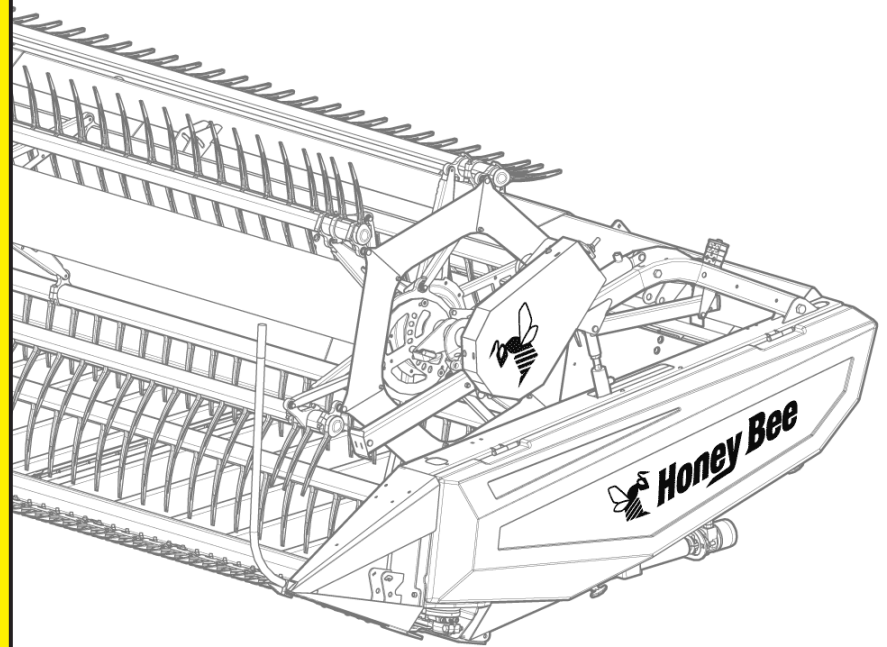
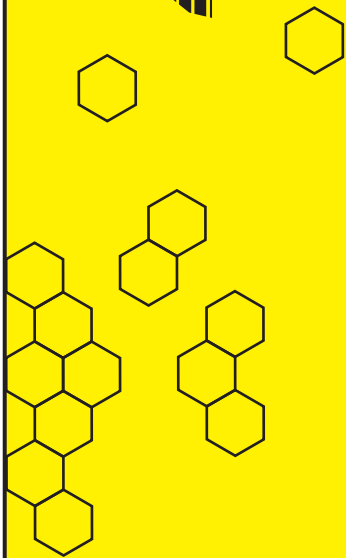


2017

4000 SERIES

Header Operator Manual



4000 Series Header Delivery Inspection Report

TO THE DEALER: *This form must be completed and returned to Honey Bee Manufacturing Ltd. along with the Warranty Registration Form. (please print)*

Model: _____ Serial #: _____
Check Completed By: _____ Signature: _____
Dealer Name: _____ Date: _____

As soon as you receive this machine, inspect it thoroughly to be certain that it is in good order and complete. Finish a pre-delivery inspection, paying special attention to the steps listed below, prior to delivery to the customer. Indicate with a tick mark in the left-hand column when correct/complete.

Pre Run-In Checks:

- Crop dividers and crop divider pipe/snub nose installed (*see section 5.2 on page 26*)
- Quick couplers match power unit.
- Reel tie-down removed.
- Knife drive hold down bolts torqued to 120 ft-lb (163 Nm). (*see decal located next to the knife drive*)
- Knife head block cap screws torqued to 41 ft-lb (56 Nm).
- Knife head cross bolt torqued to 53 ft-lb (72 Nm) for CNH/Crary knife or 73 ft-lb (99 Nm) for SCH knife.
- Reel centered in swather left to right (*see section 16.5 on page 61*).
- Reel fingers clear cutterbar by approximately 2" across length of the knife.
- Safety and warning decals affixed securely and clearly readable.
- Safety guards and shields installed and secure.
- Header lubricated (*see section 13.1 on page 49*).
- Optional equipment, as per sales order, is installed and operates correctly.

Mounting Checks:

- All adapter installation instructions completed.
- Hydraulic oil pressures and flow rates are set.
- Electrical systems working properly.
- Table drop rate valve installed and set properly. (See combine operator manual)
- Hydraulic plumbing is leak-free.
- Drapers on all decks track evenly with adequate clearances between draper, end strut gauge wheels, and the transport hitch jack (in its storage position).
- Drapers are tensioned. DO NOT OVERTIGHTEN.
- If draper deck shift is installed ensure all stops are properly set.
- Header is leveled for field operation. (See section 6 on page 31.)

Pre-Transport Checks

- Hitch and axle attached and secure.
- Reel lowered in the rear-most position, and tied down, and restrained from rotating. Caution: Do not bend tubing.
- Wheel bolts torqued to 120 ft-lb (163 Nm).
- Tire pressures @ 80 psi (552 KPa)
- All lock pins in place and securely fastened.
- All fasteners and parts secure.
- Wiring, hydraulic hoses, and fittings/connections secure.
- Wiring and hoses tied up securely for transport.
- Reflectors and SMV sign in place and clean.
- Warning and clearance lights installed and operational.

Warranty Registration Form

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name: _____	Dealer Name: _____
Address: _____	Address: _____
City: _____	City: _____
Prov./State Code: _____	Prov./State Code: _____
Phone Number: _____	E-mail Address: _____
E-mail Address: _____	
Equipment Model: _____	
Serial Number: _____	
Delivery Date: _____	

Delivery inspection and all adjustments as outlined in the provided Operator's Manual pertaining to this equipment model have been checked.

I have thoroughly instructed the buyer on the above described equipment. This instruction included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Dealer's Signature: _____ Date: _____

I have received the above equipment along with the Operator's Manual, and I have been thoroughly instructed in the care, adjustment, safe operation and applicable warranty policy.

Owner's Signature: _____ Date: _____

Return this completed form to Honey Bee Manufacturing using one of the following three methods:

By Mail: Honey Bee Manufacturing Ltd
P.O. Box 120
Frontier SK S0N 0W0

By Fax: 1 (306) 296-2165

By E-mail: service@honeybee.ca

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**IMPORTANT!**

This manual covers the 4000 Series header **ONLY**.

Review the sections of this manual regarding adjustments, settings, leveling, and table height before attempting to operate this header.

Without proper adjustment, damage to the header may occur.

**IMPORTANT!**

Please wash this equipment after transporting!

Honey Bee Manufacturing will not be responsible for any paint deterioration resulting from salt or harsh chemical corrosion if this equipment is not properly washed after transport. Use a mild soap solution, then rinse thoroughly.

If this equipment is stored near salted roadways through the winter months, it should be cleaned each spring.

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1 - Purchase Information

Dealers Name: _____

Address: _____

Phone: () _____

Purchase Date: _____

Model: _____

Serial Number: _____

Delivery Date: _____

Modification Record	
Date	Modification

Honey Bee Manufacturing Limited is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

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Table of Contents

1 - Purchase Information	7
2 - Introduction	13
2.1 - Directions.....	13
2.2 - Warranty.....	13
3 - Safety	15
3.1 - Recognize Safety Information.....	15
3.2 - Understand Signal Words.....	15
3.3 - Read and Understand Instructions and Warnings.....	15
3.4 - Protective Clothing.....	15
3.5 - In Case of Emergency.....	15
3.6 - High Pressure Spray.....	16
3.7 - Store the Header Safely.....	16
3.8 - Safety Around Moving Parts.....	16
3.9 - Draper Support Bars.....	16
3.10 - Operating Safely.....	16
3.11 - Transporting the Header.....	17
3.11.1 - Remove Transport Lift Points.....	17
3.11.2 - Pre-Transport Checks.....	17
3.11.3 - Fire Safety.....	17
3.11.4 - Safety During Transport.....	18
3.12 - Practice Safe Maintenance.....	18
3.12.1 - High-Pressure Hydraulics.....	19
3.12.2 - Using Correct Torque Values.....	19
4 - Safety Decal Locations	21
5 - Mounting Instructions	25
5.1 - Combine Preparation.....	26
5.2 - Header Preparation.....	26
5.3 - Positioning Header on Feeder Housing:.....	27
5.4 - Coupling.....	28
5.4.1 - Sub frame Adjustment.....	28
5.4.2 - Restrainer Chains.....	28
5.4.3 - Coupling the Drive Shaft.....	28
5.4.4 - Connecting Multi-Coupler and Hydraulic Hoses:.....	29
5.4.5 - Electrical Connections.....	29
6 - Leveling	31
6.1 - Leveling and Table Height Adjustment.....	32
6.2 - Floatation.....	33
6.2.1 - Example A:.....	33
6.2.2 - Example B:.....	33
6.2.3 - Example C:.....	34
6.2.4 - Example D:.....	34
7 - Removal of Transport Equipment	35
7.1 - Four Wheel Transport Option – Convert to Field Operation.....	35
7.2 - Rear Integral Axle - Convert to Field Operation.....	35
7.3 - Draw Bar - Convert to Field Operation.....	36
7.4 - Spare Parts Holder.....	37
8 - Caster Gauge Wheels	38
8.1 - Gauge Wheel Height Adjustment.....	39

9 - Mounting Checklist	40
10 - Pre-Start Checklist	41
10.1 - Cold Weather Start-up – Temperatures below 10C/50F.....	41
11 - Normal Start	42
12 - Cutting System	43
12.1 - Knife Removal.....	43
12.2 - Cutting System Maintenance.....	44
12.3 - Sickle Sections.....	44
12.3.1 - Replace a Section – Method 1:.....	44
12.3.2 - Replace a Section – Method 2:.....	45
12.4 - Knife Drive/Knife Head.....	45
12.5 - SCH Connector Bar.....	46
12.6 - Overlap Kit.....	46
12.7 - Repair Broken Knife Back.....	47
12.8 - Cutter Bar Poly Skid.....	47
13 - Lubrication	49
13.1 - Lubrication.....	49
13.2 - Lubrication Service Locations.....	50
13.3 - Filters.....	50
14 - Maintenance	51
14.1 - Periodic Checks.....	52
14.2 - Auger Drum Maintenance.....	52
14.3 - Drapers – Periodic Maintenance.....	52
14.4 - Replacing Center Bolt in Suspension Leaf Springs.....	52
15 - Hydraulics	53
15.1 - Operating Pressure.....	53
15.1.1 - Normal Pressures.....	53
15.2 - Cold Weather Operation – Temperatures below +10C/+50F.....	53
15.3 - High Pressure - Diagnostic Checks.....	53
15.4 - Other Problem Sources.....	54
15.4.1 - Diagnostic Checks.....	54
15.5 - Chain Case Assembly Pump by Combine.....	55
15.6 - Check or Adjust Knife Relief Pressure.....	56
15.7 - Draper Operating Pressure.....	57
15.7.1 - If the draper pressure is high, check:.....	57
15.7.2 - If a faulty draper motor is suspected:.....	57
15.8 - Bleeding Air Out Of Solid Reel Lift Circuit:.....	58
15.8.1 - A: Static Method.....	58
15.8.2 - B: Alternate method.....	58
16 - Reel	59
16.1 - Reel Drive.....	59
16.2 - Chain Tension.....	59
16.3 - Reel Speed Adjustment.....	60
16.4 - Reel Speed Sensor.....	60
16.5 - Reel Position.....	61
16.5.1 - Hydraulic Fore & Aft.....	61
16.5.2 - Split-Reel Lift Hydraulic Circuit.....	61
16.5.3 - Solid Reel Lift Hydraulic Circuit.....	62
16.5.4 - Reel Arm Leveling and Height Adjustment.....	62
16.5.5 - Reel Centering.....	63

16.5.6 - Placement of the Reel on the Header.....	64
16.5.7 - Reel Position in Down Crops.....	64
16.5.8 - Reel Position in Standing Crops.....	64
16.6 - Universal – U-II Pick-Up Reel: Tine Pitch Adjustment.....	65
16.7 - Control Rings (U-II Reels only).....	65
16.8 - Hart-Carter (HCC) Reel.....	66
16.8.1 - HCC Reel – Tine Pitch Adjustment.....	66
16.9 - Lubrication – Reel Shaft Bearings.....	66
16.10 - HB Reel Tine Pitch Adjustment.....	67
16.11 - Check Points Before Operation:.....	67
17 - Draper, Decks and Draper Seal.....	69
17.1 - Lining Up the Idler Roller.....	69
17.2 - Draper Installation.....	70
17.3 - Tensioning.....	70
17.3.1 - Spring Tension Indicator.....	70
17.4 - Tracking.....	71
17.4.1 - Idler Roller Tracking Adjustment.....	71
17.4.2 - Drive Roller Tracking Adjustment.....	72
17.5 - Draper Speed.....	72
17.5.1 - Draper Speed - Feeder Deck.....	72
17.6 - Feeder Draper Deck - (Rearward Feeding).....	73
17.6.1 - Adjusting Feeder Draper Tension:.....	73
17.7 - Draper Splicing.....	73
17.8 - Idler Roller Removal.....	74
17.9 - Drive Roller Removal.....	75
17.10 - Removing Draper Motor.....	75
17.11 - Replace Bearings on Drive Roller.....	76
17.12 - Replace Bearings on Idler Rollers.....	76
17.13 - Installing Draper Motor.....	77
17.14 - Draper Deck Maintenance:.....	77
17.15 - Draper Seal.....	78
18 - Center Feed Auger.....	79
18.1 - Standard Adjustments.....	79
18.2 - Finger Extension Adjustment.....	79
18.3 - Auger Drum Height Adjustment.....	80
18.4 - Fore – Aft Adjustment of the Center-Feed Auger.....	80
18.4.1 - Adjust the clearance as follows:.....	80
18.5 - Auger Drive Assembly Adjustment.....	81
18.6 - Drive Line Adjustment.....	81
18.7 - Chain Tension Adjustment.....	82
18.8 - Drive Line - Walterscheid.....	82
18.8.1 - Auger Drive Slip Clutch Adjustment.....	82
18.9 - Operating the PTO.....	83
18.10 - Drive Line Lubrication.....	83
18.11 - Coupling the Input Drive Line.....	84
18.11.1 - Drive Line Lock.....	84
18.12 - Drive Line Guard Disassembly.....	84
18.13 - Drive Line Guard Assembly.....	84
18.14 - Replace Cone:.....	85
18.15 - Mechanical Trap Doors.....	85
18.15.1 - Activating Front Trap Door.....	85

18.15.2 - Activating Rear Trap Door.....	86
19 - “Headsight” Header Height Control Ready.....	87
20 - Dismounting Draper Table from Combine.....	88
20.1 - Preparing For Dismount.....	88
20.2 - Quick Dismount.....	89
20.3 - Dolly Wheel Transport Header Dismount.....	90
20.3.1 - Dolly Wheel.....	90
20.3.2 - Integral Rear Axle.....	90
20.3.3 - Draper Header Removal.....	91
21 - Optional Equipment.....	92
21.1 - Cross Auger.....	92
21.1.1 - Cross Auger Adjustment.....	92
21.1.2 - Cross Auger Strippers.....	93
21.2 - Adjustable Skid Shoes.....	93
21.2.1 - End Skid Shoe Adjustment.....	93
21.2.2 - Middle Skid Shoe Adjustment.....	94
21.3 - Floating Crop Divider Tips.....	94
21.4 - Vertical Shear Ready Option.....	95
21.5 - RotoShear Ready Option.....	95
21.6 - No Transport Option.....	96
22 - Troubleshooting.....	97
22.1 - Common Problems You May Encounter.....	97
22.2 - Troubleshooting Checklist.....	97
23 - Appendix.....	104
23.1 - AGCO Bezels.....	104
23.1.1 - Configuring the AGCO Bezels.....	104
23.2 - Hydraulic Fitting Naming Standards.....	106
23.3 - Hydraulic System Schematics.....	107
23.3.1 - Draper and Knife Hydraulic Schematic.....	109
23.3.2 - Manual Swath - Draper and Knife Hydraulic Schematic.....	110
23.3.3 - Cross Auger Option Hydraulic Schematic.....	111
23.3.4 - Reel(Solid) Drive, Fore-Aft, Lift, and Header Tilt Hydraulic Schematic.....	112
23.3.5 - Reel (Split) Drive, Fore-Aft, Lift, and Header Tilt Hydraulic Schematic.....	113
23.4 - Specifications.....	114
23.4.1 - Combine Adapters.....	116
23.4.2 - Cross Augers.....	117
23.5 - Options:.....	118
23.6 - Pickup Reel Assemblies:.....	119
23.6.1 - U II Universal.....	119
23.6.2 - HCC.....	119
23.6.3 - Honey Bee.....	119
23.7 - Recommended Torque Values (ft-lb).....	120
23.8 - Tightening O-ring Fittings.....	121

2 - Introduction

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

This manual should be considered a permanent part of your header and should remain with the machine when you sell it.

Measurements in this manual are given in the worldwide standard of metric as well as U.S.A. unit equivalents. Use only correct replacement parts and fasteners. Metric and inch fasteners require a specific metric or inch wrench.

All names given in this document for equipment components are those in use at the time of design.

Please write down your equipment serial numbers in the Specification section to help in tracing the header should it be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place away from the header.

2.1 - Directions

Right and left hand sides are determined by facing in the direction the implement will travel when going forward.

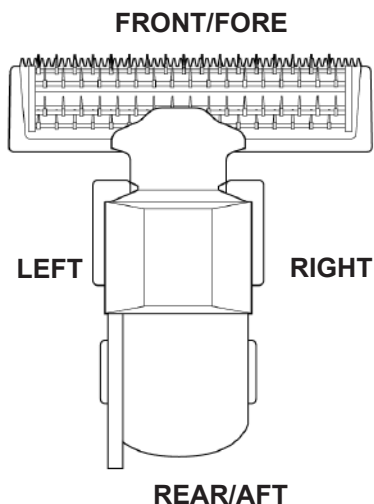


Fig. 1 - Reference directions

2.2 - Warranty

The warranty is provided as part of Honey Bee's support program for customers who operate and maintain their equipment as described in this manual.

Honey Bee Manufacturing Ltd. (Honey Bee) warrants your new header to be free of defects in material and workmanship, under normal use and service. Obligations under this warranty shall extend for a period of 1 year (12 months) following the date of first use to the original purchaser and shall be limited to, at the option of Honey Bee, replacement or repair of any parts found, upon inspection by Honey Bee, to be defective.

Warranty Claims

The purchaser claiming under this warranty shall report a warranty claim to his Authorized Dealer. The dealer shall complete the claim, on the prescribed form online, for inspection by an authorized company representative. Warranty claims must be submitted online within 60 days of warranty expiration on the Honey Bee Manufacturing Ltd Claim Form (CFI).

Limitations of Liability

This warranty is expressly in lieu of all other warranties expressed or implied and all other obligations or liabilities on our part of any kind or character, including liabilities for alleged representations or negligence. We neither assume nor authorize any person to assume, on our behalf, any liability in connection with the subsequent sale of the header.

This warranty shall not apply to any header which has been altered outside the factory in a way that Honey Bee judges to affect its operation or reliability, or which has been subject to misuse, neglect, or accident.

Operator's Manual

The purchaser acknowledges having received training in the safe operation of the Header and that Honey Bee does not assume any liability resulting from the operation of the Header in any manner other than described in this manual.

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3 - Safety

3.1 - Recognize Safety Information



This is a safety-alert symbol. When you see this symbol, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

3.2 - Understand Signal Words

The following are safety terms used around the equipment and throughout this manual. Please read and understand their descriptions.

DANGER!

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING!

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. 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 also be used to alert against unsafe practices.

IMPORTANT!

Warns of potential damage to the header if proper procedures are not followed.

NOTE:

Notifies you of important information to which you should pay attention.

3.3 - Read and Understand Instructions and Warnings

IMPORTANT!

Operating instructions for this header should be reviewed by each operator at least once a year per OSHA regulations 1928.57. The meaning of each decal should be understood, and their locations should be known prior to operating the header.

You may find additional safety information on after-market optional equipment that may not be included in this manual.

Only allow trained individuals to operate the Header. Failure to comply can result in injury and/or equipment damage.

Unauthorized equipment modifications can cause injury or equipment failure that is not covered under warranty.

3.4 - Protective Clothing

WARNING!

When working around running equipment, secure all loose items such as long hair, jewelry, or loose clothing are secured so they do not contact moving parts. Failure to do so will result in injury or death.

Wear hearing protection to protect against hearing damage.

Operating equipment safely requires your full attention, do not wear headphones while operating the header.

3.5 - In Case of Emergency

IMPORTANT!

Keep a first aid kit and fire extinguisher with your header at all times. Keep phone numbers for emergency services near your telephone.

3.6 - High Pressure Spray

IMPORTANT!

Avoid spraying yourself, electronics or hydraulic connections with a pressure sprayer.

3.7 - Store the Header Safely

WARNING!

Ensure your header and all attachments are secured when not in use. Keep bystanders away from equipment and storage area. Failure to comply can result in injury or death.

IMPORTANT!

If the storage location exposes the header to road salt during the winter months, thoroughly wash the header in spring time.

It is recommended to rotate the drapers so that the seam of the joint is located underneath the table. This will improve drainage, thus reducing the possibility of ice buildup stretching, and damaging the draper material.

3.8 - Safety Around Moving Parts

DANGER!

Never attempt to service your equipment while in operation. Always shut off the combine and wait for all moving parts to come to a complete stop before approaching the header.

Some pictures or illustrations in this manual may not show protective shields in place. This is done in order to make important components visible. Keep guards and shields in place at all times. Ensure that they are serviceable and installed correctly.

Cutterbar, auger, reel, drive shafts, and drapers cannot be completely shielded due to their function. Stay clear of these moving elements during operation.

3.9 - Draper Support Bars

IMPORTANT!

Remove the two Draper Support Bars before operation of draper tables! Failure to remove the support bars can result in damage to the product and personal injury.

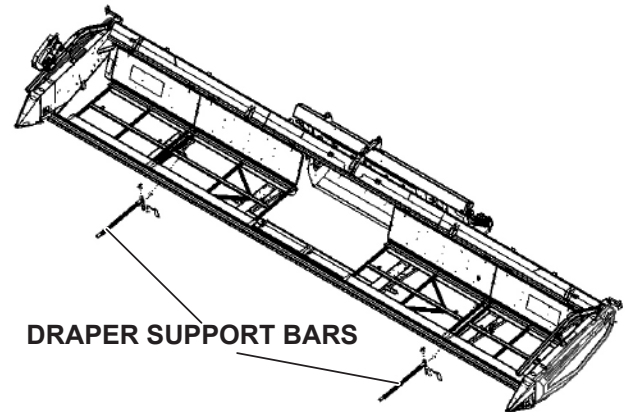


Fig. 2 - Remove Draper Support Bars

3.10 - Operating Safely

WARNING!

Clear the area of bystanders, especially small children before starting the power unit, do not allow anyone to ride on the header while running.

Make certain that the park brake is engaged, and the power unit is in neutral before starting the engine.

Stop the combine, engage the parking brake, place the combine in neutral, remove the key, and wait until all moving parts stop before leaving the cab.

Either lower both the table and the reel, or raise the header to its full height and set the platform lock before servicing the header. If working under the reel, set the reel cylinder locks. A loss of hydraulic pressure could cause the header and reel to lower unexpectedly.

Do not operate the header, while fatigued, sick, impaired or in crowded or confined areas.

DO NOT stand between the combine and the header while the header is being raised or lowered.

3.11 - Transporting the Header

3.11.1 - Remove Transport Lift Points



IMPORTANT!

Remove the four No Transport lift points before operation of draper tables! Failure to remove the lift points can result in damage to the product and personal injury.

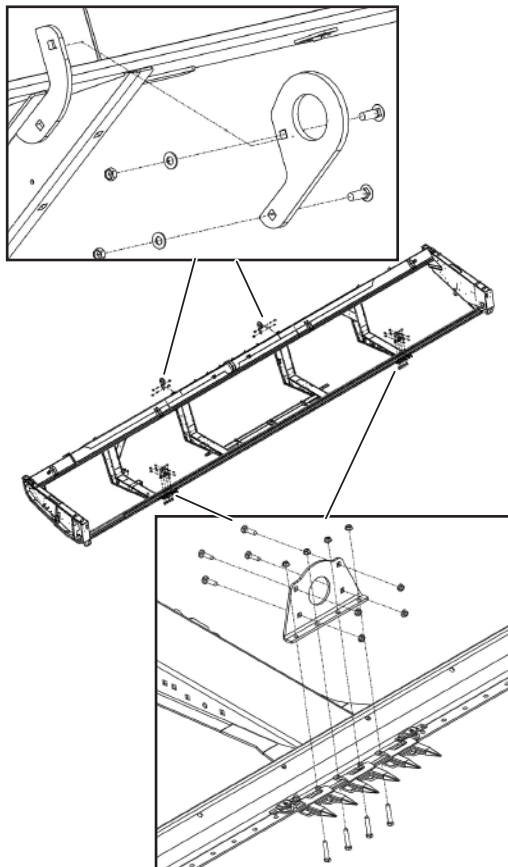


Fig. 3 - Remove Draper Support Bars

3.11.2 - Pre-Transport Checks



IMPORTANT!

Do a complete walk-around inspection and ensure everything is secure prior to transporting.

Completely retract and lower the reel before transporting.

Check:

- All reel mounting, reel drive and adapter assembly bolts to be sure no bolts/nuts are loose.
- Ensure dolly wheel drawbar and safety chain are firmly attached and secured before moving.
- Wheel bolts to make sure they are tight.
- Transport tire pressure - recommended pressure is 80 psi (552 kPa)
- Spindle and hitch lock pins - ensure they are in place and securely fastened.
- Inspect all hoses. Ensure they are secured so they will not pinch or drag during transport.

3.11.3 - Fire Safety



WARNING!

Inspect the header for material buildup on a daily basis. Build up of chaff and crop debris near moving parts is a fire hazard. Check and clean these areas frequently. Before inspection or service, shut off engine, engage the parking break, remove the key and wait for all moving parts to come to a stop.

Keep a fire extinguisher with your equipment at all times and ensure the operator is educated in its operation.

3.11.4 - Safety During Transport

WARNING!

Transport the header with the SMV (Slow Moving Vehicle) sign clearly displayed on the rear of the header and use your hazard lights if the law permits. Check local road laws before transporting.

Do not transport the machine at night, at dawn, or at dusk.

When transporting the header, frequently check for traffic from the rear, especially in turns. Always use headlights, flashing warning lights, and turn signals (when turning) day and night. Follow local regulations for equipment lighting and marking. Keep lighting and marking visible, clean, and in good working order, replace if necessary.

Whenever possible avoid transporting the header on public roadways with header attached to the combine.

If combine must be transported with header attached, ensure all warning lights are operating, and reflective material is clean and visible.

Use of a spotter or pilot vehicle is recommended on busy, narrow or hilly roads and when crossing bridges.

Drive at a speed safe for conditions.

Do not exceed 25 mph (40 kph) when transporting the header on the optional transport package.

Stop after the first 5 to 10 kilometers (2 to 6 miles) and check to make sure the wheel bolts are tight (The bolts should be torqued to 120 ft/lbs (163 Nm)) and ensure the wheel hubs are not hot. Make periodic checks every 50 to 60 km (31 -37 miles) if towing the header long distances.

Check the hitch bolt and safety chain periodically to make sure they are secure.

3.12 - Practice Safe Maintenance

WARNING!

Before attempting to service your equipment, ensure that you fully understand any procedure that you are about to attempt.

Before undertaking any maintenance, engage the park brake, either lower the reel and header, or raise and lock the header using the platform lock and shut off the engine of the combine. Make sure there is no pressure being supplied to the hydraulic lines.

Ensure that all pressure is released from the hydraulic lines before starting a repair. Replace or repair damaged hoses immediately.

Ensure all equipment is secured against sudden drops.

Keep the work area clean and dry.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove buildup of grease, oil, or debris.

If welding on the header, first disconnect battery ground cable (-). before making adjustments to electrical systems or welding on the header.

The header must be lowered to the ground before servicing. If the work requires that the header or reel be lifted, provide secure support. If left in a raised position, hydraulically supported devices can settle or drop suddenly.

Do not support the header on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a header that is supported only by a jack.

Do not attempt to clean drive belts or drapers with flammable cleaning solvents.

Maintain moving parts, hydraulics and motors clear of chaff and straw to prevent the possibility of fire.

3.12.1 - High-Pressure Hydraulics

 **DANGER!**

High pressure hydraulic leaks can penetrate the skin causing serious injury. Always relieve pressure before disconnecting hydraulic lines and tighten all connections before applying pressure.

Hydraulic leaks can be extremely small and difficult to see. Search for leaks with a piece of cardboard. Protect hands and body from high-pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source.

3.12.2 - Using Correct Torque Values

 **IMPORTANT!**

It is extremely important that you use the correct torque values when servicing your header. Failure to follow the torque recommendations on page 120 can result in equipment damage.

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4 - Safety Decal Locations

The following safety decals have been placed on your machine in the areas indicated. They are intended for your safety, and the safety of those working with you. Please take this manual, walk around your machine and familiarize yourself with the locations and content of these warning signs and labels. Review this information, and the operating instructions in this manual with your machine operators. Keep decals legible.

1. Keep them clean.
2. Know the location and meaning of all decals. Cross reference the numbers on the diagram below with the chart on the following pages to help identify the labels.

For continued safe operation of this machinery, it is recommended that you replace damaged safety decals immediately. You may purchase replacement decals from your dealer.

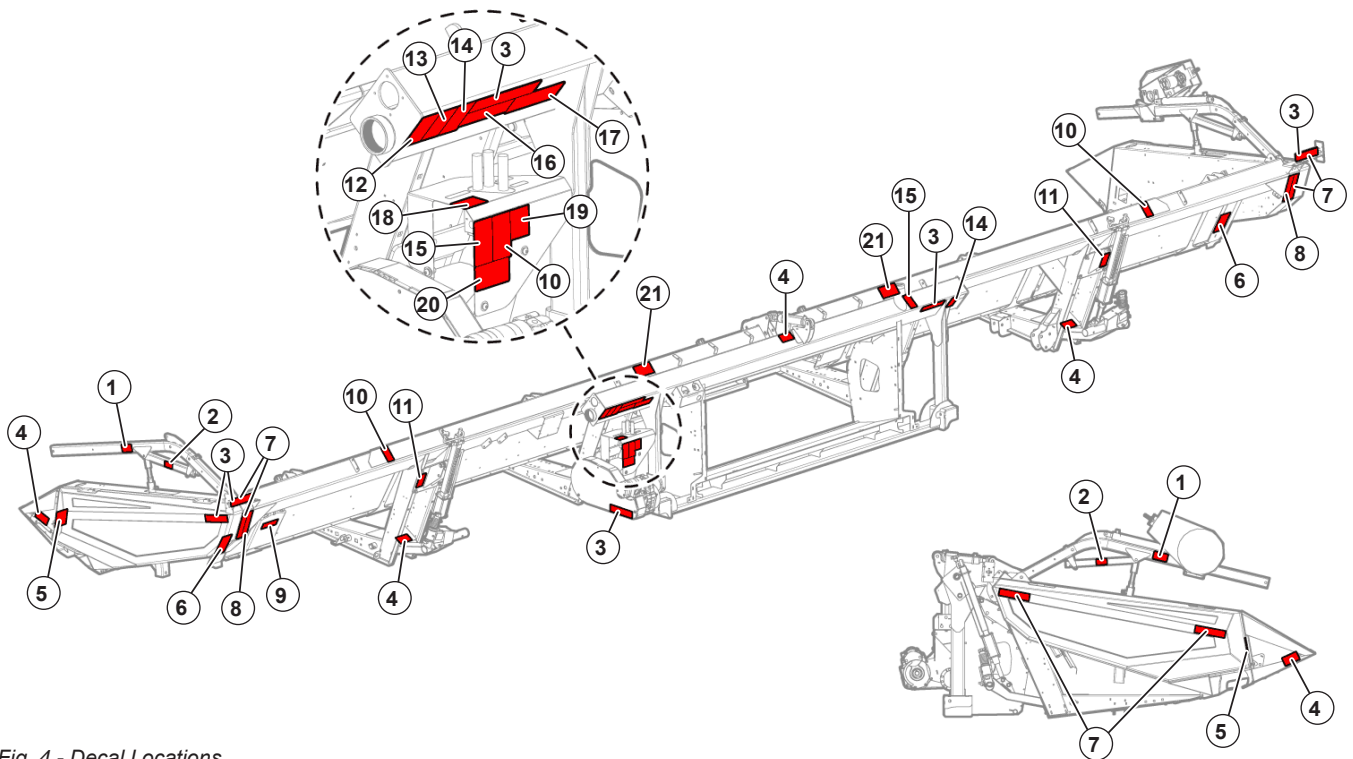


Fig. 4 - Decal Locations



Fig. 5 - #87259



Fig. 6 - #87251



Fig. 7 - #28387



Fig. 8 - #87261

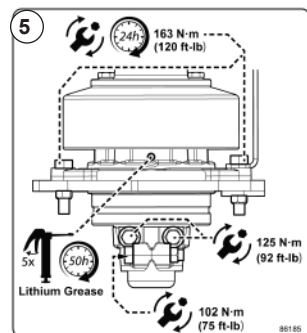


Fig. 9 - #87261

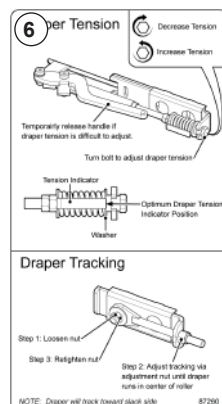


Fig. 10 - #87260



Fig. 11 - #28386



Fig. 12 - #28386



Fig. 13 - #83127



Fig. 14 - #87237



Fig. 15 - #87263

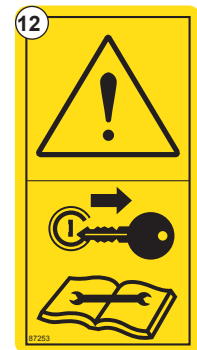


Fig. 16 - #87253



Fig. 17 - #87254



Fig. 18 - #87233



Fig. 19 - #89238

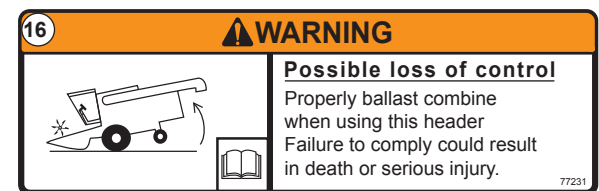


Fig. 20 - #77231

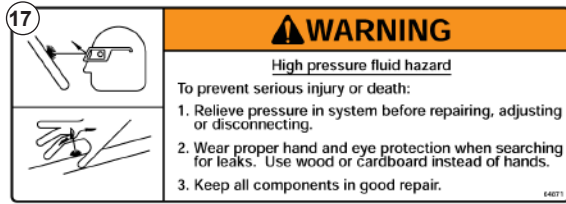


Fig. 21 - #64871

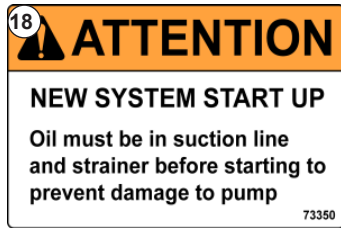


Fig. 22 - #73350

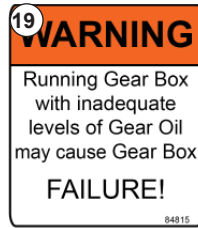


Fig. 23 - #84815



Fig. 24 - #87239



Fig. 25 - #87235

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5 - Mounting Instructions

These instructions are designed to help you safely and easily mount your 4000 Series Header onto the combine. If you follow these instructions in the order given, you will avoid difficulties.

Use the Mounting Checklist at the end of this section to ensure that the header is mounted properly and is ready for the field.

A complete setup includes the following sections of this manual:

- Mounting – (this section)
- Coupling (Section 5.4 on page 28)
- Leveling (Section 6.1 on page 32)
- Transport, or Integral Axle removal (Section 7 on page 35)
- Mounting Checklist (Section 9 on page 40)
- Pre Start Checklist (Section 10 on page 41)

Terminology

Combine	Front/Fore	Feeder house end of the combine
	Rear/Aft	Straw spreader/chopper end of the combine.
Header	Right & Left	As seen when sitting in the driver's seat facing the header
	Front/Fore	Cutter bar side.
	Rear/Aft	Feeder house mount side.
	Right & Left	As seen when sitting in the driver's seat facing the header when it is mounted on the combine or standing at the back of the header facing towards the cutter bar.

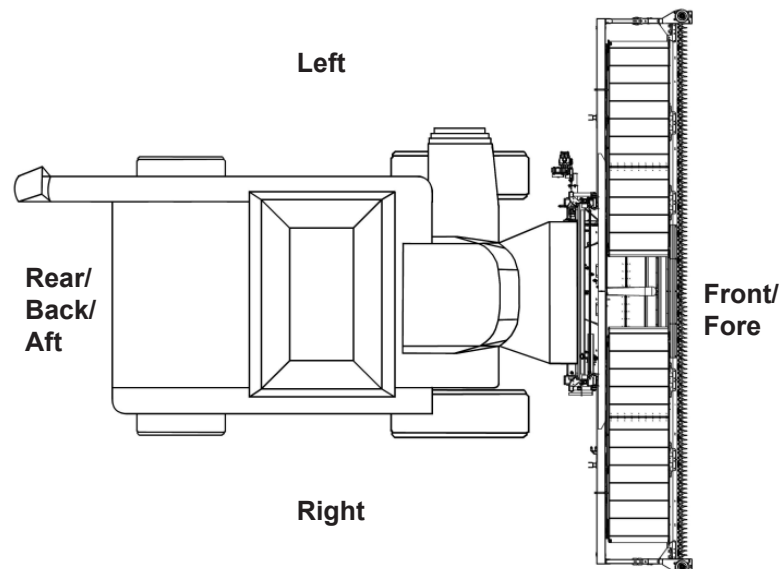


Fig. 26 - COMBINE & HEADER REFERENCE DIRECTIONS

5.1 - Combine Preparation

1. Remove factory pickup or auger header from the combine as outlined in the Owners/ Operators manual supplied by the combine manufacturer.
2. Check feeder housing front and top for straw and chaff build-up. Clean all contact areas thoroughly.
3. Check all locking mechanisms and/or lock pins on feeder housing of combine to ensure they are working properly and will not interfere with the initial mounting of the 4000 Series Header on your combine.
4. Check for leaks and/or loose fittings on hydraulic lines (hoses) which attach to the header. Repair if necessary.
5. Check the feeder house output speed to see that it matches the recommended speed of the header. See section 23.4.1 on page 116 for details.

5.2 - Header Preparation

1. Check the feeder housing adapter area on the header for obstructions.
2. Ensure the hydraulic pump and hoses are clear of the feeder housing adapter opening. Slide the telescoping drive shaft back as far as possible, if necessary, slide the pump back on the mount bracket so it does not interfere with the feeder housing as you drive the combine forward.
3. Check hydraulic hoses to be sure the couplers match those on the combine.

NOTE:

Some types of hydraulic connectors may not be supplied with the 4000 Series Header.

If the optional transport package was not purchased, the header should be placed on flat, hard and level ground as in the Quick Dismount position. (See section 20.2 on page 89)

4. Park the 4000 Series Header on flat, hard, and level ground if the optional transport system was purchased.

5. Install the crop dividers and crop divider pipes (or floating tip option) on the ends of the table. The crop dividers are not installed at the factory for shipping purposes. Once installed, operators should be aware of the assembled width of the header, and should check local regulations before transporting.
6. The crop divider easily attaches to the frame by sliding it onto the two spools at the bottom of the frame face.
7. Secure it to the frame by using the supplied tightening handle and tightening it to the receiver nut on the crop divider through the hole in the frame face.

NOTE:

If the crop divider does not sit properly, it can be adjusted via the button head bolts on the crop divider and the crop divider bracket on the frame face.

8. Insert the crop divider pipe (or stub nose) into the nose of the crop divider. Place a 3/8 x 1-1/2" bolt against the pipe and secure with a lock nut.

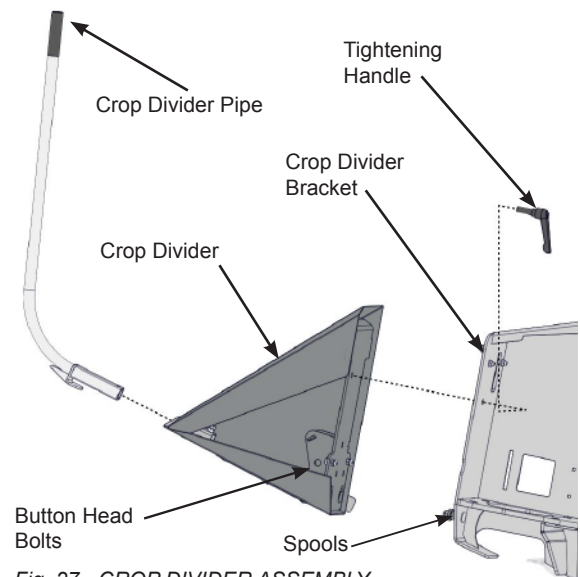


Fig. 27 - CROP DIVIDER ASSEMBLY

This will provide good crop separation, and will help prevent crop plugging in the corners. The crop divider pipe is intended to be used when cutting off the ground, and the optional floating crop divider tip is to be used when cutting on the ground.

5.3 - Positioning Header on Feeder Housing:

1. Position combine directly behind the header with the feeder housing aligned as closely as possible, on center, with the feeder housing adapter on the header sub frame.
2. With the feeder housing on the combine lowered, slowly drive the combine forward until the feeder housing front is aligned both vertically and horizontally with the adapter frame on the header. Adjust feeder housing height.

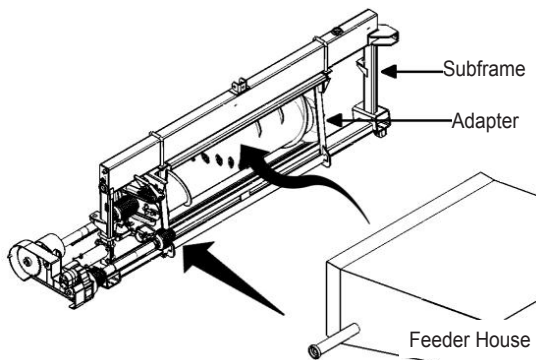


Fig. 28 - ALIGNING COMBINE

3. When the feeder housing is properly aligned with the adapter on the header, drive forward slowly until the feeder housing of the combine is inserted into the adapter frame. Slowly raise the feeder housing on the combine until the top makes firm contact with the inside top of the feeder housing adapter. If the bottom of the feeder housing makes contact with the auger adapter too soon, it may be necessary to extend the tilt cylinder on the sub frame (See Leveling or Troubleshooting sections of this manual.)
4. Check clearance and alignment of the feeder housing to the feeder housing adapter on both sides of the feeder housing as well as on the top and bottom. Be sure that nothing is interfering with the alignment of the feeder housing to the adapter frame.

WARNING!

Engage the parking brake on the combine, shut the engine down and wait for all moving parts to stop before leaving the cab.

5. Check the position of the feed auger in the adapter to be sure it is not contacting the shrouds on the front of the feeder housing. If required, adjust the feed auger to a more forward position in the adapter (see section 18.4 on page 80)
6. If feeder housing and the feeder adapter are properly aligned, restart the engine and raise the feeder housing (and header) to its fully raised position.

IMPORTANT!

If feeder housing and the feeder housing adapter frame ARE NOT properly aligned, repeat steps 2, 3, 4, and 5.

WARNING!

Engage the parking brake on the combine, shut the engine down and wait for all moving parts to stop before leaving the cab.

7. Lock the feeder housing in the fully raised position as described in your Combine Operators Manual.
8. With the header in the fully raised position insert all lock pins and/or header adapter locking bolts as described in your combine owner's manual.

IMPORTANT!

Be sure these pins are properly located and securely in place before proceeding.

5.4 - Coupling

5.4.1 - Sub frame Adjustment

The sub frame requires some adjustment to allow full floatation of the header in the field

1. After header is mounted to the combine, ensure the RH Lift Link Adjustment Nut is adjusted so that the distance between the nut and the end of the thread is approximately 1-3/4".
2. Repeat this check on the left side.

NOTE:

Decreasing this measurement (loosening the nut), lowers the frame closer to the feeder deck. Increasing this measurement does the opposite.

For further instruction on leveling the header, see section 6 on page 31.

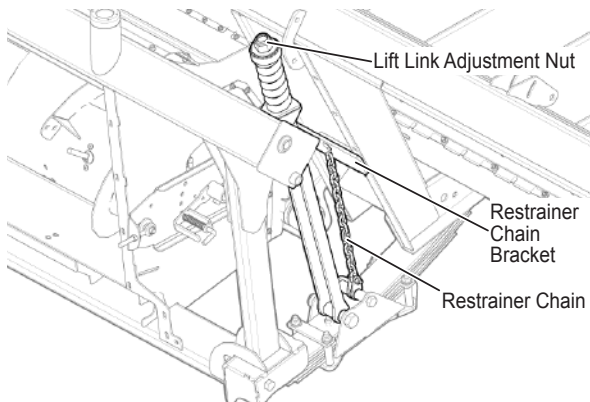


Fig. 29 - Subframe - Restrainer Chain & Lift Link

5.4.2 - Restrainer Chains

Locate the Transport Restrainer Chains on each side of the Header Adapter Frame near the bottom. These chains restrict the amount of header floatation and also suspend the adapter frame when the header is on the transport axle or in the quick disconnect position.

Unhook the chains and re-attach them in the longest position. This will provide unrestricted header floatation in the field.

5.4.3 - Coupling the Drive Shaft

Remove the Pin and lift the Telescoping Drive Line from the storage bracket. Replace the pin and close the Clip. Couple the drive line to the feeder housing shaft. Align the drive line so that a minimal amount of angle is required when the drive line is coupled.

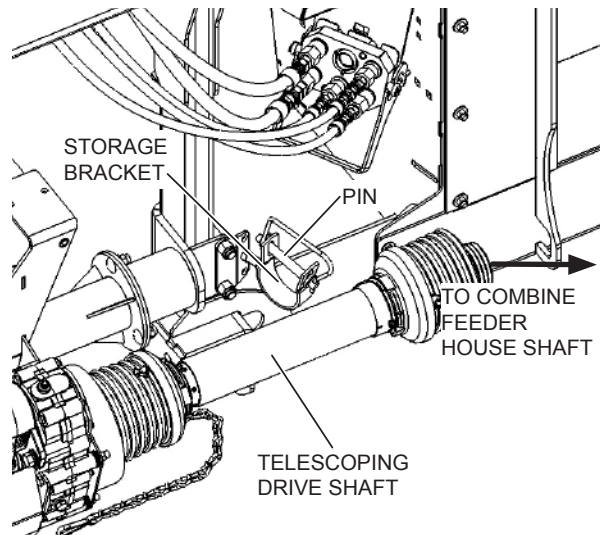


Fig. 30 - DRIVE SHAFT

5.4.4 - Connecting Multi-Coupler and Hydraulic Hoses:

1. Couple the hydraulic lines or multi-coupler connection. Ensure the couplers match those on the combine and are fully engaged.
2. Connect the Reel Lift, Reel fore/aft controls (optional).
3. Secure the Reel drive circuit. Not required if combine is not equipped with hydraulic reel drive circuit.



Fig. 31 - CONNECTING HYDRAULICS & ELECTRICAL

5.4.5 - Electrical Connections

Connect single point electrical connection from combine to header. Connect reel speed and reel height sensor wires if applicable.

When HeadSight is not installed, and the combine is either a Massey or Challenger, connect the Y520A and Y521 Harness Connectors together to power the Reel Speed Sensor.

When HeadSight is installed then an additional Power Lead from the combine is required. It is to be connected to the Y521 Harness Connector to power the Reel Speed Sensor and the HeadSight Header Height Control System. If this is not done then the Fuse for Pin 25 will blow.

NOTE:

John Deere, AGCO and Versatile combines come with a additional Tilt Selector Box to select between header tilt and reel fore/aft functions.

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6 - Leveling

The Header is attached to the Adapter frame by the Upper Hydraulic Link, (located on the top middle of the header adapter), and two Leaf Spring Assemblies. This top hydraulic link adjusts the forward angle of the table. This directly affects the angle of the cutter bar to the ground. The Adjustment Nuts on the Suspension Lift Link which is attached to the Spring Saddle, affects leveling and the overall height. Turning the adjustment nuts will alter the clearance between the ground, and the back of the center deck.

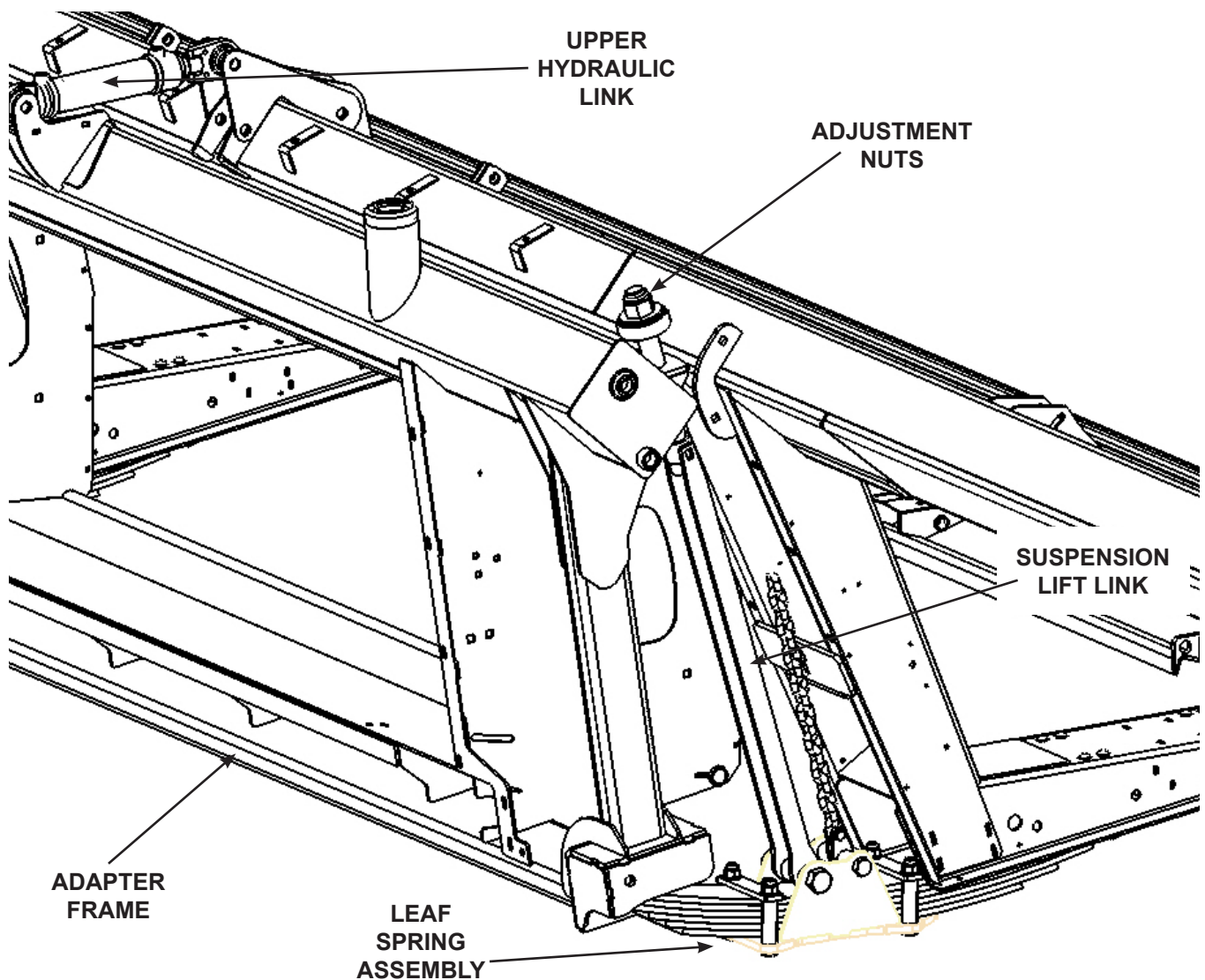


Fig. 32 - LEVELING COMPONENTS

6.1 - Leveling and Table Height Adjustment

Make sure feeder house is level before levelling the table.

- Tightening the lift link adjusting nuts will raise the table.
- Loosening the lift link adjusting nuts will lower the table.

To level the table, screw the adjusting nuts in or out depending on which side needs to be raised or lowered. To turn the adjusting nuts, lower the header down so the spring saddles are resting on wood blocks, this will take the weight off the nuts and will allow them to be turned. They will need to be adjusted by a 1-7/8" wrench. Lift table and check if it is level.

To lower the cutter bar relative to the sub-frame, loosen both adjusting nuts. This will provide more clearance between the sub-frame and the ground. This adjustment will also provide more clearance between the center deck and the ground allowing the cutter bar to contact the ground first but will decrease the clearance between the center deck and the lateral decks.

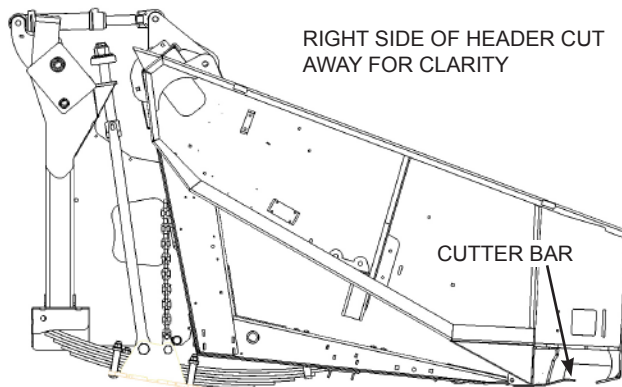


Fig. 33 - SUBFRAME RIGHT SIDE - Hydraulic Link Extended Half Way and Lift Link Nut at Factory Setting

DANGER!

Make sure not to loosen the adjustment nuts too far. There should be at least 1-2 threads still exposed. If nuts are loosened too far, threads will disengage from the lift link bolt and the table will drop suddenly.



IMPORTANT!

Care must be taken when loosening the adjusting nuts. This action will decrease the size of the opening leading to the auger adapter.



NOTE:

The recommended minimum distance between the top of the feeder deck frame and the rear of the lateral deck should be no less than 3.5" (90mm). If the distance becomes less than 3.5" (90mm), there is a greater risk of damage to the lateral decks and feeder deck due to contact between each other.

The auger adapter has a small amount of vertical range in the sub-frame, and as the table lowers with the adjusting nuts, the upper tube structure will move closer to the fingers in the auger. To ensure that the fingers do not contact the upper tube: disconnect the drive line, lift the finger auger and rotate the drum. Check the clearance.

6.2 - Floatation

For the 4000 series headers the suspension is non-adjustable. The Spring Saddle Clamps must not be adjusted or loosened. The Spacer between the clamp and the Spring Saddle provides enough range for the Leaf Spring to flex during operation. Make sure clamp nuts are tight.

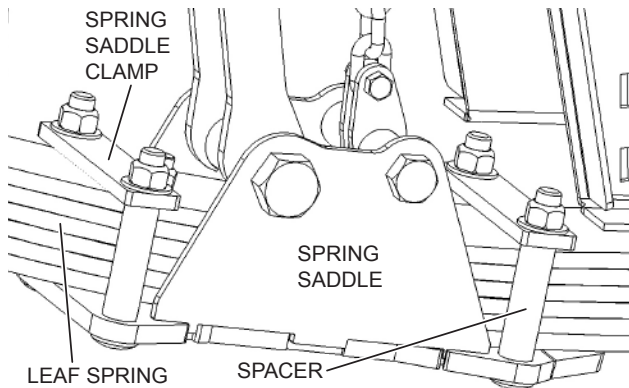


Fig. 34 - SPRING SADDLE HARDWARE

When operating in the field, the restrainer chains should be at full extension (loosened) to provide maximum end-to-end floatation for the header.



IMPORTANT!

The following examples show you the maximum range of adjustments to the leveling bolts and the top link. In each of the views, the sub-frame has been kept at a constant height above the ground.

6.2.1 - Example A:

The leveling nuts are tightened, lifting the cutter bar. The top hydraulic link is shortened, tilting back the header.

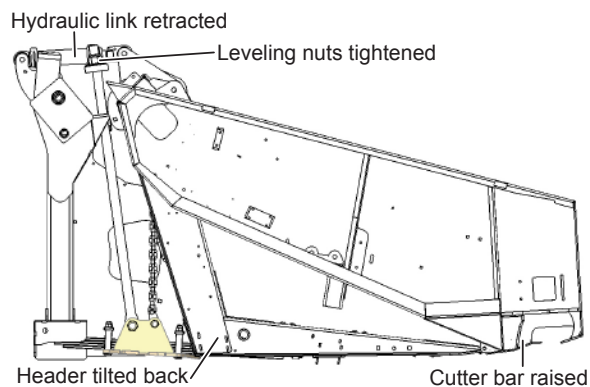


Fig. 35 - Example A

6.2.2 - Example B:

The leveling nuts are tightened, lifting the cutter bar. The top hydraulic link is extended, tilting the header forward.

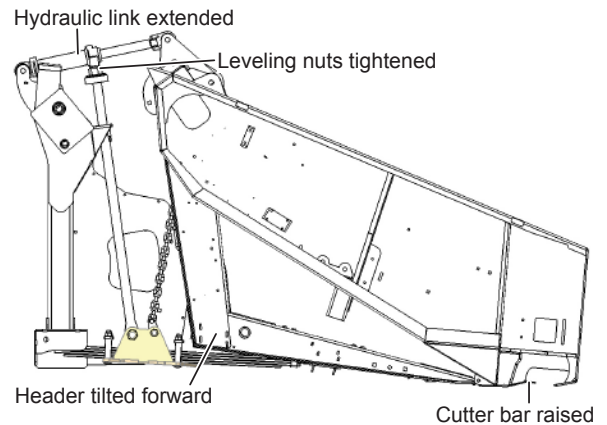


Fig. 36 - Example B



NOTE:

With both of these examples (A & B), if the feeder house is lowered allowing the cutter bar to get closer to the ground, the sub-frame and center deck will contact the ground first.

The distance between the top of the feeder deck frame and the rear of the lateral deck should be between 3.5" (89mm) and 5.5" (140mm). This should provide adequate floatation and clearance between the auger fingers and the header opening. This distance will change as the header angle is changed, so it may be necessary to re-adjust leveling nuts.

6.2.3 - Example C:

The leveling nuts are loosened with the top hydraulic link shortened. Loosening of the leveling nuts allows the table to drop in relation to the sub-frame. In this configuration, clearance between the lateral decks and the center feeder deck is at a minimum which may not provide adequate end-to-end float.

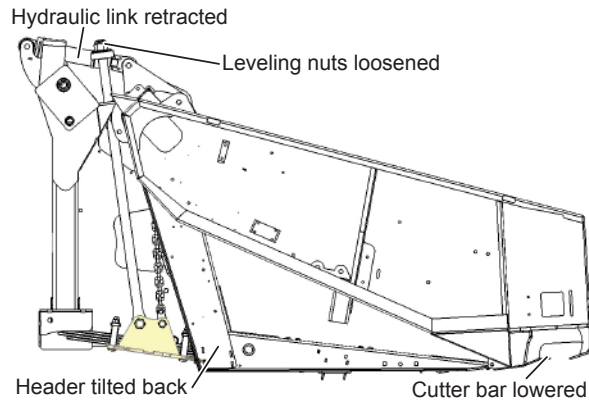


Fig. 37 - Example C



IMPORTANT!

At this extreme of the adjustment range, you may encounter interference between the finger drum and the upper tube.

6.2.4 - Example D:

The leveling nuts are loosened with the top hydraulic link also extended. The top hydraulic link tilts the table forward bringing the cutter bar closer to the ground. The clearance between the lateral decks and the center feeder deck is also increased in this example, providing better floatation.

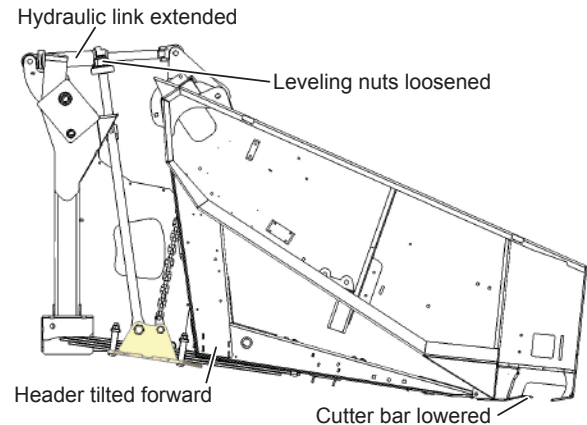


Fig. 38 - Example D



NOTE:

Before operation of equipment all clearances must be checked.



IMPORTANT!

These examples are extremes, and it is not suggested or recommended to adjust your header to the extreme. Experiment within the range of these "maximum" settings to determine which configuration will be best for your situation and crop cutting conditions.

For example:

In rocky conditions with a short crop, you may want to keep the guard tips oriented flatter in relation to the ground. Try shortening the top link.

In bushy crops such as mustard you may want to tip the header forward with the top link to maximize the opening.

For optimum operating performance you will want to stay in the 2-3 range on the hydraulic tilt cylinder position.

7 - Removal of Transport Equipment

7.1 - Four Wheel Transport Option – Convert to Field Operation

NOTE:

The Four Wheel Transport and Gauge Wheels are optional. If these were not purchased, disregard references to them in this manual.

WARNING!

Transport components are heavy. Care should be taken when handling them to avoid injury.

7.2 - Rear Integral Axle - Convert to Field Operation

With header in raised and locked position:

1. Remove Lock Pin and Wheel from front of Transport Axle.
2. Remove Deflector Wedge from its storage position and attach to the front end of the axle with supplied 5/8" Clevis Pin. (NOTE: Deflector wedge keeps material out of axle during operation).
3. Remove the second Wheel Assembly from the rear of the Transport Axle.

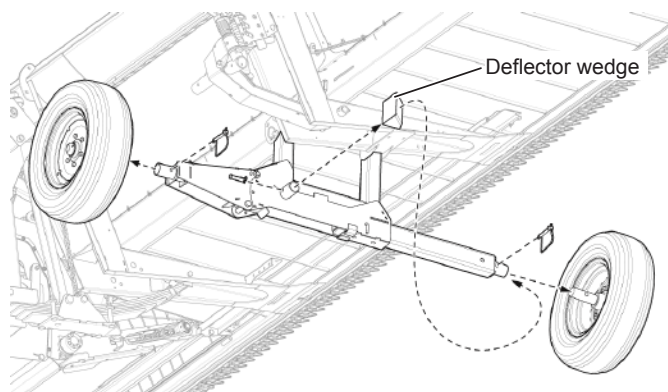


Fig. 39 - Tire removal & deflector wedge relocation

4. Store the wheels on the Gauge Wheel Brackets, if equipped. Otherwise store the wheels in a safe location.

5. Remove Lock Pin for Transport Axle and slide axle back into Main Axle Assembly. Reinstall lock pin.
6. Remove Lock Pin for Main Axle Assembly and pivot assembly up into operational/storage position.

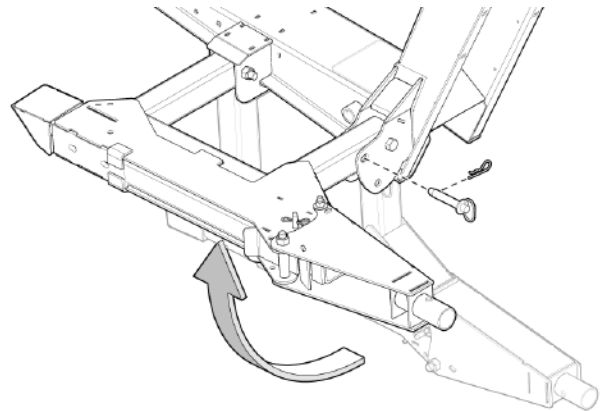


Fig. 40 - Transport axle field position

7.3 - Draw Bar - Convert to Field Operation

NOTE:
If desired, the Front Axle Assembly and Hitch Assembly may be removed, if the weight of the header needs to be reduced.

1. Lift header off the ground with the Combine. Lock the main cylinder(s) - see Combine Operators Manual.
2. Disconnect the Hitch Assembly Wire Harness at the connector on the strut.
3. Disconnect the Wire Connector where the two Hitch Assembly halves connect.

NOTE:
The Hitch Assembly breaks into half for ease of handling and storage.

4. Remove Lock Pins for both Front Axle Assembly Wheels. Remove wheels and attach them onto the gauge wheel storage bracket (if no gauge wheels are equipped, store the wheels in a safe location).

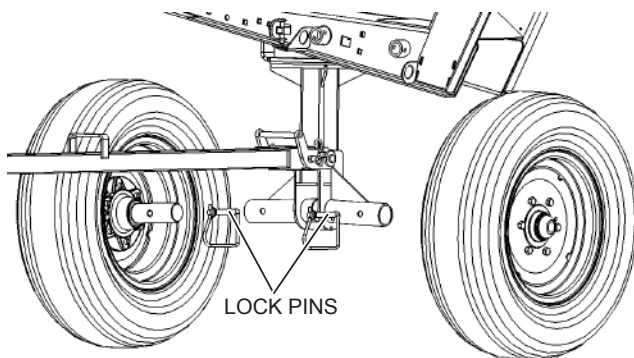


Fig. 41 - DRAW BAR WHEEL REMOVAL

5. Locate the Hitch Bolt holding the Inner Hitch, and Outer Hitch together. Remove the Hair Pin from the bolt, then spin off the Nut Handle. Remove bolt then separate the two hitch halves. Reinstall the bolt, Nut handle, and Hair Pin.

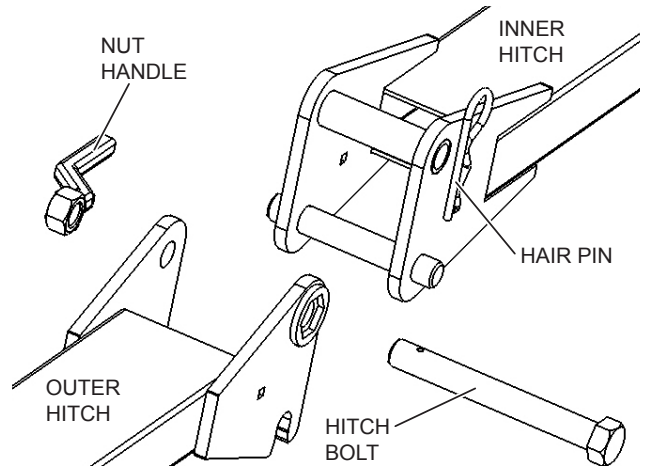


Fig. 42 - HITCH SEPARATION

6. Secure the Outer Hitch to the Header Frame as shown using the Pivoting Lock Plates and Quick Pins.

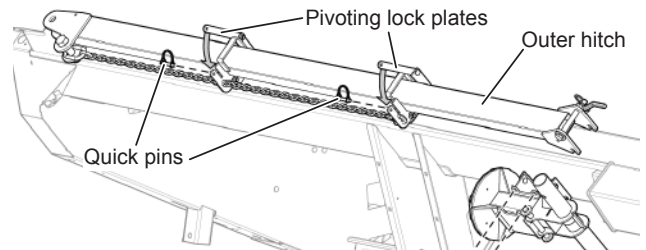


Fig. 43 - Outer hitch storage location

7. Remove the Locking Pin connecting the Inner Hitch to the Front Axle Assembly. Disengage the Lock Handle by pivoting it, then remove the Inner Hitch.

8. Secure the Inner Hitch to the Header Frame on the right hand side as shown using the Pivoting Lock Plates and Quick Pins.

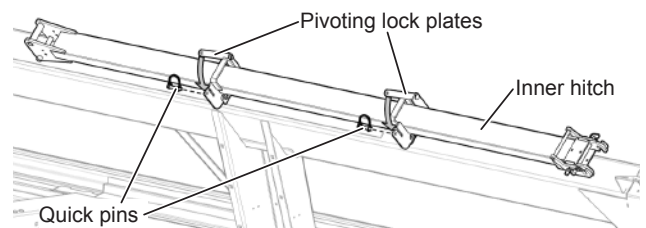


Fig. 44 - Inner hitch storage location

- Remove the Receiver Pin and Quick Pin from the front rectangular hole in the strut. Slide the Hitch Assembly forward and down removing it from the Receiver in the strut.

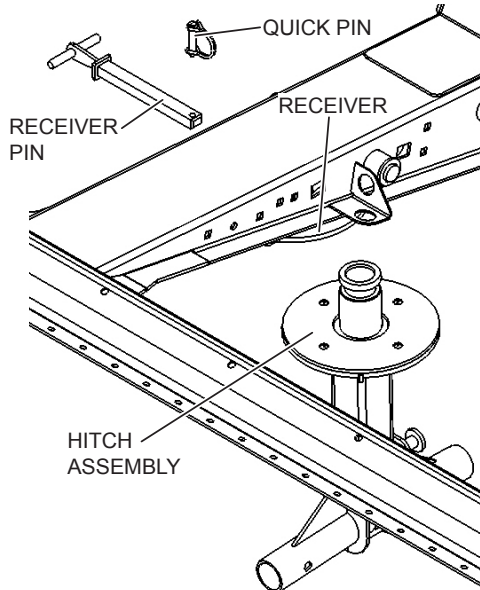


Fig. 45 - Hitch assembly removal

! WARNING!

REMINDER: Transport components are heavy. Care should be taken when handling them to avoid injury.

- Mount the Front Axle Assembly in the Front Axle Assembly Storage Bracket, on the Header Frame as shown. Secure in place with Lock Pins.

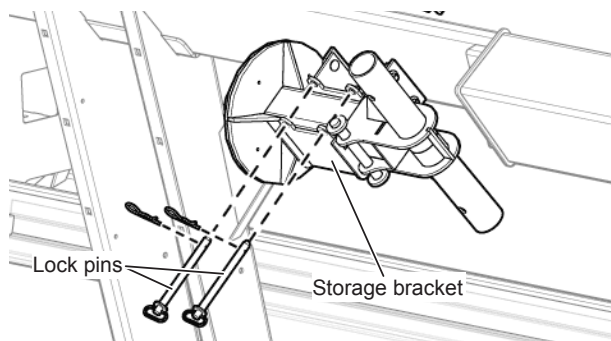


Fig. 46 - Hitch assembly storage

- With Receiver Pin removed, pivot the Receiver in the strut, up into the field position. Lock it by placing the Receiver Pin in the rectangular hole in the strut and secure with quick pin.

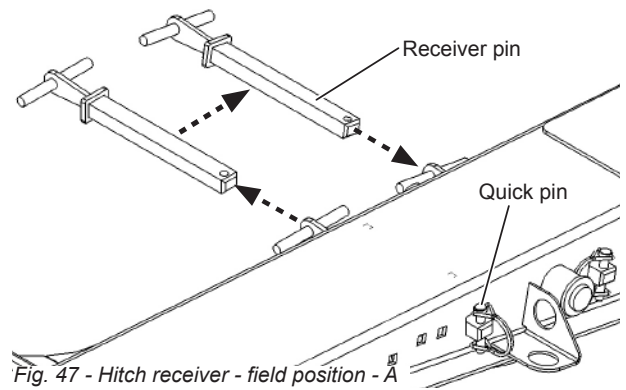


Fig. 47 - Hitch receiver - field position - A

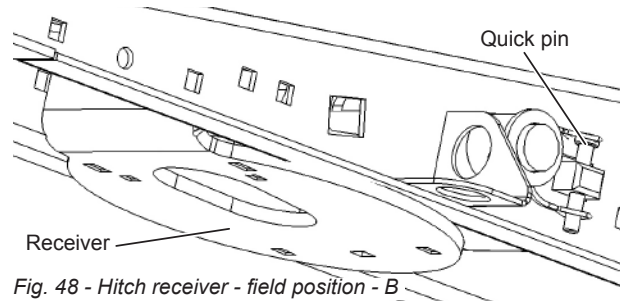


Fig. 48 - Hitch receiver - field position - B

7.4 - Spare Parts Holder

The Spare Parts Holder is located, inside the left hand End Strut. It has room to store two Knife Guards and up to ten Schumacher Knife Sections. It also stores the Multi-purpose Reel/Knife tool.

The Multi-purpose Reel/Knife tool has two wrench openings which fit the Reel Lift Cylinder Shaft Flats, and the Reel Lift Cylinder Lock Nut. The bottom end of the tool Handle is for manually turning the Knife Drive and for activating the Rock Trap Door Handle.

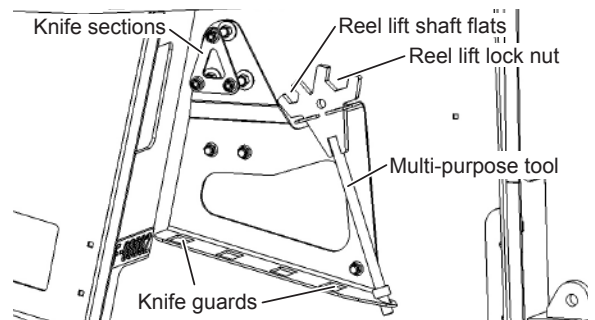


Fig. 49 - Spare parts holder

8 - Caster Gauge Wheels

Gauge wheels enhance the table's ability to follow the profile of uneven ground. In the cutting position, especially in short or "down" crops, this can prove to be essential. These wheels are designed to swivel, making it unnecessary to raise the header when cornering.

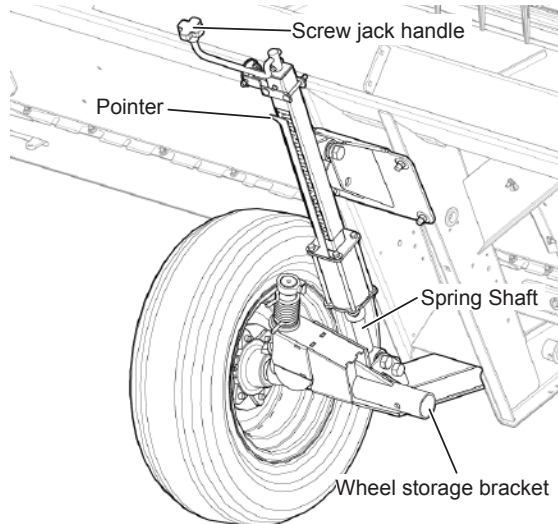


Fig. 50 - Gauge wheel assembly

CAUTION!

Damage to the caster wheels could result if header table and gauge wheels are not lifted clear of the ground when backing up.

Damage to castor wheels can also result from making tight turns. The sharp turning capabilities of some combines can cause one of the wheels to be dragged backwards.

NOTE:

The header should be parked on level ground and leveled before attempting to adjust gauge wheel height.

Gauge wheels must be adjusted relative to the height at which the header will be operated in the field.

Normal adjustment would allow the weight of the header to compress the spring shaft of the gauge wheel assembly by 1.5" (38mm) to 2" (50mm).

IMPORTANT!

Excessive compression of the Shock Assembly will cause stress and premature wear in the top link.

NOTE:

Adjustments to table tilt, spring flotation, and pitch will affect the amount of compression in the Shock Assembly. Check shock shaft exposure, and adjust accordingly, after any of these adjustments.

CAUTION!

Remember, the Gauge Wheels are NOT designed to support the weight of the table! Their purpose is to help guide the table over variations in ground level.

IMPORTANT!

When using one tire per gauge wheel assembly, ensure that the tire is mounted in the castering position of the gauge wheel arm assembly.

8.1 - Gauge Wheel Height Adjustment

1. Retract the gauge wheel jack to its lowest position, the pointer should be at or above the "1" mark.
2. Adjust the header table height until the cutter bar is at the desired average cutting height for the crop being cut. i.e. stubble height.
3. Lower the gauge wheel assembly to the ground using the screw jack until the Spring Shaft is compressed by 1.0 to 1.5". Repeat this procedure on the other gauge wheel assembly.

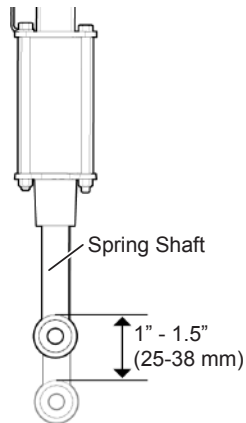


Fig. 51 - Spring shaft compression

4. Confirm that the spring shaft of the gauge wheel assembly is compressed by the specified 1.0–1.5" range. If incorrect, repeat steps (1-4) as described.

9 - Mounting Checklist

- Header Adapter Frame aligned and fitted to the Feeder House of the Combine.
- Feed Auger adjusted. (Auger fingers do not contact the Feeder Housing and the Auger Strippers are adjusted properly. See section 18 on page 79 for Auger adjustment.)
- Feeder Housing Lock Pins/Bolts in place and properly locked/tightened.
- Dolly Wheel and Integral Rear Axle Transport properly placed into field position. (If equipped.)
- Gauge Wheels installed as directed. (If equipped.)
- Hydraulic lines (multi-coupler) fully connected.
- Gearbox aligned and connected to the bottom Feeder House Output Shaft.
- Finger Auger Drive Shaft aligned and connected.
- Electrical connections in place and tested. Massey and Challenger additional power lead installed when HeadSight installed.
- Restrainer chains latched in the longest position.
- Transport parts stored for future use.
- Header is level.
- Feeder House Drive straight as possible and correct length.



WARNING!

Before proceeding, be sure you have been through the Mounting Checklist. This will ensure that the header is securely mounted.

Be sure no one is standing near the machine while you are raising or lowering the header.



IMPORTANT!

If the Combine will not raise the Header, see the Troubleshooting section of this manual.

10 - Pre-Start Checklist

- Start the Combine and lower the Header to level ground, if necessary.
- Inspect the Header for damaged or loose parts. Repair or replace any such parts immediately.
- Check oil level in hydraulic reservoir of the Header. Add to specified level with the recommended oil, if required.
- Ensure that all protective shields are in place and secured.
- Inflate tires to 50 psi (345 kPa) for both transport, and for field operation.
- Inspect all hydraulic hoses and fittings. Ensure connections are secure and hoses are in good condition.
- LUBRICATE THE HEADER as outlined in the Service section of this manual.
- Make certain Draper Support Strap has been removed.

10.1 - Cold Weather Start-up – Temperatures below 10C/50F



IMPORTANT!

It is a good practice, and in cold weather it is absolutely necessary, to allow the oil to warm up prior to any cutting. Turn the Draper flow control to zero to prevent pressure spikes

With the Combine at low idle, engage header drive. Do not increase to high idle until oil has reached operating temperature. Once the oil is warm, increase the draper flow control to desired speed. If oil flow passes over the relief, it may be necessary to adjust the relief pressure. Refer to the Hydraulic Section of this manual.

11 - Normal Start

1. Start the Combine. Raise the Reel to full height (cylinders fully extended). Hold switch on momentarily at the full height position, then drop the Reel to its lowest position (cylinders fully retracted). Complete this cycle at least twice to ensure it is working properly and raising/lowering equally.
2. ENGAGE THE PARKING BRAKE. Engage Platform Drive Switch (see Combine Owner's Manual for instruction) with engine at idle RPM. The platform draper, knife and reel should begin to turn.
5. With the Header raised, engage header drive with Combine at idle. The Header, knife, and Drapers should operate.
6. Activate the Reel with Combine controls. Steadily increase engine speed until full operating RPM has been reached.



WARNING!

If any oil leaks appear, shut the Combine down immediately and make the necessary repairs before restarting.



IMPORTANT!

Practice operating and maneuvering the header and combine in an open area away from people and buildings.

3. Increase idle speed. When Combine is at high idle check and set:
 - Reel speed.
 - Draper tracking.
 - Draper speed.
4. With Header lowered to about 2 inches (5 cm) from the ground, STOP COMBINE, SHUT ENGINE DOWN and check:
 - Header leveling (end to end).
 - Tilt cylinder set in 2-3 (GREEN) range
 - Header cutting angle (2o to 5o).
 - Feeder deck and Lateral deck separation of 3.5" to 5" recommended
 - Gauge wheel height.
 - Reel mount bolts.
 - Knife head section bolts and bearing block bolt.
 - Knife head bearing bolt.
 - Knife drive support/crank bolts.
 - Connector bar bolts on knife back.
 - Knife drive mounting bolts.

12 - Cutting System

All Cutter Bar components must be maintained in good condition to obtain acceptable field performance. Inspect the cutter bar daily for damaged and broken parts before starting work. Repair or replace parts as required.

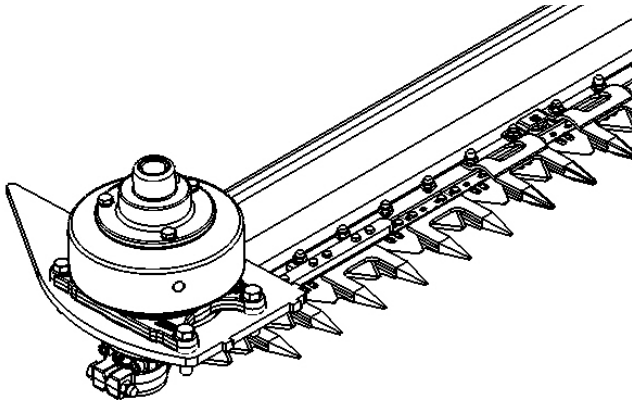


Fig. 52 - Cutting system right-end

CAUTION!

When working with or around the knife, the following procedures should be taken to prevent serious injury or death to yourself or others around you.

WARNING!

Raise the header table, raise the reel, stop the engine, set the parking brake and remove the ignition key before dismounting the combine.

Install feeder house lift cylinder locks and reel lift cylinder locks.

Clear the area of bystanders, especially small children.

Wear heavy canvas or leather gloves when working with the cutting system.

12.1 - Knife Removal

1. Remove the two Flange Head Bolts on the Knife Head Block.
2. Slide the knife out of the cutter bar by pulling the Knife Head out the left or right side of the Header.
3. Reverse the procedure when installing the Knife. Apply a small amount of Thread Lock Solution (LOCTITE 273) to Flange Head Bolts before installation. Torque bolts to the recommended specifications of 92.0 ft-lb (124.7 Nm).

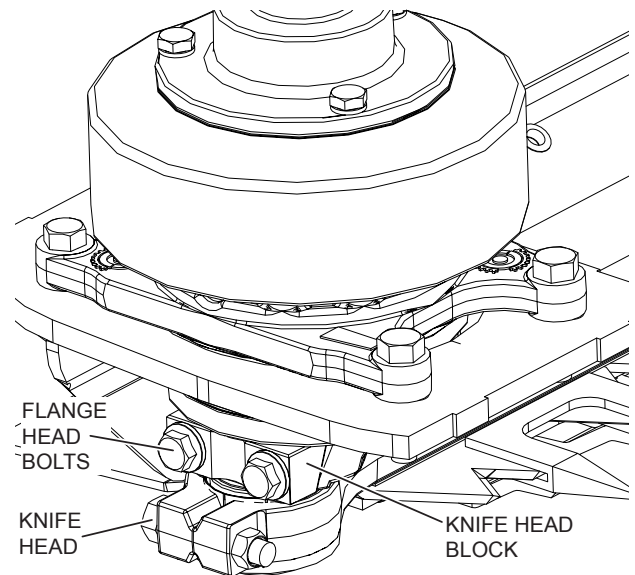


Fig. 53 - KNIFE REMOVAL

12.2 - Cutting System Maintenance

Guards

“EasyCut” Guards are manufactured from heat treated Spring Steel. They have beveled cutting edges at the top and bottom making the Guards cut better and last longer.

When replacing Guards always mount the new Guard with the SCH stamp to the top. Be sure the Spacer Bar is on top of the Cutter Bar. The Crimp Lock Nut on the Guard Bolt should always be on the top.

Alignment of the Guards is critical. Before tightening the Guard Bolts, push the Spacer Bar as far back on the Cutter Bar as possible and pull the Guard ahead as far as possible. Sight down the Cutter Bar to be sure the Guards are aligned. Tighten Guard Bolts.

12.3 - Sickle Sections

Install the sickle sections of the knife by alternating the cutting surfaces. Place one section with the cutting surface on top and the next with the cutting surface on the bottom. They must be sharp, and in good condition to obtain optimum cutting performance.

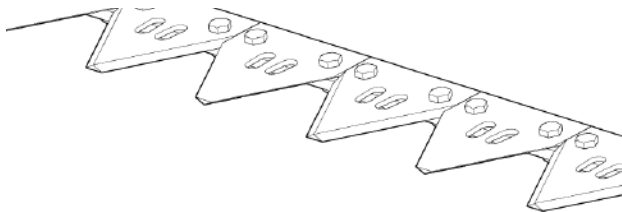


Fig. 54 - Alternating knife sections

12.3.1 - Replace a Section – Method 1:

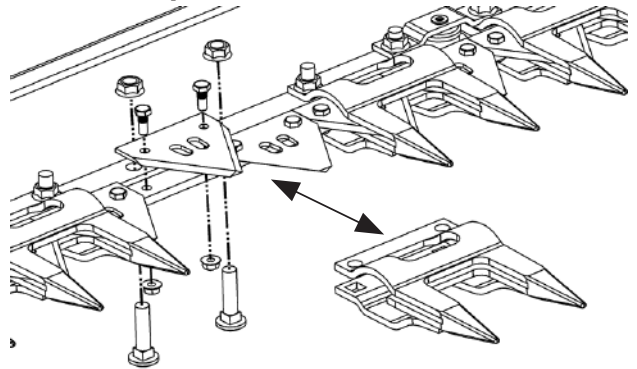


Fig. 55 - Section replacement method 1

1. Remove the Guard to expose the Section.
2. Unbolt the Section and install a new one.
3. Fully press new bolts into Section and Knife Back before tightening.
4. Tighten the Section Bolts and Nuts.
5. Install the Guard. Ensure the Spacer Bar is pushed to the rear, and the Guard is as far forward as possible. A small pry-bar may be helpful for this task.

12.3.2 - Replace a Section – Method 2:

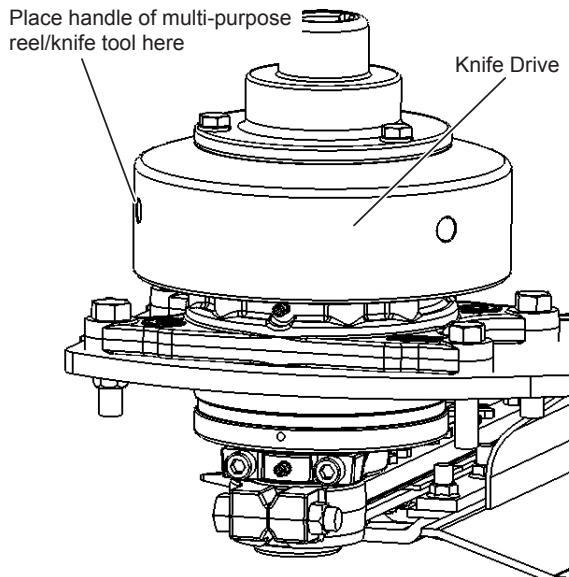


Fig. 56 - Section replacement method 2

1. Move the knife by rotating the Knife Drive with the Multi-purpose Reel/Knife tool (see Fig. 49 on page 37) until one section bolt is exposed.
2. Remove the bolt.
3. Turn the Knife Drive until the other bolt is exposed.
4. Remove it, and install a new Section.
5. Fully press new bolts into Section and Knife Back before tightening.
6. Replace and tighten the bolt.
7. Turn knife back to install and tighten the other bolt.

STOP IMPORTANT!

Remember when installing sections to alternate the serrations, one facing up and the next facing down.

12.4 - Knife Drive/Knife Head

Proper maintenance of the Knife Drive assembly is critical to the performance of your 4000 Series Header. See the Lubrication section of this manual for scheduled maintenance procedures.

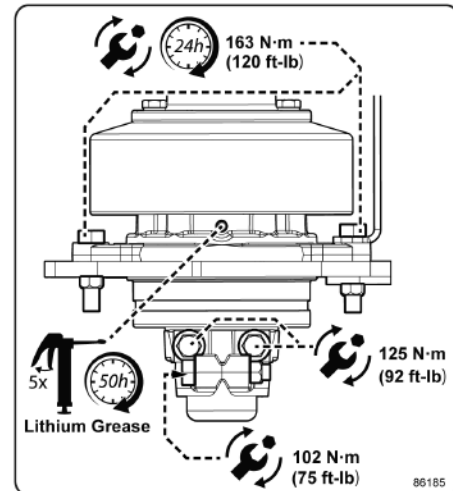


Fig. 57 - Knife drive/head lubrication & torque specs

Check the tightness of the Knife Drive hold down bolts daily. Tighten to the specified torque.

Check the Knife Head Bearing daily. Ensure the bolt is secure. Replace any defective parts immediately to prevent damage to the drive.

Check the Knife Head Locking Bolt and the flange head bolts daily.

*The Knife Head Cross Bolt (as shown in illustration) should be torqued to 75.0 ft-lb (101.7 Nm) for the SCH cutting system.

Rotate the Knife Drive by hand after tightening the Knife Head Bolt to be sure the bearing, and the Knife are moving freely.

Check the Knife Head Bolts, which attach the Knife Head to the Knife Back, daily. The bolts should be tightened to 120 in lbs., (13.5 Nm), (9.96 ft lbs.).

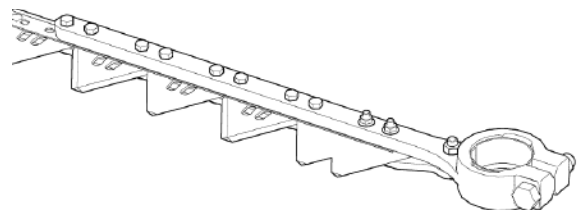


Fig. 58 - Knife head

12.5 - SCH Connector Bar

On some models of Honey Bee headers a connector bar is used to connect two sections of knife. The knife back is the part of the knife to which the sickle sections are bolted. On units that use the SCH cutting system, the connector bar is installed on the underside of the knife back. The SCH connector bar has twelve threaded bolt holes in the bar. The knife back is punched with holes to accommodate the sickle sections and the holes are slightly tapered from the bottom.

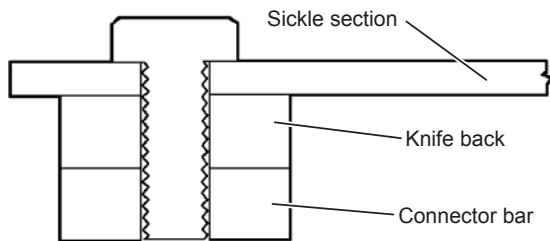


Fig. 59 - SCH knife cross section

Knife sections must be installed on the top side of the Knife Back (the side with the SCH Logo). The bolts should be tightened to between 120 - 150 lbs, (13.5 - 17 Nm).

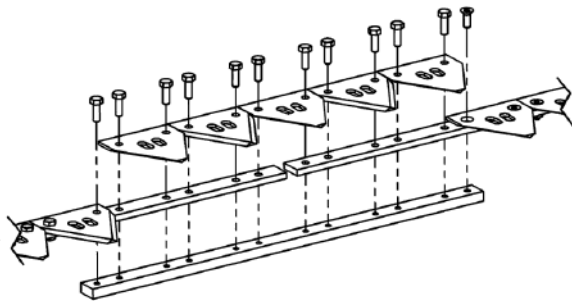


Fig. 60 - SCH connector bar

All Section bolts must be drawn fully into the Sections and Knifeback before tightening. This can be done by pressing them in with a hammer. If the bolt is drawn into the section by tightening the nut, premature failure of the bolt could occur.

12.6 - Overlap Kit

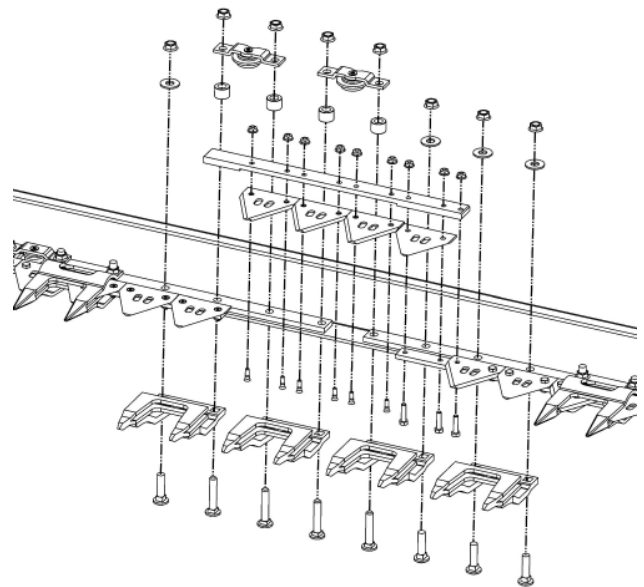


Fig. 61 - Knife Overlap Kit for Double Knife Drive

The Overlap Kit is used on Headers equipped with a Double Knife Drive. The Knife Sickle Sections that overlap use countersunk fasteners to provide a smooth surface over which the other end of the Knife slides.

The Guards used in this overlap area are open on the top side, and are specially designed to accommodate the extra thickness in this area of the Knife. The Overlap Strap, bolted to the left-hand Knife, will offset the countersunk sections to allow the Knives to overlap.

If the Knife is noisy or overheats, check this area to ensure the Overlap Guards have been properly installed. The Hold Down Rollers have been added to maintain close cutting tolerances, and to prevent the Overlap Strap from wandering.

The overlap sections connected to the overlap strap, and the right hand knife back should be tight when the counter sunk bolts are tight.

If these sections are loose, it is possible that the countersunk bolts are not seating properly. The backup bar may need to have a slight countersink drilled around the holes to permit the bolts to seat fully.

Make sure that fresh threadlock is applied to all nut and bolts that are installed. It is applied at the factory when assembled.

12.7 - Repair Broken Knife Back

If the knife breaks during use, repairs can usually be made with a connector bar. Most often the knife back will break across a sickle section bolt hole. To use the connector bar properly, the damaged section needs to be cut out and/or a section of knife removed.



IMPORTANT!

If the knife breaks close to the knife head, remove that section of knife, reconnect the knife head, and then add the new section to the far end of the knife where there is less mechanical stress. The joint in the two knives must be located midway under a sickle section, not in the gap between two sickle sections.

When you encounter this type of break, inspect the knife for dull/damaged guards, and sections, and gummy build-ups which might cause binding. Another cause of this type of knife failure is that the knife speed is too fast. Optimal knife speed is approximately 600 - 700 RPM. One or more of these problems may have been the cause of the failure.

12.8 - Cutter Bar Poly Skid

All 4000 Series Headers come standard with Cutter Bar UHMW Poly Skid. The Poly Skid protects the Cutter Bar from damage due to rocks or excessive wear.

Each Poly Skid is 6" (152mm) wide and covers one Guard. It is held in place by a UHMW Clip that attaches to the bottom of the Guards with two 3/8" Carriage Head Bolts.

Make sure to check Poly Skid after each day of operation to ensure all are in place.

Replace Poly Skids if broken or excessively worn.

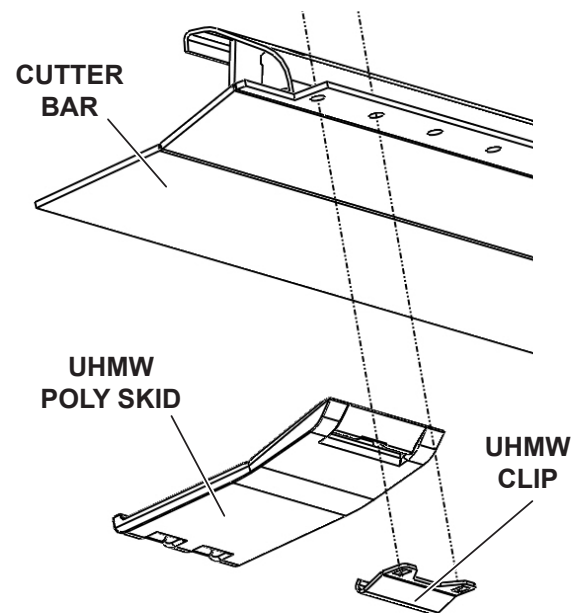


Fig. 62 - CUTTERBAR POLY SKID PLATE

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13 - Lubrication

13.1 - Lubrication



IMPORTANT!

Use good quality, general purpose grease

Item	Lubricant	Quantity	Frequency	Location/ Comments
Knife Drive	Grease	2 shot	50 hours	Bottom of crank shaft
Reel Bearings	Grease	1 shot	10 hours	Ends of reel(s)
Gauge Wheels	Grease	1 shot	10 hours	Caster sleeve
	Grease	1 shot	As needed	Jack sleeve
Guard	Grease	1 shot	50 hours	(1 location per cone)
Knife	Water/Diesel	Soak	As needed	If knife is gumming
Drive Chain	Chain lube	Soak	As required	
Hub and Spindle	Grease	Re-pack	Annually	Replace seals as needed
Gear Box-Speed Increaser	75W90 Full Synthetic			Check daily that no leaks occur
Hydraulic Tank	Co-Op Gold 15W-40 Diesel Motor Oil	Replace fluid	Every 3 years or 1000 hours	Optimum Operating range -30C to +80C (-22F to +176F)

13.2 - Lubrication Service Locations

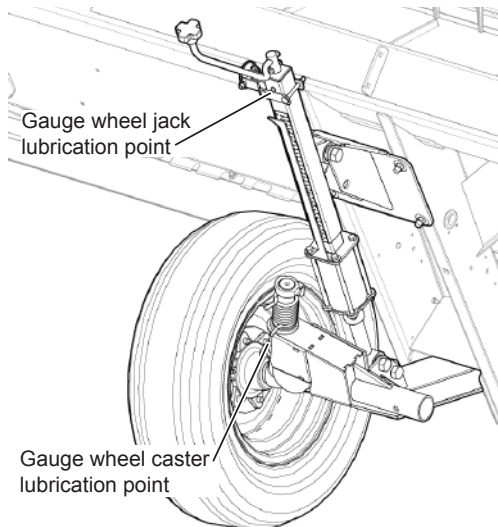


Fig. 63 - Gauge wheel lubrication

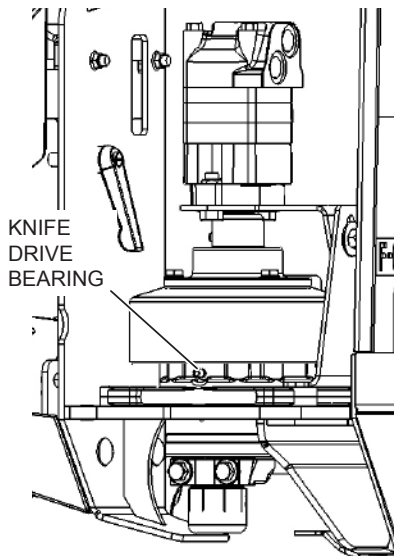


Fig. 64 - KNIFE DRIVE LUBRICATION

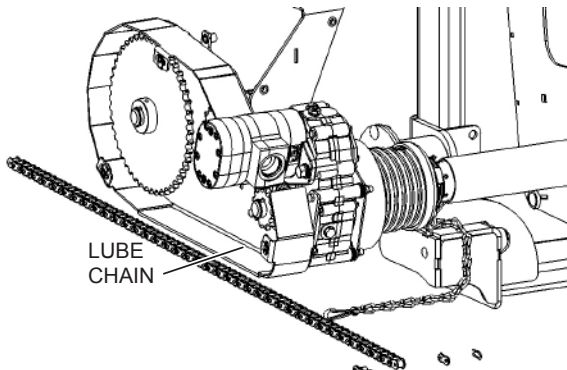


Fig. 65 - CHAIN CASE CHAIN LUBRICATION

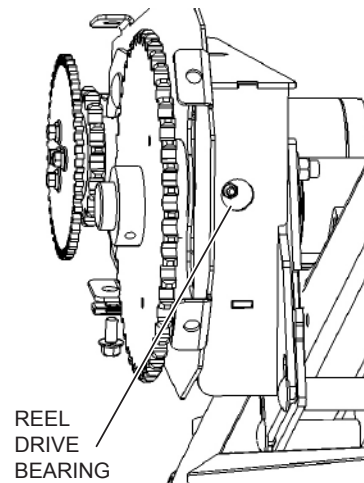


Fig. 66 - REEL DRIVE LUBRICATION

13.3 - Filters

The Suction Line Strainer (125 micron) does not require replacement. If the oil becomes contaminated, the Strainer should be removed, washed and dried before re-installation.

Change the return line Hydraulic Filter Element after the first 50 hours of operation and seasonally thereafter. Compatible replacement Filter Element is the Stauff RE-030G10B.

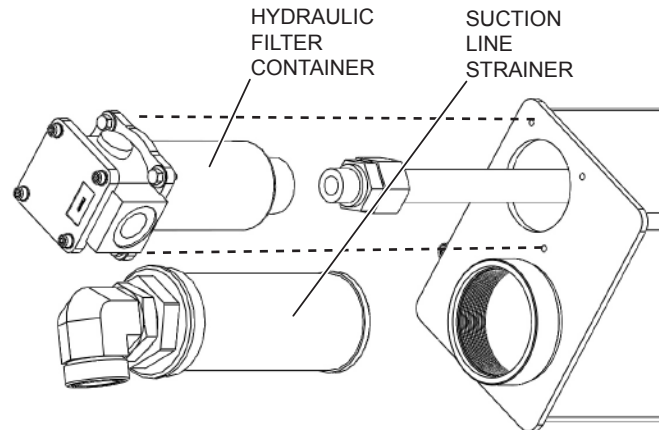


Fig. 67 - STRAINER AND FILTER

14 - Maintenance

Item	Look For
Drive Lines:	<ul style="list-style-type: none"> - Wear in each Yoke and Cross Kit - Lubrication in Slide Tubes and Shield Bearing. - Worn Friction Disks, Pressure Plates, and - Pressure setting of Slip Clutch
Reel:	<ul style="list-style-type: none"> - Missing, damaged, or broken Fingers, - Worn Bearing Joints. - Bent, broken, loose, or missing parts - Wear in Reel Drive Couplers and Reel Joints (Split Reel) - Lubrication
Crop Dividers & Crop Deflectors:	<ul style="list-style-type: none"> - Damage, abrasive wear on the Shoe of the Crop Divider, - Stress cracks
Chain Case:	<ul style="list-style-type: none"> - Sprocket wear, - Chain stretch or damage.
Hydraulic System:	<ul style="list-style-type: none"> - Leaks at pump, hoses, steel lines, and cylinders. - Damaged Pressure Gauges. - Squealing Relief Valve.
Transport and Hitch System:	<ul style="list-style-type: none"> - All components are secured - Cuts and abrasions on tires
Cutting System:	<ul style="list-style-type: none"> - Worn, loose Skid Plates or Poly Skid under the Cutter Bar - Worn, loose Knife Head and Knife Drive Bearings.
Poly Skid Shoes	<ul style="list-style-type: none"> - Worn or missing



IMPORTANT!

Service, repair, or replace all components as required.

14.1 - Periodic Checks

Check all cutting parts carefully for damage and wear. Worn Knives and Guards can cause higher cutting pressures and increase incidences of knife stalling. Sickles Sections are considered worn if the cutting edges are chipped, broken or dull. The cutting edge of the Guard gets rounded and wider as the Guards wear. When the gap is nearing the thickness of two sections, it is time to replace the Guards.

- Check Knife Back and Spacer Bars.
- Check Connector Bar joints, which should always be under a Sickle Section.
- Oil Knife and Guards for storage.

14.2 - Auger Drum Maintenance:

High wear parts, such as the Finger Guides, should be checked carefully. Remove the inspection covers on the Drum and examine the inside. Check the Finger Bearings. None should be binding. Examine the rivet or roll pin in the Finger Bearing. It must be tight. If the Roll Pin is working its way out, install a wire in the center of the Roll Pin. Inspect the Drive Lines, and lubricate as shown in the Center-feed Auger section of this manual.

14.3 - Drapers – Periodic Maintenance:

These eleven steps can significantly reduce repair costs to the drapers:

1. Remove Draper Connector Bar.
2. Remove Draper. Clean Draper of debris, both sides.
3. Clean debris from Rollers.
4. Clean Debris from deck channels and runners.
5. Check and bend down corners of Deck Runners so Draper does not get caught.
6. Clean Adjusters; lubricate Guide Tubes and Adjuster Tubes. Adjusters should move freely inside the Guide Tube.
7. Check Idler Roller Bearings, they should spin freely.
8. Check Drive Roller Bearings.

9. Check bearing stubs.
10. If storing Header outside with Draper installed on decks, position the Connector Bar on the underside to allow water to drain from Decks. Water build up and freezing action may stretch the Draper material.
11. Perform these steps on the Center Deck also.

14.4 - Replacing Center Bolt in Suspension Leaf Springs.

1. Remove any tension from the Suspension Springs. If you are required to jack up the Sub Frame, be sure to use blocks to support the weight.
2. Loosen the Leveling Nut on the Lift Link and Spring Saddle that has the broken Center Bolt.
3. Line up the holes in the Spring and Spring Saddle.
4. Drive out the broken bolt with a punch.
5. Install a new bolt from the bottom and secure with a nut.

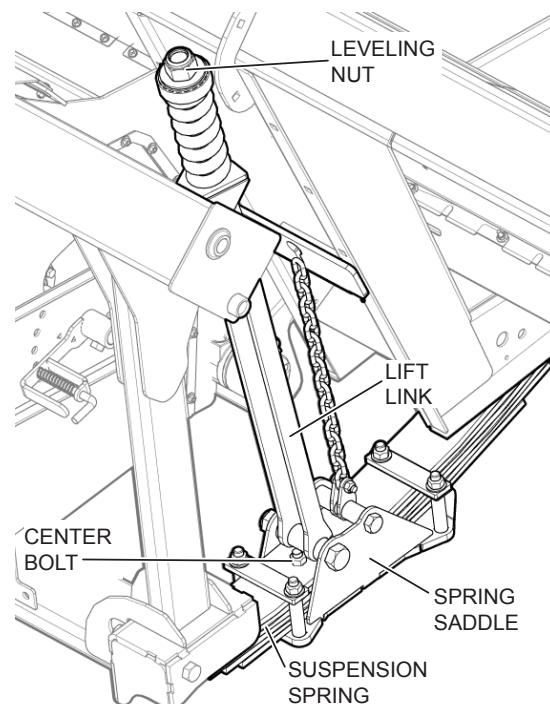


Fig. 68 - CENTER BOLT REPLACEMENT

15 - Hydraulics

This section outlines the Hydraulic system, which drives the 4000 Series Header. The components, as well as the schematics of the various systems, are shown in the “Hydraulic Schematics” section of this manual.

All of the 4000 Series Headers have a self-contained hydraulic system. The Feeder House Drive Shaft is connected to a Gearbox by a drive line. The Output Shaft of the Gearbox drives a hydraulic tandem gear pump. The tandem pump has one inlet and two outlets (two pump sections in a single pump body). One outlet for the Knife Circuit and one for the Draper Circuit (can also have Cross Auger on the Draper Circuit if it is installed). The oil comes from both pump sections and goes first into a manifold block and then out to the separate circuits. The manifold houses a separate relief for both the Knife and Draper Circuits, and it also houses a flow control for the Draper Circuit. After the oil goes through the circuits it then returns to the reservoir tank through the return filter.

15.1 - Operating Pressure

The Knife and Draper circuit pressure gauges are connected to the main manifold block and mounted to Pressure Gauge Mount on the rear of the Hydraulic Reservoir. It indicates the hydraulic pressure available to the Knife and Draper circuits.

15.1.1 - Normal Pressures

Operate the Header with the Combine at high idle, and the ambient oil temperature about 70°F (20°C). The Knife Circuit Pressure Gauge should now be in the 200psi (14 bar) to 1000 psi (69 bar) range, and the Draper Circuit Pressure Gauge should be between 1000 psi (69 bar) and 2300 psi (159 bar).

NOTE:

New units tend to operate on the higher side of this range, and Double Drive Knife Systems will require approximately 300 psi to 500 psi (21 - 35bar) more pressure for normal operation. Oil pressure will increase during normal cutting operations and will vary depending on crop conditions, the condition of the cutting system, draper speed and ground speed.

15.2 - Cold Weather Operation – Temperatures below +10C/+50F

IMPORTANT!

It is always a good practice to allow the oil to warm up prior to cutting, and in cold weather it is absolutely necessary to prevent pump damage due to cavitation.

While warming the oil, turn the Draper Flow-Control to zero to prevent pressure spikes.

1. Engage Header Drive with Combine at low idle to warm the oil.
2. Do not operate the Header Drive at a high idle until oil has reached operating temperature.
3. Once the oil is warm, adjust the Draper Flow-Control to the desired speed. If the flow-control passes too much oil over the relief, it may be necessary to adjust the flow-control relief pressure higher. Consult your dealer or a factory representative.

IMPORTANT!

It is **NOT RECOMMENDED** to adjust the relief pressure higher than the factory setting without first consulting your dealer or a factory representative. The relief valve is factory set at 3000 psi (207 bar).

15.3 - High Pressure - Diagnostic Checks

If the pressure required to drive the Knife is high, check the cutting system for

1. Material gumming or binding on the Knife. Clean as required.
2. Broken and dull Sickle Sections. Replace as required.
3. Bent, broken and dull Guards. Replace as required.

If the cutting system seems to be OK, check the following areas:

1. Knife Head Bearing. Unbolt Knife Head Block and pull Knife back at least 12" (300mm). Refer to the Cutting section for procedures if required.
2. Turn Knife Head Block and Bearing by hand, if bearing is rough or noisy, replace bearing.
3. Leave the knife pulled out. Insert a bar into the Knife Drive Fly Wheel and turn flywheel. Feel for roughness or binding in bearings or gears. Remove bar.
4. Start the Combine and engage drive with the Knives still removed. Check Knife Drive Pressure. Normally, it takes 100 psi to 150 psi to operate the drive motor in this manner. If pressure is now significantly lower, the problem will be found in the Knife. If pressure is still high, the problem is in the Knife Drive Motor, Draper Motor Circuit or the Hydraulic Circuit.

 **NOTE:**

If there is a sudden loss of Hydraulic Pressure, check for major leaks in the system. If no leaks are found, inspect the Splined Output Shaft of the pump. If the shaft is sheared or stripped, install a coupler kit.

If none of the above items are the cause of low oil pressure, it will be necessary to install a flow meter to determine the cause. Contact your dealer for assistance.

15.4 - Other Problem Sources

If the output rpm of the Drive Shaft from the Combine is too high, or the pump capacity is not matched to the Combine, the pressure may be high. High pressures may indicate a problem in the Draper Circuit. See "Draper Operating Pressure" in this section.

15.4.1 - Diagnostic Checks

1. If the pressure at the Knife Pressure Gauge and Draper Gauge is low, or is fluctuating, shut Combine down, and check the oil level in the Hydraulic Tank. Oil should be visible at the top of the Sight Glass when the Hydraulic Tank is level.
2. If oil pressure drops when making a right hand turn or on a side hill, shut Combine down, and check oil level.
3. If the Knife stalls while cutting, check for:
 - low oil level,
 - leaking relief valve,
 - worn pump.

15.5 - Chain Case Assembly Pump by Combine

Adapter	Tandem Pump	Pump Part #	Adapter Flange Base to end of Case (Inches)
NH & CIH	83029660	28530	7.52
	Knife Section - 29.0 cc (1.77 ci) Draper Section - 17.0 cc (1.04 ci)		
JD & VERSATILE	83020807	28531	7.71
	Knife Section - 31.8 cc (1.94 ci) Draper Section - 19.0 cc (1.16 ci)		
AGCO (MASSEY, CHALLENGER & AGCO)	83031853	28529	7.38
	Knife Section - 25.4 cc (1.55 ci) Draper Section - 17.0 cc (1.04 ci)		
CLAAS/LEXION	83040293	28681	7.09
	Knife Section - 22.5 cc (1.37 ci) Draper Section - 12.6 cc (0.77 ci)		

15.6 - Check or Adjust Knife Relief Pressure

CAUTION!

Engage Parking Brake on Combine, shut engine down, and wait for all moving parts to stop before leaving cab.

1. Jam a wood block tightly in the Knife, between a Guard and a Cutting Section.
2. Restart the Combine, engage the Feeder Housing and check the pressure on the gauge. The Relief Pressure should be 3000 psi. If adjustments are required, proceed as follows:

CAUTION!

Engage parking brake on Combine, shut engine down, and wait for all moving parts to stop before leaving cab.

3. Locate the Relief Valve on the top of the Main Manifold Block. Loosen Lock Nut and turn the Relief Screw clockwise to increase pressure, counter-clockwise to decrease. Adjust the relief screw 1/4 turn at a time in the appropriate direction.

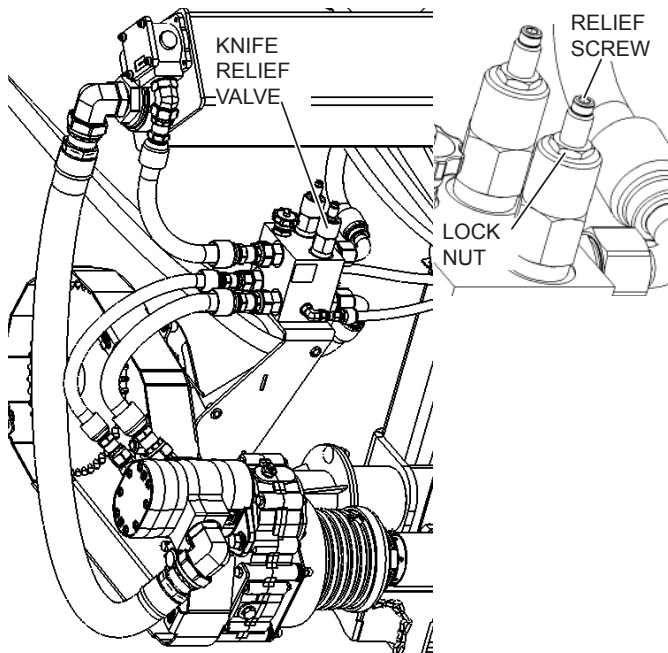


Fig. 69 - Relief Valve Adjustment

4. With the Knife still jammed, restart the Combine, engage the Feeder House Drive and check the pressure on the gauge.

WARNING!

Be sure all bystanders are away from the machine prior to engaging the Header.

5. Repeat the above steps until the desired pressure reading is attained.

IMPORTANT!

The Relief Pressure should not exceed 3000 psi. Exceeding this pressure could cause damage to the pump and the hydraulic system.

15.7 - Draper Operating Pressure

The pressure indicated on the Draper Flow-Control Gauge is the amount of force required to pump oil through the Draper Circuit. When the flow-control is screwed all the way out (fully counter-clockwise), all the oil is diverted internally through the manifold block back to the main return, which goes back to the tank. When the flow-control dial is dialed all the way in (fully clockwise), all the oil goes through the "M1" port, through the draper motors and then returns to the tank. Adjust this screw to achieve the desired draper speed.

The Draper Circuit on the manifold block is equipped with a Relief Valve, which is factory preset at 3000 psi. If the operating pressure is consistently at or near this range, oil will bypass over the relief to the "FILTER" port. When oil is bypassed over the relief, heat is generated. If this condition is excessive, the oil may over-heat. Damage to the pump and motors may result. This setting is adjustable, but only should be adjusted when problems exist (Do not adjust over 3000 psi).

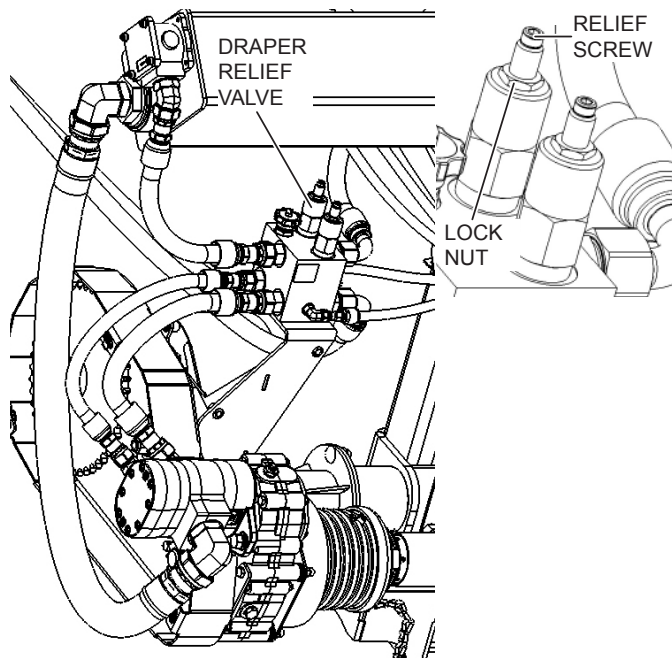


Fig. 70 - Relief Valve Adjustment

15.7.1 - If the draper pressure is high, check:

1. That the Draper tension is not too tight.
2. That material is not wrapping around Rollers. Clean Rollers as required.
3. Bearings in Drive and Idler Rollers. Replace as required.
4. Oil pressure with tension on Draper released (motors running free). Continued high pressure will indicate a faulty Draper Motor. Replace as required.
5. Check that flexible Draper Seal is not too tight on the Lateral Drapers. See section 17.15 on page 78 for Draper Seal adjustability.

15.7.2 - If a faulty draper motor is suspected:

1. Let the system cool down.
2. Start up and run Draper at full speed. Record the reading on the pressure gauge.
3. Look for motors that seem to be running slower.
4. Check the temperature of each motor to see if one is hotter than the others.
5. SHUT COMBINE DOWN.
6. Grab the Drive Roller of a Deck with both hands and rotate the roller back and forth. If the motor is difficult to turn, disconnect these hoses and install a fitting to bypass the suspect motor.
7. Restart the combine and run the Draper. Record the difference in Draper Pressure, and observe whether the draper speed of the other decks returns to normal.
8. If the differences are significant, replace the motor.

15.8 - Bleeding Air Out Of Solid Reel Lift Circuit:

If the Reel does not go up or down evenly, it may be necessary to bleed the Slave Cylinder. Complete this procedure only when Header Drive is disengaged and Header is on the ground. Lower the Reel to the bottom of the Cylinder Stroke. The Reel Cylinders have a stroke of 16.0" (40.6cm). There are two methods of bleeding the system: A: Static Method; and B: Alternate Method.

15.8.1 - A: Static Method.

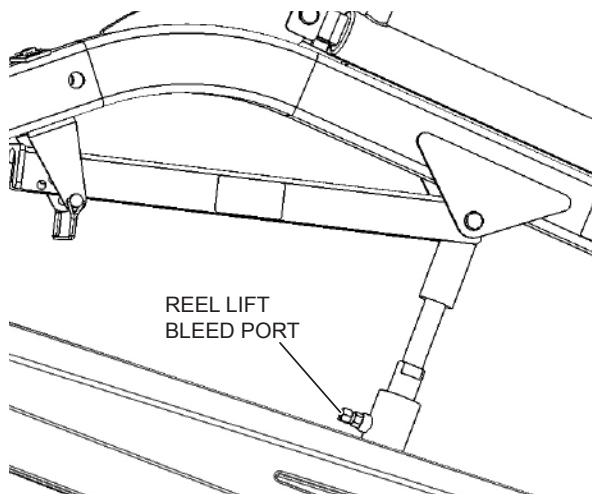


Fig. 71 - REEL LIFT BLEED PORT

1. Cycle the Reel up to the top of the stroke.
2. Cycle Reel down but stop reel when about 2" of cylinder rod is still exposed and before cylinders reach the bottom of their strokes.
3. Shut Combine down. It is best to wait for 10 to 15 minutes so air bubbles in the oil can dissipate.
4. Using a wrench, loosen the Bleed Port Hex Cap on the Slave Cylinder (far right hand cylinder on a Solid Reel setup). Air and oil will escape, and the reel will drop.
5. Tighten Bleed Screw (cap) and cycle Reel. Repeat this procedure again if necessary.

15.8.2 - B: Alternate method

1. Lower the Reel to the bottom of its stroke.
2. Shut Combine down.
3. Using a wrench, loosen the Bleed Port Hex Cap on the Slave Cylinder (far right hand cylinder on a Solid Reel setup).
4. Start Combine and lift Reel until cylinders are fully extended and the air has escaped from slave cylinder.
5. Lower the reel, shut Combine down and tighten Bleed Port Hex Cap on slave cylinder.
6. Cycle the Reel and repeat procedure if necessary.

NOTE:

Because of expansion in hydraulic lines, it is normal for the right hand slave cylinder to lag slightly when lifting Reel.

16 - Reel

16.1 - Reel Drive

Depending on the model of table, the Reel is driven by either one or two Hydraulic Motors with a Chain and Sprocket Reducer Drive directly coupled to the Reel.

Check Shear Pin, Shear Pin Collar and Motor Mount Bolts regularly for tightness.

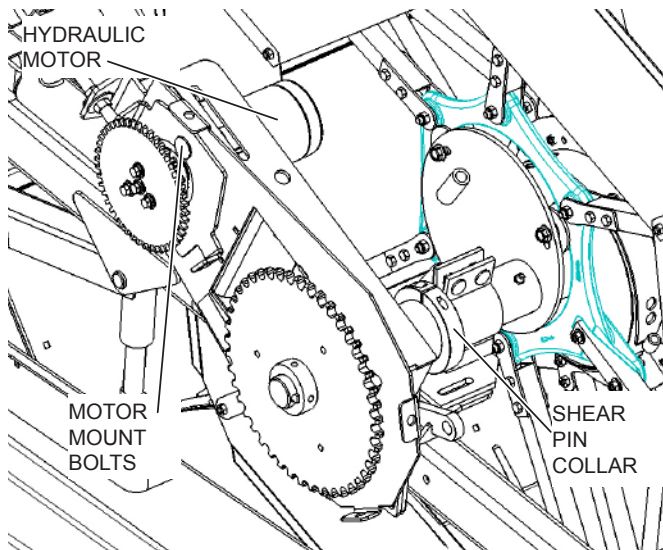


Fig. 72 - REEL DRIVE



IMPORTANT!

Reel motors are capable of bidirectional operation. As installed on the header they run in one direction only and are supplied with unidirectional hydraulic oil flow. For this reason, it is important to mark the lines and their corresponding motor ports whenever you are removing hydraulic lines.

16.2 - Chain Tension

Proper chain tension is critical for operation of the Reel Drive.

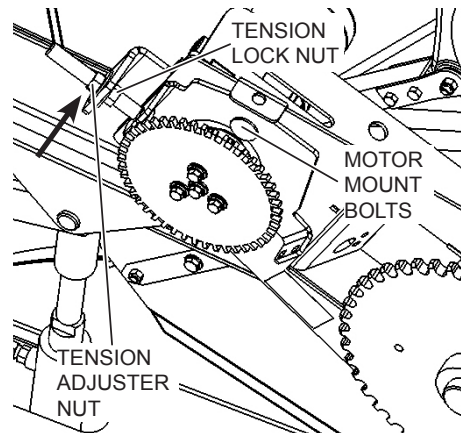


Fig. 73 - CHAIN TENSION ADJUST

1. Remove the Reel Drive Cover.
2. Loosen the Tension Lock Nut.
3. Loosen the Reel Drive Motor Mount Bolts.
4. Adjust the Tension Adjuster Nut.
5. Retighten the fasteners in reverse order.

Measure chain sag using a straight edge and a ruler. Proper tension is 0.25" (0.51 cm) of chain sag. Repeat process until proper sag is attained.

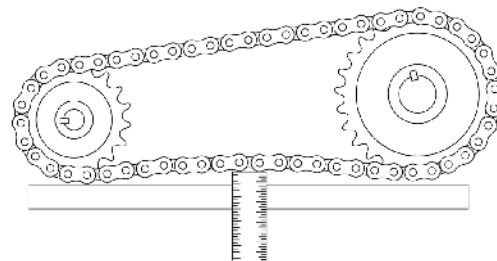


Fig. 74 - CHAIN TENSION ADJUST



NOTE:

Make sure motor mount bolts have been tightened before measuring sag.

Reinstall the reel drive cover.

16.3 - Reel Speed Adjustment

There are types of reel used on the header:

- The UII Reel should rotate from 12% to 15% faster than the ground speed.
- The HCC Reel should rotate from 10% to 12% faster than the ground speed.
- The HoneyBee Reel should rotate from 10% to 20% faster than the ground speed.

“Down” crops will require a somewhat higher speed than standing crops. Reel speed is determined by a control in the Combine. Adjust the Reel Speed so that the Reel has the appearance of “pulling” the Combine through the field.

If Reel Speed is set too slow, the crop will not be pushed against the Cutter Bar and swept onto the Draper. This can result in a portion of the cut crop being pushed forward onto the ground. Slow Reel Speed may also cause a wrapping of the Reel with cut crop, as it bunches along the front of the Cutter Bar. It is very important that the Reel gently guides the crop onto the Cutter Bar, then sweeps it onto the Draper.

If Reel Speed is too high, the crop may be stripped or shelled out by the impact of the Reel. The Crop may also be pushed down before it can be cut, leaving uncut grain in the field. Excessive Reel Speed may also cause cut crop to wrap onto the Reel, as the crop does not get a chance to fall onto the Draper.

In general, hay crops can be cut using higher Reel Speeds.

16.4 - Reel Speed Sensor

AGCO, John Deere and Lexion/Claas tables are all equipped with Reel Speed Sensors. The Reel Speed Sensor measures the speed of the Reel Drive Motor by sensing the notches in a Reel Speed Disc. All three manufacturers require different Reel Speed Sensors and sensor discs.

For proper operation a 1/16” (1.56 mm) gap between the sensor and speed disc should be maintained.

For Massey Ferguson and Challenger Combines the ‘Reel Speed Pulses per Revolution’ setting needs to be adjusted to 120 in the combine setup screen in order for the reel speed to work properly.

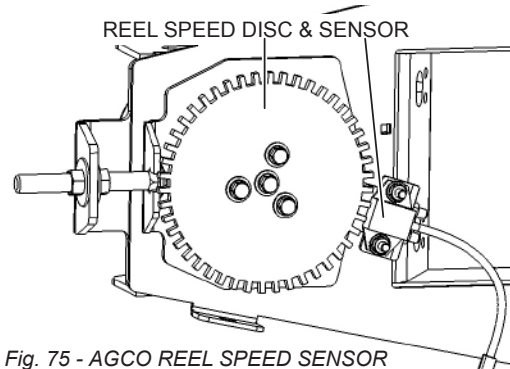


Fig. 75 - AGCO REEL SPEED SENSOR

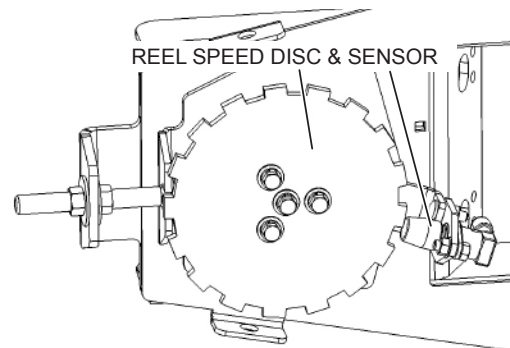


Fig. 76 - LEXION/CLAAS REEL SPEED SENSOR

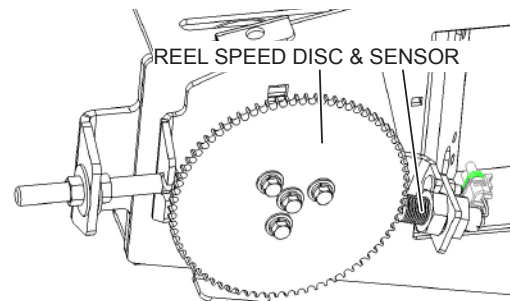


Fig. 77 - JOHN DEERE REEL SPEED SENSOR

16.5 - Reel Position

16.5.1 - Hydraulic Fore & Aft

All Header Reels are equipped with Hydraulic Fore and Aft, controlled from the Combine. This feature allows the operator to move the Reel Assembly forward and backward.

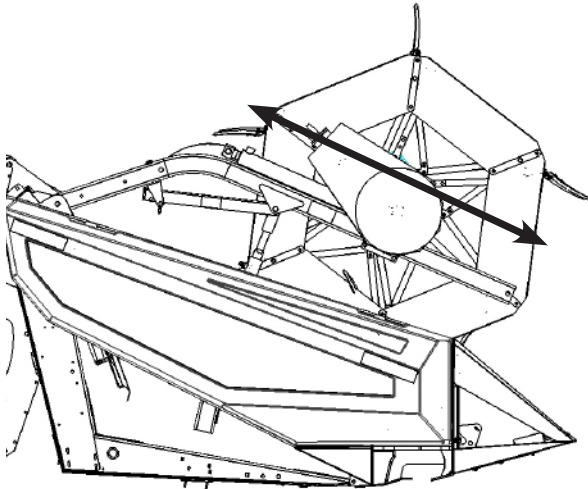


Fig. 78 - FORE & AFT

The Combine must be equipped with the fore/aft control to make this option functional.

16.5.2 - Split-Reel Lift Hydraulic Circuit

Pressure from the Combine feeds the barrel end of the left cylinder. As the barrel rises, oil on the bottom of the piston is forced out of the rod end port, into the rod end port on the center cylinder. The cylinder piston rises and oil from barrel end port of center cylinder is forced out into the barrel end of right cylinder. As the right cylinder piston rises, oil is forced out of the rod end port into the Reel Return Line, and back to the Combine Hydraulic Reservoir. To lower the reel, a check valve assembly located on the Combine opens to allow oil to free flow in reverse due to the weight of the Reel.

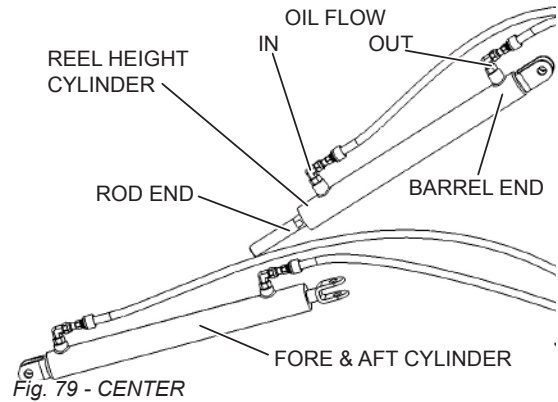


Fig. 79 - CENTER

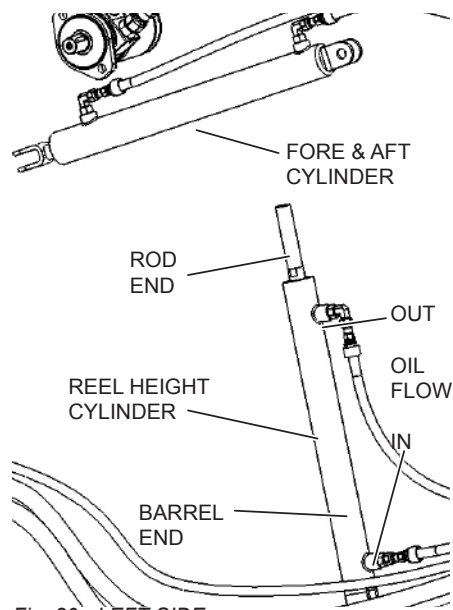


Fig. 80 - LEFT SIDE

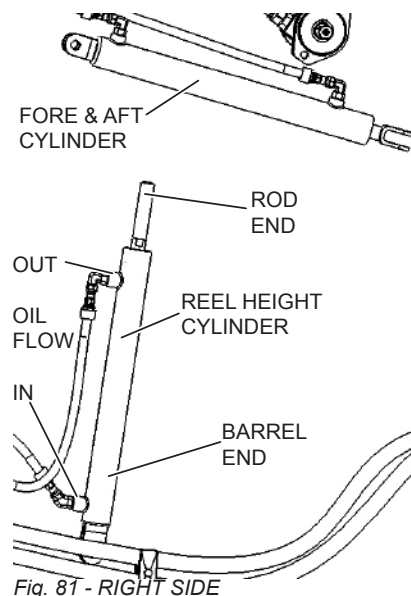


Fig. 81 - RIGHT SIDE

16.5.3 - Solid Reel Lift Hydraulic Circuit

Pressure from the Combine feeds the Barrel End of the left-hand Cylinder. As the Cylinder Barrel rises, oil below the Piston is displaced raising the Rod End. The volume of the Rod on the Left Cylinder matches the volume of the Barrel on the Right Cylinder. The displaced oil causes the Right Cylinder to raise. This Cylinder has a Vent to bleed air from the system.

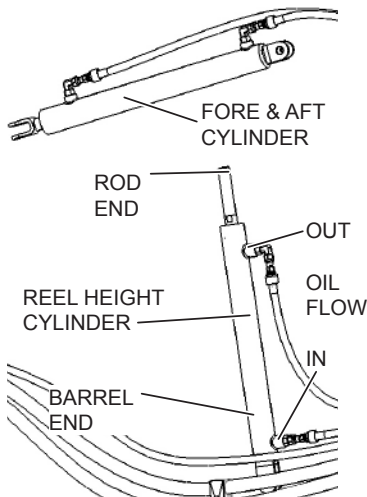


Fig. 82 - LEFT SIDE

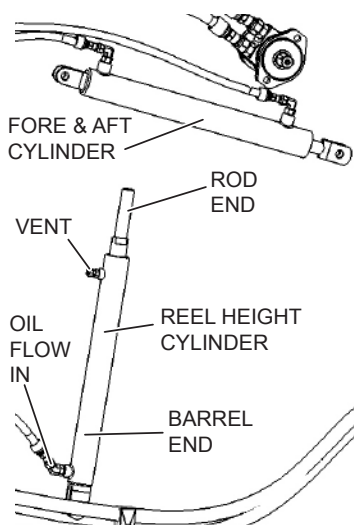


Fig. 83 - RIGHT SIDE

16.5.4 - Reel Arm Leveling and Height Adjustment

Headers are equipped with adjustable Reel Height, which adjusts how much the Reel can be raised and lowered, and how close the Reel can come to the Header. The Reel Lift Height is adjusted by turning the Cylinder Rod.

To adjust the Reel Height:

1. Start the Combine, and with the Header fully lowered, lower the Reel to minimum height.
2. Engage the emergency brake, shut Combine down, and allow all moving parts to come to a complete stop before exiting the cab.
3. Using the multi purpose tool located in the spare parts holder in the LH End Strut (see section 7.4 on page 37), first loosen the Jam Nut near the top of the Cylinder. Then use the tool and turn the Rod to adjust the Reel Height so that the Reel tines have a minimum clearance with the Cutter Bar of 2.0" (50 mm).

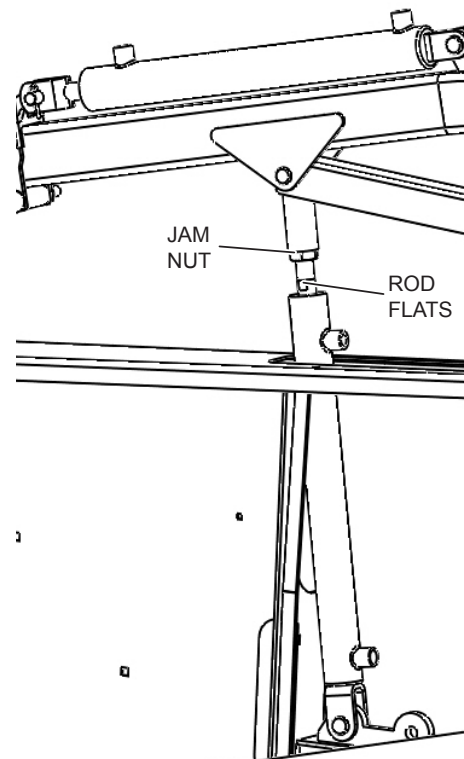


Fig. 84 - REEL HEIGHT ADJUSTMENT

- Repeat this procedure for right side of the header, ensuring that the reel tines have at least a minimum clearance with the cutterbar of 2.0" (50 mm).

CAUTION!

Set Reel Tine Height as high as possible. Flexing of Table will allow Tines to approach cutter bar and be cut off.

- If your header has a split (double) reel, the center reel height will also need to be adjusted. Repeat step 3 to adjust the center reel height.

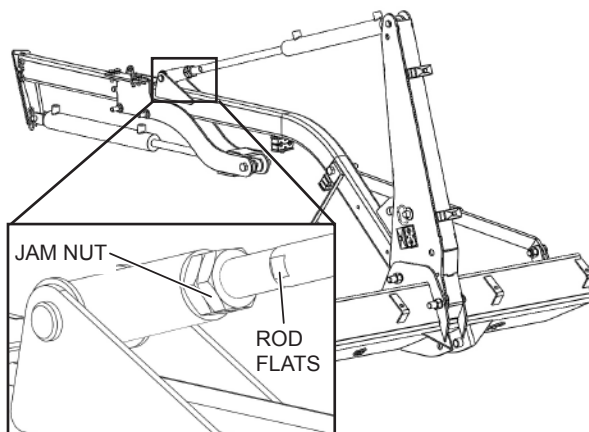


Fig. 85 - CENTER REEL HEIGHT ADJUSTMENT

WARNING!

When adjusting the reel height, make sure there is never more than 2.25" (57 mm) of thread exposed on the cylinder rod. More than 2.25" (57 mm) of thread exposed can result in the reel abruptly falling into the decks/cutter bar.

- Restart combine, and slowly lower the reel to its lowest position. Ensure the reel tines will not contact any part of the deck, draper, or cutter bar.

WARNING!

When servicing the reel, it is necessary to have the reel locked into the servicing (highest) position, with the lock pins securely in place.

16.5.5 - Reel Centering

Measure the clearance from the End Shield on the Reel to the Crop Divider on each end of the Header.

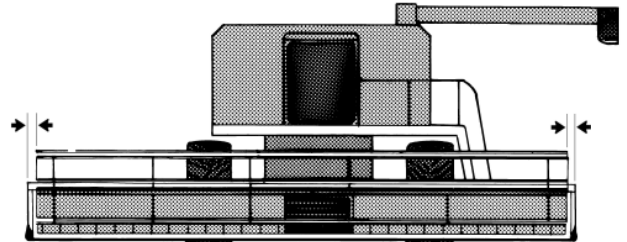


Fig. 86 - Reel Centering

If the Reel is not centered on the Header, proceed as follows:

- Fully lower the Table and Reel, and engage parking brake.
- Turn combine off and allow all moving parts to come to a complete stop before exiting the cab.
- Loosen the Carriage Bolts that secure the Reel Arm Braces on both ends of the Reel and also the center.
- Push the Reel Arms until Reel is centered.
- Tighten bolts when centered.

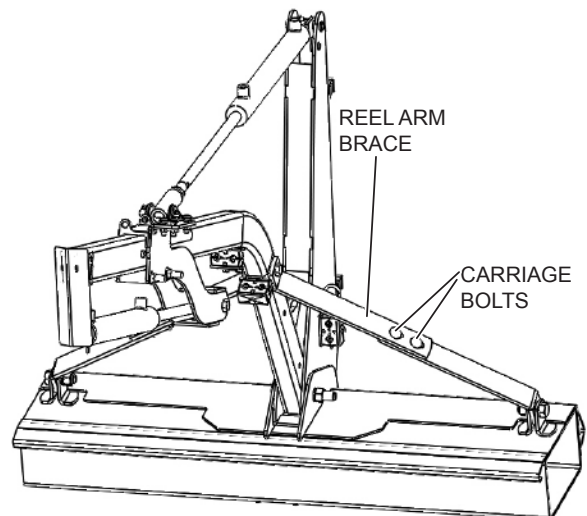


Fig. 87 - Reel Centering

16.5.6 - Placement of the Reel on the Header

The distance from the tip of the Guard to the tip of the Reel Tines can be adjusted from 1" to 12" (300 mm) depending on the crop.

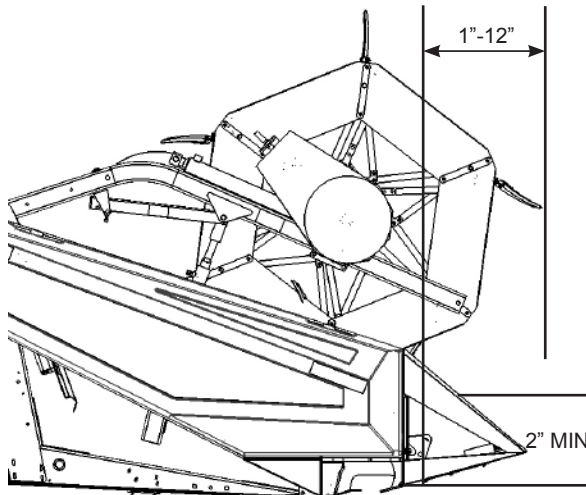


Fig. 88 - Reel Placement

- Normally the more “down” the crop, the further ahead the Reel should be set to pickup the crop before it is cut.
- Setting the Reel too far ahead will not push the crop into the Knife to be cut, nor will it efficiently deliver it onto the draper.
- Set the Reel Tines the same distance from the Guards on both ends.
- Adjust the Reel Height so that the Tine Tips will miss the Guards and Knife by at least 2.0” with the cutter bar fully raised, to avoid cutting tines, and breaking knife sections.
- Normally the more “down” the crop; the closer the tines will need to be placed to the cutter bar, down to this 2.0” minimum.

16.5.7 - Reel Position in Down Crops

- The Reel height in down crops should be low enough that the tines can lift the crop up and onto the Cutter Bar.
- The Tines should be adjusted so they pick up the crop and lift it onto the Cutter Bar with a minimum of the crop carrying around the Reel.
- The Fore and Aft position of the Reel should be adjusted so the Reel Center Tube is about 12 inches (300 mm) in front of the Cutter Bar so the crop is lifted before it gets to the Cutter Bar.



IMPORTANT!

Care must be taken to ensure that the Reel Tines do not come in contact with the Knife. Tine contact will cause damage to the Tines, Knife Sections, and Guards. At no time should the Reel Tines contact the ground. Contact with the ground or with rocks will cause damage to the Reel.

16.5.8 - Reel Position in Standing Crops

The Reel height on standing crops is usually correctly adjusted when the Reel Bats contact the crop about midway between the cutoff point and the top.

The Reel should be adjusted Fore and Aft so the Reel Center Tube is slightly ahead of the Cutter Bar. If the Reel is too far forward, the crop will not be pushed against the Cutter Bar and a portion of the cut crop will fall to the ground. If the Reel is too far back, the crop is pushed down too low when it is cut and some of the heads will be missed.

16.6 - Universal – U-II Pick-Up Reel: Tine Pitch Adjustment

Plastic Reel Tines are attached to the leading side of the Reel Bats with 1/4" bolts and nuts. To adjust the pitch of the Tines, proceed as follows:

1. Loosen the bolts (shown right) at both ends of the reel and insert a suitable tool into the tube.
2. Partially rotate the Control Ring assembly, noting the change in Tine Pitch on the Tines nearest the Cutting Bar:
 - To increase the pitch of the Tines, turn the ring in the direction of Reel rotation.
 - To decrease the pitch of the Tines, turn in the opposite direction to Reel rotation.
3. Re-tighten bolts at BOTH ends of the Reel.

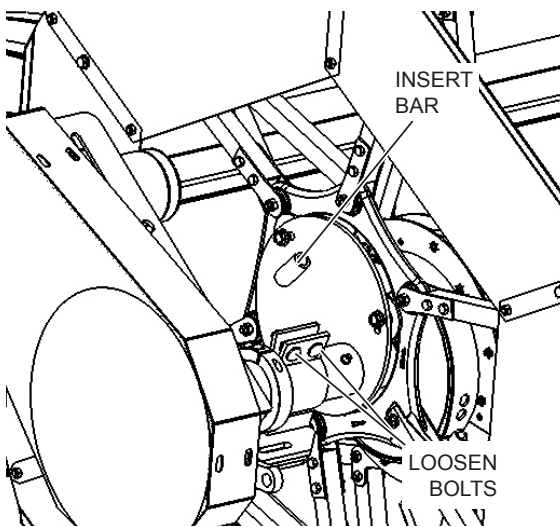


Fig. 89 - TINE ADJUSTMENT

Adjust Tine pitch initially so Tines are perpendicular to the Cutter Bar. Too great a pitch may cause the cut crop to be scooped up and carried around the Reel.

For crops that are down or lodged, adjust Reel so that center of Reel is ahead of Cutter Bar, and adjust Tines to be more aggressive, lifting the crop, yet dropping it onto the Draper Decks after cutting.

If the crop starts to wrap around Reel, this indicates the need to adjust the Tines to a less aggressive setting.

Tine pitch is critical to the operation of the Header.

Adjust the Tines to suit your individual needs and make note of the best settings for each of the crop conditions you encounter.

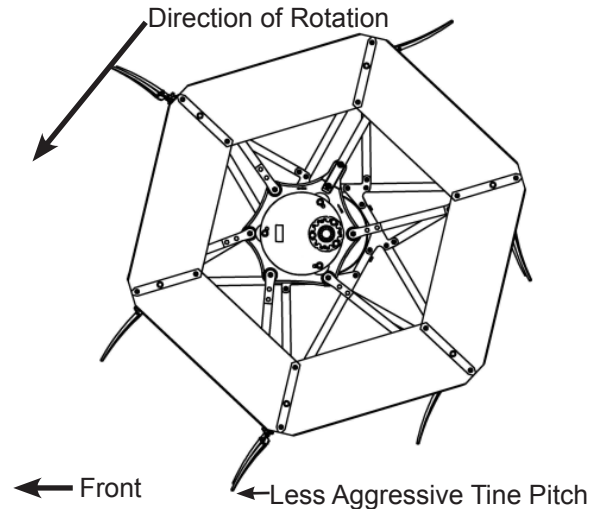


Fig. 90 - TINE ADJUSTMENT



IMPORTANT!

Tine pitch must be the same at both ends of the reel.



NOTE:

If crop is building up in the center of a split reel, the fingers/tines may be heated and bent slightly to ensure the crop does not build up at the gap.

16.7 - Control Rings (U-II Reels only)

The control ring assemblies each have three rollers mounted in adjusting slots. To compensate for wear to the control ring, the rollers may be adjusted outward in the slots so that all three rollers are lightly in contact with the control ring.



NOTE:

All three rollers at each end of the reel must be moved the same amount relative to each other, so that all three roller bolts are in the same position in the slot. Do not move only one roller.

16.8 - Hart-Carter (HCC) Reel

The HCC reels supplied with the header are 6-bat reels, with plastic tines.

The tines are fastened around steel bat tubes using 7/32" metal screws. The bats pivot within plastic bearings that are located at the ends of each reel arm (spoke).

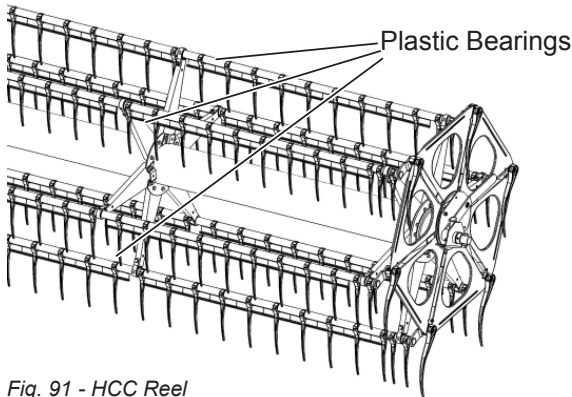


Fig. 91 - HCC Reel

To adjust the pitch of the tines, refer to the illustrations and instructions below.

16.8.1 - HCC Reel – Tine Pitch Adjustment

1. Locate the tine pitch adjustment levers, and tine-pitch adjustment bolts, located at both ends of the reel.
2. Loosen the adjustment bolts, and then move the adjustment levers accordingly to set the desired pitch. (*Hint: Start reel with a pitch of about 5° as shown.)
3. Re tighten the adjustment bolt, securing the pitch setting.

Loosen Bolt to Adjust Pitch

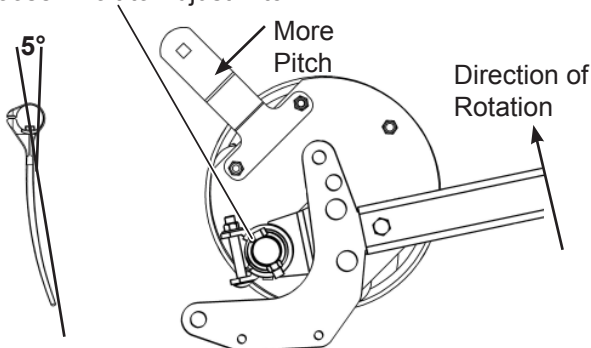


Fig. 92 - HCC tine pitch adjustment

NOTE:

Ensure that the adjustment bolts & levers are set to the same relative position for each side. Too great a pitch causes reel to wind with cut crop because the tines do not release the crop after it is cut.

16.9 - Lubrication – Reel Shaft Bearings

Lubricate every 10 hours of operation (or daily) with multi-purpose lithium base type grease. Lubricate the grease fitting at each end of the reel shaft, and also at the center on double reel models.

Annually, remove and examine the polymer liners in the control plate tubes. Replace if worn.

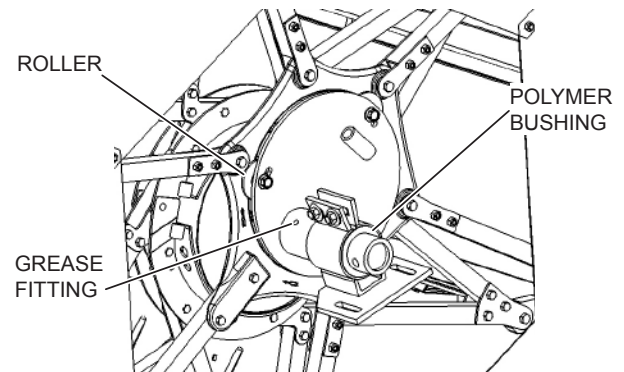


Fig. 93 - REEL MAINTENANCE

NOTE:

Initial lubrication of the plastic bat bearings (HCC Reels only) with a light film of oil will improve the break-in and service life of the bearings.

16.10 - HB Reel Tine Pitch Adjustment

1. Pull and rotate lock pin to one side so it is disengaged from reel.
2. Lift the handle up for less aggressive tine pitch.

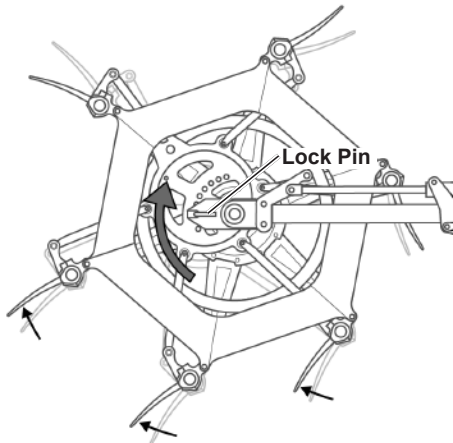


Fig. 94 - HB Reel - Decrease Tine Pitch

3. Lower the handle for more aggressive tine pitch.

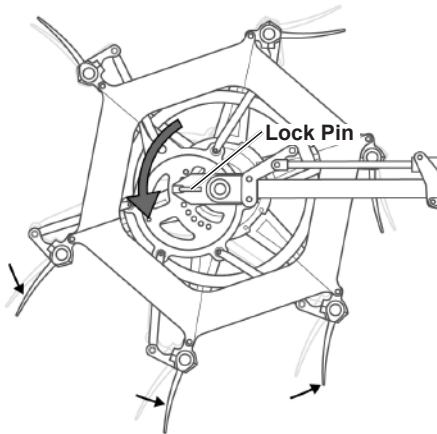


Fig. 95 - HB Reel - Increase Tine Pitch

4. Once desired setup is obtained, re-engage the lock pin.
5. Repeat this process for the other end of the reel to ensure each side has identical tine pitch.
6. Readjust reel height and reel fore/aft in order to maintain a minimum safe knife clearance (2" (5 cm)).

16.11 - Check Points Before Operation:

WARNING!

Always engage reel lift cylinder locks and table lift cylinder locks before working under or around raised reel. Do not rely on the power unit hydraulic system for support. A rupture or a leak in any part of the system will cause the table and reel to drop if the proper stops are not in place.

- All bolts are tight.
- Reel turns, by hand, without binding. (With some resistance from hydraulics.)
- Tines uniformly clear the knife.
- Reel arms are aligned. (No bow in the bat shaft or pivot bracket bat assemblies.)
- Auxiliary fingers have adequate clearance with side shields.
- Tine pitch has been set for the current application, and is uniform across header.
- Hydraulic cylinders are functioning smoothly.
- Minimum reel height has been set correctly on the reel height control arms.
- Fore & aft hydraulic cylinders extend and retract fully.
- Vertical distance from the knife to the reel center is set for the current application.
- Reel is horizontally centered in the header opening.

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17 - Draper, Decks and Draper Seal

There are two Lateral Drapers on the Table which move the crop to the opening. All Drapers must be set, and maintained properly to perform well. Quick Release Adjusters with spring tensioning allow easy access for cleaning, and maintain proper Draper tension. Unpack the Draper. Check the size to ensure it is correct for the size of the Deck.

WARNING!

Lower the Header to the ground or onto stable blocks, whichever provides the most comfortable working height.

Raise the Reel to its maximum height and place the locks on the Reel Lift Cylinders to prevent the reel from falling.

Once extended, you should make sure that everything is parallel. The easiest way to do this, is to measure the distance between the Idler Roller and the closest Cross Brace on the Draper Deck. Make sure measurement "A" is the same distance as measurement "B". If it still does not line up, you may adjust the eye bolt again.

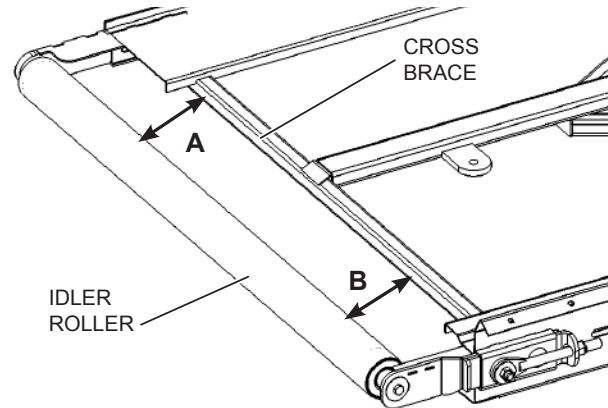


Fig. 97 - Idler Roller Alignment

17.1 - Lining Up the Idler Roller

Prior to installing the Draper, ensure that the Idler Roller (the Draper Roller without the motor) is properly aligned. This is done by setting the end of the Offset Plate flush with the C-channel of the deck. Adjust the Eye Bolt until the end of the Idler Plate contacts the stop on the Offset Plate if not so already.

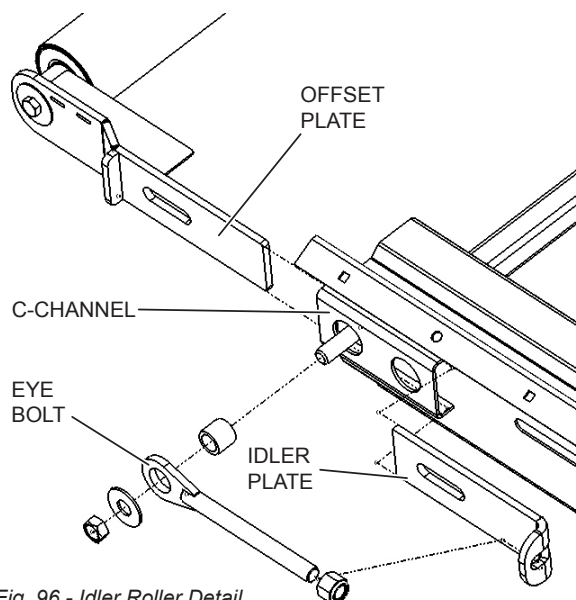


Fig. 96 - Idler Roller Detail

17.2 - Draper Installation

1. Make sure that the quick release lever is in the open position prior to installing the draper on the deck. The location of the lever is shown on the illustration on the following page.
2. Place draper bundle on the top of deck runners, and unroll with the slats facing up. Be sure to align the v-guide with the notched side of the roller toward the rear end of the header.

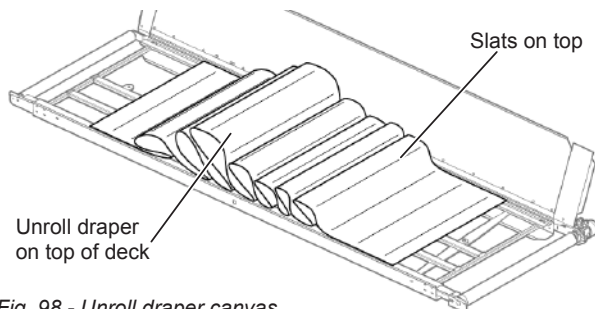


Fig. 98 - Unroll draper canvas

3. Wrap draper around one of the rollers and feed draper into the bottom runner of the deck. The bottom runners will support the draper, and prevent it from hanging down.
4. Pull draper through bottom runner, and wrap around the other roller. Pull the ends of the draper together. Install a connector bar to close the joint.

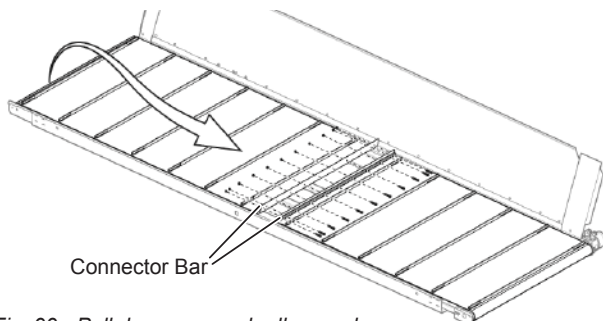


Fig. 99 - Pull draper around rollers and secure

5. The heads of the screws for the connector bar should be installed from the centre opening side. This helps prevent the crop being caught on the screws. Complete the installation by adjusting tension and tracking as described on the following pages.
6. Once the draper is installed on the draper deck, close the quick release lever (shown on following page) to apply tension to the draper.

17.3 - Tensioning

Proper tension must be maintained on the Draper to prevent slipping on the Drive Rollers. The Draper tension is changed by adjusting the Drive Roller of each deck.

17.3.1 - Spring Tension Indicator

Initially, the spring must be set by tightening the two lock nuts so the indicator is just touching the spring. Lock the two nuts in place. This ensures the spring is not pre-tensioned before tensioning the Canvas

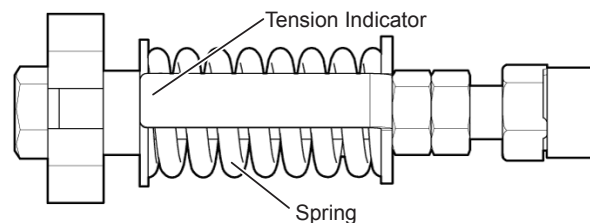


Fig. 100 - Draper tension indicator

The Spring Tensioners are equipped with a Spring Length Indicator to show the proper amount of tension that should be applied when the Decks are tensioned, prior to field operation.

NOTE:

For proper tension, the tip of the Indicator should be even with the end of the spring. This allows for good Draper tension, while still having Spring compression left over for crop loads on the Draper.

To check if tensioning is required:

1. Engage the Power Unit Drive with the engine at low idle.
2. Observe from the cab how the Drapers are tracking.

CAUTION!

If adjustment is required, lower the Header to the ground, raise the Reel and lock in place. Shut down the Combine, and turn off the engine before exiting the cab.

If tensioning is still required:

1. Adjust the tension by turning the Adjuster Bolt (Quick Release doesn't need to be released when adjusting).
2. Turn the Adjuster Bolt clockwise (shorten the bolt) to decrease tension, or counter-clockwise (lengthen the bolt) to increase tension.

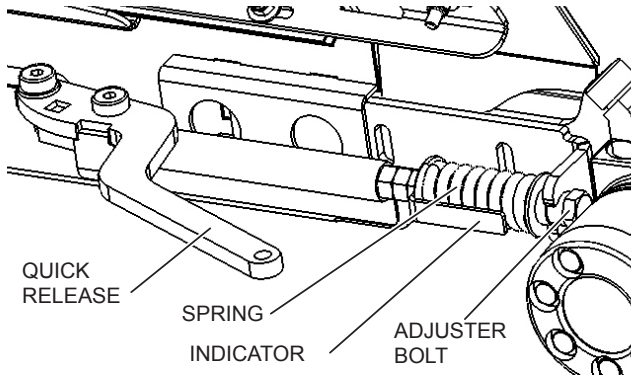


Fig. 101 - DRAPER SPRING TENSIONER

NOTE:
When increasing tension, do not compress the Spring past the Indicator tip.

3. Restart the Combine and repeat the running test. Re-adjust as necessary.

NOTE:
When adjusting the Draper tension and tracking, check the clearance between the Draper Deck slats and the end strut.

IMPORTANT!
Draper tension should be just enough to prevent slipping. Do not overtighten as it may cause bearing, roller or canvas failure.

CAUTION!
The Draper may be damaged if it, or Deck parts contact the End Strut.

A minimum of 2" (50 mm) clearance is recommended. If necessary, loosen the Deck Restrainer and slide Deck over.

17.4 - Tracking

The Draper must track properly on the rollers to avoid damage to the Drapers. The Draper Decks allow for approximately 1/4" clearance on each side.

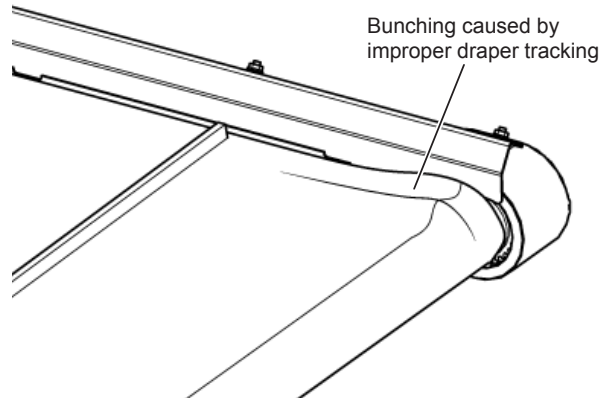


Fig. 102 - Improper draper tracking

17.4.1 - Idler Roller Tracking Adjustment

This roller is fixed at the Cutter Bar, so is adjustable only at the Back Panel. If the Draper is tracking toward the Back Panel, tighten the nut on the Eye Bolt (shorten the eye bolt). This will push the Idler Plate and Idler Roller at the Back Panel end out, creating more slack in the Draper at the Cutter Bar(Fixed End).

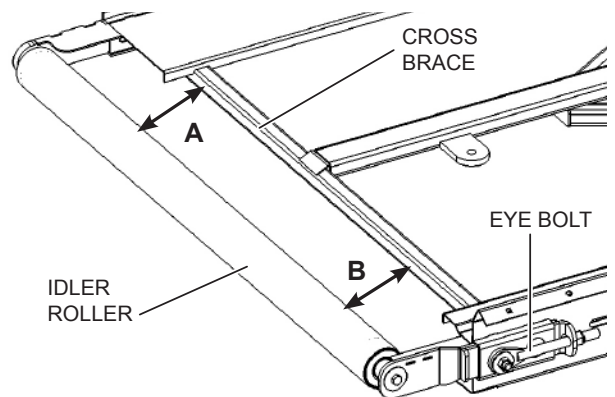


Fig. 103 - Idler Roller Alignment

If the Draper tracks toward the Cutter Bar, lengthen the eye bolt. This will pull the Idler Mount Plate and Idler Roller in, creating slack in the Draper at the Back Panel end.

NOTE:
The Draper will track to the slack side.

17.4.2 - Drive Roller Tracking Adjustment

There is no direct adjustment for tracking on the Drive Roller End. It is self tracking by way of the V-guide in the Drive Roller and Tensioning System

17.5 - Draper Speed

Proper Draper speed is critical to the performance of your 4000 Series Header. The Draper speed should be balanced with the Field speed of the Combine to deliver the material smoothly to the Center Draper.

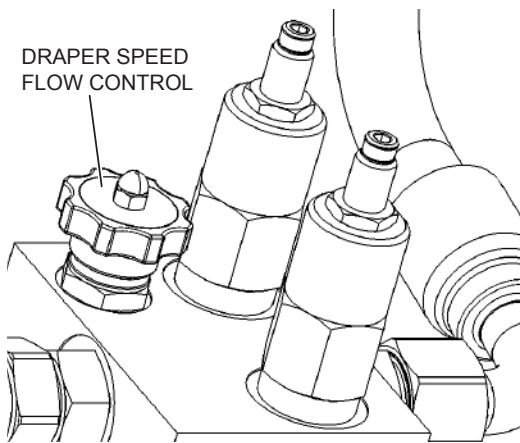


Fig. 104 - DRAPER FLOW CONTROL

The speed of the Lateral Deck Drapers and the Center Deck Draper is controlled by an adjustable flow control in the Main Manifold Block. Adjusting the Draper Speed Flow Control will affect all Decks. When using the Header as a Header the Draper speed should be set to form a good Windrow, to remove the cut crop from the Cutter Bar and to deliver it smoothly to the opening.

Things to Observe while cutting

- Excessive Draper speeds may produce poor feeding into Combine. The crop material must uniformly feed into the Combine and should not bunch up in front of Feed Auger.
- Draper speeds that are too slow for the field speed tend to overload the Decks with cut crop and can result in plugging the Cutter Bar.
- Experiment with different Draper and Field speeds to obtain the best feeding performance for the cutting conditions. It may also be necessary to make adjustments as conditions change.



IMPORTANT!

Avoid over-speeding the Draper. Excessive Draper speed will cause premature wear and shorten Draper life significantly.

17.5.1 - Draper Speed - Feeder Deck

On all 4000 series Headers the Feeder Deck Draper Drive Motor is plumbed in series with the Lateral Draper Deck Drive Motors. The Draper circuit is controlled with one flow control. Adjusting the flow control will change the speed of the Feeder Draper as well as the Lateral Draper.



NOTE:

Any adjustment to the flow control will affect the Lateral and Center Draper. The Center Draper will always run approximately 10% faster than the Lateral Drapers.

17.6 - Feeder Draper Deck - (Rearward Feeding)

Proper tension must be maintained on the Draper to prevent slipping on the Drive Roller. The Draper tension is changed by adjusting the Idler Roller at the front of the Deck.

17.6.1 - Adjusting Feeder Draper Tension:

When the Draper is correctly tensioned, you should be able to lift the side of the Draper approximately two (2) inches without effort.

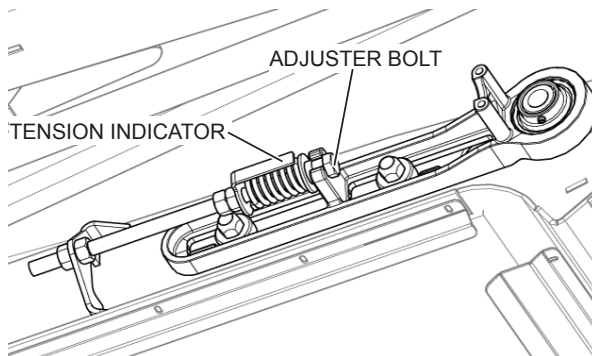


Fig. 105 - CENTER DECK TENSION ADJUSTMENT

Draper tension can be easily modified by adjusting both Spring Tensioned Pushrods on either side of the Feeder Draper independently. Loosen or tighten the Draper by turning each sides Adjuster Bolt.

The Feeder Draper Spring Tensioners are equipped with a Spring Length Indicator to show the proper amount of tension that should be applied when the Decks are tensioned, prior to field operation.



IMPORTANT!

Do not over-tighten the Feeder Draper; it should only be tensioned enough to prevent it from slipping on the Drive Roller. Over-tightening will decrease Draper life and may cause premature failure of the Rollers.

17.7 - Draper Splicing

The draper made from rubberized polyester with fiberglass reinforced slats. Regular maintenance will extend the life of your Draper. If material builds up inside the Deck, it will wrap around the rollers causing the Draper to tighten causing additional stress on the motor and the draper. If not corrected, it will result in failure of the draper motor or canvas. Tears in the Draper can be caused by poor tracking, foreign materials, or from careless use. If only a portion of Draper is damaged, a splice may be installed.

Before beginning this repair, you will need an additional connector bar set and a section of Draper that is at least 2 ½" longer than the piece to be removed.

If the damaged section is not near an existing connector bar, you will need 2 connector bar sets and a piece of Draper 5" longer than the damaged piece.

1. Raise Header table and install Lift Cylinder Locks. (If this is too high for comfortable access, the Table can be set on blocks or lowered to the ground.)
2. Raise the Reel and place the locks on the Lift Cylinders to prevent the Reel from falling.



CAUTION!

Engage the park brake on the Combine, shut the engine down, and wait for all moving parts to stop before leaving the cab.

3. Release the Draper tension.
4. Remove Draper Connecting Bar.
5. Correct the cause of the Draper failure.
6. The Draper should be cut midway between two slats to provide ample material for the new join. With a measuring tape, measure, and mark a line six inches from a slat on a good portion of the draper. Place a board directly under the line you have marked, to support the section you will be cutting. With a utility knife and a straight edge cut the draper along the marks. This cut must be accurate, and square, to assure that the draper will track properly. Repeat this step on the other side of the damaged area.

7. Lay the piece you have removed flat, and measure the width, then add 3 1/2 inches. The total will be the length of material you require for the splice. (If you need two new connector bar sets, add 5".)
8. To mark the location for holes, measure 0.625" in from each Leading Edge to be joined, and mark a Line parallel to the edges.
9. On each of these lines, mark out, from the front edge of the Draper, the holes at 1-1/8" and 2-1/8".
10. Drill 3/16" holes through each mark.

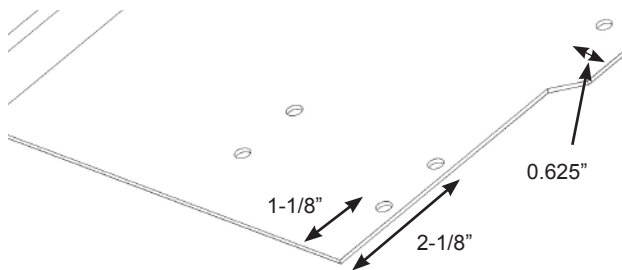


Fig. 106 - DRAPER FLOW CONTROL

11. Place the backs of the Draper together, lining up these drilled holes.
12. Place a connector bar on each side, line up the holes, and secure with a machine screw and nut.

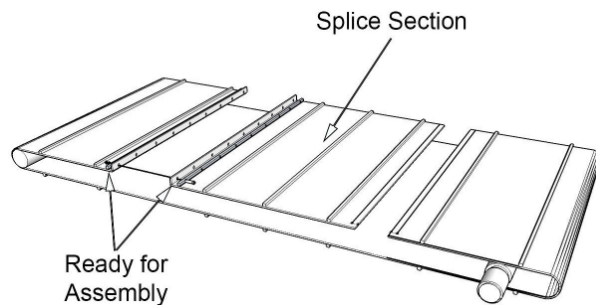


Fig. 107 - CONNECTOR BAR INSTALL

13. Match up the edges of the Draper and drill a hole at the opposite end on the 0.625" line, using the connector bar as a template. Insert a screw and secure in place. Drill the remaining holes through the holes in the connector bar, insert screws and secure.
14. Adjust Draper tension. Trim all joins to 1/4" above connector bar.
15. Adjust tracking.

17.8 - Idler Roller Removal

Relieve Draper tension using the quick release lever. See Fig. 101 on page 71.

1. Remove the nut, washer, spacer and bolt that holds the eye bolt and idler plates in place. Also remove the 3/8" bolt and fender washer that connects the roller to the pushrod.

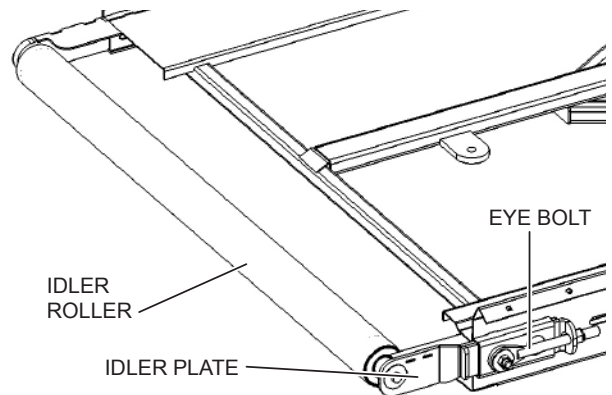


Fig. 108 - Idler Roller Alignment

2. Slide the idler plate with the eye bolt out of the c-channel as far as possible.
3. Pull the offset plate away from the roller end, letting the roller drop down.
4. Pull the Idler Roller out of the deck.
5. Check bearings on each end and remove any material build-up on the roller.
6. Re-assemble in reverse order. Adjust tension and tracking as necessary.

17.9 - Drive Roller Removal

1. Relieve the Draper tension using the Quick Release Lever.

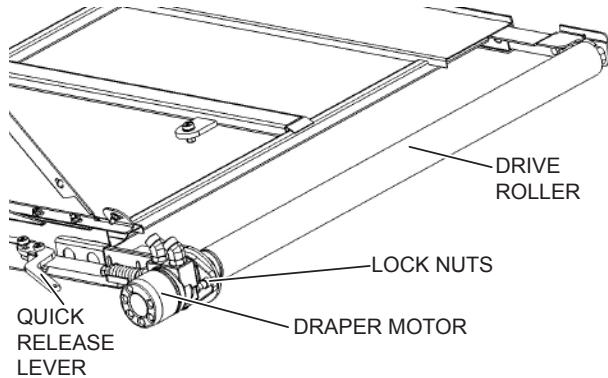


Fig. 109 - DRIVE ROLLER

2. Mark hydraulic hoses on Draper Motor. Remove hoses. Insert plugs into hoses and caps on the motor to reduce oil loss and to prevent contamination.
3. Remove the Lock Nuts that secure the motor onto the motor plate. It is not necessary to remove the Adjuster Bolt from the motor plate.
4. Pull the motor with Drive Roller through the hole in the motor plate.
5. Check bearing in end of roller, and remove any build up of material on roller.

NOTE:

Check and remove any built up material from the Draper Deck Runners. If necessary, split Draper at connector bar to gain access to inside of the Deck.

To re-install Drive Roller, reverse above procedure. Adjust tension and tracking as necessary.

17.10 - Removing Draper Motor

1. Loosen the Socket Cap bolts.
2. Insert two Pry Bars one on each side of motor, and pry motor out of Drive Roller. Do not hammer on the housing flanges of the motor. Damage to motor will void warranty.
3. If motor does not move, insert a 3/8" rod through the center of drive roller and apply force directly to the shaft of the motor.

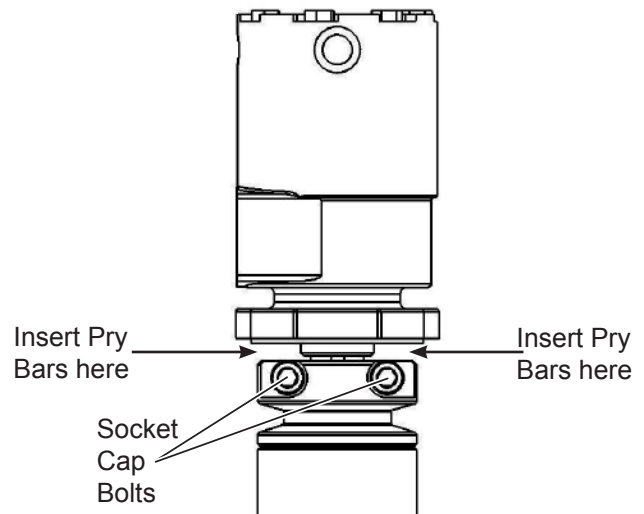


Fig. 110 - DRAPER MOTOR REMOVAL

17.11 - Replace Bearings on Drive Roller

The Roller Bearings are pressed into the Rollers with a friction fit and held in place with a retaining ring.

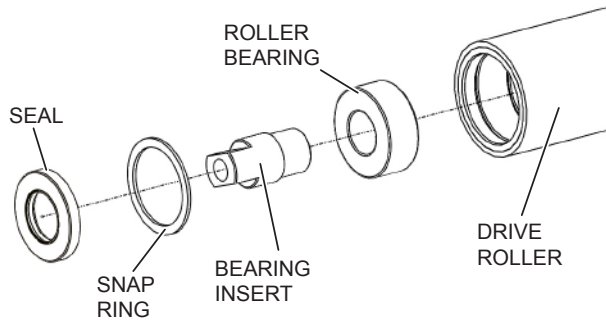


Fig. 111 - DRIVE ROLLER

1. Remove seal that holds the bearing assembly in place. Be prepared to replace the seal with a new one upon replacement.
2. Remove the snap ring that secures the bearing in place.
3. On the opposite end of the Roller from the bearing to be removed, insert a small rod through the inside of the roller and push the bearing out.
4. Drive bearing out with the rod.
5. Use a press or suitable equipment and press out the bearing insert.
6. Install insert into new bearing, press bearing insert into roller and replace the retaining ring and seal.

17.12 - Replace Bearings on Idler Rollers

The Roller Bearings are pressed into the Rollers with a friction fit and held in place with a retaining ring.

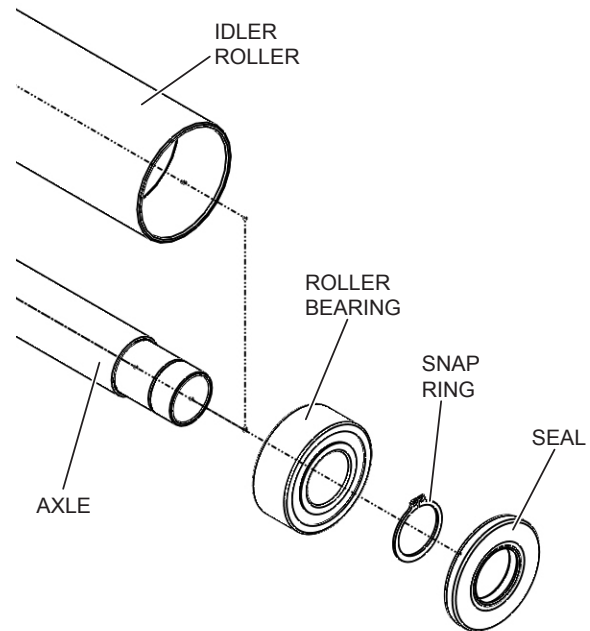


Fig. 112 - DRIVE ROLLER

1. Remove seal that holds the axle and bearing assembly in place. Be prepared to replace the seal with a new one upon replacement.
2. Remove the snap ring that secures the bearing and axle in place.
3. Using suitable tools press/push the axle out of the roller.
4. On the opposite end of the roller from the bearing to be removed, insert a small rod through the inside of the roller and push the bearing out.
5. Install new bearing, and replace the axle, snap ring and seal.

17.13 - Installing Draper Motor

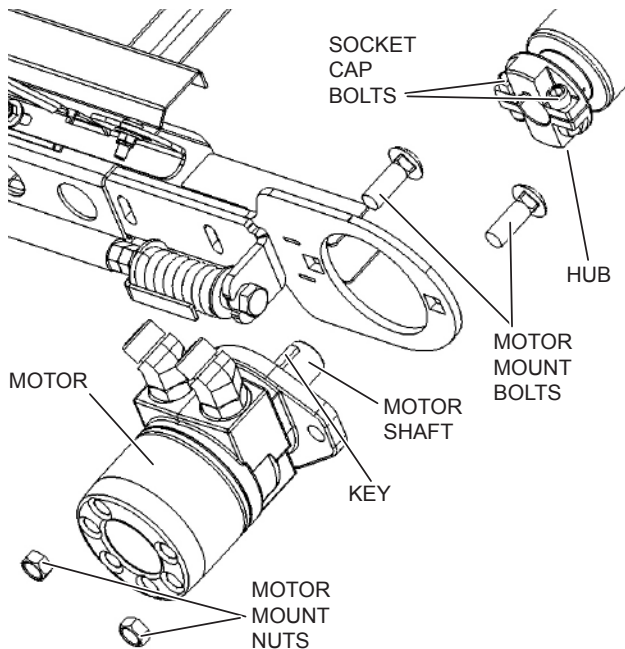


Fig. 113 - DRAPER DRIVE MOTOR

1. Clean Motor Shaft and Hub of Drive Roller. Apply anti-seize to shaft.
2. Insert Key in motor shaft.
3. Insert Motor into hub, lining key on shaft with the Key-Way in the hub. Do not use a hammer on housing flange; damage of this nature to the motor will void warranty. Use a Soft Blow or Rubber Hammer to apply force to end of Motor. To ensure proper installation, there should be approximately 3/16" of a gap between the face of the Motor and the end of the Hub.
4. Secure Motor to bracket with Carriage Bolts and Nuts.
5. Apply a small amount of threadlocker to the threads of the Socket Cap Bolts and tighten.

17.14 - Draper Deck Maintenance:

- Remove draper connector bar.
- Remove draper - clean draper of debris, both sides.
- Store draper indoors.
- Clean debris from rollers, deck channels, and runners.
- Check and bend down corners of deck runners so draper does not get caught.
- Clean adjusters; lubricate guide tubes and adjuster tubes. Adjusters should move freely inside the guide tube.
- Check idler roller bearings; they should spin freely.
- Check drive roller bearings.
- Check bearing stubs.

NOTE:

If you elect to store the header outside with draper installed, position the connector bar on the underside to aid water drainage. Ice build-up underneath could cause draper to sag and drop out of the lower runner. If this is not noticed and corrected, damage may occur to draper on start-up.

17.15 - Draper Seal

A Draper Seal is a seal between the Lateral Drapers and Cutter Bar to help with material and seed lossage. It keeps material from being trapped in the Draper Deck. When material and seed is trapped in the Draper Deck, it can build up and create damage to the Draper Canvas and Rollers.

The Draper Seal consists of a thin piece of canvas that is clamped onto the cutterbar with the Seal Hold Down Plates, and then protrudes onto the Lateral Drapers to create a positive seal.

The Draper Seal must be removed before the Draper Canvas be can unspliced and removed.

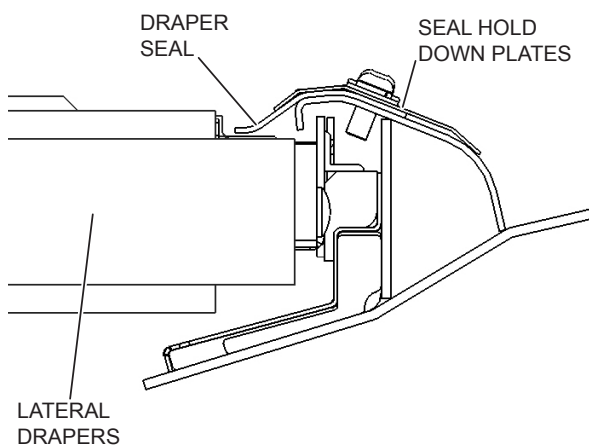


Fig. 114 - DRAPER SEAL

The Seal Hold Down Plates should push down the seal onto the Lateral Drapers with enough pressure to lightly touch the Drapers.

It should not create enough pressure to slow down the Drapers during operation. You should be able to pry the seal up with your hands and should not have to use a screwdriver to do this.

The Draper Seal Hold Down Plates can be adjusted either direction to increase or decrease the pressure onto the Lateral Drapers.

To decrease the pressure, use a suitable pry bar and pry the Seal Hold Down Plates up where the seal pressure is too high

To increase the pressure, use a suitable dead blow and form the front edge of the Hold Down Plate downwards to create more pressure onto the Lateral Drapers

The Draper Seal is a replaceable part and can be easily replaced if damaged or excessively worn.

18 - Center Feed Auger

The Center Feed Auger receives the material from the Center Draper and propels it into the Feeder Housing of the Combine. The adjustment of the Fingers, as well as the height of the Auger, is critical for the optimum transfer of material into the Combine Feeder House. This adjustment may need to be changed for different crop types and conditions to maintain an optimum flow of material from the Drapers into the Feeder House.

18.1 - Standard Adjustments

Adjust the Auger Fingers to clear the Pan or Auger Strippers by approximately $\frac{1}{4}$ " (6mm) to $\frac{1}{2}$ " (13mm). This is the recommended minimum clearance. Some crops may require greater clearance, and you may find other settings that suit your operating conditions better.

CAUTION!

Before proceeding with the following adjustments, lower the Combine Header completely to the ground or raise Header to its full height and put Feeder House Cylinder Locks in the place, whichever position will give you the most comfortable access to the Center Auger.

WARNING!

Engage the parking brake on the Combine, shut engine down and wait for all moving parts to stop before leaving the cab.

18.2 - Finger Extension Adjustment

The extension - retraction action of the Fingers is adjustable to suit the type of crop being harvested.

To adjust the extension/retraction of the Fingers:

1. Locate the Auger Finger Timing Handle on the right-side of the Subframe.
2. With a firm grip on the Timing Handle pull the spring pin out.
3. Lift or lower the Timing Handle to the desired position.

4. Check if proper indexing has been achieved.

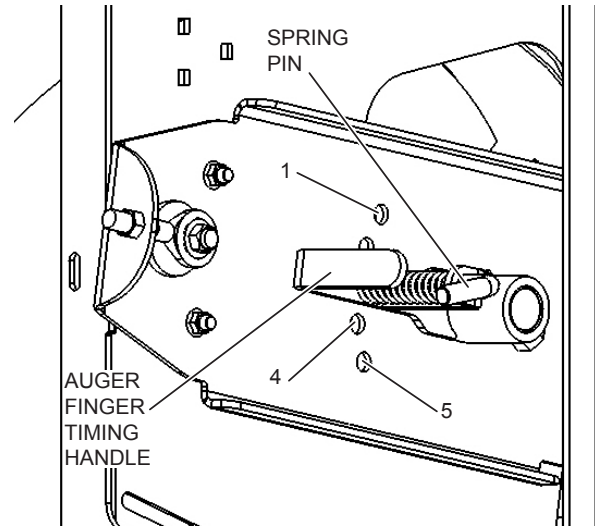


Fig. 115 - AUGER DRUM FINGER ADJUST

NOTE:

The optimal position for most crops and cutting conditions is in position 2 or 3.

Normal adjustment of the Fingers is to have them fully extended at the two or three o'clock position (viewing the Auger from the right-hand end of the tube)

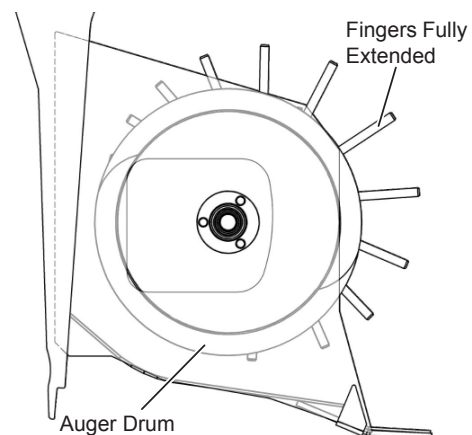


Fig. 116 - OPTIMUM FINGER TIMING

Adjust the Auger Fingers so that they clear the pan or Auger Strippers by $\frac{1}{4}$ " (6mm) to $\frac{1}{2}$ " (13mm).

18.3 - Auger Drum Height Adjustment

The feed auger drum floats in the adapter frame. Upper and lower height stops on each side of the adapter frame restrict the minimum and maximum height. There is a second upper stop location if it is desired to further restrict the movement of the feed auger drum. The height of Auger Drum Flighting/Fingers is non adjustable and has been designed to have adequate clearance with Subframe Pan.

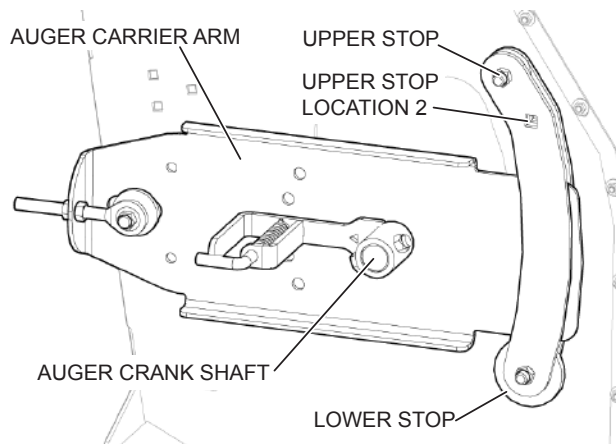


Fig. 117 - AUGER DRUM HEIGHT ADJUST

18.4 - Fore – Aft Adjustment of the Center-Feed Auger

The Auger Drum can be adjusted forward and backward by moving the Carrier Arm. The slotted hole in the Carrier Arm allows about 1.5" (38mm) of travel. Care should be taken to ensure that both sides are adjusted by the same amount. When moving the Auger Drum ensure that the Auger Flighting and the Auger Fingers do not contact the Feeder Chain on the Combine or the Bolt-in Auger Strippers.

18.4.1 - Adjust the clearance as follows:

1. Locate the Eye Bolt on each end of the Auger Adapter Frame. To increase the clearance between the Adapter Frame and the Auger; loosen Adjustment Nut A and turn Adjustment Nut B clockwise to move the Auger away from the Combine.

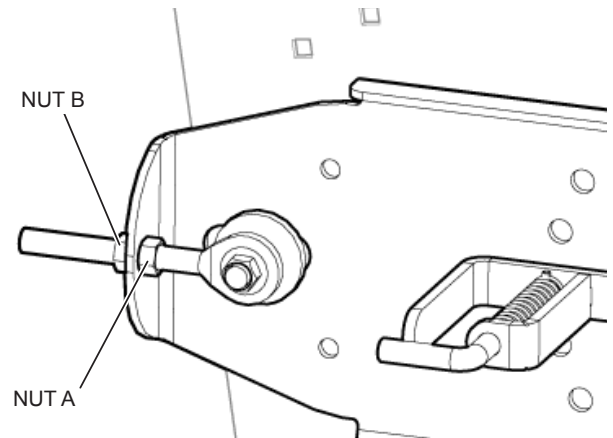


Fig. 118 - AUGER DRUM FORE/AFT ADJUST

2. To decrease the clearance, reverse this procedure to move the Auger closer to the Combine.
3. When the desired clearance has been attained, re-tighten lock nuts (A) and (B).
4. Readjust the Auger Bolt-in Strippers so that there is a 1/4" to 1/2" clearance to the Auger.

 **NOTE:**

For proper performance of the Feed Auger, each end of the Auger should be adjusted with the same amount of clearance along the full length of the Auger.

 **IMPORTANT!**

Slowly rotate Feed Auger by hand to be sure the Flighting and the Fingers do not contact the Feeder House, Shrouds, Feeder Chain, Drapers, or Header Decks. Damage to the Combine or Header arising from improper adjustment **WILL NOT BE COVERED BY WARRANTY.**

18.5 - Auger Drive Assembly Adjustment

The Auger Drive Assembly and the Chain Case Mount are located on the left-hand side of the Sub-Frame. The Chain Case Mount is secured to the Sub-frame by two 5/8" U-bolts, which provide height adjustment.

 **NOTE:**

Alignment of the Drive Line should be checked before operating the Header. The Telescoping Drive Line is equipped with Universal Joints at each end, so minor misalignment is acceptable up to 5 degrees. Try to keep the Drive Line (from Feeder House to the Gearbox) adjusted as straight as possible.

 **IMPORTANT!**

As the operating angle of the Drive Shaft increases, the life of the Universal Joints will decrease.

18.6 - Drive Line Adjustment

It is important to minimize the angle that the Drive Lines are operating at. The shallower the angle, the longer the lifespan of the Drive Shaft.

Ensure you have enough overlap in the Drive Line Sleeves.

If necessary, loosen the two U-bolts, and move the entire unit up or down.

 **NOTE:**

When changing to another Combine, it may be necessary to loosen the U-Bolts on the Chain-Case Mount and lift the complete assembly to achieve proper alignment.

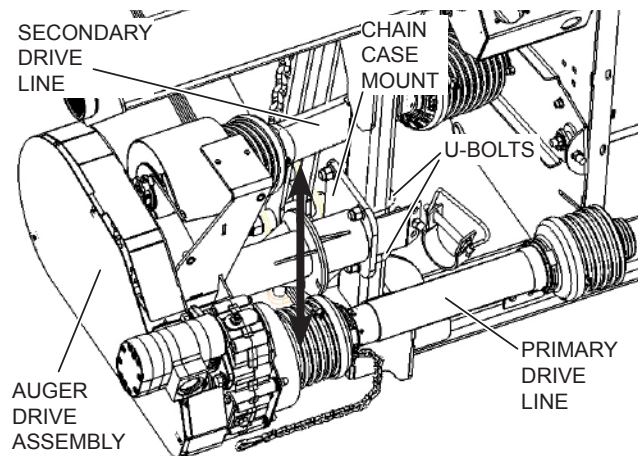


Fig. 119 - DRIVE LINE ANGLE ADJUSTMENT

18.7 - Chain Tension Adjustment

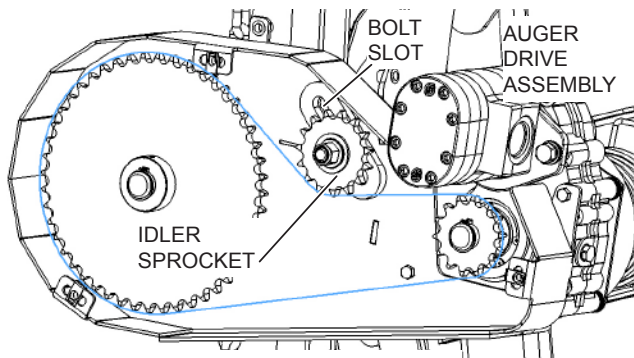


Fig. 120 - CHAIN TENSION ADJUSTMENT

1. Remove the Chain Case Shield from the Auger Drive Assembly.
2. Loosen the Idler Sprocket, insert a pry bar into the Bolt Slot.
3. Apply downward pressure to the Idler Sprocket with a pry bar until approximately 3/8" (9.5mm) to 1/2" (13mm) of slack remains along the bottom run of chain.
4. Tighten the Idler Sprocket, and recheck the tension. Do not over-tighten the Chain!
5. Reinstall, and secure the Chain Case Shield.

18.8 - Drive Line - Walterscheid

For information on the installation, service, and safety instructions for Input Drive Lines and Clutches refer to the Owner's Manual Shipped with each Drive Line.

These instructions are intended to point out some of the basic safety situations which may be encountered during the normal operation of your machine and to suggest possible ways of dealing with these conditions.

Read the Manufacturer's Owner's Manual before attempting to operate the equipment. If there are no manuals with the machine, request them from the manufacturer. Study them before you start work. If there is something in the manuals you don't understand, ask your supervisor or equipment dealer to explain it to you.

18.8.1 - Auger Drive Slip Clutch Adjustment

The auger drive slip clutch needs to be properly set in order to operate as designed. It is preset from the factory but if for any reason the clutch needs to be reset please follow the below instructions:

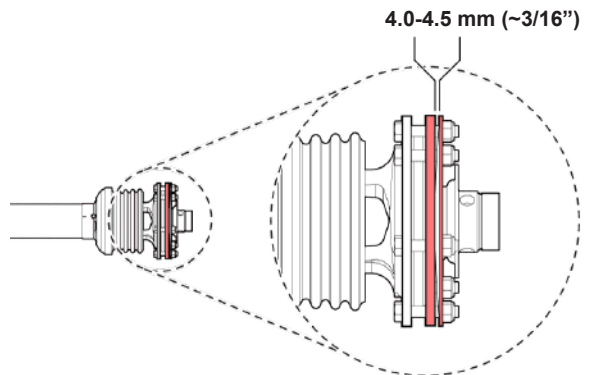


Fig. 121 - Slip Clutch Adjustment

To set the slip clutch you will need a metric measuring device and will have to tighten each bolt until a gap of 4.0-4.5mm between the Belleville spring washer and the plate is achieved. Make sure to measure this gap at each of the 6 bolts and make sure it is the same measurement all away around the circumference.

18.9 - Operating the PTO

When closing down operation of PTO driven equipment, shift PTO control to neutral, shut off the engine and wait until the PTO (feeder house) stops before getting off the Combine.

Do not wear loose fitting clothing or long, free hanging hair when operating the Power Take-off, or when near any rotating equipment.

CAUTION!

To avoid injury do not clean, adjust, unplug, or service PTO driven equipment while the Combine engine is running.

Never exceed the recommended operating speed of the equipment.

Implement Input Drive Lines, Clutches and Freewheels are designed for specific machine types and power requirements. They must not be replaced by any shaft other than that recommended by the Implement Manufacturer. Always ensure that the Implement Input Drive Line is securely connected at both ends. Only operate a Drive System when all Safety Guards are in place. PTO safety systems include: the Combine Master Shield, the Implement Input Drive Line Guard and the Implement Shielding.

If any component of the Guarding System has been removed for any reason, it must be replaced or repaired prior to operating the machine.

Note the maximum Drive Line operating length. The implement Input Drive Line should not be extended by more than half the available telescoping overlap.

Drive Line Universals should not be operated with greater than 25 degree angles.

18.10 - Drive Line Lubrication

From the factory, Walterscheid PTO drive shafts are greased and ready for operation. For subsequent lubrication, use lithium base saponified high quality grease with E.P. additives.



IMPORTANT!

Do not use grease agents containing MoS2!

The system must be lubricated at the end of every season. Especially when a high-pressure cleaner has been used, lubrication is required immediately to force out water that may have penetrated the joints.

Lubricate with quality grease before starting work and every 50 operating hours thereafter. Clean and grease the drive line before each period of storage.

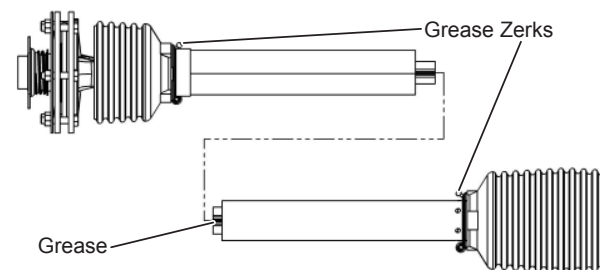


Fig. 122 - Two (2) Drive Line Lubrication Points

Molded plastic grease zerks on the guard near each guard bearing are intended as grease fittings and should be lubricated every 50 hours of operation if the guard is chained so that it does not rotate.

Telescoping shafts must be lubricated regardless of whether or not a grease fitting is present.

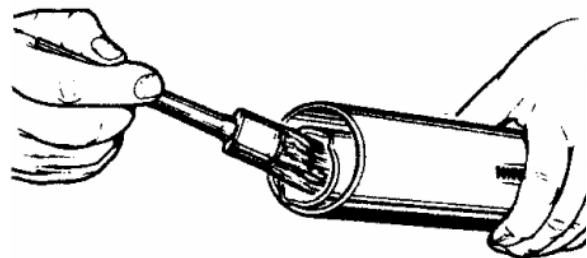


Fig. 123 - Grease Center Sleeve

Check and grease the guard tubes at the end of each season to prevent seizing.

18.11 - Coupling the Input Drive Line

Clean and grease the PTO and implement input connection.

18.11.1 - Drive Line Lock

1. Pull locking collar back towards the drive shaft.
2. Push the implement input drive line onto PTO shaft of the power unit until the locking device engages.

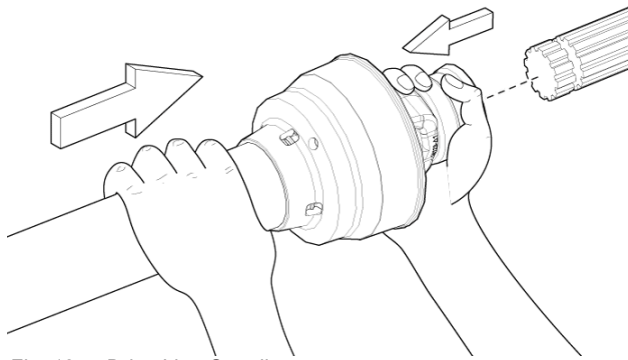


Fig. 124 - Drive Line Coupling

WARNING!

Check to ensure all the locks are securely engaged before starting work with the implement input drive line.

NOTE:

The chain is intended to prevent the guard from rubbing against non-moving parts, thereby reducing premature wear and damage. With proper maintenance, a properly installed chain will increase the service life of the guard.

Chains must be attached to allow sufficient articulation of the shaft in all working positions. Care must be taken to ensure the chain does not become entangled with nearby components during operation or transport of machine.

The chain is not designed to carry the weight of the implement input drive line. Damage will occur if it is suspended by the chain.

18.12 - Drive Line Guard Disassembly

1. Remove locking screw.
2. Align bearing tabs with cone pockets.
3. Remove half-guard.
4. Remove bearing ring.

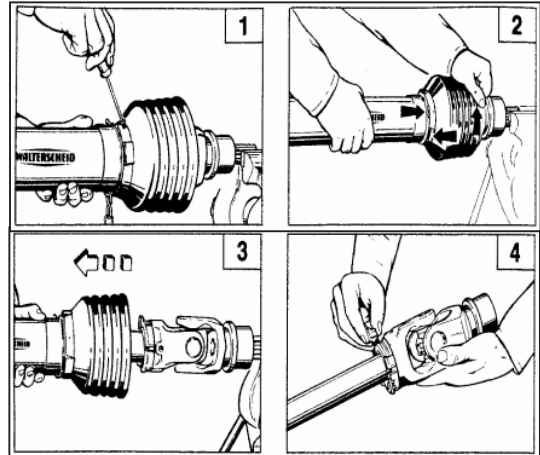


Fig. 125 - Drive line guard disassembly

18.13 - Drive Line Guard Assembly

1. Grease yoke groove and inner profile tube.
2. Fit bearing ring in groove with recesses facing profile tube.
3. Slip on half-guard.
4. Turn cone until it engages correctly.
5. Install locking screw.

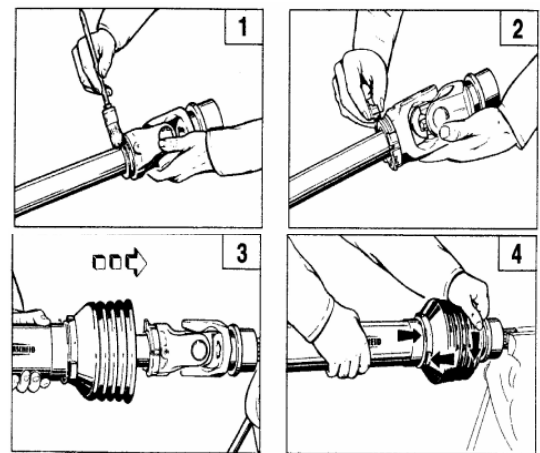


Fig. 126 - Drive line guard assembly

18.14 - Replace Cone:

1. Disassemble guard as shown previously.
2. Remove old cone (e.g. cut open with knife).
3. Remove chain.
4. Place neck of new cone in hot water (approximately 80 C/180 F) and when heated, pull onto bearing housing.
5. Follow the assembly instructions previously listed.
6. Reconnect chain.

WARNING!

Guards are designed to protect the user. Defective and damaged guards must be repaired or replaced immediately.

18.15 - Mechanical Trap Doors

There are two trap doors used for clearing debris away from the center draper.

The trap doors catch all the rocks and debris that make their way onto the Lateral Drapers. In order to clean out the Trap Doors, they are manually opened so the material is dropped to the ground.

18.15.1 - Activating Front Trap Door

Located on the center-front of the header.

WARNING!

Raise the header so the cutter bar is roughly waist height, raise the reels and engage the reel height safety locks.

Shutdown Combine and make sure all moving parts have stopped before exiting. Engage the combine lift cylinder locks.

1. Locate the Multi-Purpose Reel/Knife Tool at the left-hand end of the frame under the Safety Shielding and insert the rod end into the Trap Door Handle.

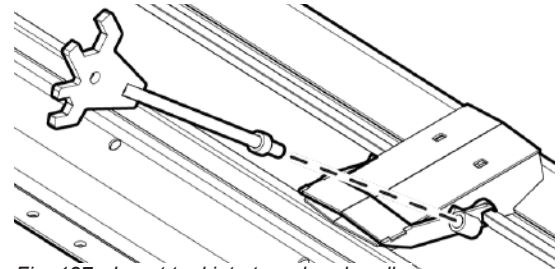


Fig. 127 - Insert tool into trap door handle

2. Pull up on Multi-Purpose Tool then open Handle to the rear of the Table to open door (there is no locking mechanism for the door, the handle over centers and holds it in place).

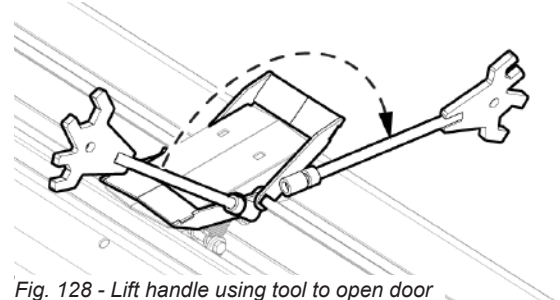


Fig. 128 - Lift handle using tool to open door

3. Clean out the Trap Door
4. Close the door by reversing the previous steps.

18.15.2 - Activating Rear Trap Door

Located under the rear of the center draper.

WARNING!

Raise the header so the cutter bar is roughly waist height.

Shutdown Combine and make sure all moving parts have stopped before exiting. Engage the combine lift cylinder locks.

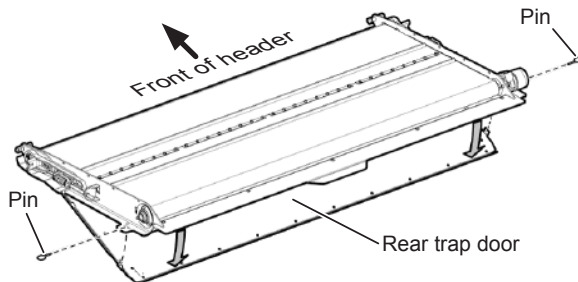


Fig. 129 - Opening rear trap door

1. Locate and remove the two pins located on the left and right sides of the center draper.
2. Support the rear trap door to prevent it from suddenly dropping, then remove the two pins.
3. Clear away all debris then raise the trap door back into place and secure with the two pins.

19 - “Headsight” Header Height Control Ready

Header Height Control Systems allow the Table/Combine to sense the ground height and keeps the Cutter Bar at a constant height no matter the ground terrain. This system is very beneficial when operating large Headers and also when operating over rough terrain. It keeps the Cutter Bar from coming into contact with the ground and damaging itself.

All models of 4000 Series Headers come from the factory Headsight Header Height Control ready. This means the frame and the electrical harness have been designed and built to easily accommodate Headsight’s Header Height Control System.

Please refer to the Headsight Header Height Control manuals for details on installation and operation for the 4000 Series Header.

The Headsight Header Height Control System for the 4000 Series Headers must be ordered through Headsight directly or through your preferred dealer.

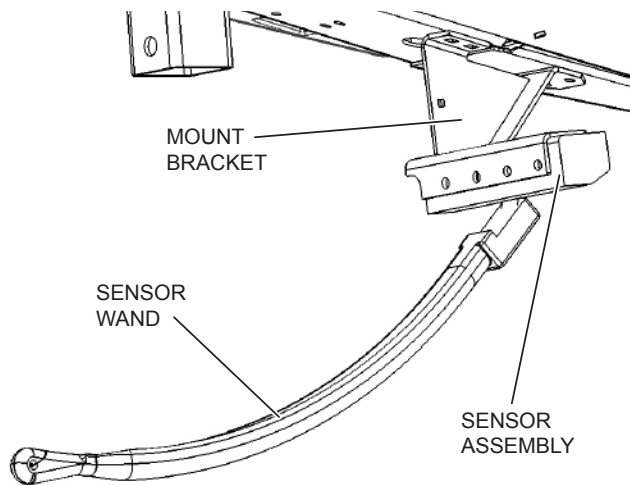


Fig. 130 - HEADSIGHT SYSTEM

Headsight Contact:

Headsight® Inc.
4845 3B Rd.
Bremen, IN 46506
Ph: 574.546.5022
Fax: 574.546.5760
info@headsight.com
www.headsight.com

20 - Dismounting Draper Table from Combine

There are two methods of removing the Draper Table, which differ only in the equipment used to support the Header after it is removed from the Combine:

Quick Dismount, without using a Transport System.

Integral Dolly Wheel Dismount, which utilizes the Integral Dolly Wheel Transport package. Refer to Dismount Header onto Dolly Wheel Transport.

It is important to dismount the Draper Table properly from the Combine for four reasons:

- Safe storage.
- Ease of remounting.
- Readiness for transport.
- To avoid possible damage to the Draper Table and Combine.

WARNING!

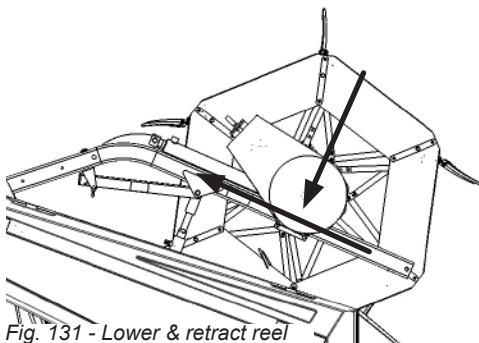
Keep bystanders away from the machine, especially children as you complete these operations. Select a storage site away from human activity.

20.1 - Preparing For Dismount

IMPORTANT!

Park the combine on hard, level ground. Engage the park brake.

1. Start the Combine:
2. Lower the reel to its lowest possible position.
3. Adjust the reel fully aft (rearward towards combine)



4. Raise the header to its fully raised position.
 - a. If quick dismounting onto ground, adjust Tilt Cylinder to fully extended position (Unlock Image on decal).
 - b. If dismounting onto dolly wheel transport, adjust tilt cylinder to fully retracted position ("T" image on tilt cylinder decal).

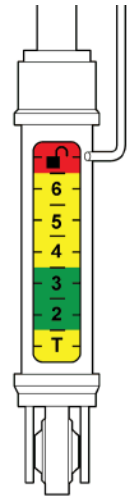


Fig. 139 - Tilt Cylinder

CAUTION!

Engage the Parking Brake on the Combine, shut the engine down and wait for all moving parts to stop before exiting the cab. Lock the Feeder House Lift Cylinders in raised position as described in your Combine Owner's Manual.

5. Disconnect Telescoping Drive Line from bottom left Feeder Housing Shaft and secure in the Drive Line Storage Bracket.

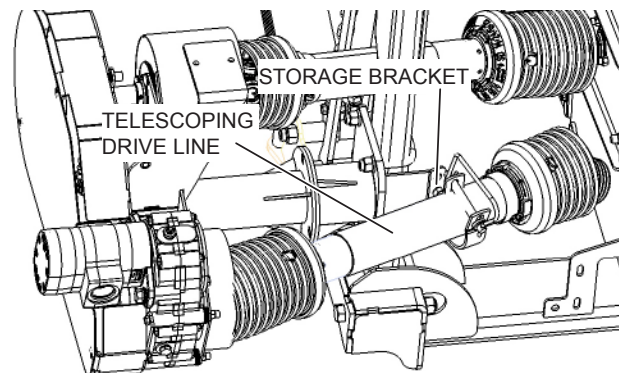


Fig. 132 - DRIVE LINE STORAGE

6. Uncouple the Hydraulic Multi Coupler connecting the Draper Table to the Combine. Secure the hydraulic lines so they are clear of any moving parts or the ground.

7. Disconnect all wires from the Combine to the Draper Table. Ensure they will not catch on the Combine or the Header when the Combine is backing away from the Draper Table.
8. Lock the Sub Frame and the Header together by shortening both the left and right Restrainer Chains as much as possible, which will support the Sub Frame in the quick dismount position.

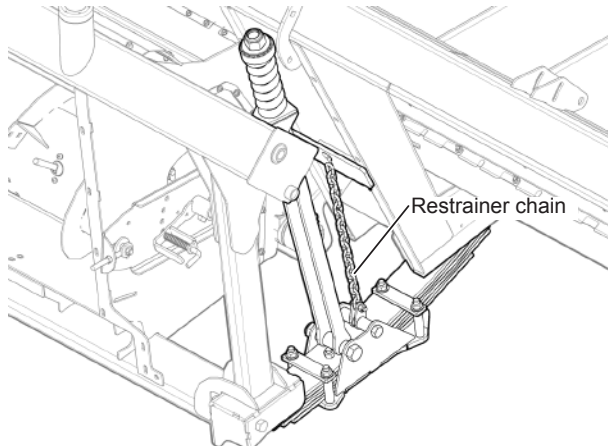


Fig. 133 - Shorten restrainer chains

9. Remove all locks, pins/bolts which hold Auger Adapter to the Feeder House of Combine.

20.2 - Quick Dismount



IMPORTANT!

Ensure that you have fully completed the "Preparing For Dismount" section of this chapter.

1. Lay two (2) Wood Blocks (4"x 4" x 16") or (6" x 6" x 16") directly under the Cutter Bar, aligned with the two Table Struts located closest to the end of the Header.

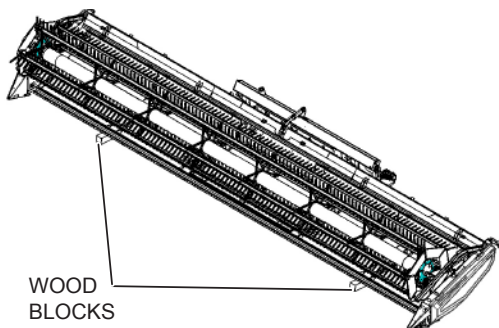


Fig. 134 - TABLE BLOCKING

2. Remove the Feeder House Cylinder Locks.
3. Start the Combine. Lower the Header to about 12" above ground and also tilt Table all the way fore (forward away from Combine).
4. Dismount from the Combine and check position of blocks to be sure they will contact the Cutter Bar.
5. Lower the Table onto the Cutter Bar blocks.
6. If required, place Wood Blocks under the Sub Frame. Ensure they will fully contact the Sub-Frame and support it stably at a suitable height.

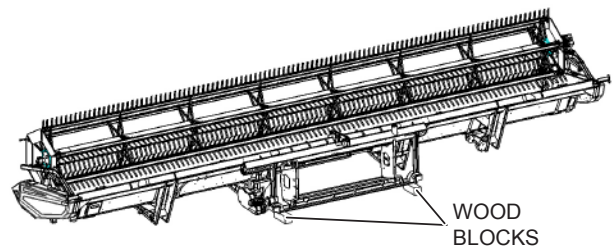


Fig. 135 - TABLE BLOCKING

7. Restart Combine and slowly lower Header onto blocks. When Cutter Bar contacts blocks, check position of blocks to be sure that Cutter Bar is making solid contact, and the blocks are laying absolutely flat so Header will not slide off once the Combine has been removed from Header.
8. Restart Combine and continue to lower the Feeder House until it is totally retracted from the Auger Adapter Frame.
9. Slowly back Combine away from the Header. Be sure that Header does not move backwards with the Combine. If it does, shut Combine down completely. Recheck to be sure all pins have been removed.



NOTE:

In the Quick Dismount position, the Sub Frame should be vertical or tilted slightly back toward the Combine. This will make re-mounting easier.

20.3 - Dolly Wheel Transport Header Dismount



IMPORTANT!

Ensure that you have fully completed the "Preparing For Dismount" section of this chapter.

20.3.1 - Dolly Wheel

1. Remove rectangular receiver pin out of REAR rectangle hole in the left-hand strut.
2. Lift transport dolly axle out of the storage pocket, and slide it in and backwards into the receiver in the strut secure it with the rectangular receiver pin and quick pin.

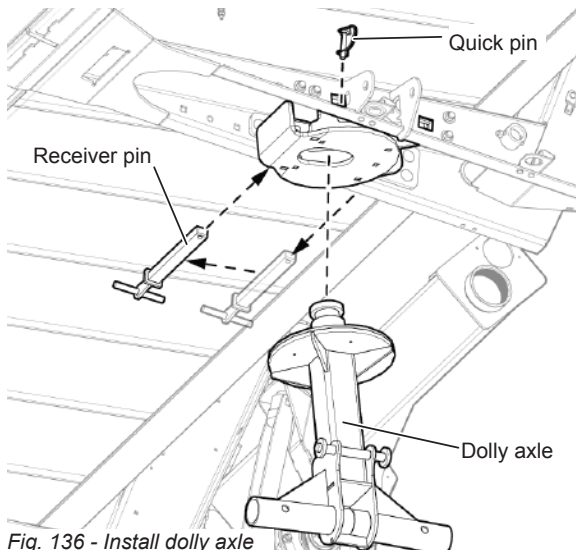


Fig. 136 - Install dolly axle

3. Remove the Dolly Wheel Drawbars from the top of the Uppertube and place near Dolly Transport.
4. Install rear half of the Drawbar onto Dolly Transport and engage Locking Handle with Locking Pin.

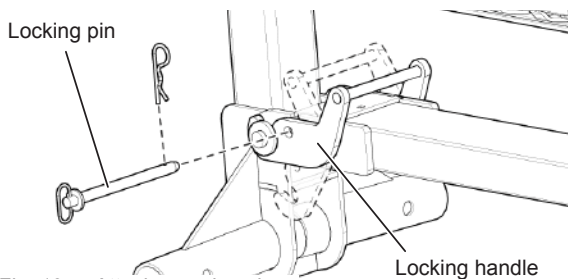


Fig. 137 - Attach rear draw bar

5. Install front half of Drawbar onto rear half of Drawbar using Locking Bolt with Quick Pin.

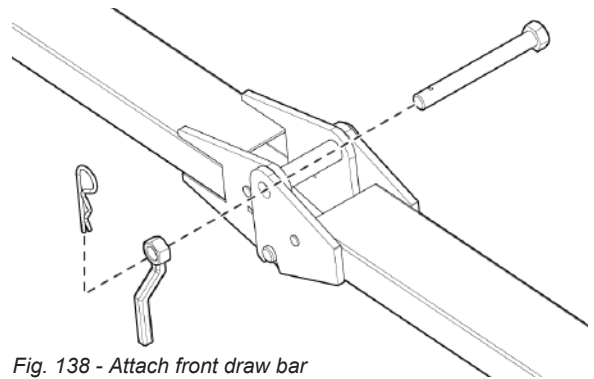


Fig. 138 - Attach front draw bar

6. Connect electrical connector between Drawbar halves.
7. Route electrical connector from rear Drawbar through Strut Grommet Holes and connect to electrical connector.
8. If Gauge Wheels are installed, remove both wheels from the Left-hand Gauge Wheel Control Arm and install onto Dolly Transport.
9. Ensure all Locking Pins are secured and Transport Drawbar is facing the direction of travel.

20.3.2 - Integral Rear Axle

1. Remove Pivot Locking Pin for Rear Axle Assembly and Pivot Rear Axle downwards. Reinstall Locking Pin.
2. Remove Locking Pin for Telescoping Axle and pull out into fully extended position. Reinstall Locking Pin.
3. Remove Locking Pin for Rear Axle Pivot and pivot mount upwards. Reinstall Locking Pin.
4. Removed Deflector Wedge from Telescoping Axle and install on storage position.
5. If Gauge Wheels are installed, remove both wheels from Right-Hand Gauge Wheel Control Arm and install onto Rear Axle Assembly.
6. Ensure all Locking Pins are secured.

20.3.3 - Draper Header Removal

1. Install block in front and behind one of the Transport Wheels to ensure the Header does not roll when it disconnected from Combine.
2. Ensure that it is safe to do so, and remove the Cylinder Locks from the Combine.
3. Restart Combine and slowly lower Header to the ground. Ensure that all four Transport Wheels come into full contact with the ground.
4. Continue to lower the Feeder House until it is totally retracted from the Auger Adapter Frame.
5. Slowly back Combine away from the Header. Be sure that Header does not move backwards with the Combine. If it does, shut Combine down completely and ensure all pins have been removed, and that everything is properly disengaged.

21 - Optional Equipment

21.1 - Cross Auger

The Cross Auger can be beneficial for handling specialty crops such as peas, canola, mustard, safflower, and lupins. Many of these crops are not heavy enough to keep them firmly on the Draper. Crops that are bushy or have vines tend to ride above the Draper as the Canvas moves under them. This often causes them to enter the Feeder House in bunches or wads.

The Cross Auger features left and right hand flighting which gently pushes the crop down onto the Draper while moving it toward the Feeder Deck and Feed Auger.

The Cross Auger is suspended above the Decks of the Header on Adjustable Mounting Brackets.

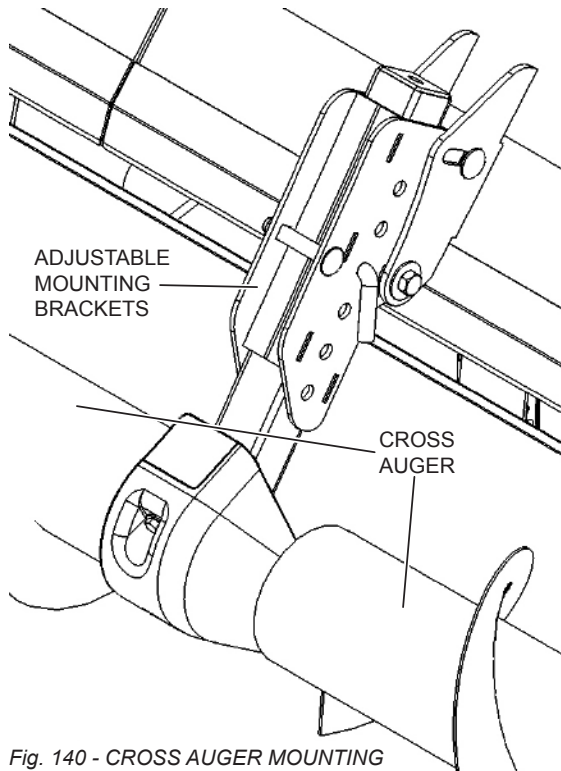


Fig. 140 - CROSS AUGER MOUNTING

The Cross Auger is plumbed into the Draper Circuit with a Manual Speed Control (Needle Valve). The speed of the Cross Auger should be adjusted only enough to keep the crop moving. If the Cross Auger rotates too quickly, wrapping may occur.

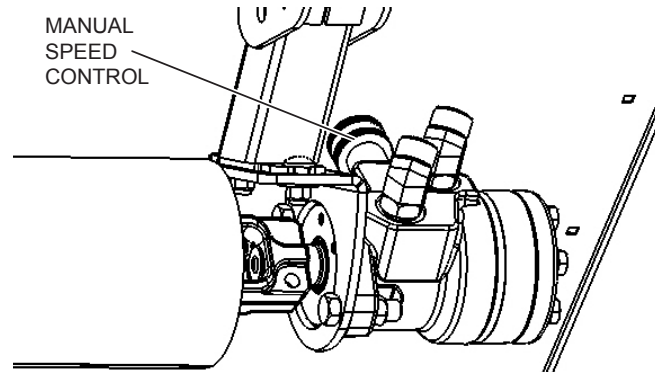


Fig. 141 - CROSS AUGER SPEED CONTROL

The Cross Auger can be left in position even if it is not being used, such as when harvesting cereal grains. The Cross Auger can be turned off by fully opening the Needle Valve. This should not affect the Draper speed.

21.1.1 - Cross Auger Adjustment

The Cross Auger can be adjusted both vertically and horizontally. Vertical adjustment is done with a Pin in multiple hole positions. A Clamp Bolt is used to clamp the Leg in place after pin adjustment. Horizontal adjustment is done with a Pivot Point and a bolted connection in a Pivot Slot location.

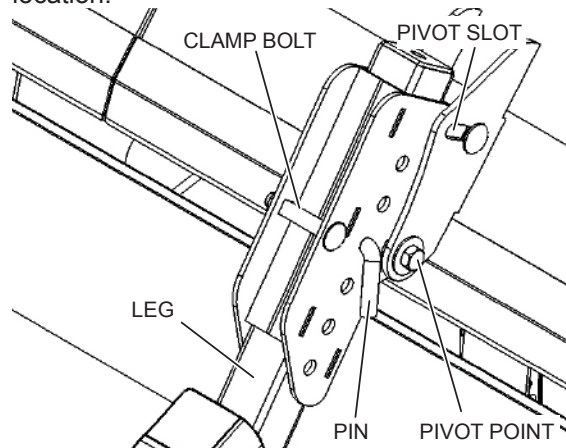


Fig. 142 - CROSS AUGER ADJUSTMENT

21.1.2 - Cross Auger Strippers

The Cross Auger works in relation with Strippers that are attached to the Deck Backpanels. The Strippers keep material from wrapping around the Cross Auger.

There are two optimal positions for the Cross Auger in relation to the Stripper. Position 1 has found to be beneficial for standing crops. Position 2 has found to be beneficial for lodged crops.

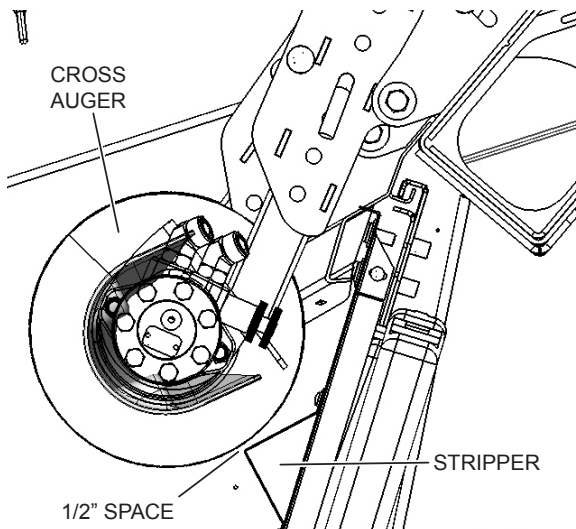


Fig. 143 - CROSS AUGER POSITION 1

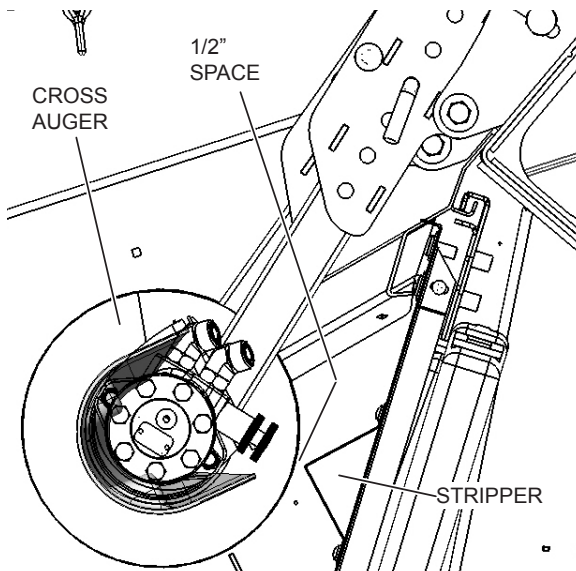


Fig. 144 - CROSS AUGER POSITION 2

21.2 - Adjustable Skid Shoes

The Adjustable Skid Shoes aid in the floatation of the Table. They provide additional surface area for the floatation of the Table. They are beneficial in soft or muddy conditions in keeping the Cutter Bar from digging into the ground.

They are also adjustable which allows the Cutter Bar to run from 0" to 3.5" off the ground.

The Adjustable Skid Shoes can be ordered in two different configurations.

End Skid Shoes Only

End and Middle Skid Shoes

21.2.1 - End Skid Shoe Adjustment

Before adjusting the height of the Skid Shoes make sure the Combine is turned off and Table is raised and locked in place.

Support the bottom of the Skid Shoes and remove the Locking Pin.

Move the Skid Shoe to the desired location and install the Locking Pin.

Set the Skid Shoe on the opposite end to the same position.

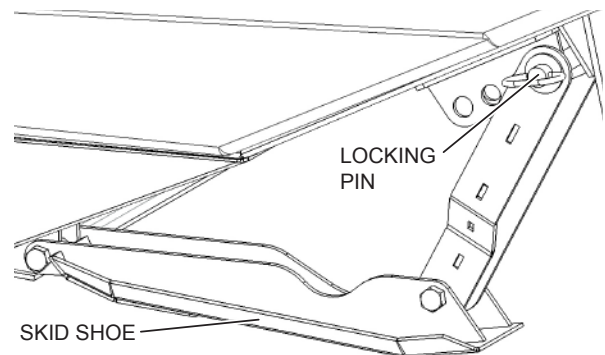


Fig. 145 - END SKID SHOE-LH

21.2.2 - Middle Skid Shoe Adjustment

Before adjusting the height of the Skid Shoes make sure the Combine is turned off and Table is raised and locked in place.

Support the bottom of the Middle Skid Shoe and remove the Locking Pin.



WARNING!

Middle Skid Shoe will FALL OUT ABRUPTLY if it is not held securely before removing the Locking Pin.

Move the Middle Skid Shoe to the desired location and install the Locking Pin.

Set the additional Middle Skid Shoes to the same position.

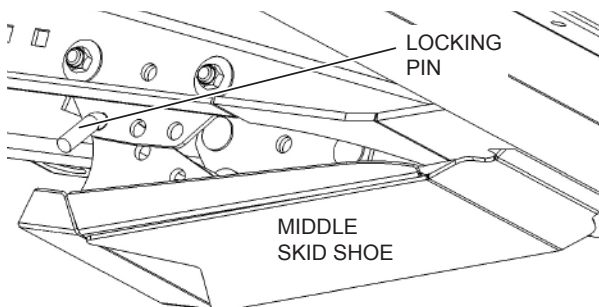


Fig. 146 - MID SKID SHOE RH FRONT VIEW

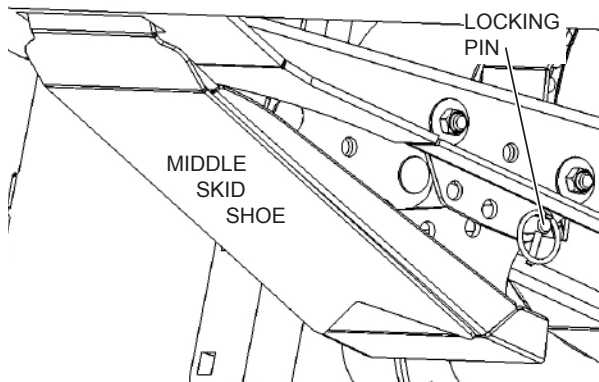


Fig. 147 - MID SKID SHOE LH FRONT VIEW

21.3 - Floating Crop Divider Tips

The Floating Crop Divider Tips are an option for all of the 4000 Series Models. The Floating Crop Divider Tips are attached to the end of the Standard Crop Divider and are used for dividing short crops while cutting close to the ground.

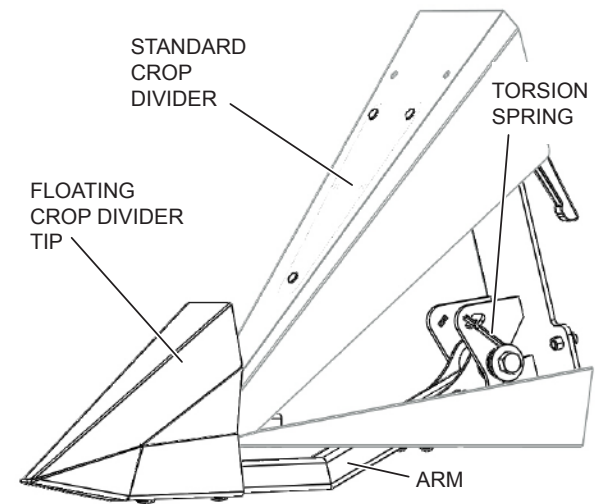


Fig. 148 - FLOATING DIVIDER TIP

The Floating Crop Divider consists of an Arm/Tip assembly that pivots inside the Crop Divider. The tip needs to be able to pivot to accommodate all the different Header angles. A Torsion Spring provides downward pressure on the Floating Tip in order to allow them to follow ground contours adequately.

21.4 - Vertical Shear Ready Option

The Vertical Shear Ready Option includes all the necessary hydraulic plumbing and brackets in order to install a set of Ziegler Vertical Shears for straight cutting Canola. The Ziegler Vertical Shears are used when harvesting Canola in order to effectively divide tangled Canola at the end of the tables.

If your table is ordered with the Vertical Shear Ready Option it will come ready with all the necessary hydraulic lines and flow control to plumb the Vertical Shears into the Reel Circuit. It will also come with a kit including all the brackets need to install the Vertical Shears onto both the right-hand and left-hand Crop Dividers.

The Ziegler Vertical Shears will not come with the kit. They need to be ordered seperately. The part numbers for the shears are listed below.

Left Hand Ziegler Shear - 70-049133 (Ziegler Hydraulic Rapeseed Side Knife CNH LH)

Right Hand Ziegler Shear - 70-049132 (Ziegler Hydraulic Rapeseed Side Knife CNH RH)

The Shears are powered by a hydraulic motor and they receive their flow from the Reel Circuit via a manifold block. The manifold block is located on the right-hand end of the table under the Safety Shielding. It houses a Relief Valve and a 3 GPM Flow Control.

Please refer to assembly instructions included in the kit to install the Vertical Shears.

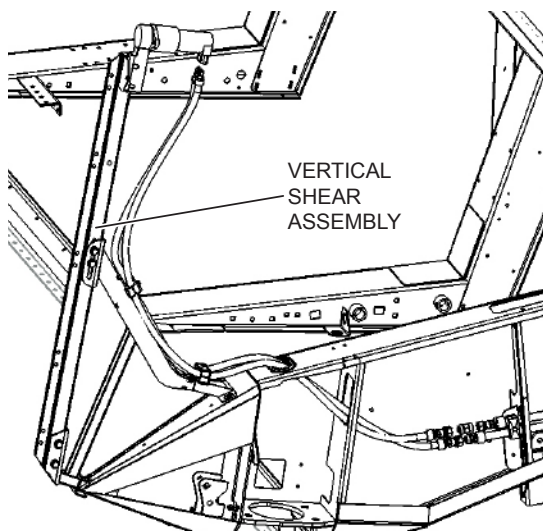


Fig. 149 - ZIEGLER VERTICAL SHEARS

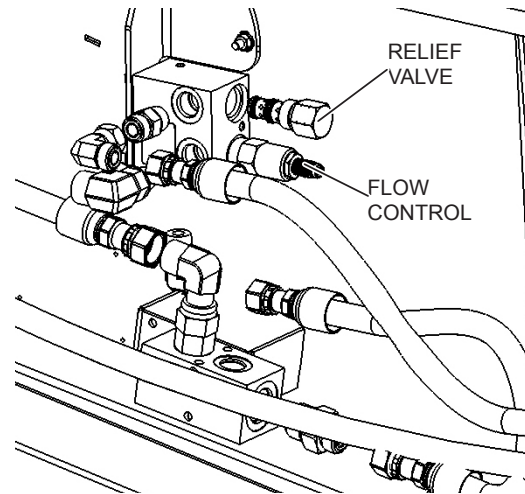


Fig. 150 - VERTICAL SHEARS HYDRAULICS

21.5 - RotoShear Ready Option

The RotoShear Ready Option includes all the necessary hydraulic plumbing and brackets in order to install a set of RotoShears for straight cutting Canola. The RotoShears are used when harvesting Canola in order to effectively divide tangled Canola at the end of the tables.

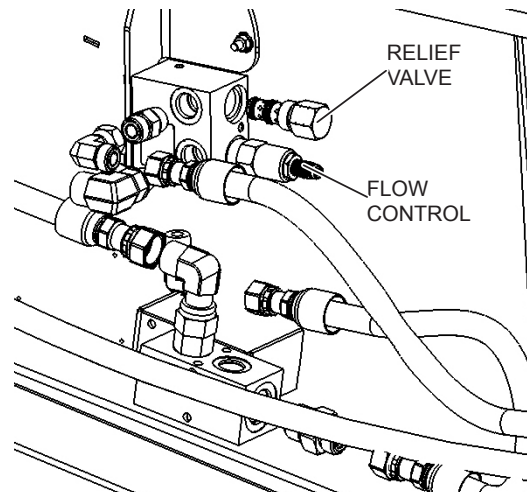


Fig. 151 - VERTICAL SHEARS HYDRAULICS

If your table is ordered with the RotoShear ready option it will come ready with all the necessary hydraulic lines and flow control to plumb the shears into the Reel Circuit. It will also come with a kit including any brackets needed to install the shears onto both the right-hand and left-hand crop dividers.

The RotoShears will not come with the kit. They need to be ordered seperately.

The shears are powered by a hydraulic motor and they receive their flow from the Reel Circuit via a manifold block. The manifold block is located on the right-hand end of the Table under the Safety Shielding. It houses a Relief Valve and a 5 GPM Flow Control.

Please refer to assembly instructions included in kit to install RotoShears.

21.6 - No Transport Option

The No Transport Option consists of Lifting Lugs for the lifting the Table when a Wheel Transport is not available. The Lift Lugs are bolt-on and therefore should be removed before operation. There are four Lift Lug points; two on Cutter Bar and two on the Frame Uppertube near the center.

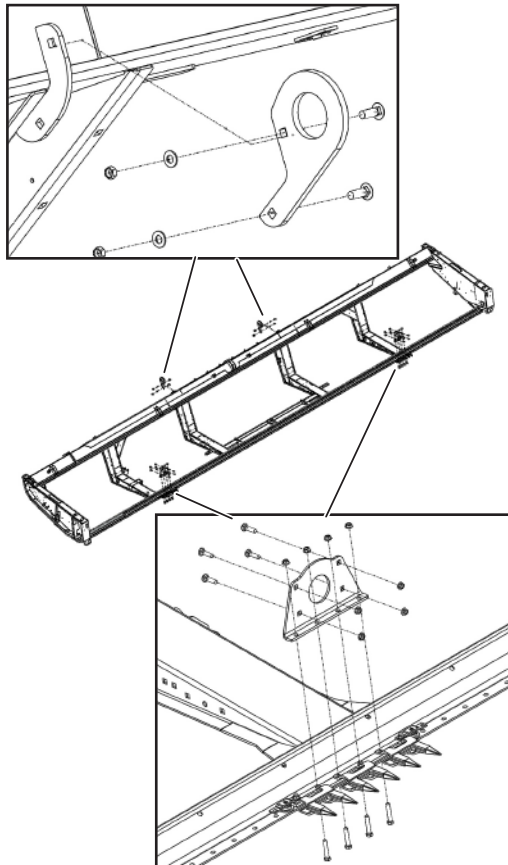


Fig. 152 - Remove Draper Support Bars

When lifting the Table the below list of maximum weights for each model should be used in your Certified Lift Plans.

4036 - 9,000 lbs (4,091 kg)

4040 - 10,020 lbs (4,555 kg)

4045 - 10,775 lbs (4,898 kg)

NOTE:

Refer to dismounting section 20 on page 88 for directions on how to dismount the header from combine when no transport is available.

22 - Troubleshooting

22.1 - Common Problems You May Encounter

Symptom	Common Cause
High Hydraulic Pressures	Cold Oil Sticky Draper Sticky or Tight Knife Draper Too Tight Draper seal too tight Cross auger jammed
Reel Will Not Raise	Low Oil Volume from Combine Defective Cylinders Line Restriction Quick Couplers Not Tight

22.2 - Troubleshooting Checklist

PROBLEM	POSSIBLE CAUSE	SOLUTION
Reel		
Reel will not hold height.	Leaking hose or fitting. Valve in Combine leaking Line lock kit not installed on newer JD combines	Repair or replace. See Combine Manual Contact customer care to inquire if a line lock kit is required for your combine.
Reel will not hold level.	Leaking hose or fitting. Air in system. Faulty master cylinder. Leaking cylinder seal.	Repair or replace. Bleed slave cylinder. Repair or replace. Replace seal
Reel raises/lowers erratically.	Reel cylinders binding. Arms bent or binding. Low hydraulic oil.	Replace cylinder. Repair or replace. See Combine Manual.
Reel will not raise.	Hydraulic couplers do not match. Hydraulic couplers not engaged Faulty Combine hydraulics	Install correct couplers. Re-couple properly See Combine manual
Reel raises slowly	Hydraulic couplers not engaged	Re-couple properly
Damage to center of reel	Reel set to low	Advance setting
Reel hitting at end	Reel not centered	Adjust centering

PROBLEM	POSSIBLE CAUSE	SOLUTION
Reel will not turn/turns erratically	Drive coupler not engaged Seized bearing(s). Faulty drive motor. Reel Tied Down. Hydraulic couplers not engaged. Seized Reel Drive Chain/Sprocket Faulty reel speed sensor/mounting	Ensure coupler is fully seated. Replace bearing(s). Replace motor. Release Reel. Re-couple properly. Check condition. Check and replace if required.
Reel Speed cannot be adjusted.	Faulty flow control.	See combine manual.
Reel Speed will not calibrate - Massey and Challenger ONLY!	No power to sensor. Sensor faulty. Blown combine fuse on Pin 25 - Massey and Challenger ONLY!	Check harnesses and connections. Replace sensor. Run power lead from combine to Y521 Header Harness Connector if HeadSight is installed. Change fuse if no HeadSight installed.
Single Reel - 36ft		
Reel does not raise level.	Air in system.	Bleed slave cylinder.
Right side goes up slowly.	Air in system. Restricted hydraulic hose or fitting.	Bleed slave cylinder. Replace hose or fitting.
Right side will not raise.	Leaking hose, fitting, or cylinder seal.	Repair or replace.
Left side goes up slowly.	Faulty master piston seal.	Replace seals.
Left side will not raise or fully extend.	Faulty master cylinder. Faulty bypass port Faulty master cylinder piston seal.	Replace cylinder. Replace cylinder. Replace seals.
Reel will not raise.	Quick couplers to combine reel drive not connected.	Couple reel drive hoses.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Double Reel - 40ft, 45ft		
Reel does not raise level.	Air in system.	Bleed slave cylinder.
Right side goes up slowly.	Air in system.	Bleed slave cylinder.
Right side cylinder does not fully extend	Air in system.	Bleed slave cylinder.
Lift cylinders out of phase.	Unbalanced hydraulic displacement.	Install spacer inside master cylinder. Check with the cylinder manufacturer.
Ends lift before center.	Center master cylinder "O" ring damaged.	Replace seal.
RH reel out of phase.	Air in system.	Bleed slave cylinder.
Sickle Sections Breaking.	Tines of reel catching knife.	Adjust reel height.
Knife will not run.	Low hydraulic oil. Faulty drive motor Faulty knife drive. Faulty hydraulic pump. Cutter bar jammed. Faulty relief valve	Add oil, Check for leaks Repair or replace motor. Repair or replace. Repair or replace. Clean, lubricate cutter bar. Check for damaged guards or sections Clean or replace
Knife stalls easily.	Type of material being cut Low oil volume, less than 14gpm Low pressure at knife motor. Bent guards or cutter bar. Dull or incorrect type of sections. Faulty knife drive. Seized knife head bearing. Knife head out of alignment. Unloaded system pressure too high. Relief valve stuck open	Reduce ground speed. Check flow, should be 16.5 gpm. Check system pressure. Repair or replace. Replace Check for loose crankshaft. Replace. Adjust alignment on knife Check for faulty draper motor. Remove and clean cartridge.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Knife running too slow or too fast. (Correct Range: 600-700 rpm)	Low oil level Relief valve stuck open. Worn pump or knife motor Wrong pump for combine.	Add oil. Determine cause. Clean or replace cartridge. Repair or replace. Check with manufacturer.
Excessive vibration	Knife running too fast. Loose bearings in drive. Loose knife head bolts.	Check speed s/b (600-700 rpm) Replace bearings. Tighten.
Excessive noise	Loose or damaged sections and/or guards. First guard bent or out of alignment. Knife drive bearing faulty Knife drive loose. Knife drive running too fast. Knife head adjusted too high or too low. Guards don't match.	Replace or tighten. Straighten or replace. Replace. Tighten bolts and check for damage to housing. Slow down to 600-700 rpm. Loosen clamp bolt on knife head bearing and adjust. Check that all guards are the same. 12mm required.
Knife leaves strip of crop standing.	Bent or broken guard. Dull/Broken knife section Plugged guard	Straighten or replace. Replace. Clean.
Connector Bar Breaks	Damaged sections or guards Knife gummed up. Section bolts not tight. Sections on knife back installed on wrong side. Knife Guards are bent. Debris in joint between connector bar and knife back.	Repair or replace. Soak with diesel fuel. Tighten or replace. Remove sections, turn knife over and replace sections. Replace bent guards. Clean the contact point between connector bar and knife back.
Knife Head Breaks	Section bolts not tight Knife gummed up Damaged sections or guards Sickle sections dull Tough crop Knife drive running too fast Guards don't match	Tighten and/or replace bolts Soak with diesel fuel Repair and/or replace Replace sections Reduce ground-speed. Check speed with photo tach (should be 600 - 700 RPM) Check that all guards are the same. 12mm required

PROBLEM	POSSIBLE CAUSE	SOLUTION
Draper		
Draper not tracking straight	Draper splice not cut straight Material building up on rollers Idler Roller is out of alignment. Drive Roller is restricted.	Re-punch connector bar holes in draper Clean rollers Adjust Idler Roller Ensure Drive Roller is free.
Draper slipping	Draper too loose Insufficient traction Draper is snagging	Adjust draper tension Roughen drive roller Check alignment
Draper not turning	Draper is snagged or caught Flow control is shut off Oil flow going over the relief	Check for interference Adjust flow control Check relief setting Remove and clean relief cartridge, check spring
Draper oil pressure in excess of 3000 psi	Material build up on rollers Faulty bearing in roller Faulty draper motor Draper seal too tight	Clean rollers. Replace bearing Check motor temperature Adjust seal holddown to relieve pressure onto draper
Decks		
Decks creep sideways in the header	Restrainer bars not installed or have fallen off	Install or replace bars.
Decks lift out of position	Deck is not locked under rear edge of cutter bar Hold down clips on back panels are loose or not installed	Place deck in proper position Tighten or replace
Decks will not shift	Decks or back panels jammed or binding	Check decks and clean out debris
Grain Heads shattering or breaking off	Reel speed too fast Ground speed too fast Crop too ripe	Reduce reel speed Reduce ground speed Cut early in morning or late at night when humidity is higher
Cut grain falling off cutter bar	Reel too high Table set too high	Lower reel Lower table

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not pick up lodged crop	Table too high Reel too high Reel too far back Ground speed too fast for reel speed Crop lying too flat for guards to pick up	Lower table Lower reel Move reel forward Reduce ground speed or increase reel speed Install Crop Lifters
Material builds up at ends of cutter bar	Pick up reel tines not sweeping crop off cutter bar	Bend the tines on end of reel to reach into the corners
Adapter		
Combine will not hook into top of adapter	Header tilted back/forward too far Cutter bar side tire too low Feeder house adjustment on combine set wrong	Extend/Retract top link Run tire onto a block See Combine Manual
Pump		
Oil running hot	Excessive oil going over relief Faulty pump or motors Draper too tight or not tracking Draper seal too tight	Clean or replace relief cartridge Repair or replace Adjust draper alignment Adjust seal holddown to relieve pressure onto draper
Pump vibrating	Faulty Universal Joint bearings Angle too great in drive line	Repair or replace Align auger & pump drive
Leveling		
Header not level (See section 6 on page 31)	Leveling bolts/nuts out of adjustment	Adjust nuts
Table Angle		
Draper too flat or steep	Tilt cylinder misadjusted	Adjust tilt cylinder
Sub frame		
Too close to the ground with cutter bar down. (See section 6 on page 31)	Leveling adjustment bolts too tight Turnbuckle/ hydraulic tilt adjusted too short	Loosen bolts Lengthen as needed

PROBLEM	POSSIBLE CAUSE	SOLUTION
Header		
Header will not lift	Combine lift capacity Add a hydraulic cylinder to feeder house	Check system pressure See Combine Manual
Oil leaking between pump	Faulty Silicone seal	Re-seal pump
Center Deck		
Center draper not turning	Center draper too loose Faulty drive motor Failed bearing(s) in idler or drive rollers Material buildup on rollers Foreign material under draper	Adjust draper tension Repair or replace Repair or replace Clean rollers Clean under draper
Center draper slipping	Center draper too loose Insufficient traction	Adjust draper tension Roughen drive roller
Center draper not tracking straight	Drive or idler rollers out of alignment Draper splice not cut straight Material buildup on rollers	Adjust draper tracking Re-punch connector bar holes in draper Clean rollers
Feed Auger		
Auger stops when full of material	Auger drive clutch is slipping Improper stripper inserts are used.	Check and set preload on the drive assembly clutch following instructions in section 18.8.1 of the manual. Check and clean clutch disks and pressure plates. Ensure that your feed auger has the proper stripper inserts if they are required for your make and model.
Material (straw) wrapping on auger	Reduce size of feeder house opening Indexing of fingers is incorrect Drum is too far forward	Remove outer fingers Install stripper bars in adapter Adjust finger indexing (timing).
Material will not feed under auger	Indexing of fingers is incorrect Auger drive is slipping Auger is not floating Fingers on drum not extending low enough	Adjust finger indexing (timing). Check drive assembly clutch Auger float seized or binding on side plates Adjust finger indexing (timing).

23 - Appendix

23.1 - AGCO Bezels

The AGCO style of auger adapter provides a series of bezel layouts. These adapters are needed to match your new header to the opening of the feeder house on your combine.



IMPORTANT!

All AGCO Combines must be equipped with Lateral Tilt in order to effectively run the 4000 Series Headers.

Combine	Model	Layout #	Note
Gleaner	R66, R76, S67, S77, S68, S78, S88	Layout 3	
	A66	Layout 2	
	A76, A86	Layout 1	Use 3/16 tab as spacer at top of web
Massey Ferguson	9790, 9895, 9795, 9540, 9560	Layout 1	Use 3/16 tab as spacer at top of web.
	9520, 9695	Layout 2	
Challenger	540C, 560C	Layout 1	

23.1.1 - Configuring the AGCO Bezels

Refer to the following diagram to familiarize yourself with the key components:

- Guide Plate (includes a portion bent back at 90 degrees.)
- The First Bezel.
- The Second Bezel.
- Web (extends backward from the bezels at 90 degrees.)

In addition, there are long and short sections of flat-bar used to reinforce connections.

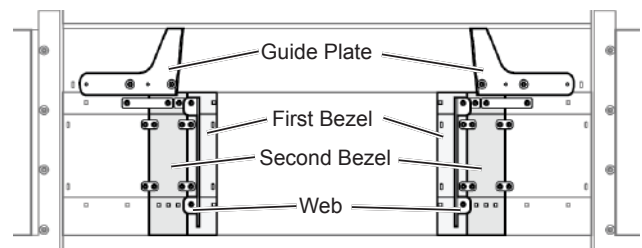


Fig. 153 - AGCO Bezels

Configuration	Components Used	Notes
Layout #1	Web	The web is positioned in the innermost holes, with one short support bar used as a spacer at the top of each web.
Layout #2	Web, Second Bezel	The guide plates are installed on the second bezel on the middle mounting holes.
Layout #3	Web, First Bezel, Second Bezel, Guide Plates	The first bezels and guide plates are installed.

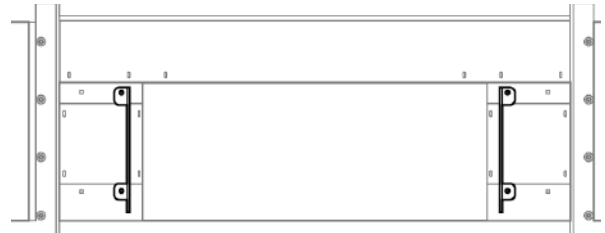


Fig. 155 - AGCO Bezel - Layout 1



Fig. 154 - AGCO Bezel - Layout 2

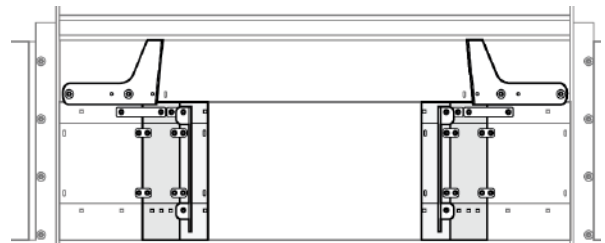


Fig. 156 - AGCO Bezel - Layout 3

23.2 - Hydraulic Fitting Naming Standards

There will be a number of different hydraulic fittings used in this manual. The naming standards can be a little confusing, however this section should clear up any questions you may have.

A standard 2 sided hydraulic fitting is named in the following format:

- ##XX-##XX

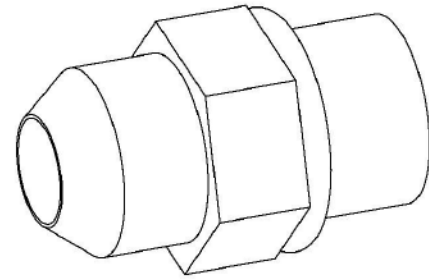
The information on each side of the hyphen represents its respective end of the fitting. The '#' is the size designation. The 'X' denotes the type of end on that side of the fitting, this information is divided into a prefix and a suffix. The prefix indicates either male or female, and the suffix indicates the type of connection.

A 'T' fitting will be named in the following format:

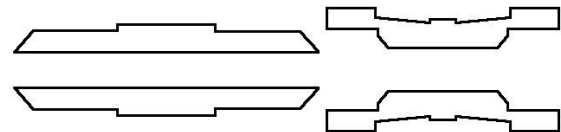
- ##XX-##XX-##XX

The center set of characters describes the middle port on the 'T' fitting.

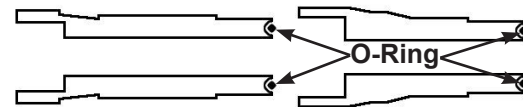
The size designations denotes which fittings go together. For example, a 10FJ fitting will fit with a 10MJ fitting, but not a 12MJ.



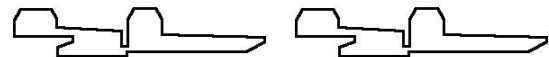
10MJ-10MB



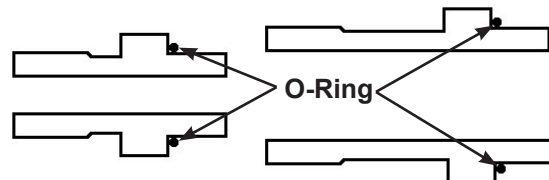
JIC 37° Fitting



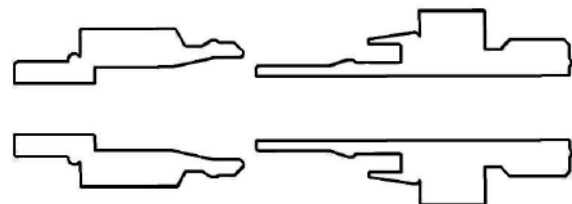
Face Seal Fitting



Pipe Fitting



O-Ring Boss



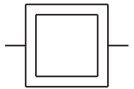
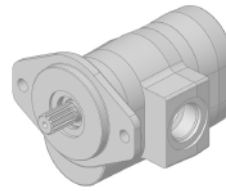
STC Fitting

Hydraulic Fitting Types		
Prefix	Suffix	Description
M or F	J	JIC 37° flared connectors
M or F	F	Face Seal
M or F	P	Pipe Fitting
M or F	B	O-Ring Boss
F only	X	Swivel (no image shown)
M or F	STC	Snap To Connect

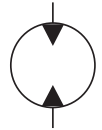
23.3 - Hydraulic System Schematics



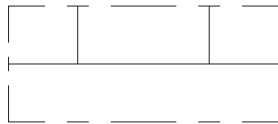
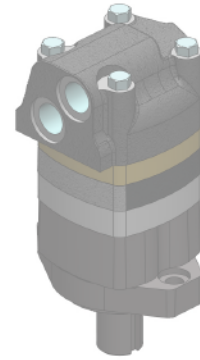
Hydraulic Pump – Uni-directional



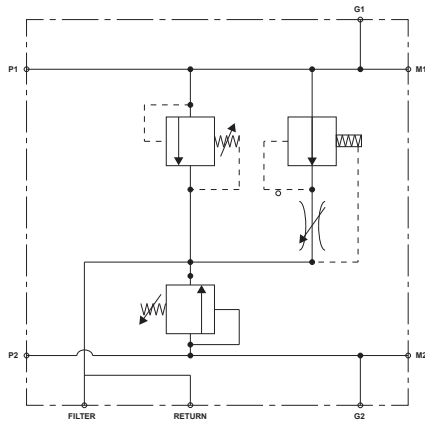
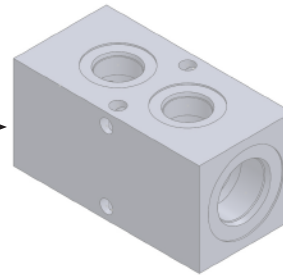
Mechanical Drive – Powered by Power Unit



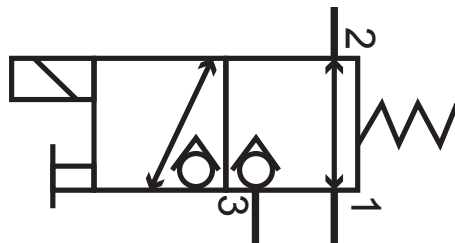
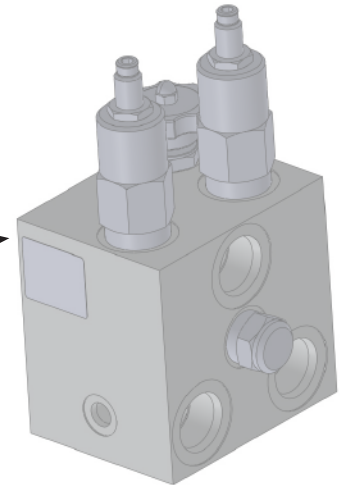
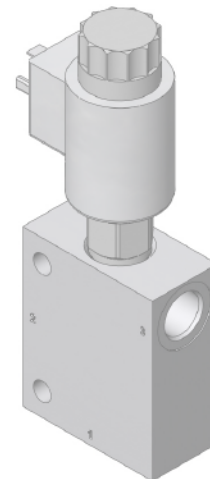
Hydraulic Motor – Fixed Displacement

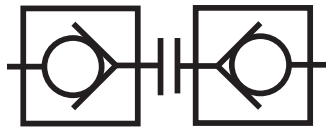


Manifold - 2 Port

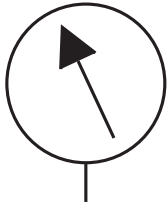
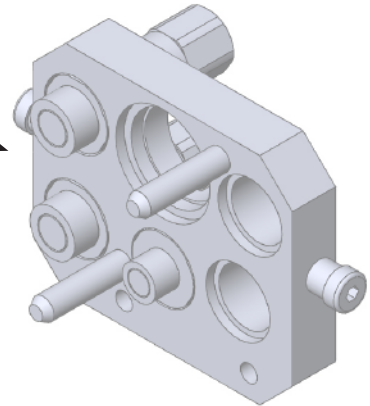


Main Manifold Block - Dual Relief and Single Flow Control

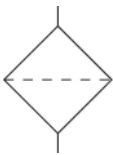
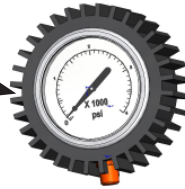

 Directional Control Valve
 - 2 Position
 - 3 Port
 - Spring Return
 - Solenoid & Manual Operated




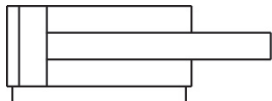
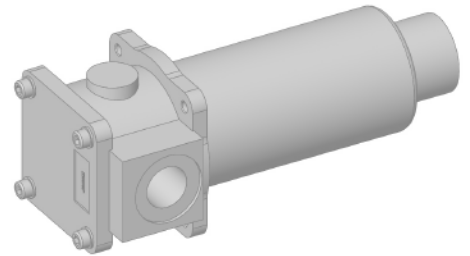
Quick Coupler/Multi-Coupler



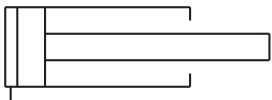
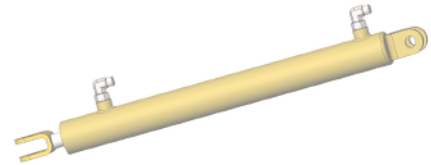
Pressure Gauge



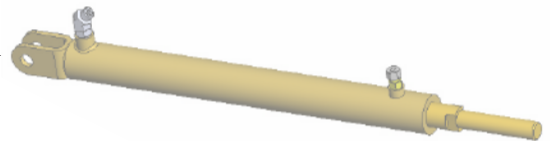
Strainer or Filter



Hydraulic Cylinder
– Double Acting



Hydraulic Cylinder
– Single Acting



Hydraulic Oil Flow – Uni-directional

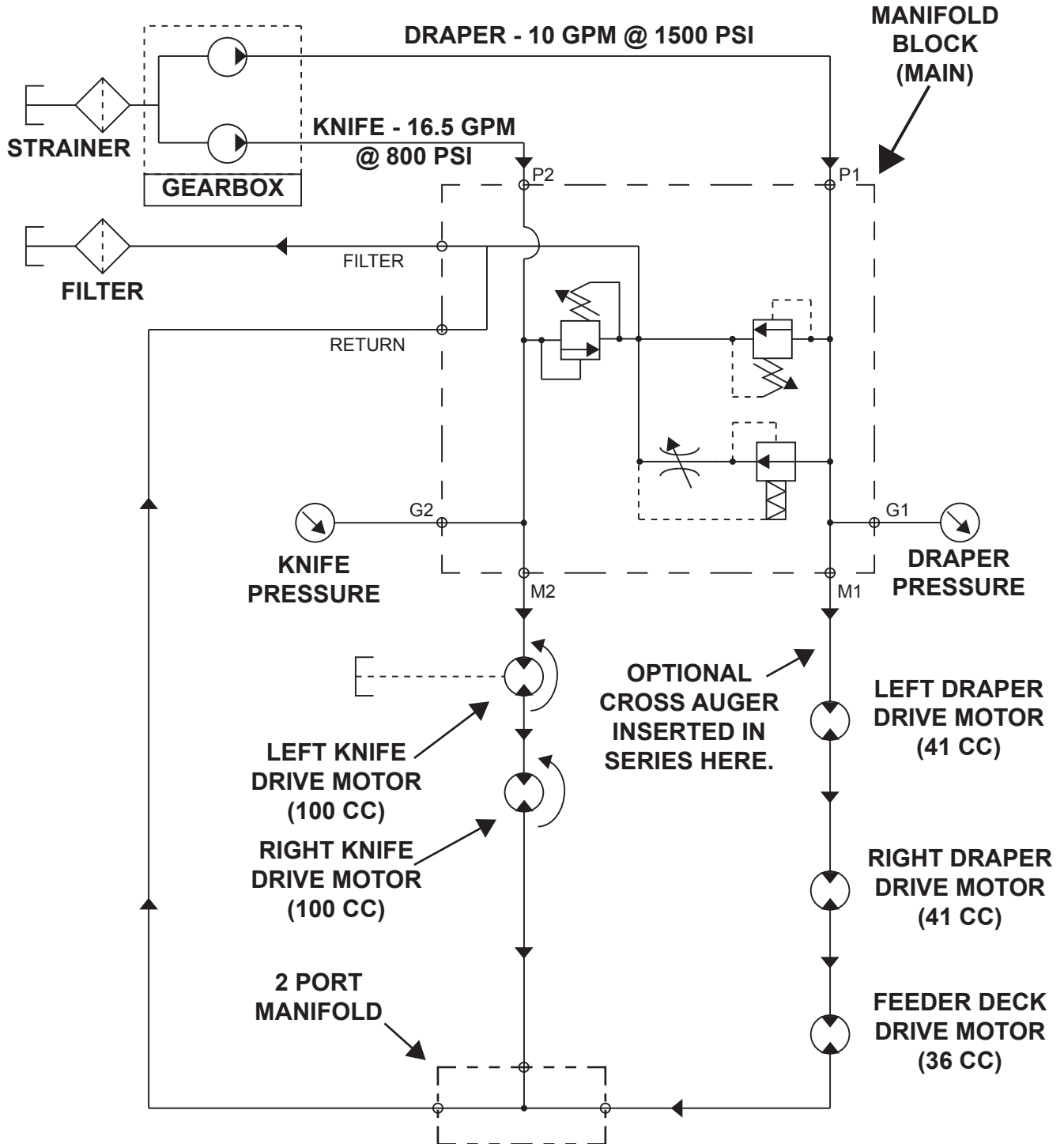


Hydraulic Oil Flow - Bi-directional

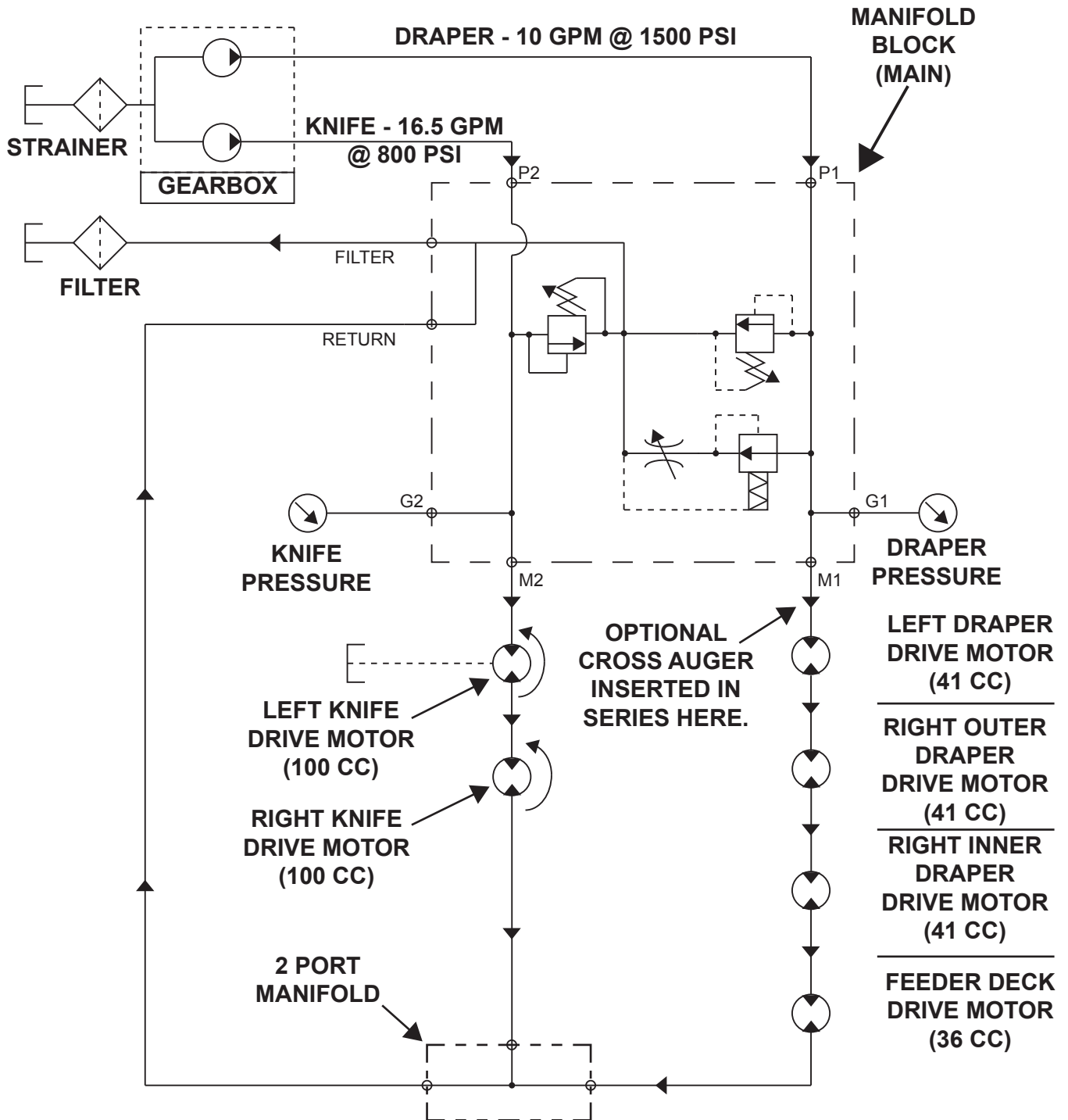


Uni-directional motor rotation

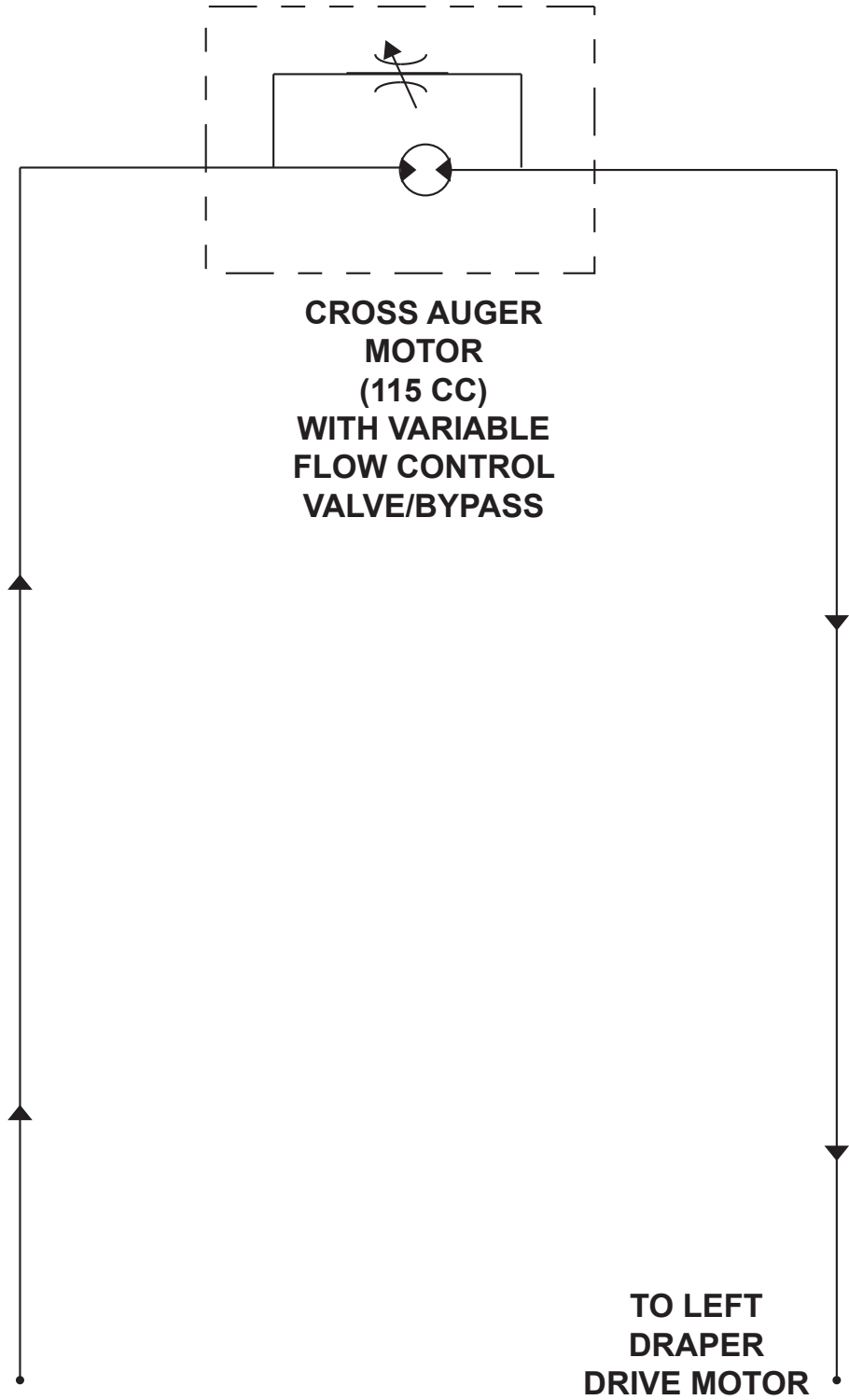
23.3.1 - Draper and Knife Hydraulic Schematic



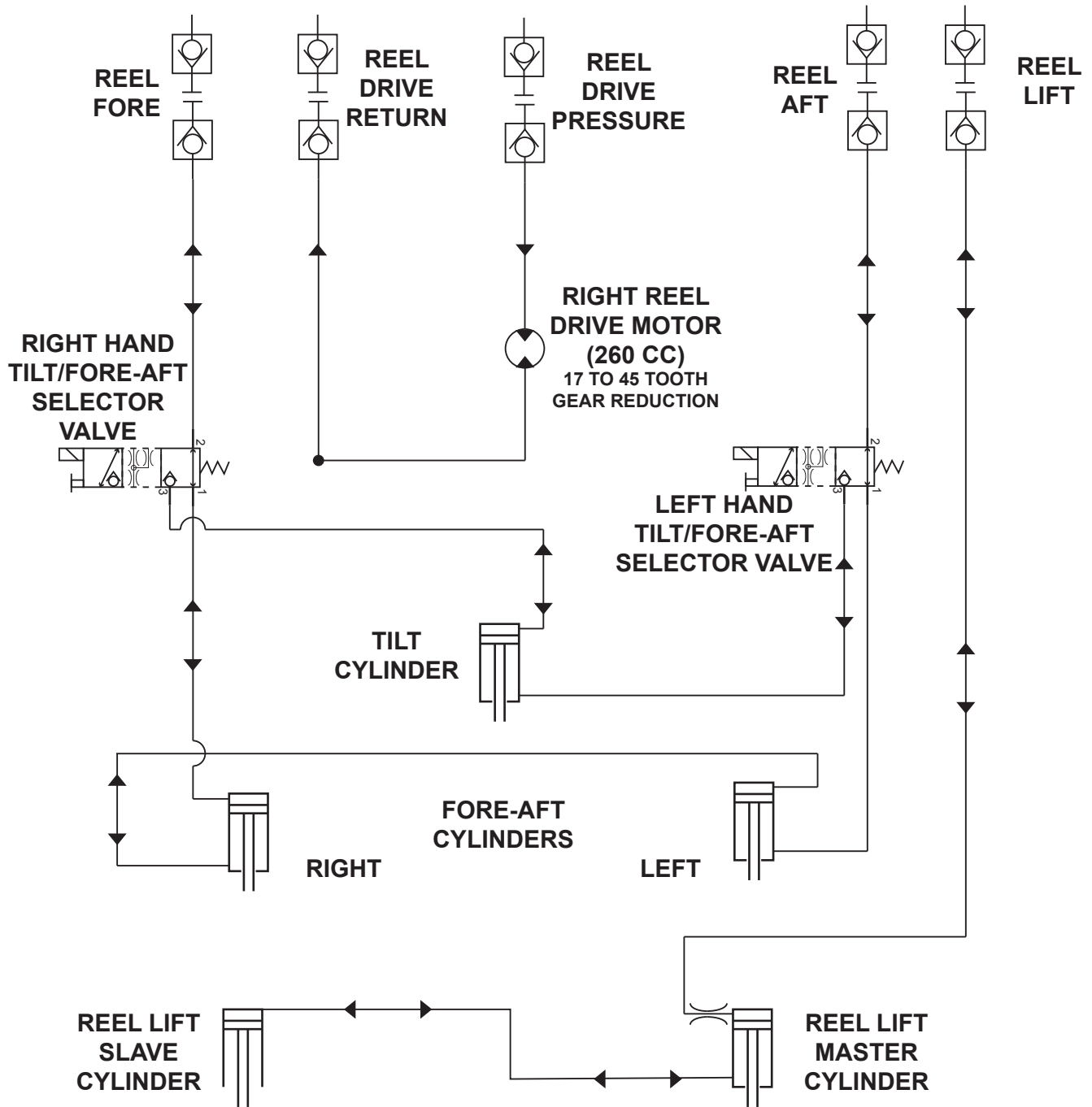
23.3.2 - Manual Swath - Draper and Knife Hydraulic Schematic

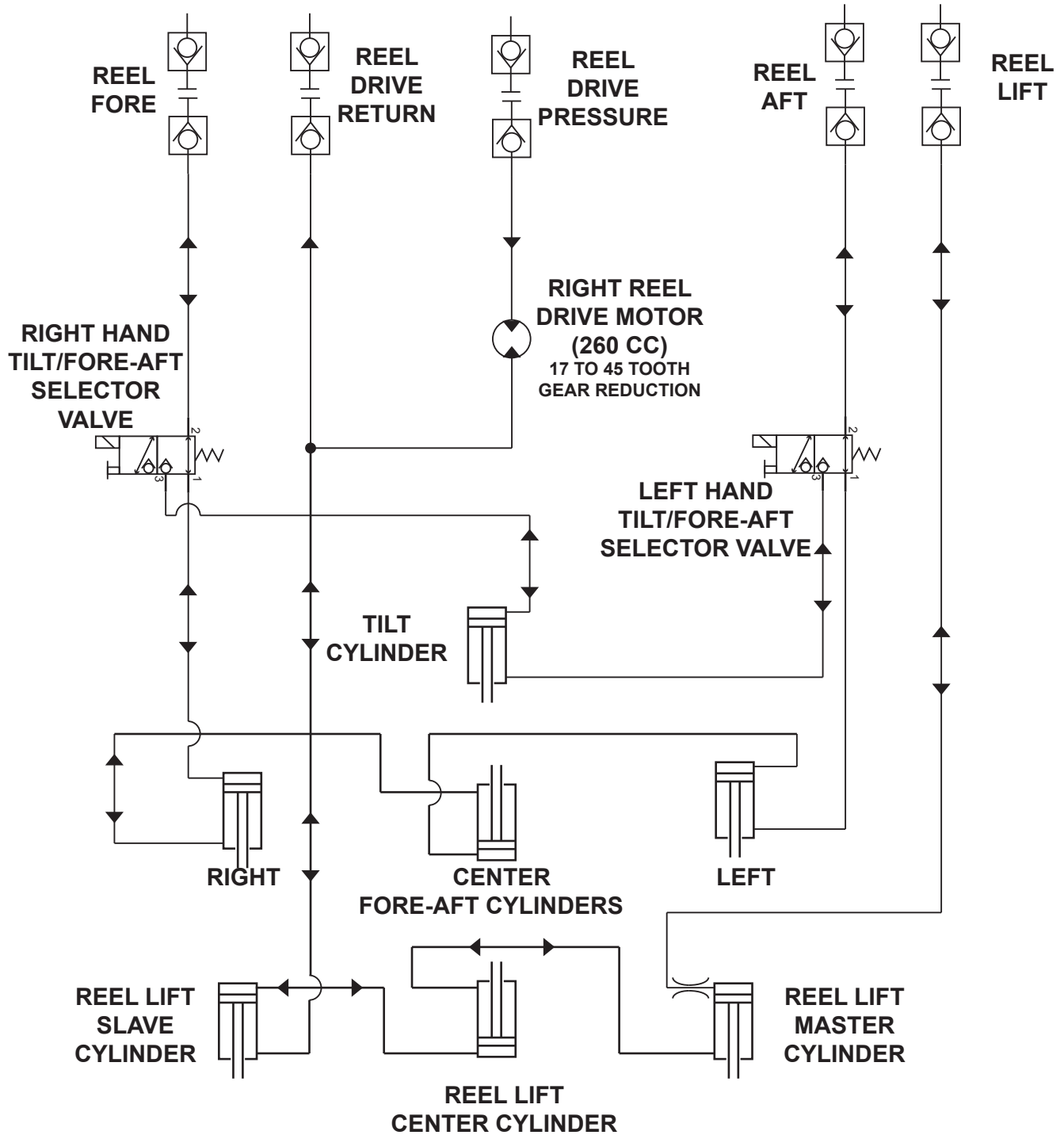


23.3.3 - Cross Auger Option Hydraulic Schematic



23.3.4 - Reel(Solid) Drive, Fore-Aft, Lift, and Header Tilt Hydraulic Schematic



23.3.5 - Reel (Split Drive, Fore-Aft, Lift, and Header Tilt Hydraulic Schematic


23.4 - Specifications

NOTE:

All weights are given in lbs/kg format.

Weight includes: header assembly c/w decks, sub frame, center deck, auger drive, cutting system, poly skid, mechanical trap door, draper seal, hydraulic header tilt, pump mounting, hydraulic pump, hydraulic tank, and attached hydraulic components.

Weights do not include swath options.

* Weights are approximate

Model	4030	4036	4040	4045
Size	30'	36'	40	45'
Weight	4,590/2,086*	5,400/2,681	6,450/2,932	6,700/3,045

Model	4030	4036	4040	4045
Pickup Reel HCC ML – 6 Bat	750/341*	900/409	998/454	1,235/561
Transport Axle/ Dolly Wheel Pack- age	350/160	350/160	350/160	350/160
Gauge Wheel Package	230/105	230/105	230/105	230/105
Adjustable Skid Shoes	90/41	90/41	90/41	90/41
No Transport	20/9	20/9	20/9	20/9
Vertical Shear	50/23	50/23	50/23	50/23
Roto-Shear	52/24	52/24	52/24	52/24
Divider Tip	24/11	24/11	24/11	24/11

Knife Drive - Single	N/A	N/A	N/A	N/A
Knife Drive - Double	Standard	standard	standard	standard

Knife Drive	SCH epicyclic 3 5/16" stroke, hydraulically driven, 1200 - 1400 strokes per minute (2 strokes = 1 RPM)
Cutting System	SCH Easy Cut, spring steel guards and bolted sections.
Draper	42" rubberized polyester, fiberglass reinforced slats, tie bar connectors.
Draper Speed	Adjustable flow control located on the Main Manifold Block.

	AGCO	LEXION/ CLAAS	CNH	JOHN DEERE	VERSATILE
Knife Pump (ci)	1.55	1.37	1.77	1.94	1.94
Draper Pump (ci)	1.04	0.77	1.04	1.16	1.16
Knife Speed (rpm)	630	689	661	623	671
Draper Speed (rpm)	1030	944	947	908	979

Center Deck/Draper	79.75" wide, single draper. Speed dependent from Side Draper (plumbed in series with Lateral Drapers). Center Draper is approximately 10% faster than Lateral Drapers.
Reel	Hydraulically driven using Combine hydraulics (or optional Header hydraulics).
Reel Speed	Adjustable in cab.
Header Flotation	Vertical leaf spring, lift link coil-over spring assist and leaf spring U-joint float system
Cutting Angle	Manually adjustable on all models (optimal -2.0° from knife to ground)
Warning Clearance light kit.	4030, 4036, 4040 and 4045 - center mounted on feeder housing.



NOTE:

These specifications are subject to change without notice or obligation.

23.4.1 - Combine Adapters

Includes: - complete feed auger adapter, latching hardware, drive lines, and hydraulic hose kit to the combine.

 **NOTE:**

The output speed of the feeder house shaft must be set to the recommended header input speed.

Adapter	Combine	Weight lbs/kg	Input Shaft RPM	Primary Drive Shaft	Pump	Reel Speed Sensor	Auger Drum Stripper Finishing Kit	Auger Drum Flighting Extension
New Holland CaseIH	Wide Frame- CR9070, CR9080, CR9090, CR8090, CX8070, CX8080, CX8090, AF7120, AF8120, AF9120, AF7230, AF8230, AF9230, AF7240, AF8240, AF9240	185/84	570	84137	28530 / 83029660	No	87877 (16.5")	None
	Middle Frame - AF5130, AF5140, AF6130, AF6140, AF7130, AF7140, AF5088, AF6088, AF7088	185/84	570	84137			87884 (20")	88398 (Short)
	Narrow Frame - CR9040, CR9060, CR9065, CR6090, CR7090, CR8080	185/84	570	84138			87885 (24")	88397 (Long)
Lexion/ Claas	700, 600 Series	220/100	767	84140	28681 / 83040293	Yes	87877 (16.5")	None
JD	60/70 Series	240/110	520	84139	28531 / 83020807	Yes	87884 (20")	88398 (Short)
	S Series		490					
Agco	Agco Wide - Massey 9790, 9795, 9895, 9540, 9560 Challenger 540C, 560C, Gleaner A76, A86 (All models must have lateral tilt)	325/147	620	84139	28529 / 83031853	3 Wire Sensor	87877 (16.5")	None
	Agco Middle - Massey 9520, 9690, 9695 and Gleaner A66 (All models must have lateral tilt)	340/155	620	84139			87884 (20")	88398 (Short)
	Agco Narrow - Gleaner R66, R76, S67, S77, S68, S78, S88 (All models must have lateral tilt)	360/167	620	84136		2 Wire Sensor	87885 (24")	88397 (Long)
Versatile	RT490	200/91	528	84138	28531 / 83020807	No	87884 (20")	88398 (Short)

23.4.2 - Cross Augers

Header Length	Center Auger Drum (lbs/kg)	Auger Extension x 2 (lbs/kg)	Total (lbs/kg)
30'	98 / 44	70 / 32	168 / 76
36'	98 / 44	102 / 46	200 / 91
40'	98 / 44	124 / 56	222 / 101
45'	98 / 44	150 / 68	248 / 113

These weights only reflect the main components of the cross auger, small parts are not included.

23.5 - Options:

- Pickup Reel - 6 bat, 42" diameter Universal U-II Pickup Reel, plastic fingers.
- Pickup Reel - 6 bat, 44" diameter HCC ML Pickup Reel, plastic fingers.
- Pickup Reel - 6 bat, 44" diameter HCC Flip Over Pickup Reel, plastic fingers.
- Dolly Wheel Transport system.
- No Transport system.
- Tire assemblies P225 x 75R 15 tires.
- Castering Gauge Wheels - compression spring carriers.
- Poly Skid Plate on Cutter Bar.
- Adjustable Skid Shoes.
- Vertical Shear Ready.
- Roto-Shear Ready.
- Floating Crop Divider Tip
- Cross Auger.
- Manual Swath Factory Installed.
 - Manual Deck Shift.
 - Model 4040 & 4045 – delivery to the right hand side of the combine (3rd deck combination).
- Manual Swath Dealer Installed Kits.
 - Manual Deck Shift.
 - Model 4036, 4040 & 4045 – delivery to the right hand side of the combine (3rd deck combination required).
- Crop Lifters for cereals and/or specialty crops.
- Combine Adapter: Available for most models for self-propelled Combines
 - John Deere
 - Case IH
 - Gleaner
 - Massey Ferguson
 - Claas/Lexion
 - New Holland
 - Versatile

23.6 - Pickup Reel Assemblies:

Size (ft)	30	36	40	45
Ull Universal		859/390	1,092/496	1,214/552
HCC Standard		705/320	925/420	1,110/505
HCC Flip-Over		830/378	1,050/475	1,235/561
Honey Bee	988/450	1131/514	1176/535	

23.6.1 - U II Universal

6 Bat, 42" diameter, plastic fingers, includes mounting hardware.

23.6.2 - HCC

6 Bat, 44" diameter, plastic fingers, includes mounting hardware.

6 Bat, 44" diameter, plastic fingers, flip over, includes mounting hardware.

23.6.3 - Honey Bee

6 Bat, 44" diameter, plastic fingers, cam action.

All weights are given in lbs/kg format, and are approximate.

23.7 - Recommended Torque Values (ft-lb)

The tables shown below give correct torque values for various bolts and cap screws. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

Torque Values when using UNC nuts.					
Bolt Size	Grade 5		Grade 8		Wrench Size
	Loctite	No Loctite	Loctite	No Loctite	
1/4	6	8	9	12	7/16
5/16	13	17	18	25	1/2
3/8	23	31	35	44	9/16
7/16	35	49	55	70	5/8
1/2	55	75	80	107	3/4
9/16	80	109	110	154	13/16
5/8	110	150	170	212	15/16
3/4	200	266	280	376	1-1/8
7/8	320	429	460	606	1-3/8
1	480	644	680	909	1-1/2
1-1/8	600	794	960	1287	1-11/16
1-1/4	840	1120	1360	1875	1-7/8
1-3/8	1100	1469	1780	2382	2-1/16
1-1/2	1460	1950	2360	3161	2-1/4

Torque Values when using C Lock Nuts					
Bolt Size	Grade 5		Grade 8		Wrench Size
	Loctite	No Loctite	Loctite	No Loctite	
1/4	7.6	11.1	10	14.7	7/16
5/16	14.1	21.1	15.2	22.3	1/2
3/8	23	37	28	39	9/16
7/16	39	59	44	60	11/16
1/2	53	80	63	88	3/4
9/16	77	120	98	134	7/8
5/8	106	158	127	172	15/16
3/4	190	274	218	295	1 1/8
7/8	n/a	n/a	317	440	1 5/16
1	n/a	n/a	506	651	1 1/2

23.8 - Tightening O-ring Fittings

Inspect O-ring and seat for dirt or obvious defects.

On angle fittings, back the lock nut off until washer bottoms out at top of groove.

Tighten fitting by hand until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.

Position angle fittings by unscrewing no more than one turn.

Tighten straight fittings to torque shown.

Tighten angle fittings to torque showing while holding body of fitting with a wrench.



NOTE:

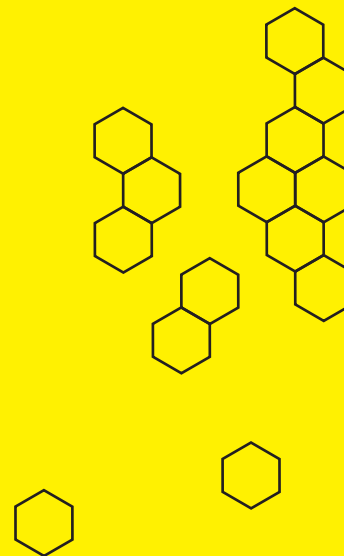
The torque values shown are based on lubricated connections as in reassembly.

Thread Size OD (in.)	Nut Size (in.)	Torque Value		Turns to Tighten (After Finger Tightening)	
		(Nm)	(lb-ft)	Flats	Turns
3/8	1/2	8	6	2	1/3
7/16	9/16	12	9	2	1/3
1/2	5/8	16	12	2	1/3
9/16	11/16	24	18	2	1/3
3/4	7/8	46	34	2	1/3
7/8	1	62	46	1-1/2	1/4
1-1/16	1-1/4	102	75	1	1/6
1-3/16	1-3/8	122	90	1	1/6
1-5/16	1-1/2	142	105	3/4	1/8
1-5/8	1-7/8	190	140	3/4	1/8
1-7/8	2-1/8	217	160	1/2	1/12



Honey Bee
Harvest Faster

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Honey Bee Manufacturing Ltd.

P.O. Box 120
Frontier SK
S0N 0W0

Tel: (306) 296-2297
Fax: (306) 296-2165

www.honeybee.ca
E-mail: info@honeybee.ca