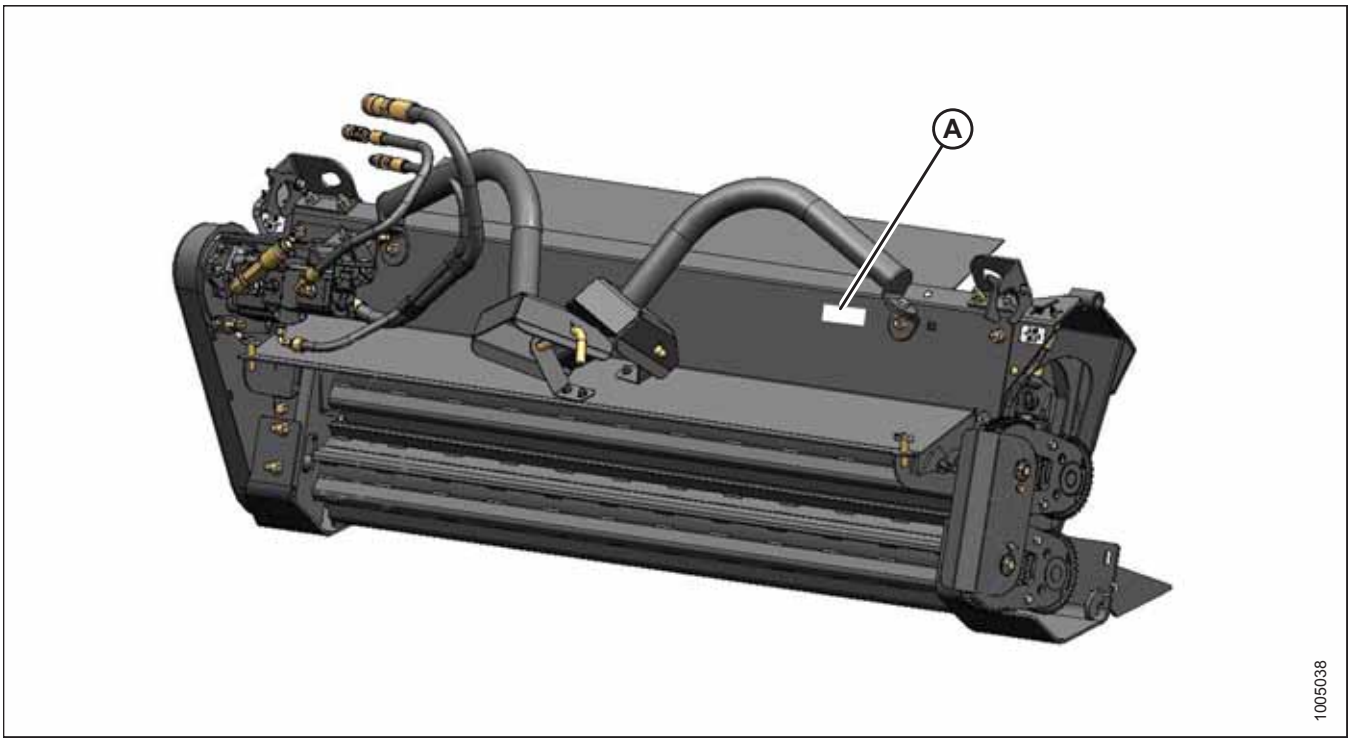


Figure 1: Serial Number Plate

Chapter 1: Safety

Understanding and consistently following safety procedures helps to ensure the safety of machine operators and 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 not avoided, will result in death or serious injury.

WARNING

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

CAUTION

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

IMPORTANT:

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

NOTE:

Provides additional information or advice.

1.3 General Safety

Protect yourself when assembling, operating, and servicing machinery.

CAUTION

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

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

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

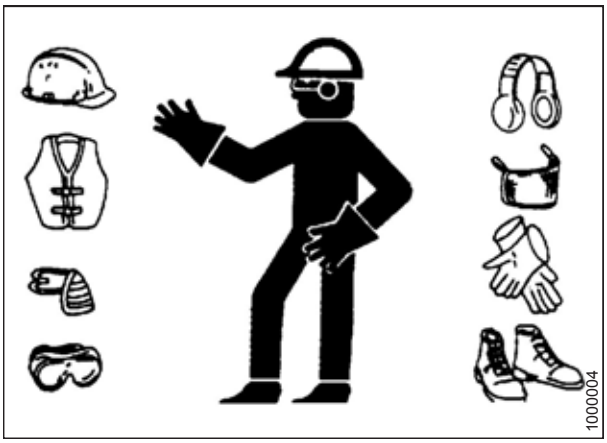


Figure 1.2: Safety Equipment

In addition, take the following precautions:

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

Figure 1.3: Safety Equipment

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

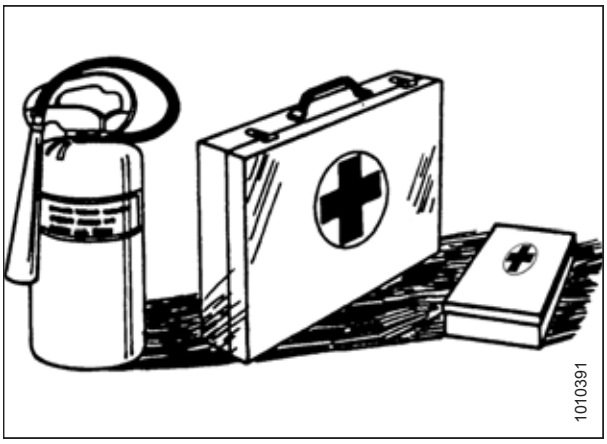


Figure 1.4: Safety Equipment

- Wear close-fitting clothing and cover long hair. **NEVER** wear dangling items such as 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.

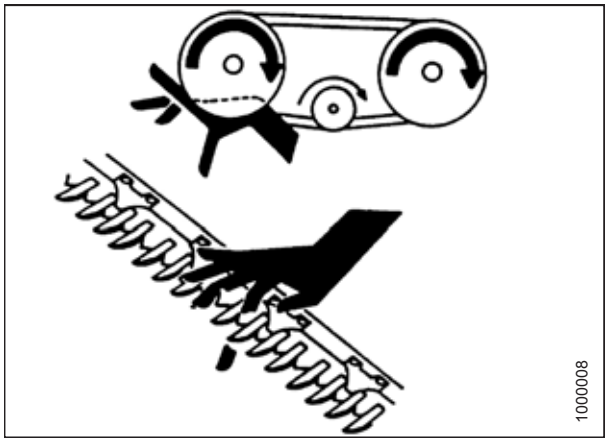


Figure 1.6: Safety around Equipment

- 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

Protect yourself when servicing machinery.

To ensure your safety while maintaining machine:

- Review the operator's manual and all safety items before the operation and/or maintenance of 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, and/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 other mechanically-driven component by hand (for example, accessing a lubricant fitting) will cause drive components in other areas (belts, pulleys, and knives) to move. Stay clear of driven components at all times.
- Wear protective gear when working on the machine.
- Wear heavy gloves when working on knife components.

Figure 1.8: Safety around Equipment

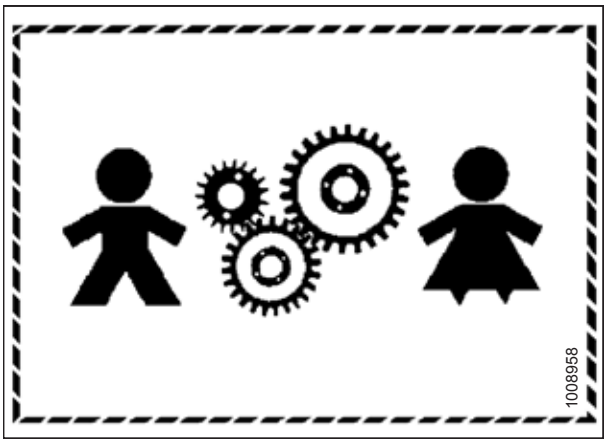


Figure 1.9: Equipment is NOT Safe for Children

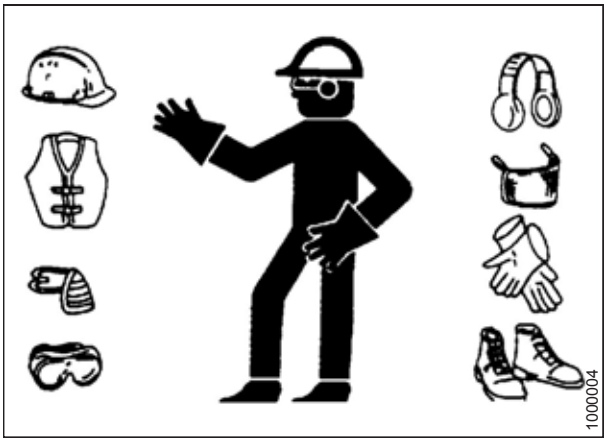


Figure 1.10: Safety Equipment

1.5 Hydraulic Safety

Protect yourself when assembling, operating, and servicing hydraulic components.

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

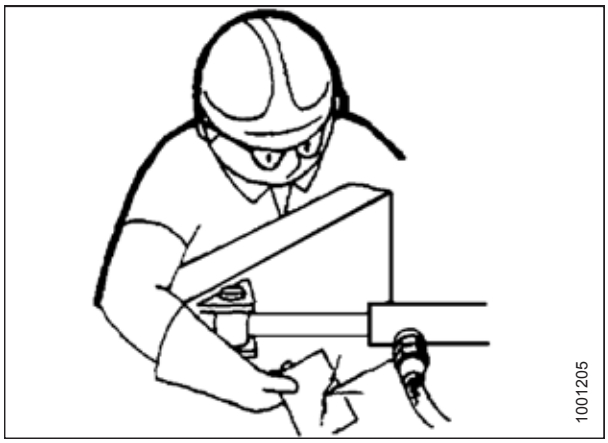


Figure 1.11: Testing for Hydraulic Leaks

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

Figure 1.12: Hydraulic Pressure Hazard

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

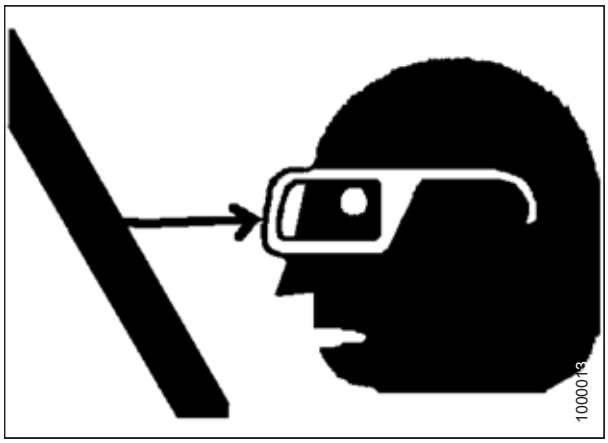


Figure 1.13: Safety around Equipment

1.6 Safety Signs

Safety signs are decals placed on the machine where there is a risk of personal injury, or where the operator should take extra precautions before operating the controls. They are usually yellow. Operator manuals and technical manuals list the location and explain the meaning of all safety signs placed on the machine.

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

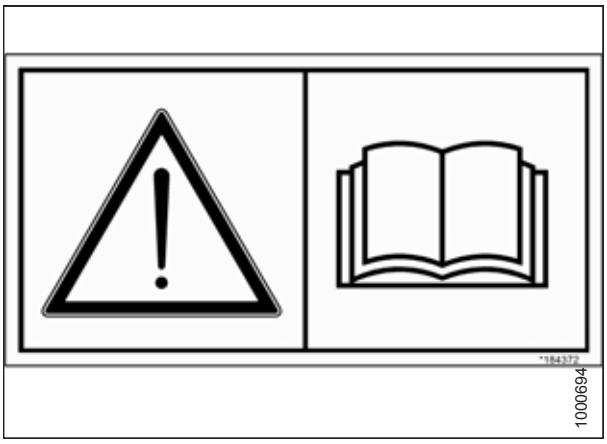


Figure 1.14: Operator's Manual Decal

1.6.1 Installing Safety Decals

If a safety decal is damaged it should be 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.

Chapter 2: Product Overview

2.1 Definitions

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

Term	Definition
API	American Petroleum Institute
ASTM	American Society of Testing and Materials
Bolt	A headed and externally threaded fastener that is designed to be paired with a nut
Center-link	A hydraulic cylinder link between the header and machine used to change header angle
CGVW	Combined gross vehicle weight
D Series Header	MacDon D50, D60, and D65 rigid draper headers
D1 SP Series Header	MacDon D115, D120, D125, D130, D135, and D140 rigid draper headers for windrowers
DK	Double knife
DKD	Double-knife drive
FFFT	Flats from finger tight
Finger tight	Finger tight is a reference position where sealing surfaces or components are making contact with each other, and fitting has been tightened to a point where fitting is no longer loose
GVW	Gross vehicle weight
Hard joint	A joint made with use of a fastener where joining materials are highly incompressible
Header	A machine that cuts and lays crop into a windrow and is attached to a windrower
Hex key	A tool of hexagonal cross-section used to drive bolts and screws that have a hexagonal socket in head (internal-wrenching hexagon drive); also known as an Allen key and various other synonyms
HDS	Hydraulic deck shift
hp	Horsepower
JIC	Joint Industrial Council: A standards body that developed standard sizing and shape for original 37° flared fitting
n/a	Not applicable
N-DETENT	The slot opposite the NEUTRAL position on the operator's console of M Series SP Windrowers
NPT	National Pipe Thread: A style of fitting used for low-pressure port openings. Threads on NPT fittings are uniquely tapered for an interference fit
Nut	An internally threaded fastener that is designed to be paired with a bolt
ORB	O-ring boss: A style of fitting commonly used in port openings on manifolds, pumps, and motors
ORFS	O-ring face seal: A style of fitting commonly used for connecting hoses and tubes. This style of fitting is also commonly called ORS, which stands for O-ring seal
RoHS (Reduction of Hazardous Substances)	A directive by the European Union to restrict use of certain hazardous substances (such as hexavalent chromium used in some yellow zinc platings)
rpm	Revolutions per minute
SAE	Society of Automotive Engineers
Screw	A headed and externally threaded fastener that threads into preformed threads or forms its own thread into a mating part

Term	Definition
Soft joint	A joint made with use of a fastener where joining materials are compressible or experience relaxation over a period of time
Tension	Axial load placed on a bolt or screw, usually measured in Newtons (N) or pounds (lb.)
TFFT	Turns from finger tight
Timed knife drive	Synchronized motion applied at cutterbar to two separately driven knives from a single hydraulic motor
Torque	The product of a force X lever arm length, usually measured in Newton-meters (Nm) or foot-pounds (lbf·ft)
Torque angle	A tightening procedure where fitting is assembled to a precondition (finger tight) and then nut is turned farther a number of degrees to achieve its final position
Torque-tension	The relationship between assembly torque applied to a piece of hardware and axial load it induces in bolt or screw
Washer	A thin cylinder with a hole or slot located in the center that is to be used as a spacer, load distribution element, or locking mechanism

2.2 Specifications

NOTE:

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

Item		Specification		
Frame and Structure				
Total Weight (estimated)		770 kg (1700 lb.)		
Carrier (North America only)		MacDon M150, M155, M155*E4*, and M200 Windrowers[2]		
Carrier (Export only)		MacDon M100, M105, M150, M155, M155*E4*, and M200 Windrowers [2]		
Header		MacDon double-knife (timed only) drive D60, D65, and D1 Series Draper Headers		
Manual Storage		In windrower cab		
Drives				
Main Conditioner		80 cc (4.9 cu in.) hydraulic motor		
Feed Deck		65 cc (4.0 cu in.) hydraulic motor with 921 psi relief		
Connections		Flat-faced quick attach couplers – connect under pressure		
Normal Operating Pressure	Conditioner	17.0–20.7 MPa (2500–3000 psi)		
	Feed Deck	4.1 MPa (600 psi)		
Conditioner				
Drive		Hydraulic motor to belt-driven roll to open timing gear system		
Header Size		4.6 m (15 ft.)	6.1 m (20 ft.) and 7.6 m (25 ft.)	9.1 m (30 ft.)[3]
Roll Speed		772–977 rpm	720–874 rpm	695–927 rpm
Feed Draper Speed		437–553 fpm	407–495 fpm	393–525 fpm
Roll Type		Intermeshing steel bars		
Roll Diameter		233 mm (9.17 in.) / 168.4 mm (6.63 in.) OD tube		
Roll Length		1830 mm (72 in.)		
Swath Width		915–2540 mm (36–102 in.)		
Forming Shields		Header-mounted tractor-supported adjustable forming shield system		

IMPORTANT:

To avoid excessive vibration and poor performance, the HC10 Hay Conditioner should **NOT** be attached to single-knife drive headers. The HC10 Hay Conditioner is **NOT** intended for use with the M205 Self-Propelled Windrower.

NOTE:

The HC10 is for use on M100 and M105 Self-Propelled Windrowers **ONLY** in markets outside of North America.

2. M1170 Windrowers with compatibility kit (MD #B6978).
3. To avoid poor performance, the HC10 Hay Conditioner should **NOT** be attached to 9.1 m (30 ft.) draper headers in heavy crop conditions.

2.3 Component Identification

To better understand the topics discussed in this manual, familiarize yourself with the component part names and locations.

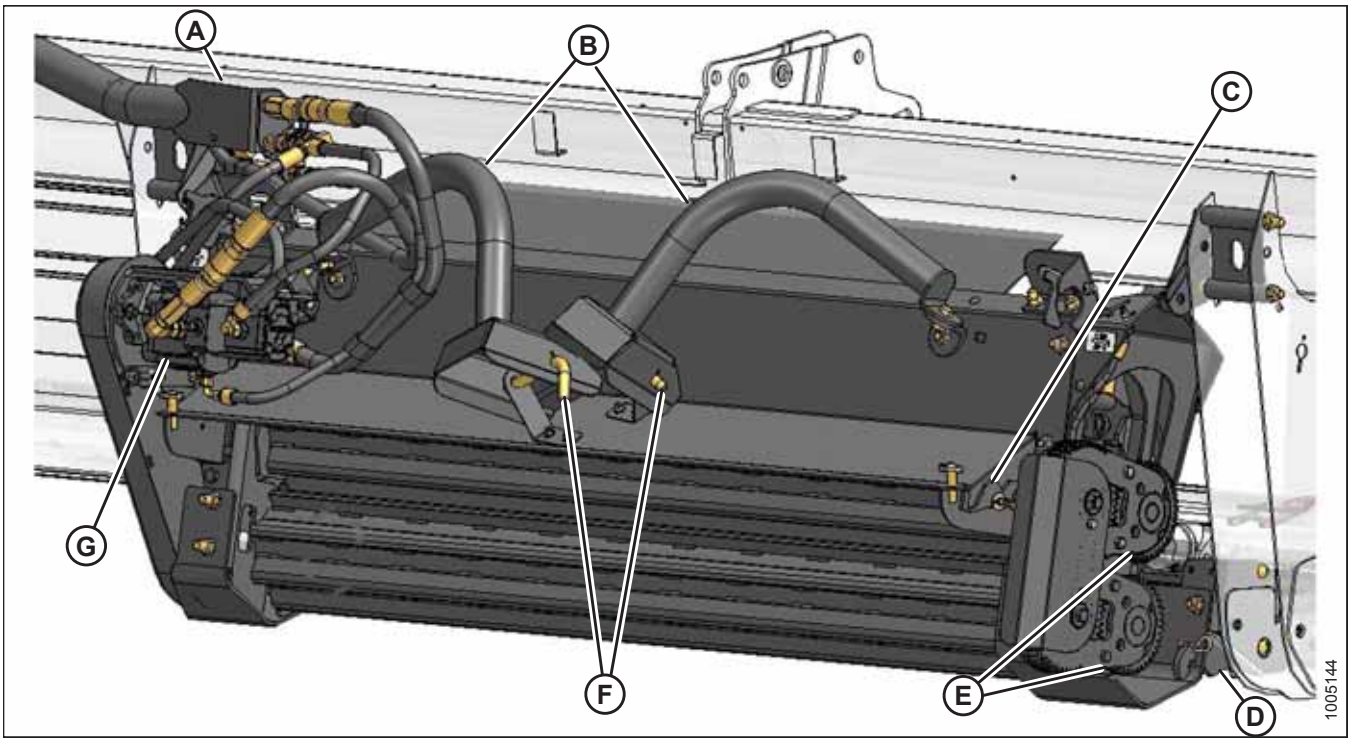


Figure 2.1: Back View of Hay Conditioner Installed in Header

A - Hydraulics to Header
B - Lift Arms
C - Roll Timing Tool
D - Stand
E - Timing Gears
F - L-Pins
G - Hydraulic Motor

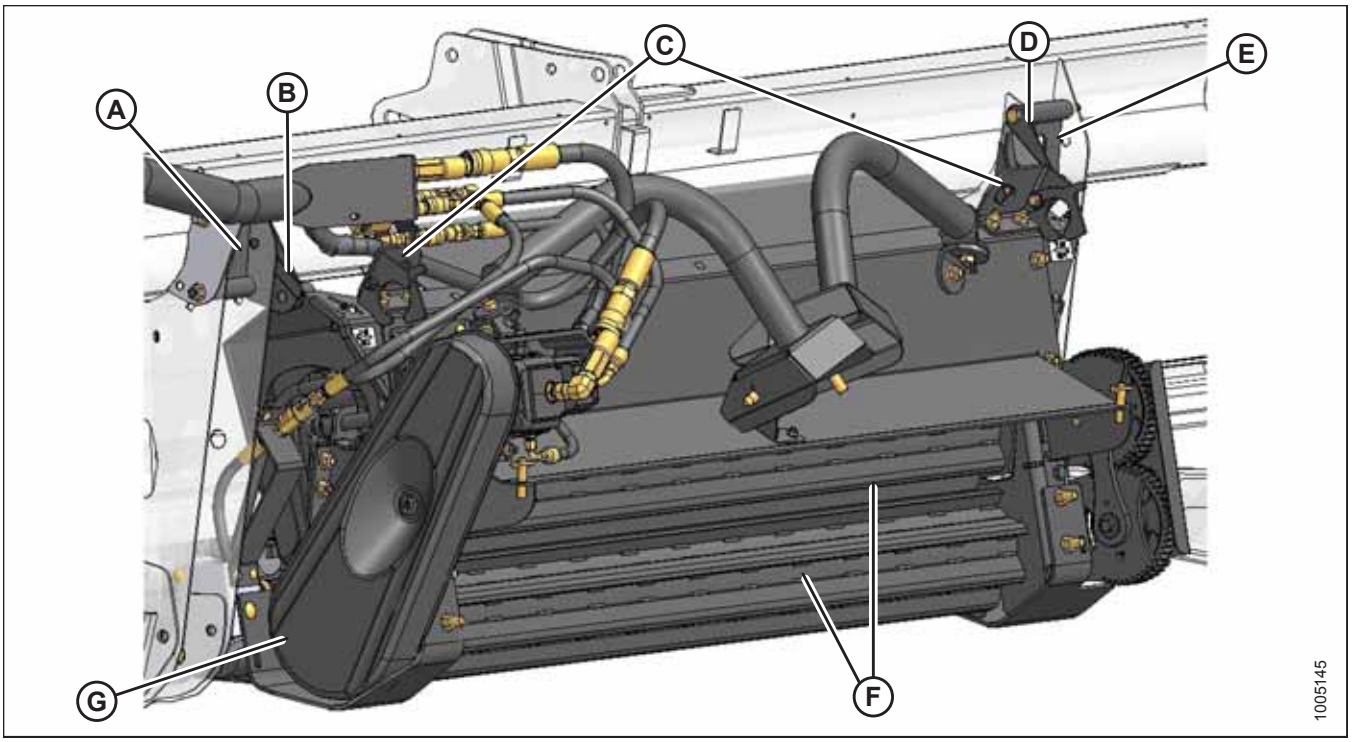


Figure 2.2: Back View of Hay Conditioner Installed in Header

A - Spacer
B - Mounting Bracket
C - Lifting Lugs
D - Mounting Bracket
E - Spacer
F - Rolls
G - Drive Belt Shield

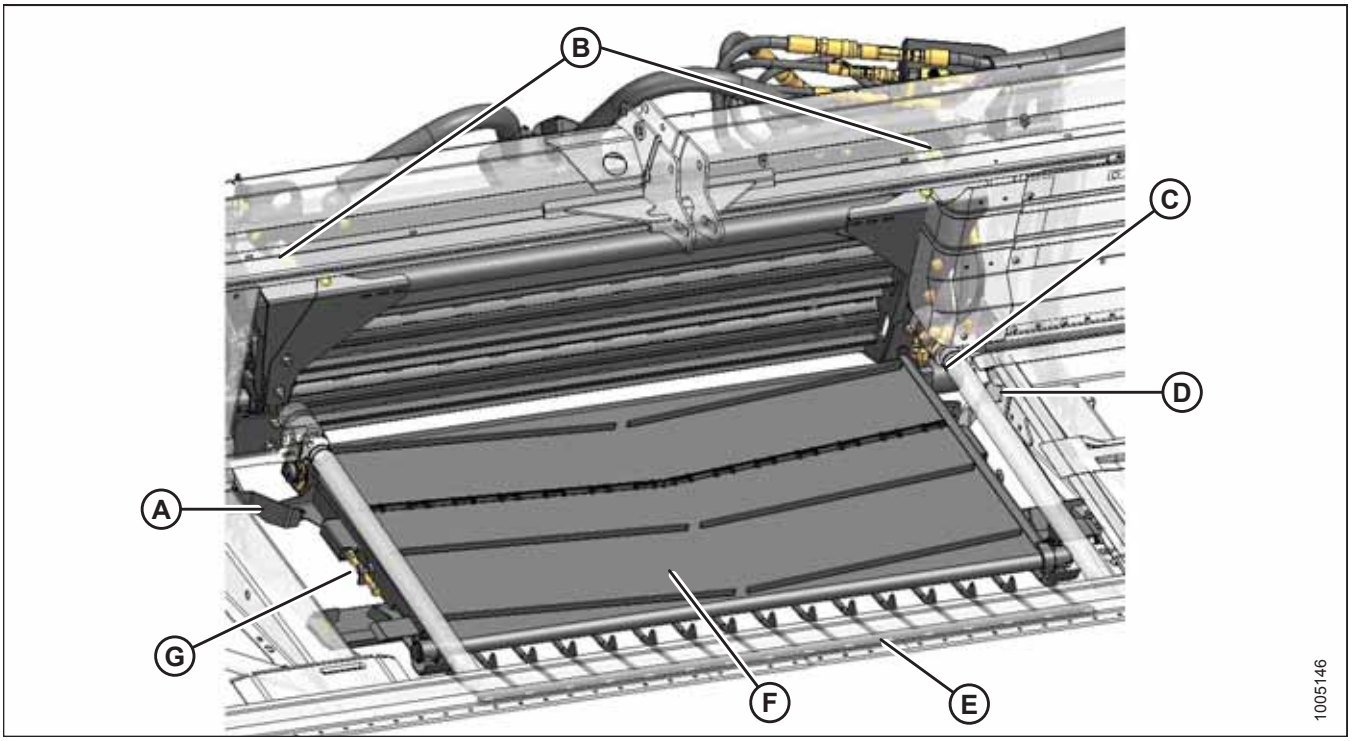


Figure 2.3: Front View of Hay Conditioner Installed in Header

A - Mounting Bracket
B - Roll Gap Adjusters
C - Feed Deck Motor
D - Mounting Bracket
E - Rock Grate
F - Feed Deck
G - Draper Tension Adjusters (2)

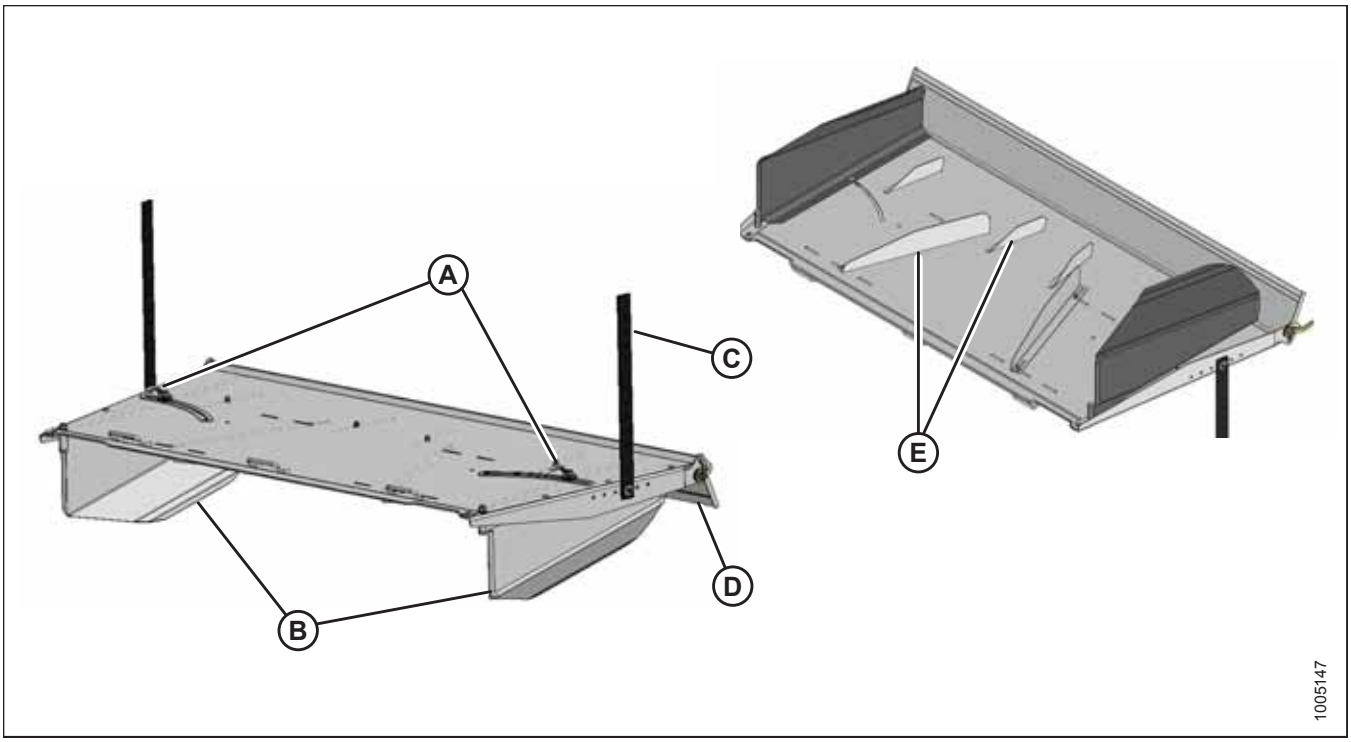


Figure 2.4: Swath Forming Shield

A - Side Deflector Adjusters **B - Side Deflectors** **C - Height Adjust Strap** **D - Fluffer Shield**
E - Deflector Fins

Chapter 3: Unloading and Assembly

To unload and assemble an HC10 Hay Conditioner, follow each of the procedures in this chapter in order.

3.1 Unloading the Hay Conditioner

To unload machines from a shipment safely and without damage, understand the weight limits and lifting requirements, and familiarize yourself with the procedure.

CAUTION

To avoid injury to bystanders from being struck by machinery, do NOT allow people to stand in unloading area.

CAUTION

Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in vehicle tipping or machine damage.

Table 3.1 Lifting Vehicle Requirements

Minimum Lifting Capacity[4]	908 kg (2000 lb.)
Minimum Fork Length	1524 mm (60 in.)

IMPORTANT:

Forklifts are normally rated for a load located 610 mm (24 in.) ahead of the back end of the forks. Check with your forklift distributor to obtain the forklift capacity at 1220 mm (48 in.).

WARNING

Be sure forks are secure before moving away from load. Stand clear when lifting.

Figure 3.1: Hay Conditioner Bundle (MD #B4798)

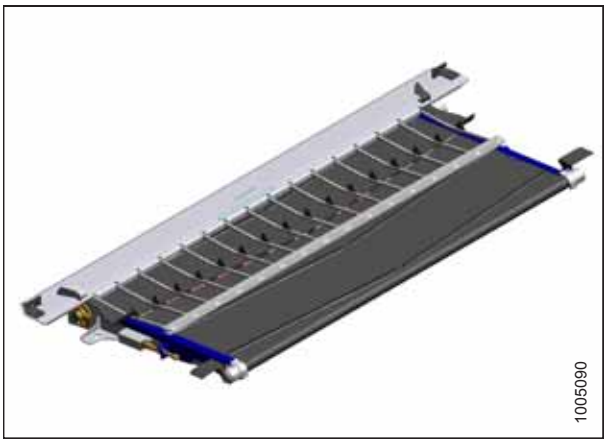


Figure 3.2: Feed Deck Bundle (MD #B4799)

4. At 1220 mm (48 in.) from back end of forks.

1. Remove hauler's tie down straps and chains.
2. Use forklift to lift the first of three pallets of hay conditioner components off of the trailer deck.
3. Back up until the forks and pallet clear the trailer and slowly lower pallet to 150 mm (6 in.) from ground.
4. Take conditioner components to storage or setup area.
5. Set pallet down securely on level ground.
6. Repeat above steps for remaining pallets.
7. Check for shipping damage and missing parts.

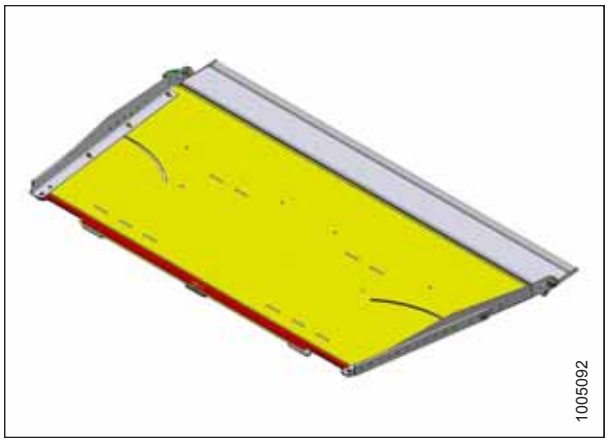


Figure 3.3: Forming Shield Bundle (MD #B4800)

3.2 Preparing the Header

Some header preparation is required before installing the HC10.

1. Adjust header stand (A) to mid-position. For instructions, refer to the header operator's manual.

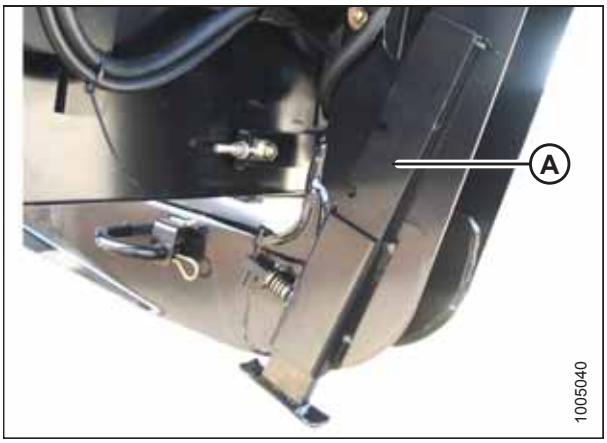


Figure 3.4: Header Stand

2. Trim the plastic deflector along creased line (A) on back of deflector for proper fit up to conditioner.

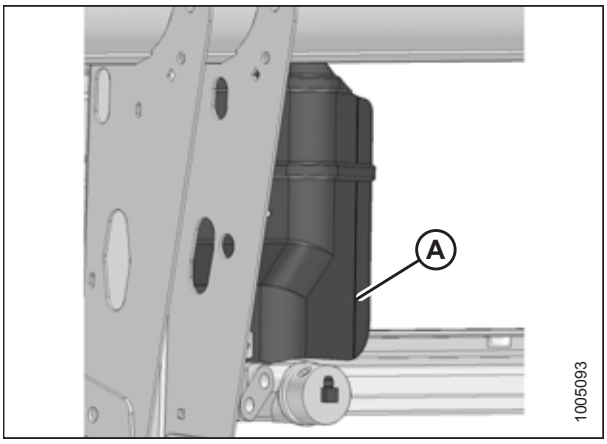


Figure 3.5: Deflector – Rear View of Left Header Opening

3.3 Installing the Rock Grate

The rock grate helps prevent rocks from feeding into the conditioner rolls.

1. Unpack the feed deck / rock grate bundle MD #B4799.
2. Position rock grate (A) between the drapers.
3. Lift rock grate (A) and position rear tabs (C) so they slide over the header leg flanges.
4. Position front lip (B) of rock grate (A) in front of the bottom edge of the cutterbar and slide forward so it engages the cutterbar.
5. If the header is equipped with a cutterbar wearplate, set the rock grate on top of the wearplate in front of the cutterbar, then push down and forward to seat the rock grate onto the cutterbar.

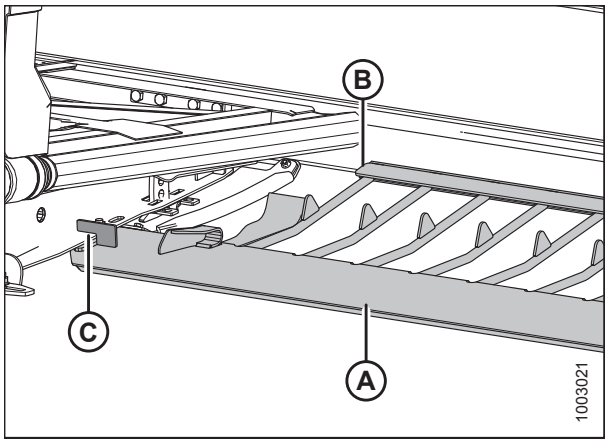


Figure 3.6: Rock Grate

6. Retrieve two 1/2 in. flange nuts and two 1/2 x 1 1/4 in. carriage bolts from the loose parts package shipped with MD #B4799.
7. Ensure rock grate is completely pushed forward, and secure with two 1/2 x 1 1/4 in. carriage bolts installed from below and two 1/2 in. flange nuts (A).
8. Tighten both nuts (A).

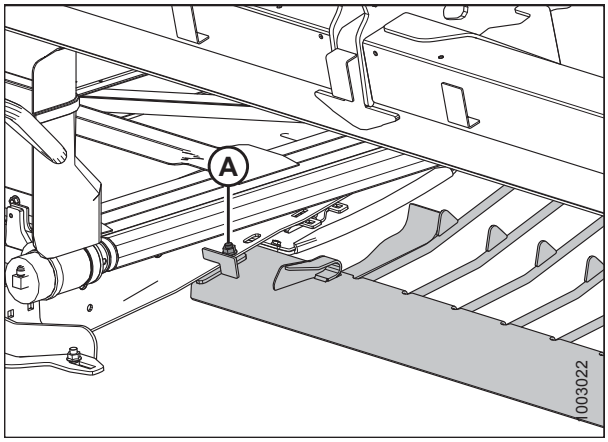


Figure 3.7: Rock Grate – Left Side

3.4 Installing Mounting Brackets

Mounting brackets provide the connection points for the HC10 to attach to the header.

Proceed to the section applicable to the type of header:

- **D115, D120, and D125:** Refer to *3.4.1 Installing HC10 Mounting Brackets – D115, D120, and D125, page 19*.
- **D60, D65, and D130:** Refer to *3.4.2 Installing HC10 Mounting Brackets – D60, D65, and D130, page 22*.

3.4.1 Installing HC10 Mounting Brackets – D115, D120, and D125

Bolt-on mounting brackets are required to connect the HC10 to D115, D120, and D125 headers.

1. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Left lower bracket (MD #130817)
   - Right lower bracket (MD #130831)
   - Two 1/2 in. flange nuts (MD #50186)
   - Two 1/2 x 1 1/4 in. carriage bolts (MD #21471)

   Install lower brackets (A) (Left: MD #130817), (Right: MD #130831) onto the inside of both center header legs with two 1/2 x 1 1/4 in. carriage bolts (MD #21471) and two 1/2 in. flange nuts (B) (MD #50186) in each bracket.

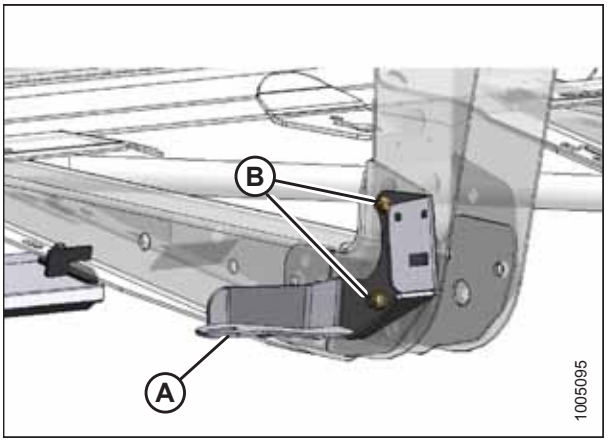


Figure 3.8: Lower Deck Bracket – Right Side

2. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Right upper bracket (MD #130803)
   - One spacer (MD #159700)
   - Two 5/8 in. flange nuts (MD #50225)
   - One 5/8 x 7 1/2 in. hex bolt (MD #135906)

   Install right upper bracket (A) (MD #130803) and spacer (B) (MD #159700) on the right center leg as shown in illustration, and install one 5/8 in. flange nut (C) (MD #50225).

   NOTE:

   On headers with a sheet metal hose cover, install bolts from the outboard side.

3. Install 5/8 x 7 1/2 in. hex bolt (D) (MD #135906) through the bracket and spacer and secure it with one 5/8 in. flange nut (E) (MD #50225).
4. Tighten both nuts (C) and (E).

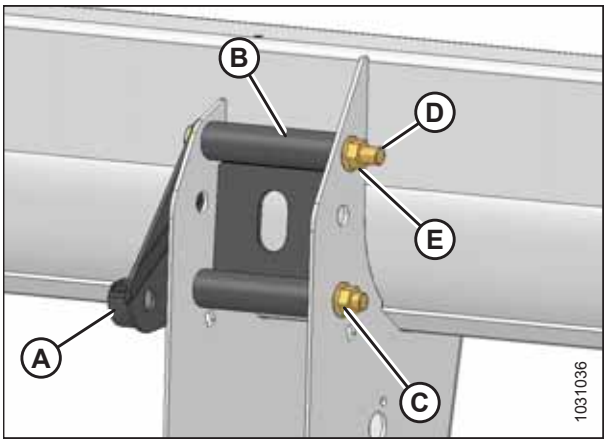


Figure 3.9: Upper Bracket – 15-Foot Header Shown

5. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Left upper bracket (MD #130802)
   - One spacer (MD #159700)

   Install left upper bracket (A) (MD #130802) and spacer (B) (MD #159700) onto the inboard side of left center leg as shown in the illustration.

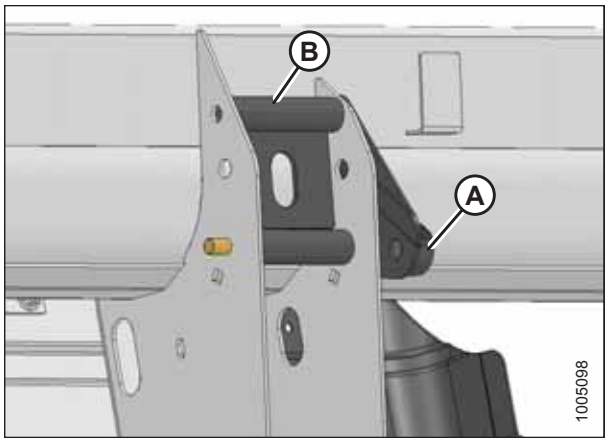


Figure 3.10: Upper Bracket – Left

6. Remove hose guide (A) located near the left center leg.

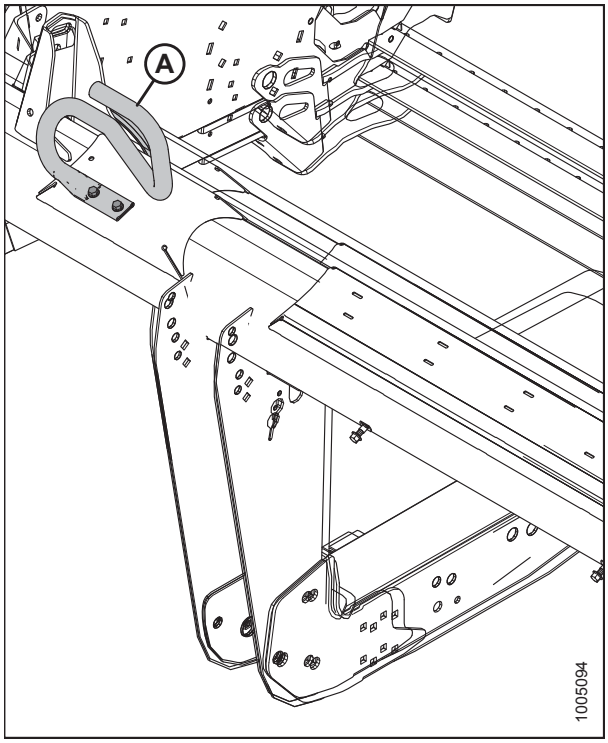


Figure 3.11: Hose Guide – D115 Header Shown

7. Retrieve the following parts from MD #B4798:
   - Hydraulic completion assembly

   Retrieve the following parts from the finishing package shipped with MD #B4798:
   - Adapter plate (MD #159734)

   Retrieve the following parts from the hardware bag shipped with MD #B4798:
   - Two 5/8 x 1 in. bolts (MD #113611)
   - Two 5/8 in. flange nuts (MD #50225)

   Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Two 5/8 in. flange nuts (MD #50225)
   - One 5/8 x 7 1/2 in. hex bolt (MD #135906)

   Attach adapter plate (A) to the left center leg.

8. Install 5/8 x 7 1/2 in. hex bolt (B) (MD #135906) through bracket, spacer, and adapter plate (A).

   NOTE:

   On headers with a sheet metal hose cover, install bolts from the outboard side.

9. Secure bolts with two 5/8 in. flange nuts (C). Tighten nuts.
10. Attach hose assembly (A) to adapter plate (B) using two 5/8 x 1 in. bolts (B)and two 5/8 in. flange nuts (C).
11. Tighten nuts (C).

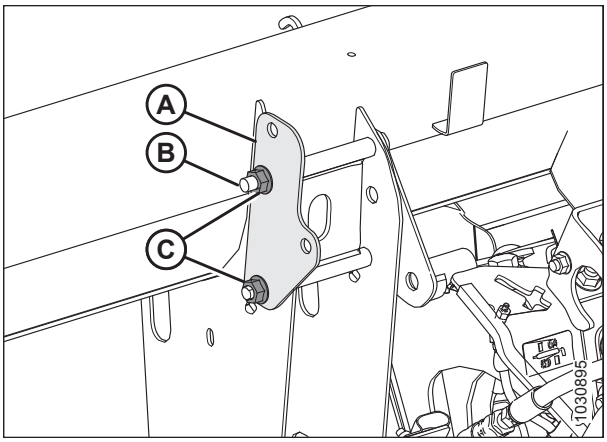


Figure 3.12: Adapter Plate

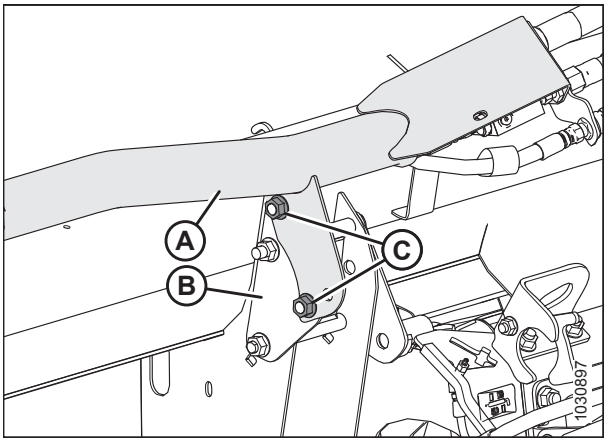


Figure 3.13: Hose Assembly

3.4.2 Installing HC10 Mounting Brackets – D60, D65, and D130

Bolt-on mounting brackets are required to connect the HC10 to D60, D65, and D130 headers.

1. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Left lower bracket (MD #130817)
   - Right lower bracket (MD #130831)
   - Two 1/2 in. flange nuts (MD #50186)
   - Two 1/2 x 1 1/4 in. carriage bolts (MD #21471)

   Install lower brackets (A) (Left: MD #130817), (Right: MD #130831) onto the inside of both center header legs with two 1/2 x 1 1/4 in. carriage bolts (MD #21471) and two 1/2 in. flange nuts (B) (MD #50186) in each bracket.

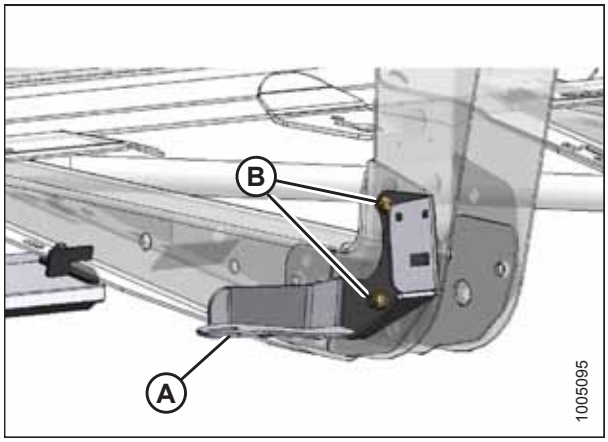


Figure 3.14: Lower Deck Brackets

2. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Right upper bracket (MD #130803)
   - One spacer (MD #159700)
   - Two 5/8 in. flange nuts (MD #50225)
   - One 5/8 x 7 1/2 in. hex bolt (MD #135906)

   Install right upper bracket (A) (MD #130803) and spacer (B) (MD #159700) on the right center leg as shown in the illustration, and install one 5/8 in. flange nut (C) (MD #50225).

   NOTE:

   On headers with a sheet metal hose cover, install bolts from the outboard side.

3. Install 5/8 x 7 1/2 in. hex bolt (D) (MD #135906) through the bracket and spacer and secure it with one 5/8 in. flange nut (E) (MD #50225).
4. Tighten both nuts (C) and (E).

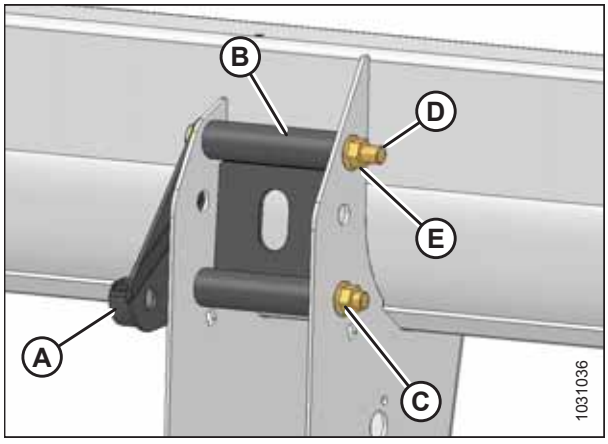


Figure 3.15: Upper Bracket – D60/D65 4.6 m (15 ft.) Header Shown

5. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Left upper bracket (MD #130802)
   - One spacer (MD #159700)

   Install left upper bracket (A) (MD #130802) and spacer (B) (MD #159700) onto the inboard side of left center leg as shown in the illustration.

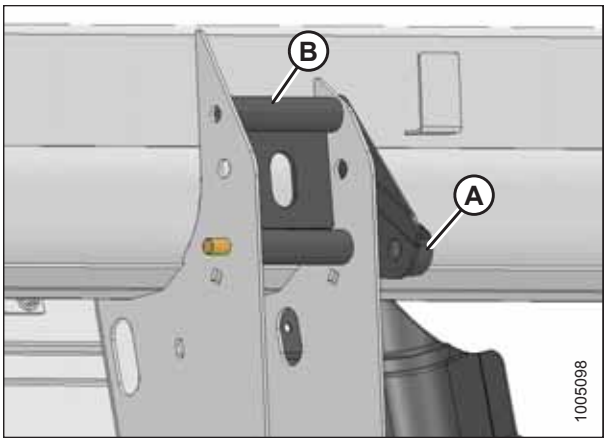


Figure 3.16: Upper Bracket – Left

6. Remove hose guide (A) located near the left center leg.

   NOTE:

   For 6.1 m (20 ft.) and larger headers, this guide is mounted on sheet metal hose cover.

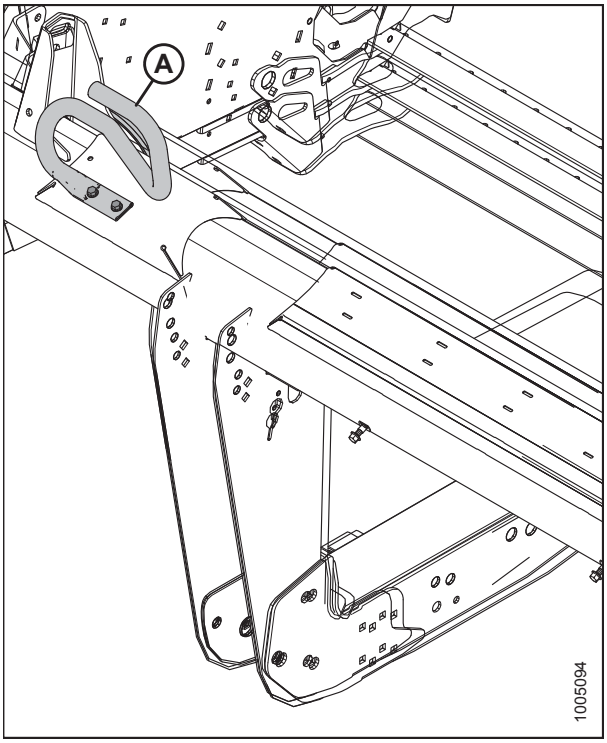


Figure 3.17: Hose Guide – D60/D65 4.6 m (15 ft.) Header Shown

7. Retrieve the following parts from MD #B4798:
   - Hydraulic completion assembly

   Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Two 5/8 in. flange nuts (MD #50225)
   - One 5/8 x 7 1/2 in. hex bolt (MD #135906)

   Attach hose assembly (A) onto the left center leg and install 5/8 in. flange nut on lower bolt (C). Ensure correct hole is used when attaching hose assembly (use hole [D] for 4.6 m (15 ft.) D60/D65 headers).

   NOTE:

   On headers with a sheet metal hose cover, install bolts from the outboard side.

8. Install 5/8 x 7 1/2 in. hex bolt (B) (MD #135906) through bracket, spacer, and hose assembly and secure with 5/8 in. flange nut (MD #50225).

9. Tighten both nuts.

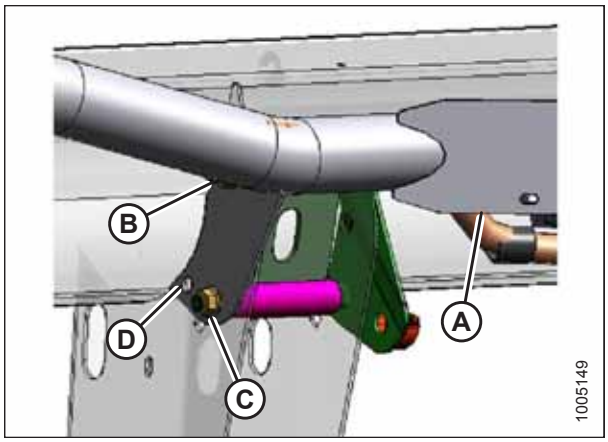


Figure 3.18: Hose Assembly – 6.1–9.1 m (20–30 ft.) Header Shown

3.5 Installing the Feed Draper Deck

The feed draper deck conveys crop from the side drapers to the conditioner rolls.

1. Retrieve feed deck assembly (A) from MD #B4799. Slide feed deck (A) under the header opening from the rear. The deck drive motor faces aft.

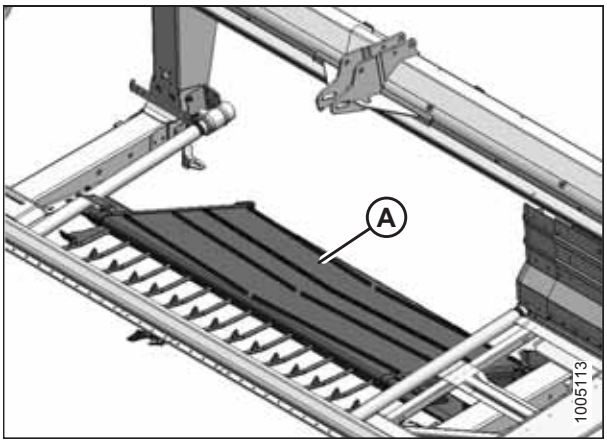


Figure 3.19: Feed Deck

2. Set the front of deck (A) onto the rock grate and slide the feed deck forward until locating pins (B) reach the pockets on the rock grate.
3. Lift the rear of the feed deck so the mounts on the deck clear the brackets on the leg, and then slide the deck forward until the mounting pins are fully positioned inside the pockets.

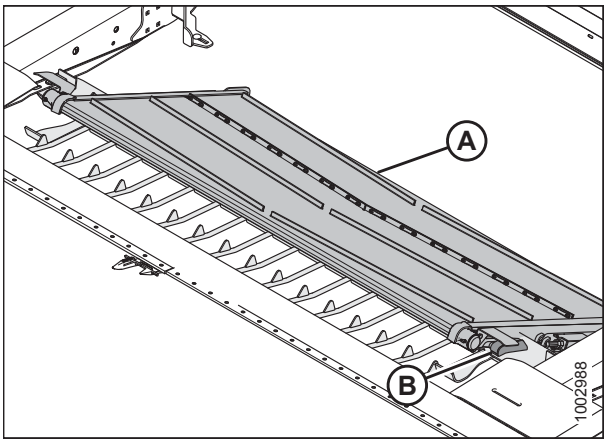


Figure 3.20: Feed Deck

4. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Two 1/2 in. flange nuts (MD #50186)
   - Two 1/2 x 1 1/4 in. carriage bolts (MD #21471)

   Install one 1/2 in. flange nut (A) (MD #50186) and one 1/2 x 1 1/4 in. carriage bolt (MD #21471) at the rear left mounting bracket.

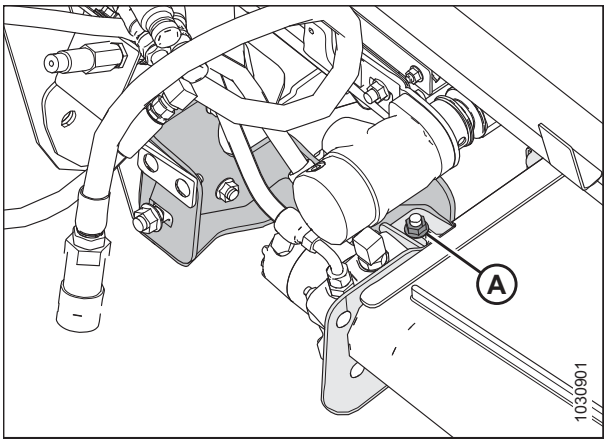


Figure 3.21: Feed Deck – Left Side

5. Install one 1/2 in. flange nut (A) (MD #50186) and one 1/2 x 1 1/4 in. carriage bolt (MD #21471) at the rear right mounting bracket.

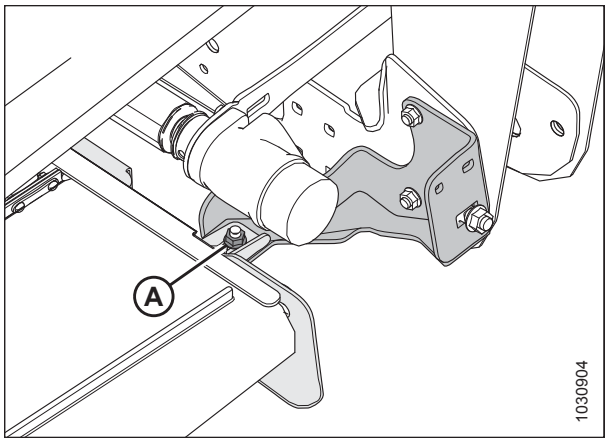


Figure 3.22: Feed Deck – Right Side

6. Attach hose bracket (A) (MD #159183) to the mounting bracket with two 3/8 x 1.0 in. long carriage bolts (B) (MD #19965) and two 3/8 in. flange nuts (MD #30228).

   NOTE:

   Hose bracket (A), bolts (B) and nuts are part of the feed deck assembly shipped with MD #B4799.

7. Adjust header side drapers to overlap feed deck by 65–75 mm (2-1/2–3 in.). Refer to header operator's manual for procedure.

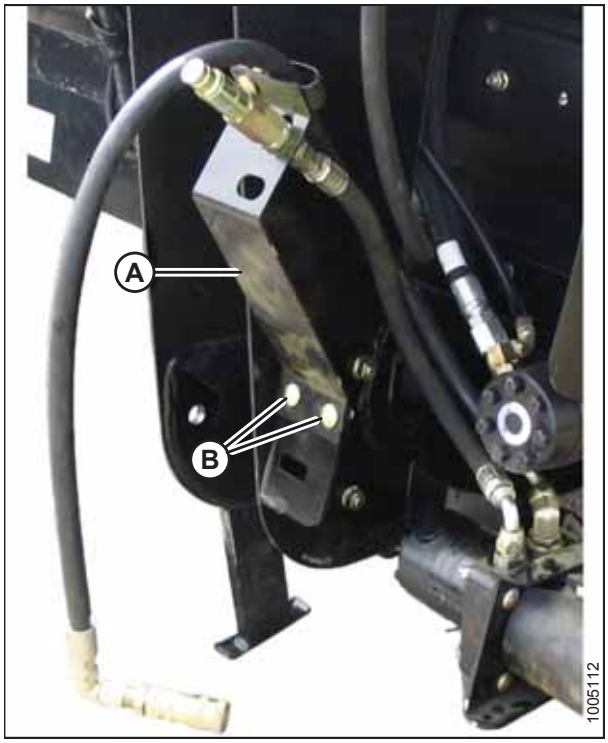


Figure 3.23: Hose Bracket

3.6 Installing the Conditioner

The HC10 conditioner is connected to the header mechanically and hydraulically.

There are two methods for installing the conditioner. Refer to the following sections for instructions:

- The lifting method, refer to *3.6.1 Installing Conditioner – Lifting Method, page 27*
- The windrower method, refer to *3.6.2 Installing Conditioner – Windrower Method, page 29*

3.6.1 Installing Conditioner – Lifting Method

If Installing the HC10 with a chain and a suitable lifting device, ensure you read and understand the lifting vehicle and chain requirements before proceeding.

CAUTION

Equipment used for unloading must meet or exceed the requirements specified below. Using inadequate equipment may result in vehicle tipping or machine damage.

Table 3.2 Lifting Vehicle Requirements

Minimum Lifting Capacity[5]	908 kg (2000 lb.)
Minimum Fork Length	1524 mm (60 in.)

IMPORTANT:

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

Table 3.3 Lifting Chain Requirements

Chain Type	Overhead Lifting Quality (1/2 in.)
Minimum Working Load	2270 kg (5000 lb.)

To install the conditioner using the lifting method, follow these steps:

1. Attach a chain to lifting brackets (A) on the conditioner and secure chain to lifting device (B).
2. Lift the conditioner to upright position.
3. Remove the shipping blocks if present.
4. Position the conditioner into the header opening from the rear.

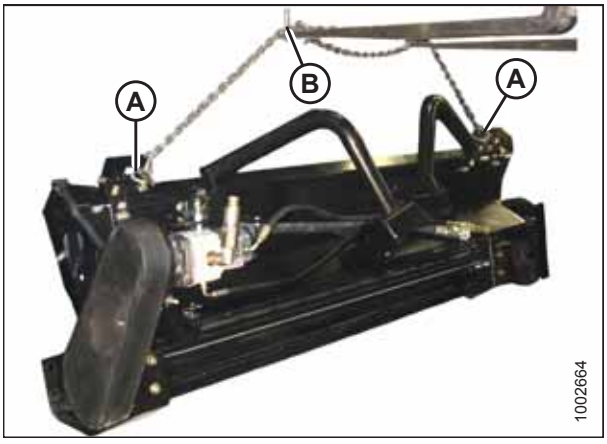


Figure 3.24: Conditioner and Lifting Brackets

5. At 1220 mm (48 in.) from back end of forks.

5. Carefully lower the conditioner between the windrower lift legs until lugs (A) on the conditioner are seated in the U-shaped brackets (B) on header.
6. Ensure the conditioner is seated properly in the brackets, and then remove the chains.

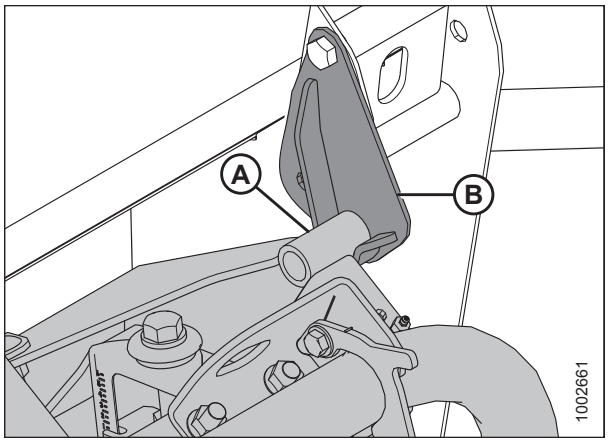


Figure 3.25: Conditioner Lug

7. Retrieve the following parts from the loose parts package shipped with MD #B4799:
   - Two 5/8 in. flange nuts
   - Two 5/8 in. x 1 1/2 in. carriage bolts

   Install one 5/8 in. flange nut (A) and one 5/8 in. x 1 1/2 in. carriage bolt in the lower right attachment location.

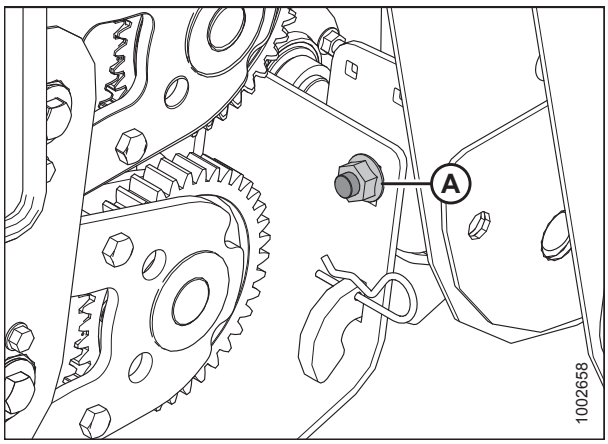


Figure 3.26: Conditioner – Right Side

8. Install one 5/8 in. flange nut (A) and one 5/8 in. x 1 1/2 in. carriage bolt in the lower left attachment location.

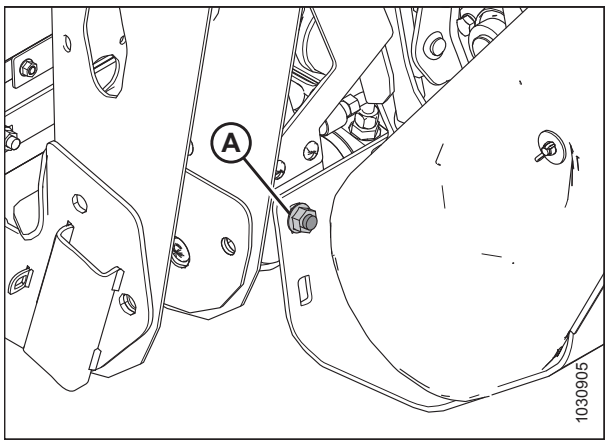


Figure 3.27: Conditioner – Left Side

3.6.2 Installing Conditioner – Windrower Method

The windrower can be used to set the HC10 into the header brackets.

DANGER

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

1. Lower the header stand (A) to the mid-position.

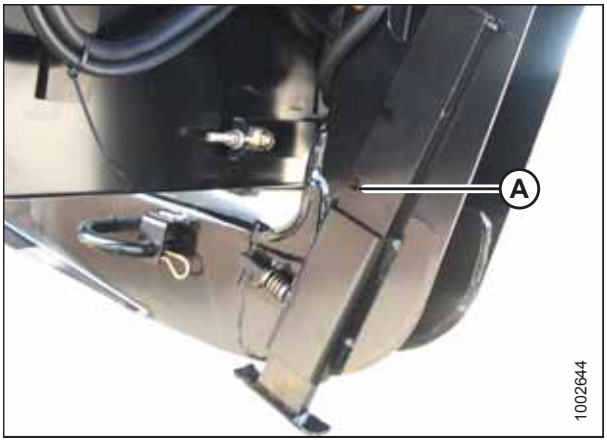


Figure 3.28: Header Stand

2. Attach chain (A) to lifting brackets (B) on the conditioner and secure the chain to the lifting device.
3. Lift the conditioner off the shipping pallet and set on the ground in the upright position.

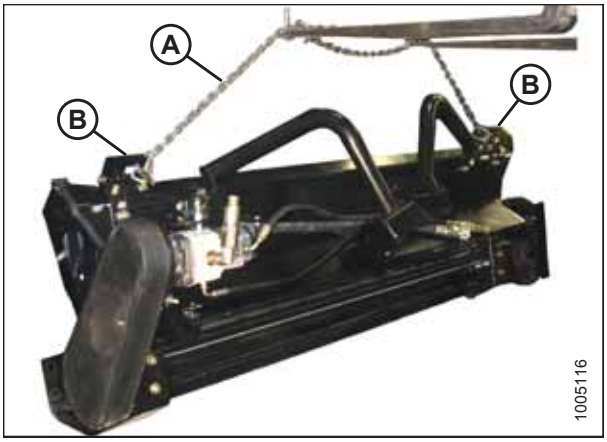


Figure 3.29: Conditioner and Lifting Brackets

4. Retrieve the following parts from the finishing package shipped with MD #B4798:
   - Support

   Retrieve the following parts from the hardware bag shipped with MD #B4798:
   - Hairpin

   Install support (A) in slot in base at lower right end of conditioner. Secure support with hairpin (B).
5. Remove shipping blocks if present.

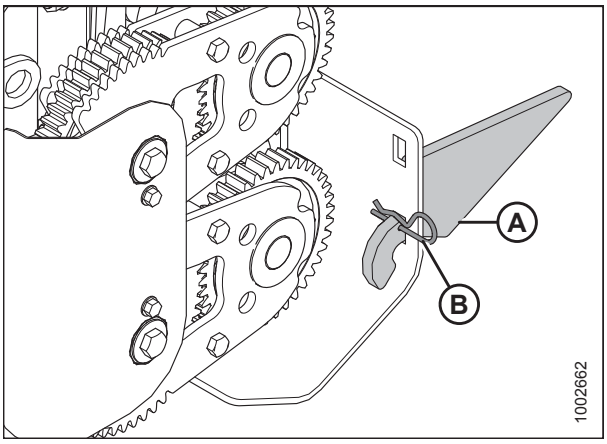


Figure 3.30: Conditioner Support

6. Remove bolt and nut (A) attaching lift arm (B) to bracket (C).
7. Loosen nut (D) enough to rotate bracket (C).
8. Remove L-pin (E) securing lift arm (B) to the conditioner.

   NOTE:

   Rotate pin (E) to align the key-hole slot.
9. Remove lift arm (B).

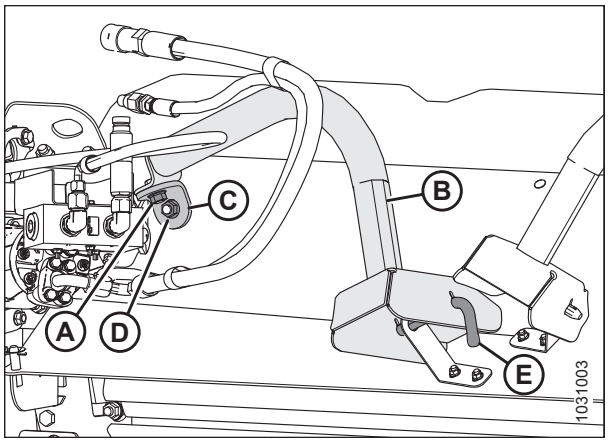


Figure 3.31: Lift Arm – Left Side

10. Position lift arm (A) as shown and secure with latch (D).
11. Reattach lift arm (A) to bracket (B) using nut and bolt (C).
12. Tighten hardware (E) to secure bracket (B) to the conditioner. Tighten hardware (C) to secure lift arm (A) to bracket (B).
13. Repeat Step *6, page 30* to Step *12, page 30* for the other lift arm.

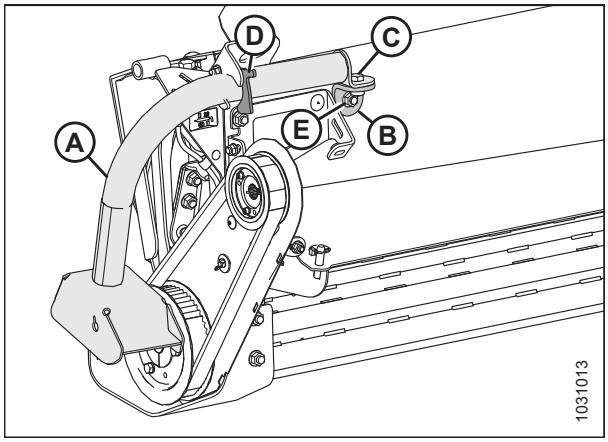


Figure 3.32: Conditioner – Left Side

14. Position the windrower arms in the lift arm pockets of the HC10.
15. Shut down the engine, and remove the key from the ignition.
16. Engage the header safety props.
17. Insert L-pins (A) for safety.

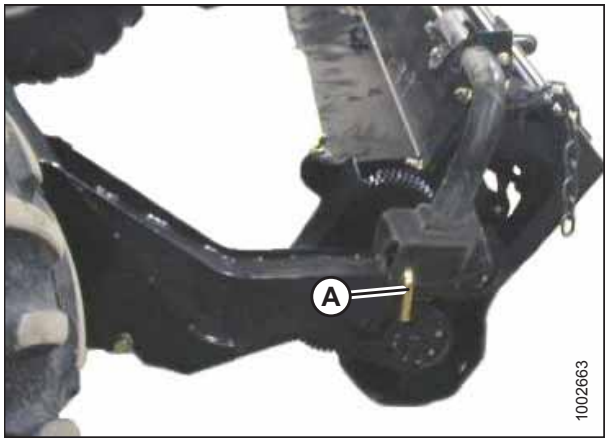


Figure 3.33: Windrower Arms

18. Remove support (A) and store with hairpin (B) in the toolbox.
19. Lift the conditioner and position it into the header opening from the rear.

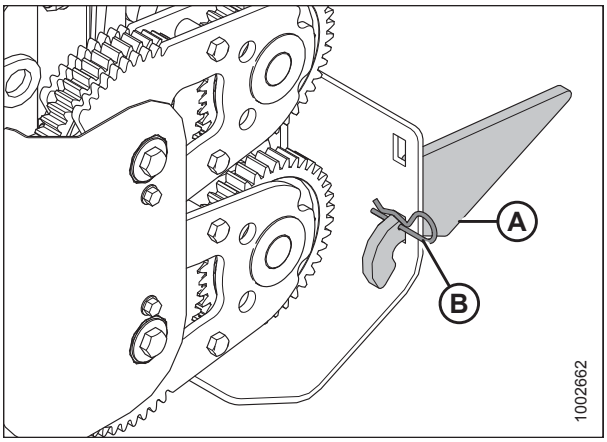


Figure 3.34: Conditioner Stand

20. Carefully lower the windrower lift legs until lugs (A) on the conditioner are seated in U-shaped brackets (B) on header.
21. Ensure the conditioner is seated properly in the brackets before you disconnect from the windrower.
22. Disconnect the windrower from the HC10.
23. Shut down the engine, and remove the key from the ignition.

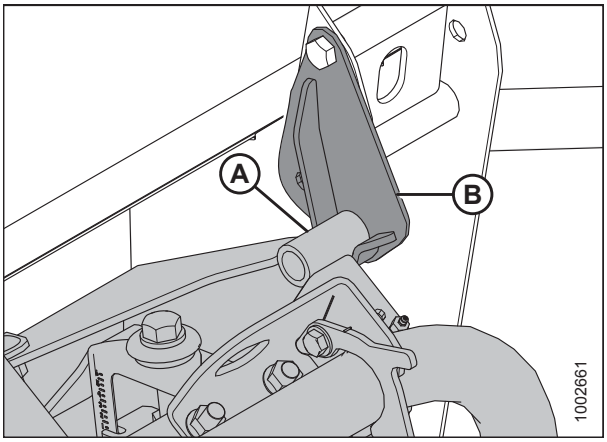


Figure 3.35: Conditioner Lug

24. Remove bolt and nut (A) attaching swing arm (B) to bracket (C).
25. Loosen bolt and nut (D) enough to rotate bracket (C).
26. Open latch (E) and remove swing arm (A).

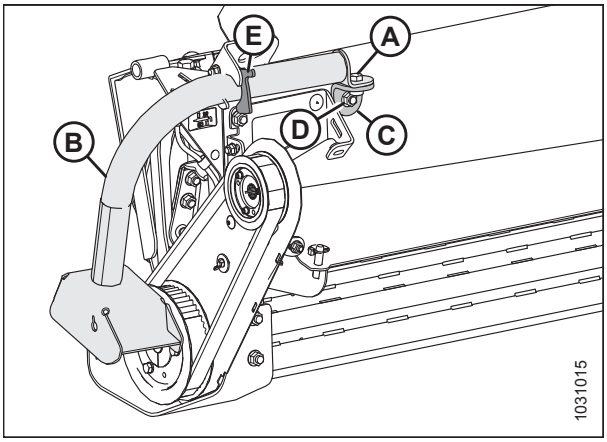


Figure 3.36: Conditioner – Left Side

27. Place lifting arm (A) into storage position as shown.
28. Reattach lift arm (A) to bracket (B) using nut and bolt (C). Leave hardware loose.
29. Secure lifting arm using L-pin (D).

    NOTE:

    Rotate pin (D) to align the key-hole slot.
30. Tighten hardware (E) to secure bracket (B) to the conditioner. Tighten hardware (C) to secure lift arm (A) to bracket (B).
31. Repeat Steps *6, page 30* to *24, page 31* for the other lifting arm.

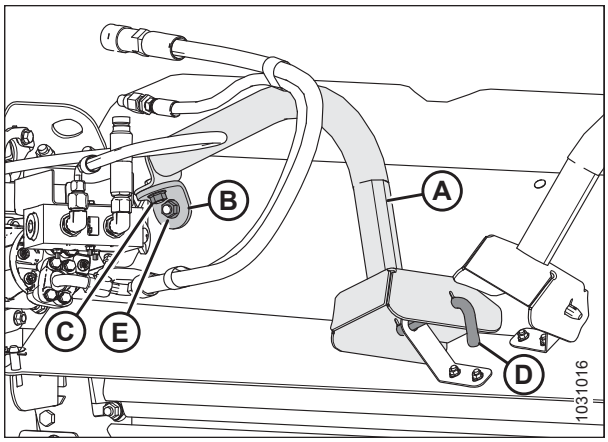


Figure 3.37: Lifting Arm – Left Side

32. Retrieve the following parts from the loose parts package shipped with MD #B4799:
    - Two 5/8 in. flange nuts
    - Two 5/8 in. x 1 1/2 in. carriage bolts

    Install one 5/8 in. flange nut (A) and one 5/8 in. x 1 1/2 in. carriage bolt in the lower right attachment location.

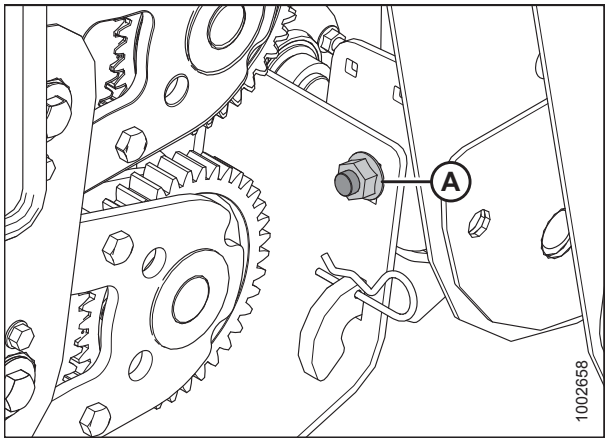


Figure 3.38: Conditioner – Right Side

33. Install one 5/8 in. flange nut (A) and one 5/8 in. x 1 1/2 in. carriage bolt in the lower left attachment location.

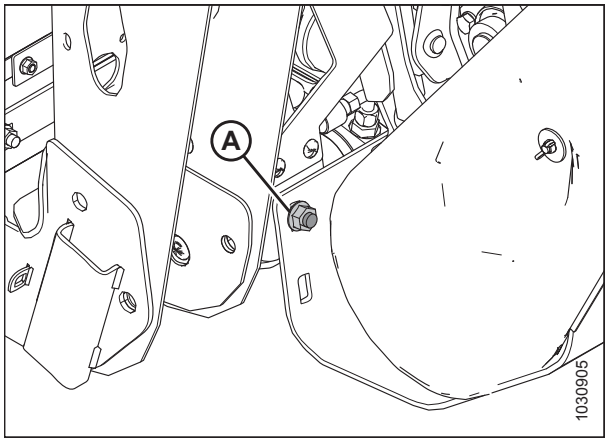


Figure 3.39: Conditioner – Left Side

3.7 Attaching Hydraulics

There are two separate topics for attaching hydraulics because the procedure is different for 4.6 m (15 ft.) draper headers.

- If attaching a 4.6 m (15 ft.) header, refer to *3.7.1 Attaching Hydraulics – 4.6 m (15 ft.) Headers, page 33*.
- If attaching any other size header, refer to *3.7.2 Attaching Hydraulics – All Headers Except 4.6 m (15 ft.), page 36*.

3.7.1 Attaching Hydraulics – 4.6 m (15 ft.) Headers

Installing hoses, couplers, and fittings included with the HC10 is required to interface with the 4.6 m (15 ft.) header hydraulics.

1. Disconnect return hose (A) at elbow on motor.

Figure 3.40: Return Hose – D Series Shown, D1 Series Similar

2. Install check valve tee (A) on elbow and reconnect return hose (B) to tee (A).
3. Connect feed draper return line (C) from the conditioner hose package onto the check valve.

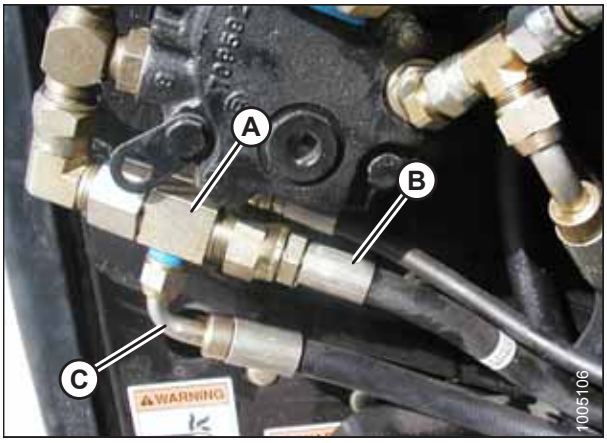


Figure 3.41: Check Valve and Hoses – D Series Shown, D1 Series Similar

4. Remove knife drive coupler (A), draper drive coupler (B), and case drain coupler (C) along with its extension tube (D).

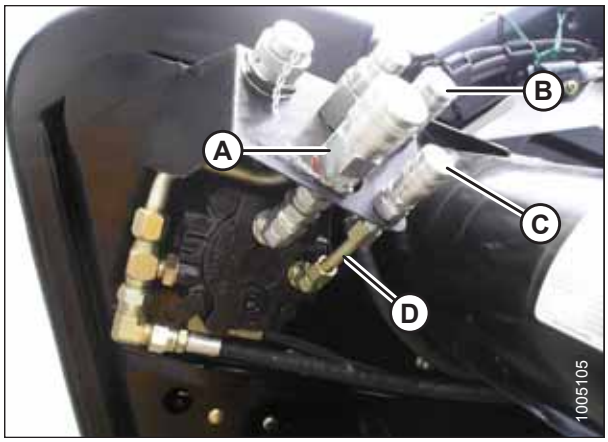


Figure 3.42: Hydraulic Couplers – D Series Shown, D1 Series Similar

5. Retrieve all parts from the hydraulics bag shipped with bundle MD #B4798:
   - Coupler bracket (A)
   - Female union

   Position coupler bracket (A) on housing.

6. Reinstall draper drive coupler (B) in its original location and install knife drive coupler (C) onto the end of new bracket (A).

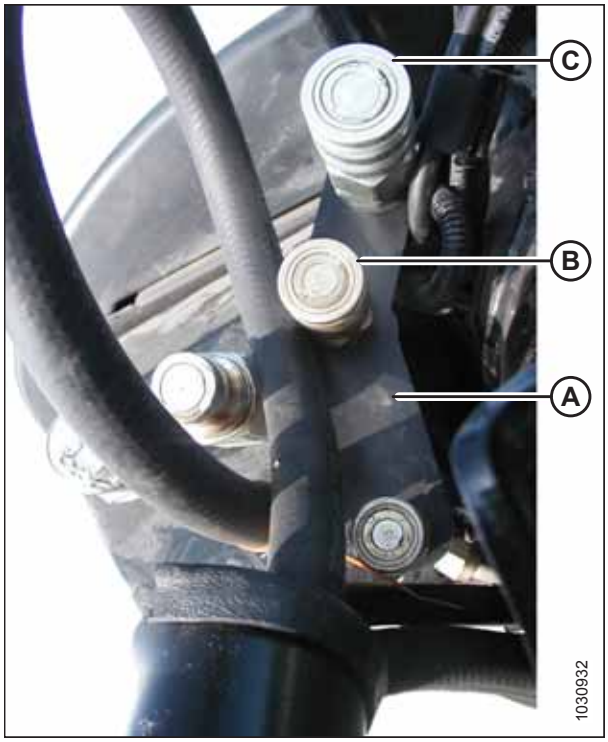


Figure 3.43: Hydraulic Couplers – D Series Shown, D1 Series Similar

7. Install tee fitting (A) and female union (B) onto the motor case drain.
8. Reinstall case drain coupler (C).
9. Route conditioner case drain hose (D) (45° bent tube) behind the motor and connect to tee fitting (A).

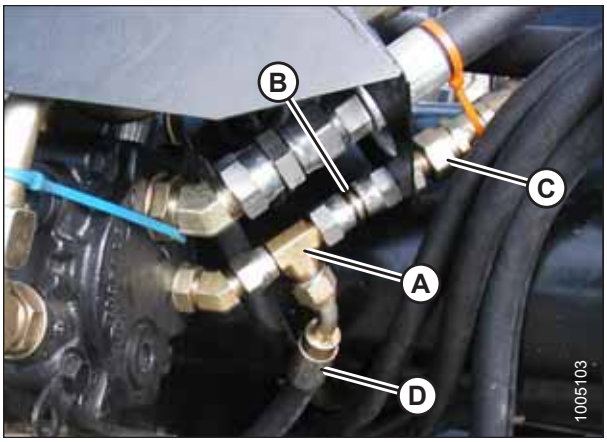


Figure 3.44: Case Drain Hydraulics – D Series Shown, D1 Series Similar

10. Route conditioner pressure hose (A) (orange cable tie) behind the motor and attach it to coupler (B).

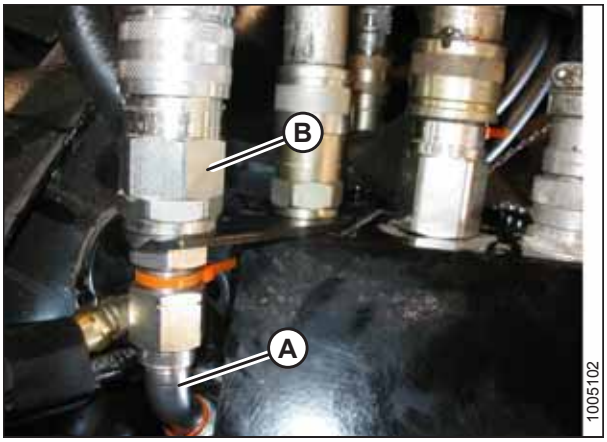


Figure 3.45: Conditioner Hydraulics – D Series Shown, D1 Series Similar

11. Loop conditioner return line (A) over top of the couplers and connect to pressure port (B) on the motor. Ensure that all hoses will be clear of windrower tires.

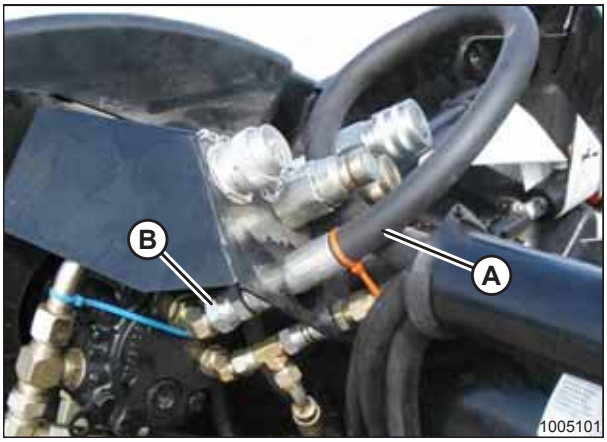


Figure 3.46: Conditioner Hydraulics – D Series Shown, D1 Series Similar

12. Connect the five HC10 hydraulic hoses to the header at the following locations:
    - Hose (A) with small male quick-disconnect from motor to header
    - Hose (B) with large female quick-disconnect from motor to header
    - Hose (C) with small female quick-disconnect from deck to header
    - Hose (D) with small female quick-disconnect from motor to deck
    - Hose (E) with large female quick-disconnect from header to motor

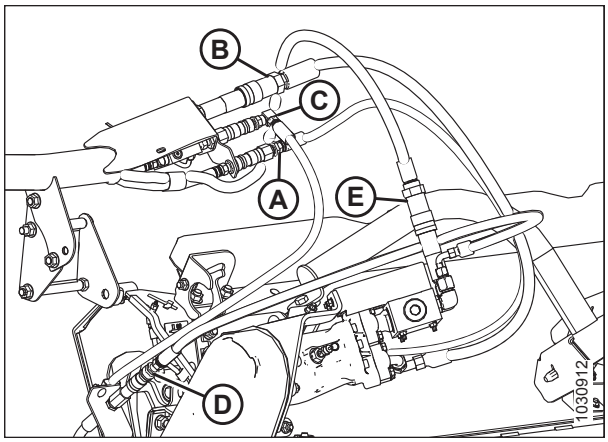


Figure 3.47: Hydraulic Hoses

A - Case Drain
B - Conditioner Motor Pressure
C - Deck Motor Return
D - Deck Motor Pressure
E - Conditioner Motor Return

3.7.2 Attaching Hydraulics – All Headers Except 4.6 m (15 ft.)

Installing hoses, couplers, and fittings included with the HC10 is required to interface header hydraulics.

1. Remove hose cover (A) from left coupler mount.
2. Disconnect side draper return hose (C) at the main return tee (refer to item [E] in the figure below).

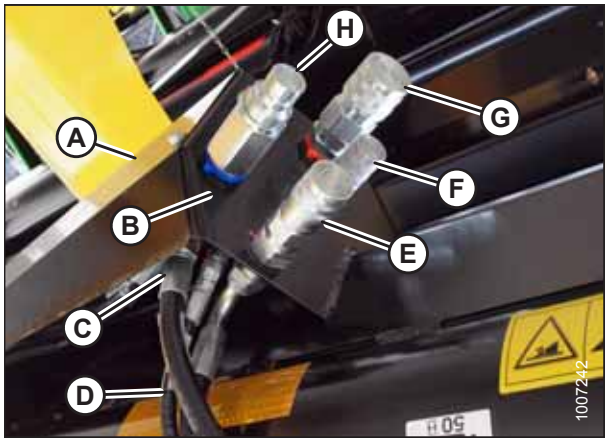


Figure 3.48: Hydraulic Coupler Components – D Series Shown, D1 Series Similar

A - Hose Cover
B - Coupler Mount
C - Side Draper Return
D - Left Draper Case Drain
E - To Side Drapers (Pressure)
F - Case Drain Coupler
G - Knife/Conditioner Pressure
H - Header Return

3. Detach knife motor case drain line (D) from the bulkhead fitting at coupler mount (A).
4. Install conditioner case tee fitting (B) and conditioner case drain line (C).
5. Remove knife drive hose (G).

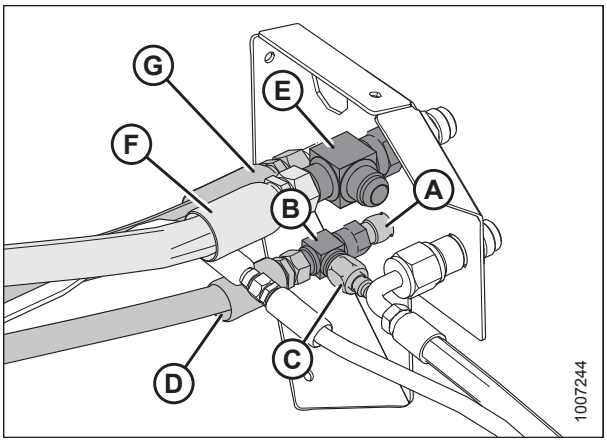


Figure 3.49: Hydraulic Coupler Components – D Series Shown, D1 Series Similar

A - Coupler Mount
B - Conditioner Case Tee
C - Conditioner Case Drain
D - Knife Motor Case Return
E - Header Return Tee
F - Knife Return
G - Knife Drive Hose

6. Install check valve tee (A) on main return tee (E).

   NOTE:

   Arrow on check valve tee fitting should face up.
7. Connect feed draper return hose (C) with the blue tie to check valve tee (A).
8. Reinstall side draper return hose (B) that was removed in Step *2, page 36*, to new check valve tee (A).
9. Connect conditioner return hose (D) with union to knife drive hose (F) removed in Step *5, page 37*.
10. Connect conditioner drive hose (G) with orange tie to the coupler where knife drive hose was removed in Step *5, page 37*.
11. Bundle the hoses with cable ties as required. Ensure hoses do **NOT** contact sharp edges.
12. Reinstall the hose cover.

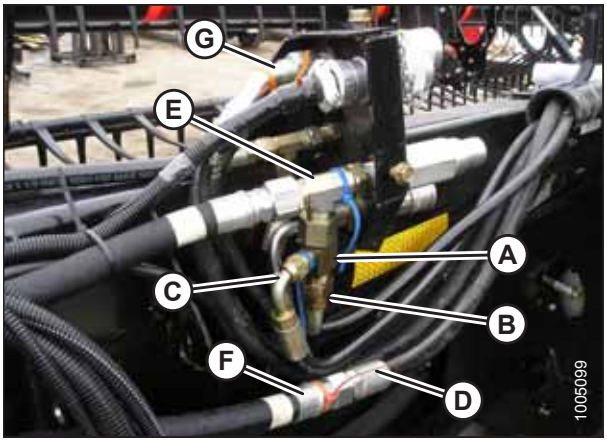


Figure 3.50: Hydraulic Coupler Components – D Series Shown, D1 Series Similar

A - Check Valve Tee
B - Side Draper Motor Return
C - Feed Draper Return
D - Conditioner Return
E - Header Return Tee
F - Knife Drive Hose
G - Conditioner Drive

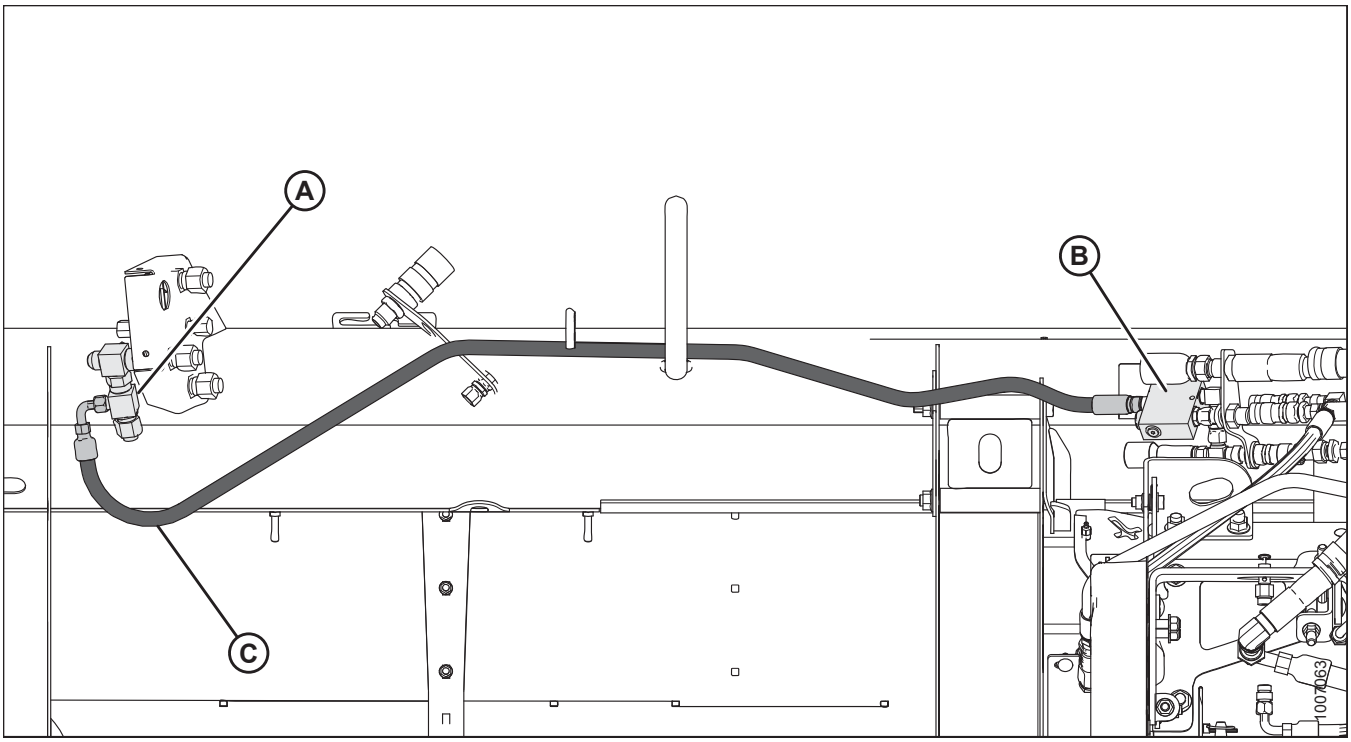


Figure 3.51: Feed Draper Return Hydraulics – Shields Removed to Expose the Feed Draper Return Hose Connection

A - Check Valve Tee **B - Pressure Reducing Valve** **C - Feed Draper Return Hose**

13. While referencing the illustration to the right, connect the five HC10 hydraulic hoses to the header at the following locations:
    - Hose (A) with small male quick-disconnect from motor to header
    - Hose (B) with large female quick-disconnect from motor to header
    - Hose (C) with small female quick-disconnect from deck to header
    - Hose (D) with small female quick-disconnect from motor to deck
    - Hose (E) with large female quick-disconnect from header to motor

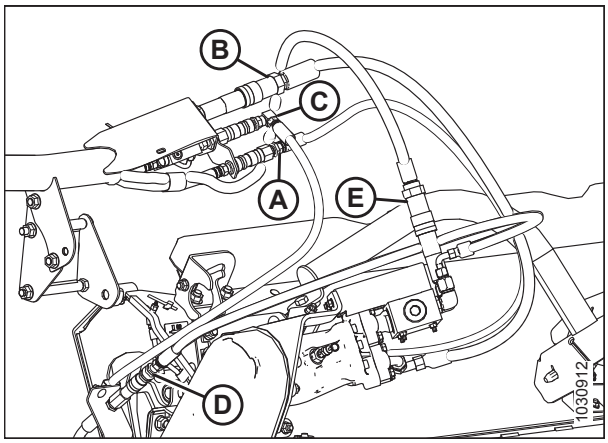


Figure 3.52: Hydraulic Hoses

A - Case Drain **B - Conditioner Motor Pressure**
C - Deck Motor Return **D - Deck Motor Pressure**
E - Conditioner Motor Return

3.8 Assembling Forming Shield

The forming shield shapes and controls the distribution of conditioned crop.

1. Retrieve the following parts from MD #B4800:
   - Forming shield with baffle, struts, and hardware attached

   Retrieve the following parts from the deflector package shipped with MD #B4798:
   - Forming shield deflectors with hardware attached

   Retrieve the following parts from the finishing bag shipped with MD #B4798:
   - Deflector fin (left side)
   - Deflector fin (right side)
   - Four smaller deflector fins

   Retrieve the following parts from the hardware bag shipped with MD #B4798:
   - Eight 3/8 x 3/4 in. carriage bolts
   - Eight 3/8 in. flange nuts

2. Lay forming shield (A) upside down (side support flanges facing up) on a flat surface.

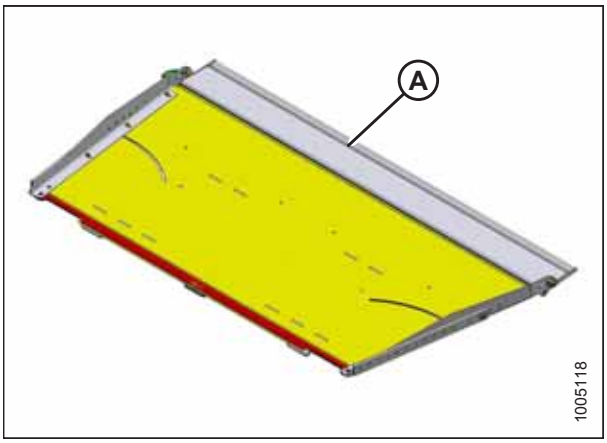


Figure 3.53: Forming Shield Cover

3. Attach short fins (A) and long fins (B) to the shield using two 3/8 x 3/4 in. carriage bolts and two 3/8 in. flange nuts per fin:
   - Attach short fins (A) to bottom of shield as shown in illustration using hardware provided.
   - Two long fins (B) are handed and should be installed with bolts on outboard side of the fin. Bolts should be installed with nuts against the fins.

   NOTE:

   Fins are only effective for windrows wider than 1778 mm (70 in.) or if windrow shape is unsatisfactory. Store fins for future use if not installed.

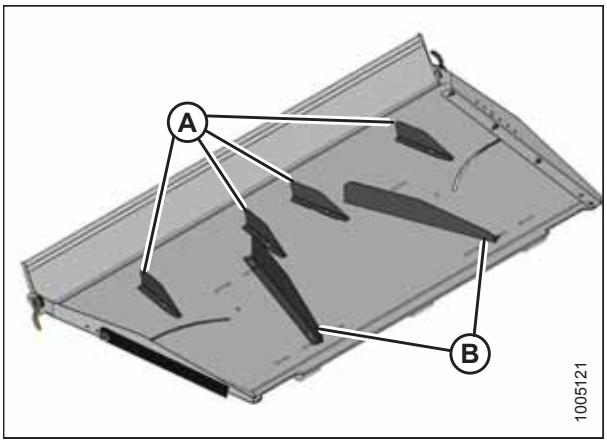


Figure 3.54: Deflector Fins

4. Position fins approximately as shown in illustration, and tighten hardware.

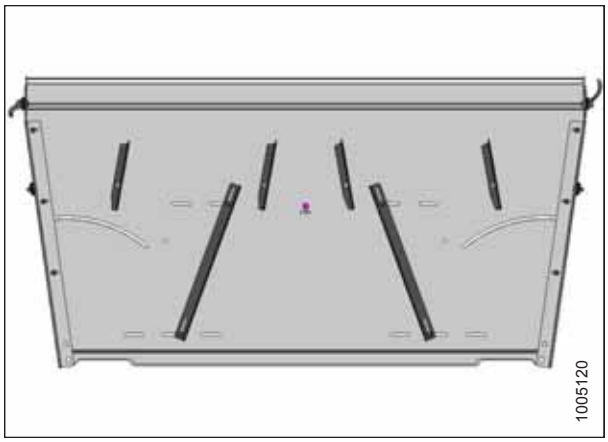


Figure 3.55: Deflector Fins

5. Remove hardware (A) from side deflectors (B).

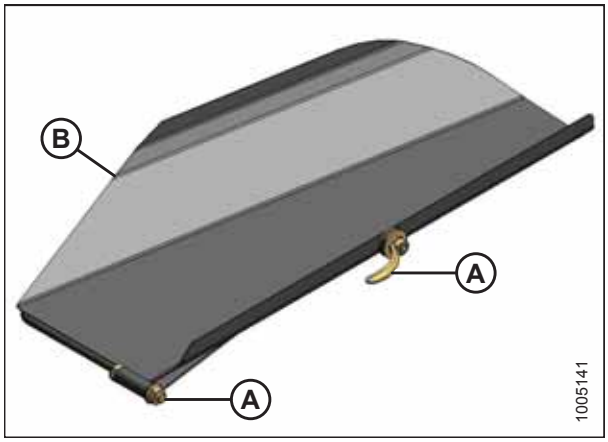


Figure 3.56: Side Deflector

6. Position deflector (A) on cover as shown in illustration, and install with hex bolt (B) and flange nut removed in previous step.
7. Tighten flange nut enough so that it holds deflector (A) in position, but still allows adjustment.

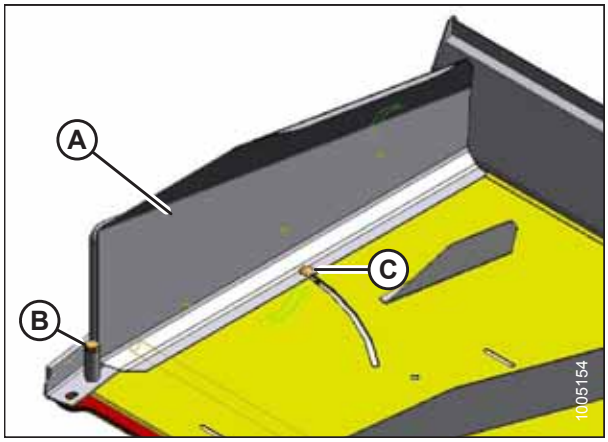


Figure 3.57: Side Deflector – Left

A - Side Deflector **B - Hex Bolt**
C - Bolt (referred to in next step)

8. Install bolt, washers, and handle nut (A) as shown in illustration at right. Rubber washer (B) must be positioned between metal washers (C).
9. Tighten handle nut (A) against cover to lock deflector in desired position.
10. Repeat for the other deflector.

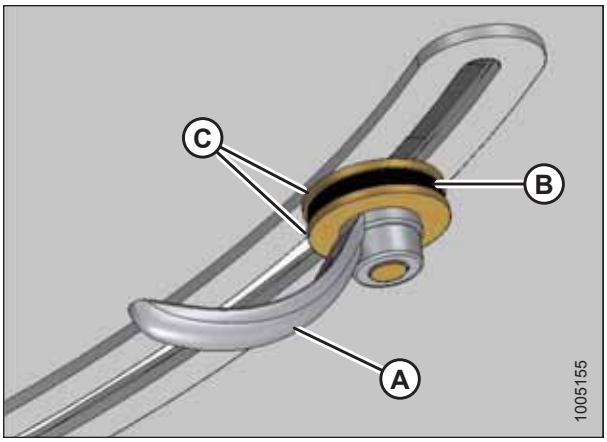


Figure 3.58: Handle – Left

11. Invert forming shield to installation position as shown in illustration.

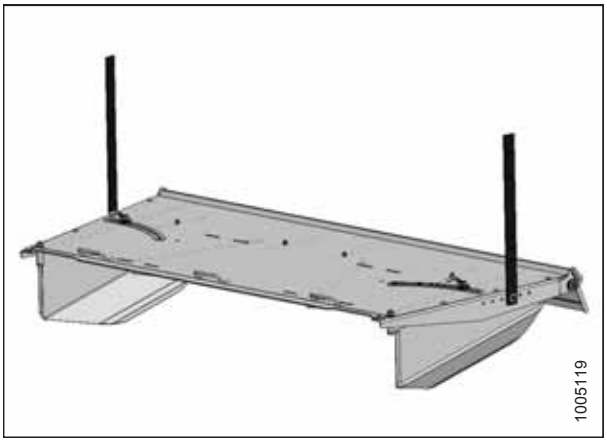


Figure 3.59: Forming Shield

3.9 Installing the Forming Shield

The forming shields attach to both the HC10 and the windrower.

1. Position the forward end of forming shield (A) onto two pins (B) located on the rear cover of the conditioner.

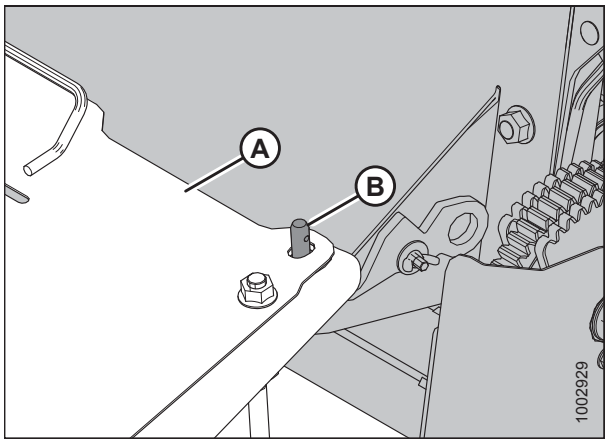


Figure 3.60: Forming Shield and HC10

2. Insert lynch pins (A) to secure forming shield to conditioner.

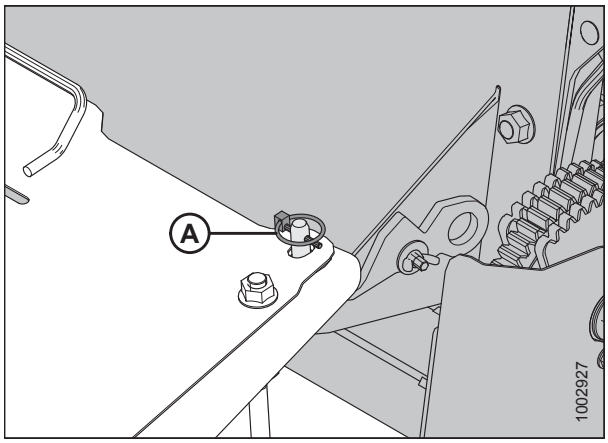


Figure 3.61: Lynch Pin

3. Set forming shield side deflectors to desired width by loosening handle (A) and moving deflector (B). Set deflectors on both sides to approximately the same position.
4. Tighten handles (A).
5. Loosen handles (C) and adjust fluffer shield (D) to middle position.
6. Tighten handles (C).

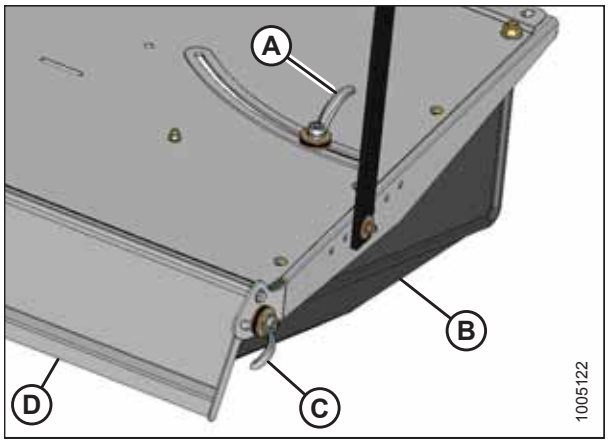


Figure 3.62: Forming Shield

7. Retrieve the following parts from the finishing package shipped with MD #B4798:
   - Shield transport support assembly with hardware attached

   Install shield transport support (A) on windrower frame with two 3/8 x 1.0 in. carriage bolts and nuts (B).

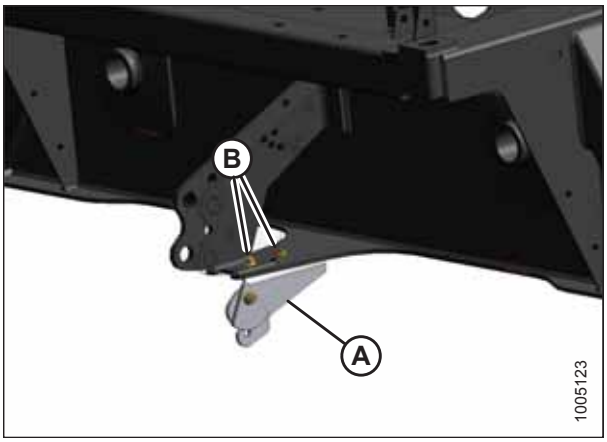


Figure 3.63: Shield Transport Support on Windrower

8. Attach the header to the windrower. For instructions, refer to the windrower unloading and assembly instructions or operator's manual.

9. Retrieve the following parts from the hardware bag shipped with MD #B4798:
   - Two 21/32 (I.D.) x 1 5/16 in. (O.D.) flat washers
   - Two hairpins

   Lift the aft end of the forming shield and attach straps (B) to pins (A) on the windrower frame. Use the middle hole and adjust forming shield height to suit the crop.

10. Secure each strap (B) with one washer (C) and hairpin (D).

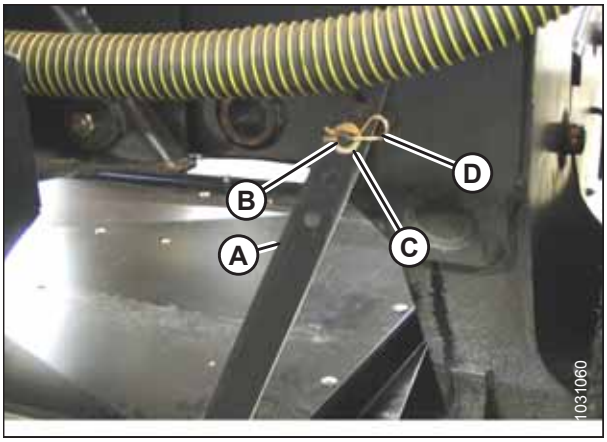


Figure 3.64: Rubber Strap

3.10 Lubricating the Conditioner

3.10.1 Greasing Procedure

Following the recommended greasing intervals and procedures will help extend the performance of bearings.

CAUTION

To avoid personal injury, before servicing the header or opening drive covers, follow procedures in *5.1 Preparation for Servicing, page 75*.

1. To avoid injecting dirt and grit, wipe grease fittings with a clean cloth before greasing. For locations of grease fittings, refer to *3.10.2 Lubrication Points, page 45*.
2. Inject grease through fitting with grease gun until grease overflows fitting, except where noted. For detailed lubrication information, refer to *5.4 Lubrication, page 78*.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately. Refer to *6 Repair Parts, page 91*.
5. If fitting will not take grease, remove fitting and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

3.10.2 Lubrication Points

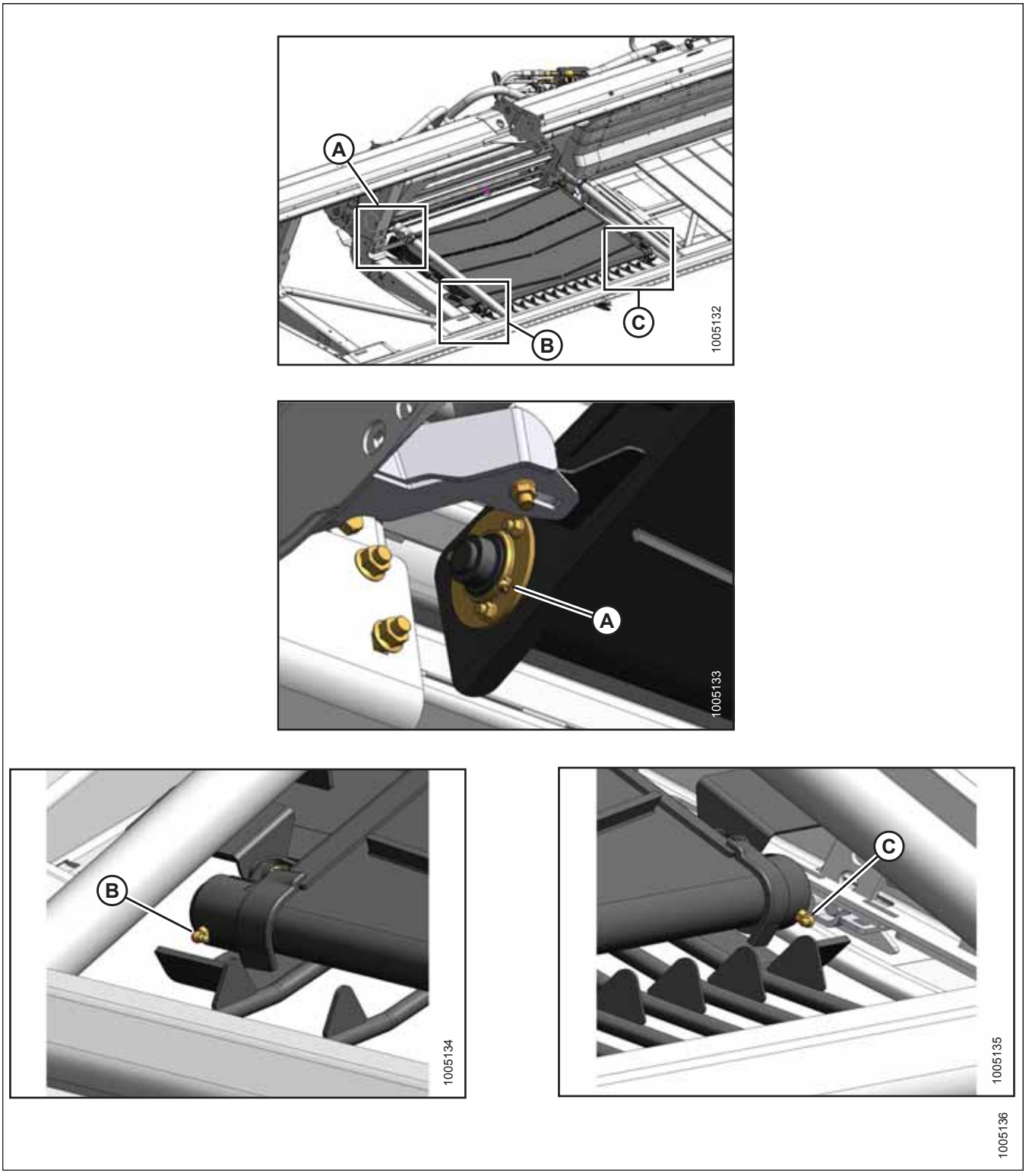


Figure 3.65: Lubrication Points

A - Drive Roller Bearing Lubrication Point **B - Idler Roller Bearing Lubrication Point** **C - Idler Roller Bearing Lubrication Point**

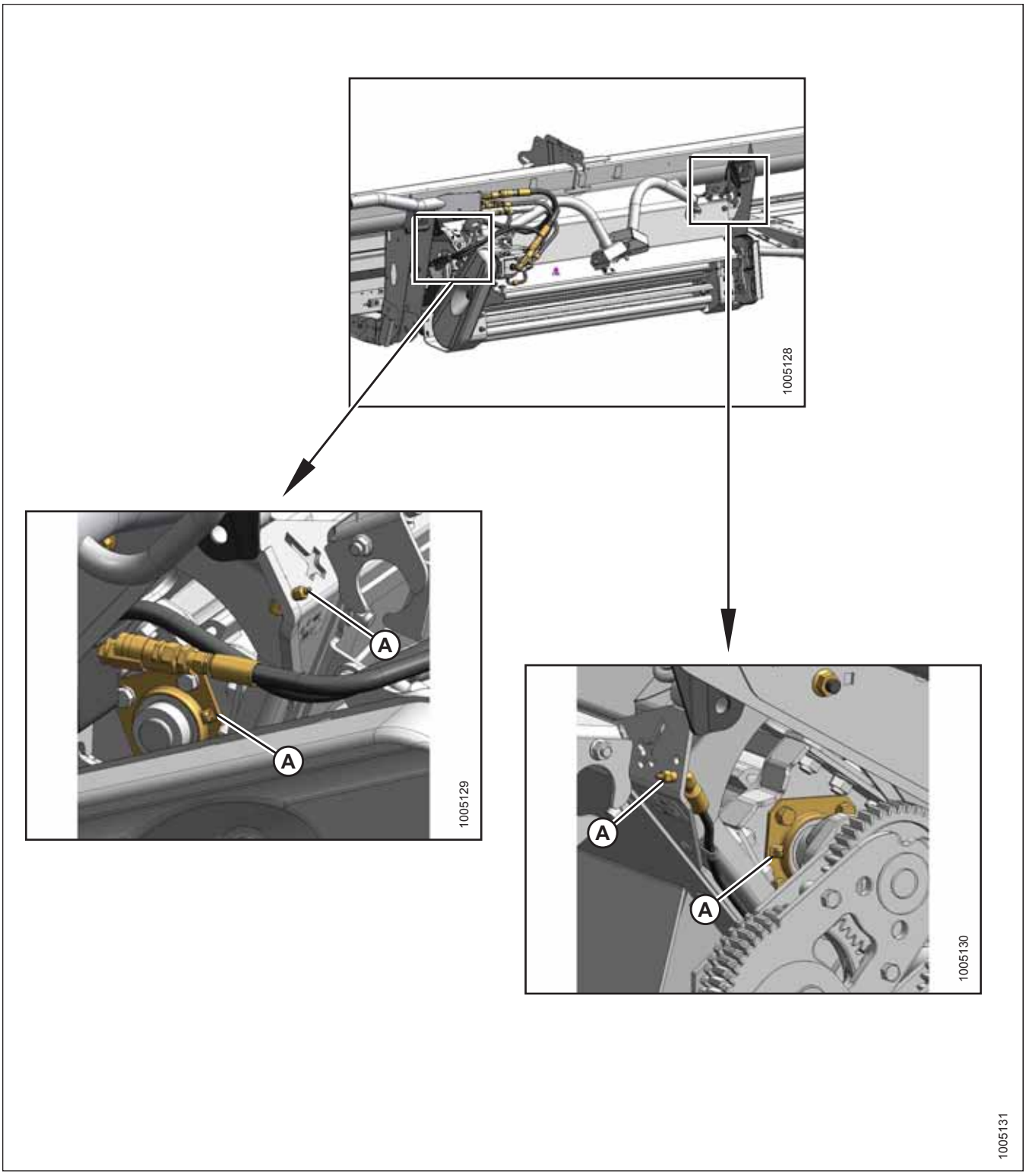


Figure 3.66: Lubrication Points

A - Roll Shaft Bearing Lubrication Points (Four Places)

3.11 Performing Predelivery Checks

Final checks ensure your machine is ready for the field.

Perform the final checks and adjustments as listed on the **Predelivery Checklist** (yellow sheet before the back cover – refer to *Predelivery Checklist, page 173*) along with the header final checks and adjustments to ensure the machine is field-ready.

The completed checklist should be retained either by the Operator or the Dealer.

3.11.1 Checking Roll Drive Belt Tension

The roll drive belt must be tightened as specified for maximum efficiency.

1. Remove wing nut and washer (A) and remove drive cover (B).

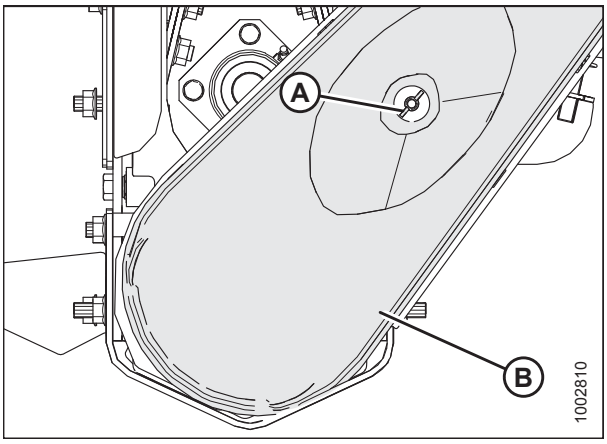


Figure 3.67: Drive Cover

2. Apply force to deflect belt (A). Belt (A) should deflect 7.9 mm (5/16 in.) when a force of 22–49 N (5–11 lbf) is applied at the center of the span. If belt tension requires adjusting, refer to *5.7.1 Adjusting Drive Belt Tension, page 81*.
3. Replace cover and secure with washer and wing nut.

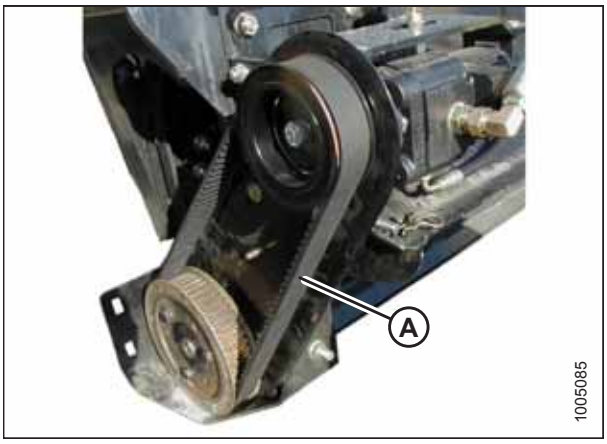


Figure 3.68: Drive Belt

3.11.2 Checking Roll Gap

The roll gap controls the degree to which crop is conditioned as it passes through the rolls.

1. Confirm the roll gap is set to the factory setting using either method below:
   - Refer to Figure *3.69, page 48*: Confirm the roll gap (B) is 20 mm (3/4 in.).
   - Refer to Figure *3.70, page 48*: Confirm the roll gap is at the 1.5 line (A).

   Gauge readings should be the same at both ends of the roll.
2. If roll gap requires adjusting, refer to *4.9.2 Adjusting Roll Gap, page 68*.

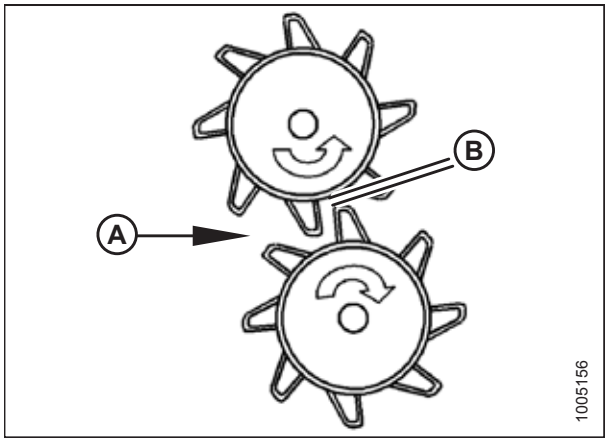


Figure 3.69: Roll Gap

A - Crop direction **B - Roll gap**

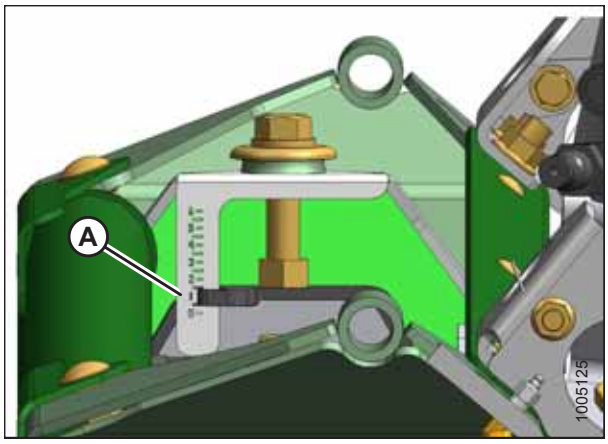


Figure 3.70: Roll Gap Gauge

3.11.3 Checking Roll Timing

For proper conditioning, the bars on one conditioner roll must be centered between the bars on the other roll. The factory setting should be suitable for most crop conditions.

1. Remove wing nut and washer (A) and remove tool (B) from panel at right end of conditioner.

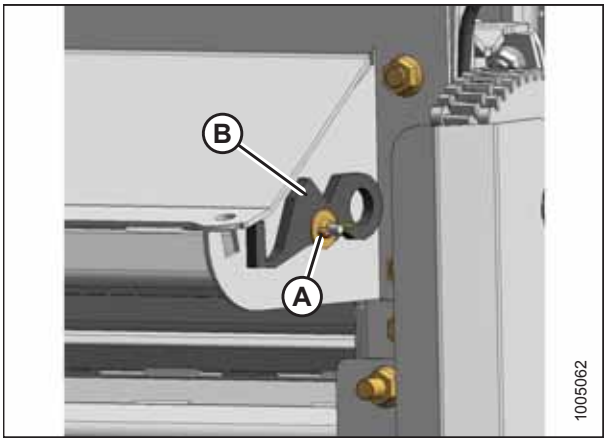


Figure 3.71: Conditioner End – Right

2. From the rear of the conditioner, position the tool at the center of rolls (A) as shown in illustration at right, and manually turn the rolls to the limits of tool (B). Rolls will engage the tool if timing is correct.
3. Manually turn rolls to release tool.
4. If roll timing requires adjusting, refer to *4.9.3 Adjusting Roll Timing, page 69*.
5. Return the tool the storage location on the right end of the conditioner. Secure it with a washer and wing nut.

WARNING

Remove the tool from the rolls and return it to the storage location before starting machine.

Figure 3.72: Roll Timing Tool

A - Start Position **B - Gauge Position**

3.11.4 Activating the Hay Conditioner - M Series Cab Display Module

The HC10 hay conditioner feature must be activated in the windrower's cab display module (CDM).

NOTE:

- This procedure is for draper headers only.

1. Turn the ignition key to RUN, or start the engine.
2. Press PROGRAM (A) and SELECT (C) on the CDM to enter programming mode.
   - WINDROWER SETUP? is displayed on the upper line.
   - NO/YES is displayed on the lower line.
3. Press right arrow (B) to select YES. Press SELECT (C).

4. Press SELECT (C) until HAY CONDITIONER? is displayed on the upper line.
   - NO/YES is displayed on the lower line.
5. Press right arrow (B) to select YES. Press SELECT (C).
6. Press PROGRAM (A) to exit programming mode or press SELECT (C) to proceed to next WINDROWER SETUP action.

3.11.5 Running up the Conditioner

Running up the conditioner ensures the machine is assembled, connected, and functioning properly.

CAUTION

Never start or move the machine until you are sure all bystanders have cleared the area.

DANGER

To avoid injury or death from 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. Clear all bystanders from the area.
2. Start the windrower and engage the header. Refer to the windrower unloading and assembly instructions or operator's manual for windrower operating instructions.
3. Operate the conditioner slowly for 5 minutes, watching and listening **FROM THE OPERATOR'S SEAT** for binding or interfering parts.
4. Run the header for 15 minutes.
5. Perform the header run-up check to ensure the machine is field-ready. Refer to the header unloading and assembly instructions.
6. Perform the run-up check as listed on the Predelivery Checklist (yellow sheet attached to this instruction—refer to *Predelivery Checklist, page 173*).
7. Shut down the engine, and remove the key from the ignition.

3.11.6 Storing Manuals

Manual should be placed in the manual storage case when not in use.

Place this manual in storage case (A) in the windrower. The Predelivery Checklist (yellow sheet attached to this instruction—refer to *Predelivery Checklist, page 173*) should be retained by either the Dealer or the Operator.

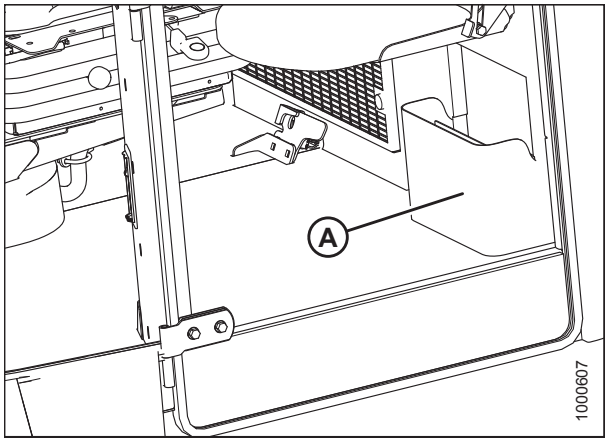


Figure 3.73: Manual Storage Case

Chapter 4: Operation

4.1 Owner/Operator Responsibilities

Owning and operating heavy equipment comes with certain duties.

CAUTION

- **It is your responsibility to read and understand this manual completely before operating the header. Contact your Dealer if an instruction is not clear to you.**
- **Follow all safety messages in the manual and on safety decals applied to 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 that they have been instructed in its safe and proper use.**
- **Review the manual and all safety-related items with all Operators of this machine annually.**
- **Be alert for other Operators not using the recommended procedures or not following safety precautions. Immediately correct improper use of this machine to prevent accidents.**
- **Do NOT modify the machine. Unauthorized modifications may impair the function and/or safety of this machine and affect its service life.**
- **The safety information given in this manual does NOT replace the safety codes, the requirements of insurance policies, or the laws governing your area. It is your responsibility to ensure that you operate your machine in compliance with these standards.**

4.2 Operational Safety

CAUTION

Follow these safety precautions:

- **Follow all safety and operational instructions given in your windrower and header operator's manuals. If you do not have a windrower and/or header manual, get one from your Dealer and read it thoroughly.**
- **Never start or move the machine until you are sure all bystanders have cleared the area.**
- **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 the engine and inspect the machine. Follow proper shutdown procedure. Refer to *4.2.1 Shutting down the Machine, page 52*.**
- **Operate only in daylight or good artificial light.**

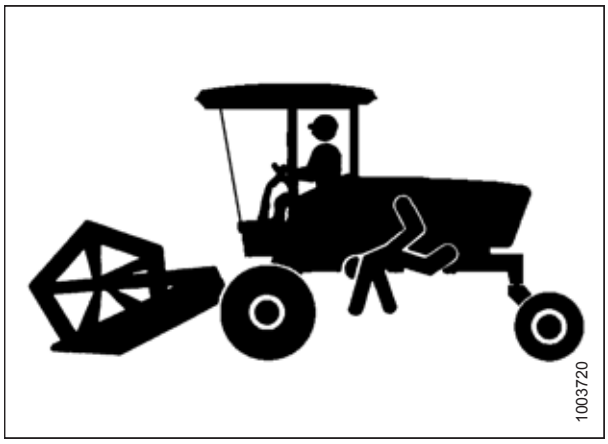


Figure 4.1: Safety around Windrower

4.2.1 Shutting down the Machine

The proper shutdown procedure helps to make the machine as safe as possible for inspection.

Before inspecting the machine, follow these steps to shut it off:

1. Return the ground speed lever (GSL) to N-DETENT/PARK and center the steering wheel to lock.
2. Disengage the header drives.
3. Shut down the engine, and remove the key from the ignition.
4. Wait for all movement to stop.
5. Before inspecting raised machine, dismount and engage lift cylinder safety props on the windrower lift legs.

4.3 Attaching Hay Conditioner to Header

The HC10 is installed between the windrower and the header.

Refer to these topics from the Unloading and Assembly section for instructions on installing the HC10 Hay Conditioner on your D Series or D1 Series draper header.

- *3.3 Installing the Rock Grate, page 18*
- *3.4.2 Installing HC10 Mounting Brackets – D60, D65, and D130, page 22*
- *3.5 Installing the Feed Draper Deck, page 25*
- *3.6 Installing the Conditioner, page 27*
- *3.7 Attaching Hydraulics, page 33*
- *3.8 Assembling Forming Shield, page 39*
- *3.9 Installing the Forming Shield, page 42*

4.4 Detaching Hay Conditioner from Header

The hay conditioner can be detached from the header by using a windrower or a suitable lifting device.

Refer to the following sections for instructions:

- The windrower method – refer to *4.4.1 Detaching Hay Conditioner – Windrower Method, page 54*
- The lifting method – refer to *4.4.2 Detaching Hay Conditioner – Lifting Method, page 58*

4.4.1 Detaching Hay Conditioner – Windrower Method

The windrower can be used to lift the HC10 away from the header.

DANGER

To avoid injury or death from 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. Disconnect straps (A) from the windrower frame.

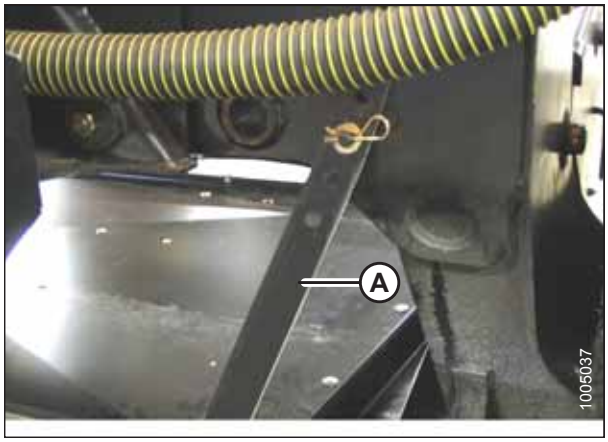


Figure 4.2: Forming Shield Strap at Wheel Leg

3. Lower header stand (A) to its mid-position.
4. Detach the header from the windrower. Refer to the windrower operator's manual for instructions.

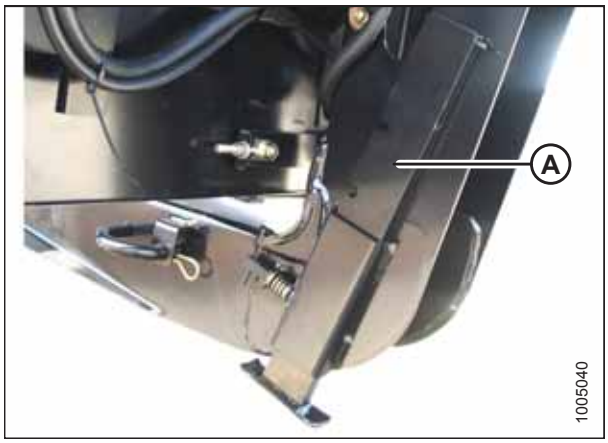


Figure 4.3: Header Stand

5. Remove two lynch pins (A) securing the forming shield to the conditioner pins and remove the shield.

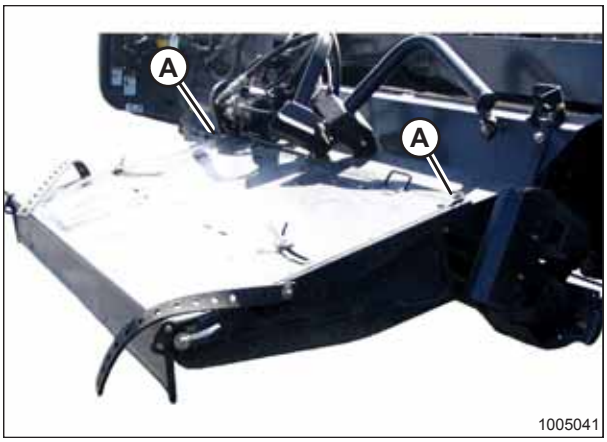


Figure 4.4: Forming Shield

6. Disconnect the five HC10 hydraulic hoses from the header:
   - Case drain hose (A)
   - Conditioner motor pressure hose (B)
   - Deck motor return hose (C)
   - Deck motor pressure hose (D)
   - Conditioner motor return hose (E)

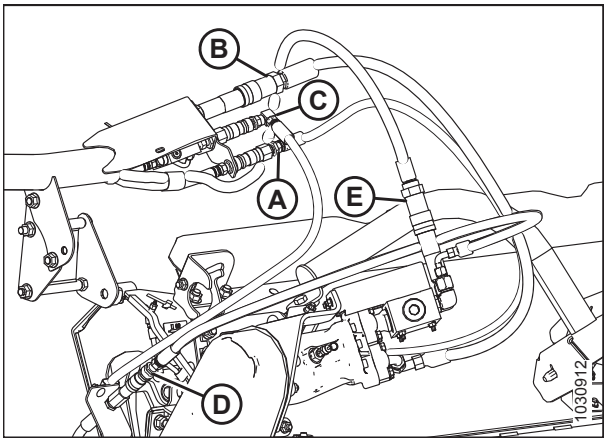


Figure 4.5: Hydraulic Hoses

A - Case Drain
B - Conditioner Motor Pressure
C - Deck Motor Return
D - Deck Motor Pressure
E - Conditioner Motor Return

7. Remove nut (A) and the carriage bolt that attach the conditioner to the lower right of the header.

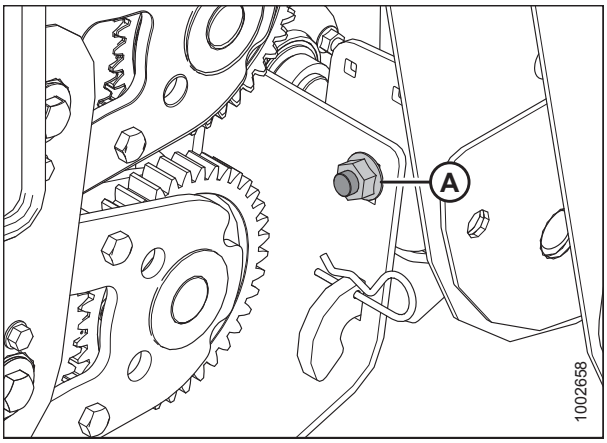


Figure 4.6: Conditioner – Right Side

8. Remove nut (A) and the carriage bolt that attach the conditioner to the lower left of the header.

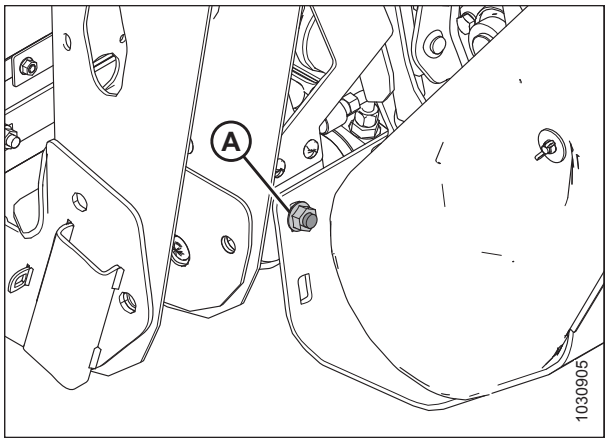


Figure 4.7: Conditioner – Left Side

9. Remove bolt and nut (A) attaching lift arm (B) to bracket (C).
10. Loosen nut (D) enough to rotate bracket (C).
11. Remove L-pin (E) securing lift arm (B) to the conditioner.

    NOTE:

    Rotate pin (E) to align the key-hole slot.

12. Remove lift arm (B).

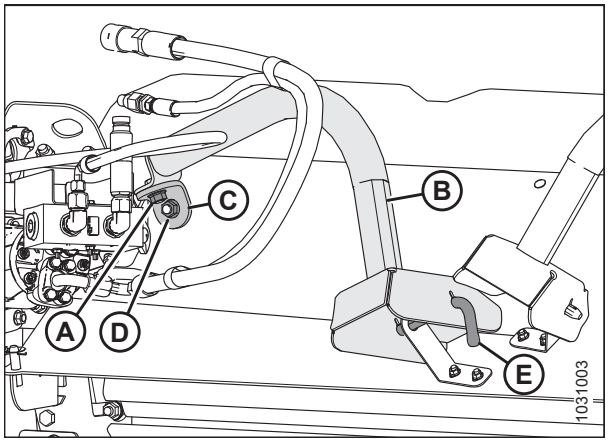


Figure 4.8: Lift Arm – Left Side

13. Position lift arm (A) as shown and secure with latch (D).
14. Reattach lift arm (A) to bracket (B) using nut and bolt (C).
15. Tighten hardware (E) to secure bracket (B) to the conditioner. Tighten hardware (C) to secure lift arm (A) to bracket (B).
16. Repeat Step *9, page 56* to Step *15, page 56* for the other lifting arm.

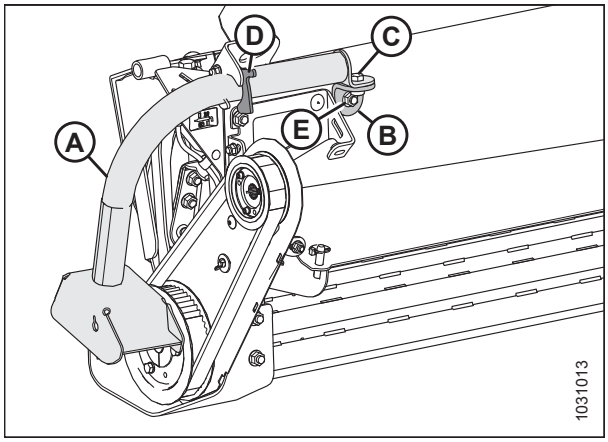


Figure 4.9: Conditioner – Left Side

17. Position the windrower arms in lift arm pockets (A) and insert the L-pins for safety.

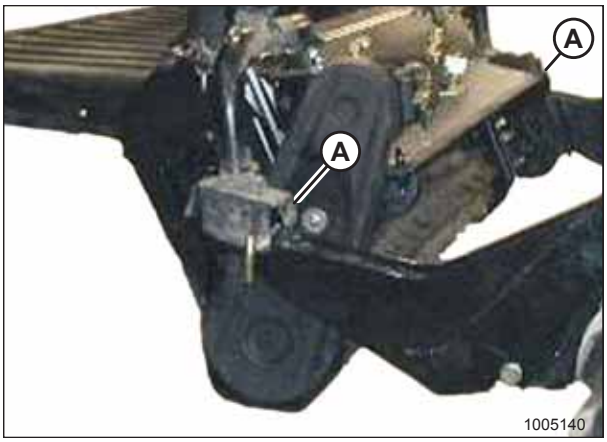


Figure 4.10: Lift Arm Pockets

18. Carefully raise the windrower lift legs until lugs (A) on conditioner clear U-shaped brackets (B) on header.
19. Slowly back the windrower away from the header.

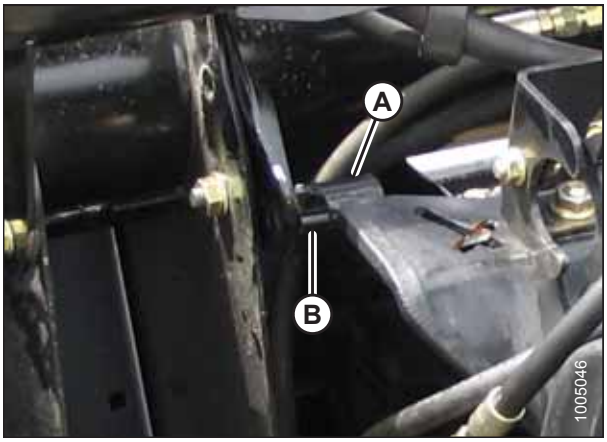


Figure 4.11: Conditioner Lug

20. Retrieve support (A) from toolbox and install in the slot at bottom of the conditioner base. Secure with hairpin (B).
21. Lower conditioner to ground.

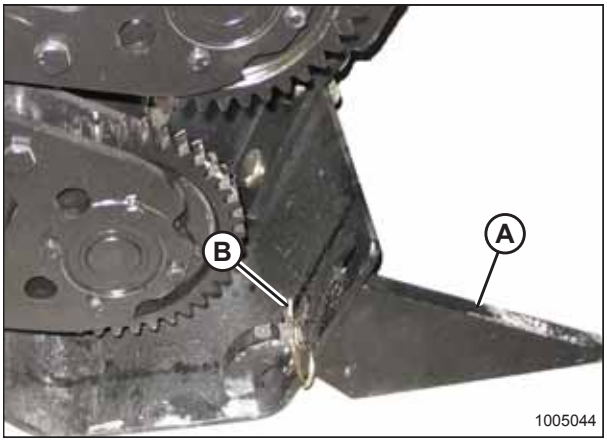


Figure 4.12: Conditioner Support

22. Remove L-pins (A) from lift arms and back the windrower away from the conditioner.
23. Replace the L-pins in the conditioner lift arms.

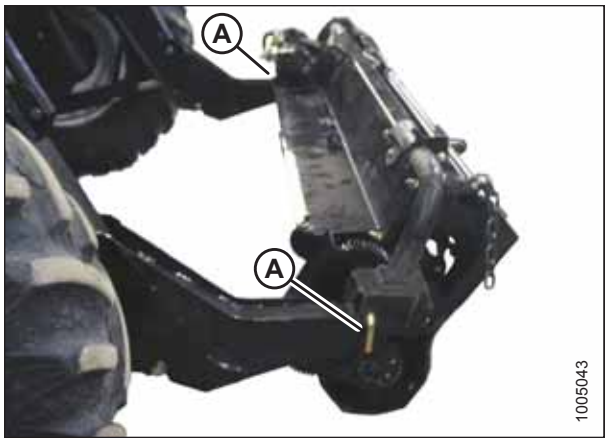


Figure 4.13: L-Pins

4.4.2 Detaching Hay Conditioner – Lifting Method

A forklift or another suitable lifting device can be used to lift the HC10 away from the header.

DANGER

To avoid injury or death from 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. Disconnect straps (A) from the windrower frame.

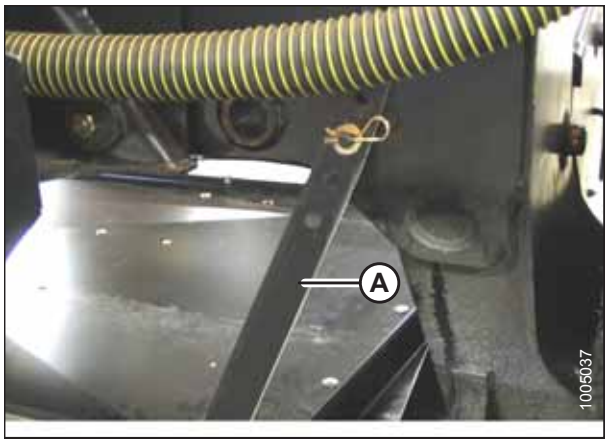


Figure 4.14: Forming Shield Strap at Wheel Leg

3. Lower header stand (A) to mid-position.
4. Detach the header from the windrower. Refer to the windrower operator's manual for instructions.

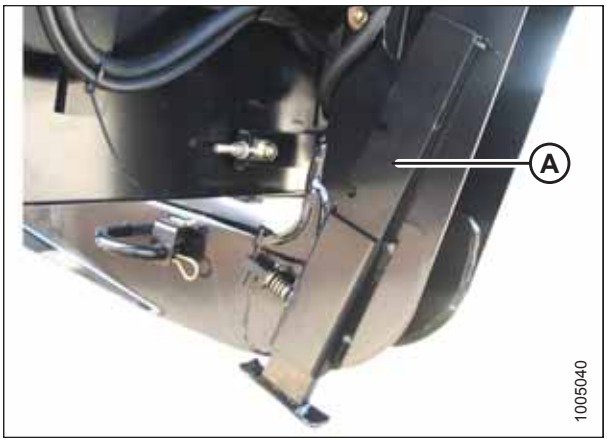


Figure 4.15: Header Stand

5. Remove two lynch pins (A) securing the forming shield to the header pins and remove the forming shield.

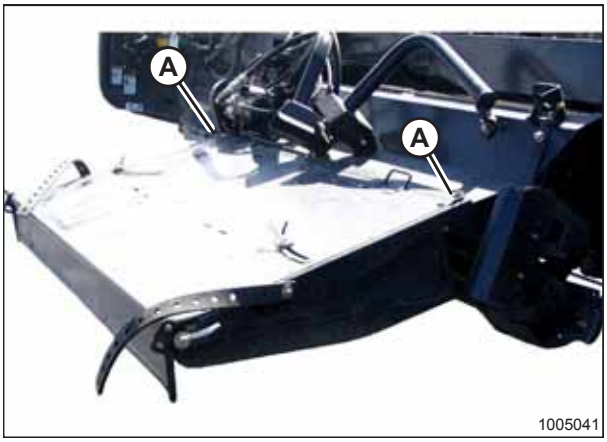


Figure 4.16: Forming Shield

6. Disconnect the following five HC10 hydraulic hoses from the header:
   - Case drain hose (A)
   - Conditioner motor pressure hose (B)
   - Deck motor return hose (C)
   - Deck motor pressure hose (D)
   - Conditioner motor return hose (E)

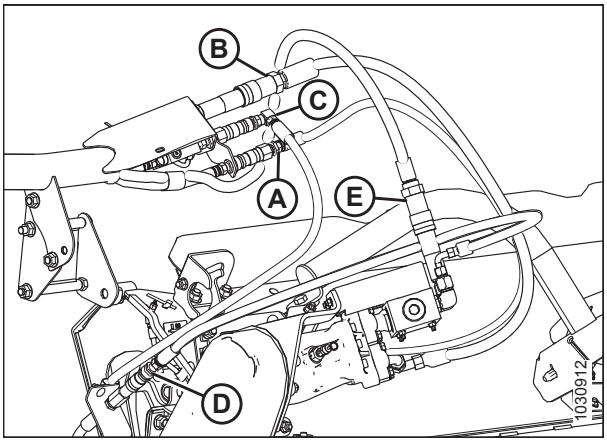


Figure 4.17: Hydraulic Hoses – Conditioner Drive Motor

A - Case Drain
B - Conditioner Motor Pressure
C - Deck Motor Return
D - Deck Motor Pressure
E - Conditioner Motor Return

7. Remove nut (A) and the carriage bolt that attach the conditioner to the lower right of the header.

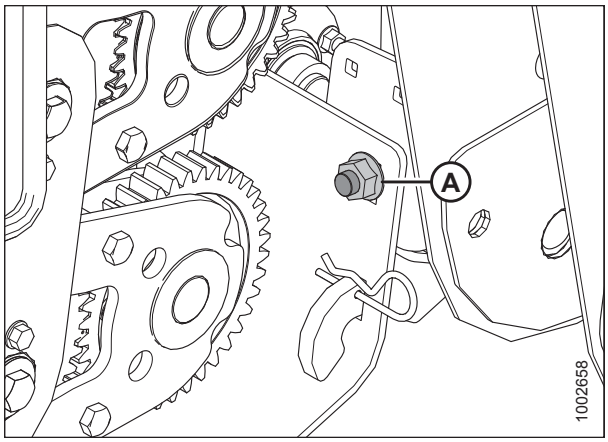


Figure 4.18: Conditioner – Right Side

8. Remove nut (A) and the carriage bolt that attach the conditioner to the lower left of the header.

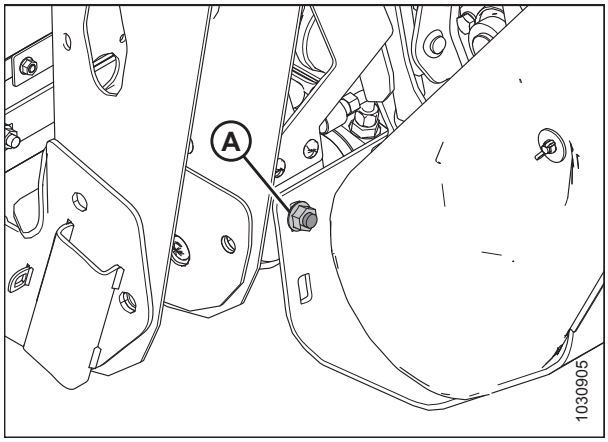


Figure 4.19: Conditioner – Left Side

9. Attach chain to lifting brackets (A) on conditioner and secure chain to lifting device (B).

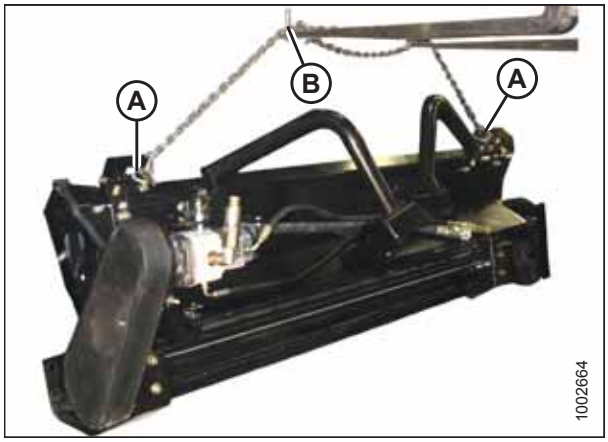


Figure 4.20: Conditioner and Lifting Brackets

10. Carefully raise the lifting device until lugs (A) on the conditioner clear U-shaped brackets (B) on the header.
11. Slowly back the windrower away from the header.

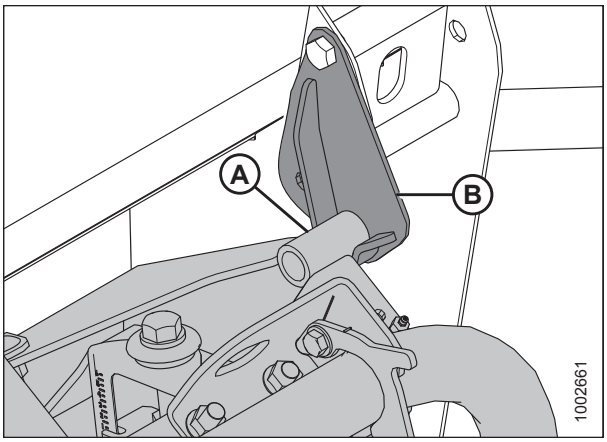


Figure 4.21: Conditioner Lug

12. Retrieve support (A) from the toolbox and install in the slot at the bottom of the conditioner base. Secure with hairpin (B).
13. Lower the conditioner to the ground.
14. Unhook the chains.

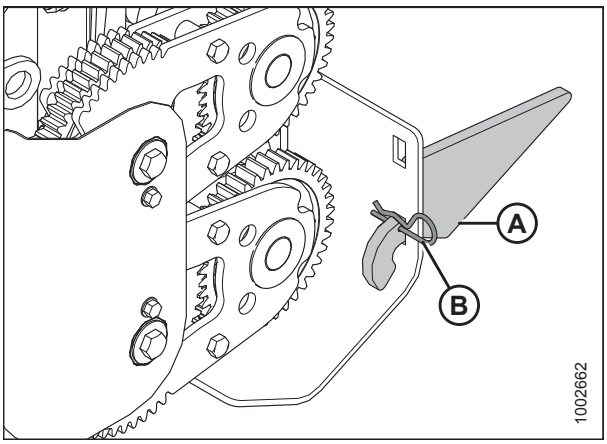


Figure 4.22: Conditioner Support

4.5 Detaching Feed Draper Deck and Rock Grate

If necessary for service or to gain access to other components, the feed draper deck and rock grate can be removed from the hay conditioner.

1. Remove two carriage bolts (A) that attach the hose brace to the header, and lay the hoses on the deck.

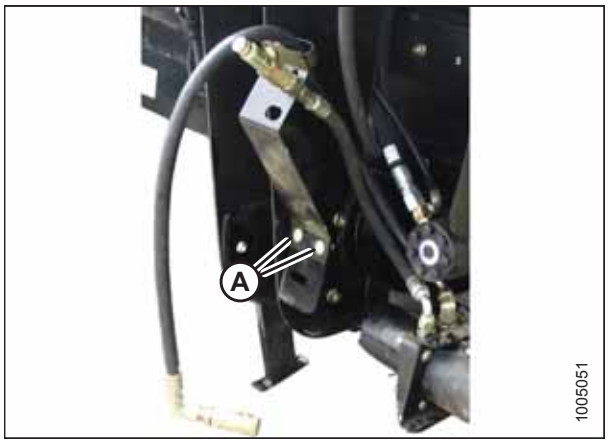


Figure 4.23: Hose Brace

2. Remove nut (A) and bolt at the rear left of the deck that secure the deck to the header.

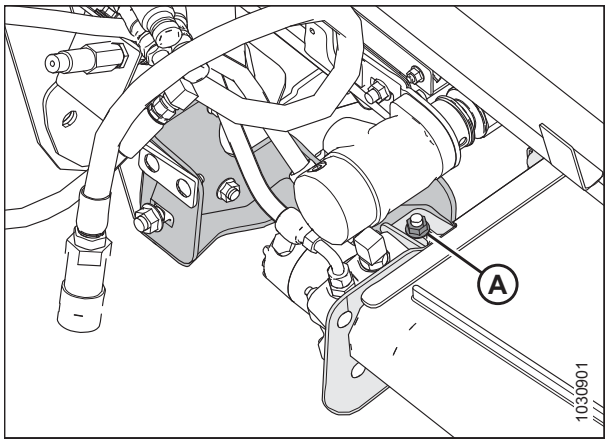


Figure 4.24: Feed Deck – Left Side

3. Remove nut (A) and bolt at the rear right of the deck that secure the deck to the header.

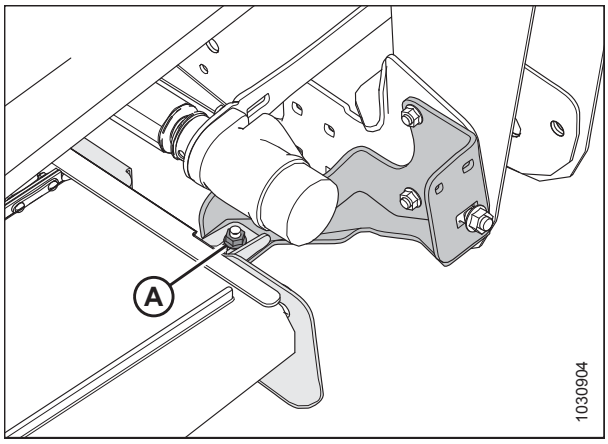


Figure 4.25: Feed Deck – Right Side

4. Slide deck (A) back slightly until the deck mounts clear the header brackets. Lower aft of deck to ground.
5. Continue sliding the deck back until the deck drops free of the rock grate. Move the deck out of the way.

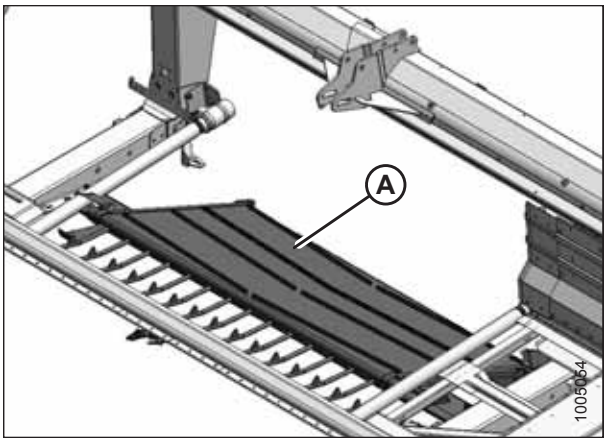


Figure 4.26: Feed Deck

6. Remove two bolts (A) attaching rock grate to header legs.

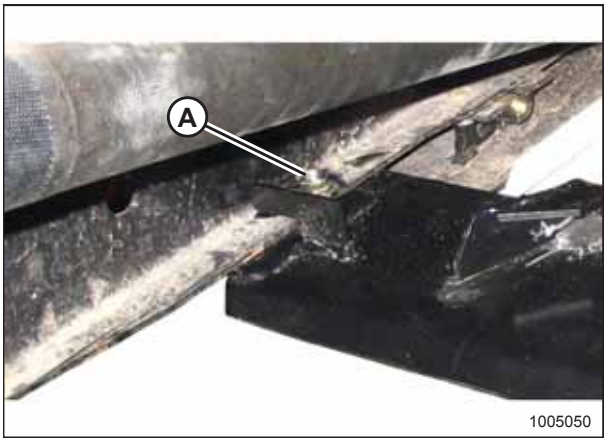


Figure 4.27: Rock Grate

7. Pull rock grate (A) off cutterbar and header legs. Move rock grate out of the way.

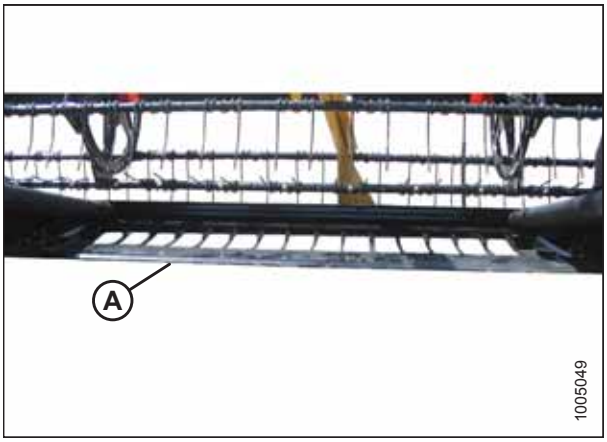


Figure 4.28: Rock Grate

8. If necessary, remove conditioner attachment brackets (A) and spacers (B) from the header legs and store with the feed deck.

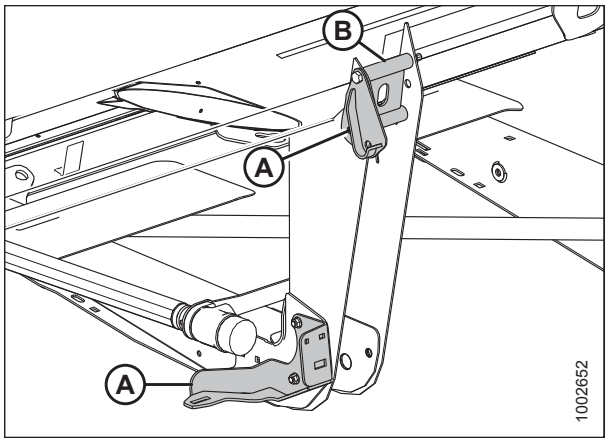


Figure 4.29: Conditioner Attachment Brackets

4.6 Break-in Period

The break-in period should be used to observe the new machine to make sure it is functioning properly, verify hardware is secure, and that all adjustable components remain within specified ranges.

DANGER

To avoid injury or death from 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.

When operating the hay conditioner for the first time, operate the conditioner slowly for 5 minutes, watching and listening FROM THE OPERATOR'S SEAT for binding or interfering parts.

NOTE:

The conditioner will **NOT** operate until oil flow fills the lines.

NOTE:

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

After first 5 hours of operation:

- Tighten any loose hardware.
- Adjust the tension of the roll drive belt. For instructions, refer to *5.7.1 Adjusting Drive Belt Tension, page 81*. Continue to check the belt tension periodically for the first 50 hours.

4.7 Preseason Check

Take time to review safety and operating procedures, and perform annual maintenance to help ensure a smooth start to the operating season.

CAUTION

- **Review the operator's manual to refresh your memory on safety and operating recommendations.**
- **Review all safety signs and other decals on the header and note hazard areas.**
- **Be sure all shields and guards are properly installed and secured. Never alter or remove safety equipment.**
- **Be sure you understand and have practiced safe use of all controls. Know the capacity and operating characteristics of the machine.**
- **Check the first aid kit and fire extinguisher. Know where they are and how to use them.**

Before you begin the operating season, perform all annual maintenance. For instructions, refer to *5.8 Maintenance Schedule, page 88*.

4.8 Daily Startup Check

Daily startup checks should be included in a plan to keep the workplace safe and the machinery operating properly.

CAUTION

- **Clear the area of other persons, pets, etc. Keep children away from machinery. Walk around the machine to be sure no one is under, on, or close to it.**
- **Wear close-fitting clothing and protective shoes with slip-resistant soles.**
- **Remove foreign objects from the machine and surrounding area.**
- **Carry with you any protective clothing and personal safety devices that COULD be necessary through the day. Don't take chances. You may need a hard hat, protective glasses or goggles, heavy gloves, a respirator or filter mask, or wet weather gear.**
- **Protect against noise. Wear a suitable hearing protection device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.**

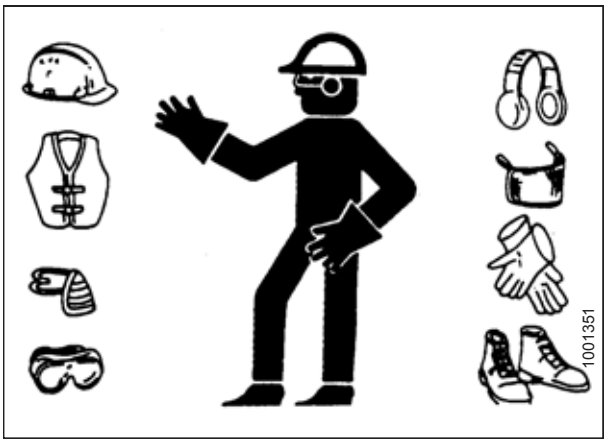


Figure 4.30: Protective Clothing and Personal Safety Devices

Complete the following tasks each day before start-up:

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

   NOTE:

   Use proper procedure when searching for pressurized fluid leaks. Refer to *5.5 Hydraulics, page 79*.

2. Clean all lights and reflective surfaces on the machine.
3. Perform all daily maintenance. Refer to *5.8 Maintenance Schedule, page 88*.

4.9 Conditioner Operation

Intermeshing steel rolls condition the crop by crimping and crushing the stem for quick drying.

WARNING

Keep hands and feet away from discharge opening. Keep everyone at least 100 meters (330 ft.) away from your operation. Never direct the discharge toward anyone. Stones or other foreign objects can be ejected with force.

WARNING

To avoid bodily injury or death from unexpected start-up of machine, stop engine and remove key before adjusting rolls.

4.9.1 Roll and Feed Draper Speed

The roll and feed draper speeds change whenever the header knife speed is changed since the drives use the same hydraulic circuit. They cannot be independently adjusted.

4.9.2 Adjusting Roll Gap

The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap.

Intermeshing steel rolls condition the crop by crimping and crushing the stem in several places. This allows moisture release for quicker drying. The degree to which the crop is conditioned as it passes through the rolls is controlled by roll gap (refer to illustration at right). The gap is factory set at 20 mm (3/4 in.) or at the 1.5 line on the roll gap gauge as shown in Figure *4.32, page 68*. Gauge readings should be the same at both ends of the roll.

Correct conditioning of alfalfa, clover, and other legumes is usually indicated when 90% of the stems show cracking, but no more than 5% of the leaves are damaged. Use only enough roll gap to achieve this result.

Grass type crops may require a tighter gap for proper feeding and conditioning. A larger gap (up to 25 mm [1 in.]) may be desirable in thick-stemmed cane-type crops; however, too large a gap may cause feeding problems.

If required, you can adjust the roll gap by loosening nut (A) and turning adjuster (B). Retighten nut (A) after adjustment.

IMPORTANT:

To achieve consistent intermesh across the rolls, be sure that roll gap gauge (C) reading is the same on both sides of the conditioner roll.

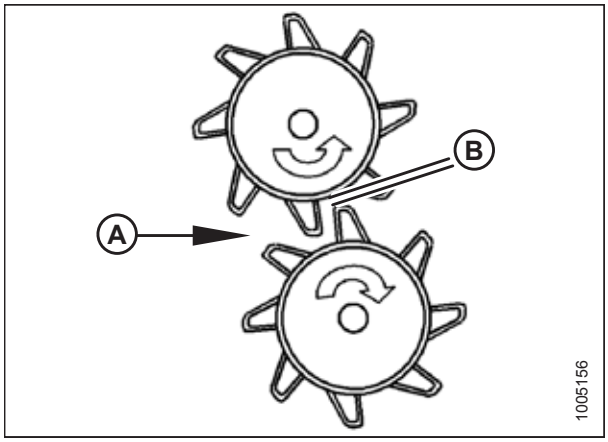


Figure 4.31: Roll Gap

A - Crop Direction **B - Roll Gap**

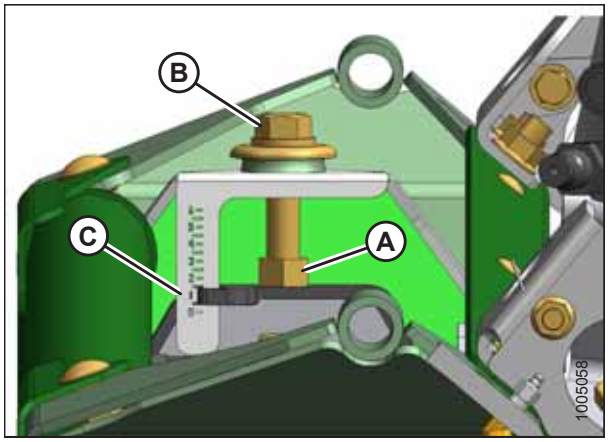


Figure 4.32: Roll Gap Gauge

4.9.3 Adjusting Roll Timing

For proper conditioning, the rolls must be properly timed and aligned.

Each steel bar (A) on one roll must be centered between two bars (B) on the other roll as shown in illustration at right. The factory setting should be suitable for most crop conditions.

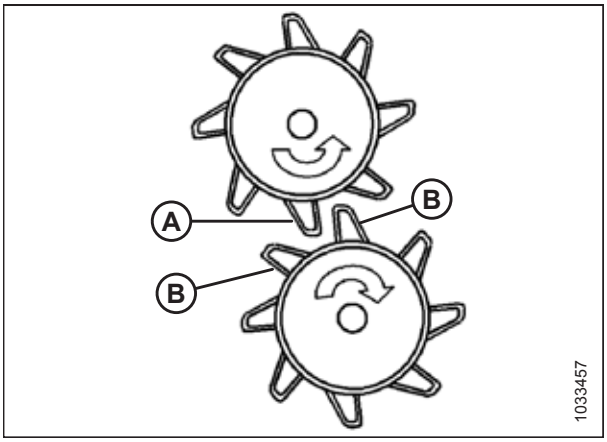


Figure 4.33: Conditioner Roll Timing

1. Before adjusting the rolls, retrieve timing tool and check roll timing. Refer to *3.11.3 Checking Roll Timing, page 49*.
2. Loosen four bolts (A) on one of the small timing gears.

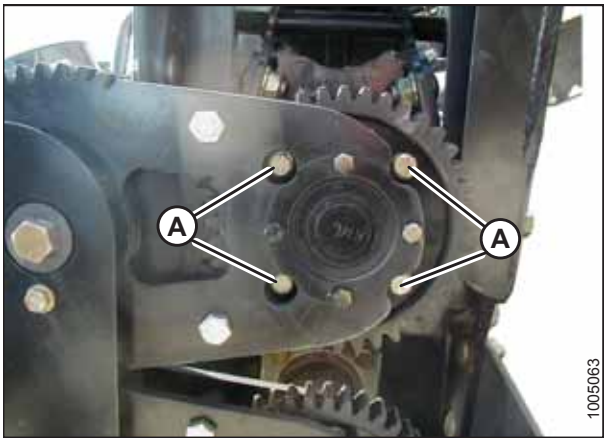


Figure 4.34: Timing Gear

3. Insert tool (A) and allow rolls to adjust to the tool.
4. Tighten bolts on timing gear.
5. Return the tool to storage location on the right end of the conditioner. Secure it with a washer and wing nut.

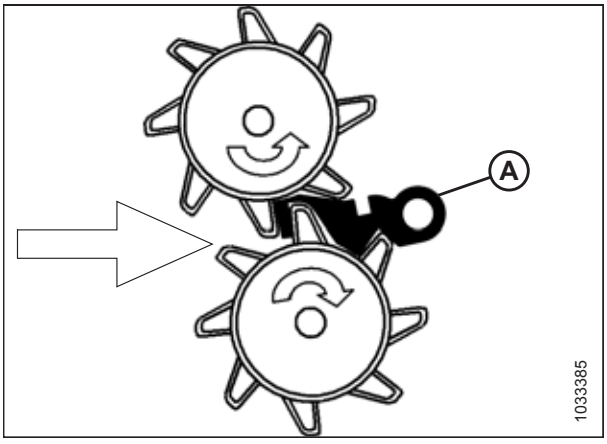


Figure 4.35: Roll Timing Tool

4.9.4 Adjusting Conditioner Roll Tension

The conditioner roll tension is maintained by two tension springs providing pressure for conditioning of the crop. These springs also allow the rolls to open to allow passage of small solid objects without damage to the rolls.

DANGER

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

1. Lower the header to the ground.
2. Shut down the engine, and remove the key from the ignition.
3. Locate adjustment nuts (B) on top of the conditioner channel.
4. Loosen jam nuts (A).
5. Turn adjusting nut (B) clockwise to increase tension, and counterclockwise to decrease tension.
6. Adjust nuts (B) on both sides equal amounts.
7. Tighten jam nuts (A).

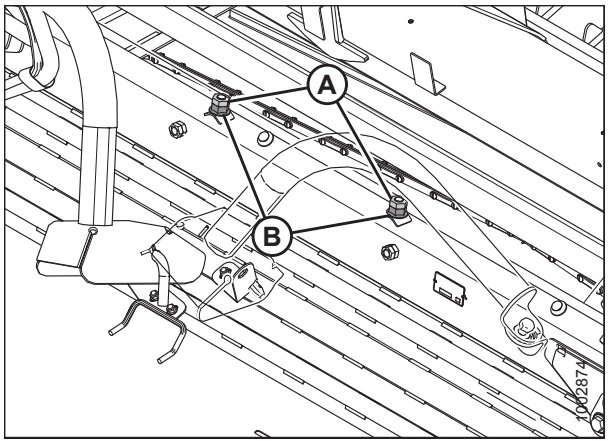


Figure 4.36: Conditioner Channel

4.9.5 Forming Shields

The position of the forming shields controls the width and placement of the windrow.

The position of the forming shields should be based on the following factors:

- Weather conditions (rain, sun, humidity, wind)
- Type and yield of crop
- Drying time available
- Method of processing (bales, silage, green-feed)

A wider windrow will generally dry faster and more evenly, resulting in less protein loss. Fast drying is especially important in areas where the weather allows only a few days to cut and bale.

Where weather conditions permit or when drying is not critical (for example, when cutting for silage or green-feed), a narrower windrow may be preferred for ease of pick-up.

Adjusting Forming Shield Height

The height of the forming shield affects the shape and consistency of the windrow. A heavy crop will require the forming shield to be set near the highest position and a lighter crop needs the forming shield to be lower.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Remove hairpins (A) securing straps (B) to pins on windrower frame.
3. Support aft end of forming shield. Adjust the shield height using the holes in the straps.
4. Secure straps with hairpins.

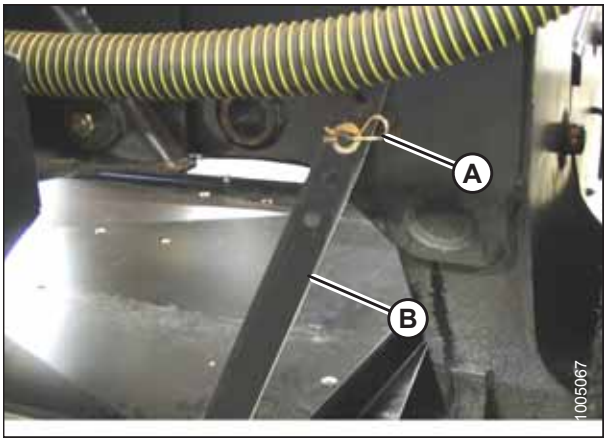


Figure 4.37: Forming Shield Strap at Wheel Leg

Adjusting Side Deflectors

The position of the side deflectors controls the width and placement of the windrow.

DANGER

To avoid injury or death from 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. Set side deflectors (A) to the desired width by loosening handle (B) and moving deflector (A). Tighten the handle. Repeat at opposite side. Set both deflectors to approximately the same position.

   IMPORTANT:

   To ensure windrow placement is centered with respect to windrower wheels, adjust both side deflectors to the same position. To achieve this setting, adjuster handles must be in the same location on both sides.
3. If side deflector attachment is too tight or too loose, tighten or loosen nut (C) as required.

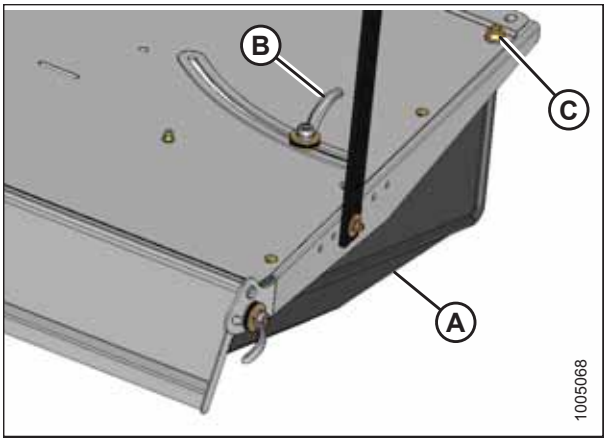


Figure 4.38: Side Deflector – Right

Adjusting Rear Deflector (Fluffer Shield)

The rear deflector slows the crop exiting the conditioner rolls, directs the flow downward, and fluffs the material.

DANGER

To avoid injury or death from 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. For more control of windrow in light material, lower rear deflector (A) by pushing on one side of the deflector and then on the other side. Locking bolts (B) are located at either end of the deflector and may be loosened slightly.
3. For heavier crops, raise the deflector by pulling up on one side and then on the other side.

   NOTE:

   For even windrow formation, be sure the deflector is not twisted.

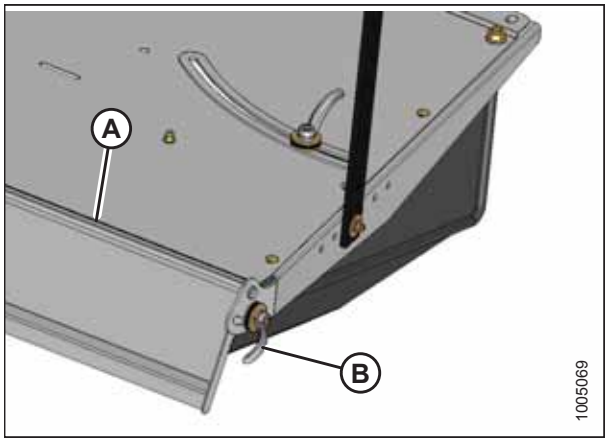


Figure 4.39: Rear Deflector

Adjusting Deflector Fins

Adjustable deflector fins help to provide different swath widths and distribution of crop across the windrow.

DANGER

To avoid injury or death from 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. Angles of short fins (A) can be adjusted by loosening mounting bolt(s) and rotating as required. Long fins (B) can be adjusted using the slots in the cover.
3. Set the fins approximately parallel to the side deflectors for a wide swath, and adjust as required for even distribution of crop across the full width. For narrow windrow less than 1780 mm (70 in.), remove fins.

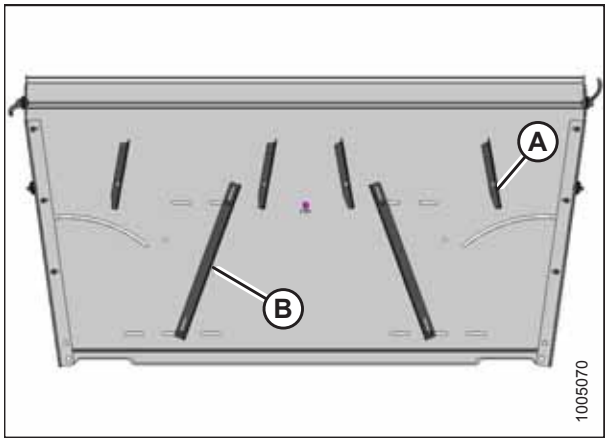


Figure 4.40: Deflector Fins

4.9.6 Unplugging the Conditioner

To unplug the conditioner, reverse the header drive. Refer to the windrower operator's manual for procedures on reversing the header drive.

4.10 Storing the Hay Conditioner

Performing maintenance items at the end of each operating season ensures you are ready for the next operating season and minimizes unexpected issues.

WARNING

Never use gasoline, naphtha, or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.

- Clean the conditioner thoroughly.
- Check for worn or broken components and order replacements from your Dealer. Attention to these items right away will save time and effort at the beginning of the next season.
- Replace or tighten any missing or loose hardware. Refer to *6 Repair Parts, page 91*.
- Repaint all worn or chipped painted surfaces to prevent rust.
- Lubricate the conditioner thoroughly, leaving excess grease on fittings to keep moisture out of bearings. Apply grease to exposed threads and sliding surfaces of components.
- Loosen drive belt.
- Store in a dry, protected place if possible. If stored outside, always cover conditioner with a waterproof canvas or other protective material.

Chapter 5: Maintenance

5.1 Preparation for Servicing

Developing safe habits helps to reduce accidents while servicing equipment.

DANGER

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

Before servicing hay conditioner or opening header drive covers:

1. Fully lower the header. If necessary to service in the raised position, always engage safety props.
2. Wait for all moving parts to stop.
3. Engage park brake.
4. Shut down the engine, and remove the key from the ignition.

5.2 Recommended Safety Procedures

Always follow these recommended safety procedures:

- Park on a level surface when possible. Block the wheels securely if the windrower is parked on an incline.
- Follow all recommendations in your header and windrower operator's manuals.
- Follow all safety sections in this manual. Refer to *1 Safety, page 1*.

5.3 Removing and Installing Driveshields

Driveshields protect you from fast moving parts. Use caution when working with driveshields removed, and reinstall driveshields as soon as possible.

CAUTION

- **Keep all shields in place. Never alter or remove safety equipment.**
- **Do NOT operate machine with shield removed.**

1. To remove the driveshield, undo wing nut (B) and remove washer. Pull shield (A) off the conditioner.
2. To install the driveshield, position shield (A) over the drive pulleys and then secure with washer and wing nut (B).

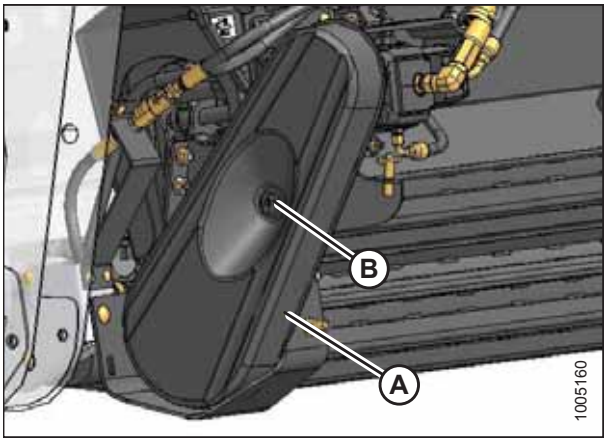


Figure 5.1: Driveshield

5.4 Lubrication

5.4.1 Lubricants

Use clean lubricants to keep your machine operating at top efficiency.

Use clean containers to handle all lubricants, and store in an area protected from dust, moisture, and other contaminants.

Lubricant	Spec.	Description	Use
Grease	SAE multi-purpose	High temperature, extreme pressure (EP) 0–1% max; molybdenum disulphide (NLGI Grade 2) Lithium complex, base oil viscosity of 190–250 CST @ 40°C	As required unless otherwise specified

5.4.2 Greasing Procedure

Following the recommended greasing intervals and procedures will help extend the performance of bearings.

CAUTION

To avoid personal injury, before servicing the header or opening drive covers, follow procedures in *5.1 Preparation for Servicing, page 75*.

1. To avoid injecting dirt and grit, wipe grease fittings with a clean cloth before greasing. For locations of grease fittings, refer to *3.10.2 Lubrication Points, page 45*.
2. Inject grease through fitting with grease gun until grease overflows fitting, except where noted. For detailed lubrication information, refer to *5.4 Lubrication, page 78*.
3. Leave excess grease on fitting to keep out dirt.
4. Replace any loose or broken fittings immediately. Refer to *6 Repair Parts, page 91*.
5. If fitting will not take grease, remove fitting and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

5.4.3 Greasing Points

Greasing points that have greasing intervals of 50 hours or less are marked on the machine by decals showing a grease gun.

Greasing points that have greasing intervals of 50 hours or less are marked on the machine by decals showing a grease gun (A) and grease interval (B) in hours of operation.

Log hours of operation and use the Maintenance Checklist provided to keep a record of the maintenance performed. Refer to *5.8 Maintenance Schedule, page 88*.

To identify the various locations that require lubrication, refer to *3.10.2 Lubrication Points, page 45*.

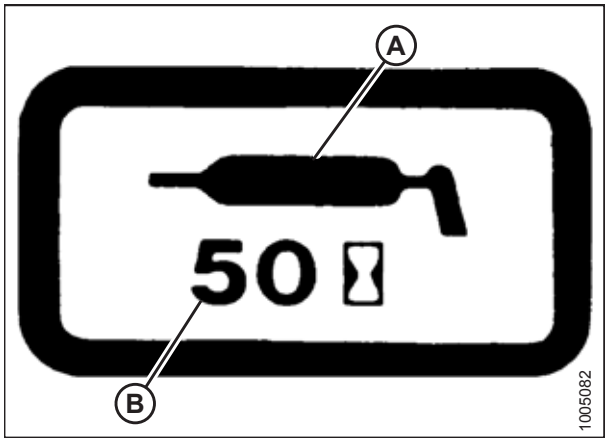


Figure 5.2: Grease Decal – 50 Hours

5.5 Hydraulics

Understand the safety precautions when working around hydraulic systems, and use hydraulic schematics to troubleshoot and diagnose performance issues.

5.5.1 Hydraulic Hoses and Lines

Check hydraulic hoses and lines daily for signs of leaks.

Figure 5.3: Hydraulic Pressure Hazard

WARNING

- **Avoid high-pressure fluids. Escaping fluid can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Keep hands and body away from pin holes and nozzles which eject fluids under high pressure.**
- **If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.**
- **Use a piece of cardboard or paper to search for leaks.**

IMPORTANT:

Keep hydraulic coupler tips and connectors clean. Dust, dirt, water, and foreign material are the major causes of hydraulic system damage. **DO NOT** attempt to service hydraulic system in the field. Precision fits require WHITE ROOM CARE during overhaul.

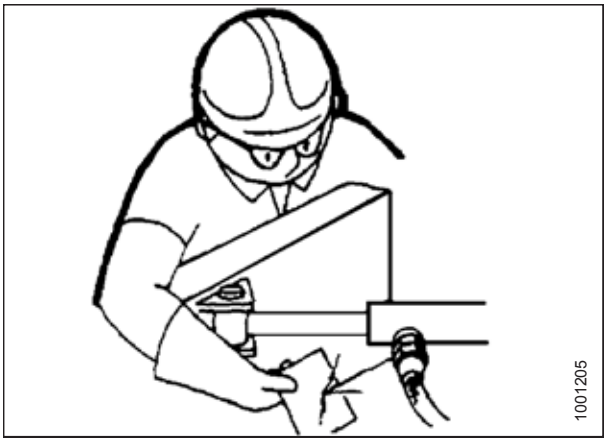


Figure 5.4: Safety Equipment

5.5.2 Hydraulic Schematics

A set of header hydraulic schematics is provided for current HC10s with motor MD #159661, and older HC10s with motor MD #159648.

For detailed hydraulic schematics, refer to the following:

- **If the HC10 is equipped with new conditioner driver motor MD #159661:** Refer to *8.1 Hydraulic Schematics – Headers with HC10 Motor MD #159661, page 147*.
- **If the HC10 is equipped with old conditioner driver motor MD #159648:** Refer to *8.2 Hydraulic Schematics – Headers with HC10 Motor MD #159648, page 157*.

5.6 Feed Draper

5.6.1 Adjusting Feed Draper Tension

Feed draper tension should be just enough to prevent slipping and keep the draper from sagging below the cutterbar.

DANGER

To avoid bodily injury or death from unexpected start-up or fall of raised machine, always stop engine, remove key, and engage safety props before going under header for any reason. Refer to your windrower operator's manual for instructions for use and storage of safety props.

1. Raise header fully, stop engine, and remove key. Engage safety props.
2. Check that draper guide (A) (rubber track on underside of draper) is properly engaged in groove of drive roller (B), and that idler roller (C) is inboard of the draper guide.

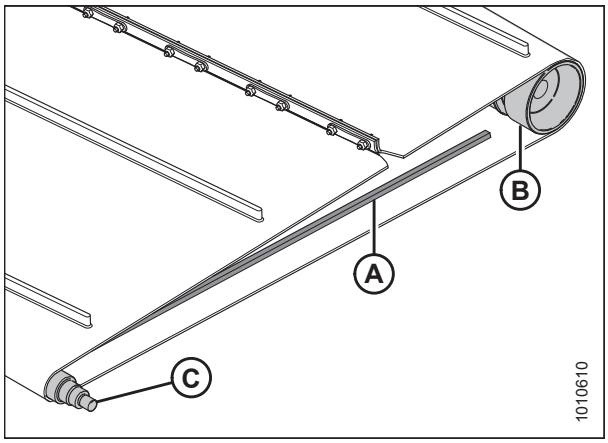


Figure 5.5: Draper Guide

3. Loosen jam nut (A).
4. Hold nut (B) with a wrench and turn bolt (C) clockwise to increase tension and counterclockwise to decrease tension.

   NOTE:

   Tension is correct when retainer (D) is flush with spring holder, and bolt (E) is free.
5. Tighten jam nut (A).
6. Repeat Steps *3, page 80* to *5, page 80* on the opposite side of the draper.

   IMPORTANT:

   Perform equal adjustments on both sides of the draper.

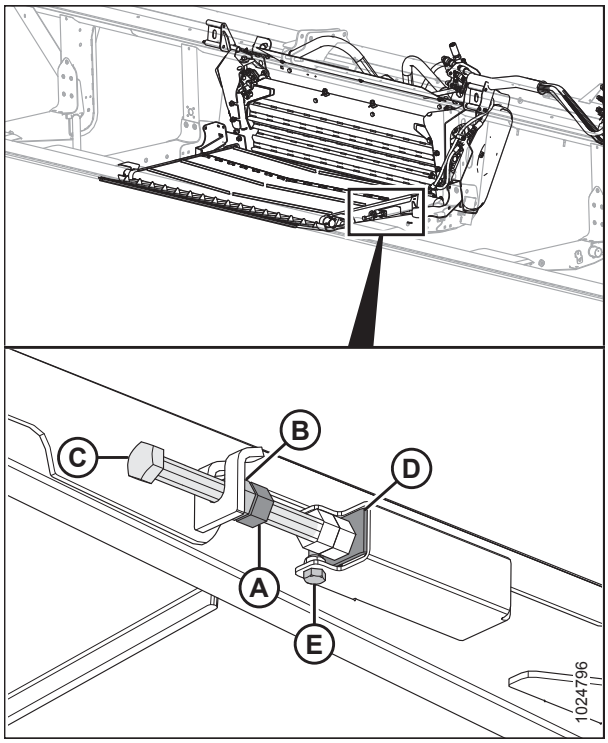


Figure 5.6: Tension Adjustment Hardware

5.7 Drive Belt

5.7.1 Adjusting Drive Belt Tension

The roll drive belt must be tightened as specified for maximum efficiency.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Engage the header safety props.
3. Remove wing nut and washer (A) and remove drive cover (B).

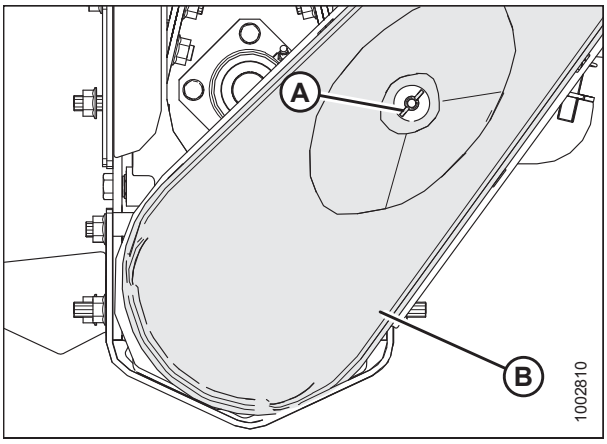


Figure 5.7: Drive Belt Cover

4. Check the drive belt tension. Belt (A) should deflect 7.9 mm (5/16 in.) when a force of 22–49 N (5–11 lbf) is applied at the center of the span.

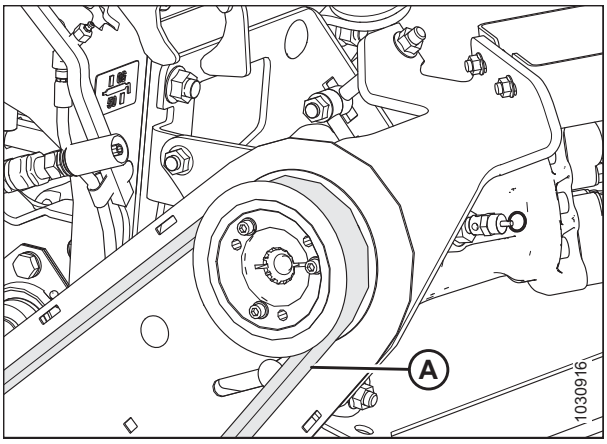


Figure 5.8: Drive Pulley – Conditioner Drive Motor

5. Loosen three motor mount nuts (A).
6. Turn tensioning nut (B) clockwise to tighten belt and counterclockwise to loosen.
7. Tighten three motor mount nuts (A).
8. Recheck belt (C) tension.

   NOTE:

   If drive pulley is loose, was removed, or was replaced for any reason, tighten three bolts (D).

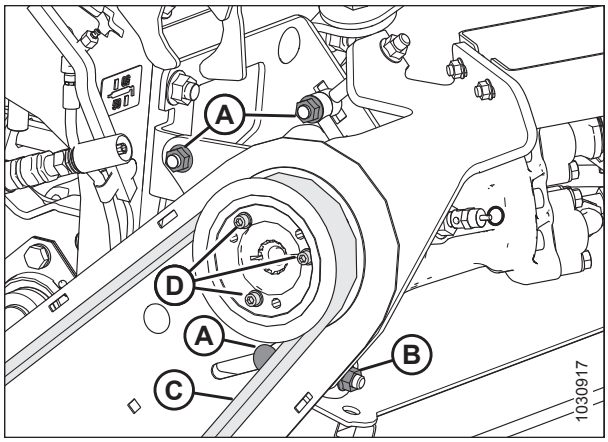


Figure 5.9: Drive Pulley – Conditioner Drive Motor

9. Replace cover (B) and secure with washer and wing nut (A).
10. Readjust tension of a new belt after a short run-in period (about 5 hours).

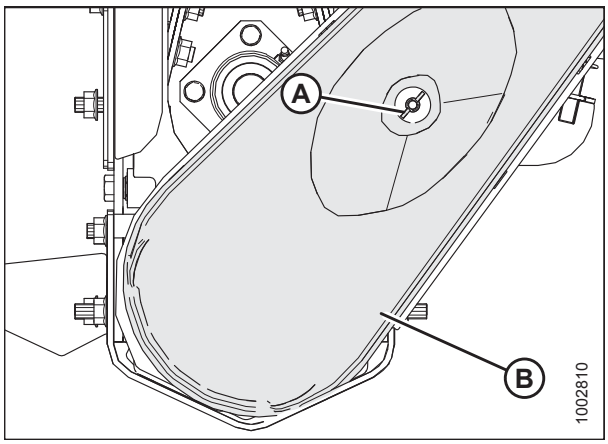


Figure 5.10: Drive Belt Cover

5.7.2 Adjusting Drive Belt Pulley Alignment

Pulleys should be aligned so that the belt tracks properly.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Engage the header safety props.

If necessary, adjust belt pulley alignment as follows:

3. Remove wing nut (A) and washer and remove drive cover (B).

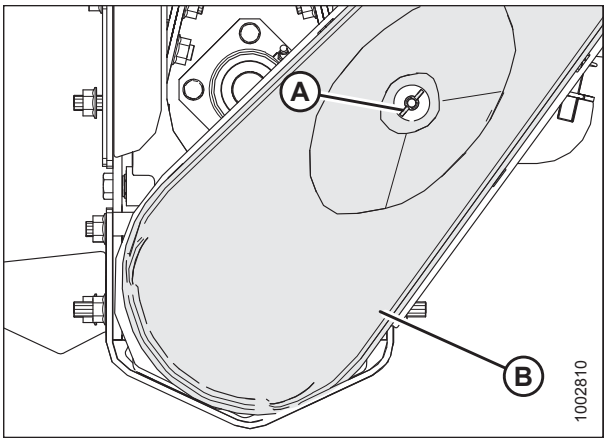


Figure 5.11: Drive Belt Cover

4. Loosen nut (A).
5. Adjust nuts (B) to align the drive pulley horizontally.
6. Adjust nuts (C) to align the drive pulley vertically.

   NOTE:

   If the drive pulley is loose, was removed, or replaced for any reason, tighten three bolts (D).

7. Tighten nut (A).

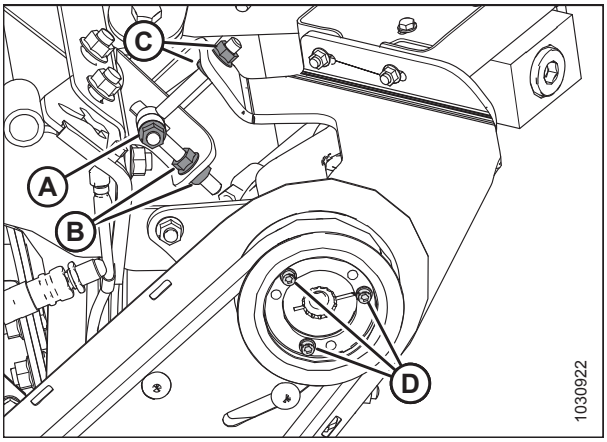


Figure 5.12: Drive Pulley – Conditioner Drive Motor

8. Replace cover (B) and secure with washer and wing nut (A).

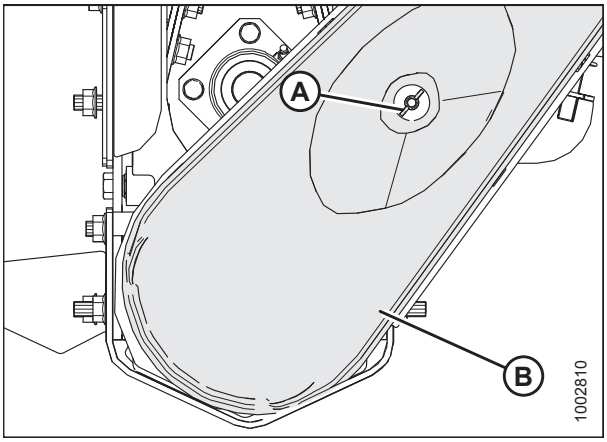


Figure 5.13: Drive Belt Cover

5.7.3 Checking and Adjusting Drive Belt Tracking

Proper tracking of the belt ensures there is no rubbing of the belt on either pulley.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Engage the header safety props.
3. Remove wing nut (A) and washer and remove drive cover (B).

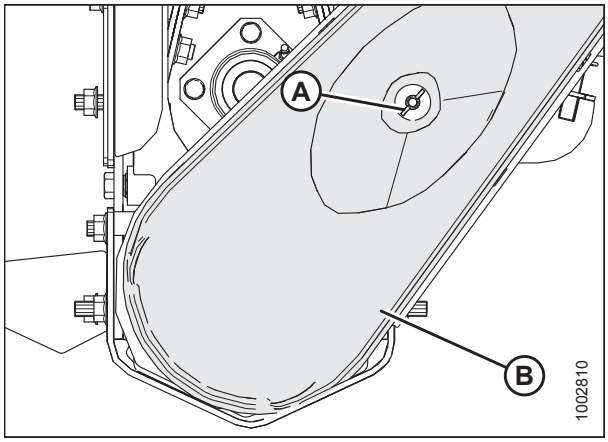


Figure 5.14: Drive Belt Cover

4. Check the belt and both pulleys (A) for evidence of belt rubbing.

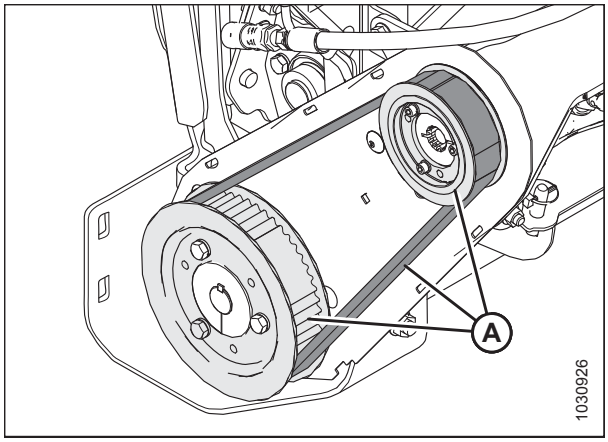


Figure 5.15: Drive Belt and Pulleys – Conditioner Drive Motor

5. Place a straight edge (A) across the face of the driving and driven pulleys. Check that the pulleys are aligned.

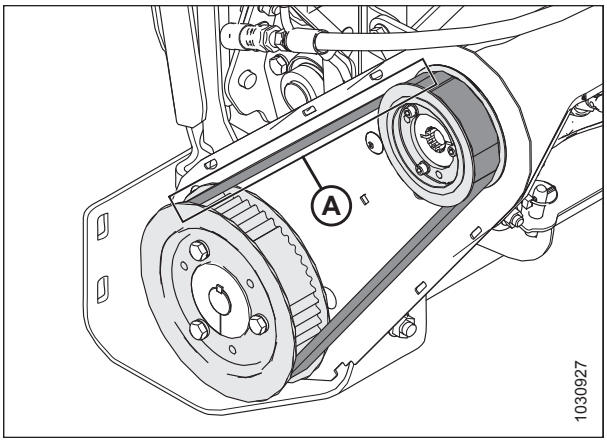


Figure 5.16: Drive Belt and Pulleys – Conditioner Drive Motor

6. Adjust the driving pulley by loosening nut (A).
7. Adjust nuts (B) to align the drive pulley horizontally. If belt is tracking to the outside of the pulley, turn jam nuts (B) clockwise.
8. Adjust nuts (C) to align the drive pulley vertically. If belt is tracking to the inside of the pulley, turn jam nuts (C) counterclockwise.

   NOTE:

   If drive pulley is loose, was removed, or was replaced for any reason, tighten three bolts (D).

9. Tighten nut (A).

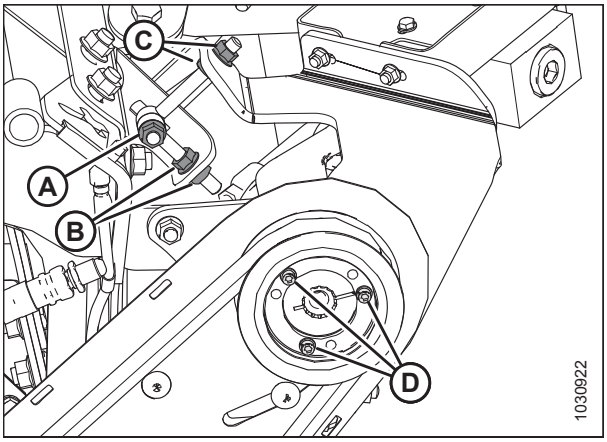


Figure 5.17: Drive Pulley – Conditioner Drive Motor

10. Run the conditioner to verify the belt is now tracking correctly.
11. Replace cover (B) and secure with washer and wing nut (A).

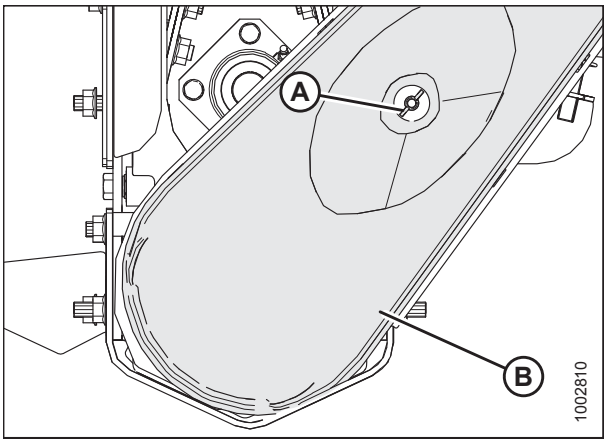


Figure 5.18: Drive Belt Cover

5.7.4 Removing Drive Belt

The drive belt transfers rotational force from the motor to the gears and roll coupling assembly.

DANGER

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

1. Shut down the engine, and remove the key from the ignition.
2. Engage the header safety props.
3. On the left side of the conditioner, remove wing nut and washer (A), and then remove drive cover (B).

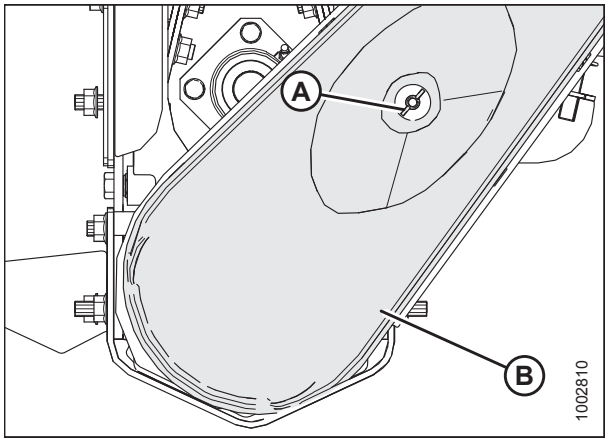


Figure 5.19: Drive Belt Cover

5. Turn tensioning nut (B) counterclockwise to loosen.
6. Remove belt (C).

   NOTE:

   If drive pulley is loose, was removed, or was replaced for any reason, tighten three bolts (D).

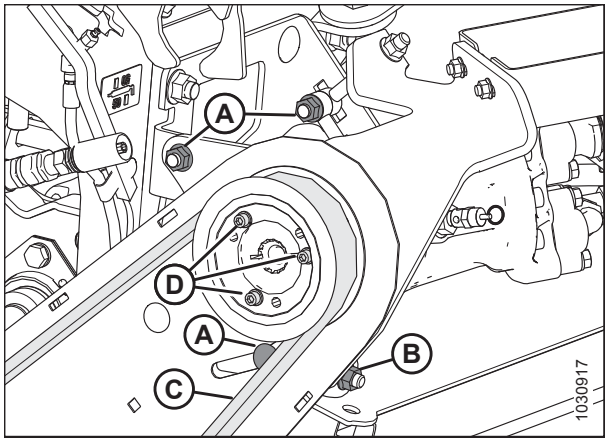


Figure 5.20: Drive Pulley – Conditioner Drive Motor

5.7.5 Installing Drive Belt

The drive belt transfers rotational force from the motor to the gears and roll coupling assembly.

DANGER

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

NOTE:

Before installing a new belt, refer to *5.7.3 Checking and Adjusting Drive Belt Tracking, page 84* to check possible cause of failure.

1. Shut down the engine, and remove the key from the ignition.
2. Engage the header safety props.
3. Install belt (A) onto pulleys.

   NOTE:

   When installing new belt, never pry belt over pulley. Be sure adjusting device is fully loosened, then tension belt.

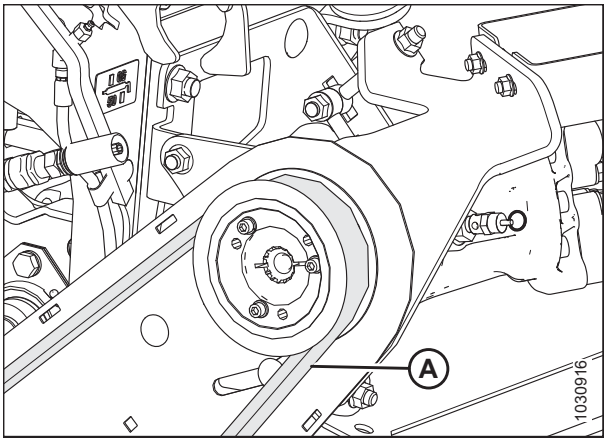


Figure 5.21: Drive Pulley – Conditioner Drive Motor

4. Loosen three motor mount nuts (A).
5. Turn tensioning nut (B) clockwise to tighten belt and counterclockwise to loosen.
6. Tighten three motor mount nuts (A).
7. Recheck belt (C) tension.

   NOTE:

   If drive pulley is loose, was removed, or was replaced for any reason, tighten three bolts (D).

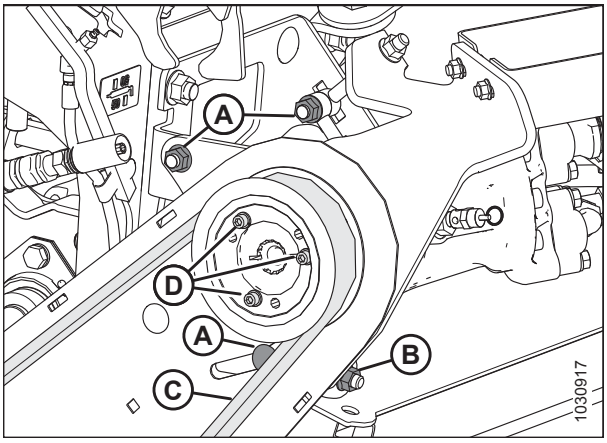


Figure 5.22: Drive Pulley – Conditioner Drive Motor

8. Replace cover (B) and secure with washer and wing nut (A).
9. Readjust tension of a new belt after a short run-in period (about 5 hours).

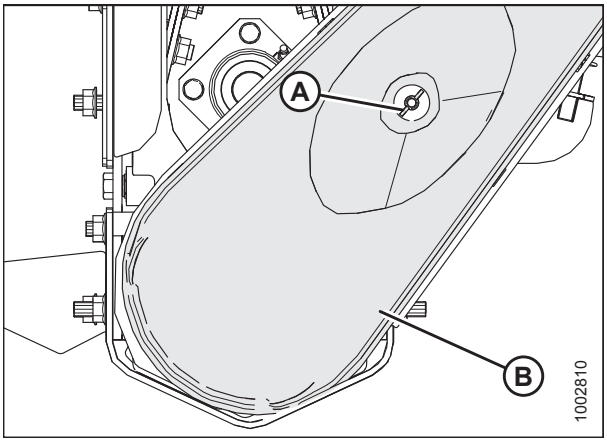


Figure 5.23: Drive Belt Cover

5.8 Maintenance Schedule

Regular maintenance is the best insurance against early wear and untimely breakdowns.

The following maintenance schedule is a listing of periodic maintenance procedures, organized by service intervals. Following this schedule will increase the service life of your machine. For detailed instructions, refer to the specific headings in this manual. Use the lubricant specified in *5.4.1 Lubricants, page 78*.

Service Intervals: The recommended service intervals are specified in hours of operation. Where a service interval is given in more than one time frame, e.g., "100 hours or Annually", service the machine at whichever interval is reached first.

IMPORTANT:

Recommended intervals are for average operating conditions. Service the machine more often if operated under adverse conditions (severe dust, extra heavy loads, etc.).

CAUTION

Carefully follow safety messages given under *5.1 Preparation for Servicing, page 75* and *5.2 Recommended Safety Procedures, page 76*.

Table 5.1 Service Intervals

Interval	Service
First use	Refer to *4.6 Break-in Period, page 65*.
10 hours or daily	Check hydraulic hoses and lines.
50 hours	Grease roll shaft bearings. Grease feed deck drive and idler roller bearings.
100 hours or annually[6]	Check roll drive belt tension.
End of season	Refer to *4.10 Storing the Hay Conditioner, page 73*.

Table 5.2 Maintenance Record

	Action:	✓ – Check										♦ – Lubricate										
	Hour Meter Reading																					
	Date																					
	Serviced By																					
	First Use	Refer to *4.6 Break-in Period, page 65* for checklist.																				
	10 Hours or Daily																					
✓	Hydraulic hoses and lines	**NOTE:** A record of daily maintenance is not normally required; it is maintained at the Owner/Operator's discretion.																				
	50 Hours																					
♦	Roll shaft bearings																					
♦	Feed deck roller bearings																					
	100 Hours or Annually																					
✓	Roll drive belt tension																					

6. It is recommended that annual maintenance be done prior to the start of the operating season.

5.9 Troubleshooting

Use troubleshooting tables to help solve problems with the machine.

Problem	Solution	Section
Symptom: Hay conditioner rolls will not turn		
There is an obstruction or wad in the conditioner rolls	Turn mechanism in reverse and remove wad	*4.9.6 Unplugging the Conditioner, page 72*
Drive belt is broken	Replace drive belt	*5.7.4 Removing Drive Belt, page 86* and *5.7.5 Installing Drive Belt, page 86*
Drive belt is too loose	Tighten or replace conditioner drive belt	*5.7.4 Removing Drive Belt, page 86* and *5.7.5 Installing Drive Belt, page 86*
Symptom: Crop is over-conditioned		
Roll gap is too small	Increase roll gap	*4.9.2 Adjusting Roll Gap, page 68*
Roll timing is off	Adjust roll timing	*4.9.3 Adjusting Roll Timing, page 69*
Symptom: Crop is under-conditioned		
Roll gap is too large	Reduce roll gap	*4.9.2 Adjusting Roll Gap, page 68*
Roll timing is off	Adjust roll timing	*4.9.3 Adjusting Roll Timing, page 69*
Symptom: Windrow is too wide		
Forming shield side deflectors are too far apart	Position deflectors closer together	*Adjusting Side Deflectors, page 71*
Symptom: Windrow is too narrow		
Forming shield side deflectors are too close together	Position deflectors farther apart	*Adjusting Side Deflectors, page 71*
Deflector fins inside forming shield are improperly adjusted	Adjust fins	*Adjusting Deflector Fins, page 72*
Symptom: Windrow is uneven		
Forming shield is too low	Raise forming shield	*Adjusting Forming Shield Height, page 70*
Deflector fins inside forming shield are improperly adjusted	Adjust fins	*Adjusting Deflector Fins, page 72*
Overlap of side drapers and feed deck is inadequate	Adjust overlap	*3.5 Installing the Feed Draper Deck, page 25*
Symptom: Windrow lacks shape		
Forming shield is too high	Lower forming shield	*Adjusting Forming Shield Height, page 70*
Deflector fins inside forming shield are improperly adjusted	Adjust fins	*Adjusting Deflector Fins, page 72*
Symptom: Feed draper is not tracking properly		
Feed draper tensioners are improperly adjusted	Check feed draper tension and adjust accordingly	*5.6.1 Adjusting Feed Draper Tension, page 80*
Symptom: Side draper is backfeeding		
Overlap of side drapers and feed deck is inadequate	Adjust overlap	*3.5 Installing the Feed Draper Deck, page 25*

Chapter 6: Repair Parts

This chapter lists all the replacement parts that can be ordered for a MacDon HC10 Hay Conditioner.

Bold text is used to indicate updates made at the current revision level. With each new revision of the manual, previous revisions are returned to regular text.

In this manual, right and left are determined from the operator's position, facing forward with the windrower in cab-forward position. An arrow is sometimes used in illustrations to indicate cab-forward position.

6.1 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		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 – veritcal knife
WF – wide frame	ZP – zinc plated	

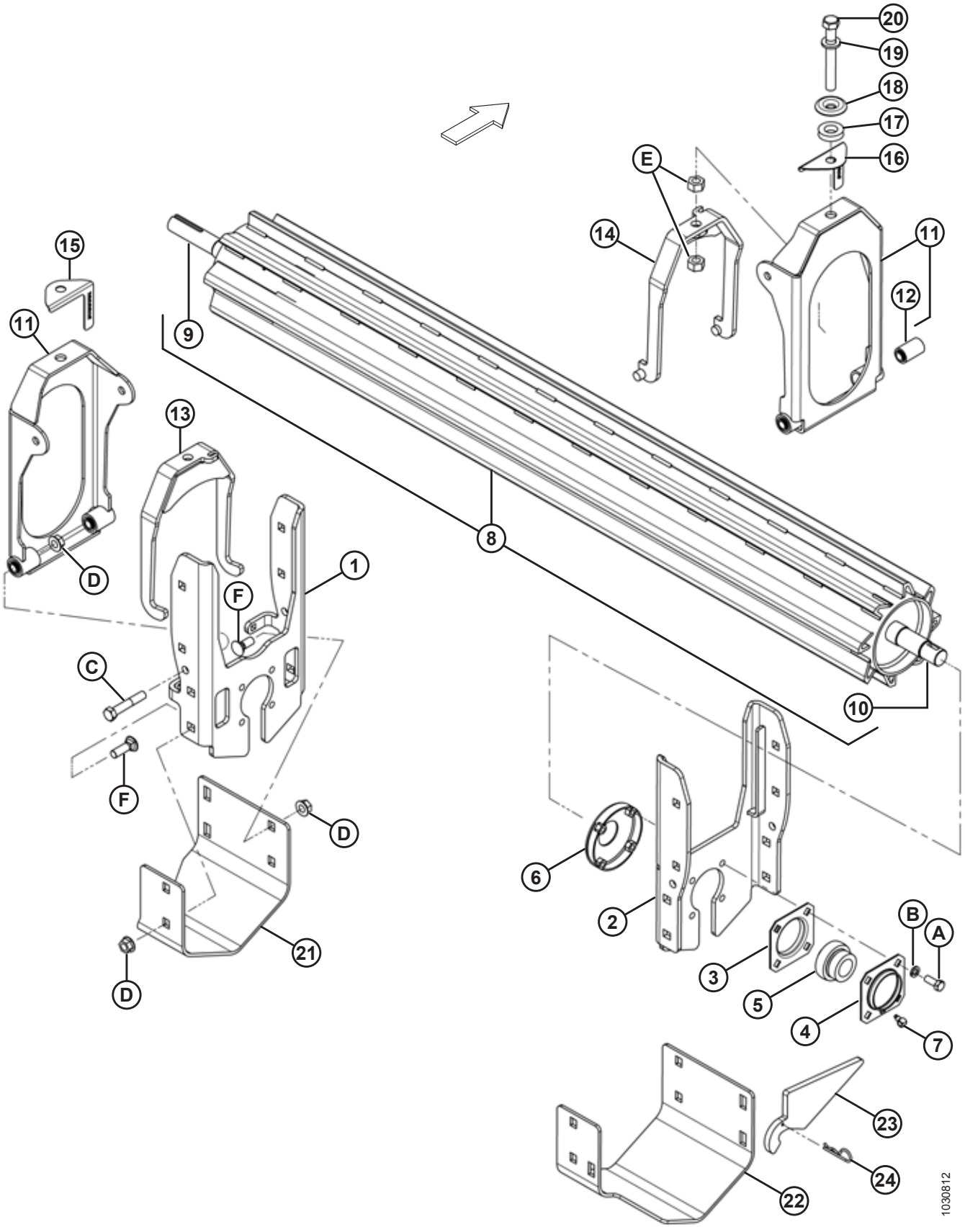
6.2 Serial Number Breaks

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:

- –162249 Used on machines up to and including serial number 166249
- 166250– Used on machines including and after serial number 166250

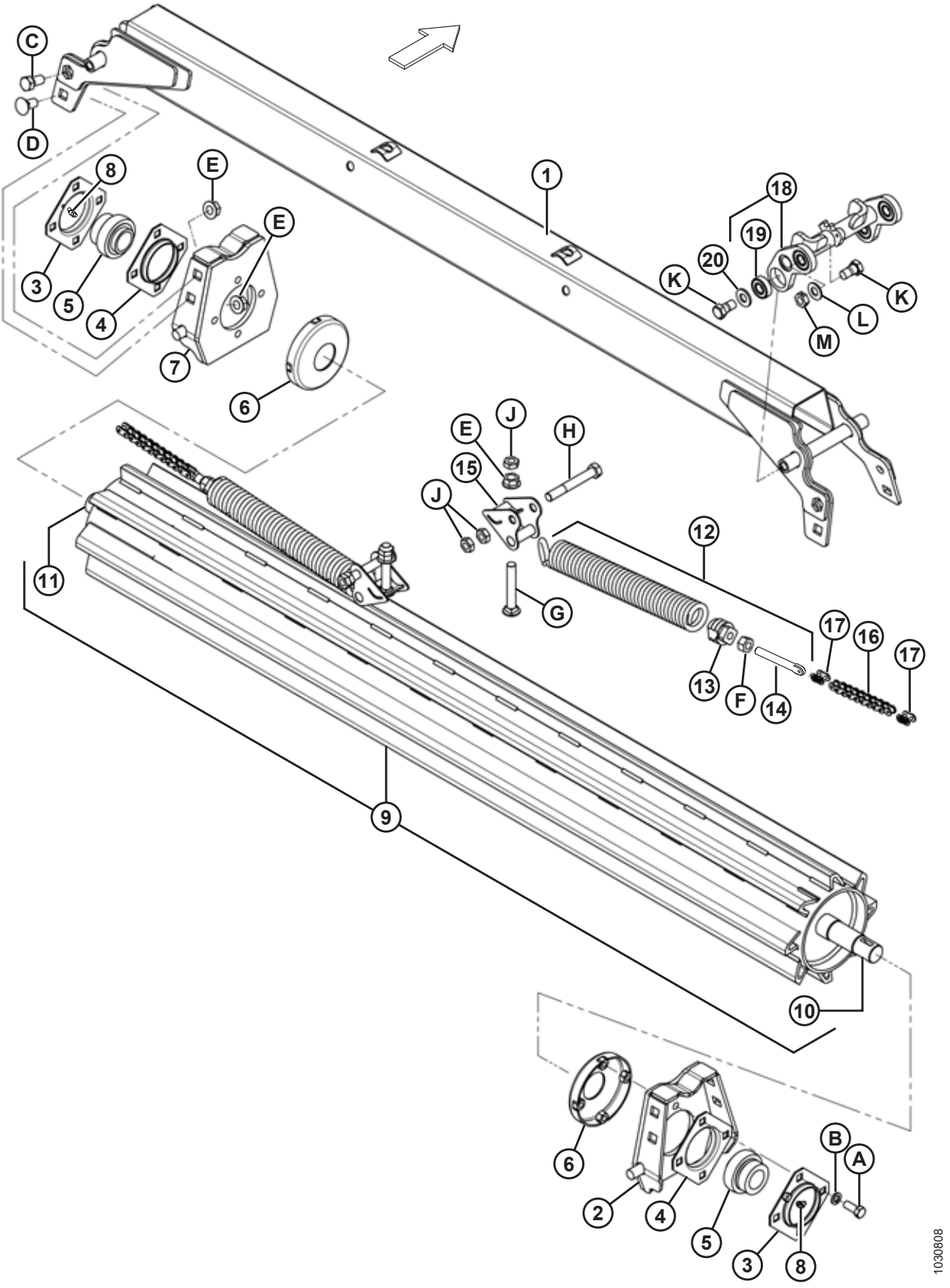
6.3 Lower Roll and Frame Assembly



Ref	Part Number	Description	Qty	Serial Number
1	159117	SUPPORT – LH	1	
2	159118	FRAME – RH LOWER WELDT	1	
3	30576	FLANGE	2	
4	50182	FLANGE	2	
5	30031	BEARING – SPH OD C/W COLLAR 1.5 IN BORE	2	
6	101173	DISC WELDT	2	
7	50187	FITTING – LUBE 90° ADAPTER [7]	2	
8	**159750**	**ROLL – LOWER WELDT**	**1**	
9	**159749**	**SHAFT SPINDLE – LH LOWER ROLL (WELDED)**	**1**	
10	**159748**	**SHAFT SPINDLE – RH LOWER ROLL (WELDED)**	**1**	
11	130476	CHANNEL – PIVOT C/W BUSHINGS	2	
12	13626	BUSHING – RUBBER	4	
13	130443	BRACKET – LH ADJUSTER WELDT	1	
14	130336	BRACKET – RH ADJUSTER WELDT	1	
15	130990	GAUGE – LH ROLL OPENING	1	
16	130994	GAUGE – RH ROLL OPENING	1	
17	47124	WASHER – RUBBER	2	
18	130532	WASHER – FORMED	2	
19	21540	WASHER – HARDENED	2	
20	135405	BOLT – HEXHD (MIN THD) 3/4 NC X 6.0 LG GR 5 ZP	2	
21	159404	SKID – LH CONDITIONER	1	
22	159405	SKID – RH CONDITIONER	1	
23	159352	SUPPORT	1	
24	13125	PIN – HAIR	1	
A	21491	BOLT – HEXHD 1/2 NC X 1.25 LG GR 5 ZP		
B	18638	WASHER – REG. LOCK 1/2 IN. NOM. I.D. ZP		
C	21406	BOLT – HEXHD 5/8 NC X 3.5 GR 5 ZP		
D	50225	NUT – FLANGE DT SMOOTH FACE .625-11 UNC		
E	18593	NUT – HEX 3/4-10 UNC GR 5 ZP		
F	18523	BOLT – RHSN, 5/8 NC X 1.5 LG GR 5 ZP		

7. Refer to Section *6.5 Cover and Supports, page 98*, for lubrication lines.

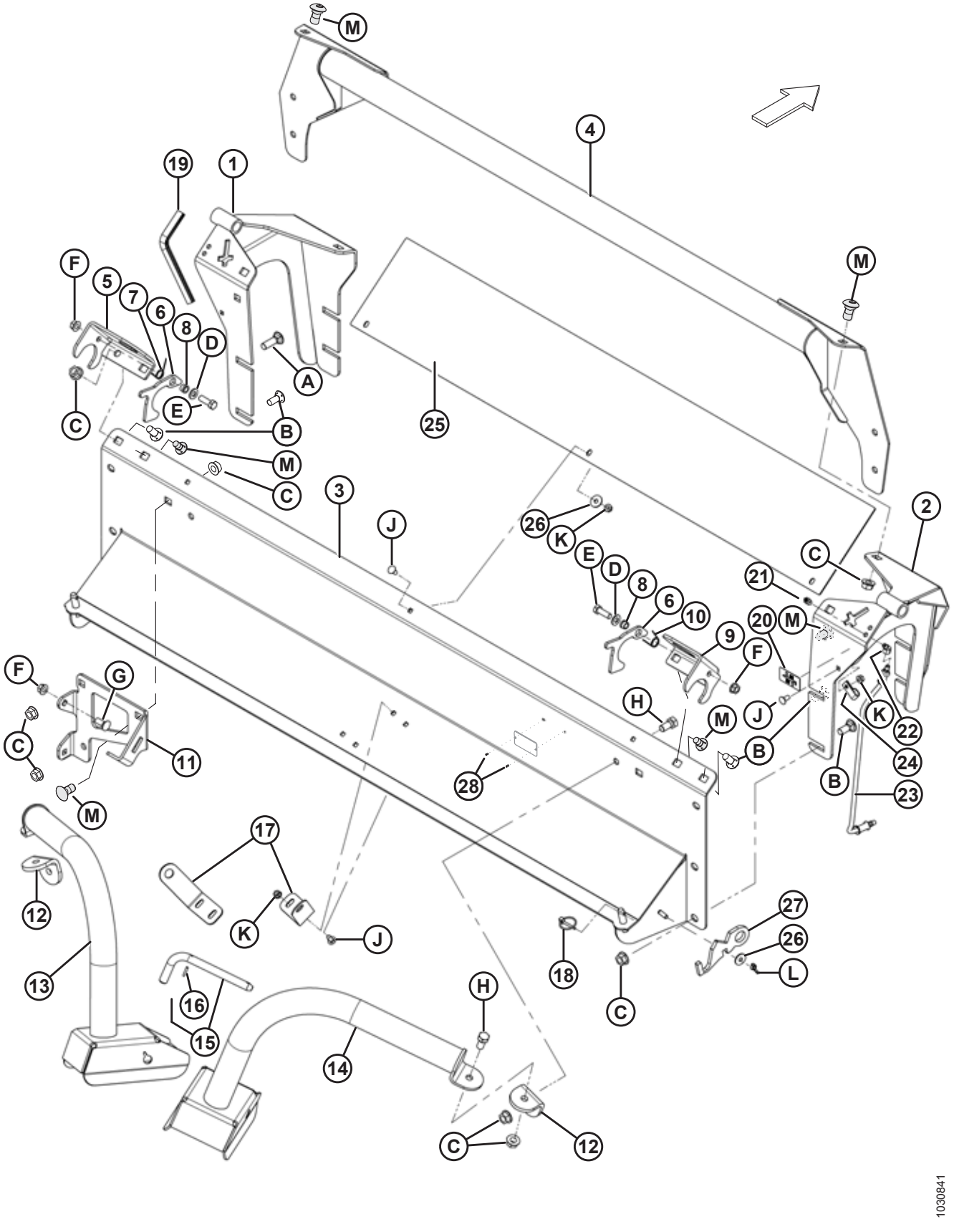
6.4 Upper Roll Assembly



Ref	Part Number	Description	Qty	Serial Number
1	130470	CHANNEL – CROSS WELDT	1	
2	130793	SUPPORT – RH WELDT	1	
3	50182	FLANGE	2	
4	30576	FLANGE	2	
5	30031	BEARING – SPH OD C/W COLLAR 1.5 IN. BORE	2	
6	101173	DISC WELDT	2	
7	130472	SUPPORT – LH WELDT	1	
8	21301	FITTING – LUBRICATION	2	
9	**159751**	**ROLL – UPPER WELDMENT**	**1**	
10	**159748**	**SPINDLE – RH (WELDED)**	**1**	
11	170332	SHAFT – STUB, LH (WELDED)	1	
12	159707	ASSEMBLY – SPRING [8]	2	
13	NSS	INSERT – MACHINED	2	
14	159706	STUD – THREADED	2	
15	130747	LEVER WELDT	2	
16	130645	CHAIN – #50 WO CONN (9 PITCHES)	2	
17	6634	LINK – CONNECTOR #50	4	
18	130450	TOGGLE ASSEMBLY C/W BEARINGS	2	
19	50185	BEARING – BALL CYL OD 17MM BORE	8	
20	30441	WASHER – HARDENED	4	
A	21491	BOLT – HEXHD 1/2 NC X 1.25 LG GR 5 ZP		
B	18638	WASHER – REG. LOCK 1/2 IN. NOM. I.D. ZP		
C	21585	BOLT – HEXHD 5/8 NC X 1.25 LG GR 5 ZP		
D	103562	BOLT – RHSN 5/8 NC X 1.25 GR 5 ZP		
E	50225	NUT – FLG DT SMTH FACE .625-11 UNC		
F	18592	NUT – HEX 5/8-11 UNC GR 5 ZP		
G	102658	BOLT – RHSN 5/8 NC X 4 TFL GR 5 ZP		
H	21720	BOLT – HEXHD 5/8 NC X 4.5 LG GR5 ZP		
J	21941	NUT – HEX LOCK JAM (DT) 5/8-11 UNC GR 5 ZP		
K	105141	BOLT – LOCKING SHOULDER		
L	18600	WASHER – SAE FLAT, 21/32 I.D. X 1-5/16 O.D. ZP		
M	105173	NUT – HEX JAM, CENTER LOCK		

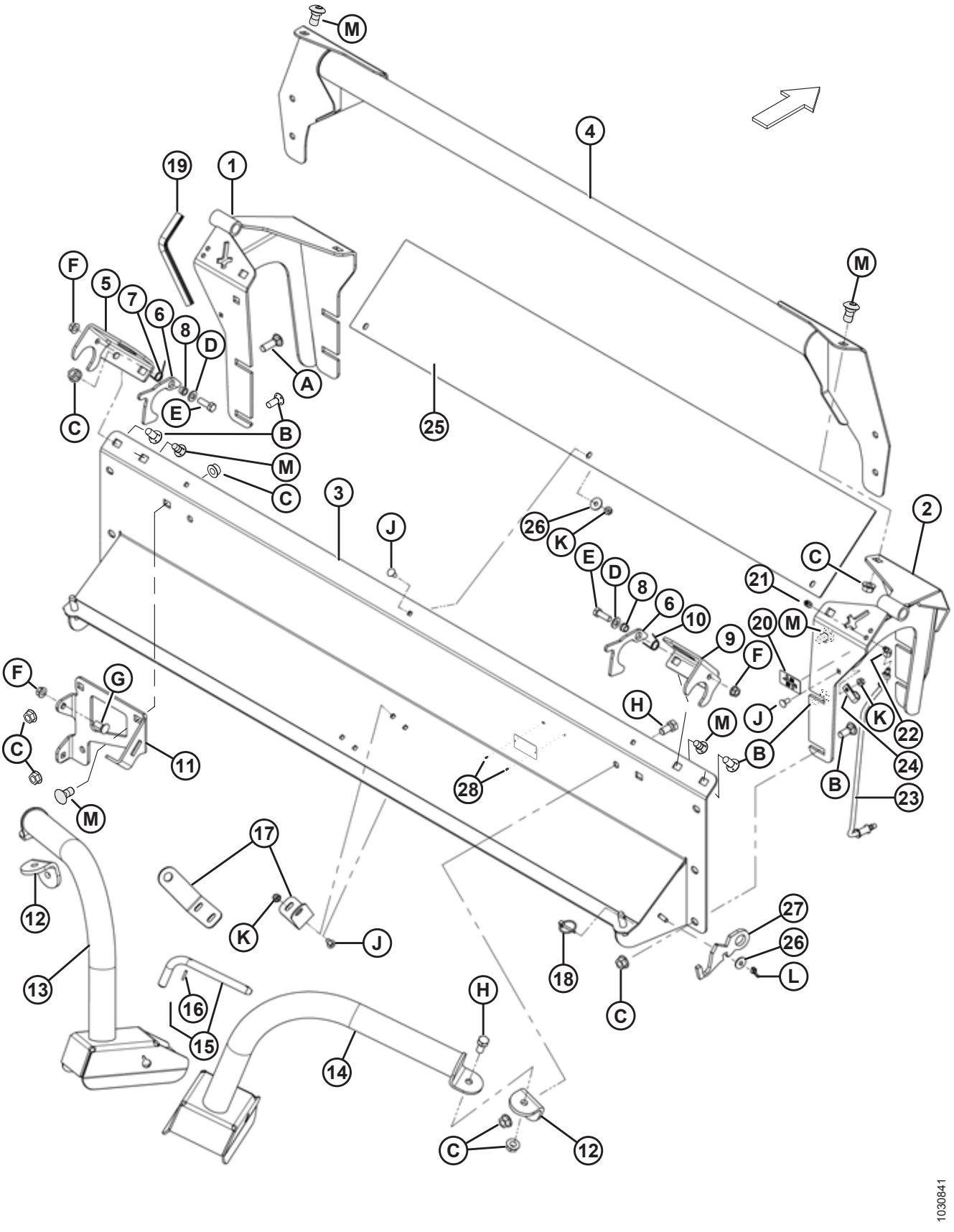
8. Includes spring and machined insert.

6.5 Cover and Supports



Ref	Part Number	Description	Qty	Serial Number
1	159231	SUPPORT WELDT – LH	1	
2	159582	SUPPORT WELDT – RH	1	
3	159200	COVER – TOP REAR WELDT	1	
4	130496	TUBE – CROSS WELDT	1	
5	159003	LATCH – WELDT, LH	1	
6	159001	LATCH	2	
7	159020	SPRING – TORSION	1	
8	159005	SPACER – 3/4 IN. O.D. X .120 WALL X 12 LONG [9]	2	
9	159007	LATCH – WELDT, RH	1	
10	144505	SPRING – TORSION	1	
11	REF	Refer to Section *6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661, page 102*.	1	
12	130858	ANGLE	2	
13	159329	SUPPORT – WELDT, LIFT ARM, LH	1	
14	159333	SUPPORT – WELDT, LIFT ARM, RH	1	
15	144415	ASSY – L-PIN [10]	2	
16	16010	PIN – SPRING 3/16 DIA X 1.0 LG	2	
17	159002	ANGLE	2	
18	102264	PIN – LYNCH 3/16 X 1-9/16 IN.	2	
19	110737	MOULDING – FRAME (UNIGRIP)	1	
20	23165	DECAL – 50 HR LUBE	2	
21	50188	FITTING – LUBRICATION 1/8 NPT FEMALE	2	
22	115677	FITTING – ELBOW 45° HYD	2	
23	159583	HOSE – GREASE, 1/8 IN. NPT	2	
24	135232	CLAMP – DOUBLE HOSE INSULATED	2	
25	187723	COVER	1	
26	19685	WASHER – FLAT	4	
27	150572	PLATE – ROLL TIMING GAUGE	1	
28	14338	RIVET – BLIND 1/8 X .125	2	
A	18524	BOLT – RHSN 5/8 NC X 2.0 LG GR 5 ZP		
B	18523	BOLT – RHSN 5/8 NC X 1.5 GR 5 ZP		
C	50225	NUT – FLG DT SMTH FACE .625-11 UNC		
D	18599	WASHER – SAE FLAT 17/32 I.D. X 1-1/16 IN. O.D. ZP		
E	18723	BOLT – HEX HD 1/2 NC X 1.5 LG TFL GR 5 ZP		
F	50186	NUT – FLG LK SMTH FACE DT .500-13 UNC GR 5		
G	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
H	21585	BOLT – HEX HD 5/8 NC X 1.25 LG GR5 ZP		
J	21863	BOLT – RHSSN 3/8 NC X 0.75 LG GR 5 ZP		

9. Stepped.
10. Includes spring pin (MD #16010).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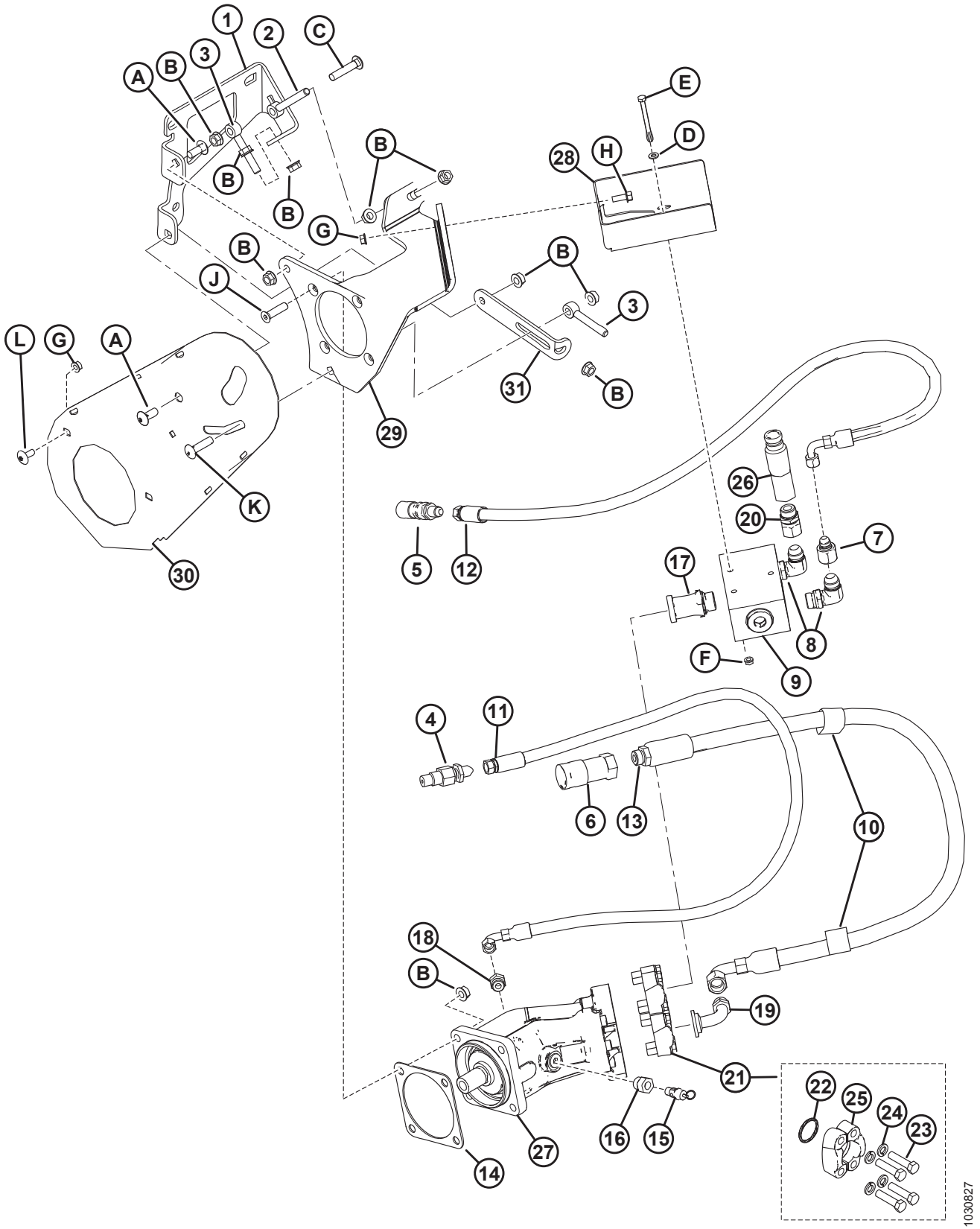
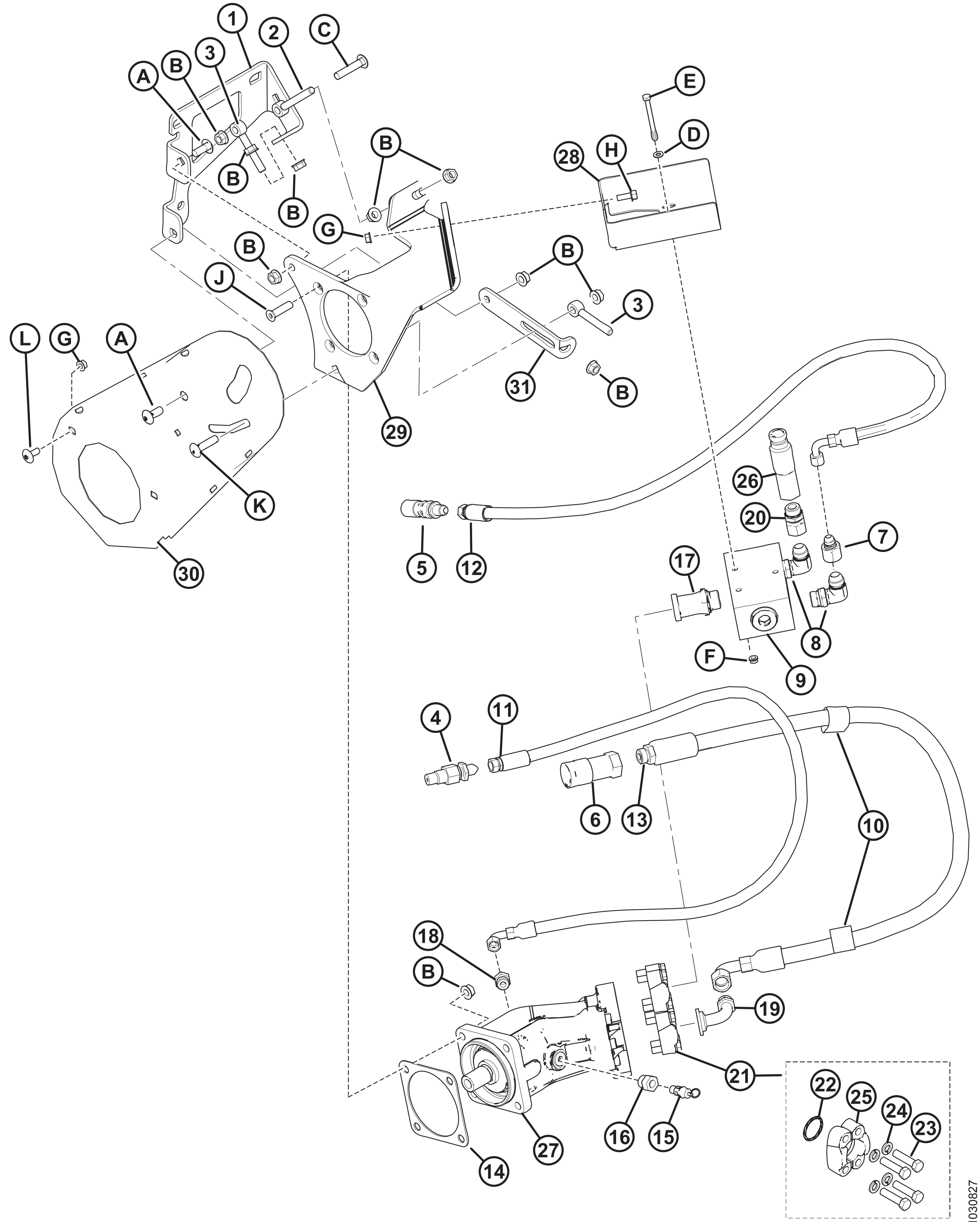
Ref	Part Number	Description	Qty	Serial Number
K	30228	NUT – FLG DT SMTH FACE .375-16 UNC		
L	21289	NUT – WING TYPE A 3/8 NC ZP		
M	103562	BOLT-RHSN 5/8-11X1.25-GR5-AA1J		

6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661



Ref	Part Number	Description	Qty	Serial Number
1	130757	SUPPORT – HYD MOTOR	1	
2	159452	BOLT WELDT – EYE	1	
3	130765	BOLT WELDT – EYE	1	
4	135237	COUPLER – MALE HYD. 3/8 IN. FLAT FACE BULKHEAD	1	
5	135213	COUPLING – FEMALE HYD. 3/8 FLAT FACE BULKHEAD	1	
6	135565	COUPLER – FEMALE HYD. 3/4 IN. FLAT FACE	1	
7	136952	FITTING – ADAPTER HYD REDUCER	1	
8	320092	FITTING – ELBOW 90° HYD METRIC	2	
9	159719	VALVE-FLOW DIVIDER	1	
10	135444	CINCH STRAP 6" LG	2	
11	159646	HOSE	1	
12	159028	HOSE	1	
13	159029	HOSE	1	
14	159716	SHIM – MOTOR	1	
15	159635	VALVE – RELIEF 75 PSI	1	
16	135255	FITTING – ADAPTER HYD CW O-RING	1	
17	320093	FITTING – ADAPTER HYD FLANGE	1	
18	21881	FITTING – ADAPTER HYD	1	
19	135929	FITTING – ADAPTER HYD 90° FLG	1	
20	40241	FITTING – ADAPTER HYD	1	
21	138127	KIT – SPLIT FLANGE, 1" CD 62	2	
22	112868	O-RING – 1.296 IN. ID x 0.139 IN. WALL	4	
23	252643	BOLT-HH 7/16-14 x 1.75 – GR8 – AA3L	4	
24	18652	WASHER – REG. LOCK7/16 IN. NOM. ID ZP	4	
25	194043	FLANGE – HALF SPLIT 1 INCH – CODE 62	2	
26	135314	COUPLER – MALE HYD. 3/4 IN. FLAT FACE	1	
27	159661	MOTOR – HYD	1	
28	159721	SUPPORT – VALVE MOUNT	1	
29	159665	SUPPORT – MOTOR	1	
30	159541	SHIELD WELD'T	1	
31	159634	BAR – TENSIONER	1	
A	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
B	50186	NUT – FLG LK DT 1/2-13 UNC GR5 AA1J		
C	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
D	18597	WASHER – FLAT SAE 11/32 ID X 11/16 OD AA1J		
E	30821	BOLT – HEX HD 5/16-18X3.5 GR5 – AA1J		
F	30280	NUT – FLG LK SMFC 5/16-18 UNC GR5 AA1J		
G	30228	NUT – FLG DT SM FACE 3/8-16UNC – GR5 – AA1J		
H	21975	BOLT – HEX FLG SER HD 3/8-16X1.0 GR 5 – AA1J		
J	320077	SCR – HEX SOC CSK HD 1/2X2		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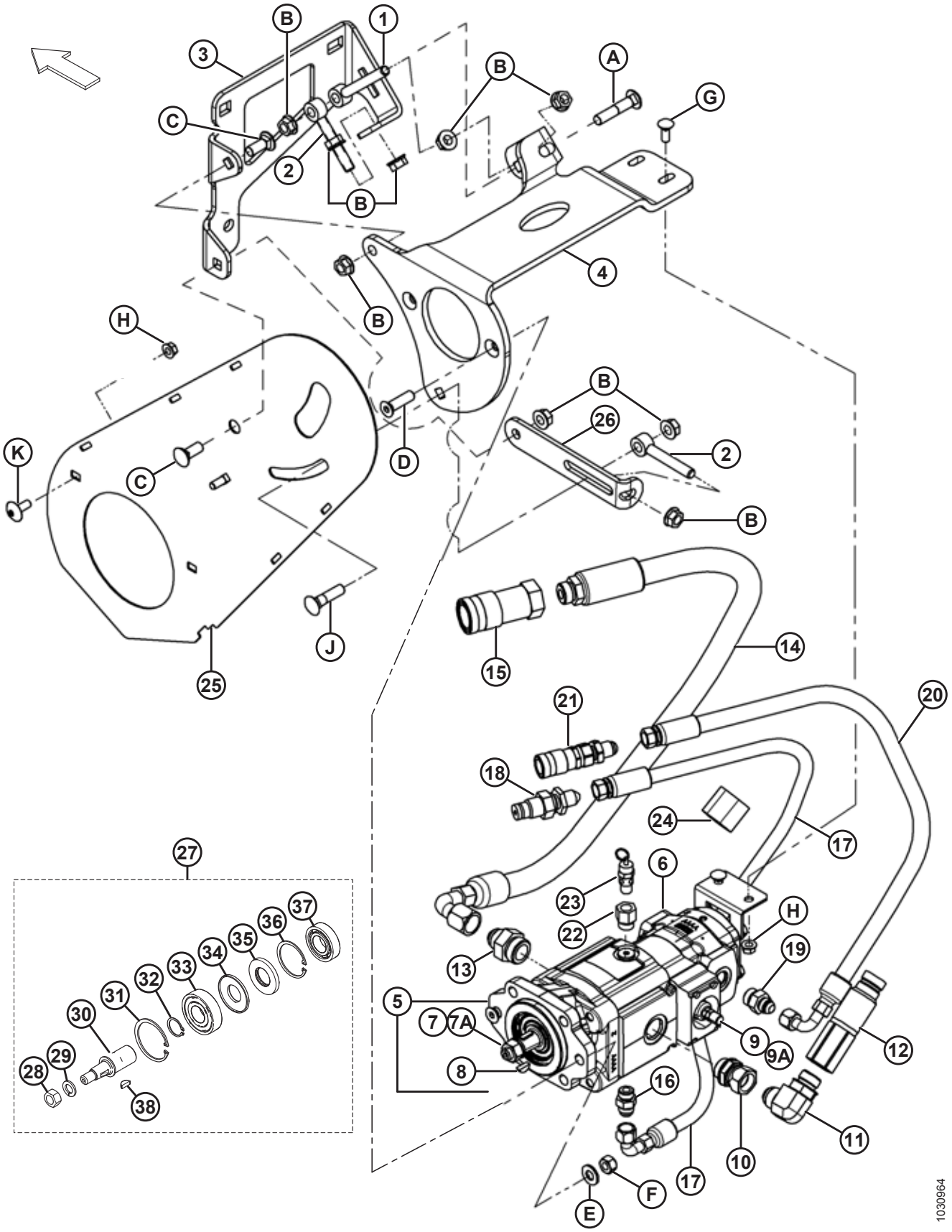
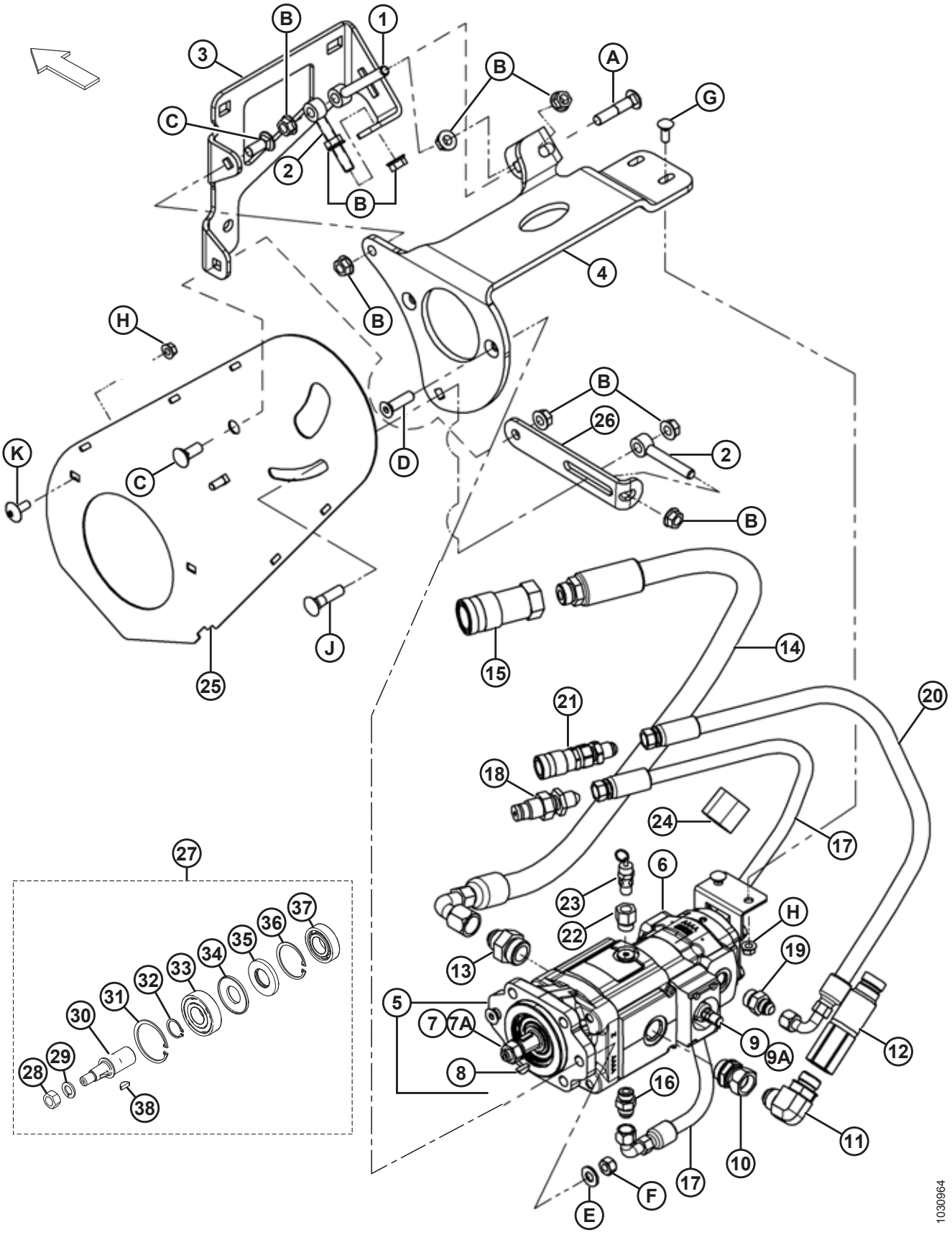
Ref	Part Number	Description	Qty	Serial Number
K	21474	BOLT – RHSN 1/2 NC X 2.0 LG GR 5 ZP		
L	135507	SCREW – MACHINE, TRUSS HD TORX, 38NC X 1LG		

6.7 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159648



Ref	Part Number	Description	Qty	Serial Number
1	159452	BOLT WELDT – EYE	1	
2	130765	BOLT WELDT – EYE	2	
3	130757	SUPPORT – HYD MOTOR	1	
4	133965	SUPPORT – CASSAPA MOTOR	1	
5	159648	MOTOR – HYD FLOW DIVIDER [11]	1	
	159631	SEAL KIT (FOR MOTOR)		
6	159645	MOTOR – HYD, GEAR (CAST IRON BODY) [12]		
	159649	MOTOR – HYD, GEAR (ALUMINUM BODY) [13]		
7	REF	NUT – HEX LOCK DT 5/8-18 UNF ZP [14]	1	
7A	REF	WASHER – SAE FLAT 5/8 I.D. X 1-15/32 IN. O.D. ZP [14]	1	
8	159535	KEY – WOODRUFF (1/4 X 3/4 NOM.)	1	
9	159632	VALVE – RELIEF	1	
9A	159633	NUT – 8MM, M8 SPECIAL	1	
10	40241	FITTING – ADAPTER HYD C/W O-RING	1	
11	30970	FITTING – ELBOW 90° HYD	1	
12	135314	COUPLER – MALE HYD 3/4 IN. FLAT FACE	1	
	135479	SEAL KIT – 3/4 MALE COUPLER		
13	135483	FITTING – ADAPTER HYD	1	
14	159029	HOSE	1	
15	135565	COUPLER – FEMALE HYD 3/4 IN. FLAT FACE	1	
16	21030	FITTING – CONNECTOR HYD, SAE 8 [15]	1	
17	159646	HOSE [15]	1	
18	135237	COUPLER – MALE HYD 3/8 IN. FLAT FACE BULKHEAD	1	
	111978	SEAL KIT – 3/8 MALE COUPLER		
19	21881	FITTING – ADAPTER HYD	1	
20	159028	HOSE	1	
21	135213	COUPLER – FEMALE HYD 3/8 FLAT FACE BULKHEAD	1	
22	159419	FITTING – ADAPTER HYD C/W O-RING	1	
23	159635	VALVE – RELIEF	1	
24	135444	FASTENER – CINCH STRAP 6 IN. LG	2	
25	159541	SHIELD WELD'T	1	
26	159634	BAR – TENSIONER	1	
27	**159692**	**KIT – SHAFT REPAIR (FOR MOTOR MD #159648)**		

11. If replacing the motor, upgrade the motor and associated components (sprocket, hydraulics) using kit MD #159717. Kit includes motor (MD #159645), key (MD #159535), valve (MD #159632), and special nut (MD #159633). Service motor shaft with item 27 (MD #159692).
12. Preferred motor.
13. Use only if motor (MD #159645) is unavailable.
14. Nut and washer supplied on end shaft of motor (MD #159648) used only to protect threads during shipping. For service parts, order nut (MD #18714) and washer (MD #1624). For installation position, refer to Section *6.9 Belt Drive and Shield – Motor MD #159648, page 112*.
15. Order fitting (MD #21030) and hose (MD #159646) together to ensure thread match.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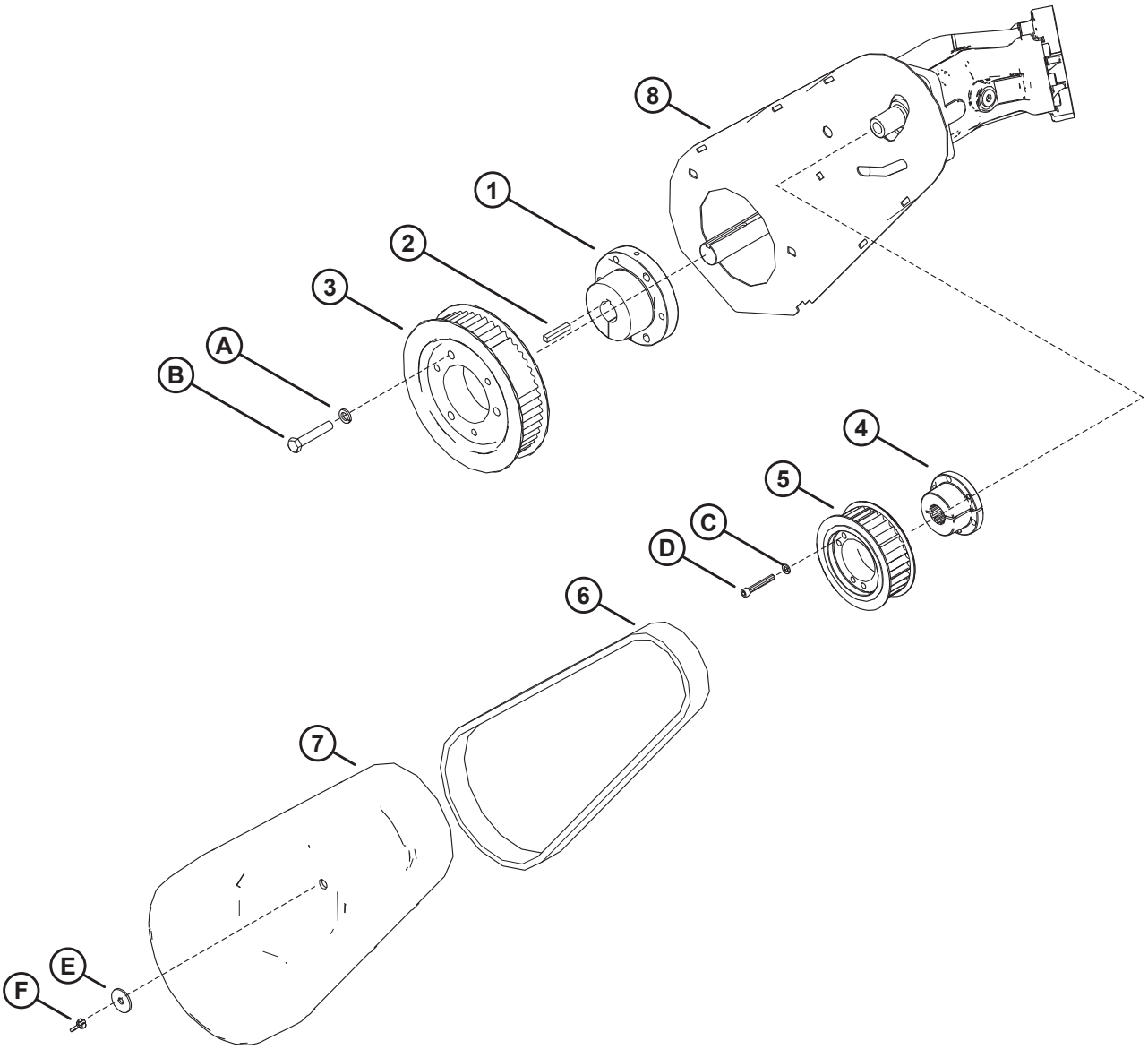
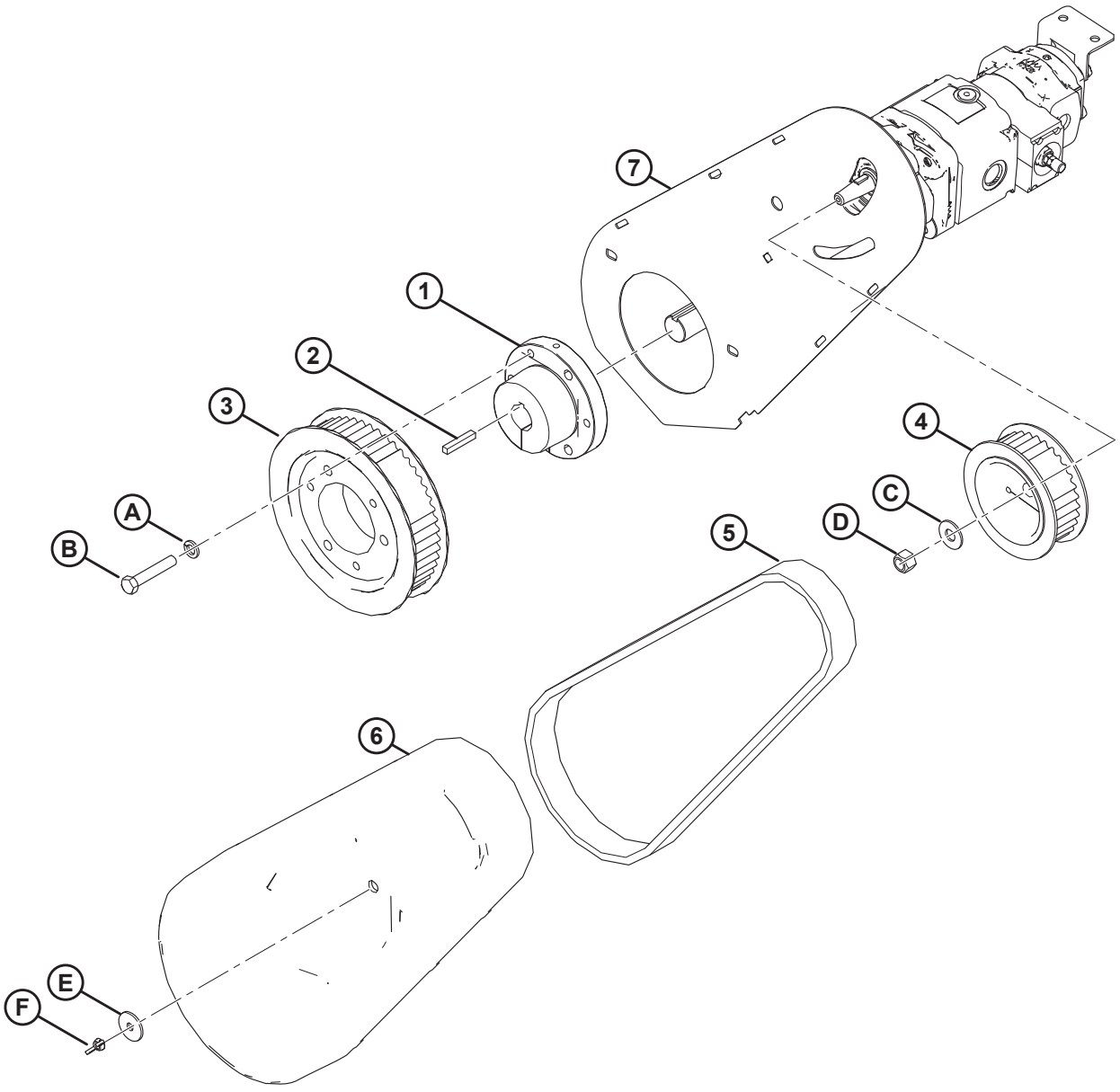
Ref	Part Number	Description	Qty	Serial Number
28	**159681**	**NUT – 5/8-17 UNF-2B ANSI B.8.2.2**	**1**	
29	**159682**	**WASHER – B16 DIN 128 DACROMET**	**1**	
30	**159683**	**SUPPORT – SHAFT K 30-6-G6**	**1**	
31	**159684**	**RING – 30 UNI 7435-DIN 472**	**1**	
32	**159685**	**RING – 30 UNI 7435-DIN 471**	**1**	
33	**159686**	**BALL – BEARING 6306-2RS1 30X72X19**	**1**	
34	**159687**	**BACK-UP – WASHER BAU3 30X62X7**	**1**	
35	**159688**	**SHAFT – SEAL BAU3 30X62X7**	**1**	
36	**159689**	**RING – 62 UNI 7437-DIN 472**	**1**	
37	**159690**	**BALL – BEARING 6206**	**1**	
38	**159535**	**KEY – WOODRUFF (1/4 X 3/4 NOM.)**	**1**	
A	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
B	**50186**	**NUT – FLG LK DT 1/2-13 UNC GR5 AA1J**		
C	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
D	137503	BOLT – CSK SOCK. 1/2 NC X 1.75 GR. 5 ZP		
E	18599	WASHER – SAE FLAT 17/32 I.D. X 1-1/16 IN. O.D. ZP		
F	18697	NUT – HEX LOCK DT .500-13 UNC		
G	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		
H	**30228**	**NUT – FLG DT SM FACE 3/8-16UNC-GR5-AA1J**		
J	21474	BOLT – RHSN 1/2 NC X 2.0 LG GR 5 ZP		
K	135507	SCREW – MACHINE, TRUSS HD TORX, 38 NC X 1 LG		

6.8 Belt Drive and Shield – Motor MD #159661



Ref	Part Number	Description	Qty	Serial Number
1	130880	BUSHING – SPLIT TAPER QD-E-1.375 BORE	1	
2	17194	KEY	1	
3	159215	SPROCKET – P52 14M 40	1	
4	159617	HUB – SPLINED	1	
5	159658	SPROCKET – TIMING	1	
6	130706	BELT – HTD 1610-14M-40	1	
7	159168	SHIELD – HT DRIVE	1	
8	REF	Refer to Section *6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661, page 102*.		
A	18638	WASHER – REG. LOCK 1/2 IN. NOM. ID AA1J		
B	21880	BOLT – HEX HD 1/2-13 X 2.75 GR5 AA1J		
C	18636	WASHER – REG. LOCK 5/16 IN. NOM. ID AA1J		
D	320078	SCR – HEX SOC HD 5/16-18 X 2 1/8		
E	14887	WASHER – FLAT		
F	21289	NUT – WING TYPE A 3/8 NC ZP		

6.9 Belt Drive and Shield – Motor MD #159648



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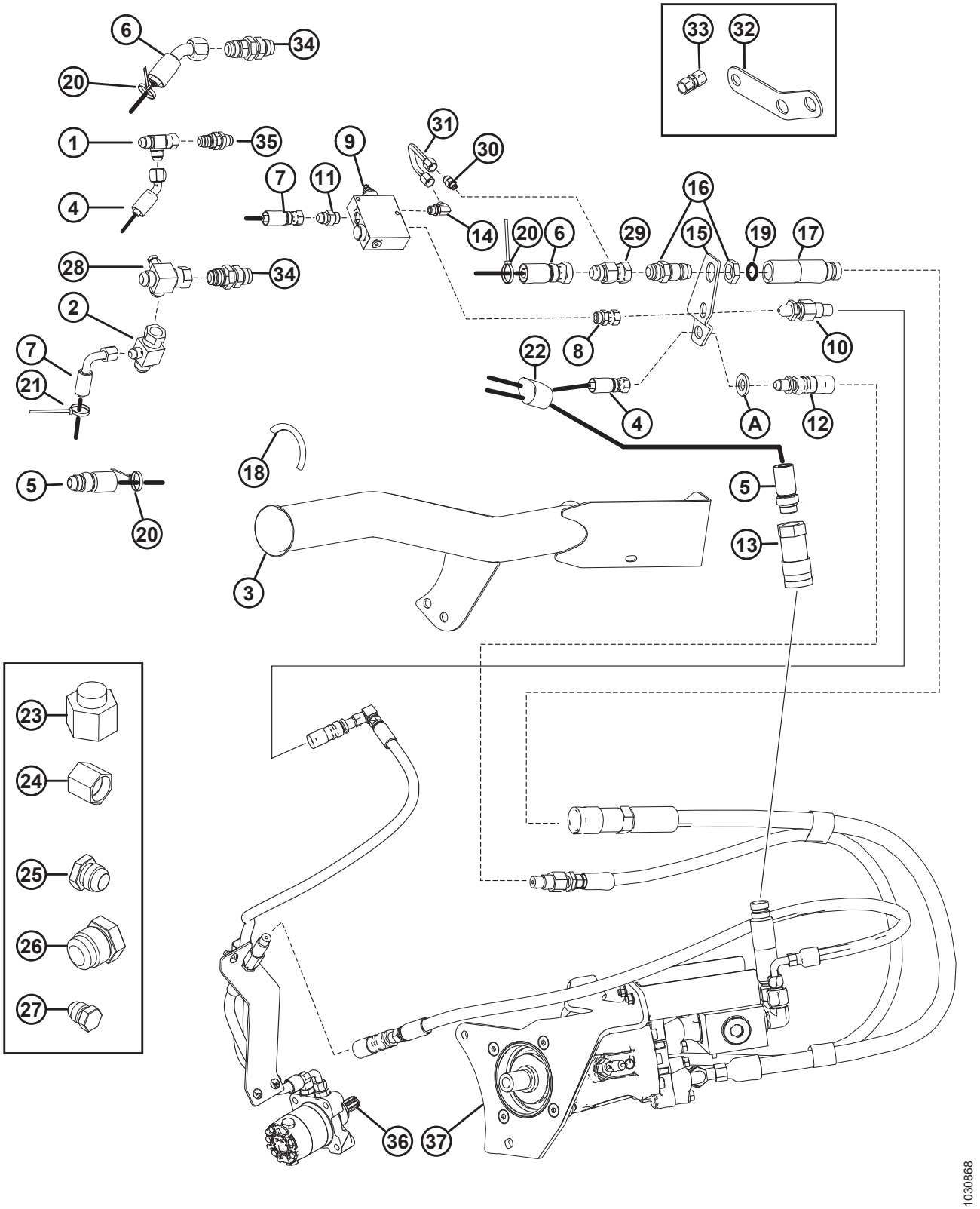
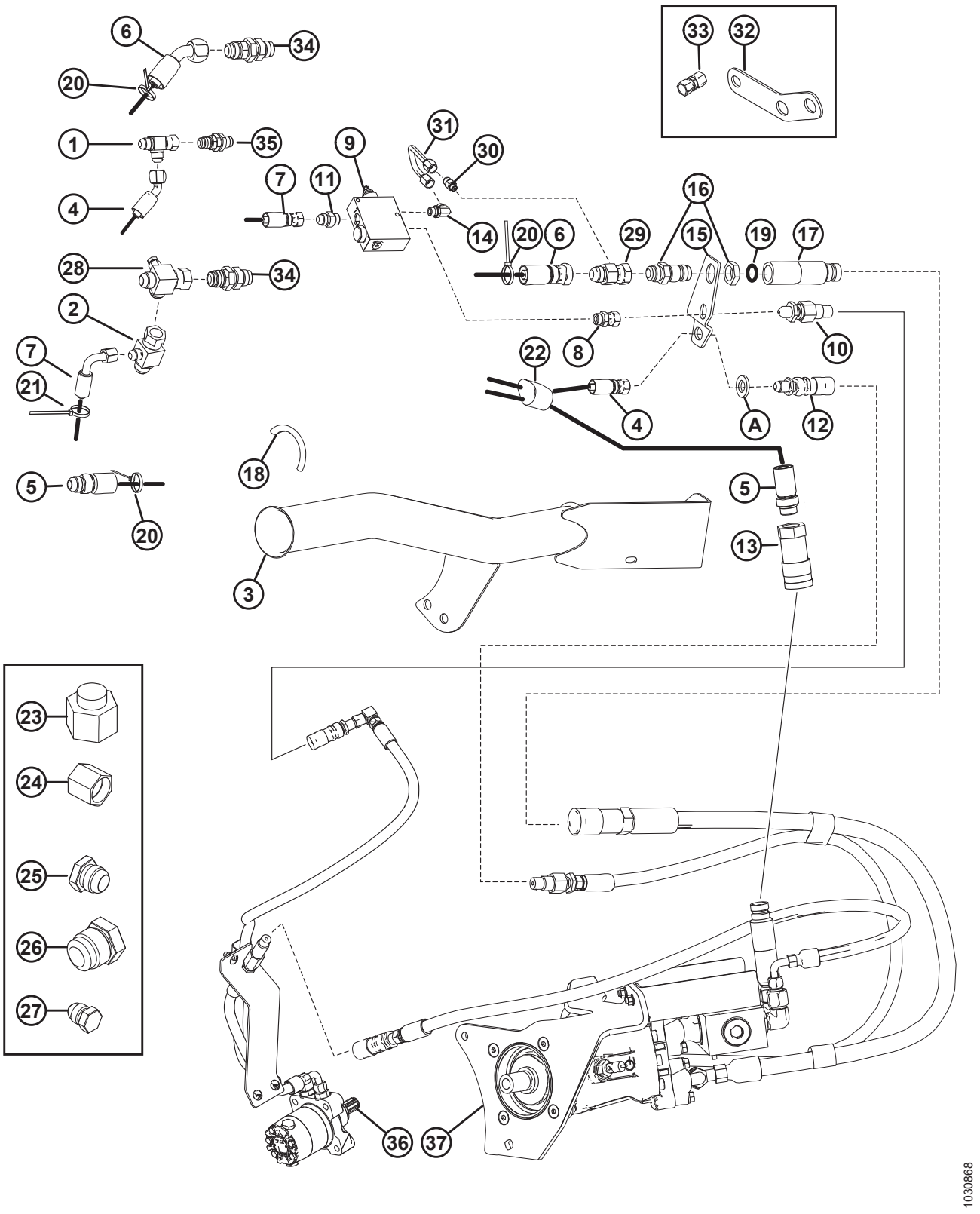
Ref	Part Number	Description	Qty	Serial Number
1	130880	BUSHING – SPLIT TAPER QD-E-1.375 BORE	1	
2	17194	KEY	1	
3	159215	SPROCKET – P52 14M 40	1	
4	159430	SPROCKET – P32-14M-40	1	
5	130706	BELT – HTD 1610-14M-40	1	
6	159168	SHIELD – HT DRIVE	1	
7	REF	Refer to Section *6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661, page 102*.		
A	**18638**	**WASHER – REG. LOCK 1/2 IN. NOM. ID AA1J**		
B	**21880**	**BOLT – HEX HD 1/2-13 X 2.75 GR5 AA1J**		
C	1624	WASHER – SAE FLAT 5/8 I.D. X 1-15/32 IN. O.D. ZP		
D	18714	NUT – HEX LOCK DT 5/8-18 UNF ZP		
E	14887	WASHER – FLAT		
F	21289	NUT – WING TYPE A 3/8 NC ZP		

6.10 Hydraulic Completion Package – Motor MD #159661



Ref	Part Number	Description	Qty	Serial Number
1	108268	FITTING – HYD TEE	1	
2	159038	VALVE – CHECK	1	
3	159158	HOLDER – HOSES	1	
4	159032	HOSE – HYDRAULIC, 1/2 IN. I.D.	1	
5	159030	HOSE – HYDRAULIC, 3/4 IN. I.D.	1	
6	120574	HOSE – HYDRAULIC, 3/4 IN. I.D.	1	
7	159159	HOSE – HYDRAULIC, 1/2 IN. I.D.	1	
8	135373	FITTING – ADAPTER HYD	1	
9	**159735**	**VALVE – PRESSURE REDUCING**	**1**	
10	135237	COUPLER – MALE HYD 3/8 IN. FLAT FACE BULKHEAD	1	
	111978	SEAL KIT – 3/8 MALE		
11	21030	FITTING – CONNECTOR HYD	1	
12	135213	COUPLING – FEMALE HYD 3/8 FLAT FACE BULKHEAD	1	
13	135565	COUPLER – FEMALE HYD 3/4 IN. FLAT FACE	1	
14	30282	FITTING – ELBOW HYD	1	
15	159421	PLATE	1	
16	135372	FTG – 3/4 IN. HYD BULKHEAD 37 DEG. FLAIR UNION	1	
17	135314	COUPLER – MALE HYD 3/4 IN. FLAT FACE	1	
	135479	SEAL KIT – 3/4 MALE		
18	109791	MOULDING	1	
19	30971	O-RING	1	
20	40704	FASTENER – CABLE TIE (ORANGE)	3	
21	40703	FASTENER – CABLE TIE (BLUE)	1	
22	135444	FASTENER – CINCH STRAP 6 IN. LG	1	
23	30999	CAP – 3/4 IN. TUBE [16]	3	
24	108233	CAP – 1/2 IN. TUBE [16]	1	
25	135374	PLUG – 1/2 IN TUBE [16]	1	
26	103576	PLUG – 3/4 IN. TUBE [16]	2	
27	50178	PLUG – 3/8 IN. TUBE [16]	1	
28	135245	FITTING – HYD TEE, SPECIAL [17]	1	
29	136973	FITTING – FEMALE UNION HYD	1	
30	**100790**	**FITTING – ADAPTER HYD**	**1**	
31	159733	LINE- – HYD, RELIEVING	1	
32	159358	SUPPORT – COUPLING [18]	1	
33	135540	FITTING – FEMALE UNION HYD [18]	1	
34	REF	FITTING – 3/4 IN. HYD BULKHEAD 37 DEG. FLAIR UNION [17]	2	
35	REF	FITTING – 1/2 IN. UNION HYDRAULIC [17]	1	
36	REF	Refer to Section *6.15 Feed Deck and Pan, page 128*.		

16. For shipping only.
17. Refer to header parts catalog for connecting parts.
18. For 4.6 m (15 ft.) header **ONLY**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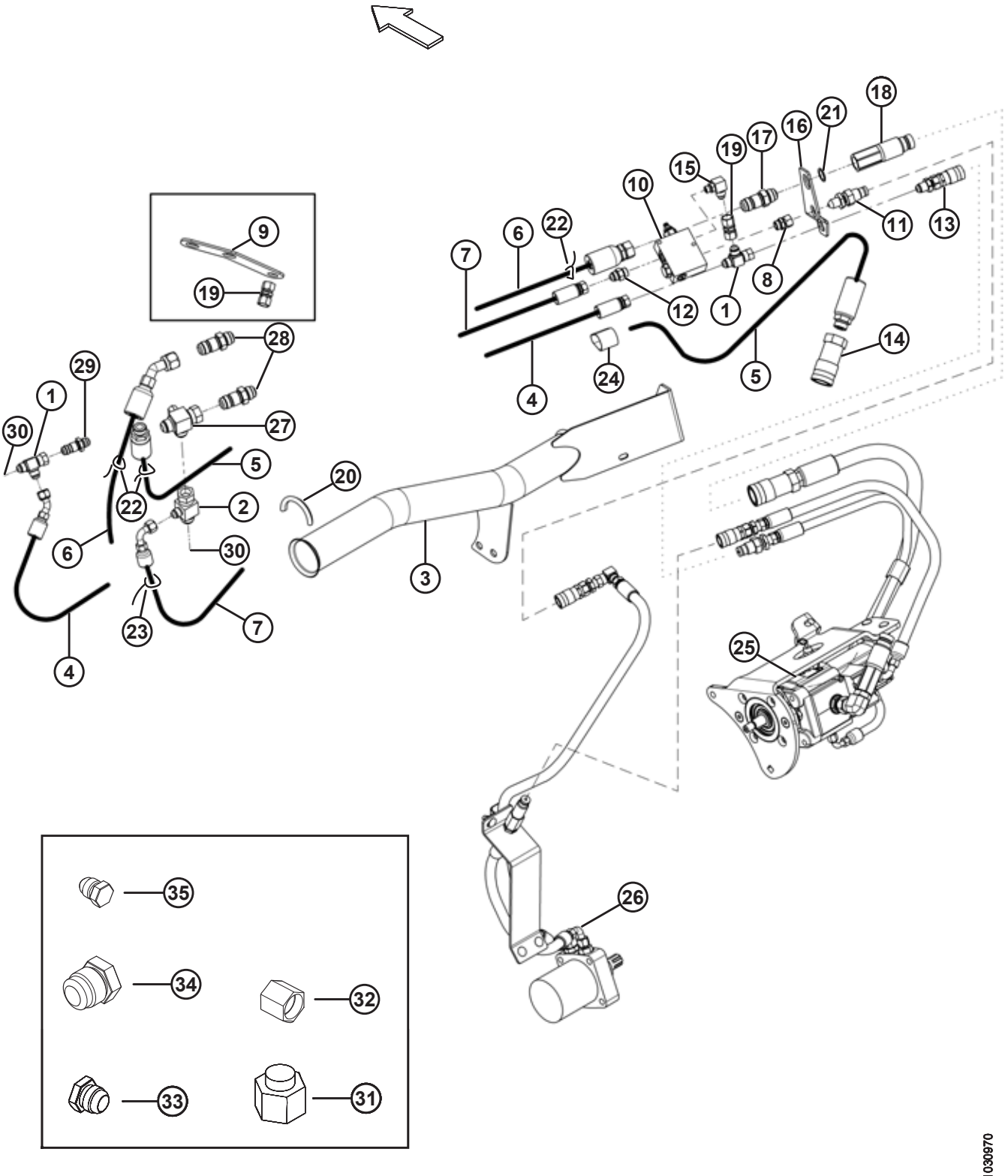
Ref	Part Number	Description	Qty	Serial Number
37	REF	Refer to Section *6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661, page 102*. [19]		
A	21540	WASHER – HARDENED		

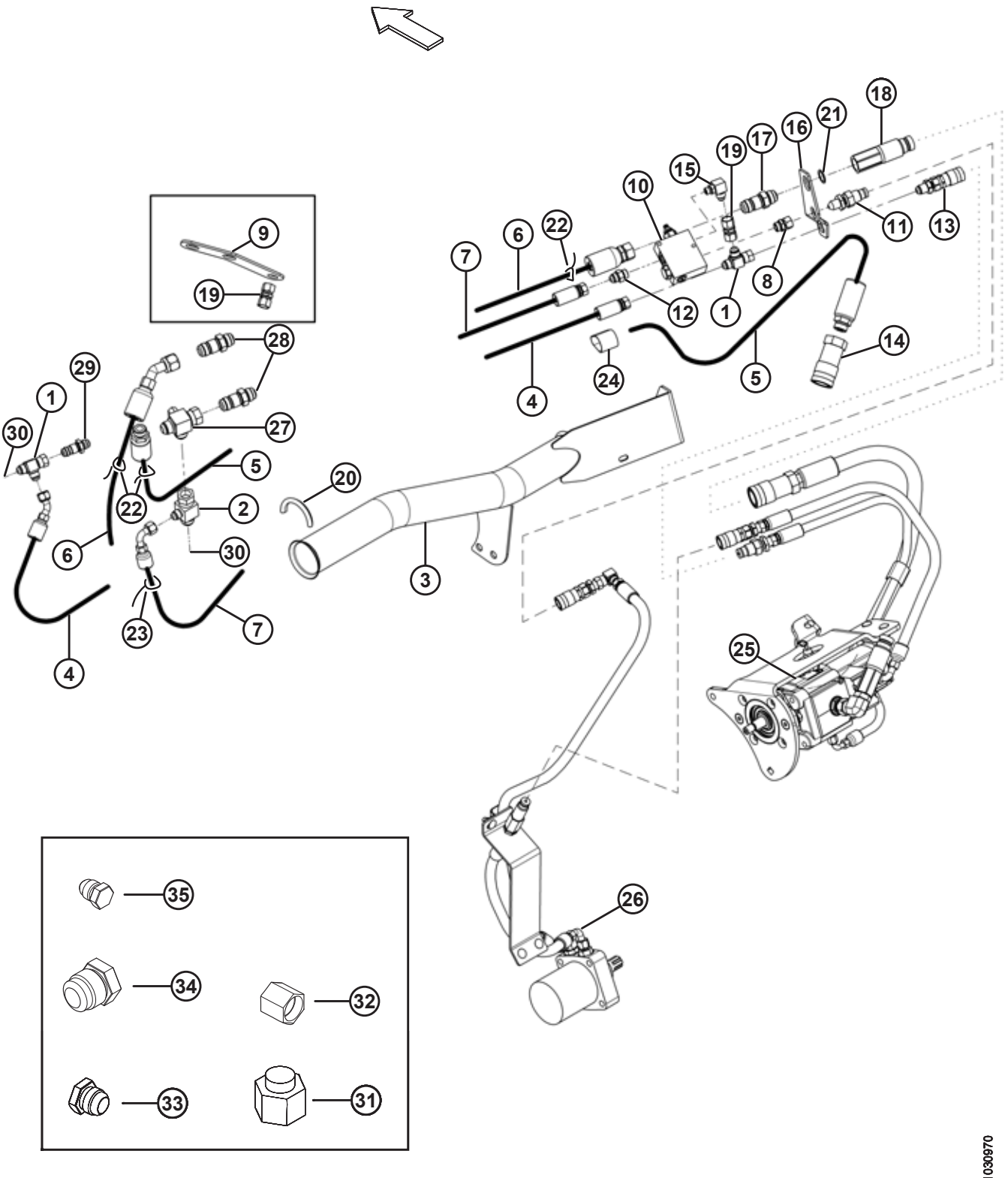
19. Shaft repair kit (MD #159692) can be used to service the motor shaft without needing to replace the complete assembly.

6.11 Hydraulic Completion Package – Motor MD #159648



Ref	Part Number	Description	Qty	Serial Number
1	108268	FITTING – HYD TEE	2	
2	159038	VALVE – CHECK	1	
3	159158	HOLDER – HOSES	1	
4	159032	HOSE – HYDRAULIC, 1/2 IN. I.D.	1	
5	159030	HOSE – HYDRAULIC, 3/4 IN. I.D.	1	
6	120574	HOSE – HYDRAULIC, 3/4 IN. I.D.	1	
7	159159	HOSE – HYDRAULIC, 1/2 IN. I.D.	1	
8	135373	FITTING – ADAPTER HYD	1	
9	159358	SUPPORT – COUPLING [20]	1	
10	**159735**	**VALVE – PRESSURE REDUCING**	**1**	
11	135237	COUPLER – MALE HYD 3/8 IN. FLAT FACE BULKHEAD	1	
	111978	SEAL KIT – 3/8 MALE		
12	21030	FITTING – CONNECTOR HYD	1	
13	135213	COUPLING – FEMALE HYD 3/8 FLAT FACE BULKHEAD	1	
14	135565	COUPLER – FEMALE HYD 3/4 IN. FLAT FACE	1	
15	21805	FITTING – ELBOW HYD	1	
16	159421	PLATE	1	
17	135372	FTG – 3/4 IN. HYD BULKHEAD 37 DEG. FLAIR UNION	1	
18	135314	COUPLER – MALE HYD 3/4 IN. FLAT FACE	1	
	135479	SEAL KIT – 3/4 MALE		
19	135540	FITTING – FEMALE UNION HYD [21]	1	
20	109791	MOULDING	1	
21	30971	O-RING	1	
22	40704	FASTENER – CABLE TIE (ORANGE)	3	
23	40703	FASTENER – CABLE TIE (BLUE)	1	
24	135444	FASTENER – CINCH STRAP 6 IN. LG	1	
25	REF	Refer to Section *6.6 Hydraulic Motor, Mounts, and Tensioner – Motor MD #159661, page 102*. [22]		
26	REF	Refer to Section *6.15 Feed Deck and Pan, page 128*.		
27	135245	FITTING – HYD TEE, SPECIAL [23]	1	
28	REF	FITTING – 3/4 IN. HYD BULKHEAD 37 DEG. FLAIR UNION [23]	2	
29	REF	FITTING – 1/2 IN. UNION HYDRAULIC [23]	1	
30	REF	See note [23]		
31	30999	CAP – 3/4 IN. TUBE (for shipping only)	3	
32	108233	CAP – 1/2 IN. TUBE (for shipping only)	1	
33	135374	PLUG – 1/2 IN TUBE (for shipping only)	1	

20. For 4.6 m (15 ft.) header **ONLY**
21. Quantity of two for 4.6 m (15 ft.) header.
22. Shaft repair kit (MD #159692) can be used to service the motor shaft without needing to replace the complete assembly.
23. Refer to header parts catalog for connecting parts.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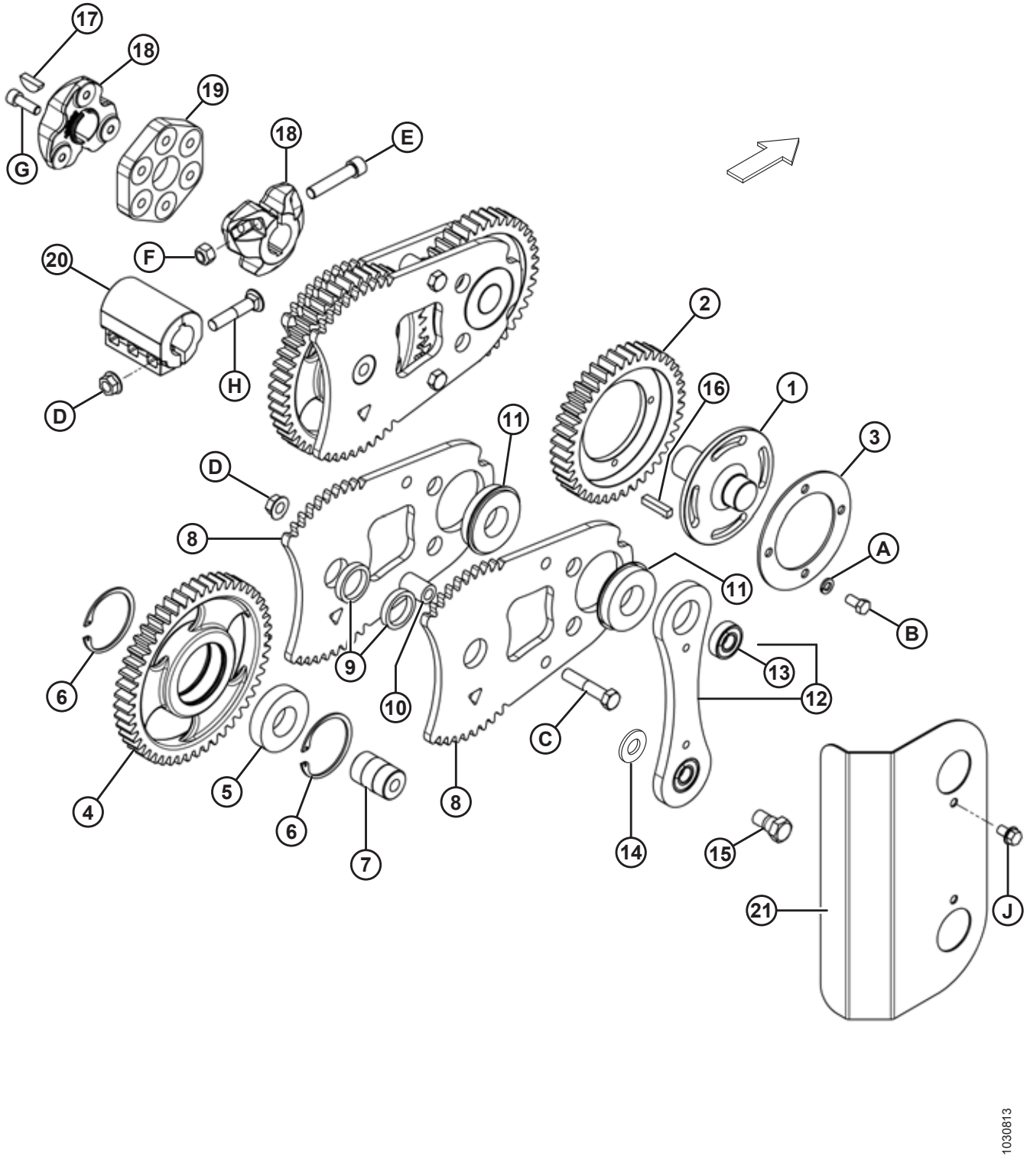
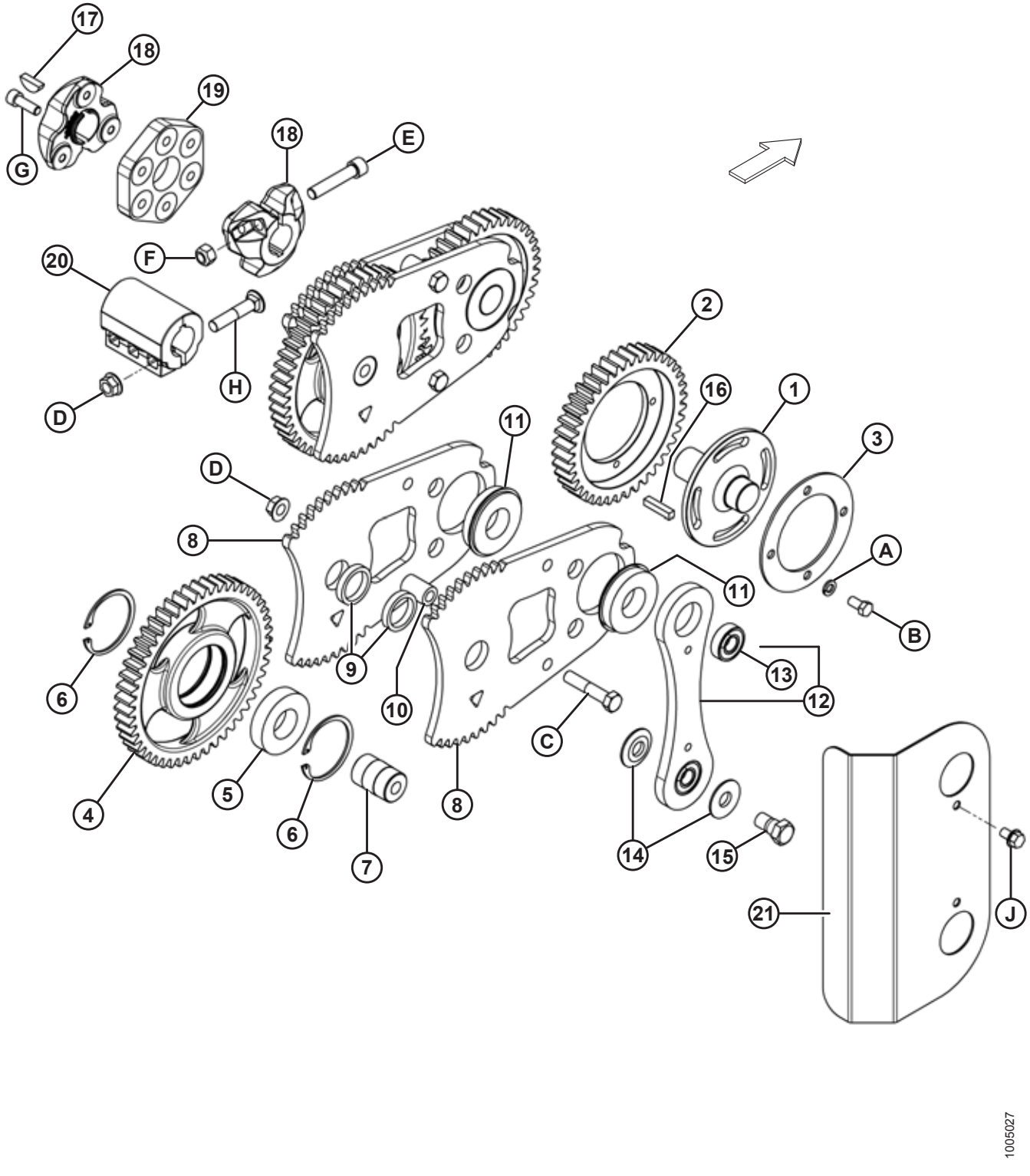
Ref	Part Number	Description	Qty	Serial Number
34	103576	PLUG – 3/4 IN. TUBE (for shipping only)	2	
35	50178	PLUG – 3/8 IN. TUBE (for shipping only)	1	

6.12 Gears and Roll Coupling Assembly – New (With Washer MD #30441)



Ref	Part Number	Description	Qty	Serial Number
1	159550	HUB – MACHINING	2	
2	130680	GEAR – 40T	2	
3	129932	DISK	2	
4	130677	GEAR – 49T	2	
5	159474	BEARING – BALL CYL	2	
6	38854	RING – INT RETAINING	4	
7	130687	SHAFT – IDLER	2	
8	130685	PLATE, SIDE HEAT TREATMENT	4	
9	130689	SPACER	4	
10	130694	SPACER	4	
11	159478	BEARING – BALL CYL C3 WITH SNAP RING	4	
12	130691	SUB-ASSEMBLY – LINK	2	
13	50185	BEARING – BALL CYL OD 17 MM BORE	4	
14	30441	WASHER – HARDENED ASTM F436 5/8	4	
15	105141	BOLT – LOCKING SHOULDER	4	
16	26846	KEY – HUB TO COUPLING	2	
17	11142	KEY – WOODRUFF (5/16 X 1-1/8 NOM.)	2	
18	130936	COUPLING-FLEX – MACHINING, UPPER ROLL	2	
19	130736	DISC – FLEX, UPPER ROLL	1	
20	159130	COUPLING – MACHINING, LOWER ROLL	1	
21	159218	COVER	1	
A	18637	WASHER – REG. LOCK 3/8 IN. NOM. I.D. ZP		
B	21567	BOLT – HEX HD .375-16 UNC X 0.75 LG		
C	21880	BOLT – HEX HD 1/2 NC X 2.75 LG GR 5 ZP		
D	50186	NUT – FLG LK SMTH FACE DT .500-13 UNC GR 5		
E	135403	BOLT – SKT HD 1/2 NC X 2.5 LG		
F	18697	NUT – HEX LOCK DT .500-13 UNC		
G	135401	BOLT – HEX SKT HD M10 X 1.5 X 30 LG ZP		
H	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
J	101898	SCREW – HEX WASH HD THD ROLLING 3/8 NC X 5/8		

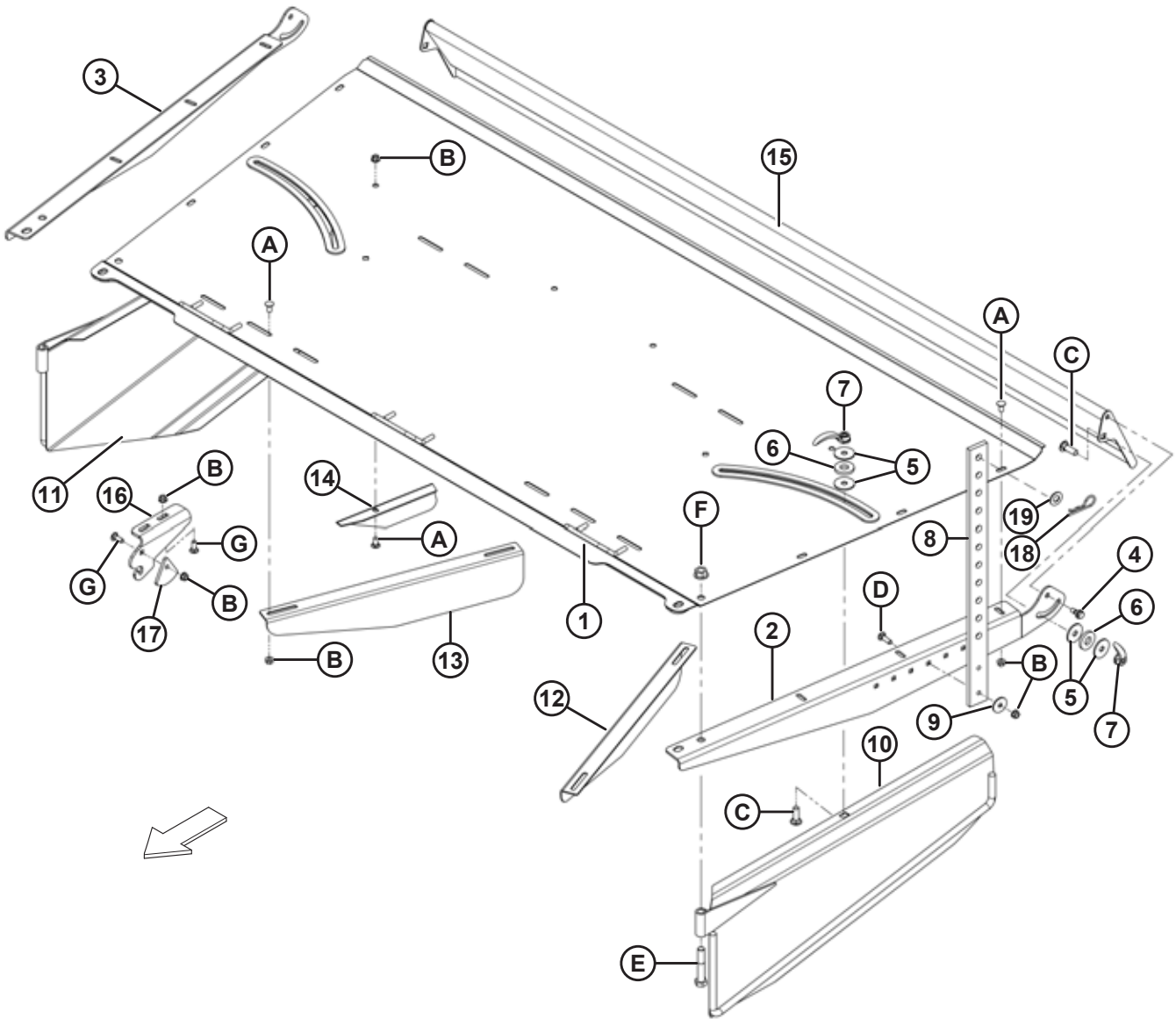
6.13 Gears and Roll Coupling Assembly – Old (With Washer MD #130688)



Ref	Part Number	Description	Qty	Serial Number
1	159550	HUB – MACHINING	2	
2	130680	GEAR – 40T	2	
3	129932	DISK	2	
4	130677	GEAR – 49T	2	
5	159474	BEARING – BALL CYL	2	
6	38854	RING – INT RETAINING	4	
7	130687	SHAFT – IDLER	2	
8	130685	PLATE, SIDE HEAT TREATMENT	4	
9	130689	SPACER	4	
10	130694	SPACER	4	
11	159478	BEARING – BALL CYL C3 WITH SNAP RING	4	
12	130691	SUB-ASSEMBLY – LINK	2	
13	50185	BEARING – BALL CYL OD 17 MM BORE	4	
14	130688	**WASHER – MACHINED 11/16 I.D. X 1.75 IN. O.D. ZP – SEE FOOTNOTE**[24]	**8**	
15	105141	BOLT – LOCKING SHOULDER	4	
16	26846	KEY – HUB TO COUPLING	2	
17	11142	KEY – WOODRUFF (5/16 X 1-1/8 NOM.)	2	
18	130936	COUPLING-FLEX – MACHINING, UPPER ROLL	2	
19	130736	DISC – FLEX, UPPER ROLL	1	
20	159130	COUPLING – MACHINING, LOWER ROLL	1	
21	159218	COVER	1	
A	18637	WASHER – REG. LOCK 3/8 IN. NOM. I.D. ZP		
B	21567	BOLT – HEX HD .375-16 UNC X 0.75 LG		
C	21880	BOLT – HEX HD 1/2 NC X 2.75 LG GR 5 ZP		
D	50186	NUT – FLG LK SMTH FACE DT .500-13 UNC GR 5		
E	135403	BOLT – SKT HD 1/2 NC X 2.5 LG		
F	18697	NUT – HEX LOCK DT .500-13 UNC		
G	135401	BOLT – HEX SKT HD M10 X 1.5 X 30 LG ZP		
H	21489	BOLT – RHSN 1/2 NC X 2.5 LG GR 5 ZP		
J	101898	SCREW – HEX WASH HD THD ROLLING 3/8 NC X 5/8		

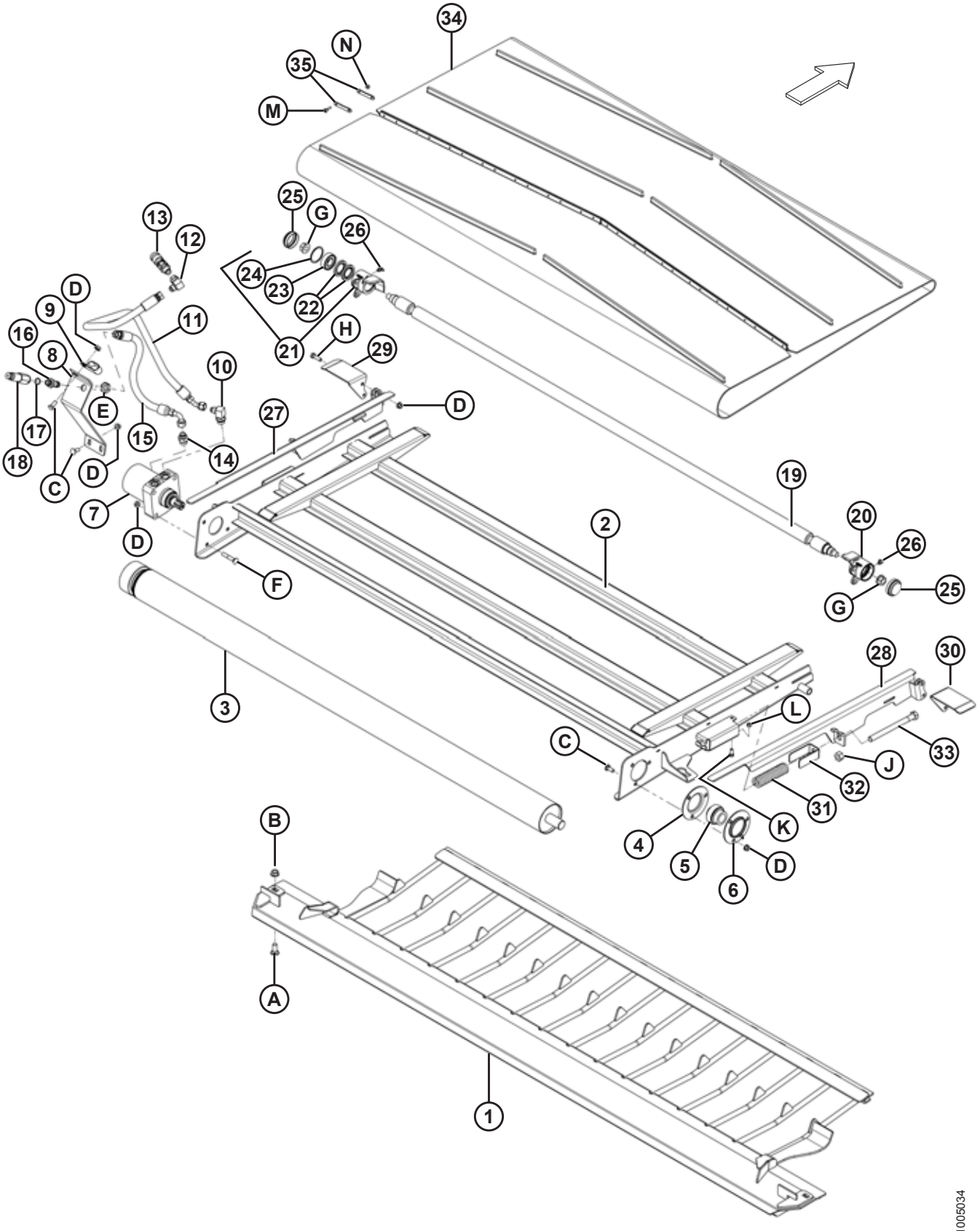
24. Replace each pair of washers with **one** new washer (MD #30441). You do **NOT** have to replace all four pairs of washers (MD #130688) with new washers (MD #30441) at the same time. For the installation location of new washer (MD #30441), refer to *Gears and Roll Coupling Assembly – New (With Washer MD #30441)*.

6.14 Forming Shields



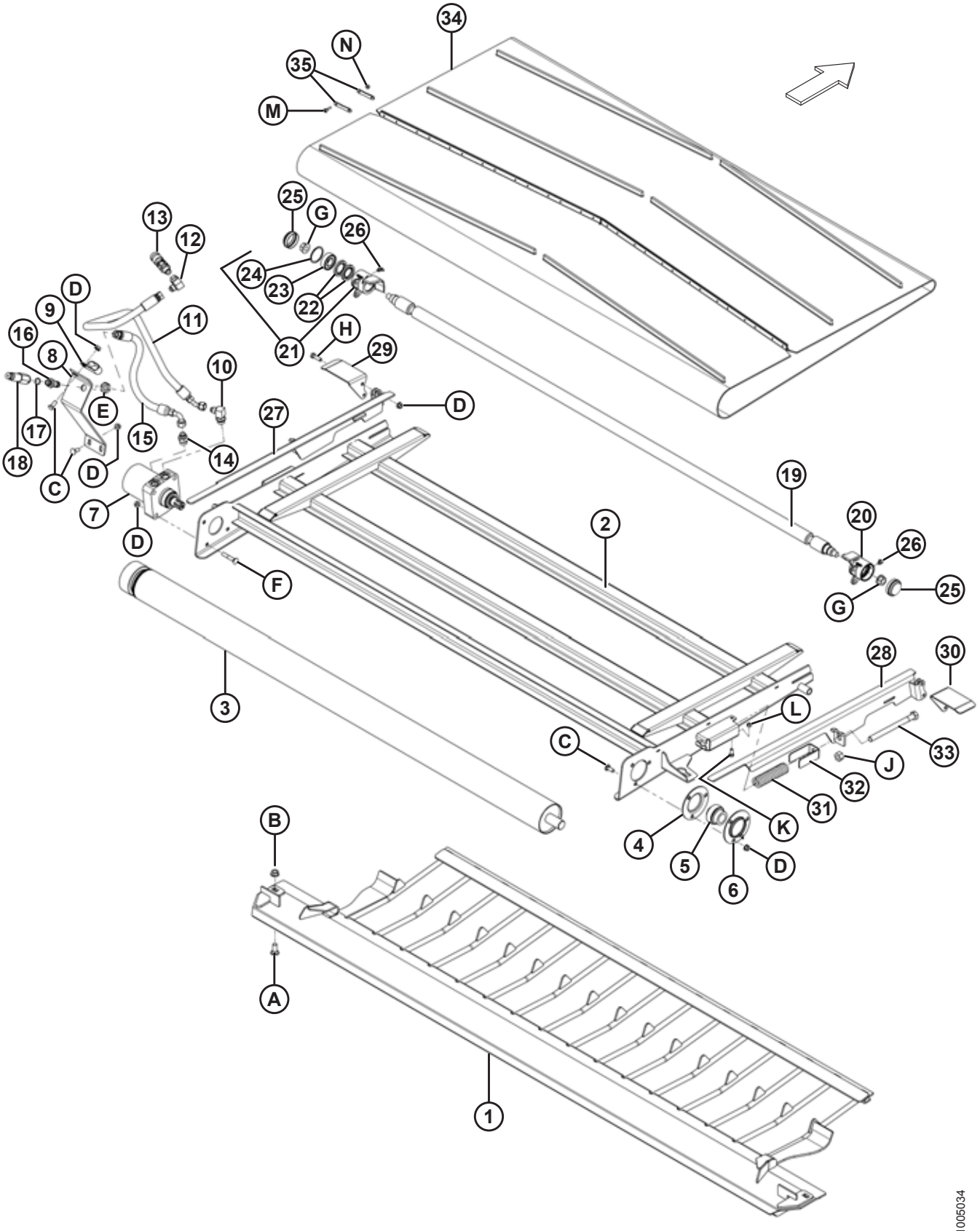
Ref	Part Number	Description	Qty	Serial Number
1	159204	COVER WELDT	1	
2	159206	SUPPORT – STRUT, LH	1	
3	159207	SUPPORT – STRUT, RH	1	
4	135001	BOLT – SHOULDER .375-16 UNC	2	
5	42592	WASHER – FLAT	8	
6	42045	WASHER – RUBBER	4	
7	149317	HANDLE	4	
8	159294	STRAP – RUBBER	2	
9	16652	WASHER – FLAT	2	
10	159220	DEFLECTOR WELDT, LH	1	
11	130911	DEFLECTOR WELDT, RH	1	
12	130905	DEFLECTOR – FIN, LH	1	
13	130906	DEFLECTOR – FIN, RH	1	
14	130548	DEFLECTOR – FIN	4	
15	130900	BAFFLE	1	
16	159598	SUPPORT – HANGER (TRACTOR MOUNTED)	1	
17	159325	SUPPORT – KEEPER	1	
18	13125	PIN – HAIR	2	
19	18600	WASHER – FLAT, 21/32 I.D. X 1-5/16 IN. O.D. ZP	2	
A	21863	BOLT – RHSSN 3/8 NC X 0.75 LG GR 5 ZP		
B	30228	NUT – FLANGE DT SMOOTH FACE .375-16 UNC		
C	21469	BOLT – RHSN 1/2 NC X 1.5 LG GR 5 ZP		
D	19966	BOLT – RHSN 3/8 NC X 1.25 LG GR 5 ZP		
E	21406	BOLT – HEXHD 5/8 NC X 3.5 GR 5 ZP		
F	50225	NUT – FLANGE DT SMOOTH FACE .625-11 UNC		
G	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		

6.15 Feed Deck and Pan



Ref	Part Number	Description	Qty	Serial Number
1	159432	PAN – FINGER FEED WELDT	1	
2	159399	FRAME, FEED DECK – WELDT	1	
3	159704	ROLLER – DRIVE 4 IN., WELDT	1	
4	49306	FLANGE	1	
5	21859	BEARING – SPH O.D. EXT INNER RACE 1-3/16 BORE	1	
6	30661	FLANGE	1	
7	159197	MOTOR – HYD 4.0 CID (WITH 921 PSI RELIEF)	1	
	220672	SEAL KIT – FOR MOTOR MD #159197		
	159606	VALVE – RELIEF, 921 PSI		
8	159183	HOLDER – COUPLING	1	
9	103738	CLAMP – PVC INSULATED 13/16 IN. TUBE SIZE	1	
10	21801	FITTING – ELBOW 90° HYD	1	
11	130998	HOSE	1	
12	30314	FITTING – ELBOW 90° HYD	1	
13	135213	COUPLING – FEMALE HYD 3/8 FLAT FACE BULKHEAD	1	
14	21881	FITTING – ADAPTER HYD	1	
15	159422	HOSE	1	
16	30819	FTG – 1/2 IN. HYD UNION	1	
17	44209	O-RING	1	
18	135386	COUPLER – MALE HYD 3/8 IN. FLAT FACE (FASTER) [25]	1	
	111978	SEAL KIT – FOR 3/8 MALE COUPLER (FASTER)		
19	159256	SHAFT – IDLER ROLLER	1	
20	133124	HOUSING ASSY – RH IDLER CUP [26]	1	
21	133126	HOUSING ASSY – LH IDLER CUP [26]	1	
22	100862	SEAL – OIL	4	
23	118185	BEARING – BALL CYL, 52MM O.D., 25MM I.D.	2	
24	118011	RING – RETAINING, INTERNAL	2	
25	133372	CAP, DUST	2	
26	21010	FTG – LUBE 90 DEG 1/4-28 TAPER THD	2	
27	159383	SUPPORT WELDT – LH	1	
28	159385	SUPPORT WELDT – RH	1	
29	159260	GUIDE – LH	1	
30	159264	GUIDE – RH	1	
31	133946	SPRING – COMPRESSION	2	
32	130246	RETAINER – SPRING	2	
33	135906	BOLT – HH 5/8 NC X 7.5 LG TFL GR 5 ZP	2	
34	159393	DRAPER – 1850 WIDE X 2107 LONG	1	

25. Faster coupler (MD #135386) is interchangeable with Parker Hannifin coupler (NSS). Seal kit (MD #111978) is only intended for Faster coupler and cannot be used with Parker Hannifin coupler. Length can be used to differentiate the two couplers; Faster coupler = 101 mm and Parker Hannifin coupler = 84 mm.
26. Includes oil seal (MD #100862), bearing (MD #118185), and retaining ring (MD #118011).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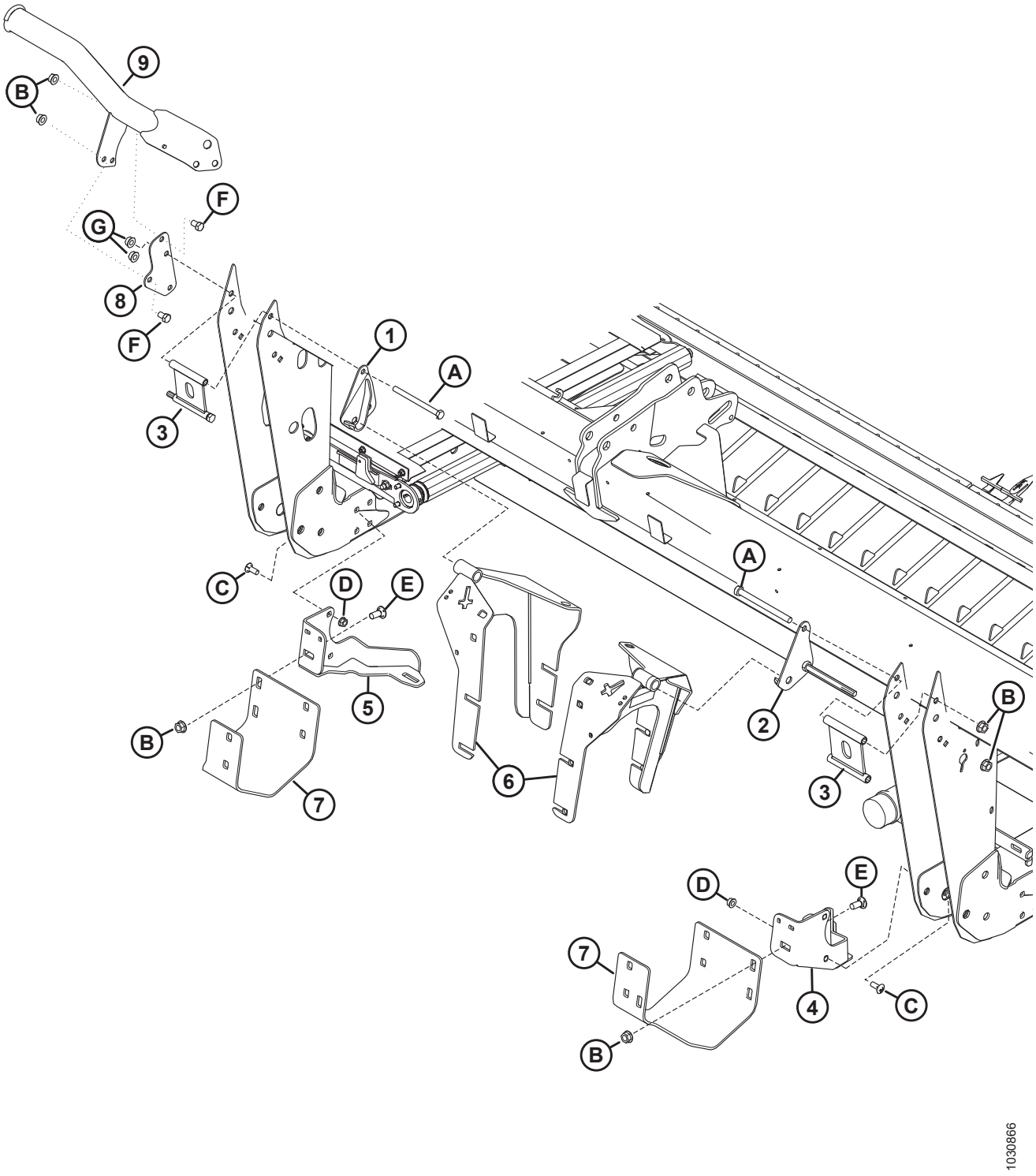
Ref	Part Number	Description	Qty	Serial Number
35	130283	STRAP – DRAPER CONNECTOR	28	
A	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
B	50186	NUT – FLG LK SMTH FACE DT .500-13 UNC GR 5		
C	19965	BOLT – RHSN 3/8 NC X 1.0 GR 5 ZP		
D	30228	NUT – FLG DT SMTH FACE 0.375-16 UNC		
E	7674	NUT – HEX JAM 3/4-16 UNF GR 5 ZP		
F	21485	BOLT – RHSN 3/8 NC X 2.25 LG GR 5 ZP		
G	50225	NUT – FLG DT SMTH FACE .625-11 UNC		
H	21264	BOLT – HEX HD 3/8 NC X 1.25 LG GR 5 ZP		
J	18592	NUT – HEX 5/8-11 UNC GR 5 ZP		
K	21558	BOLT – HEX HD 5/16 NC X 0.75 LG GR 5 ZP		
L	18690	NUT – HEX LOCK DT 5/16-18 UNC ZP		
M	49671	SCREW – BUTTON HD RIB NK; #12-24 NC X 0.920 IN. LG		
N	30669	NUT – CSK CENTER LOCK#12 – 24 NC		

6.16 Mounting Brackets



Ref	Part Number	Description	Qty	Serial Number
1	130802	SUPPORT – LH WELDT	1	
2	130803	SUPPORT – RH WELDT	1	
3	159700	SPACER BRACKET	2	
4	130831	SUPPORT – RH WELDT	1	
5	130817	SUPPORT – LH WELDT	1	
6	REF	Refer to Section *6.5 Cover and Supports, page 98*.		
7	REF	Refer to Section *6.3 Lower Roll and Frame Assembly, page 94*.		
8	159734	PLATE – ADAPTER [27]	1	
9	REF	• HC10 equipped with conditioner drive motor MD #159661: refer to Section *6.10 Hydraulic Completion Package – Motor MD #159661, page 114* • HC10 equipped with conditioner drive motor MD #159648: refer to Section *6.11 Hydraulic Completion Package – Motor MD #159648, page 118*		
A	135906	BOLT – HH 5/8 NC X 7.5 LG TFL GR 5 ZP		
B	50225	NUT – FLG DT SMTH FACE .625-11 UNC		
C	21471	BOLT – RHSN 1/2 NC X 1.25 GR 5 ZP		
D	50186	NUT – FLG LK SMTH FACE DT .500-13 UNC GR 5		
E	18523	BOLT – RHSN 5/8 NC X 1.5 GR 5 ZP		
F	113611	BOLT – HEX HD 5/8 – 11 X 1.0 GR.5 – AA1J [27]		
G	50225	NUT – FLG DT SMTH FACE .625-11 UNC [27]		

27. Only used on D115, D120, and D125 headers equipped with a double-knife and single reel.

Chapter 7: Reference

7.1 Torque Specifications

The following tables provide torque values for various bolts, cap screws, and hydraulic fittings.

- Tighten all bolts to torque values specified in charts (unless otherwise noted throughout this manual).
- Replace hardware with same strength and grade.
- Use torque value tables as a guide and periodically check tightness of bolts.
- Understand torque categories for bolts and cap screws by using their identifying head markings.

Jam nuts

When applying torque to finished jam nuts, multiply the torque applied to regular nuts by f=0.65.

Self-tapping screws

Standard torque is to be used (**NOT** to be used on critical or structurally important joints).

7.1.1 SAE Bolt Torque Specifications

Torque values shown in following tables are valid for non-greased, or non-oiled threads and heads; therefore, do **NOT** grease or oil bolts or cap screws unless otherwise specified in this manual.

Table 7.1 SAE Grade 5 Bolt and Grade 5 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	11.9	13.2	*106	*117
5/16-18	24.6	27.1	*218	*241
3/8-16	44	48	32	36
7/16-14	70	77	52	57
1/2-13	106	118	79	87
9/16-12	153	170	114	126
5/8-11	212	234	157	173
3/4-10	380	420	281	311
7/8-9	606	669	449	496
1-8	825	912	611	676

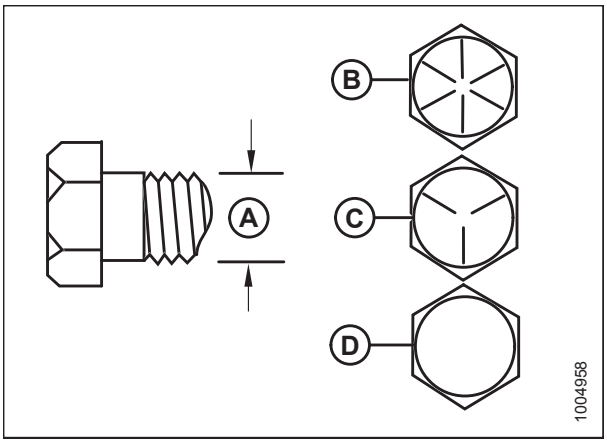


Figure 7.1: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 7.2 SAE Grade 5 Bolt and Grade F Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	8.1	9	*72	*80
5/16-18	16.7	18.5	*149	*164
3/8-16	30	33	22	24
7/16-14	48	53	35	39
1/2-13	73	80	54	59
9/16-12	105	116	77	86
5/8-11	144	160	107	118
3/4-10	259	286	192	212
7/8-9	413	456	306	338
1-8	619	684	459	507

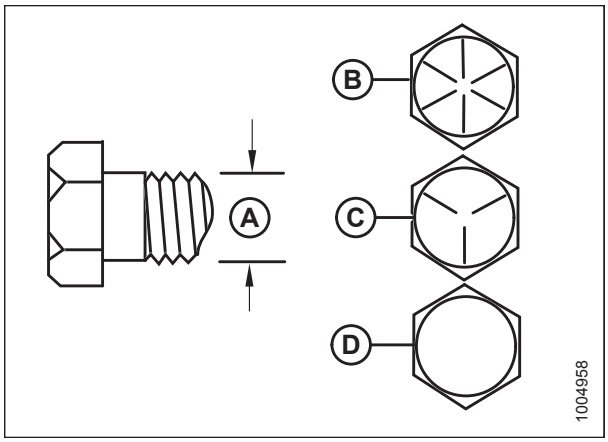


Figure 7.2: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 7.3 SAE Grade 8 Bolt and Grade G Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	24	26	18	19
3/8-16	42	46	31	34
7/16-14	67	74	50	55
1/2-13	102	113	76	84
9/16-12	148	163	109	121
5/8-11	204	225	151	167
3/4-10	362	400	268	296
7/8-9	583	644	432	477
1-8	874	966	647	716

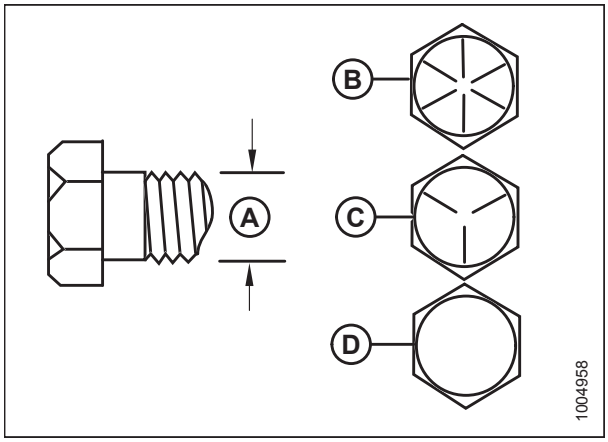


Figure 7.3: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

Table 7.4 SAE Grade 8 Bolt and Grade 8 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
1/4-20	16.8	18.6	*150	*165
5/16-18	35	38	26	28
3/8-16	61	68	46	50
7/16-14	98	109	73	81
1/2-13	150	166	111	123
9/16-12	217	239	160	177
5/8-11	299	330	221	345
3/4-10	531	587	393	435
7/8-9	855	945	633	700
1-8	1165	1288	863	954

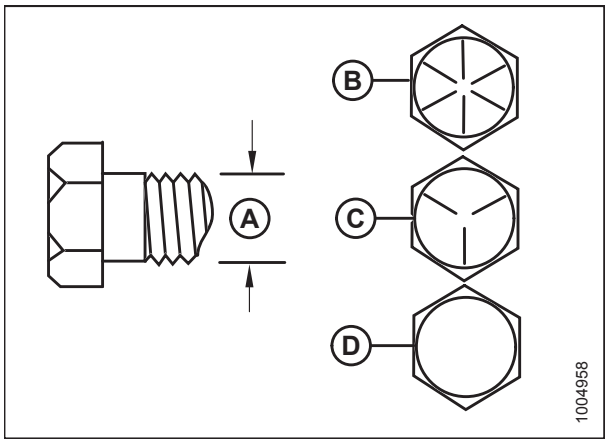


Figure 7.4: Bolt Grades

A - Nominal Size **B - SAE-8**
C - SAE-5 **D - SAE-2**

7.1.2 Metric Bolt Specifications

Torque values shown in following tables are valid for non-greased, or non-oiled threads and heads; therefore, do **NOT** grease or oil bolts or cap screws unless otherwise specified in this manual.

Table 7.5 Metric Class 8.8 Bolts and Class 9 Free Spinning Nut

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

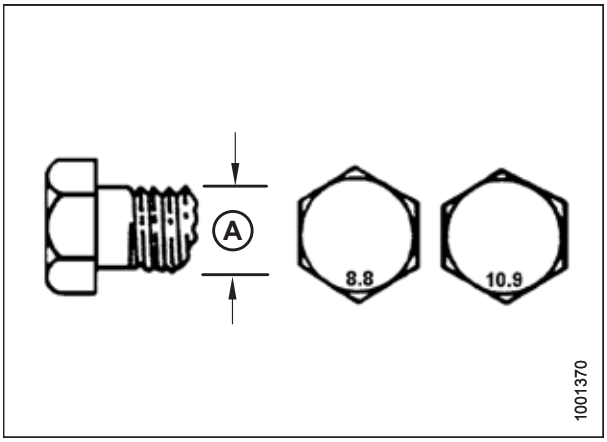


Figure 7.5: Bolt Grades

Table 7.6 Metric Class 8.8 Bolts and Class 9 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1	1.1	*9	*10
3.5-0.6	1.5	1.7	*14	*15
4-0.7	2.3	2.5	*20	*22
5-0.8	4.5	5	*40	*45
6-1.0	7.7	8.6	*69	*76
8-1.25	18.8	20.8	*167	*185
10-1.5	37	41	28	30
12-1.75	65	72	48	53
14-2.0	104	115	77	85
16-2.0	161	178	119	132
20-2.5	314	347	233	257
24-3.0	543	600	402	444

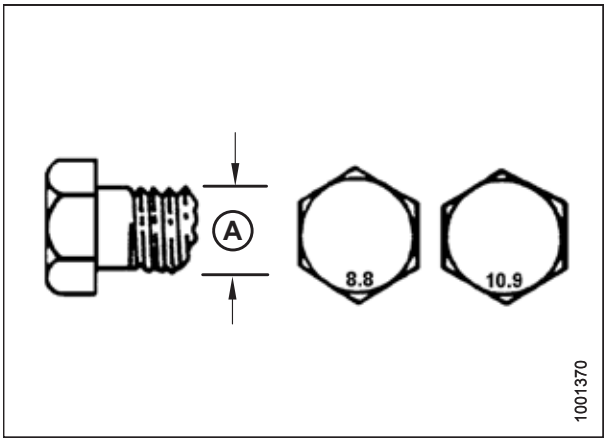


Figure 7.6: Bolt Grades

Table 7.7 Metric Class 10.9 Bolts and Class 10 Free Spinning Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.8	2	*18	*19
3.5-0.6	2.8	3.1	*27	*30
4-0.7	4.2	4.6	*41	*45
5-0.8	8.4	9.3	*82	*91
6-1.0	14.3	15.8	*140	*154
8-1.25	38	42	28	31
10-1.5	75	83	56	62
12-1.75	132	145	97	108
14-2.0	210	232	156	172
16-2.0	326	360	242	267
20-2.5	637	704	472	521
24-3.0	1101	1217	815	901

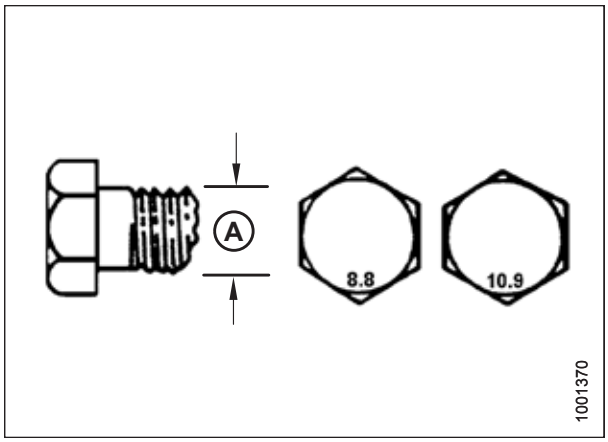


Figure 7.7: Bolt Grades

Table 7.8 Metric Class 10.9 Bolts and Class 10 Distorted Thread Nut

Nominal Size (A)	Torque (Nm)		Torque (lbf·ft) (*lbf·in)	
	Min.	Max.	Min.	Max.
3-0.5	1.3	1.5	*12	*13
3.5-0.6	2.1	2.3	*19	*21
4-0.7	3.1	3.4	*28	*31
5-0.8	6.3	7	*56	*62
6-1.0	10.7	11.8	*95	*105
8-1.25	26	29	19	21
10-1.5	51	57	38	42
12-1.75	90	99	66	73
14-2.0	143	158	106	117
16-2.0	222	246	165	182
20-2.5	434	480	322	356
24-3.0	750	829	556	614

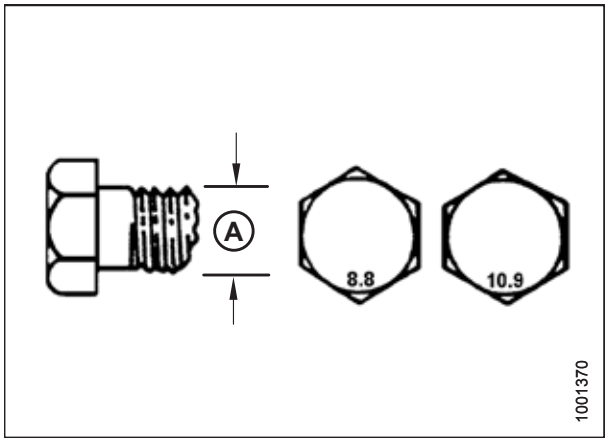


Figure 7.8: Bolt Grades

7.1.3 Metric Bolt Specifications Bolting into Cast Aluminum

Torque values shown in following tables are valid for non-greased, or non-oiled threads and heads; therefore, do **NOT** grease or oil bolts or cap screws unless otherwise specified in this manual.

Table 7.9 Metric Bolt Bolting into Cast Aluminum

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

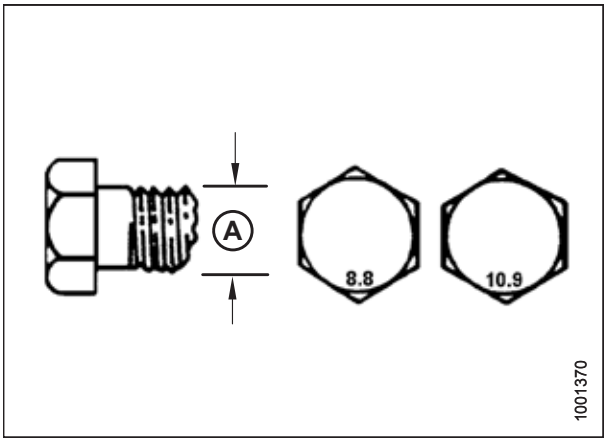


Figure 7.9: Bolt Grades

7.1.4 Flare-Type Hydraulic Fittings

1. Check flare (A) and flare seat (B) for defects that might cause leakage.
2. Align tube (C) with fitting (D) and thread nut (E) onto fitting without lubrication until contact has been made between flared surfaces.
3. Torque fitting nut (E) to specified number of flats from finger tight (FFFT) or to a given torque value in Table *7.10, page 139*.
4. Use two wrenches to prevent fitting (D) from rotating. Place one wrench on fitting body (D), and tighten nut (E) with other wrench to torque shown.
5. Assess final condition of connection.

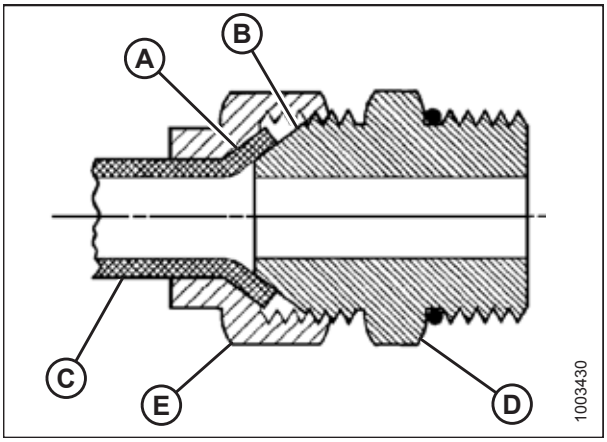


Figure 7.10: Hydraulic Fitting

Table 7.10 Flare-Type Hydraulic Tube Fittings

SAE Dash Size	Thread Size (in.)	Torque Value[28]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-2	5/16–24	4–5	3–4	—	—
-3	3/8–24	7–8	5–6	—	—
-4	7/16–20	18–19	13–14	2 1/2	2
-5	1/2–20	19–21	14–15	2	2
-6	9/16–18	30–33	22–24	2	1 1/2

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

Table 7.10 Flare-Type Hydraulic Tube Fittings (continued)

SAE Dash Size	Thread Size (in.)	Torque Value[29]		Flats from Finger Tight (FFFT)	
		Nm	lbf·ft	Tube	Swivel Nut or Hose
-8	3/4–16	57–63	42–46	2	1 1/2
-10	7/8–14	81–89	60–66	1 1/2	1 1/2
-12	1 1/16–12	113–124	83–91	1 1/2	1 1/4
-14	1 3/16–12	136–149	100–110	1 1/2	1 1/4
-16	1 5/16–12	160–176	118–130	1 1/2	1
-20	1 5/8–12	228–250	168–184	1	1
-24	1 7/8–12	264–291	195–215	1	1
-32	2 1/2–12	359–395	265–291	1	1
-40	3–12	—	—	1	1

7.1.5 O-Ring Boss Hydraulic Fittings – Adjustable

Torque values are shown in following table below.

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

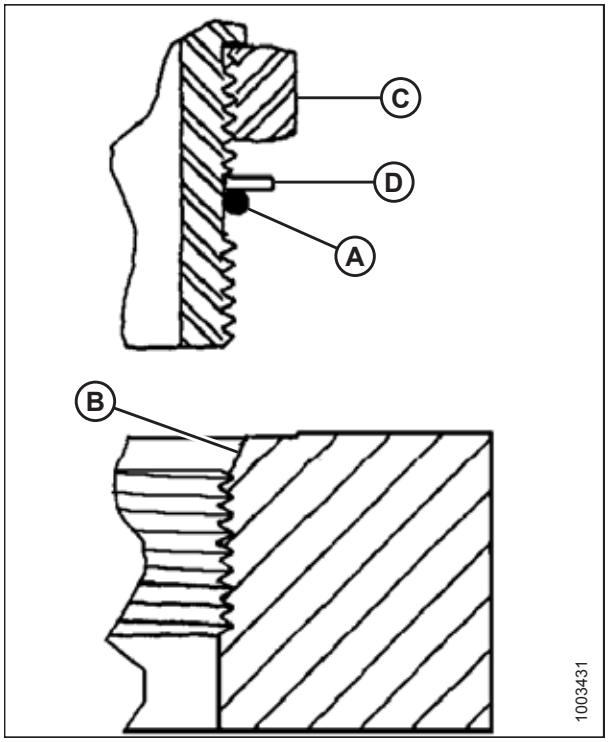


Figure 7.11: Hydraulic Fitting

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

5. Install fitting (B) into 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 to torque shown. Use two wrenches, one on fitting (B) and other on lock nut (C).
8. Check the final condition of the fitting.

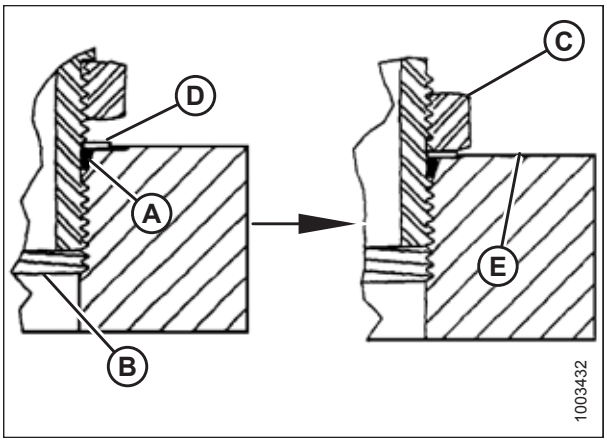


Figure 7.12: Hydraulic Fitting

Table 7.11 O-Ring Boss (ORB) Hydraulic Fittings – Adjustable

SAE Dash Size	Thread Size (in.)	Torque Value[30]	
		Nm	lbf·ft (*lbf·in)
-2	5/16–24	6–7	*53–62
-3	3/8–24	12–13	*106–115
-4	7/16–20	19–21	14–15
-5	1/2–20	21–33	15–24
-6	9/16–18	26–29	19–21
-8	3/4–16	46–50	34–37
-10	7/8–14	75–82	55–60
-12	1 1/16–12	120–132	88–97
-14	1 3/8–12	153–168	113–124
-16	1 5/16–12	176–193	130–142
-20	1 5/8–12	221–243	163–179
-24	1 7/8–12	270–298	199–220
-32	2 1/2–12	332–365	245–269

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

7.1.6 O-Ring Boss Hydraulic Fittings – Non-Adjustable

Torque values are shown in following table below.

1. Inspect O-ring (A) and seat (B) for dirt or obvious defects.
2. Check that O-ring (A) is **NOT** on the threads and adjust if necessary.
3. Apply hydraulic system oil to the O-ring.
4. Install fitting (C) into port until the fitting is hand-tight.
5. Torque fitting (C) according to values in Table *7.12, page 142*.
6. Check the final condition of the fitting.

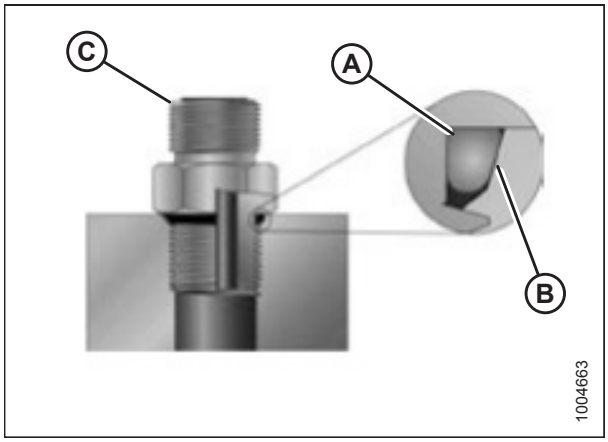


Figure 7.13: Hydraulic Fitting

Table 7.12 O-Ring Boss (ORB) Hydraulic Fittings – Non-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
-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

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

7.1.7 O-Ring Face Seal Hydraulic Fittings

Torque values are shown in following table below.

1. Check the components to ensure that the sealing surfaces and fitting threads are free of burrs, nicks, scratches, and any foreign material.

Figure 7.14: 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 in 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 is bottomed out.
5. Torque the fittings according to values in Table *7.13, page 143*.

   NOTE:

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

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

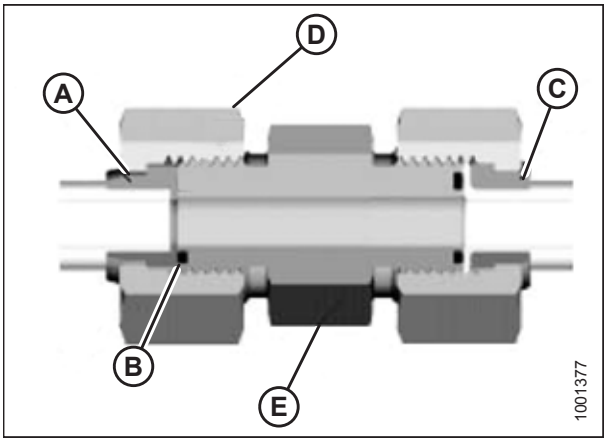


Figure 7.15: Hydraulic Fitting

Table 7.13 O-Ring Face Seal (ORFS) Hydraulic Fittings

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[32]	
			Nm	lbf·ft
-3	Note[33]	3/16	–	–
-4	9/16	1/4	25–28	18–21
-5	Note[33]	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[33]	7/8	–	–

32. Torque values and angles shown are based on lubricated connection as in reassembly.
33. O-ring face seal type end not defined for this tube size.

Table 7.13 O-Ring Face Seal (ORFS) Hydraulic Fittings (continued)

SAE Dash Size	Thread Size (in.)	Tube O.D. (in.)	Torque Value[34]	
			Nm	lbf·ft
-16	1 7/16	1	150–165	111–122
-20	1 11/16	1 1/4	205–226	151–167
-24	1–2	1 1/2	315–347	232–256
-32	2 1/2	2	510–561	376–414

7.1.8 Tapered Pipe Thread Fittings

Torque values are shown in following table below.

Assemble pipe fittings as follows:

1. Check components to ensure that the fitting and port threads are free of burrs, nicks, scratches, and any form of contamination.
2. Apply pipe thread sealant (paste type) 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 *7.14, page 144*. Make sure that the tube end of a shaped connector (typically 45° or 90°) is aligned to receive the incoming tube or hose assembly. Always finish alignment of fitting in the direction of tightening. Never back off (loosen) the pipe threaded connectors to achieve alignment.
5. Clean all the residue and any excess thread conditioner with an appropriate cleaner.
6. Assess the final condition of the fitting. Pay special attention to the possibility of cracks to port opening.
7. Mark the final position of the fitting. If a fitting leaks, disassemble the fitting and check it for damage.

   NOTE:

   Overtorque failure of fittings may not be evident until fittings are disassembled.

Table 7.14 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

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

7.2 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 7.15 Conversion Chart

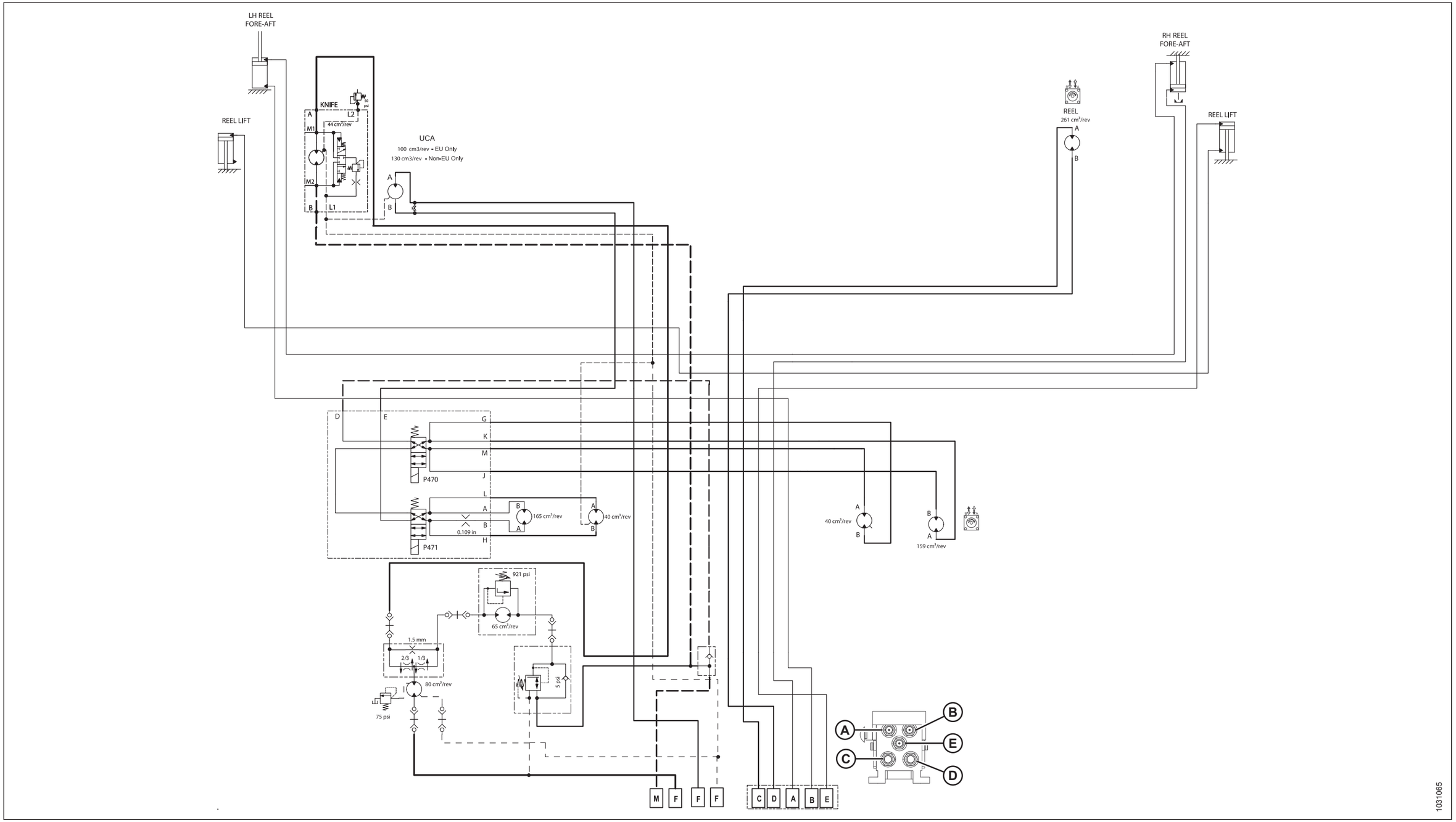
Quantity	SI Units (Metric)		Factor	US Customary Units (Standard)	
	Unit Name	Abbreviation		Unit Name	Abbreviation
Area	hectare	ha	x 2.4710 =	acre	acres
Flow	liters per minute	L/min	x 0.2642 =	US gallons per minute	gpm
Force	Newton	N	x 0.2248 =	pound force	lbf
Length	millimeter	mm	x 0.0394 =	inch	in.
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.

Chapter 8: Appendix – Hydraulics

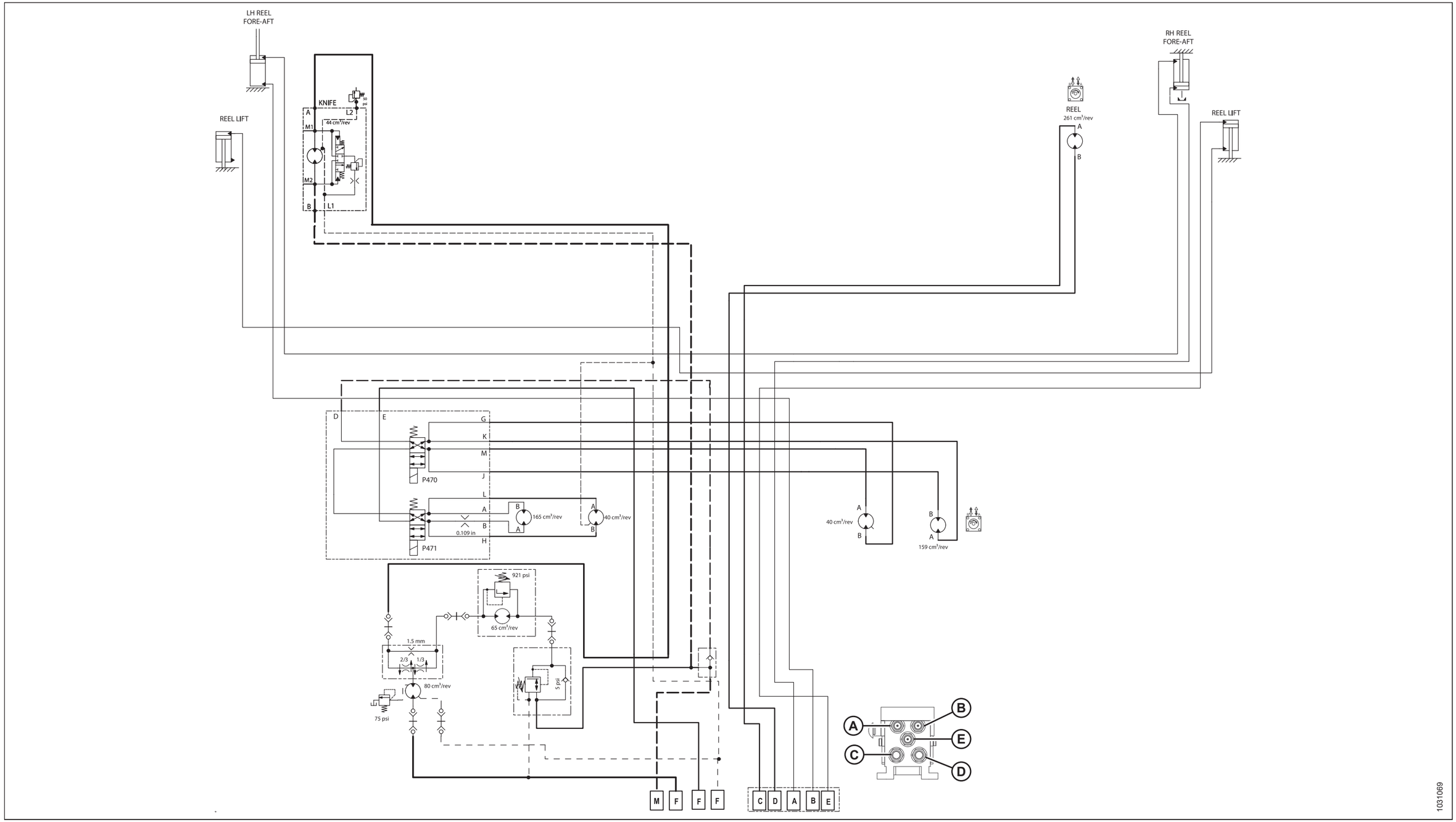
8.1 Hydraulic Schematics – Headers with HC10 Motor MD #159661

For an explanation of the acronyms used in this section, refer to *2.1 Definitions, page 9*.

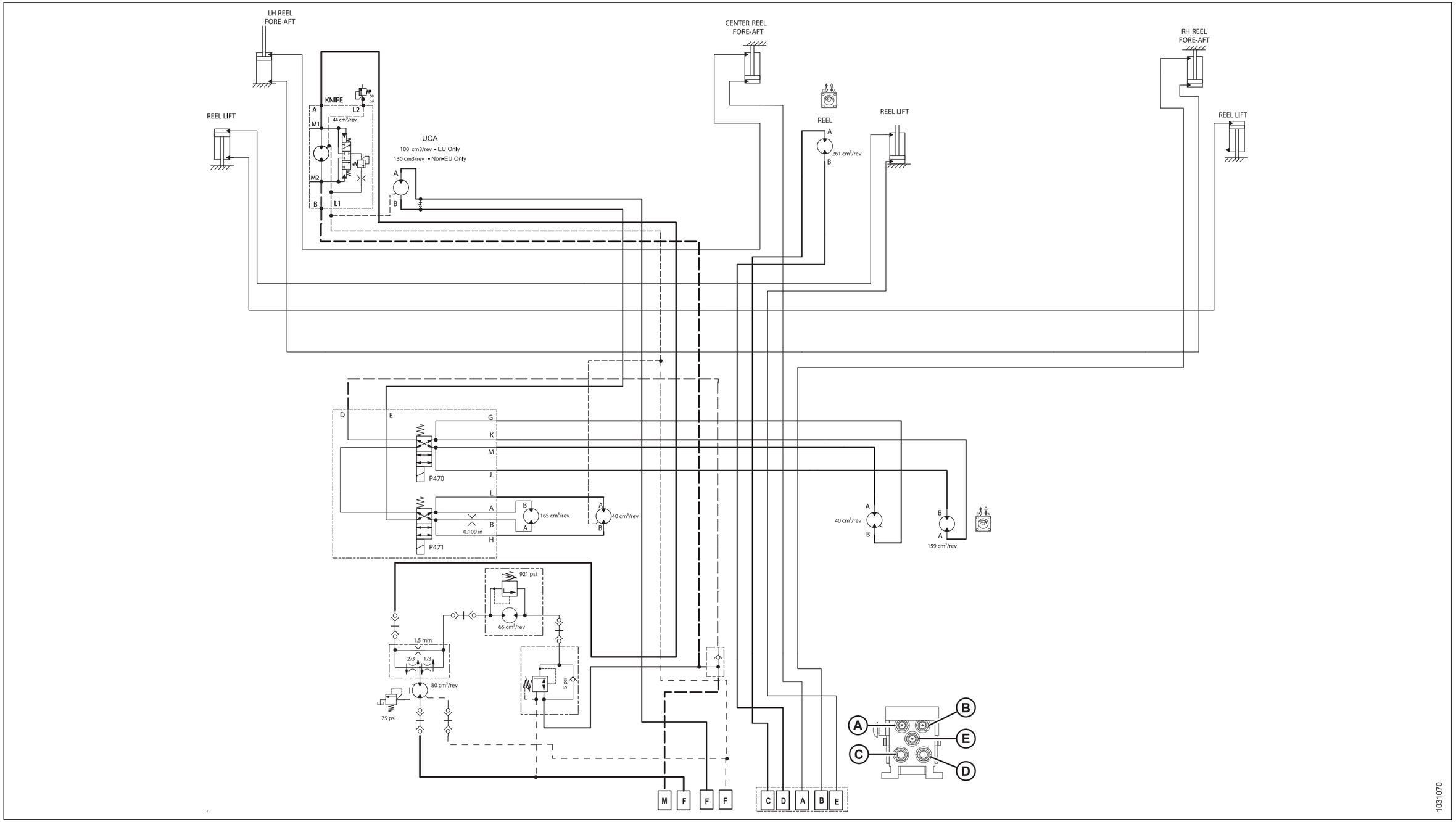
D1 Series Header – 4.6–9.1 m (15–30 ft.), Timed Double Knife, Single Reel, Hydraulic Deck Shift, HC10 (Motor MD #159661), and Upper Cross Auger



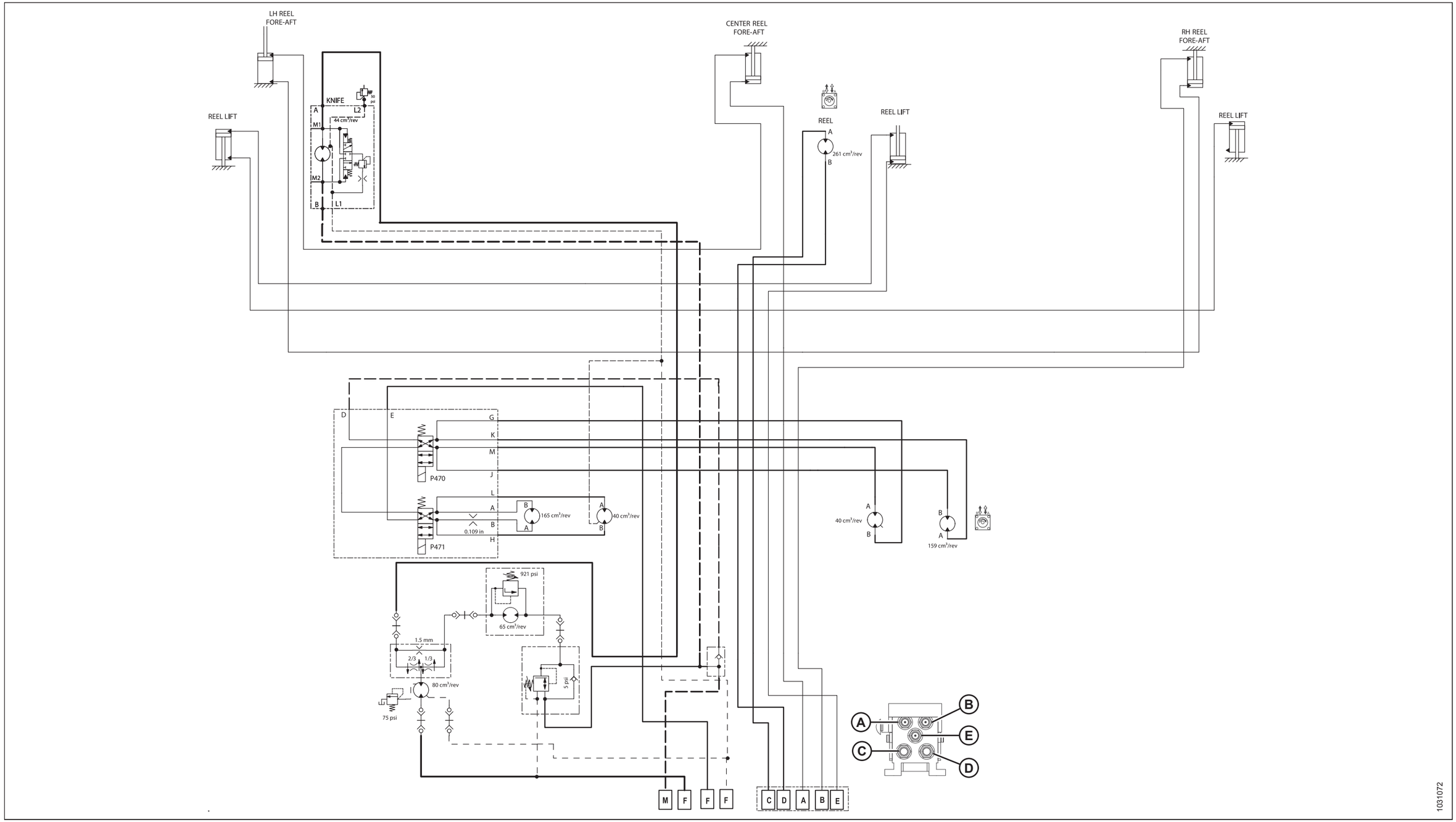
D1 Series Header – 4.6–9.1 m (15–30 ft.), Timed Double Knife, Single Reel, Hydraulic Deck Shift, and HC10 (Motor MD #159661)



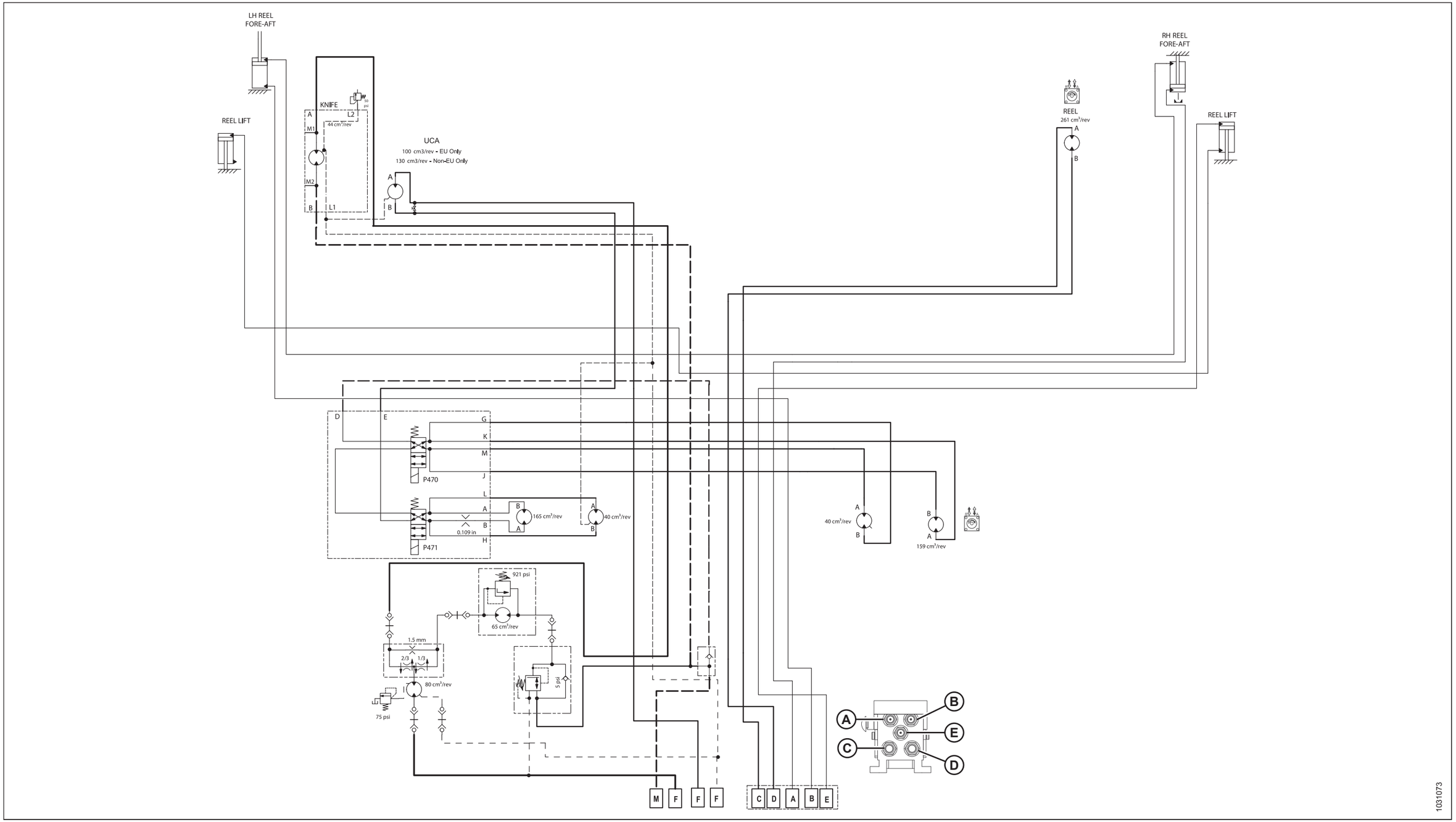
D1 Series Header – 9.1 m (30 ft.), Timed Double Knife, Double Reel, Hydraulic Deck Shift, HC10 (Motor MD #159661), and Upper Cross Auger



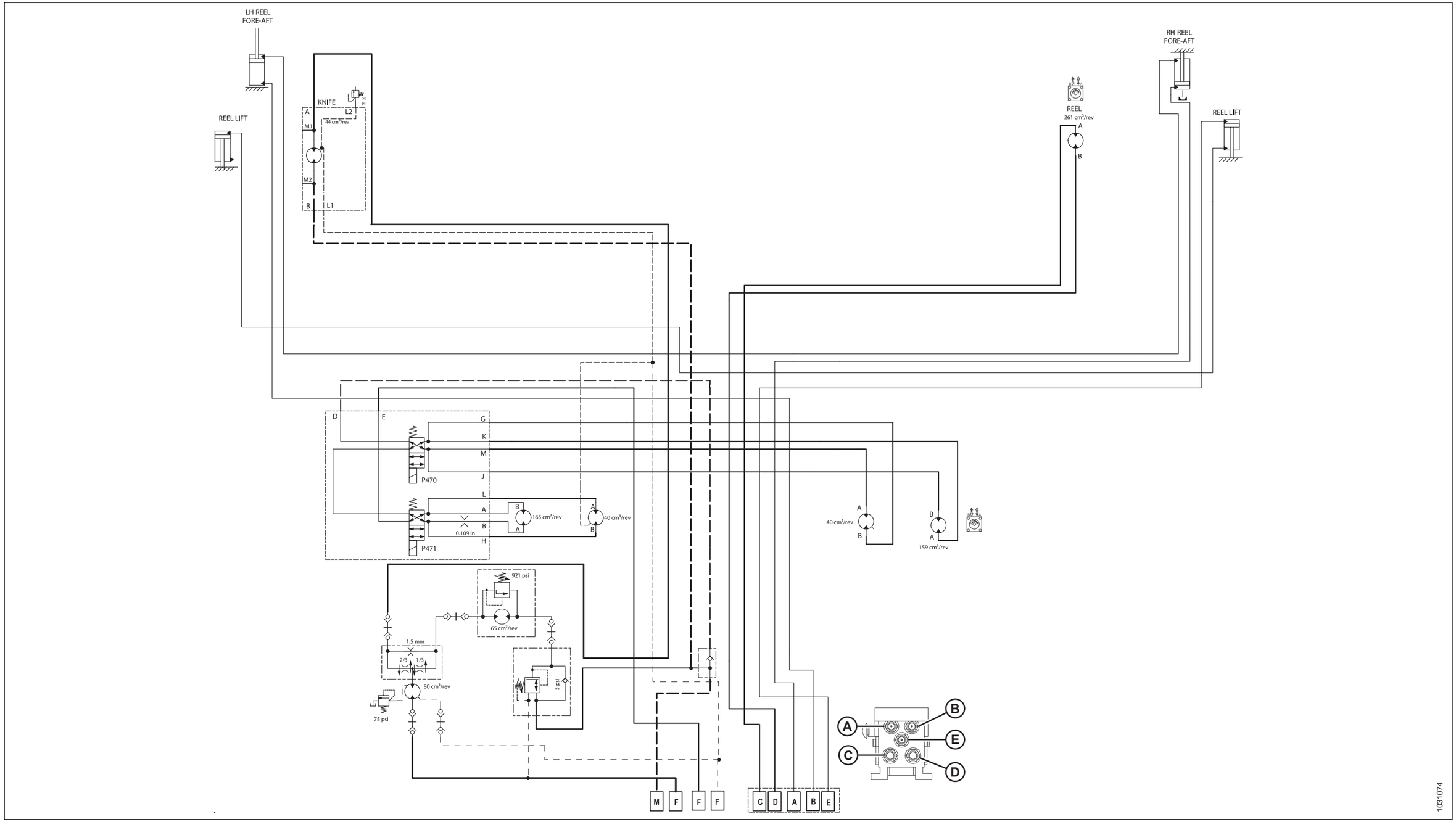
D1 Series Header – 9.1 m (30 ft.), Timed Double Knife, Double Reel, Hydraulic Deck Shift, and HC10 (Motor MD #159661)



D60/D65 Header – 4.6–9.1 m (15–30 ft.). Timed Double Knife, Single Reel, Hydraulic Deck Shift, HC10 (Motor MD #159661), and Upper Cross Auger



D60/D65 Header – 4.6–9.1 m (15–30 ft.), Timed Double Knife, Single Reel, Hydraulic Deck Shift, and HC10 (Motor MD #159661)



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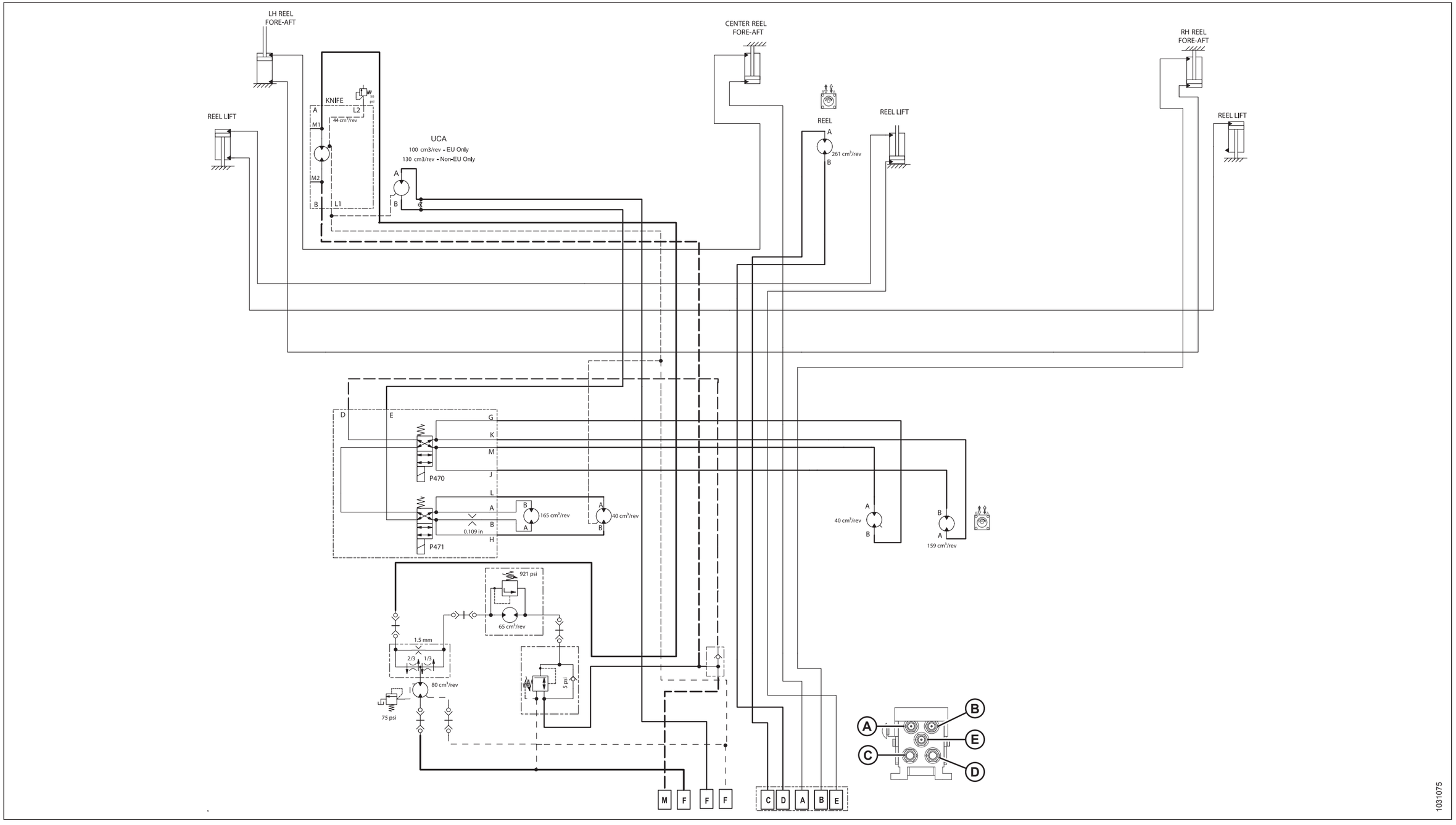

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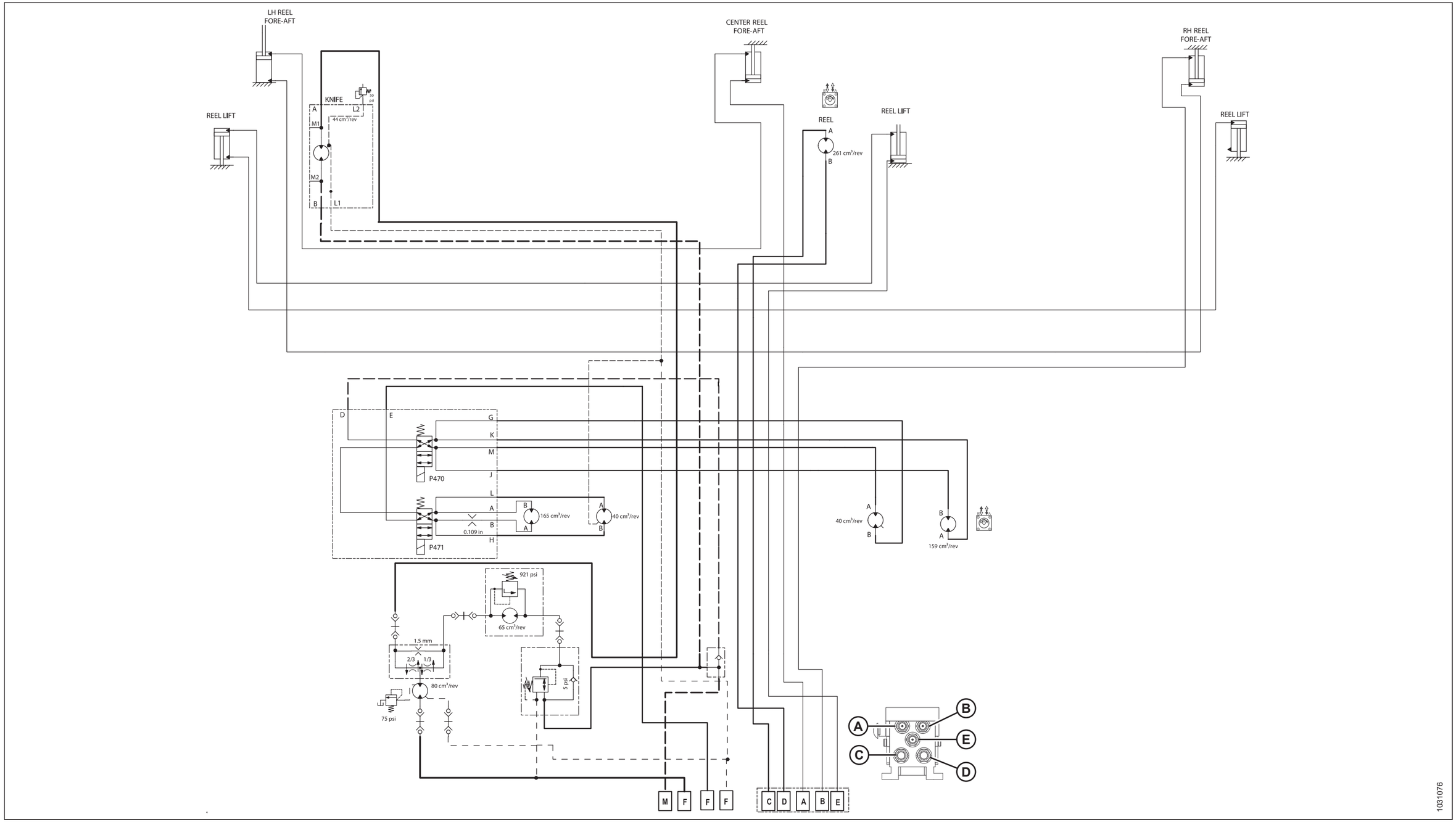
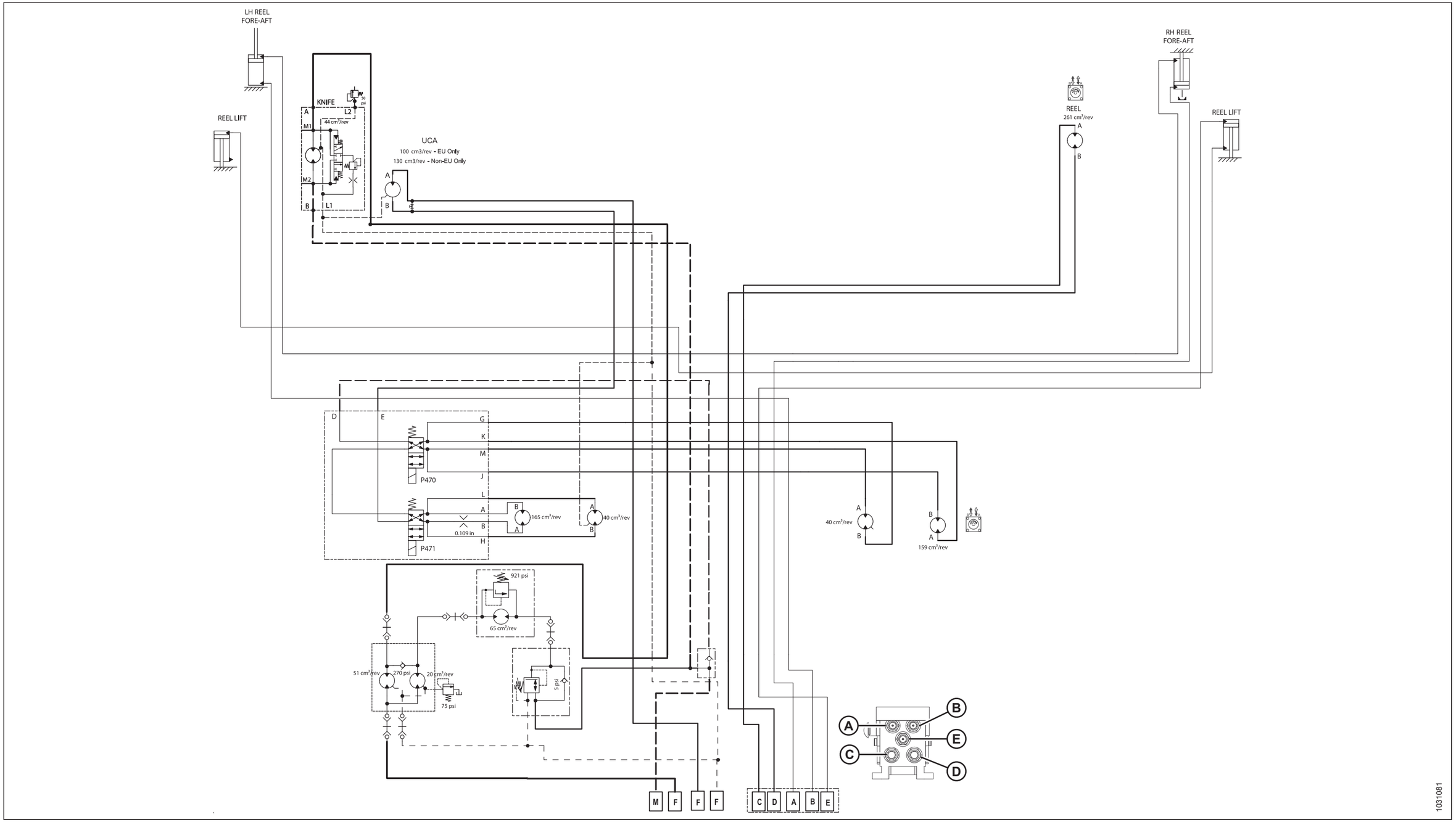


8.2 Hydraulic Schematics – Headers with HC10 Motor MD #159648

For an explanation of the acronyms used in this section, refer to *2.1 Definitions, page 9*.

D1 Series Header – 4.6–9.1 m (15–30 ft.), Timed Double Knife, Single Reel, Hydraulic Deck Shift, HC10 (Motor MD #159648), and Upper Cross Auger



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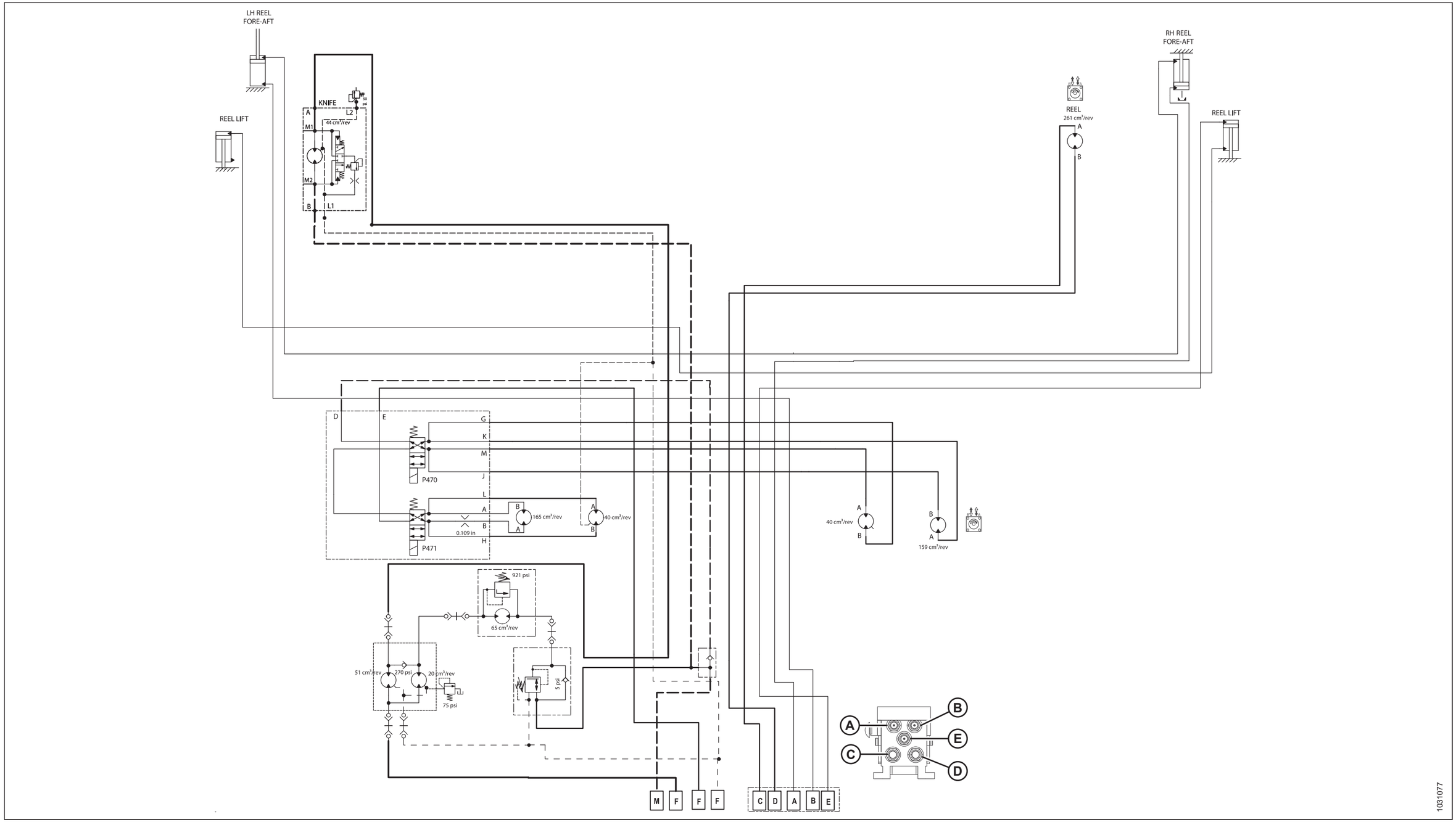

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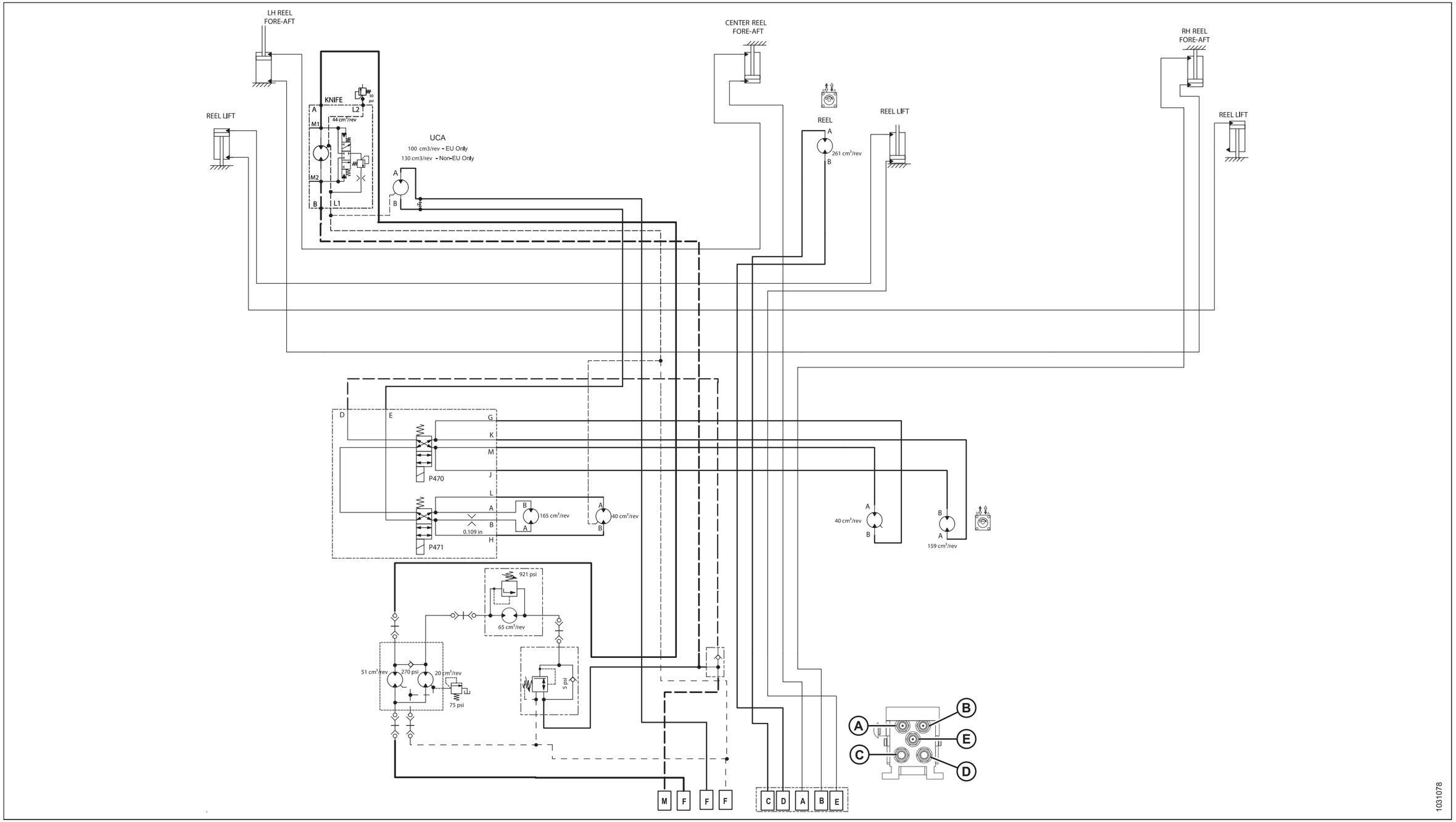

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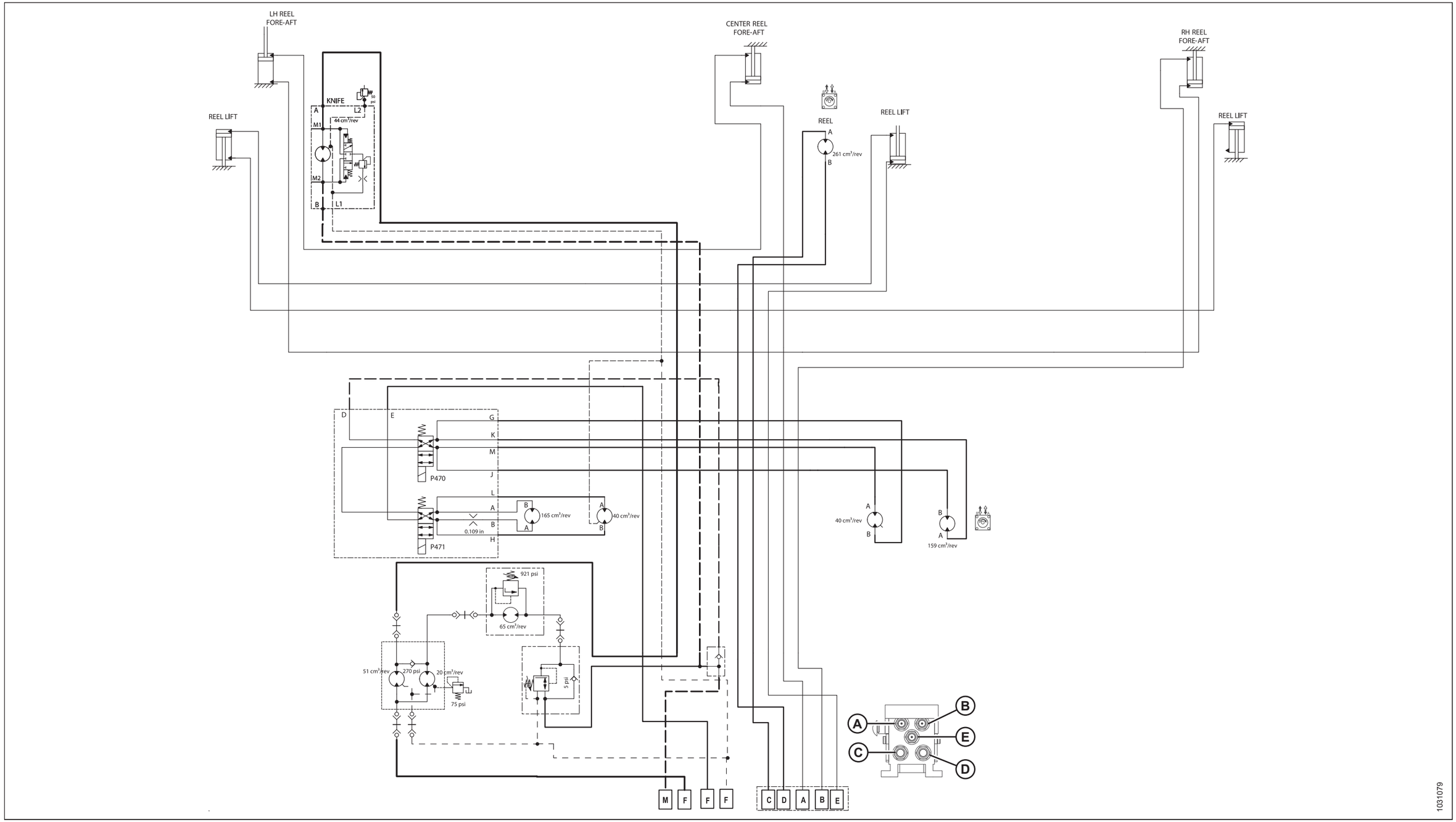

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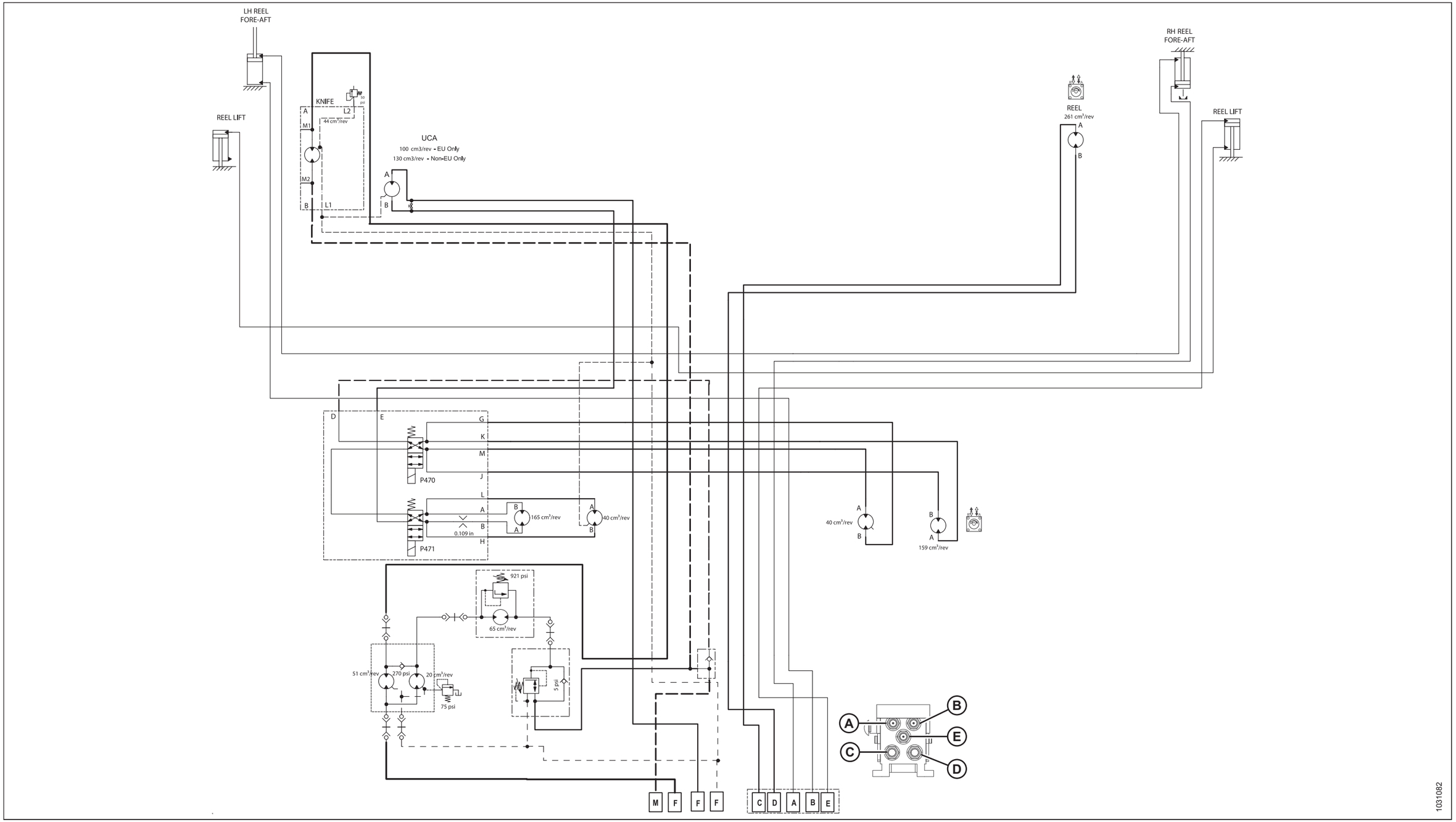

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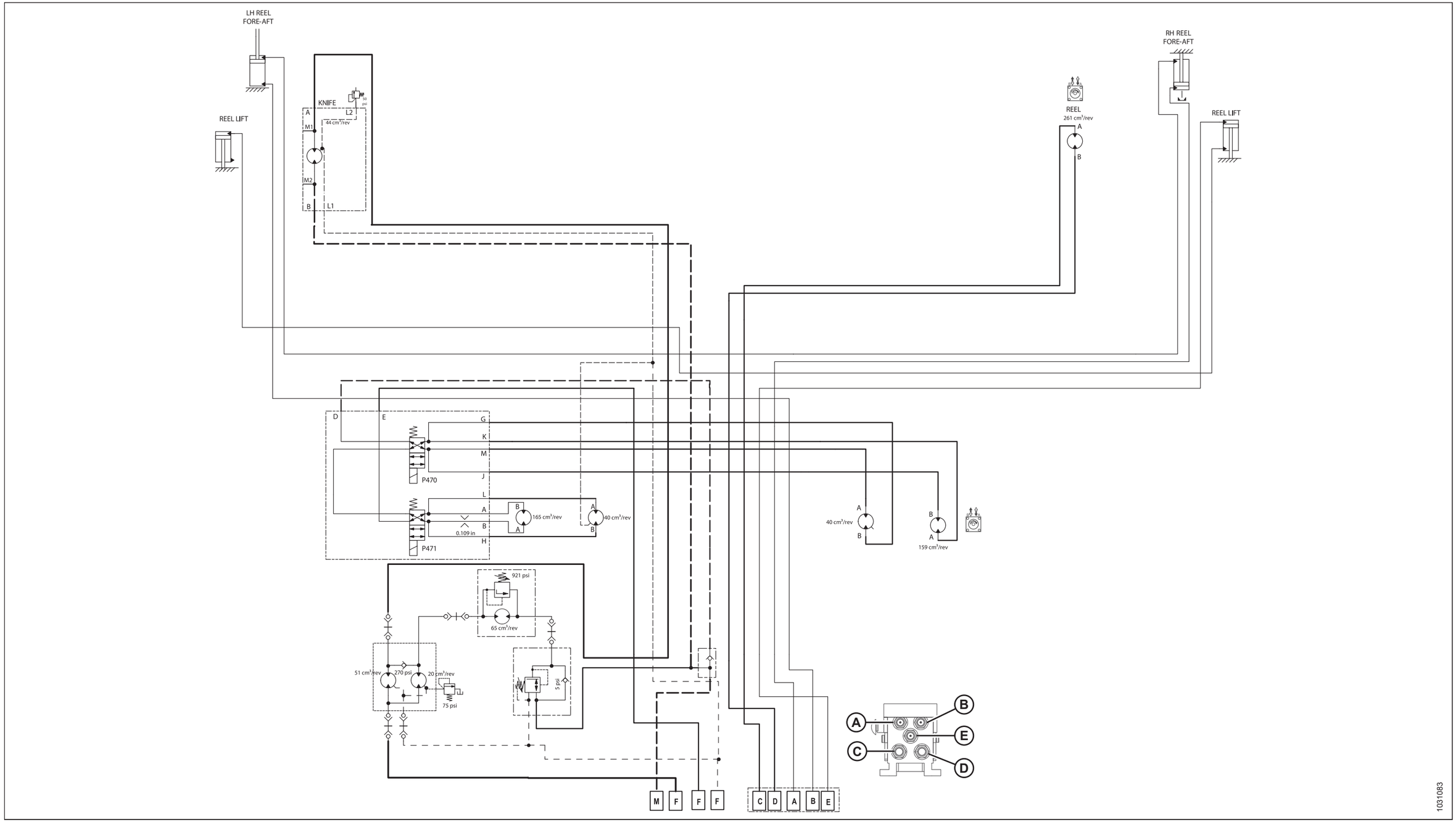

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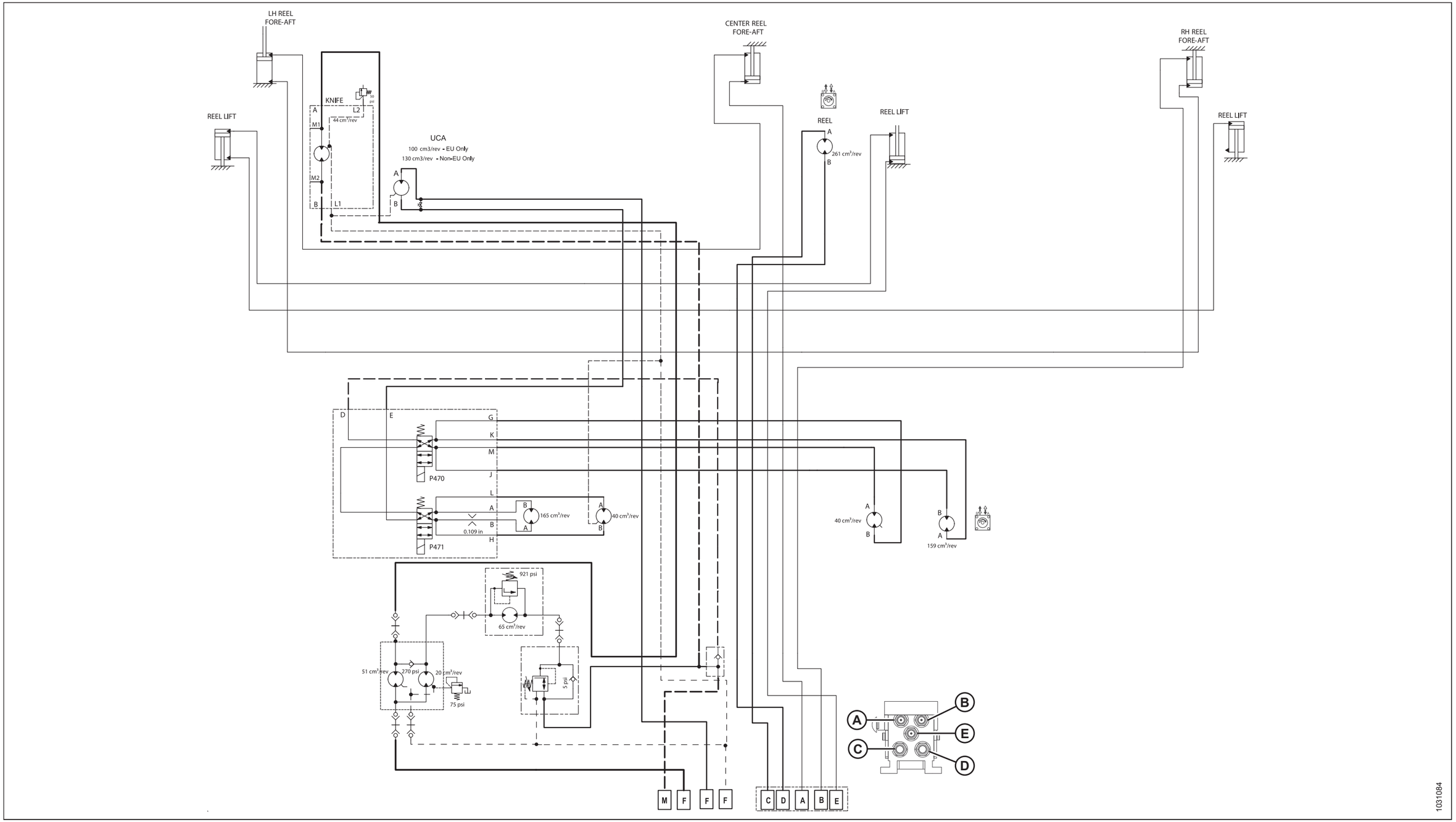

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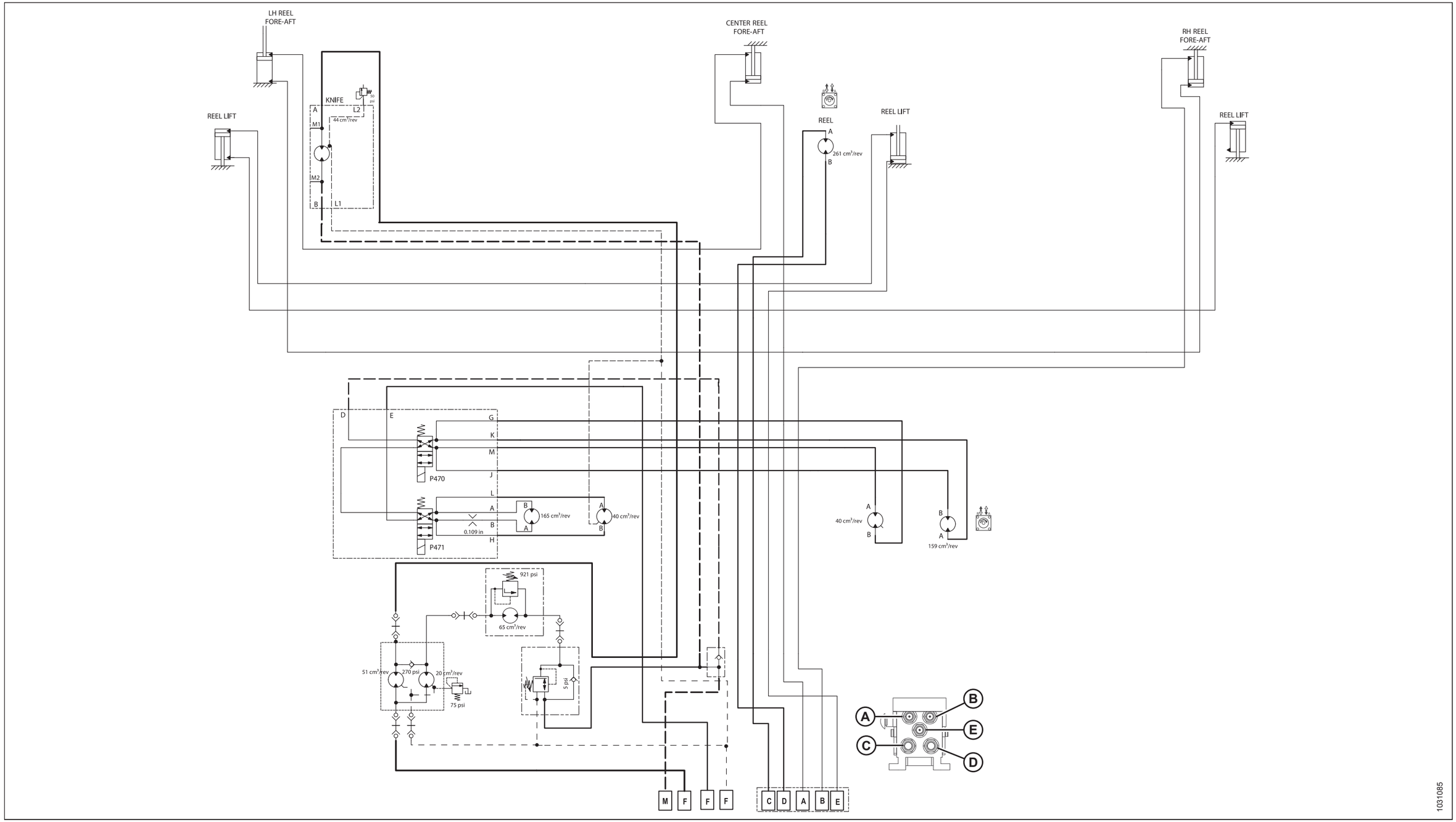

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Predelivery Checklist

Perform these checks and adjustments prior to delivery to your Customer. Refer to Unloading and Assembly Instructions for adjustment details. The completed checklist should be retained either by the Operator or the Dealer.

CAUTION

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

Conditioner Serial Number: _____

Table .1 HC10 Hay Conditioner Predelivery Checklist

✓	Item	Reference
	Be sure all shipping material is removed.	—
	Check for shipping damage or missing parts.	shortageanddamage@macdon.com
	Check roll drive belt tension.	*3.11.1 Checking Roll Drive Belt Tension, page 47*
	Check conditioner roll gap, timing, and alignment.	*3.11.2 Checking Roll Gap, page 48* and *3.11.3 Checking Roll Timing, page 49*
	Check rear and side forming shields evenly set to desired position.	*3.9 Installing the Forming Shield, page 42*
	Grease all bearings.	*3.10 Lubricating the Conditioner, page 44*
	Check roll intermesh hardware is securely tightened.	*4.9.2 Adjusting Roll Gap, page 68*
	Check hydraulic hose routing.	*4.3 Attaching Hay Conditioner to Header, page 53*
	Run-up procedure	*3.11.5 Running up the Conditioner, page 50*
	Check reverse operating mode.	Refer to windrower manual.
	Check hydraulic hose routing for clearance when raising or lowering header.	—
	Post run-up checks. Stop engine.	—
	Check for hydraulic leaks.	—
	Check belt drive for alignment and heated bearings.	*5.7 Drive Belt, page 81*
	Check manuals in windrower cab.	*3.11.6 Storing Manuals, page 50*

Date checked:

Checked by:

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