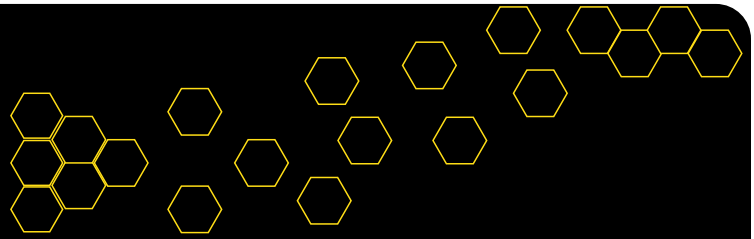




Honey Bee
Manufacturing Ltd.



WS GRAIN BELT SWATHER



John Deere Models A400, and R450



Important Notice

This manual covers **John Deere** models **A400 & R450**
ONLY

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

Without proper adjustment, damage to the swather may occur.

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.



1.0 – Hydraulic Readings

Use this page to record any specific hydraulics readings and/or settings done upon initial dealer inspection. See Installation and Hydraulics sections of this manual for reference.

Pump flow setting (when applicable): _____ GPM
Manifold Block pressure gauge (when checking relief pressure): _____ PSI
Knife Drive speed (at normal working engine RPM): _____ RPM
Draper Flow Control pressure gauge (at normal working engine RPM): _____ PSI
Manifold Block pressure gauge (at normal working engine RPM): _____ PSI

Other Settings: _____



1.1 - Purchase Information

Dealers Name: _____

Address: _____

Phone: () _____

Purchase Date: _____

Model: _____

Serial Number: _____

Delivery Date: _____

Modification Record	
Date	Modification

Improvements:
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.



1.2 - Warranty

Honey Bee Manufacturing Ltd. (Honey Bee) warrants your new Swather 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, for inspection by an authorized company representative. Warranty claims must be made 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 Swather.

This warranty shall not apply to any Swather table which has been altered outside the factory in any way so as in the judgment of Honey Bee 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 Swather and further acknowledges that Honey Bee does not assume any liability resulting from the operation of the Swather in any manner other than described in this manual.



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Operator's Manual and Reference Guide

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2 - Safety

In this manual, the safety conventions used are as follows:

Safety Terms



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, typically for machine components that, for functional purposes, cannot be guarded.



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.



ATTENTION

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



IMPORTANT

Provides instructions to help you avoid unnecessary strain on, or possible damage to the machine.

Shields

Shields are provided to protect you from injury. Make sure they are in place and secured before starting the machine.



NOTE!

Names given here for parts of the swather are those in use at the time of design.



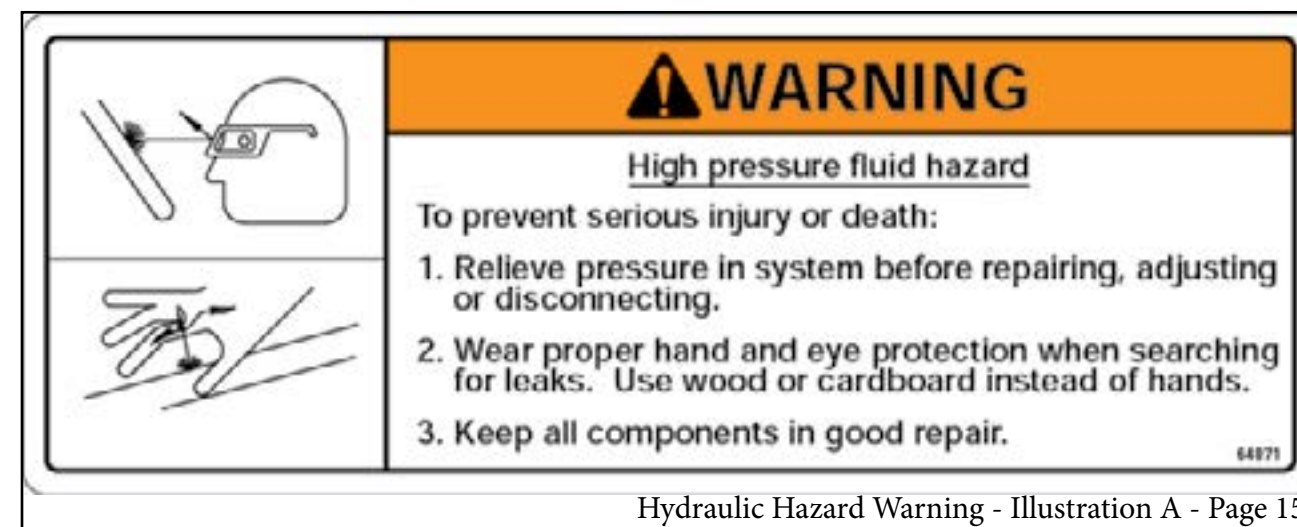
Hydraulic Safety



WARNING

This machine is powered and run by hydraulic oil under high pressure. Caution must be taken around the machine because high pressure hydraulic fluid can penetrate the skin causing serious injury and possibly death. When looking for a hydraulic leak, always hold a piece of cardboard up to the suspected area. Never use your unprotected hands to locate a leak.

Always wear eye protection, gloves and long sleeve clothing when working near hydraulics. Small leaks can be completely invisible.



You can reduce this hazard by relieving the system pressure before disconnecting hydraulic lines. Once finished, tighten all connections to specifications before re-applying pressure.



WARNING

If a hydraulic-related accident occurs, see a doctor immediately. Any hydraulic fluid injected into the body 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.



Operation and Maintenance Requirements

You are responsible for the safe operation and maintenance of your Honey Bee Swather. You must ensure that you and anyone else, who is going to operate, maintain or work around the swather be familiar with the operating and maintenance procedures and related safety information contained in this manual.

Remember you are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

Operating instructions for this swather 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 swather.

General Safety

1. Maintain moving parts, hydraulics and motors clear of chaff and straw to prevent the possibility of fire.
2. Carry a multipurpose fire extinguisher in the power unit and know how to use it. Check the extinguisher regularly and keep it fully charged.
3. Provide a first aid kit in the cab for emergencies and know how to use it.
4. Do not wear loose clothing or jewelry around moving parts.
5. Wear appropriate protective gear. This list includes but is not limited to:
 - A hard hat
 - Protective shoes with slip-resistant soles
 - Protective glasses or goggles
 - Leather gloves
 - Hearing protection
 - Respirator or filter mask
6. Do not allow any one to ride on the swather while it or the windrower is in motion.
7. Make certain that the park brake is engaged, and the power unit is in neutral before starting the engine.
8. Clear the area of bystanders, especially small children before starting the power unit.
9. Do not allow anyone to operate the swather who has not been instructed in how to operate the machine.
10. All operators should familiarize themselves with the SAFETY section in the Power unit Operators Manual.
11. Some pictures or illustrations in this manual may not show protective shields in place. This is done in order to make important components visible. Make certain that all protective shields are secured in place before operating the machine.



Operating Safety – Good Practices

1. STOP the power unit, engage the parking brake, place the power unit in neutral, remove the key, and wait until all moving parts stop before leaving the cab.
2. Either lower both the table and the reel, or raise the swather to its full height and set the platform lock before servicing the swather. If working under reel, set the reel cylinder locks. A loss of hydraulic pressure could cause the swather and reel to lower unexpectedly.
3. NEVER operate machinery while tired, sick or otherwise impaired.
4. Do not operate the swather in crowded or confined areas.



Do not stand between the power unit and the swather while raising or lowering the swather.

Maintenance Safety

1. Before undertaking any maintenance, engage the park brake, either lower the reel and swather, or raise and lock the swather using the platform lock and shut off the engine of the power unit. Make sure there is no pressure being supplied to the hydraulic lines.
2. Hydraulic leaks can penetrate the skin causing serious injuries. Small leaks can be invisible and are the most dangerous. Use some kind of object, such as cardboard, to find the leak -- DO NOT USE YOUR HAND.
3. Ensure that all the pressure is released from the hydraulic lines before starting a repair. Replace or repair damaged hoses immediately.
4. Care should be taken when maintaining the knife. Sickle sections are very sharp and can easily cause severe injury. Use heavy leather or canvas gloves when working with the knife. Always ensure everyone is well clear before moving the knife, manually or under power.



Transport Safety

1. Transport the swather with the SMV (Slow Moving Vehicle) sign displayed on the rear of the swather and use your hazard lights if the law permits. Check local road laws before transporting.
2. When transporting the swather on roads, always be aware of the width of the swather.
3. For long - distance transporting completely install the full transport assembly. (see dismount section).
4. Do not transport the machine at night, at dawn, or at dusk.
5. Ensure hitch is firmly attached and secured with hitch pins before moving.
6. Attach the hitch safety chain before moving.
7. Do not exceed 40 kph (25 mph) during transport.
8. Ensure you display the Slow Moving Vehicle sign during transport on roadways.

Before Transport Checklist

1. Do a complete walk-around and check to be sure there are no loose parts or components.
2. Check:
 - All reel mounting, reel drive and adapter assembly bolts to be sure no bolts/nuts are loose.
 - Wheel bolts to make sure they are tight.
 - Transport tire pressure. Recommended pressure is 65 psi (449 kPa)
 - Spindle and hitch lock pins to make sure they are in place and securely fastened.
3. Inspect all hoses. Ensure they are secured so they will not pinch or drag during transport.
4. Ensure hitch tongue and safety chain are securely fastened securely to the swather and to the transporting vehicle.
5. Make sure that all transport lights are properly connected and in their transport position.



During Transport Checks

1. Stop after the first 5 to 10 kilometers (2 to 6 miles) and check to make sure the wheel bolts are tight and the wheel hubs are not hot. Make periodic checks every 50 to 60 km (30 -40 miles) if towing the swather long distances.
2. Check the hitch bolt and safety chain periodically to make sure they are secure.

In-Field Checks

The Installation and Operation sections of your operator's manual cover the adjustments which may be required on your swather. Read these sections carefully before using your machine. Make the necessary adjustments before operating your swather, and check these adjustments periodically as required.

Storage

Store the swather on firm ground away from areas of human activity. If the storage location exposes the swather to road salt during the winter months, thoroughly wash the swather in spring time. It is recommended to rotate the drapers so that the seam of the join is located underneath the table. This will improve drainage, thus reducing the possibility of ice buildup damaging the draper material.

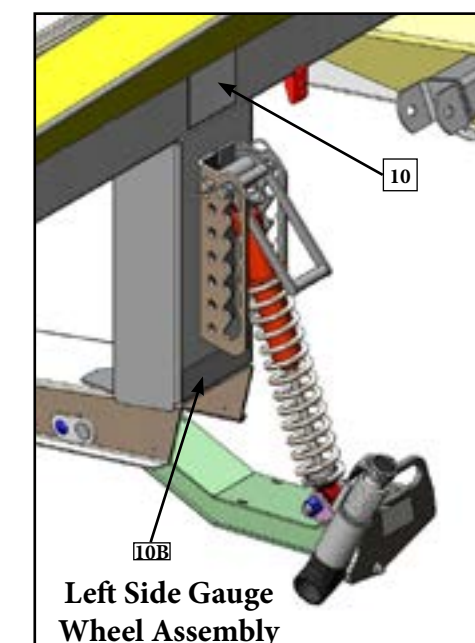
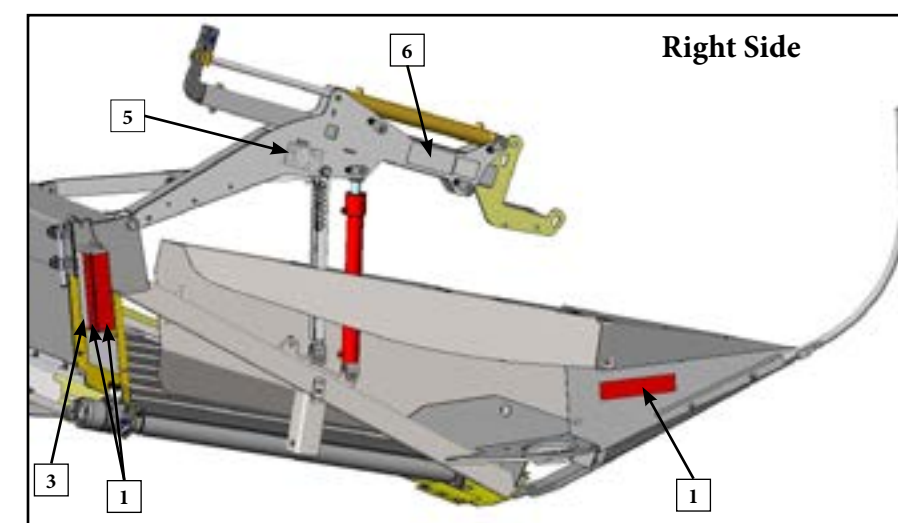
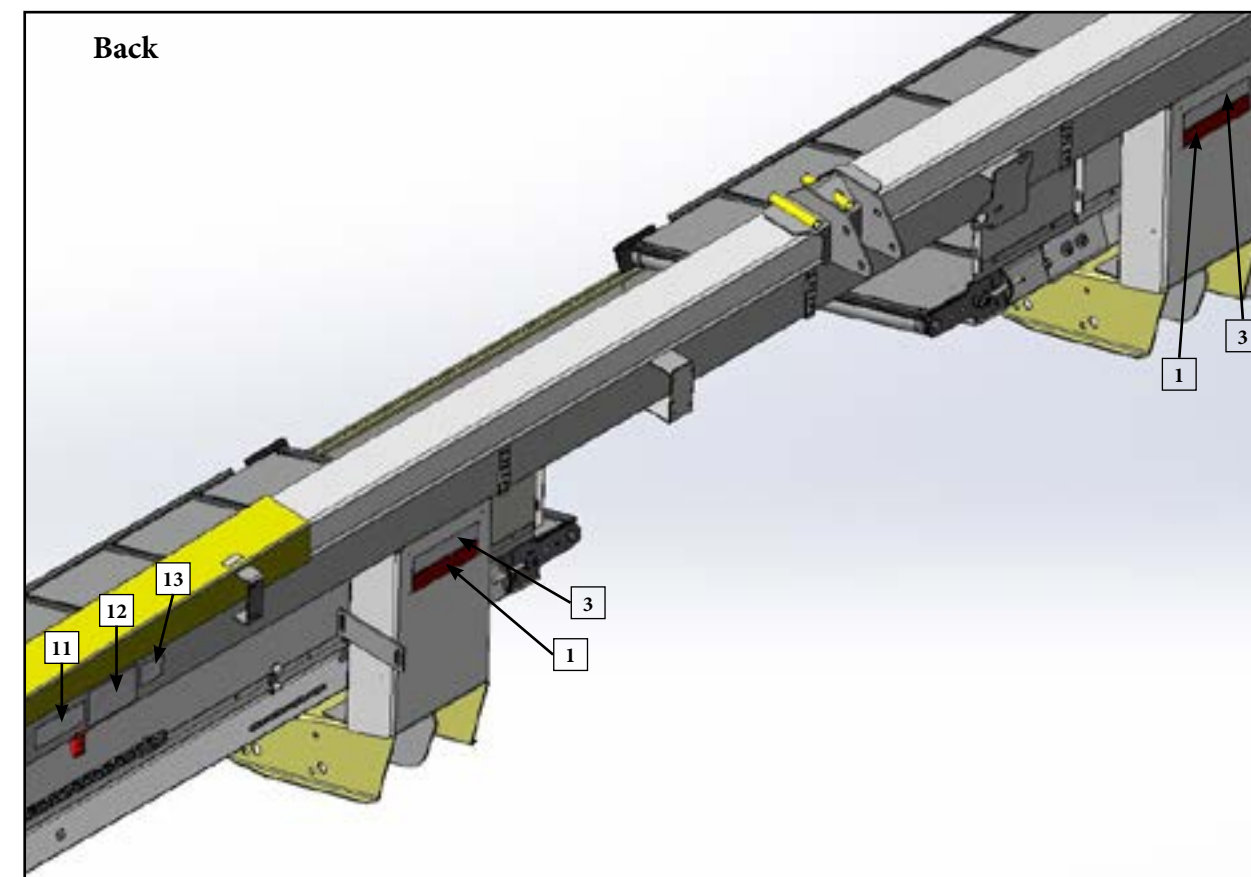
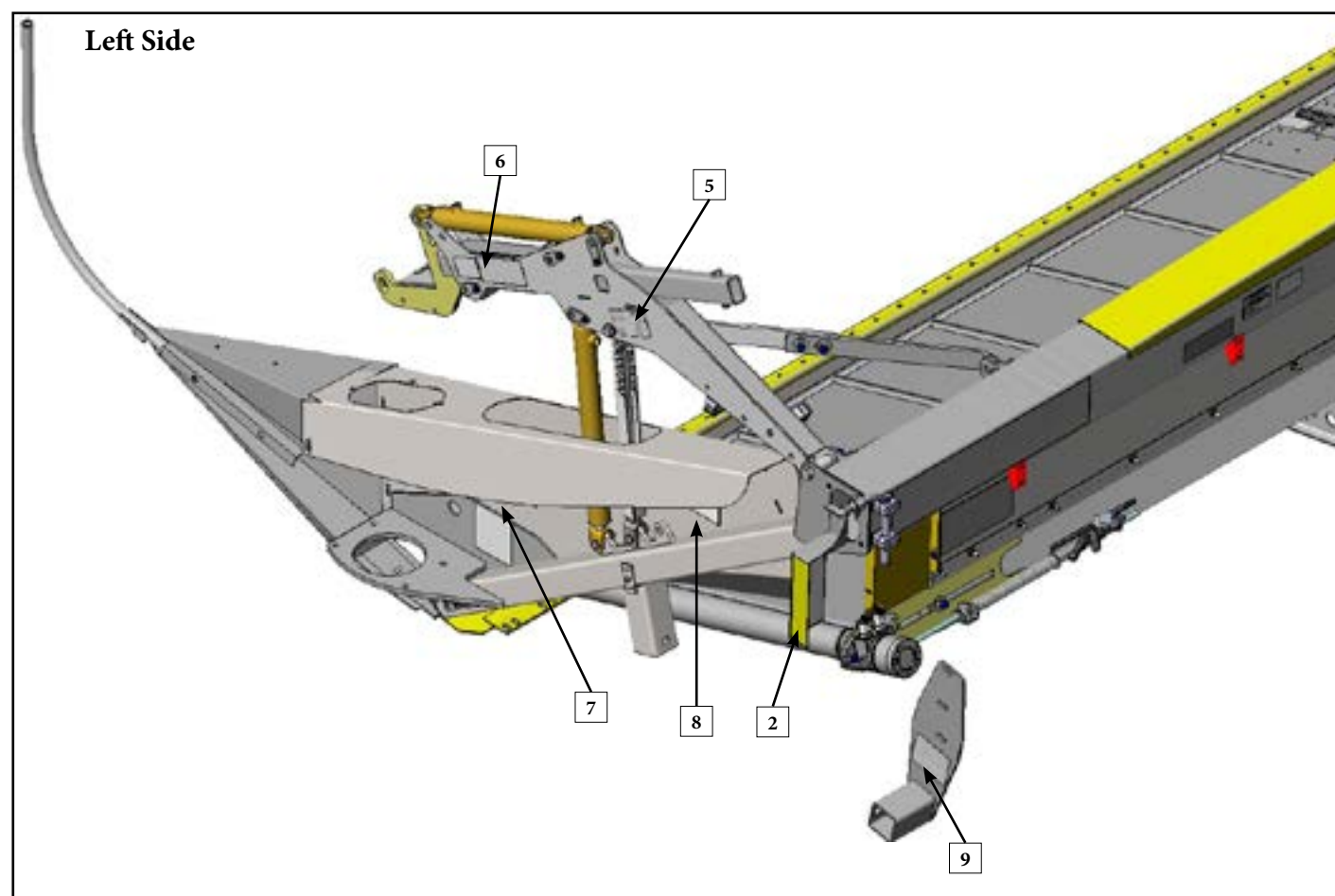


Safety Decal Locations

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. If they are not, we suggest you obtain replacements from your Honey Bee dealer.

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. The following illustration indicates the location of all labels on your swather. Match the number indicated in this diagram to the numbered illustrations provided.





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Safety-Related
Labels



Labels shown are not the actual size.

- Vehicle Marking Reflectors:
(not shown on illustration)
1. Red (2x9) - 7 Locations
 2. Yellow (2x9) - 3 Locations
 3. Red-Orange (2x9) - 6 Locations

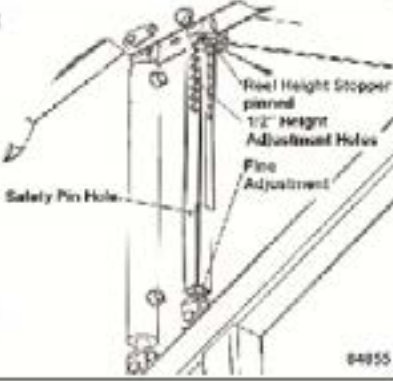
**WARNING**

Install cylinder locks before working on or under raised reels.

Decal 4 - Illustration A - Page 22.

Reel Height Adjustment

- Position Reel Stopper to desired 1/2" Height Adjustment Hole.
- Fine tune height with Adjustment nut.



Safety Lock

- Engage Cylinder Lock by installing Reel Height Stopper pin in Safety Pin Hole.

Decal 5 - Illustration B - Page 22.




DANGER

Rotating part hazard

To prevent serious injury or death from rotating parts:
Keep hands, feet, hair and clothing away from moving part.

Decal 6 - Illustration C - Page 22.



DANGER

Knife sections are sharp

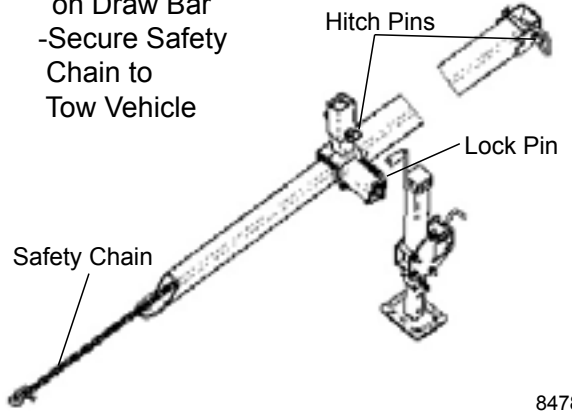
1. Wear heavy canvas or leather gloves when working with knife.
2. Be sure no one is near the cutter bar when removing or rotating knife.

Decal 7 - Illustration D - Page 22.

WARNING

Before Transporting:

- Secure Hitch Pins and Lock Pin on Draw Bar
- Secure Safety Chain to Tow Vehicle



Decal 8 - Illustration E - Page 22.

WARNING

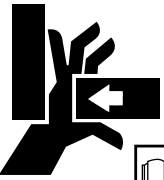
- Properly prepare machine for transport / roading.
- 20 mph [32 kph] - MAX. road speed.
- Towing unit must be equipped with compatible electrical connections to operate lights
- Towing unit must weigh at least 0.67 x weight of towed machine.
- Use caution when making turns to avoid loss of control.

Failure to comply could result in death or serious injury.

Decal 9 - Illustration F - Page 22.

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WARNING

PINCH AREA

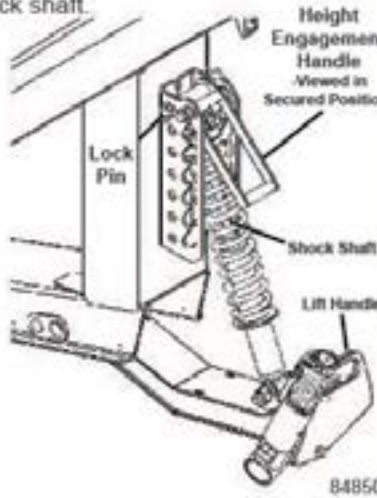
Keep Away!

Failure to comply could result in death or serious injury.

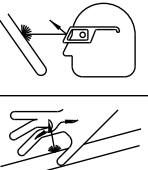
Decal Location 10 - Illustration A - Page 23.

WARNING

- DO NOT adjust so that shock runs with less than 3" of exposed shock shaft.
- WARNING - Have full control of both handles when Height Engagement Handle is not secured!



Decal Location 10B - Illustration B - Page 23



WARNING

High pressure fluid hazard

To prevent serious injury or death:


1. Relieve pressure in system before repairing, adjusting or disconnecting.
2. Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
3. Keep all components in good repair.

Decal 11 - Illustration C - Page 23.

CAUTION

1. Read operators manual before using machine.
2. Stop power unit, place all controls in neutral, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging.
3. Close and secure all guards before starting.
4. Keep hands, feet, hair, and clothing away from moving parts.
5. Securely attach hitch tube and safety chain before transporting.
6. Do not allow riders.
7. Install header housing and/or cylinder locks before transporting or working under the header.
8. Keep all hydraulic components in good condition.
9. Travel only at recommended speeds.
10. Locate SMV sign on rear of header before transporting.
11. Add clearance light bar or use pilot vehicle when transporting on the highway.
12. Train all operators in the safe and correct operation of the header.
13. Review safety instructions before each operating season.

Decal 12 - Illustration D - Page 23.

**WARNING**

BEFORE SERVICING

Engage park brake on the power unit, shut engine down and wait for all moving parts to stop.

Decal 13 - Illustration E - Page 23.



3 - Installation Instructions

This information is designed for first-time installation, but will be valuable every time you are re-mounting the swather to the windrower. It is suggested that you follow the instructions in the order that they are given to avoid difficulties. Use the check lists at the end of this section to ensure that the swather is mounted properly and ready for the field.

Mounting and Dismounting Terminology

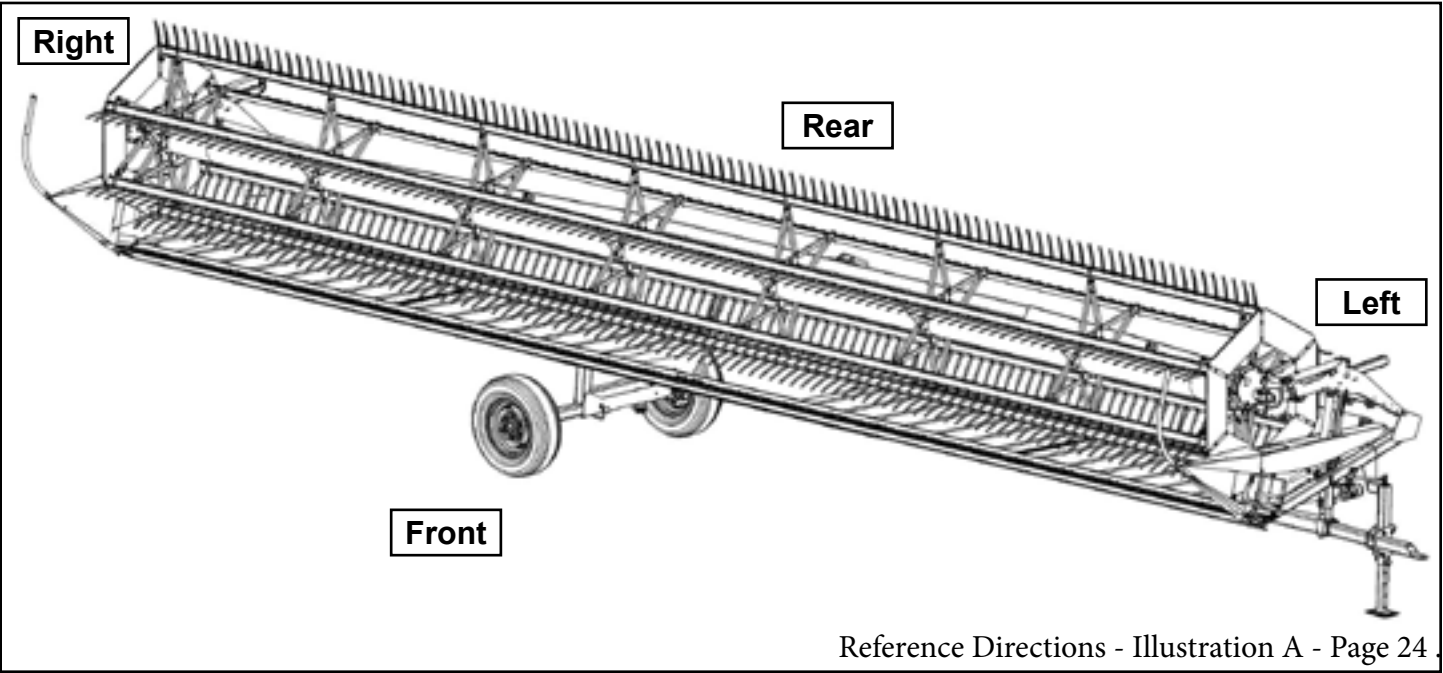
- Power Unit:

Front
Back or Rear
Right and Left

Lift arm end of the windrower
Engine end of the windrower
As seen when sitting in the driver's seat facing the swather.
- Swather Table:

Front
Back or Inside
Right and Left

Cutter bar side
Lift arm mount side
As seen when sitting in the driver's seat facing the swather when it is mounted on the windrower.



Preliminary Leveling



Please study the information listed below, prior to starting any work on either the windrower or the table to determine whether the windrower lift-arm cylinders require changes. If changes are required, completing them at this point will result in savings of time in equipment setup.

If your table setup requires that the lift arm float cylinders be swapped, proceed to Leveling - Option 3 - Switch the Lift Arm Cylinders (Located in the Leveling Chapter in this manual). After completing the cylinder switch, return, and proceed from this point in the manual. If you determine that your table does not require swapping the lift arm float cylinders, proceed from this point.

JD Windrower Float Cylinder Recommendation with Honey Bee

Single Knife / Double Knife - Single Swath

	No Hitch	Hitch	Float Pressure*
18'	Swap Cylinders	No Change	1200 psi
21'	Swap Cylinders	No Change	1250 psi
25'	Swap Cylinders	No Change	1500 psi
30'	Swap Cylinders	No Change	1700 psi
36'	Swap Cylinders	No Change	1900 psi

Single Knife / Double Knife - Double Swath

	No Hitch	Hitch	Float Pressure*
18'	N/A	N/A	N/A
21'	Swap Cylinders	No Change	1250 psi
25'	Swap Cylinders	No Change	1500 psi
30'	Swap Cylinders	No Change	1700 psi
36'	Swap Cylinders	No Change	1900 psi

* Approximate Pressure at cutting height.



For 36' Double knife with hitch, floatation may be improved by replacing the 2 3/4" cylinder with another 3" cylinder.



"Honey Bee Ready" Windrower Identification

It is important to identify which model of windrower you have.
The Honey Bee draper table requires quick-couplers on the ends of the power unit platform drive and tilt cylinder hoses for hydraulic hookup.

John Deere power units to be used only with a Honey Bee draper table can be ordered from John Deere with a custom code (code 6500 for A400 and R450) that provides a power unit less the JD platform drive motor, JD tilt cylinder, some forming shields, and includes quick-couplers on the ends of the platform drive and tilt cylinder hoses. This is referred to as a Honey Bee Ready windrower.

The Honey Bee draper table has it's own drive motor and tilt adjustment. Operators wanting to use both a Honey Bee draper table and a John Deere hay platform with the same power unit should not order the custom order code, as they will not receive the proper equipment with their power unit to run their John Deere hay platform.

For windrowers that are not Honey Bee Ready, a Quick Coupler Finishing Kit containing quick-couplers for the platform drive and tilt cylinder hoses is required from Honey Bee.
This kit also includes quick-couplers for the JD platform drive motor and JD tilt cylinder so they can be easily attached or removed, depending on which table is to be used with the power unit.

Installation of this Quick Coupler Finishing Kit is shown on the following pages.



Power Unit Preparation - Hydraulic Modifications



Remove any attachments that would interfere with the swather from the windrower as outlined in your John Deere Operator's manual.

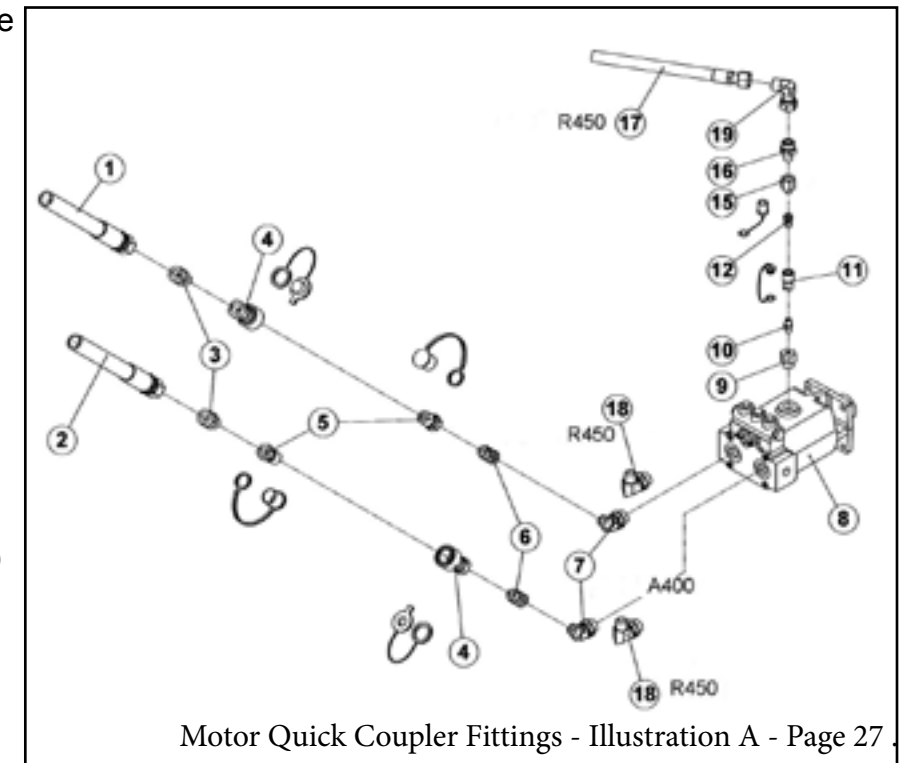


Mark the hoses before removing them from the motor, so you can identify them correctly for reassembly.

Installing Quick Couplers

Install quick couplers and fittings of the sizes shown, as indicated below:

1. Forward Pressure Hose
2. Reverse Pressure Hose
3. 16MF-12MB Nipple
4. 3/4 Quick Coupler Female ORB
5. 3/4 Quick Coupler Male ORB
6. 12MB-12FFX Adapter SW
7. 12MF-16MB 45°
8. JD Motor
9. 6MF-12MB Nipple
10. 6MB-6FFX Adapter SW
11. 1/4 Quick Coupler Female ORB
12. 1/4 Quick Coupler Male ORB
13. 6MB-8MF (6MB-8MJ alternate)
14. 4895 & 4995 Return Line
15. 6MB-10MF Nipple
16. 12MF-10FFX Adapter SW
17. A400 & R450 Return Line
18. 12MF-16MB 90° Elbow
19. 12FFX-12MF 90° Elbow



Motor Quick Coupler Fittings - Illustration A - Page 27



Use thread sealant only on fittings with pipe thread. Do not use thread sealant on fittings that have an "O" ring, face seal or JIC swivel.
Refer to the "Appendix A - Hydraulic Fitting Naming Standards" on page 121 for further information on different types of hydraulic fittings.



Storing the John Deere Hydraulic Motor

The John Deere hydraulic motor is not used with the Honey Bee swather. If you own a JD hay platform, the motor, with the newly installed quick couplers, can be stored on the platform. Otherwise store the motor in a clean, safe and convenient location for future use.

1. Remove the case drain hose from the motor.
2. Install the 12MF-10FFX SW adapter, 12FFX-12MF-90° elbow and the 6MB-10MF nipple onto the case drain hose. To this fitting install the 1/4" male ORB quick coupler and dust cap.
3. If the motor has the 8MF-12MB (8MJ-12MB), or the 12MF-12MB long elbow adapter, remove it from motor and install the 6MF-12MB nipple (#9 in the parts list on the previous page) into the motor. Install a 6MB-6FFX SW adapter onto the nipple, and install the 1/4" female ORB quick coupler and dust cap.
4. From the Pressure Hose ports of the motor remove the 16MF-16MB-45° elbows from the motor, and install 12MF-16MB-45° elbows in their place if you own a A400 power unit. If you own a R450 power unit, install the 12MF-16MB 90° elbows in place of the 16MF-16MB- 90° elbows.
5. Then install the 12MB-12FFX swivel adapters, and 3/4" ORB quick couplers (with dust covers); ensuring you put the male coupler on the forward pressure side and female coupler on the return.
6. Thread a 16MF-12MB nipple, and 3/4" ORB male quick coupler (with dust cover) to the reverse pressure hose.
7. Thread a 16MF-12MB nipple, and 3/4" ORB female quick coupler (with dust cover) to the forward pressure hose.



Refer to "Appendix A - Hydraulic Fitting Naming Standards" on page 121 for further information on identifying different types of hydraulic fittings. For R450 windrowers that are not Honey Bee ready, the hose from the left hand side 'B' port of the windrower pump (same side as pump lever arm) should get the 3/4" female quick coupler. Check the operation of the JD hay platform (the male and female quick couplers on the hay platform drive motor may need to be swapped.)



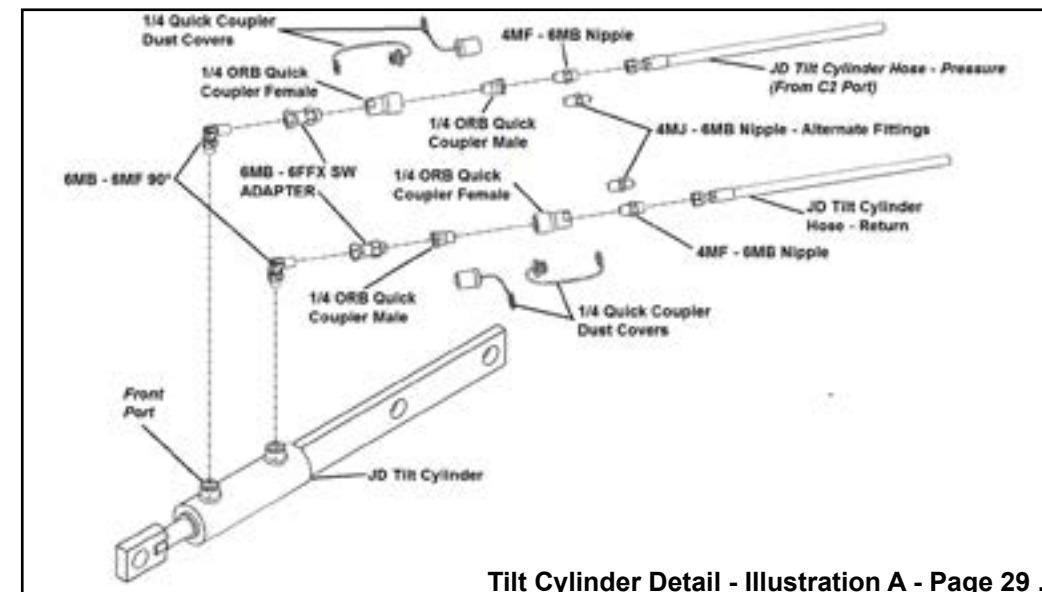
Install Tilt Cylinder Quick Couplers

The John Deere tilt cylinder is not used with the Honey Bee swather. Honey Bee supplies a different tilt cylinder for use with our equipment. Store the JD tilt cylinder in a clean, safe place.



Mark the hoses before removing them from the cylinder, so you can identify them correctly for reassembly.

1. On the tilt pressure hose, install a 1/4" male quick coupler and dust cap install a 4MF - 6MB nipple.
2. On the return side, install a 1/4" female quick coupler and dust plug install a 4MF-6MB nipple.
3. Install a 6MB-6MF 90° elbow to the rod end of the cylinder, and from the elbow, a 6MB-6FFX SW adapter then a 1/4" quick coupler and dust plug. Use a female coupler for the pressure hose, and a male for the return hose connections.

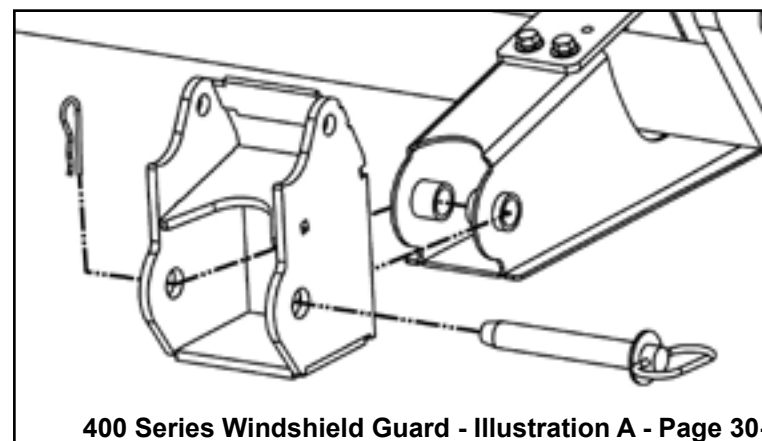


The reel lift is controlled by the platform tilt circuit on the power unit. The hose connected to the Front port of the tilt cylinder will be the reel lift pressure hose. This hose from the power unit must have a male quick coupler and be connected to the 'C2' port on the power unit manifold block. If the reel lift/tilt does not work, check that the hoses are connected properly, and the couplers are fully engaged.



Install the Windshield Guard

Install the guard by inserting the hitch pin in the side of the windshield guard and through the power unit top link mount as shown to the right.

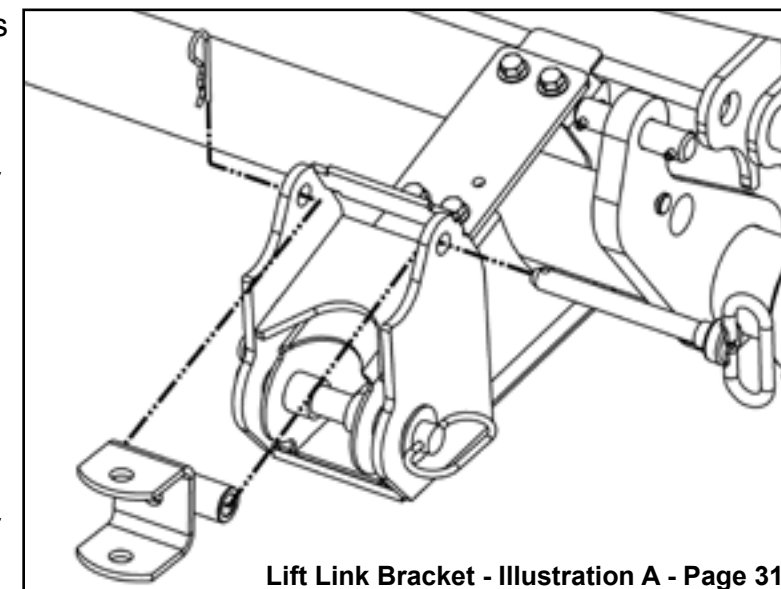


400 Series Windshield Guard - Illustration A - Page 30-



Install the Hydraulic Tilt

1. Attach the cylinder pivot as shown to the right, using the items and fasteners shown in Illustration 3-15 on page 40.
2. Attach the 2 x 8" Cylinder by inserting the bushing into the end of the cylinder. Insert this end of the cylinder into the cylinder pivot and secure with the bolt, nut and lock-washer.
3. Remove the small green shield at the wiring bracket location, exposing the threaded inserts beneath it.
4. Refer to Wiring Bracket - Detail, below. Install the bracket mount to the power unit using the hardware shown. Connect the quick coupler valve under the bracket using the 5/16 u-bolt, 1/4 quick coupler dust cap, 5/16 and 3/8 fender washer, and c/lock nuts.
5. Install the valve assembly to the mount using the hardware supplied, ensuring proper orientation.



Lift Link Bracket - Illustration A - Page 31-

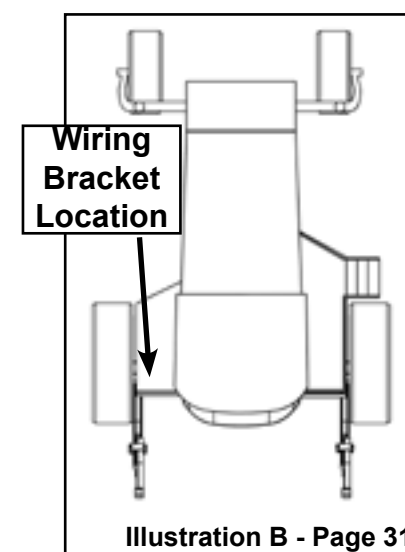
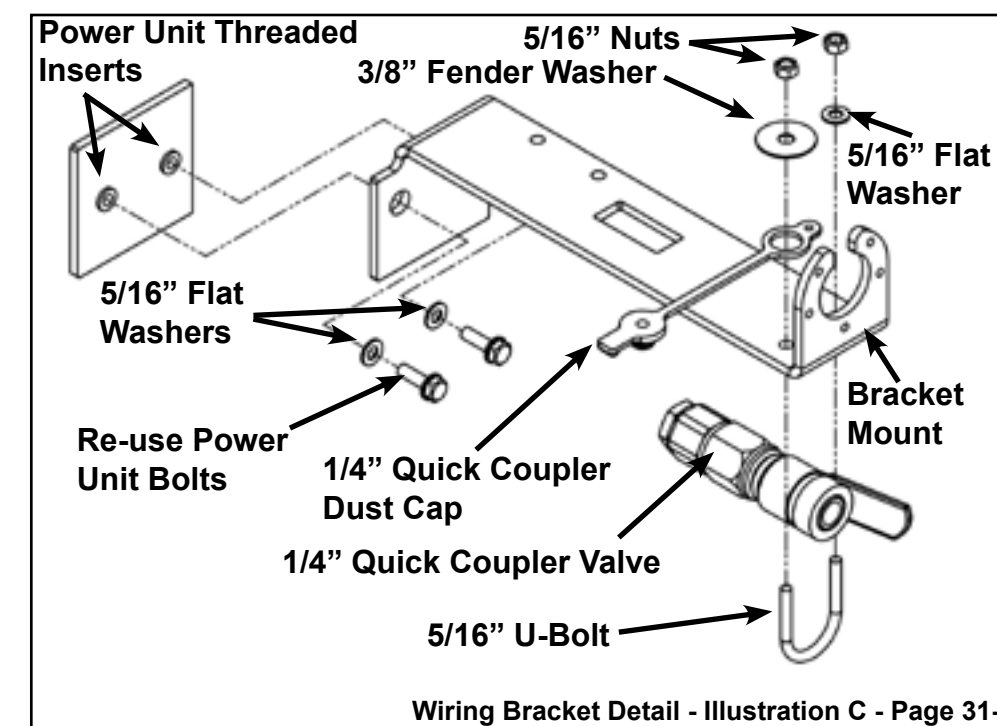
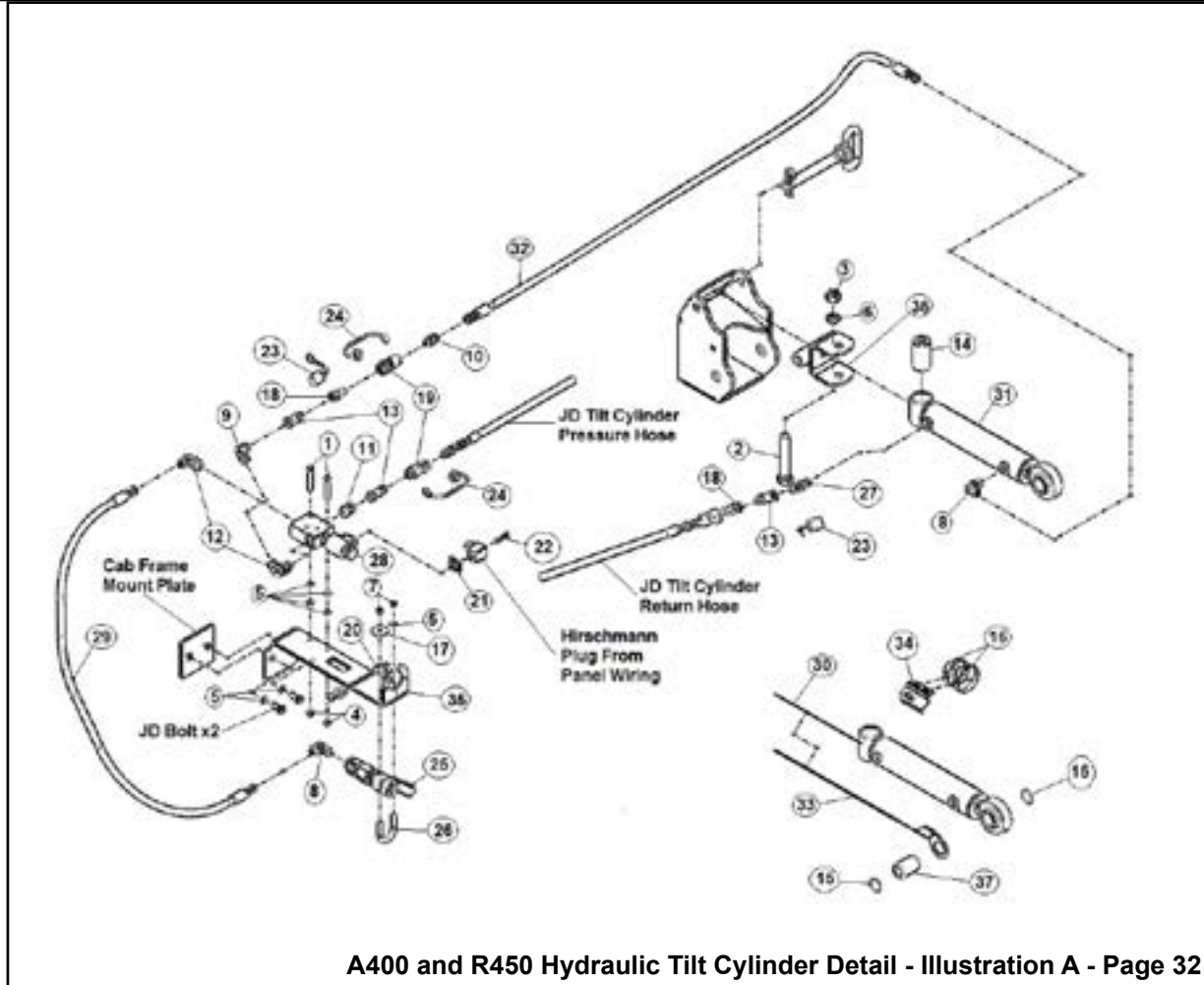


Illustration B - Page 31-



Wiring Bracket Detail - Illustration C - Page 31-



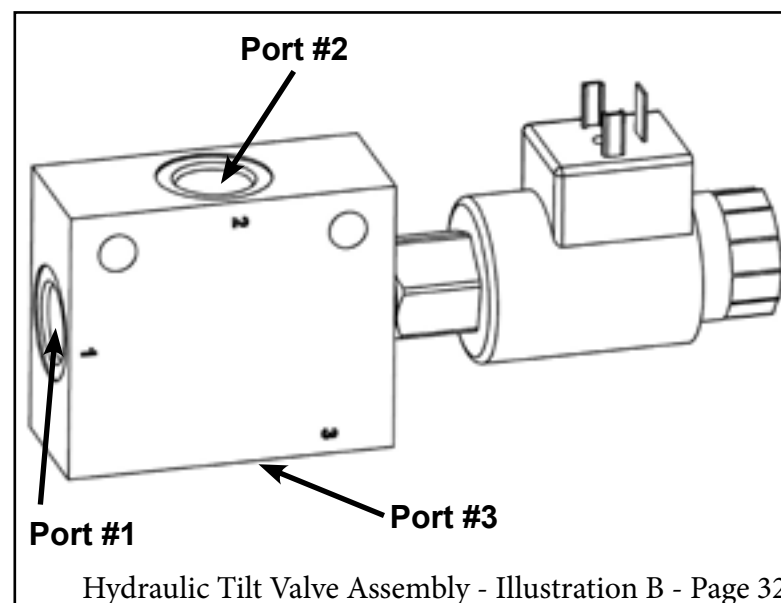
A400 and R450 Hydraulic Tilt Cylinder Detail - Illustration A - Page 32

Basic Valve Connections

Connect **port #1** to Reel Lift Connection hose (#)29 – see step #9 below.
Connect **port #2** to Tilt Cylinder Pressure hose – see step #10 below.
Connect **port #3** to Tilt Cylinder Connection hose (#32) – see step #11 below.



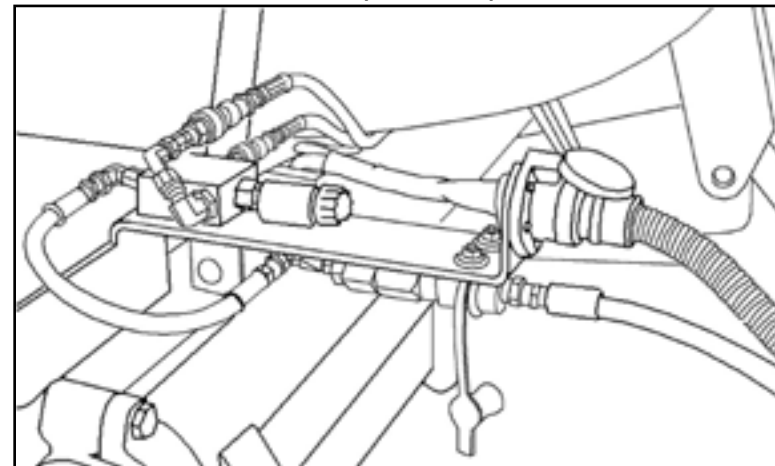
Proper connection of the three ports is critical for correct operation of reel lift and tilt functions.



Hydraulic Tilt Valve Assembly - Illustration B - Page 32

Hydraulic Tilt Cylinder - Parts		
Item #	Quantity	Description
1	2	Bolt 5/16" X 2-1/4" UNC
2	1	Bolt 3/4" X 4-1/2" UNC
3	1	Nut 3/4" UNC
4	2	F/Lock Nut 5/16" UNC
5	7	Flat Washer 5/16"
6	1	Lock Washer 3/4"
7	2	C/Lock Nut 5/16" UNC
8	2	Elbow 6MB-6MF-90°
9	1	Elbow SW 6MF-6FFX-90°
10	1	Nipple 4MP-6MF
11	1	Nipple 6MF-8MB
12	2	Elbow 6MF-8MB-90°
13	3	Adapter SW 6MB-6FFX
14	1	Bushing RB-58
15	2	Snap Ring 1-1/4"
16	2	Gear Clamp 1-13/16" X 2-3/4"
17	1	Fender Washer 3/8"
18	2	Male Quick Coupler 1/4" ORB
19	2	Female Quick Coupler 1/4" ORB
20	1	Female Quick Coupler Dust Cap – 1/4"
21	1	Hirschmann Gasket
22	1	Hirschmann Screw
23	2	Male Quick Coupler Dust Cap 1/4"
24	2	Female Quick Coupler Dust Cap 1/4"
25	1	1/4" Qck Cplr Levered Vlv Assembly
26	1	U Bolt 5/16x1-13/32x2-3/16
27	1	Elbow 6MB-6MF-45°
28	1	Header Hydraulic Tilt Valve Assembly
29	1	1/4" 13" Hydraulic Hose 6FFX-6FFX
30	1	Height Indicator Decal
31	1	Hydraulic Cylinder 2X8
32	1	1/4" 44" Hydraulic Hose 6FFX-6FFX
33	1	Tilt Angle Indicator
34	1	Tilt Angle Indicator Guide
35	1	Cab Reel Lift Bracket
36	1	Cylinder Pivot
37	1	Header Tilt Cylinder Bushing – Grooved

6. From port #1 of the valve assembly, install a 6MF–8MB 90° elbow to a ¼ " 13" 6FFX–6FFX hose, to a 6MB–6MF 90° elbow, which is then connected to the quick coupler levered valve assembly.
7. On the tilt pressure hose, install a ¼" female quick coupler and dust cap. Install a 6MF–8MB nipple, and a 6MB-6FFX swivel adapter, to the valve Assembly port #2.
8. From the valve assembly port #3, connect a 6MF–8MB 90° elbow to a 6MF–6FFX 90° swivel elbow, to a 6MB–6FFX swivel adapter, to a ¼ inch male quick coupler and dust plug. This assembly will then be connected to the 44 inch hose assembly.
9. From the Rod end of the cylinder, install a 44" 6FFX–6FFX hose with a 6MB–6MF 90° elbow. On the other end of the hose install a ¼ inch female quick coupler with a 6MB–6MF nipple plus dust plug.
10. On the return hose, install a ¼" male quick coupler and dust cap. Install a 6MB-6MF 45° elbow, and a 6MB-6FFX swivel adapter, to the tilt cylinder (piston end).



Wiring Bracket Installed - Illustration A - Page 34 .

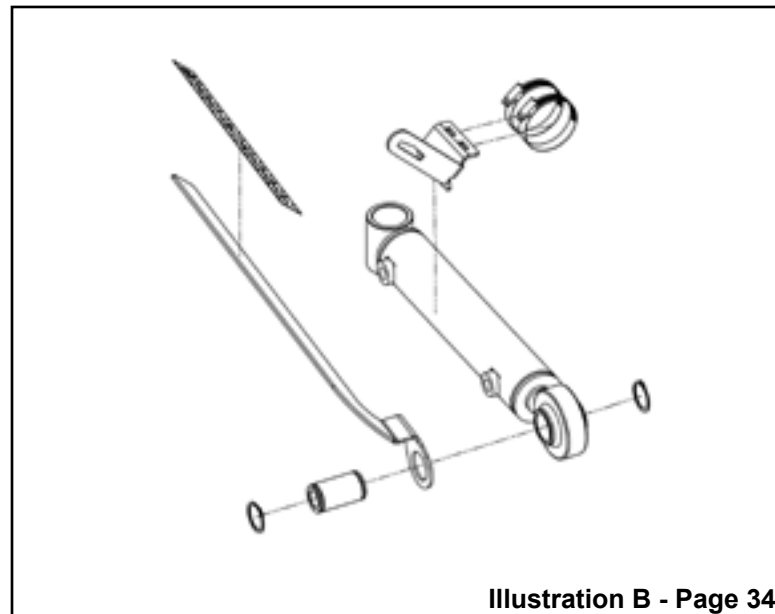


Illustration B - Page 34



Refer to **"Appendix A - Hydraulic Fitting Naming Standards"** on page 121 for details on identifying hydraulic fittings.

Refer to **"A400 and R450 Hydraulic Tilt Cylinder Detail - Illustration A"** on page 32 for proper power unit quick coupler installation. A schematic can be found on **"Appendix C-8 - Tilt Cylinder/Reel Lift Valve"** on page 131.

11. Refer to Tilt Indicator – Detail illustration to the right. If not already applied, apply the indicator decal to the aluminum tilt indicator, with "10" furthest away from the tilt cylinder rod end. Attach the aluminum tilt indicator to the rod end using two snap rings and the cylinder bushing. Slide the tilt indicator guide onto the tilt indicator and secure to the cylinder with two gear clamps. Ensure that the tilt indicator guard is positioned rotationally on the cylinder so that the tilt indicator is parallel with the tube of the cylinder. Any unnecessary tension on the tilt indicator and guide may cause damage to those parts. With the cylinder retracted the tilt indicator guide should line up with "0" on the decal.

Installing the Platform Lift Needle Valve on Power Units

Refer to the illustrations on the next two pages to familiarize yourself with the locations of the components involved.

1. On the left side of the power unit at the top of the stairs, access the compartment door behind the cab.

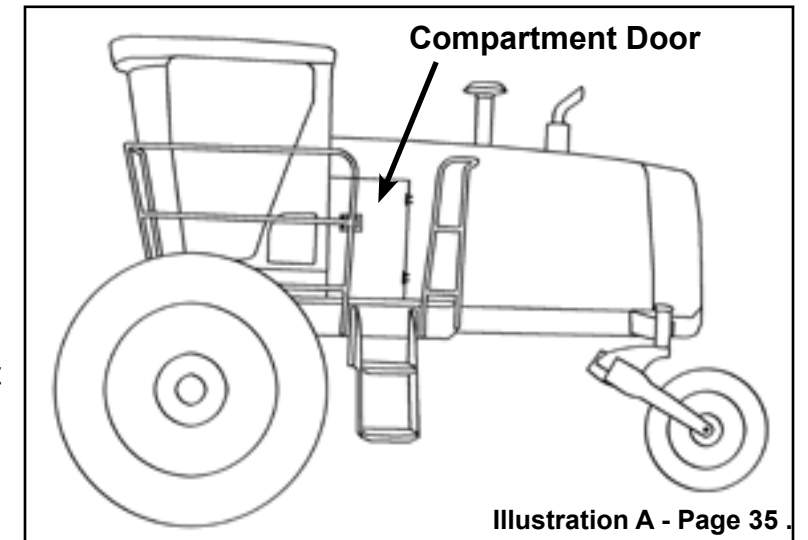


Illustration A - Page 35 .

2. At the front of the compartment, you will find two slots in the frame that will line up with the bracket shown to the right. Attach the bracket to the frame with two 5/16" bolts, washers and nuts. Tighten the nuts to secure.

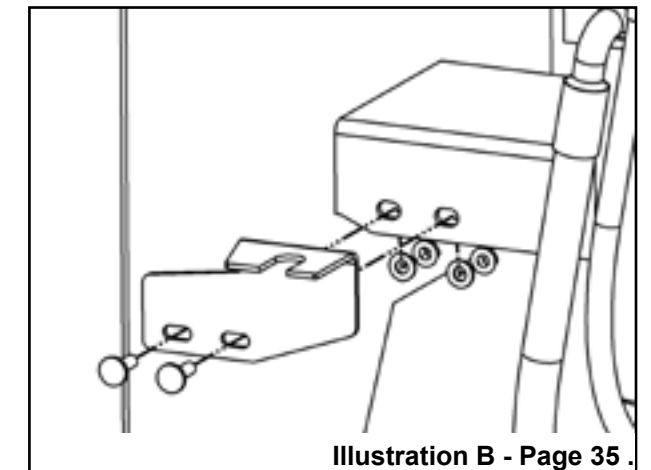


Illustration B - Page 35 .

3. Lower the power unit lift arms to help reduce pressure.

4. Locate the manual float release valve and relieve the pressure by opening the valve (counter clockwise).



Ensure that you open the valve prior to disconnecting any hoses to avoid excess spillage or potential harm from heated oil.

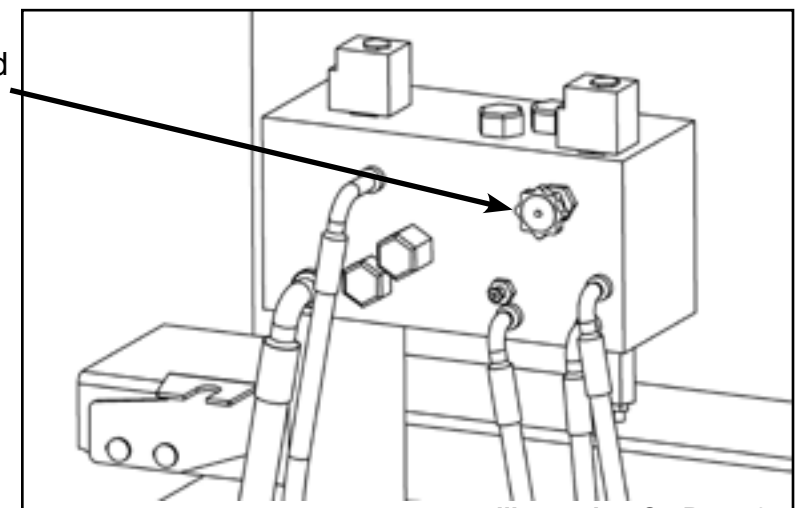


Illustration C - Page 35 .



The following sequence will minimize oil spillage.

5. Disassemble the needle valve knob from the body and reassemble using the panel nut and washer. Install the supplied hose "B" and the three fittings as shown to the right.
6. Slide the needle valve onto the mounting bracket and secure in place with the panel nut. Hose "B" should be hanging straight down.
7. Disconnect the platform lift hose "A" at the rod end of the Center Torsion Bar cylinder located under the cab.
8. Install an 8MB-10MF 90° on the hydraulic cylinder port that you had removed hose "A" from in the previous step. Connect the supplied hose "B" to the fitting.



Refer to **"Appendix A - Hydraulic Fitting Naming Standards"** on page 121 for details on identifying hydraulic fittings.

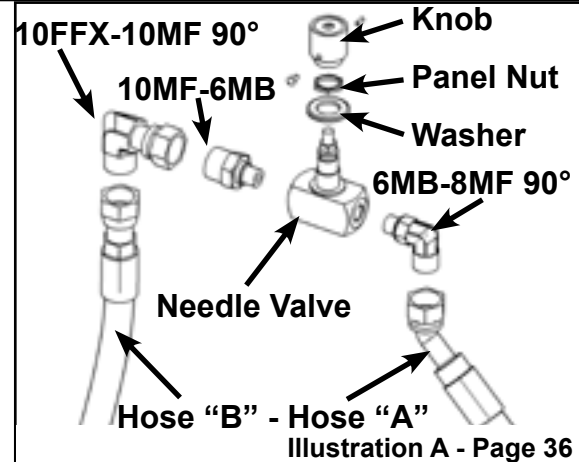
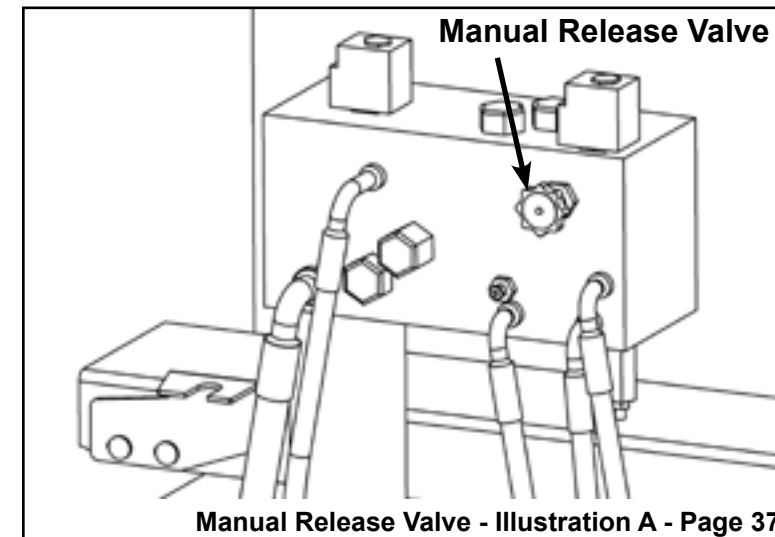


Illustration B - Page 36 .

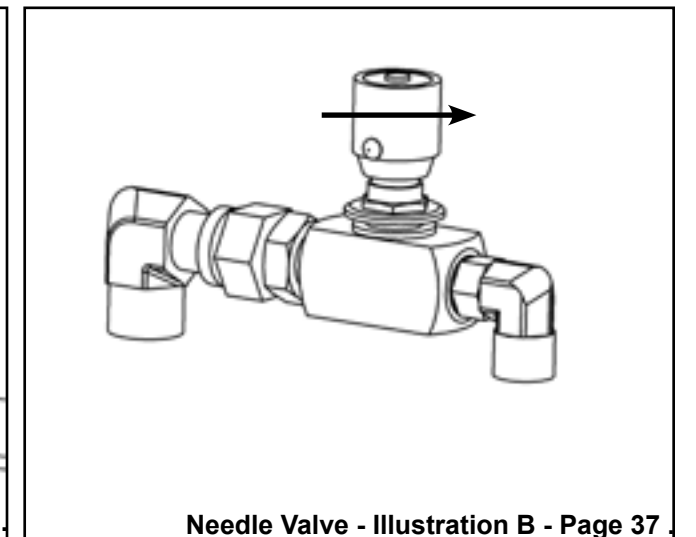


Illustration C - Page 36 .

9. Now connect Hose "A" to the needle valve. If required, temporarily remove the needle valve from the mounting bracket for better access.
10. For added support for hose "B", place it on top of the nearby large hoses and secure with zip ties. Ensure that both hose "A" and "B" are not contacting any surfaces that may damage the hoses. Close the manual float release valve on the block (clockwise) and set a small flow rate on the needle valve (counter-clockwise.)



Manual Release Valve - Illustration A - Page 37 .



Needle Valve - Illustration B - Page 37 .



Wiring Installation Model Identification

It is important that you determine exactly which model of windrower you have. Possible variations are:

New Models (A400 and R450)

For all A400 and R450 power units, switches come pre-installed in the panel regardless if the power unit was specifically ordered as Honey Bee ready or not. No in-cab modification is required!

New Models (4895 and 4995)

New models include all John Deere 4895 and 4995 units built after 29 January 2007 with serial numbers including, and after EO4995X330675, and EO4895X330107. These units will have the correct in-cab wiring and switch panel factory installed. No in-cab modification is required! If the power unit was ordered specifically as Honey Bee Ready, all switches will be installed in the panel. If the unit was not ordered with this option, the switches will be supplied by Honey Bee, and will need to be installed and plugged into the existing harness by the dealer.

Older Production Models(4895 and 4995)

Old models include all John Deere 4895 and 4995 units with serial numbers prior to EO4995X330675, and EO4895X330107, built before January 29th 2007.



If required, refer to **“Appendix B-3 - Swather Adapter Wiring Schematic” on page 124.**

See **““Honey Bee Ready” Windrower Identification” on page 26** for Honey Bee Ready reference.

New Model Wiring (A400 and R450 only)

1. Identify the 21-pin plug of the wiring adapter, and mount this end in the front bracket of the windrower, located on the right hand side of the cab.
2. Connect the hirschmann plug of the harness to the receptacle on the hydraulic tilt valve solenoid.
3. Feed the 14 pin plug under the front of the right side of the cab.

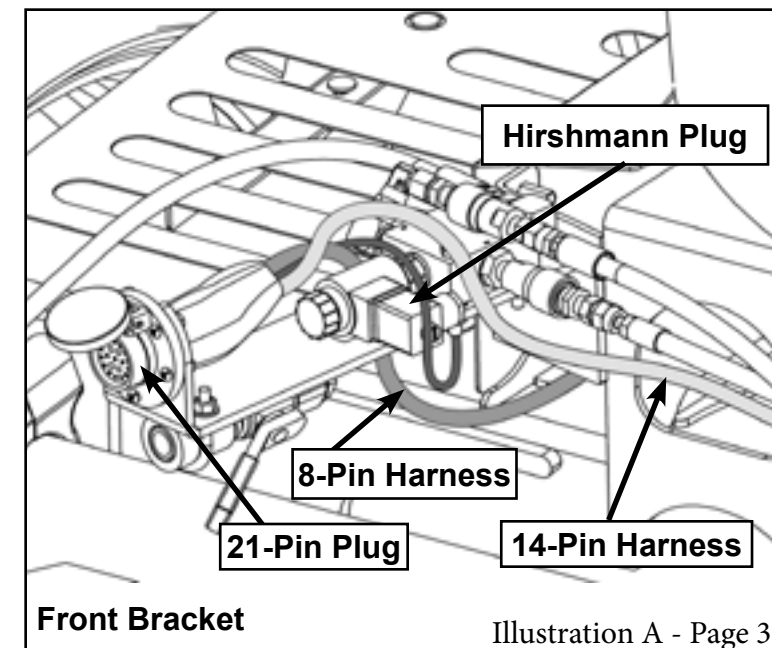


Illustration A - Page 39

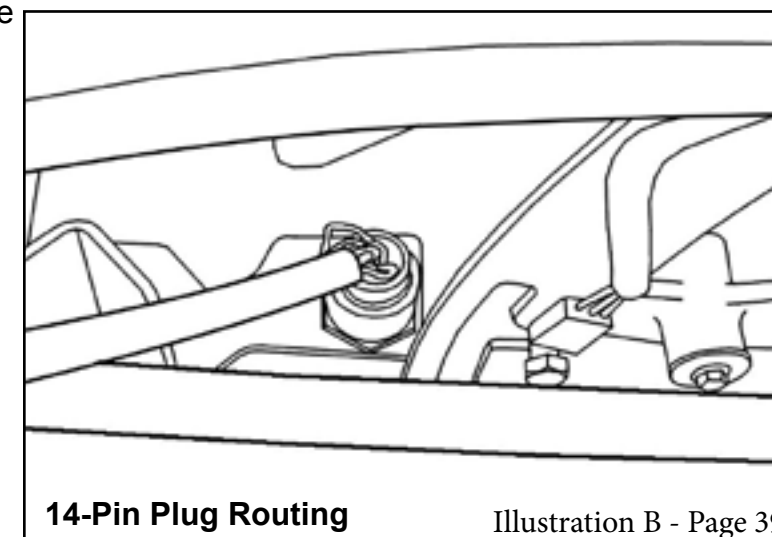


Illustration B - Page 39

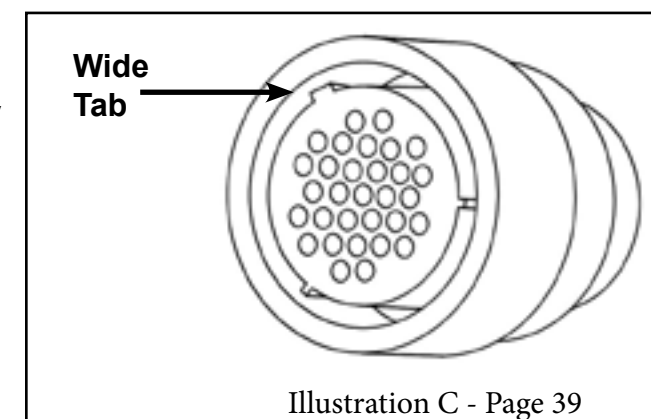


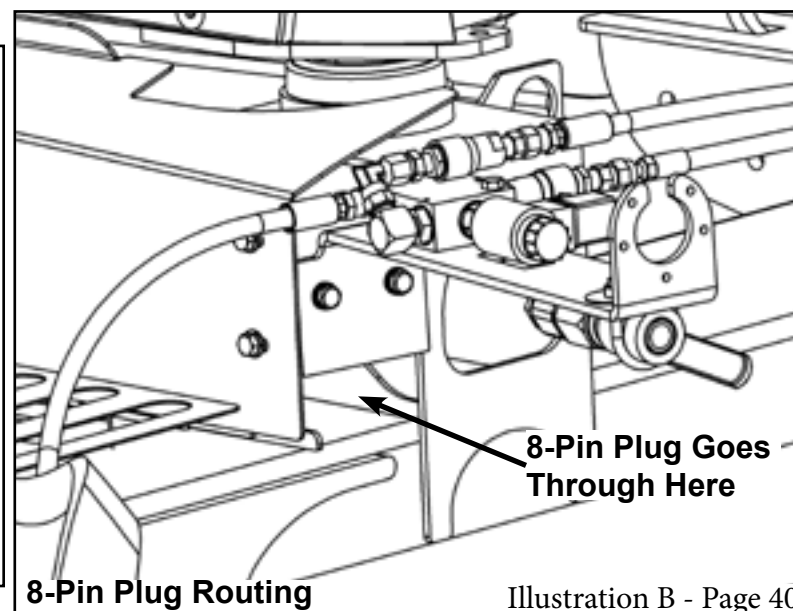
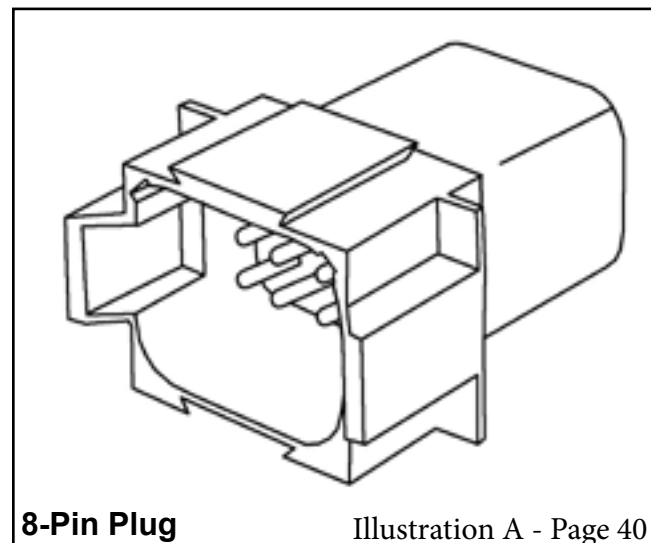
Illustration C - Page 39

4. Insert the plug into the receptacle provided as shown to the right. First align the widest tab in the plug with the wide slot in the receptacle. Once it is fully seated, turn the locking collar to secure the plug.



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5. Feed the 8-pin rectangular plug end of the harness through the opening directly below the bracket where the 21 pin plug is mounted.



6. Toward the rear of the cab, you will see an opening in the frame. Feed the 8-pin plug through to the receptacle via this access. Connect the 8-pin plug to the receptacle.

7. Secure the harness underneath the cab using zip-ties as needed.

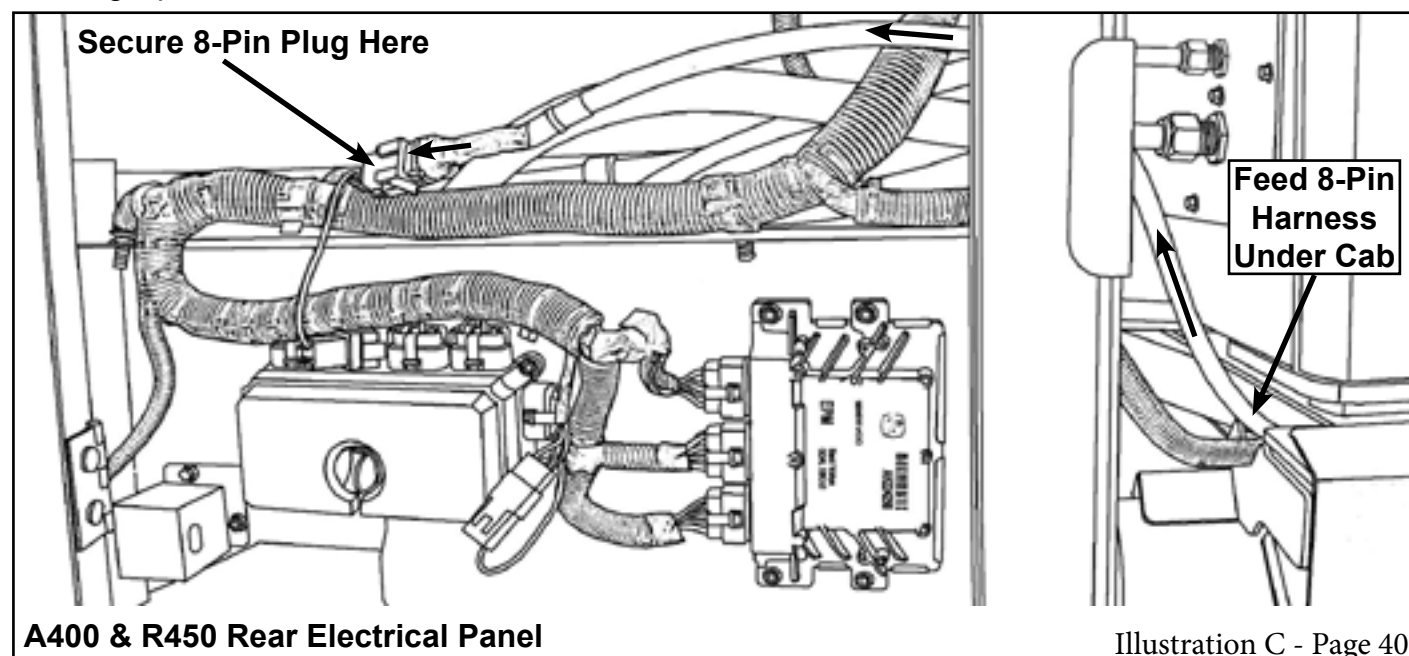


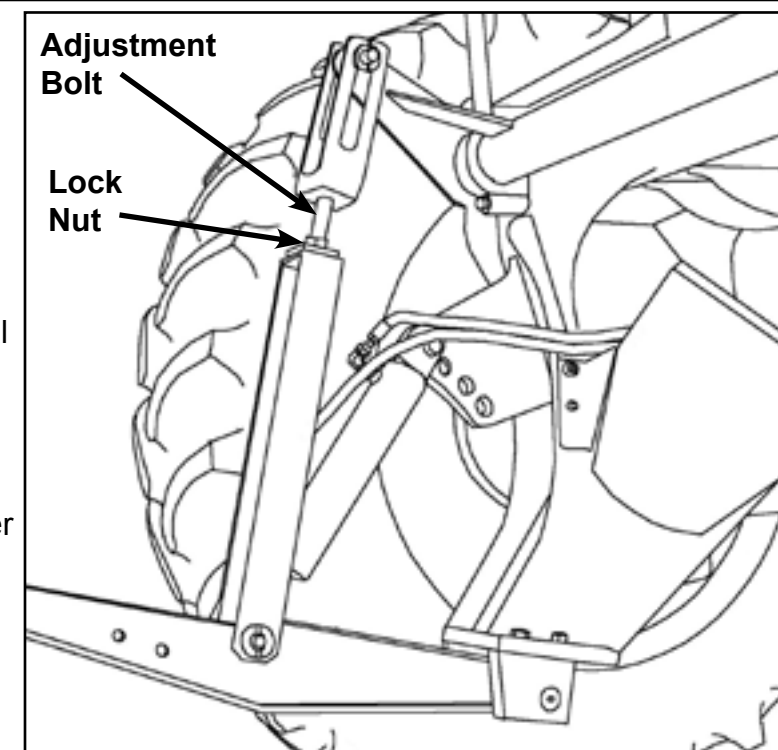
Illustration C - Page 40

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Leveling Link Installation

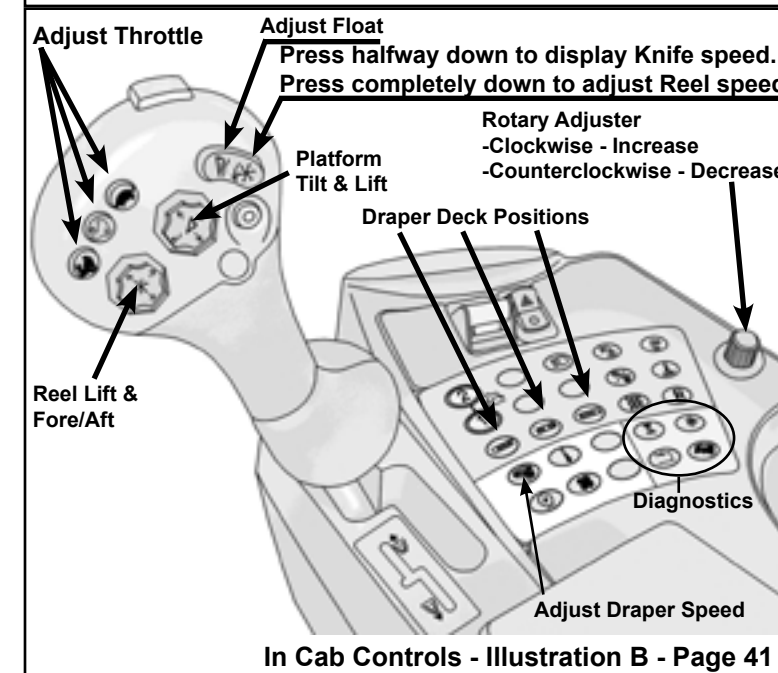
1. Remove the Leveling Link that came with the Power Unit. Take note of the length of this link.
2. Adjust the head of the adjustment bolt on the Honey Bee Leveling Link until the link is the same length as the initial link. Lock the length in place with the lock nut.
3. Install the Honey Bee Leveling link onto the right side lift arm on the power unit as shown. Use the pins and washers that were removed from the initial link, to secure the Honey Bee Link in place.



Leveling Link Illustration A - Page 41

A400 & R450 Windrower Controls

Basic function controls are located on the F-N-R lever and cab console. Throttle rpm (mid), reel speed, draper speed and float are adjustable by means of a rotary adjuster knob when selected. See your John Deere windrower manual for more information.



NOTE!

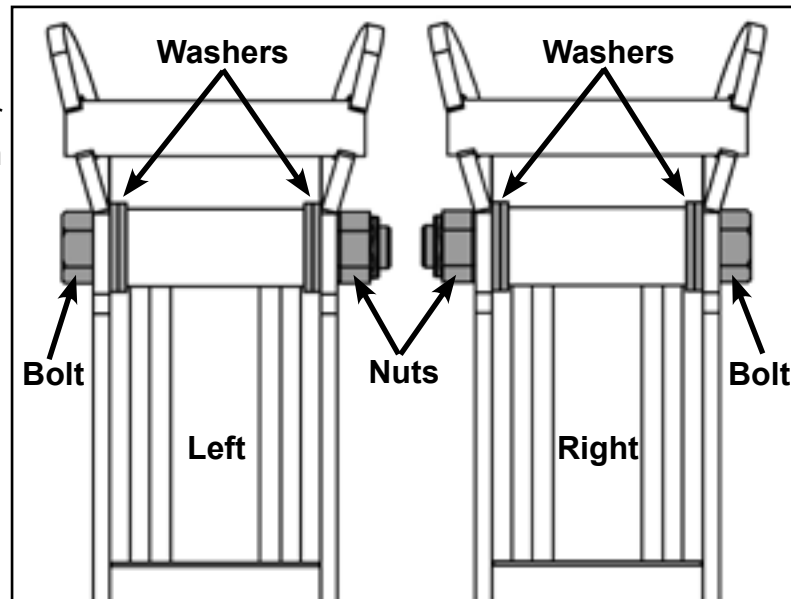
There is a short delay from the time you press the Reel Lift or Platform Tilt buttons to the time that the table responds.



Install Lift-Arm Extensions – A400

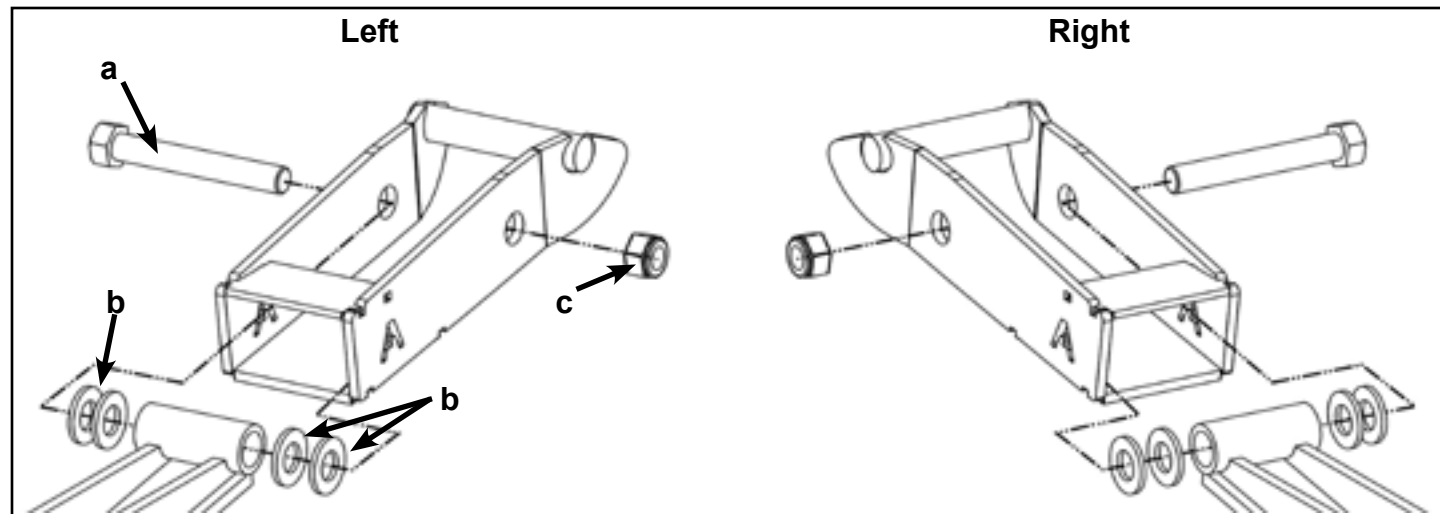
Place the lift arm extensions on the lift arms of the power unit. Secure them in place with the bolts, nuts and washers listed below. For each lift arm, you should use two washers on the 'inside' of the lift arm and two washers on the 'outside' as show to the right.

- a) Bolt - 1 $\frac{1}{8}$ " x 7"
- b) SAE Washer - 1 $\frac{1}{8}$ "
- c) Nylock Nut - 1 $\frac{1}{8}$ "



Lift Arm Top View

Illustration A - Page 42



Installing the Lift Arm Extensions on the A400

Illustration B - Page 42



Pay attention to the location of the washers, ensure that they are properly located as shown above.

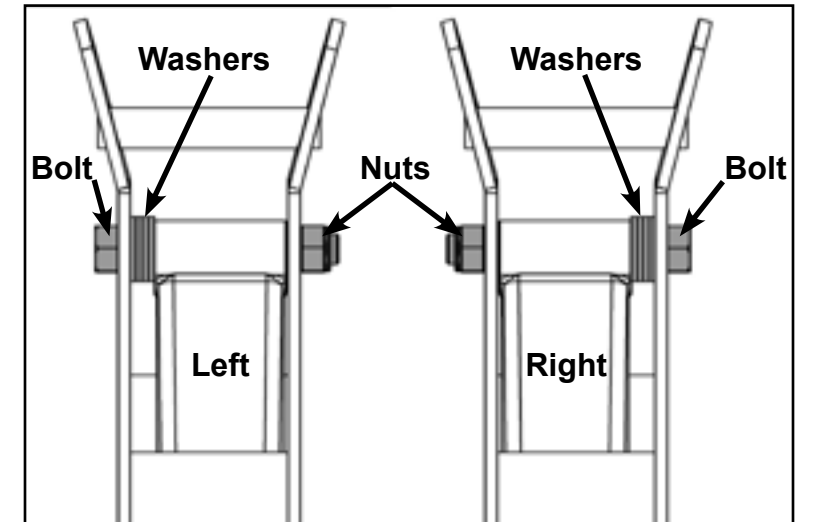
A400 lift arm extensions have an "A" cut into the side plate.



Install Lift-Arm Extensions – R450

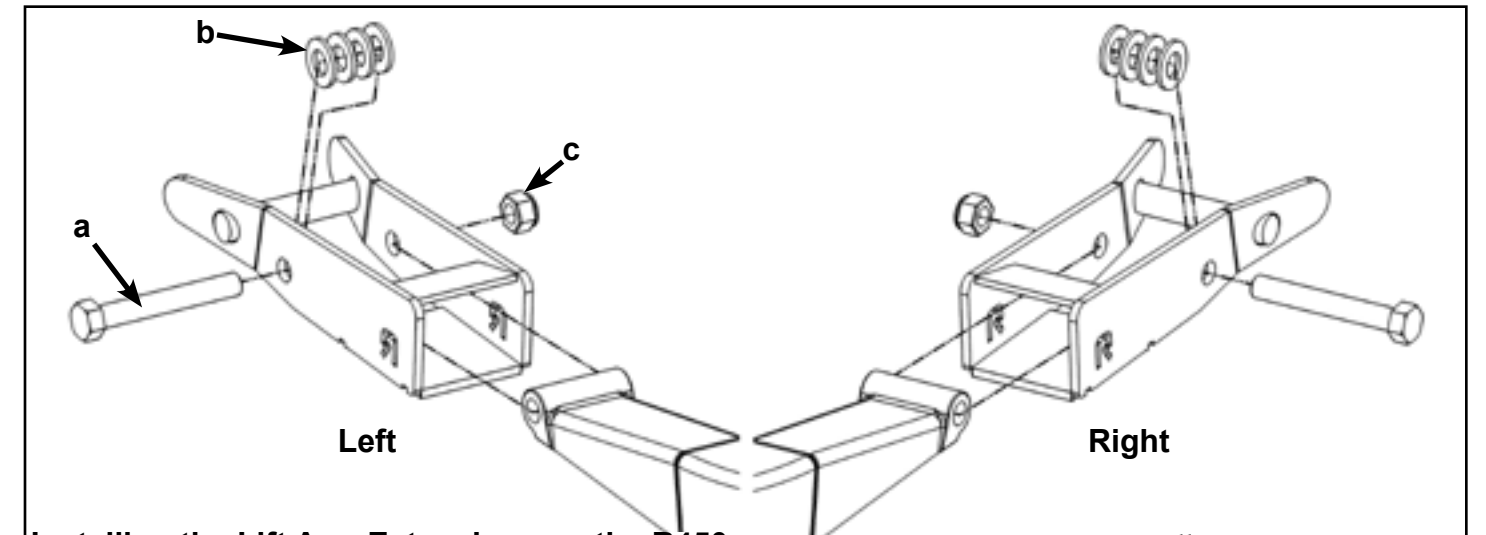
Place each of the lift arm extensions on the power unit lift arms. Secure each extension in place using the following parts:

- a) M24-3.0 x 170mm Bolt
- b) Four 1" SAE washers
- c) M24 Nylock nut.



Lift Arm Top View

Illustration A - Page 43



Installing the Lift Arm Extensions on the R450

Illustration B - Page 43



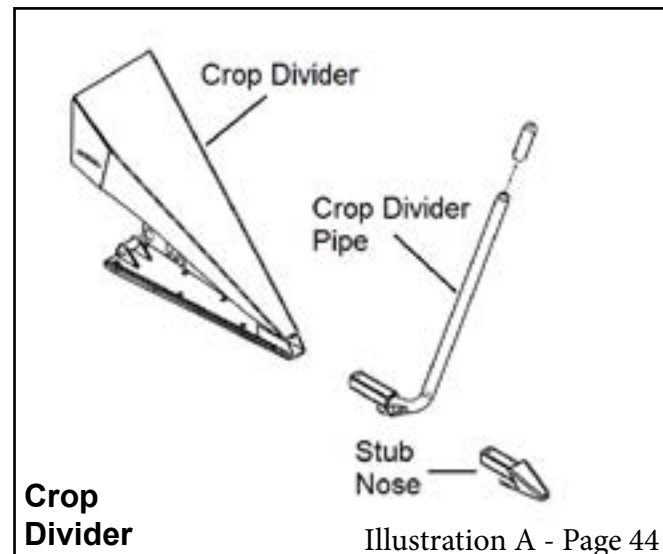
Ensure the Lift Arm Extensions are pushed towards the outside ends of the table by the four washers as shown above.

R450 lift arm extensions have an "R" cut into the side plate.



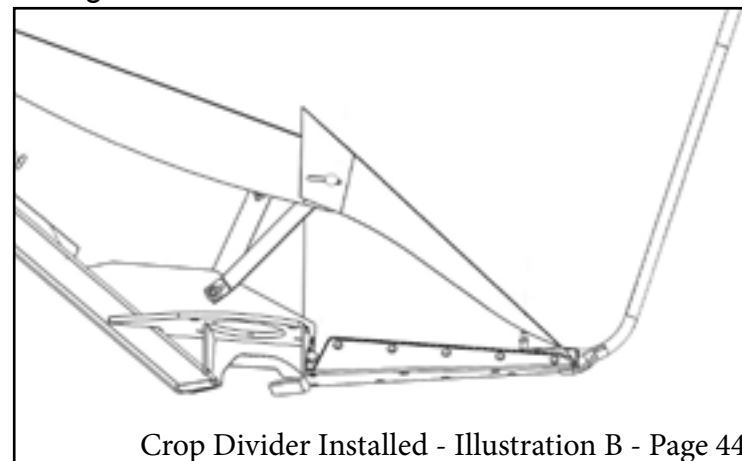
Swather Preparation – Crop Divider Installation

1. Park the Swather on flat, hard, and level ground. Support the hitch end of the unit by extending the hitch jack until the swather is sitting level.
2. Install the crop dividers, and crop divider pipes (or snub nose) to the ends of the table. The crop divider and pipes are not installed at the factory for shipping purposes. Once installed, operators should be aware of the assembled width of the swather, and should check local regulations before transporting on public roadways.
3. The crop divider is fastened, and pivots, on one (1) 1/2"x5" carriage-head bolt through a tube on the bottom rear of the divider and two lugs on the bottom front of the frame. Secure the bolt with a 1/2" lock nut, keeping it loose enough so that the divider will still pivot freely on the bolt. The top of the crop divider is held in place with two (2) 3/8" x 1" carriage-head bolts connecting the top rear of the divider with the top front of the deflector. They are held in place using the supplied locking textured washers and 3/8 locking nuts. The top bolts have an arched slot, for variable positioning, in the top of the divider. This allows the divider to be adjusted to approximately run parallel with the ground.
4. When properly positioned, the crop divider overlaps the outside of the crop deflector to provide a smooth transition for the crop.
5. Insert the crop divider pipe (or snub nose) into the nose of the crop divider. Tighten the 3/8" x 1 1/2" bolt with lock nut against the divider pipe base and secure with the lock nut.



Crop Divider

Illustration A - Page 44



Crop Divider Installed - Illustration B - Page 44

NOTE!

The divider is designed to be adjusted in order to run without trampling the crop. 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 stub nose is to be used when cutting on the ground.



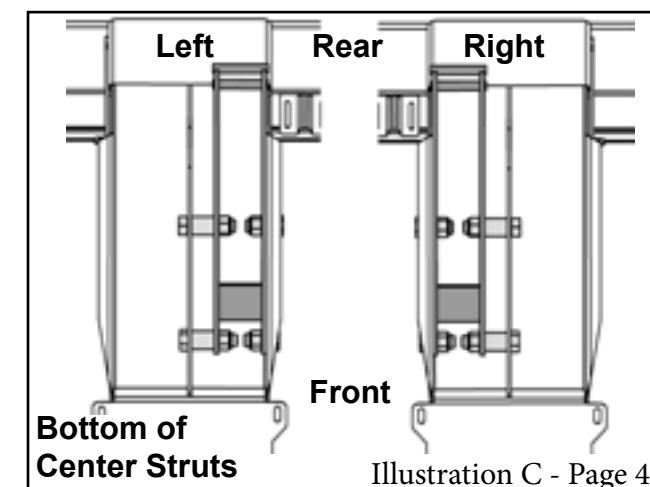
Strut Mounting Bolts Mounting Holes

When installing Strut Mounting Bolts, the Standard mounting holes are typically used for both A400 and R450.

As an option for the A400 ONLY, the Alternate mounting holes can be used for higher swath lift clearance (ie Canola), but will not allow the table to lower enough to cut on the ground when using Castering Gauge Wheels. The Alternate mounting holes DO NOT work for R450.

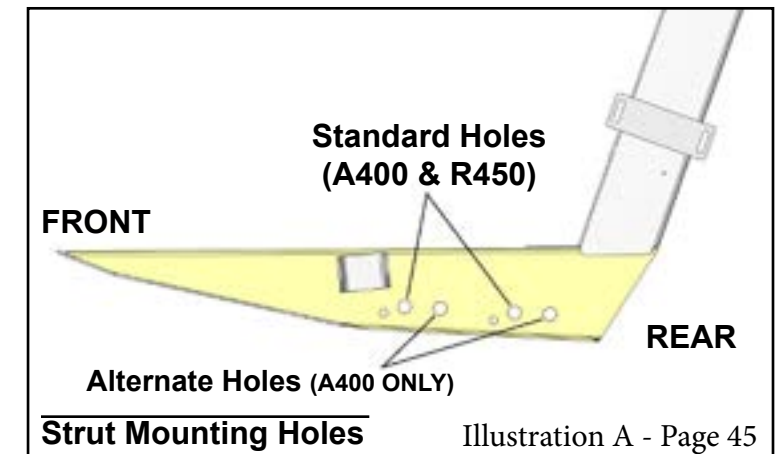
Install Strut Mounting Boots – A400 Specific Instructions

1. Each mounting boot should be installed flush against the edge closest to the middle of the table on each of the two center struts of the swather as shown in the illustrations on this page.
2. Each mounting boot should be held against the interior wall of the strut with the following parts:
 - a) Bolt – 1" x 4"
 - b) Spacer – 1 1/2" x 1 7/8"
 - c) Nylock Nut – 1"
 - d) Bolt – 1" x 2"



Bottom of Center Struts

Illustration C - Page 45



FRONT

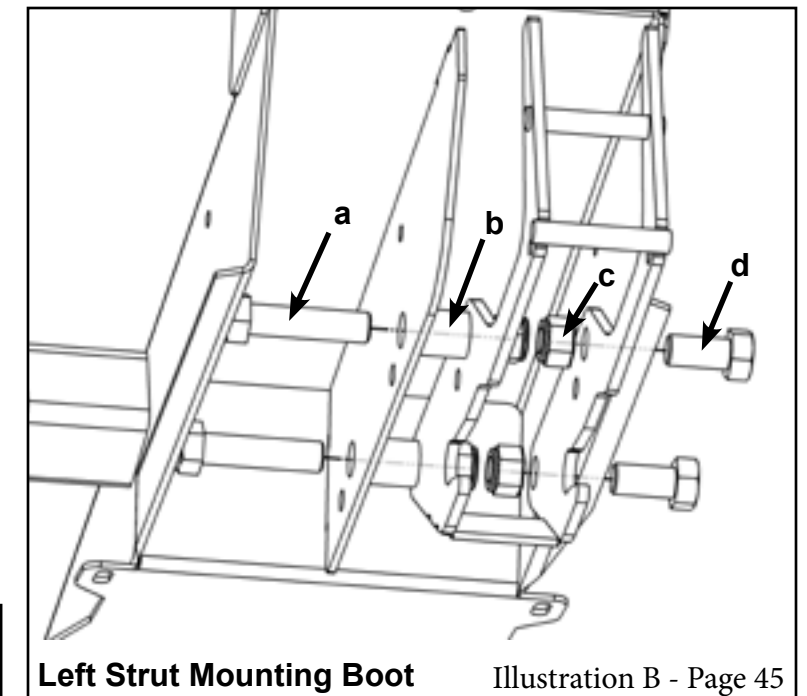
Standard Holes (A400 & R450)

REAR

Alternate Holes (A400 ONLY)

Strut Mounting Holes

Illustration A - Page 45



Left Strut Mounting Boot

Illustration B - Page 45



NOTE!

Some components are not shown in these illustrations for clarity reasons.

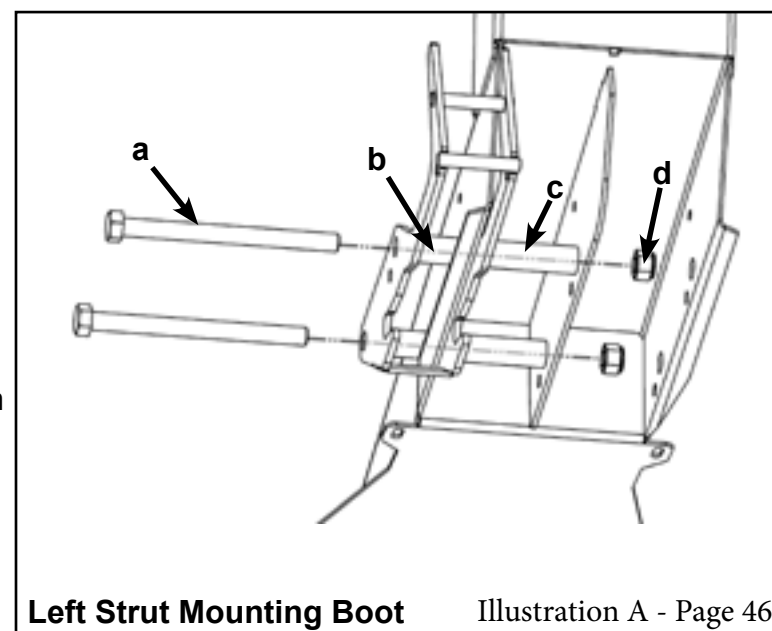


Install Strut Mounting Boots – R450 Specific Instructions

Swathers will have the mounting boots preinstalled, however if installation is required, follow these instructions.

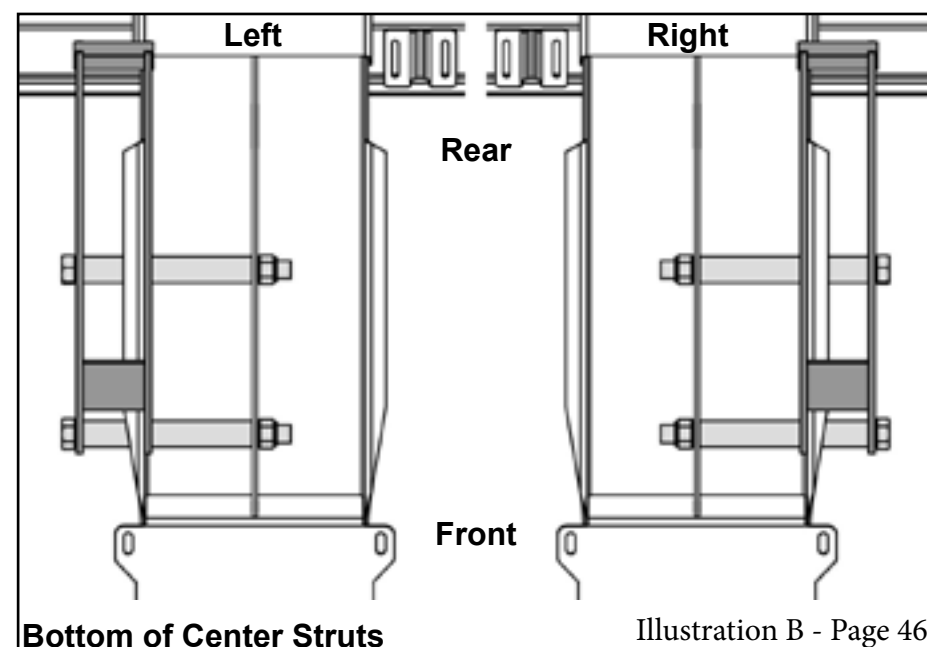
1. Each mounting boot should be installed flush against the edge closest to the outside edge of the table on each of the two center struts of the swather as shown in the illustrations on this page.
2. Each mounting boot should be held against the outside wall of the strut with the following parts:

- a) Bolt – 1" x 12"
- b) Spacer – 1½" x 3 5/16"
- c) Spacer – 1½" x 5 ¾"
- d) Nylock Nut – 1"



Left Strut Mounting Boot

Illustration A - Page 46



Bottom of Center Struts

Illustration B - Page 46



Some components are not shown in these illustrations for clarity reasons.



Mounting the Swather to the Windrower

1. Park the swather on firm, level ground, where it will be easily accessible for the windrower operator to pick up.
2. Lower the screw jack, located on the side of the transport axle, and raise the axle until the tire clears the ground.
3. Remove the quick pin securing the hub and spindle, and remove the wheel assembly. Store the wheel assembly in an appropriate location, or if the gauge wheel option has been purchased, install the wheel into one of the gauge wheel mounts and secure with the quick pin.
4. On each of the mount boots, remove the pin holding the locking arms in place and lift the lock arms into the mounting position as shown (See Illustration "C").

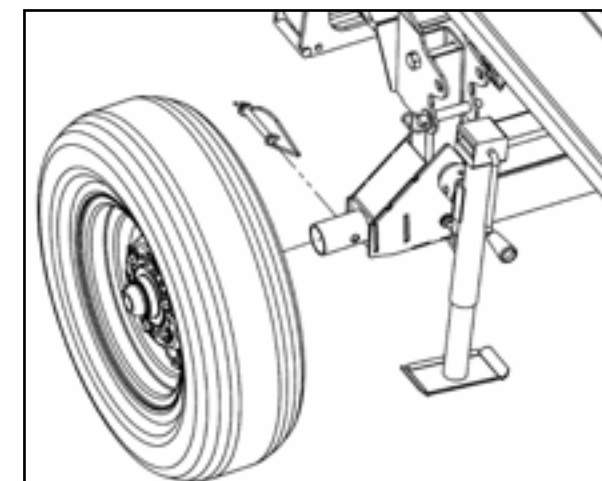


Failure to adjust the lock arm properly will result in damage to the mount boots and the lock arms.

5. Start the windrower. Ensure that the windrower's manual float release valve is fully closed. Test the lift-arm controls to ensure smooth operation. Decrease the amount of float pressure to minimum.

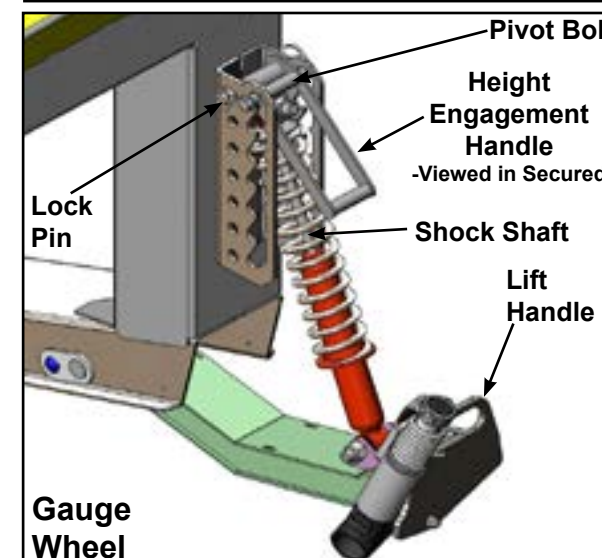


If the lift arms move too abruptly, reduce the flow of oil at the needle valve as shown in "Needle Valve - Illustration B - Page . ." on page 37.
If they raise and lower fully with one cycle of the control, remove the relay as shown



Remove Wheel & Extend Jack

Illustration A - Page 47



Gauge Wheel Assembly

Illustration B - Page 47

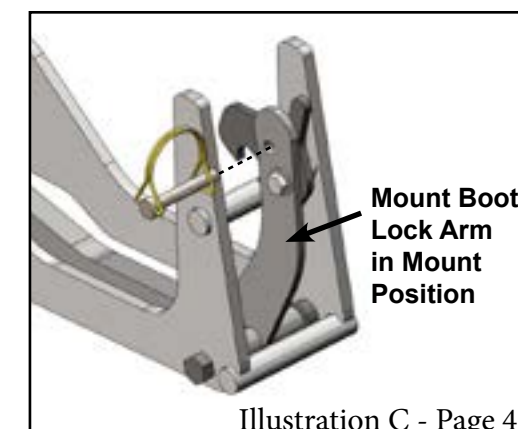
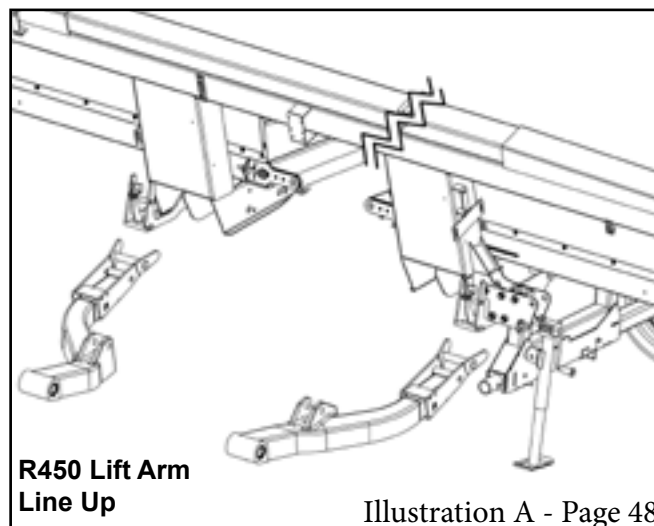


Illustration C - Page 47

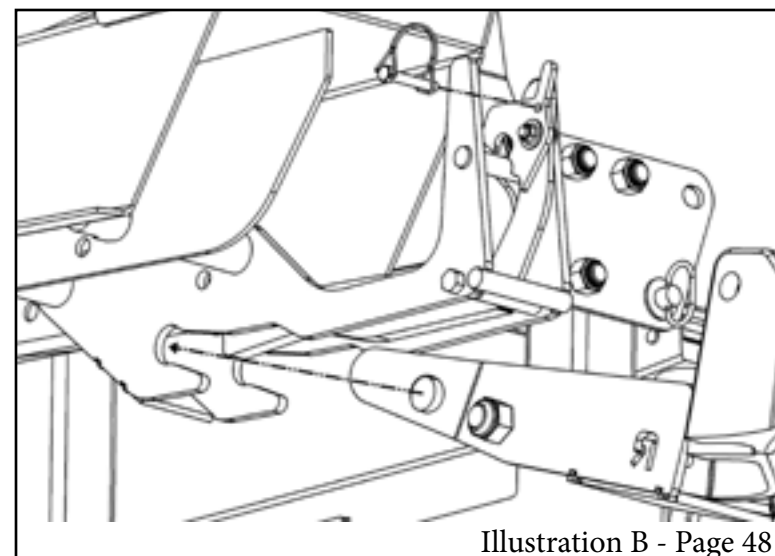


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6. Move the power unit into position, lining up the lift arm extensions with the mounting boots that were installed earlier. Ensure the arms are low enough to move under the boots.

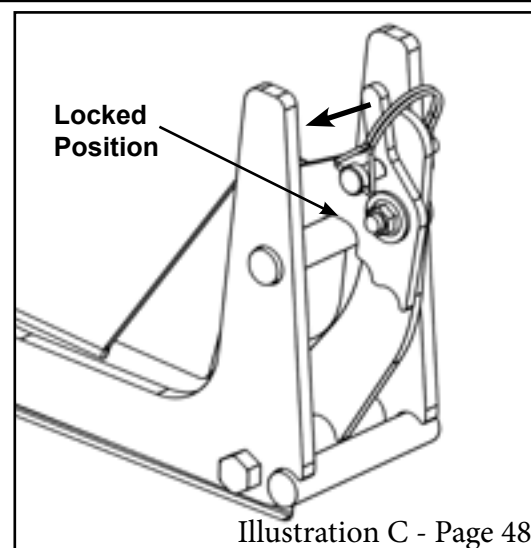


7. Slowly raise the lift arms and move forward until the arm extensions are firmly set on the mounting boots. Ensure the end of the extension arm has fully engaged the mounting boot and the locking arm has dropped into the proper position. Do not lift the table any higher at this point.



Shut the engine down and wait for all moving parts to stop before leaving the cab. Ensure the park brake is set.

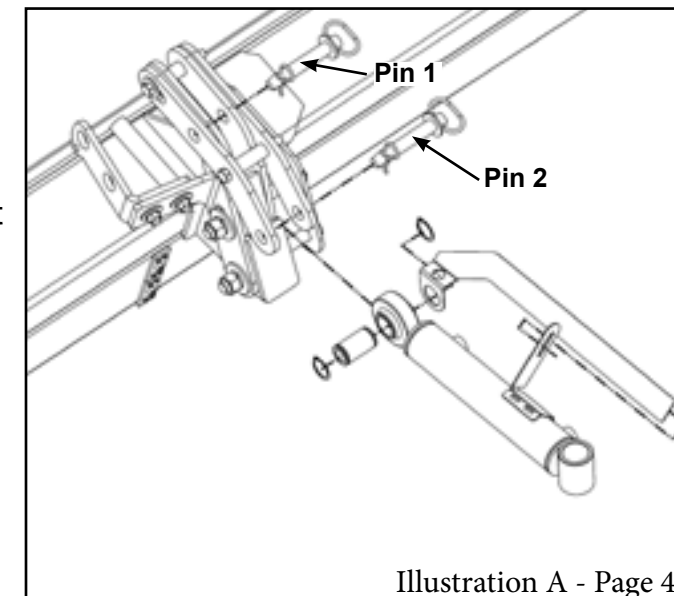
8. If the arms are located correctly, secure the lock arms in their locked position with the pin as shown to the right.



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9. Remove Pin 1 to allow the cylinder mounting bracket to swivel up and down. Secure the hydraulic tilt cylinder to the bracket as shown. Install the hitch pin (Pin 2) to finish connecting the cylinder to the table. Do not try to reinstall Pin 1 yet, since the holes won't be lined up.

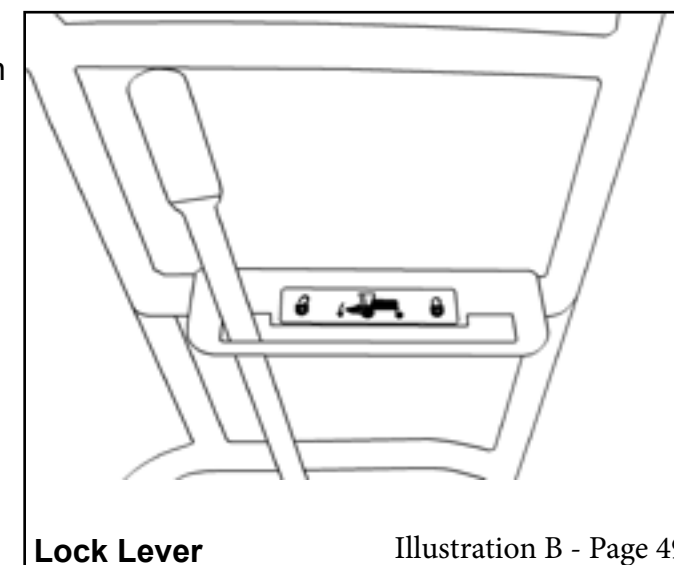


10. Start the windrower.

11. Carefully raise the swather to full height, then lock the arms, using the windrower's lock lever.



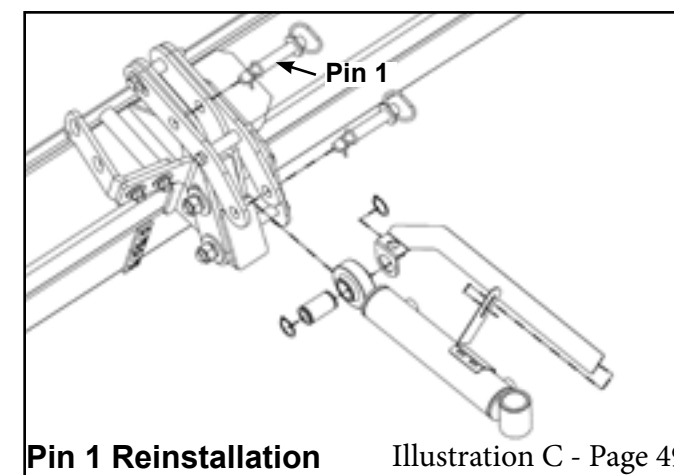
Shut the engine down and wait for all moving parts to stop before leaving the cab. Ensure the park brake is set.



12. Re-install Pin 1 (as shown to the right) to secure the cylinder mounting bracket in place.



Failure to re-install Pin 1 will result in breakage of power unit windshield during operation.





Store the Transport Axle

1. Remove the wheel assembly from the cutter-bar side of the table, and store in an appropriate location, or install onto the remaining gauge wheel mount.
2. Remove the pin which holds the axle extension in place, from position #1 and slide the axle into the housing.
3. Secure the axle in the housing by re-inserting the pin in position #2 as shown.
4. Remove the jack and remove the pin holding the axle strut in the vertical position.



The axle is heavy!



Your transport axle mounting bracket may look slightly different from what is shown depending on your model of swather.

5. Swing the axle up, and secure using the pin. Replace the jack as shown and secure with the pin.

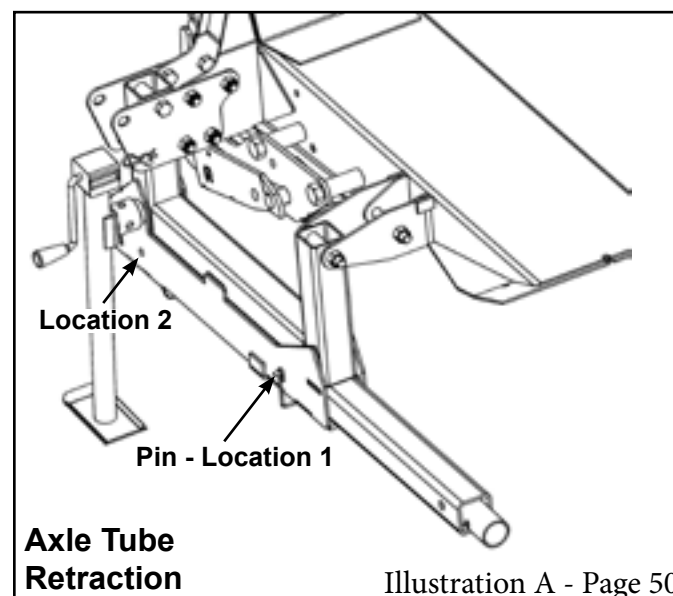


Illustration A - Page 50

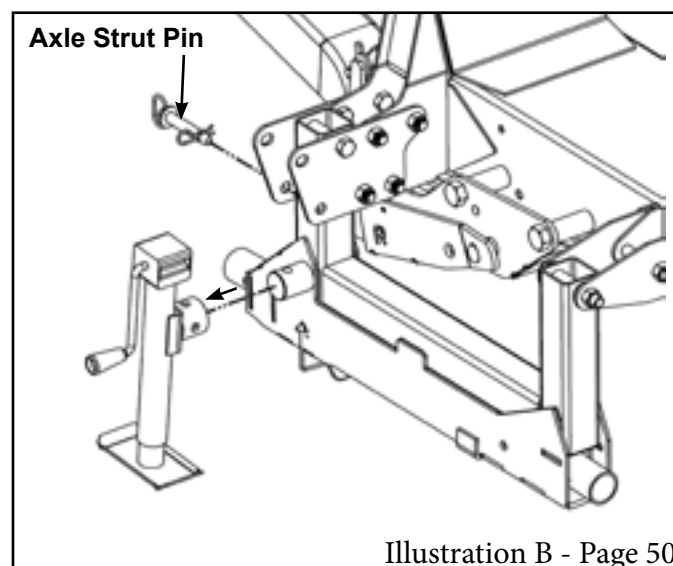


Illustration B - Page 50

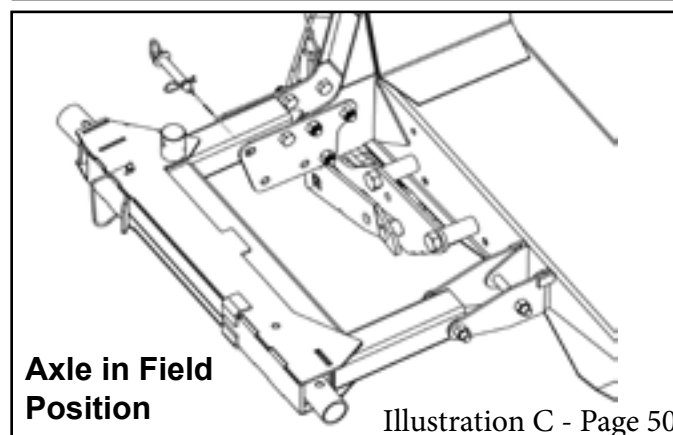


Illustration C - Page 50



Store the Transport Hitch

1. The swather should still be lifted from the ground at this point, with the table safety lock in place.
2. Fully retract the jack leg, by turning the jack handle, and by collapsing the lower section to the first hole.
3. Release the hitch clamp, and slide the jack off the hitch mount. Store the jack as shown in Illustration "C", and tighten the clamp.

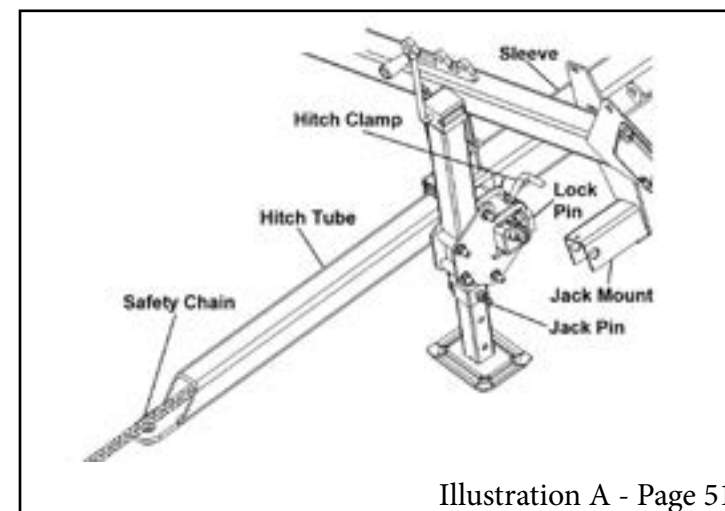


Illustration A - Page 51

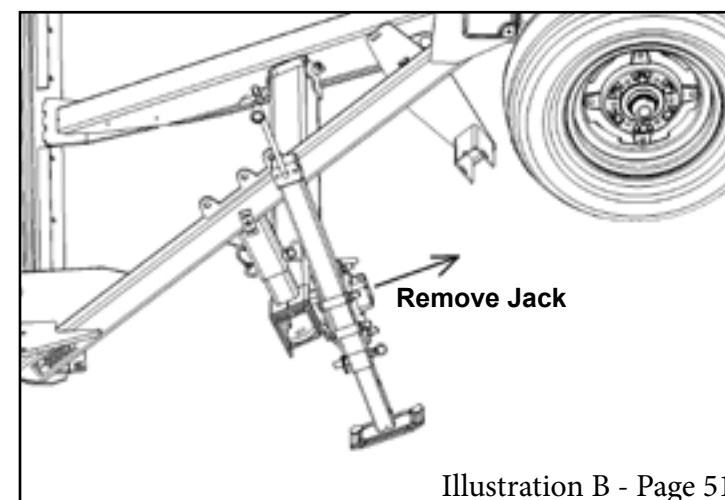


Illustration B - Page 51

4. Pull the Lock Pin on the hitch tube and slide the tube into the storage sleeve. Refer to Illustration "A". Attach the hitch safety chain to the storage stub as shown in Illustration "C".



If excessive vibration occurs, extend the jack until it contacts the hitch tube storage sleeve, as shown.

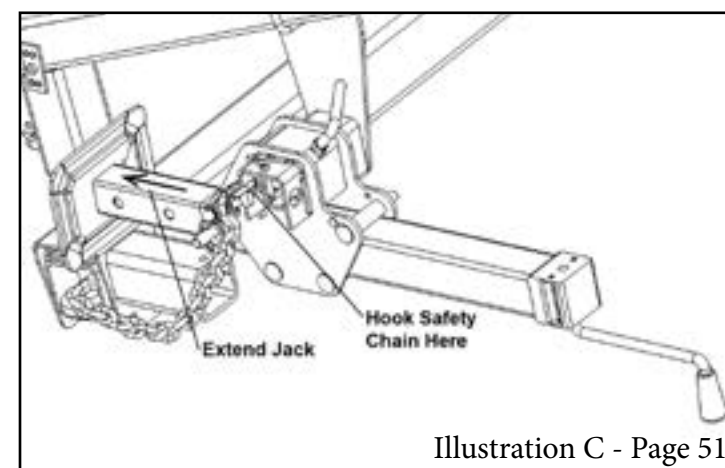
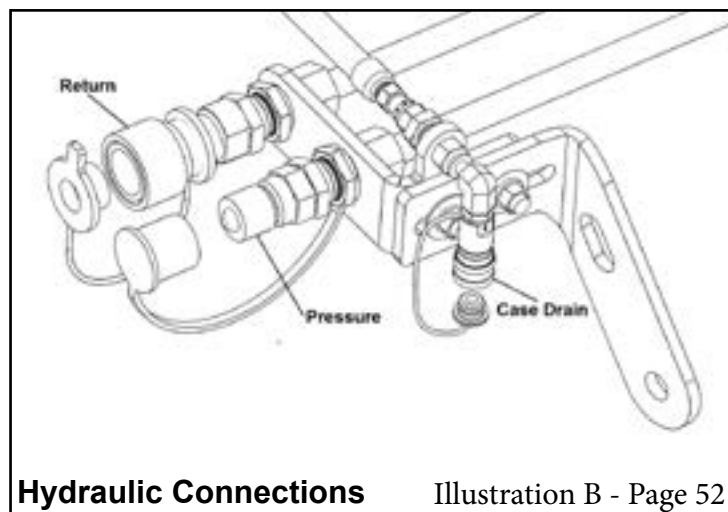
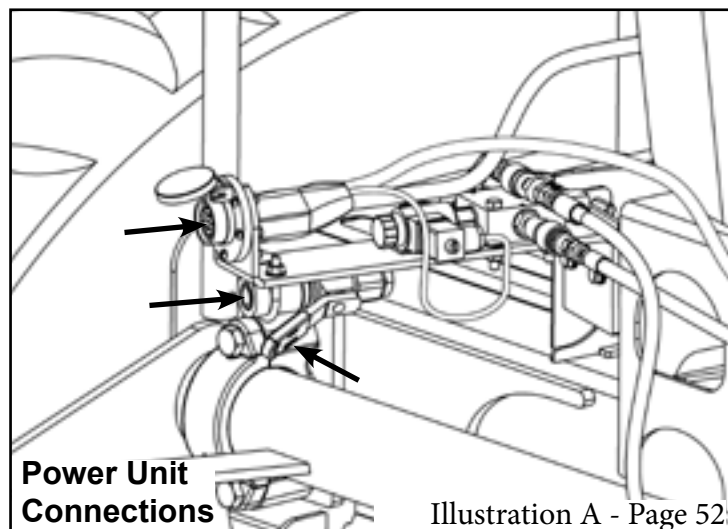


Illustration C - Page 51

Connect Electrical and Hydraulic Systems

1. Release the table lock, start the windrower engine and lower the table. Shut the engine down and engage the parking brake. Ensure all moving parts have come to a stop before exiting the cab.
2. Connect the electrical lines, and the hydraulic reel lift/tilt hose (standard on all tables) at the plug mount, located on the right-hand side of the cab.
3. Open the valve to the reel lift/tilt cylinder (curved arrow).
4. Connect hydraulics for Pressure, Return, and Case Drain to the swather.



NOTE! If you need to refer to hydraulic schematics, see chapter "9 - Hydraulics on page 97"

When the swather is being stored, the separate table case drain hose should be left connected to relieve pressure in the closed hydraulic system, thus avoiding potential damage to system components.



NOTE! For 2010 and newer tables, the forward side of the pump will be used instead of the reverse side of the pump.

Install the Hose Holder – R450 Only.

A bracket and canvas loop are provided to route the hydraulic hoses both while in use, and in storage. Use of this hanger will prevent damage to the hoses and connections from being run over, or trailed on the ground.

The bracket is installed on the cab railing indicated in the photo to the right.

The hydraulic hoses are fed through the canvas loop and then the canvas loop is fed through the bracket.

When the hydraulic hoses are not in use, ensure they are placed in a location where they will not become damaged or contaminated by dirt.



Hose Connected Illustration A - Page 53



Hose Disconnected Illustration B - Page 53

Leveling the Swather

If the table requires leveling at this stage, you have three options, of which you may elect to use singly or in any combination. These three options can be found in **Chapter "8 - Leveling" on page 92.**



Programming Diagnostic Addresses

For proper operation of all draper table functions, both the “Belt Speed Adjust Option” (Address 066) and “HB Option” (Address 067) must be enabled , as well as the correct “Platform Type” (Address 071) selected. The “Deck Shift Option” (Address 068) must also be enabled if you have a Double Swath table. Only the Platform Type is accessible to the operator. The Options are accessible only to the Dealer.

The dealer should also check with the JD Software Delivery System (SDS) that the installed software version is current for the windrower.

- For Honey Bee Ready windrowers, the HB Option and Belt Speed Adjust Option will already be enabled and the Platform Type will be preset as a “Honey Bee Draper 21 Foot”. The Deck Shift Option (if applicable) must be enabled by the dealer.
- For non-Honey Bee Ready windrowers, all the Options must be enabled by the dealer and the Platform Type will be preset as a “Sickle – 14 Foot (if A400) or as a “Rotary Platform - 4 Meter” (if R450) from factory.

The correct Platform Type must be selected by the operator (or dealer) by changing the value of diagnostic address 071, using the diagnostics buttons on the cab console and display lines on the PDU.

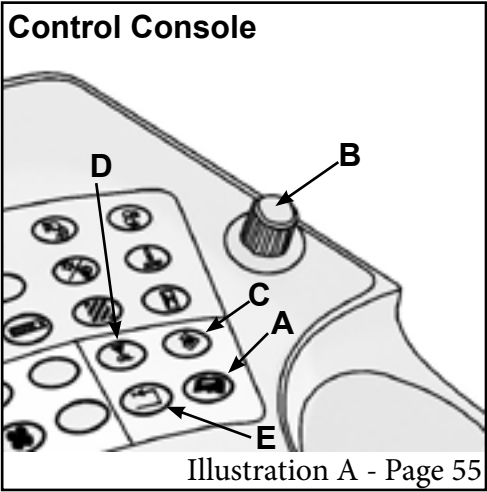
It is not necessary to start the engine to program diagnostic addresses.

At any time, the back button (E) can be used to go back one step, and the mode button (A) can be used to exit diagnostics mode.

1. Turn the key to “RUN”
2. To enter diagnostics mode, press Mode button (A)
3. Rotate the dial (B) until “diA” is shown on the display (X). Press the enter button (C)
4. Rotate the dial (B) until “CAb” is shown on the display (X). Press the enter button (C)
5. Rotate the dial (B) counter-clockwise until “071” is shown on the display (X). The display will alternately show “071” and “InP”. The value of address 071 will be shown on line two of the display (Y), indicating the platform type (refer to the chart on next page). If the value shown is not correct, skip to step 6. If the value shown is correct, no changes are required. Press the mode button (A) to exit diagnostics mode and turn the key to the “OFF” position.



6. To change the value of address 071, press the enter button (C). The left most digit on the second line of the display (Y) will flash, indicating that it can be changed. Edit each digit by using the dial (B) to change the value of the flashing digit (if required) and CAL button (D) to move to the next digit. Once all digits are correct, press the enter button (C) to save the value. If the value has been successfully saved, none of the digits will be flashing.
7. Press the mode button (A) to exit diagnostics mode and turn the key to the “OFF” position.



Every time the operator (or dealer) physically changes to a different platform, diagnostic address 071 must also be changed accordingly.

TLA	DA	Description	Description & Input Values	
CAB	71	Windrower Platform Type	Header Description	Header Number
			Sickle – 14 Foot	100
			Sickle – 16 Foot	101
			Sickle – 18 Foot	102
			Rotary Platform – 4 Meter	103
			Rotary Platform – 4.5 Meter	104
			Rotary Platform – 5 Meter	105
			HoneyBee Draper 21 Foot	110
			HoneyBee Draper 25 Foot	111
			HoneyBee Draper 30 Foot	112
			HoneyBee Draper 36 Foot	113
			Other	114

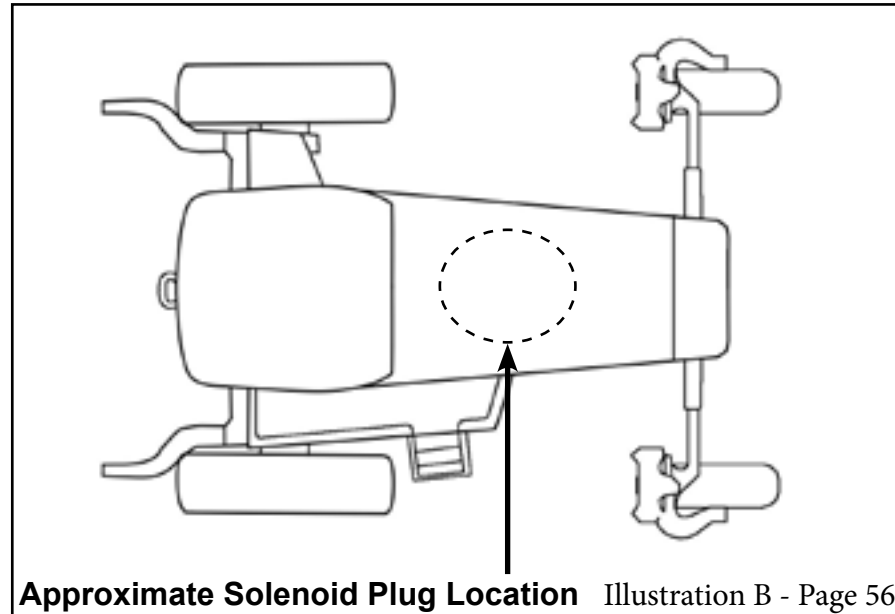
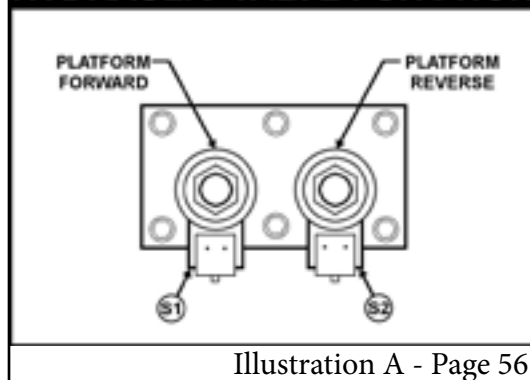
JD A400 Solenoid Modification

The full flow of the forward side of the pump will be used rather than adjusting the reverse side as done in previous years. The wires for S1 (Platform Forward) and the S2 (Platform Reverse) do not need to be swapped as in the past.

When using the forward side of the pump, adjusting the flow set screw for the reverse side will have no effect.

If in the future the windrower is used with a John Deere hay platform, these connections will be correct as-is.

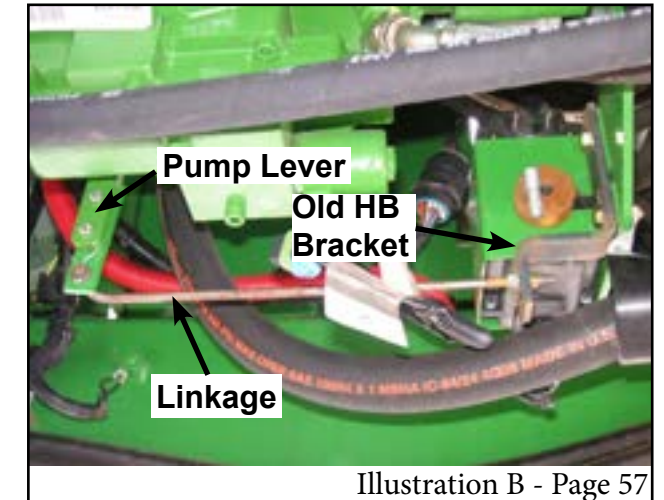
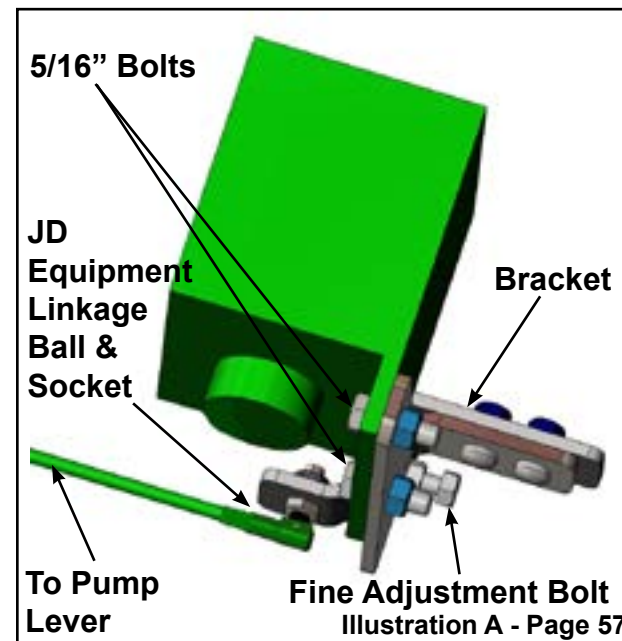
HYDRAULIC VALVE FUNCTION



You will be unable to increase knife speed beyond the speed that has been set by the priority flow cartridge. See ***“Knife Drive Speed Adjustment” on page 100*** for knife speed adjustment details.

JD R450 Install Pump Bracket And Set Pump Flow

Set the pump flow using high idle. Normal pump output is 45 GPM (170 LPM). The output from the tractor must be set from 29 to 30 GPM (110 – 114 LPM). Install the flow bracket assembly onto the motor mount, located under the windrower, as shown in Illustration “A”.



1. Remove the two nuts and bolts from the electric swather pump output controller. Add the bracket as shown in Illustration “A”, using the new 5/16” x 1” bolts and nuts provided. *Do not tighten yet.*
2. Disconnect the linkage lever from the controller by unthreading the Ball & Socket from the controller. Connect linkage lever by placing the threads of the ball through the hole on the new bracket, and using the supplied M 6 nut fasten it securely. Use JD supplied ball stud.
3. Tighten the nuts and bolts from step 1 to secure the bracket in place.
4. Install a flow meter inline where the output hose is connected to the table.
5. Start the engine, engage table hydraulics, and set at high idle. Set the draper flow control to full.
6. Adjust the bracket fine adjustment bolt until the flow meter shows 29 to 30 GPM (110 – 114 LPM). Secure the fine adjustment bolt with locking nut. Re check the flow meter to ensure it has not changed.



NOTE!

The above procedure sets the correct amount of pump flow for the table. See ***“Knife Drive Speed Adjustment” on page 100*** for knife speed adjustment details once the pump flow has been set.



WARNING

Start at a low flow rate and increase in small increments. Setting flow above the 29 to 30 GPM stated above will result in excessive heating of oil and excessive draper wear.



If in the future the R450 windrower is being used with a John Deere hay platform, the linkage needs to be removed from the Honey Bee bracket and re-installed onto the John Deere pump output controller so that the John Deere hay platform receives the correct amount of pump flow.

For the R450, it is a good idea to leave the fine adjust bolt length secured. This will aid in quicker future change over times when switching from a John Deere hay platform back to the Honey Bee draper table.

Mounting Checklist

	Lift arm assemblies fitted to the lift arms of the windrower.
	Strut mounting boots installed and secure.
	Lift arm and top link pins, bolts, and fasteners in place and secure.
	Transport axle and hitch tube in the storage (field) position.
	Transport parts stored for future use.
	Gauge wheels installed and secured. (if equipped.)
	Hydraulic lines (quick couplers) connected.
	Reel lift hose connected to the tilt circuit.
	Electrical connections complete and tested.
	Reel tie down strap removed.
	Swather table leveled.



System Tests

Once all installations have been completed, and checked, the entire system should be tested to ensure everything is operating correctly. If a fault is detected, troubleshoot, and correct as needed.



If possible, the following tests should be completed with an observer present at a safe location outside, with a clear line of sight to the operator. If this is not possible, complete the tests with the cab door open, so the operator can more easily detect unusual noises.

Hydraulics, Electric, and Mechanical Checklist

	Check all fluid levels and top up if needed.
	Start the windrower, run the engine at low idle. Raise and lower the swather and adjust the needle valve to achieve a suitable rate of movement, given the present engine speed. Advance engine RPM to normal operating range, test the rate again, and adjust as necessary.
	Return the engine to idle RPM. Engage each of the swather controls, one by one, to test the electrical and hydraulic connections. Select the applicable function on the tachometer for each system you activate, and monitor its readings to ensure they are accurate.
	Engage all systems, and slowly advance throttle to normal operating RPM. Check that all systems are running at normal speed with no signs of problems or interference.
	Stop all systems, turn the engine off. Inspect the swather to ensure everything is secure, and there are no signs of abnormal operating conditions. Make adjustments as required, and re-test as necessary.
	Check hydraulic fluid levels and top up if necessary.



The drapers will not turn until the engine RPM is increased.

4 - Operation

Initial Start-up



WARNING

Keep bystanders, especially children, away from the machine during these operations. Before attempting these steps, complete the mounting checklist to assure the swather is securely mounted, and be familiar with all cab controls.

1. Unlock the lift arms by disengaging the platform lock as per windrower manual.
2. Start the windrower (see operators manual) and lower the swather to the ground.



IMPORTANT

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

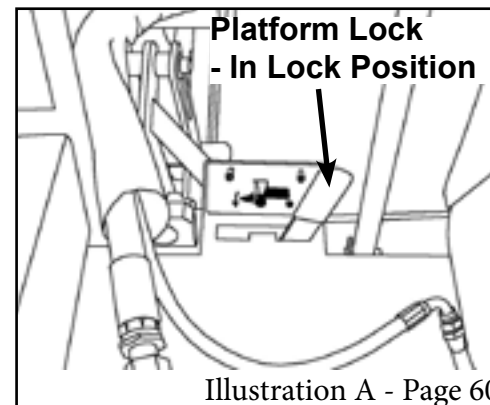


Illustration A - Page 60

3. With the swather completely lowered, (in full contact with the ground) inspect the swather for damaged or loose parts, nuts and bolts. Repair or replace any such parts as required.
4. Check hydraulic reservoir oil level on the windrower. Fill to recommended level according to instructions in windrower owner's manual.
5. Ensure that all protective shields are in place and properly secured.
6. Check that transport/gauge wheel tires are inflated to the recommended pressure of 65 psi. (449 kPa).
7. Check all hydraulic hoses and fittings to be sure they are tight, properly connected, and that no hose damage has occurred during mounting. Repair or replace any damaged parts before re-starting the machine.



WARNING

Do not operate this machinery with defective hoses or fittings. Ensure hydraulic pressure is released before checking or attempting repairs. Pressurized hydraulics can cause serious injury.

8. Lubricate the swather. See service points in the Lubrication section of this manual.
9. Restart the windrower (see windrower Operators Manual). Engage the Park Brake.

Reel Lift Controls

Depress the reel lift switch to raise the reel until the cylinders are fully extended. Hold switch on momentarily, then drop the reel to its lowest position (cylinders fully retracted). Complete this cycle at least twice to ensure the system is working properly.



NOTE!

There is a short delay from the time you press the Reel Lift or the Platform Tilt buttons to the time that the table responds.

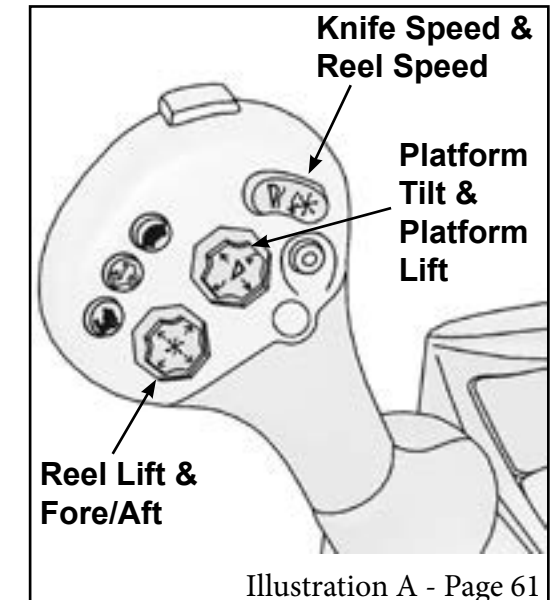


Illustration A - Page 61

Bleeding Air Out Of 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 the swather drive is disengaged and the swather is resting on the ground. Lower the reel to the bottom of the cylinder stroke. The reel cylinders have a center to center collapsed length of 18". Fully extended cylinder length is 28".

Cycle the reel to the top of the stroke, then lower the reel until about 2" of cylinder rod remains exposed. Shut the windrower down. Wait for 10 to 15 minutes to allow the air bubbles in the oil to dissipate. Loosen the bleed port cap on the slave cylinder (far left hand cylinder). Air and oil will escape, and the reel will settle. Tighten the bleed screw (cap) and cycle the reel again. If needed, repeat this procedure.

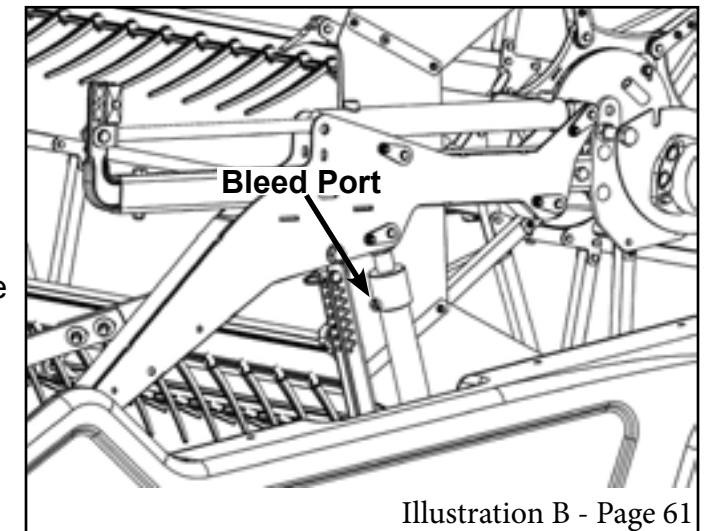


Illustration B - Page 61



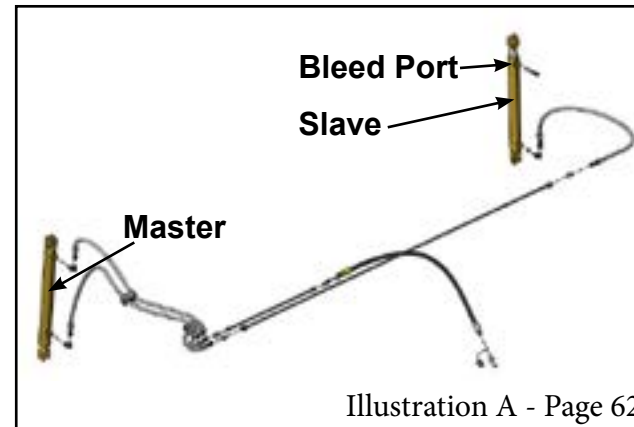
NOTE!

Because of expansion in hydraulic lines, it is normal for the slave cylinder to lag slightly when lifting the reel



Single Reel Lift Circuit

When the operator opens the valve in the windrower, oil is forced into the barrel end of the left hand master cylinder, as the cylinder piston rises, oil on the top side of the piston is forced out of the rod end port, into the port on the slave cylinder.



Additional Checks:

1. Unlock the platform, as shown previously.



If the windrower will not lift the swather table, see the Troubleshooting section of this manual.



Be certain no one is standing near the machine while you are raising or lowering the swather.

2. Raise and lower the swather table to ensure the lift cylinders are working properly.
3. With swather lowered to the ground, and the windrower shut down, check the tension on each draper. If adjustments are required, see the Draper section of this manual.
4. Re-start the windrower, engage the parking brake. Engage platform drive switch (see windrower Operator's Manual) with windrower at low idle. The platform knife and reel should begin to turn. The drapers will not turn until engine speed is increased.



If any leaks appear, shut the unit down, and switch off the engine immediately. Locate the source of the leak, and repair before re-starting.

5. Increase engine speed, until the windrower is at normal operating engine rpm, check and set the following:
 - Reel speed.
 - Draper speed.
 - Draper tracking.



6. If changes are required see the appropriate section of this, or the windrower manual.
7. With the swather lowered to approximately 2 inches (5 cm) from the ground, stop the windrower, shut the engine down, and check the following:
 - Swather leveling (end to end).
 - Swather cutting angle.
 - Gauge wheel height.
 - Reel mount bolts.
 - Knife head section bolts, Knife head bearing bolt, and bearing block bolt.
 - Knife drive support/crank bolts.
 - Connector bar bolts on knife back.
 - Knife drive mounting bolts.

Problems frequently encountered during start-up and break in period

High Hydraulic Pressures - Cold Oil

- Sticky Draper
- Sticky or Tight Knife
- Draper Too Tight

Reel Will Not Raise

- Low Oil Volume from windrower
- Line Restriction
- Valve not open



Full Dismount



IMPORTANT Park the windrower on a hard, level surface. Engage the park brake.

1. With the windrower running, lower the reel to its lowest position. Lower the swather to the ground.



CAUTION Shut the engine down and wait for all moving parts to stop before leaving the cab. Ensure the park brake is set.

2. Uncouple all hydraulic hoses connecting swather to the windrower. Tie or lay hydraulic hoses in such fashion that they will not interfere with the windrower or the swather when the windrower is being backed away from the swather.

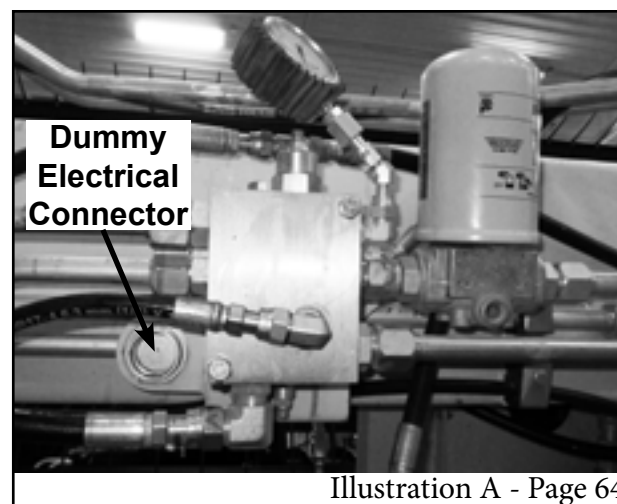


Illustration A - Page 64

3. Uncouple all wires running from the windrower to the swather (21 pin connector) and store on the dummy connector provided.
4. Start the engine, lift the table to its fully raised position.
5. Lock platform in fully raised position as described previously, and in your windrower Operator's Manual.



CAUTION Shut the engine down and wait for all moving parts to stop before leaving the cab. Ensure the park brake is set.



- Self Storing Hitch – Transport Position

6. To convert the hitch from storage to transport mode, remove the safety chain from the storage stub. Release the pressure on the jack, loosen the hitch clamp, and slide the jack off of the stub.
7. Pull the lock pin on hitch tube sleeve, and then pull the hitch tube out of the hitch tube sleeve. Reinsert the lock pin to secure the tube.
8. Install the jack onto the Hitch Sleeve jack mount tube, and tighten the hitch clamp on the jack mount.
9. Extend the lower leg of the jack to a suitable hole.
10. The swather should still be lifted from the ground at this point with the table safety lock in place.

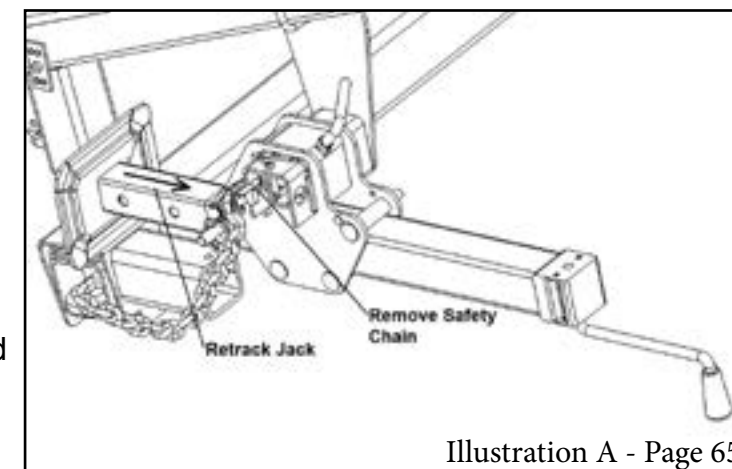


Illustration A - Page 65

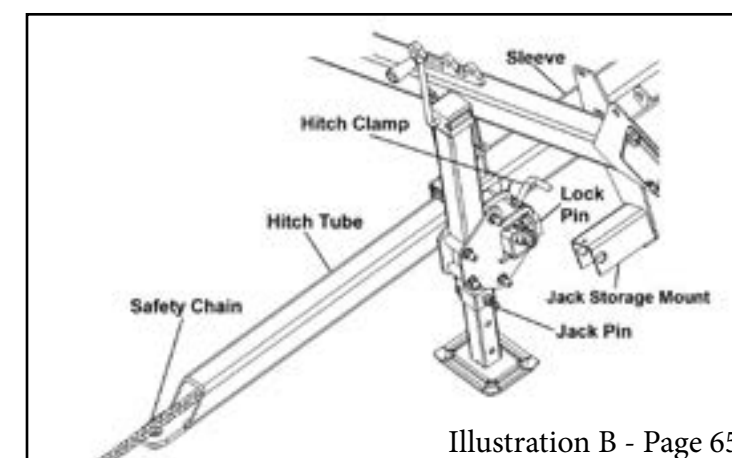


Illustration B - Page 65

- Install Transport Axle

11. Carefully lower the axle from the field position to the transport position. Ensure the hitch pin has been inserted back into the strut in the transport position.
12. Remove the hitch pin securing the extension inside the axle. Pull out the extension and relocate the pin to secure for transport.

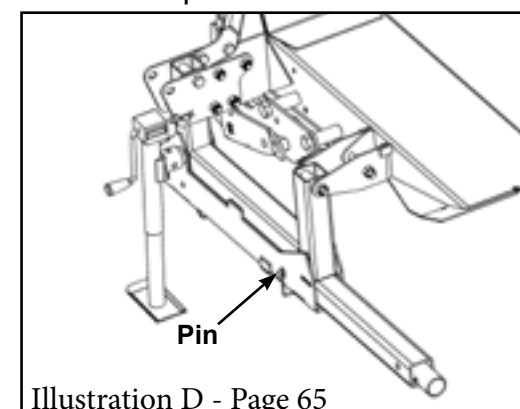


Illustration D - Page 65

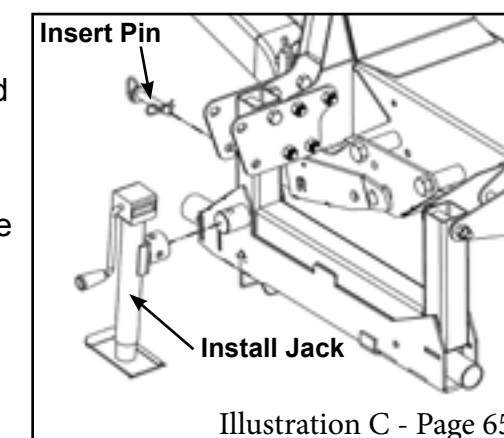


Illustration C - Page 65

13. Install the wheel assembly onto the extension on the cutterbar side of the table, insert lock pin into spindle mount and secure with safety clip.
14. Install the transport axle jack to support the weight at the rear of the table.

15. Remove **Pin 1** to allow the cylinder mounting bracket to swivel. As long as the table is still fully raised, there won't be any pressure on **Pin 1**.
16. Place the platform lock in the unlock position, as shown previously and in the windrower operator's manual.
17. Restart the windrower. Lower the swather until the front transport axle wheel, transport screw jack and hitch tube jack just touch the ground. The lift arms should still be firmly set in the strut mounting boots. Decrease the amount of float pressure to minimum to aid in lowering.

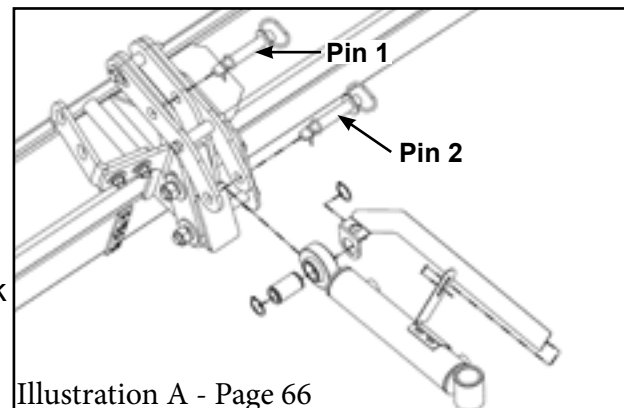


Illustration A - Page 66

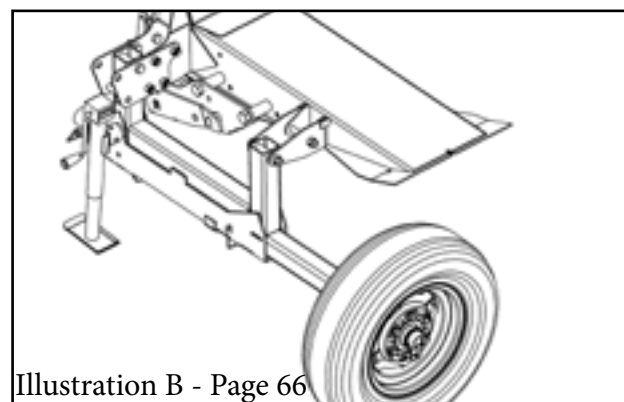


Illustration B - Page 66



CAUTION Shut the engine down and wait for all moving parts to stop before leaving the cab. Set the park brake.



NOTE! Your transport axle mounting bracket may look slightly different from what is shown depending on your model of swather.

18. Block transport axle tires so the swather will not move once the windrower has been removed from the swather.

- Store Hydraulic Tilt Link

19. Release all pressure on the hydraulic tilt link, disconnect the hydraulic tilt link from the swather, and place the cylinder in its storage position. The hydraulic cylinder is rotated 90° to the side and can be held in place with a bungee if required.

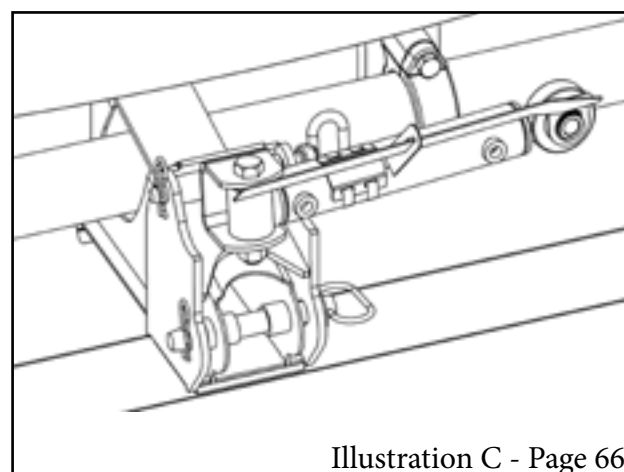


Illustration C - Page 66

- Final Dismounting Steps.

20. With the float pressure still set at minimum, carefully lower the swather so that the weight is fully on the front wheel, hitch and rear axle.



Shut the engine down, set the parking brake, and wait for all moving parts to stop before leaving the cab.

21. Remove the pins keeping the lock arms in the locked position and reposition the lock arms on each of the mounting boots to the dismount position as shown.
22. Restart the windrower and continue to lower the lift arms while slowly backing away until the lift arms are clear of the boots. For ease, additional lift arm pressure can be relieved at this point by opening the windrower's manual float release valve.

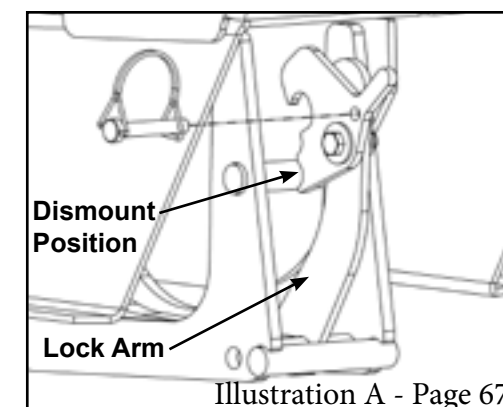


Illustration A - Page 67



If the swather moves, stop immediately and find the cause.



Once clear of the swather, engage the park brake. Shut the engine down and wait for all moving parts to stop before leaving the cab.

23. Attach the rear wheel and secure with the hitch pin (Illustration "B").
24. Lower the jack, remove it and re-install it in the storage position (Illustration "C").
25. Check that the swather is level. If necessary adjust the height of the hitch jack.

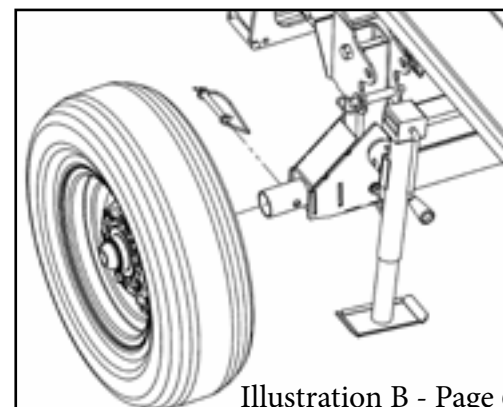


Illustration B - Page 67

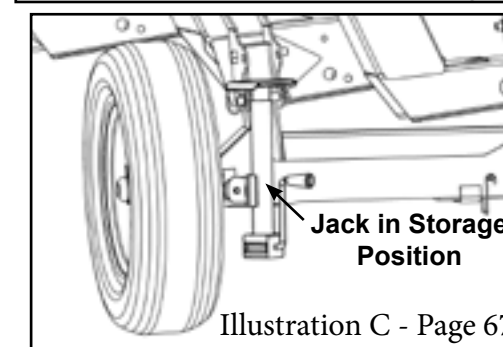


Illustration C - Page 67

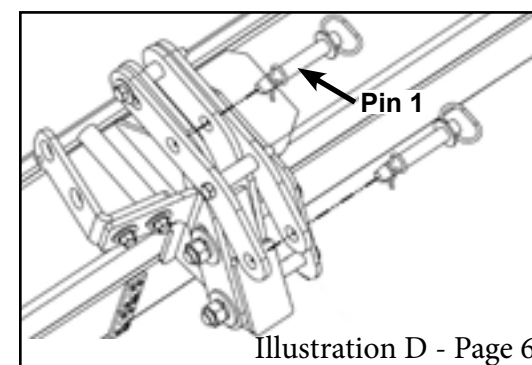


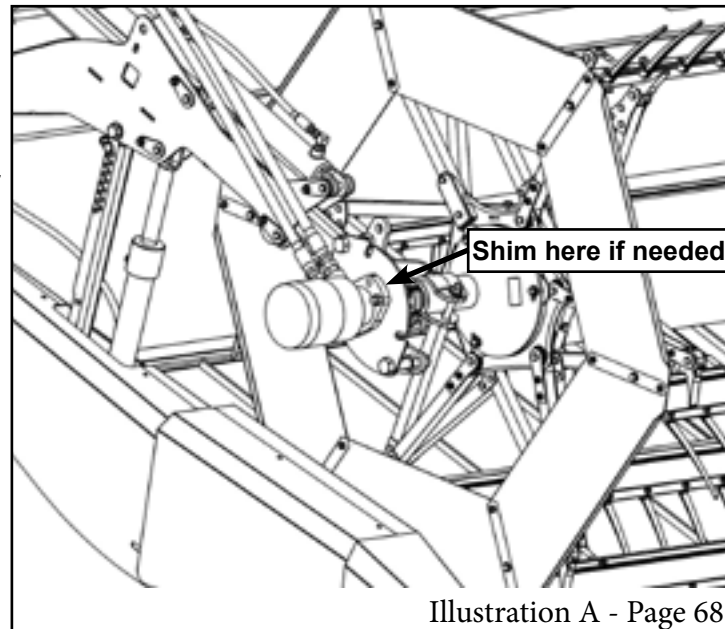
Illustration D - Page 67

26. Re-install the pins for the mounting boot lock arms (Illustration "A").
27. Re-install Pin 1 to secure the cylinder mounting bracket in place (Illustration "D").

5 - Reel

Reel Drive

Depending on your table model, the reel is driven by either one or two hydraulic motors with a direct drive coupler to the reel. Check coupler bolts and motor mount bolts regularly for tightness. Check alignment of motor to reel tube, and shim the mounting bolts if needed.



Reel motors are capable of bi-directional operation. As installed on the swather 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.

Reel Speed Adjustment

There are two diameters of reel used on the swather. The 42" UII Reel should rotate from 12% to 15% faster than the ground speed. The 44" HCC Reel should rotate from 10% to 12% 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 power unit. Adjust the reel speed so that the reel has the appearance of "pulling" the power unit 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.

Reel Position

Hydraulic Fore & Aft

All swather reels are equipped with hydraulic fore and aft, controlled from the power unit. This feature allows the operator to move the reel assembly forward and backward.



NOTE!

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

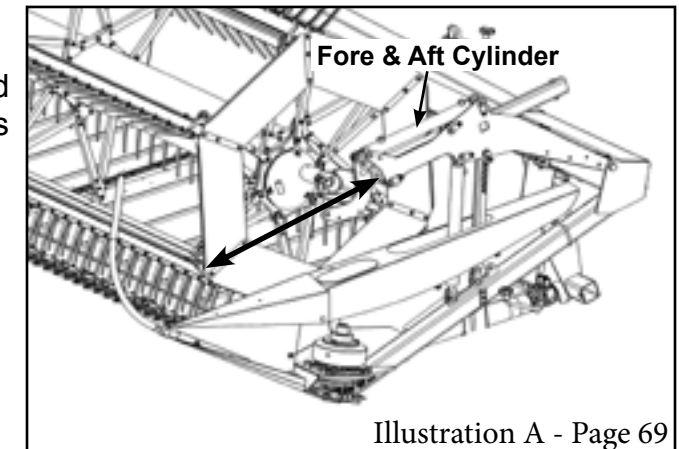
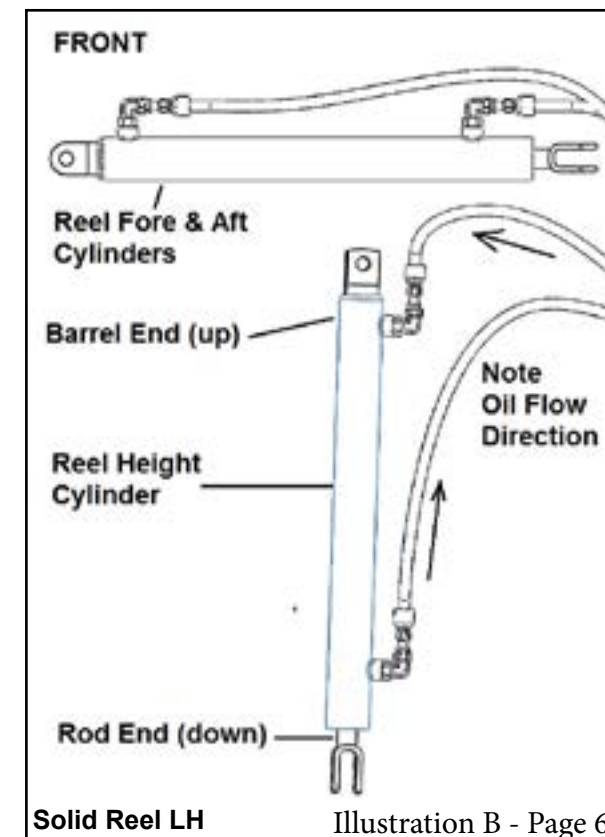


Illustration A - Page 69

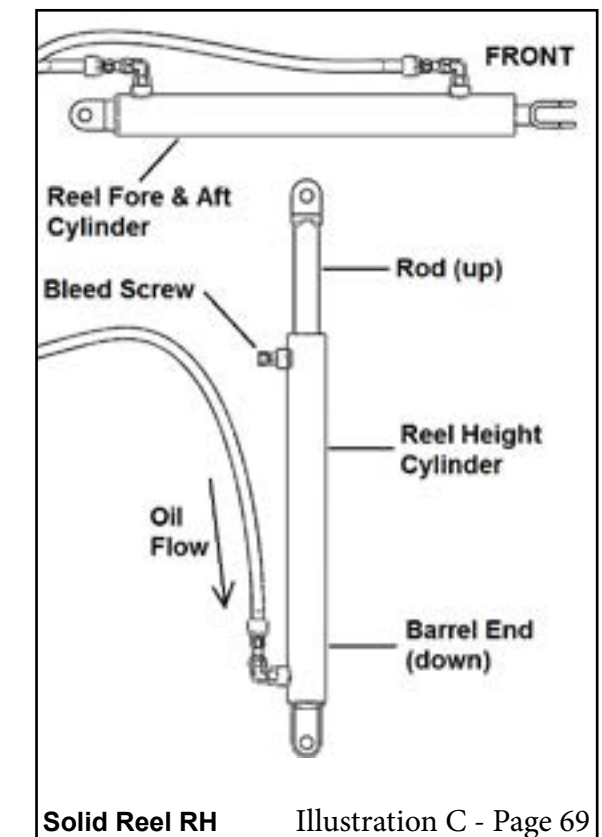
Solid Reel Hydraulic Circuit

Pressure from the power unit feeds the barrel end of the left-hand cylinder. As the cylinder barrel rises, oil below the piston is displaced. 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.



Solid Reel LH

Illustration B - Page 69



Solid Reel RH

Illustration C - Page 69

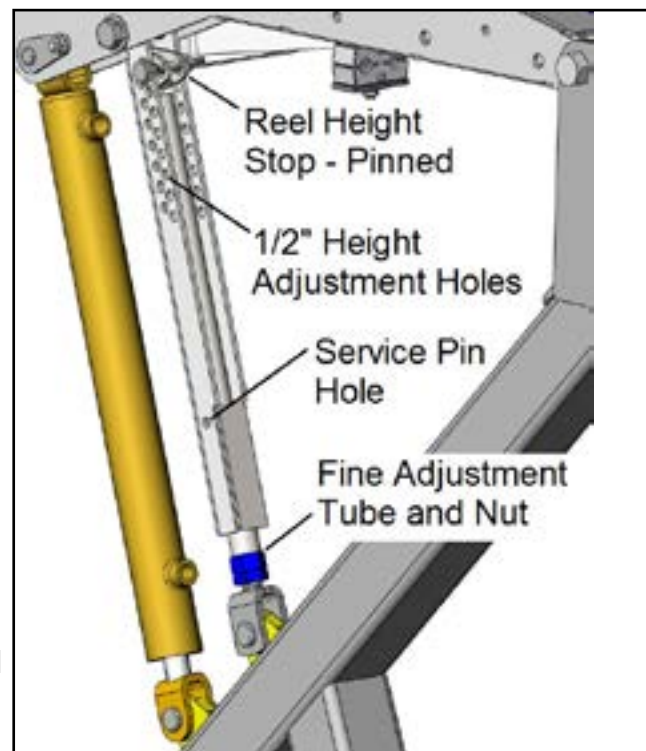
Reel Arm Leveling and Height Adjustment

Reel Height Adjustment

Swathers are equipped with adjustable reel height stops, which limit how much the reel can be lowered. These stops are located behind the reel lift cylinders, and use course adjustment lock pin holes and a fine adjustment threaded tube.

To adjust the height limits:

1. Start the power unit, and with the swather fully lowered, raise the reel to maximum height.
2. Engage the emergency brake, shut power unit down, and allow all moving parts to come to a complete stop before exiting the cab.
3. Move Reel Height Stop in left side Reel Height Control arm into the desired location (hole). Fully insert Stop into the arm and orientate flat side down. Ensure that lock pin is fully installed and locked in place with the safety clasp. Perform fine adjustment to height by turning the Adjuster Tube either clockwise or counter-clockwise and securing in place with lock nut. Take note of the exact hole location of the lock pin, and thread count underneath the lock nut.
4. Repeat this procedure for right side of the swather, ensuring that lock pin is inserted at the same hole location height as the left side, and the thread count matches.
5. Restart power unit, and slowly lower the reel to it's lowest position. Ensure the reel tines will not contact any part of the deck, draper, or cutter bar.



Reel Height Stop Illustration A - Page 70



Illustration B - Page 70



Ill C - Page 70

NOTE!

If slightly different heights for each end are desired, perform fine adjustment only, keeping the lock pin hole locations the same on both ends.

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.

Reel Centering

Measure the clearance from the end shield on the reel to the crop divider on each end of the swather. See the illustration below.

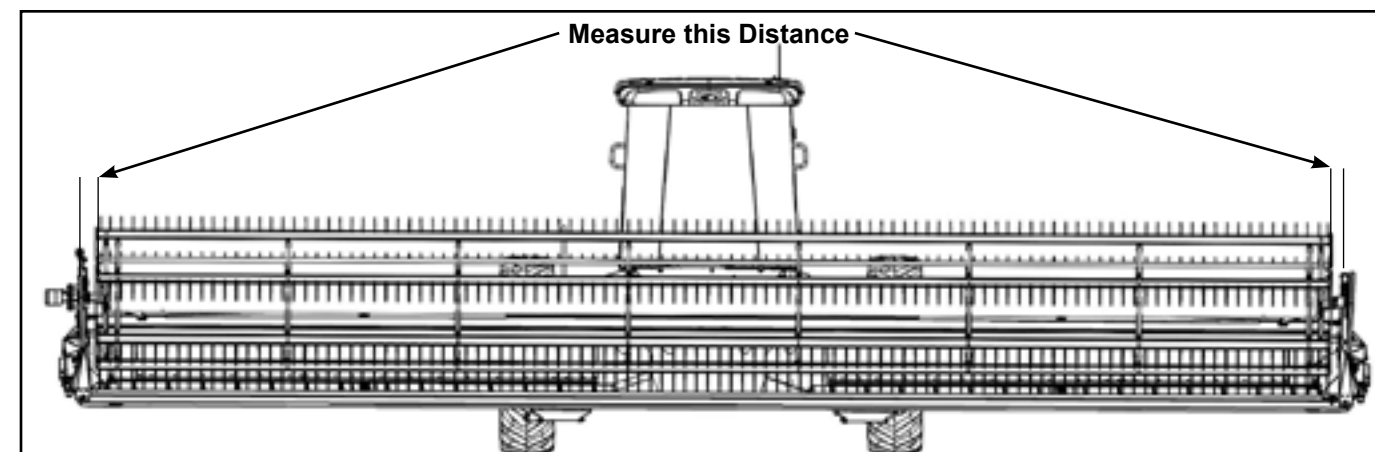


Illustration A - Page 71

If the reel is not centered on the swather, proceed as follows:

1. Fully lower the table and reel, and engage parking brake.
2. Turn power unit off and allow all moving parts to come to a complete stop before exiting the cab.
3. Loosen the carriage bolts that secure the reel arm braces on both ends of the reel.
4. Push the reel arms until reel is centered.
5. Tighten bolts when centered.

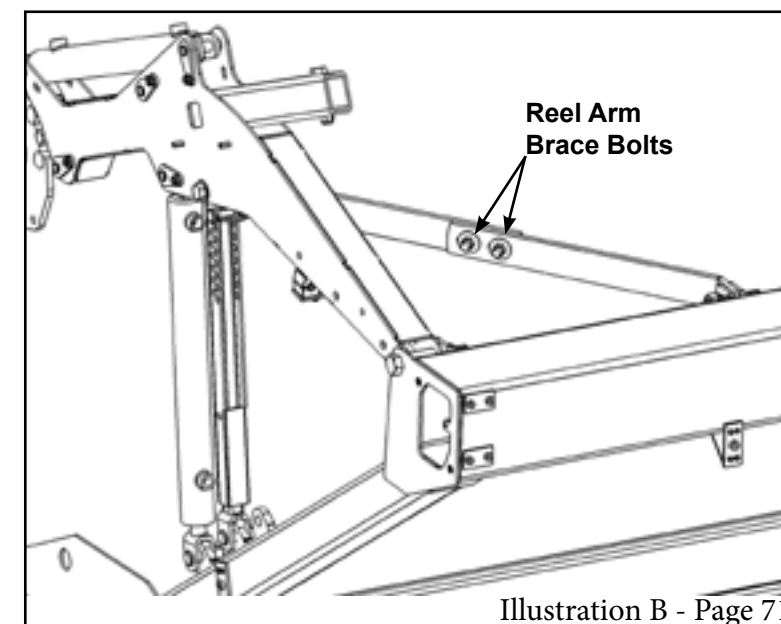
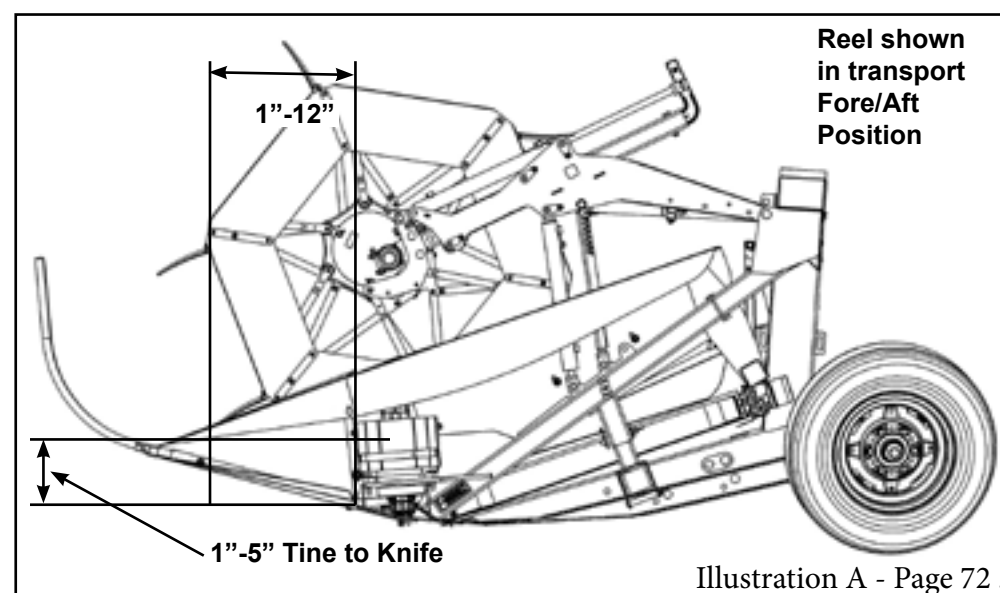


Illustration B - Page 71

Placement of the Reel on the Swather

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

- Normally the more "down" the crop, the further ahead the reel should be set. See next section.
- Setting the reel too far ahead will not push the crop into the knife will 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 stops so that the tine tips miss the guards and sickle by at least 1" with the cutter bar fully raised, to avoid cutting tines, and breaking knife sections. Wider tables will require more clearance due to increased flexing.
- Normally the more "down" the crop; the closer the tines will need to be placed to the cutter bar, down to this 1" minimum.



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.



Care must be taken to ensure that the reel tines do not come in contact with the cutter bar. 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.

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.

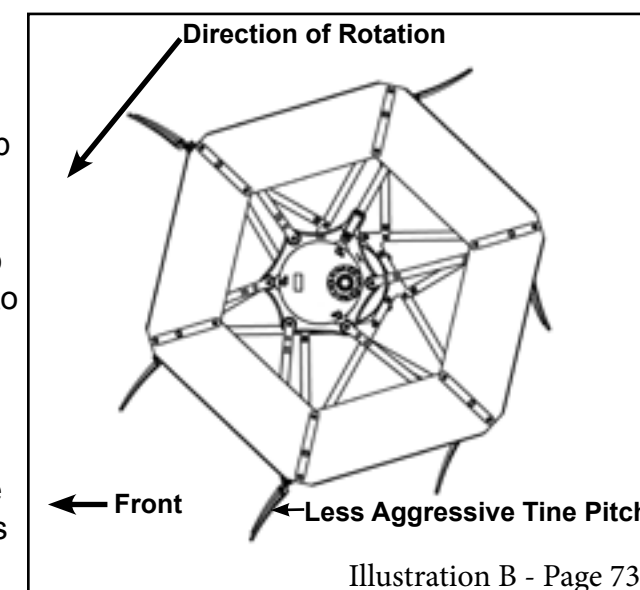
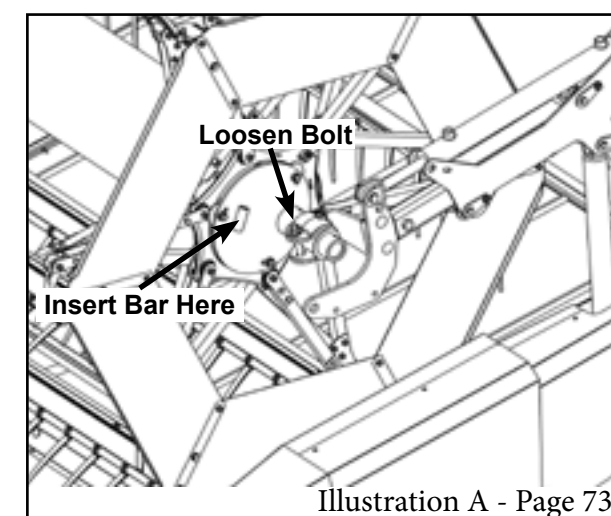
Universal – Ull Pick-Up Reel: Tine Pitch Adjustment

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.

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



Tine pitch must be the same at both ends of the reel. This applies to Ull or HCC reels.

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.

Hart-Carter (HCC) Reel

The HCC reels supplied with the swather 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).
To adjust the pitch of the tines, refer to the illustrations and instructions below.

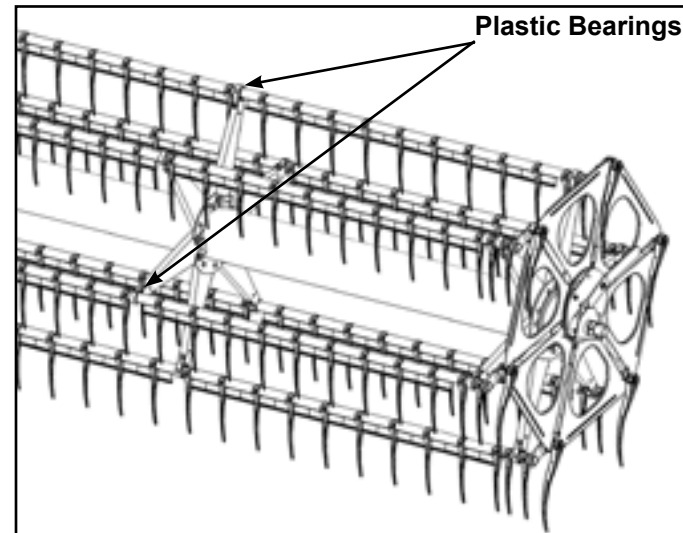


Illustration A - Page 74

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.

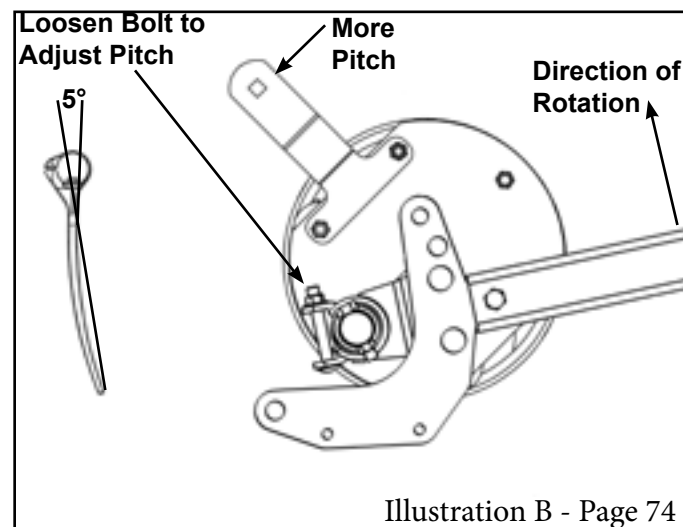


Illustration B - Page 74



Tine pitch must be the same at both ends of the reel. This applies to Ull or HCC reels.



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.

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.



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.

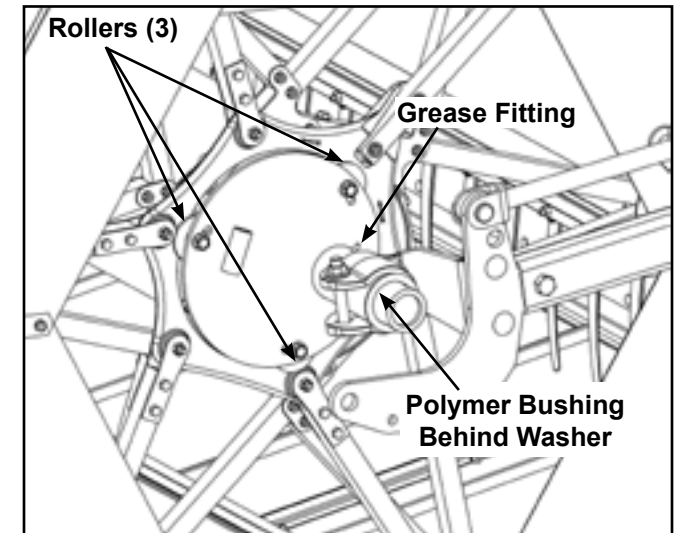


Illustration A - Page 75

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.



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.

Check Points Before Operation:



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 swather.
- 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 swather opening.



6 – Draper and Decks

Depending on the options purchased, 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.



Lower the swather 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.

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.

Once extended, you should make sure that everything is parallel. The easiest way to do this, is to measure the distance between the 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.

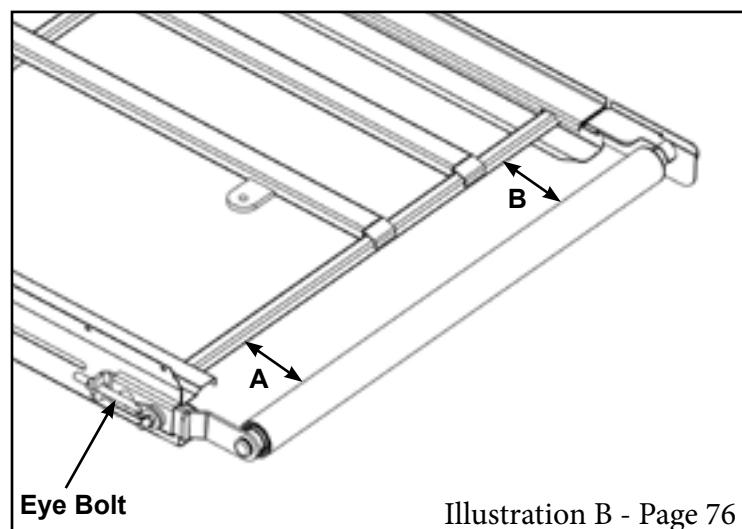


Illustration B - Page 76

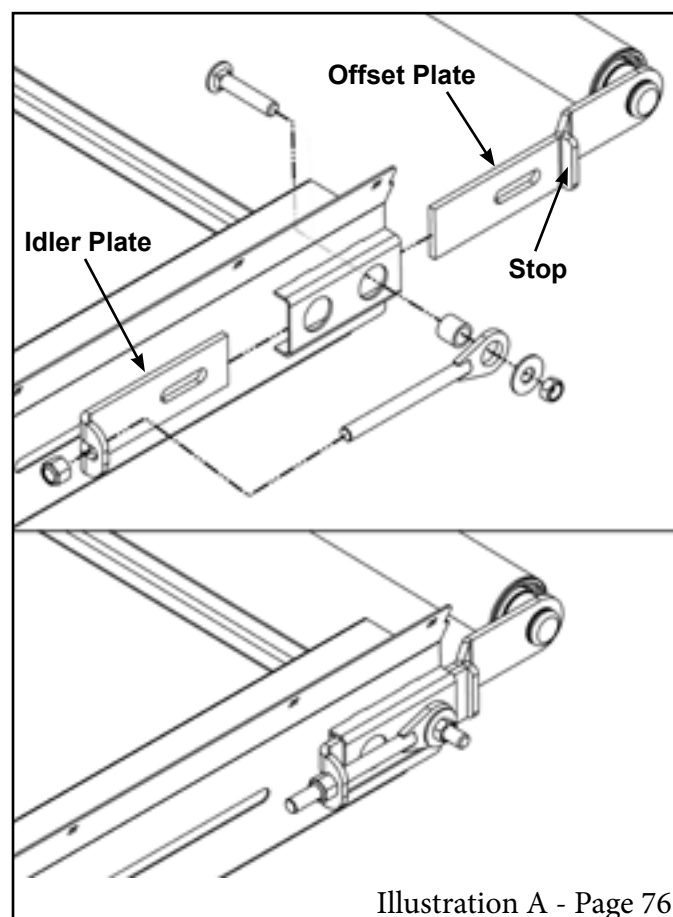


Illustration A - Page 76



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 **"Deck Tensioning - Illustration B - Page ."** on page 78.
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 swather.
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. Take note of the position of the rounded corners on the connector bar.
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.

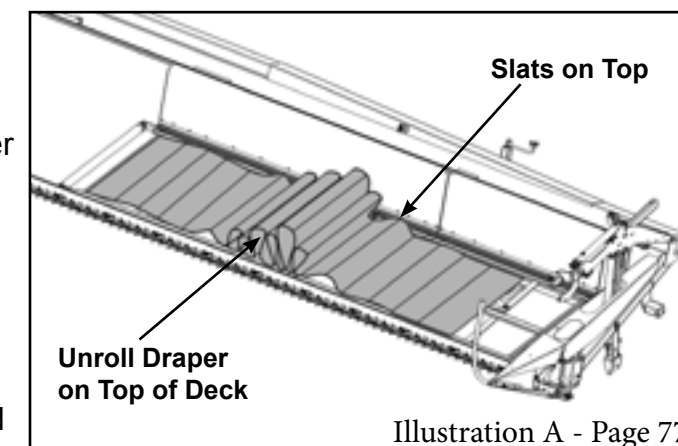


Illustration A - Page 77

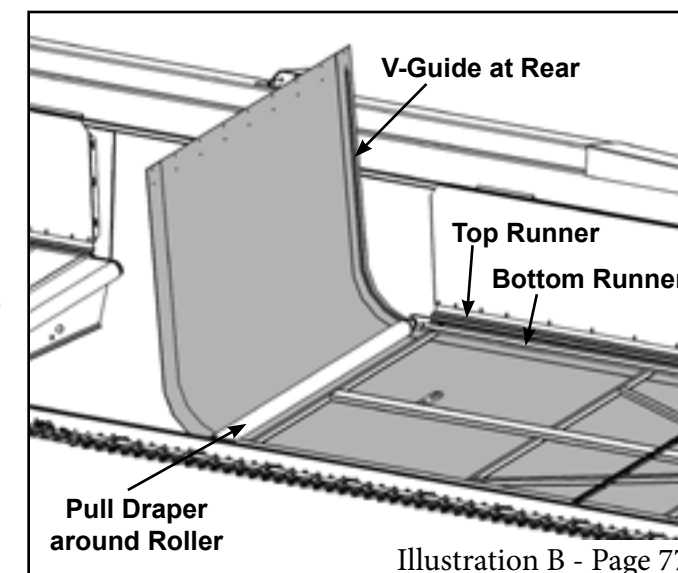


Illustration B - Page 77

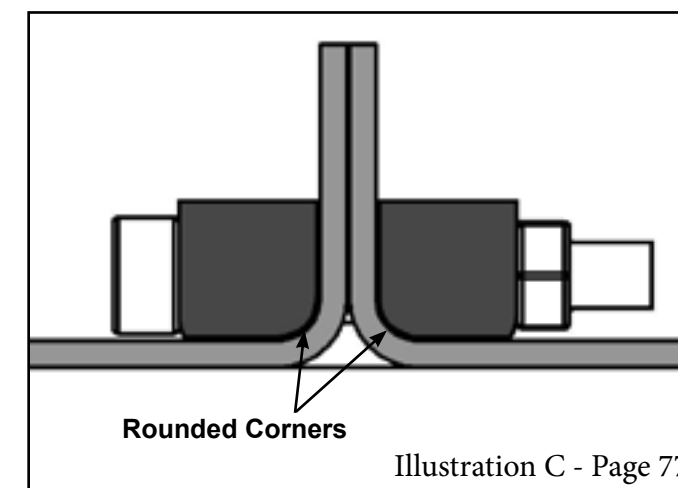


Illustration C - Page 77

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.

Spring 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.

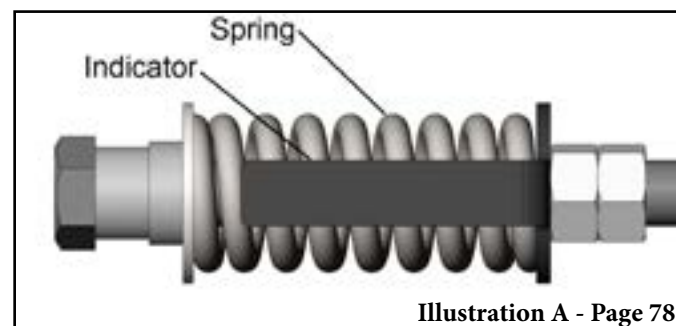


Illustration A - Page 78



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:

- Engage the power unit drive with the engine at low idle.
- Observe from the cab how the drapers are tracking.



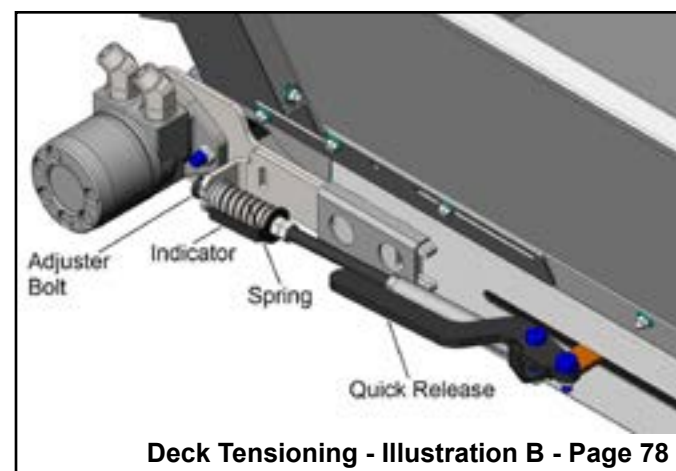
If adjustment is required, lower the swather to the ground, raise the reel and lock in place. Shut down the swather, and turn off the engine before exiting the cab.

If tensioning is still required:

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



When increasing tension, do not compress the spring past the indicator tip.



Deck Tensioning - Illustration B - Page 78

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



When adjusting the draper tension and tracking, check the clearance between the draper deck slats and the end strut.



Draper tension should be just enough to prevent slipping. Do not overtighten as it may cause failure to the bearings, draper rollers and/ or draper belts.



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.

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.

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 mount plate and idler roller at the back panel end out, creating more slack in the draper at the cutter bar.

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.



The draper will track to the slack side.

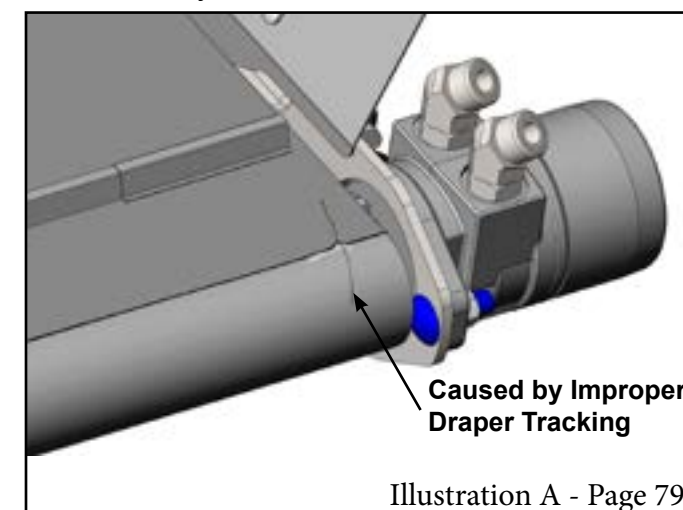


Illustration A - Page 79

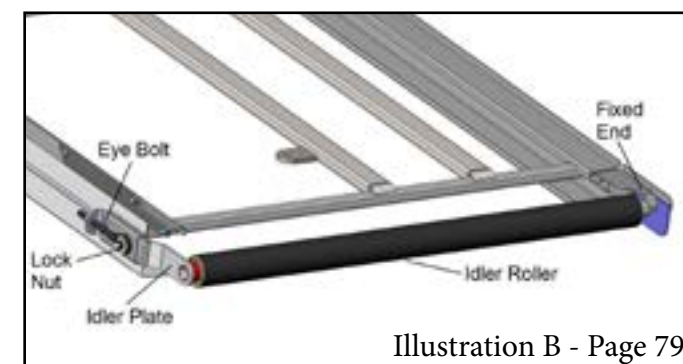
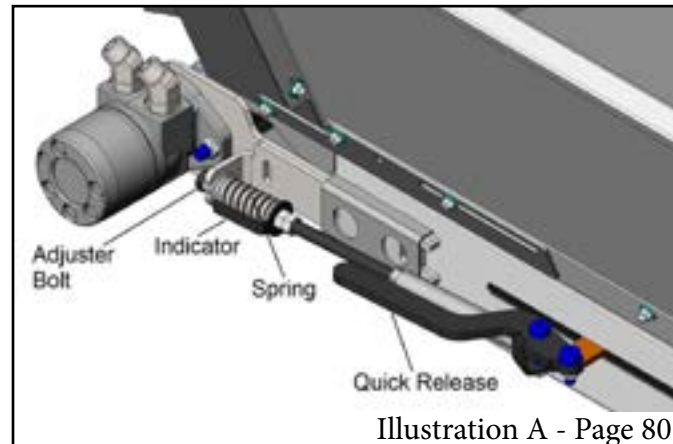


Illustration B - Page 79



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

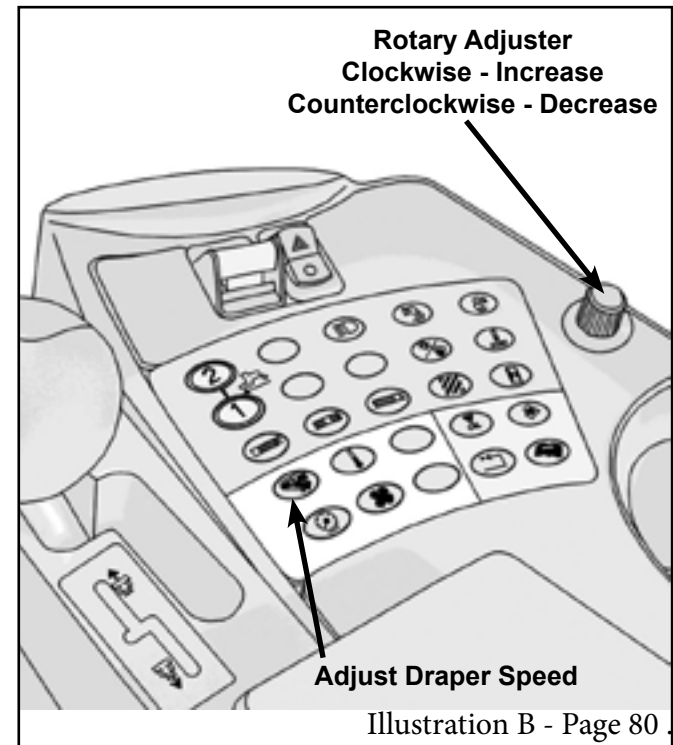


Draper Speed

Proper draper speed is critical to the performance of your Swather. The draper speed should be set to match the field speed of the swather and to deliver the material smoothly to the center opening. The speed of the lateral draper is controlled by an adjustable flow control. Adjusting the flow control will affect decks equally. The draper speed flow control is managed from the in-cab control console.

Additional Draper Speed

When swathing, the draper speed should be set to form a good windrow, removing material from the cutter bar, and delivering the material smoothly to the opening. Experiment with various draper speeds to determine the best swath formation for the existing cutting conditions. It may be necessary to make further adjustments as crop and moisture conditions change.



ATTENTION

Excessive draper speed will cause abnormal wear, and will shorten the service life of the draper.



Draper Splicing

Honey Bee Mfg. strives to provide top quality draper material on their products. Our draper is made from rubberized polyester with fiberglass reinforced slats. Regular maintenance will extend the life of your draper. Proper tension and tracking are very important. If material builds up inside the deck, it will wrap around the idler and drive rollers causing the draper to tighten. As the draper tightens, additional stress is put on the motor and the draper. If this condition is not corrected, it will result in failure of the drive roller motor or the draper. 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 1/2" longer than the piece to be removed.



NOTE!

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 swather 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

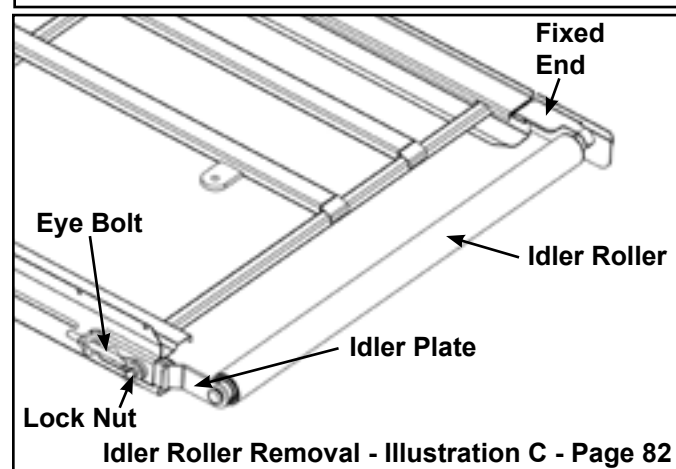
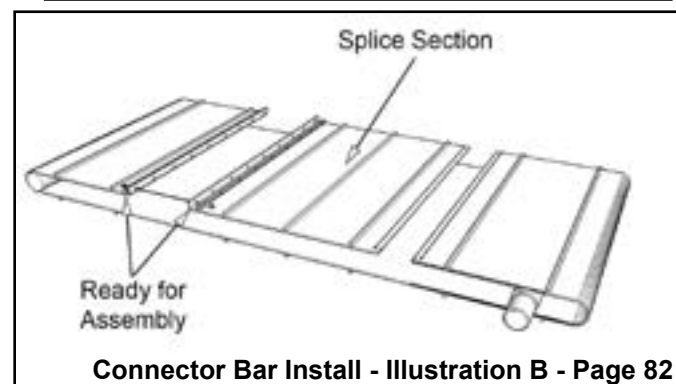
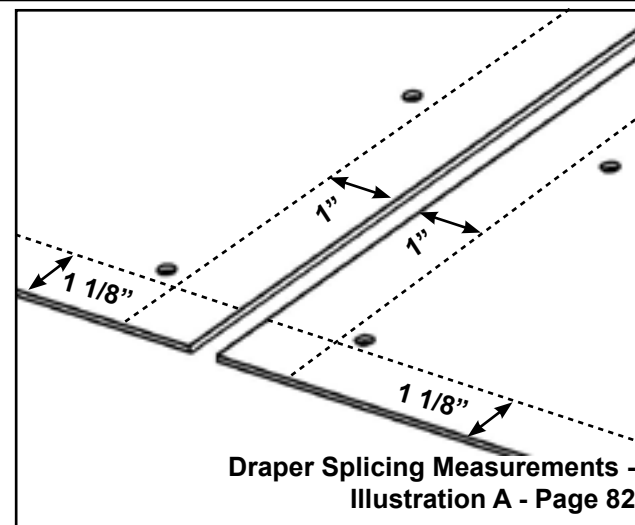
Engage the park brake on the windrower, shut the engine down, and wait for all moving parts to stop before leaving the cab.

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".)



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8. To mark the location for holes, measure 1" in from each edge to be joined, and mark a line parallel to the cut edges.
9. On each of these lines, measure 1-1/8" from the front edge of the draper, and make a mark for the first hole.
10. Drill 3/16" holes through each mark.
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.
13. Match up the edges of the draper and drill a hole at the opposite end on the 1" 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 1/2" above connector bar.
15. Adjust tracking.



Idler Roller Removal

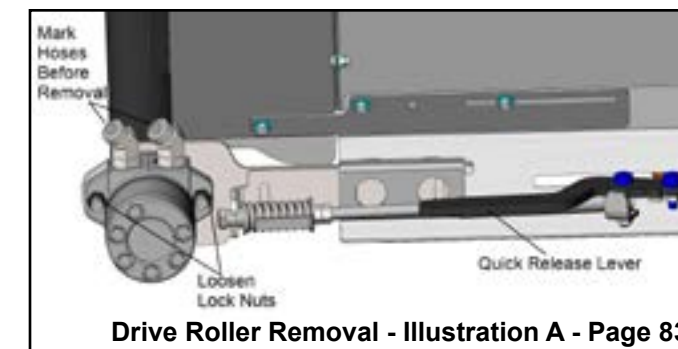
1. Relieve draper tension using the quick release lever.
2. Remove the nut, washer, spacer and bolt that holds the eye bolt and idler plates in place.
3. Slide the idler plate with the eye bolt out of the c-channel as far as possible.
4. Pull the offset plate away from the roller end, letting the roller drop down.
5. Pull the idler roller out of the deck.
6. Check bearings on each end and remove any material build-up on the roller.
7. Re-assemble in reverse order. See **"Lining Up the Idler Roller" on page 76**, adjust tension and tracking as necessary.

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Drive Roller Removal

1. Relieve the draper tension using the quick release lever.
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.

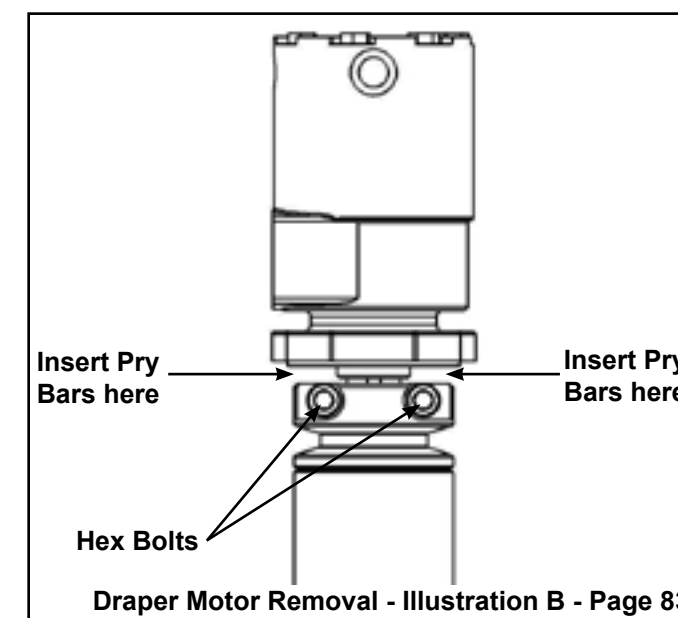


NOTE!

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.

Removing Draper Motor

1. Remove Hex Bolt set screws.
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 7/8" or 3/4" rod through the center of drive roller and apply force directly to the shaft of the motor.

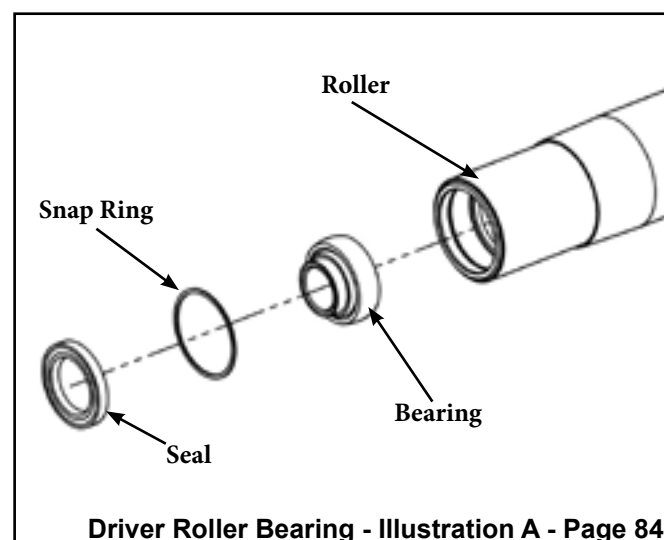




Replace Bearings on Drive Roller

The roller bearings are pressed into the rollers with a friction fit and held in place with a retaining ring.

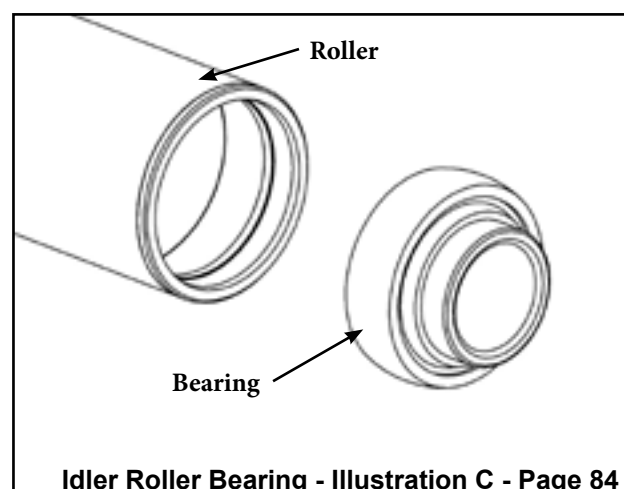
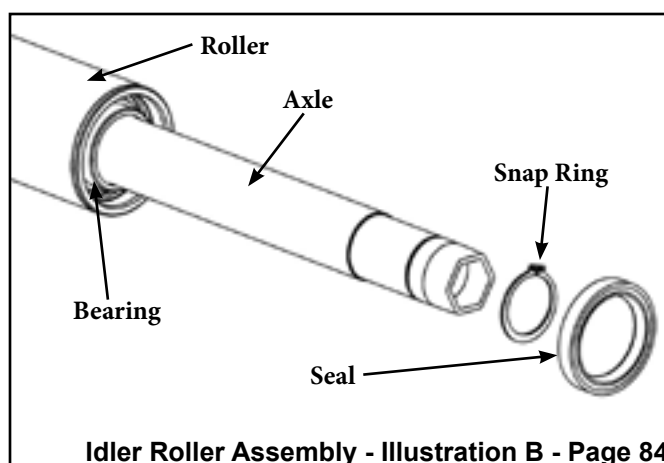
1. Remove seal that holds the bearing assembly in place. Be prepared to replace the seal with a new one upon replacement.
2. Remove the snap ring that secures the bearing in place.
3. On the opposite end of the roller from the bearing to be removed, insert a small rod through the inside of the roller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



Replace Bearings on Idler Rollers

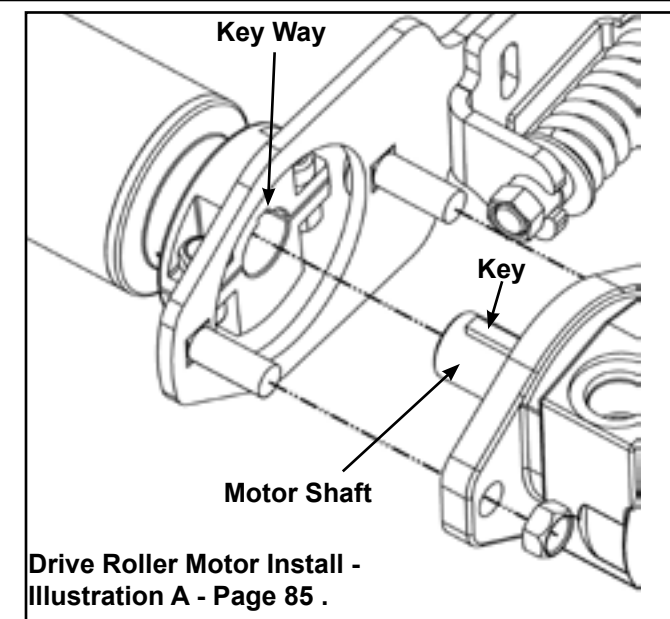
The roller bearings are pressed into the rollers with a friction fit and held in place with a retaining ring.

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. Grab the axle and pull it out of the roller, ensure that you pull the side with the hexagon end out first.
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.



Installing Draper 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.
4. Tighten set screws.



Draper Deck Maintenance:

1. Remove draper connector bar.
2. Remove draper - clean draper of debris, both sides.
3. Store draper indoors.
4. Clean debris from rollers, 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.



If you elect to store the swather 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.



7 - 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.



WARNING

When working with or around the knife, take the following precautions to avoid death or serious injury.

1. Raise the table, raise the reel, stop the engine, set the park brake, and remove the ignition key.
2. Wait for all moving parts to stop before dismounting.
3. Install the reel and table lift cylinder locks.
4. Clear the area of bystanders, especially children.
5. Wear heavy canvas or leather gloves when working with the knife.

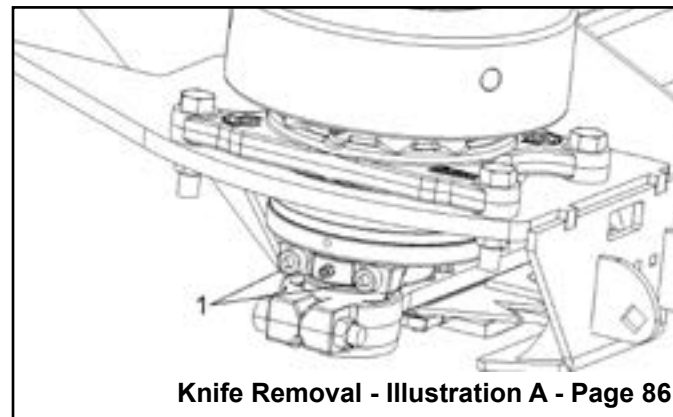
Knife Speed

See *"Knife Drive Speed Adjustment"* on page 100

Removing the Knife

Remove the two socket head cap screws (1) on the knife head block. Slide the knife out of the cutter bar.

Reverse the procedure when installing the knife. Apply a small amount of thread lock solution to cap screws (1) before installation. Torque to recommended specifications - 59 ft-lb (80 Nm).



Knife Removal - Illustration A - Page 86



Guards

EasyCut guards are manufactured from heat treated spring steel with beveled cutting edges at the top and bottom which make the guards cut well 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 top. Alignment 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.

Sickle Sections

The sickle sections of the knife are installed with alternating cutting surfaces. One section will have the cutting surface on the top and the next will have the cutting surface on the bottom. They must be in good condition to obtain proper cutting.

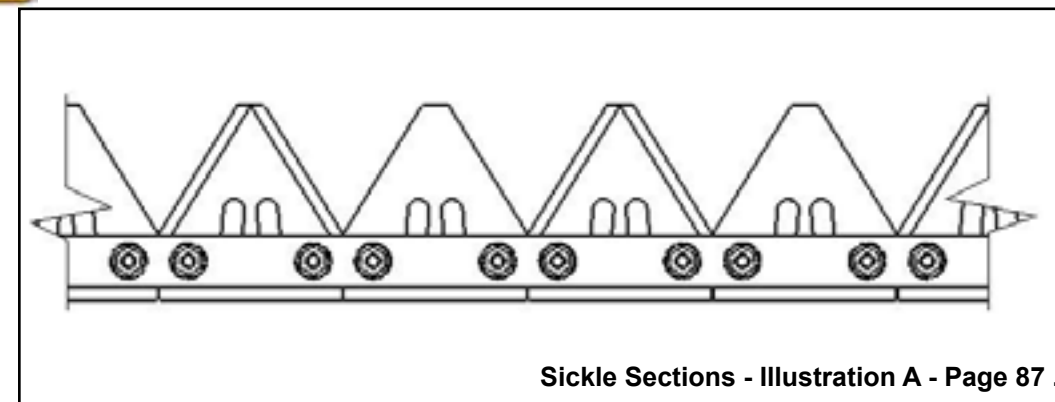
Replace a Section:

- | | | |
|--|------|--|
| 1. Remove the guard to expose the section. | -OR- | 1. Turn the knife by hand until one section bolt is exposed. |
| 2. Unbolt the section and install a new one. | | 2. Remove the bolt. |
| 3. Tighten the section bolts and nuts. | | 3. Turn the knife until the other bolt is exposed. |
| 4. Install the guard. | | 4. Remove it, and install a new section by reversing this procedure. |
| | | 5. Tighten section bolts and nuts. |



IMPORTANT

Always alternate the sickle sections, one with the serrations facing up, the next, facing down.



Sickle Sections - Illustration A - Page 87



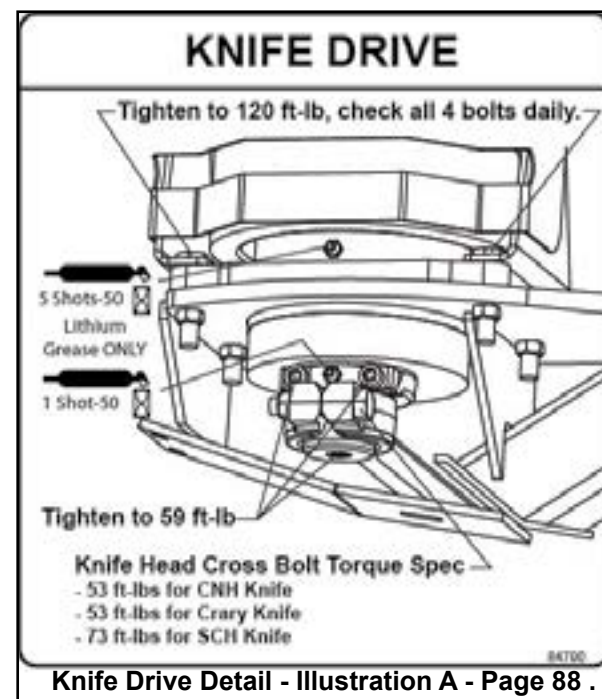
Knife Drive/Knife Head

Proper maintenance of the knife drive and the knife head is critical to the performance of your swather. Check the knife drive hold down bolts daily. Tighten to the specified torque as needed. Check the knife head bearing daily. If the bearing is loose, check the tightness of the bolt. If the bolt is tight, check the condition of the bearing and sleeve. If any parts are defective, replace them immediately to avoid damage to the drive. Check the knife head locking bolt and the socket head cap screws daily. Rotate the knife drive by hand after tightening the knife head bolt to be sure the bearings rotate freely.

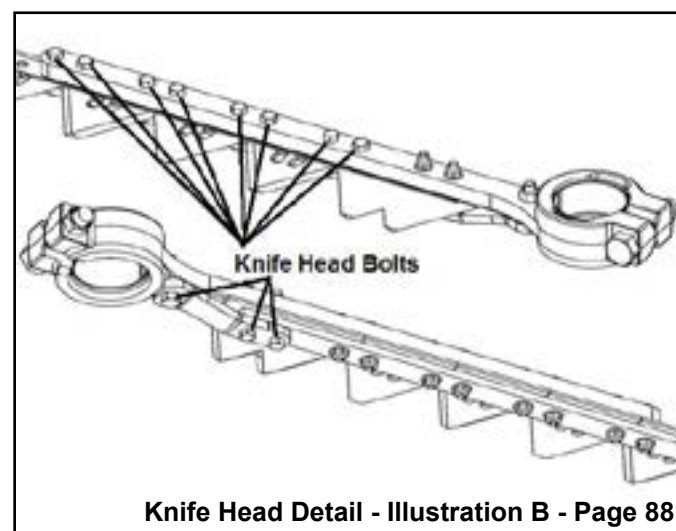


Knife drives should always rotate counter-clockwise to keep the bottom cap screw from coming loose.

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.)



Knife Drive Detail - Illustration A - Page 88 .

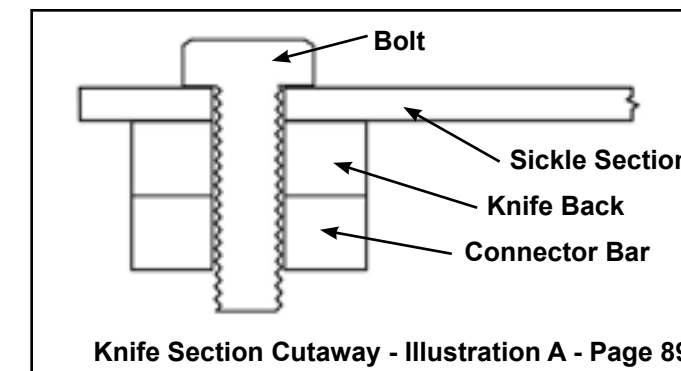


Knife Head Detail - Illustration B - Page 88 .

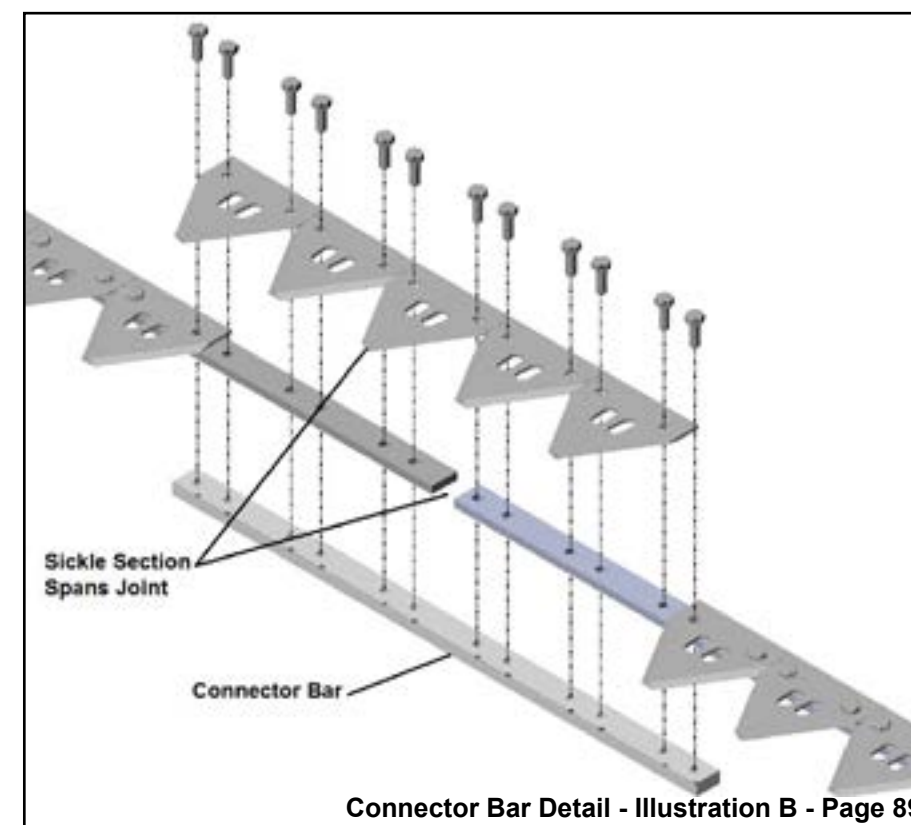
Connector Bar

On some models of Honey Bee swathers a connector bar is used to join two sections of knife back. The sickle sections are bolted to the knife back. The connector bar is attached to the underside of the knife back with eight threaded inserts installed into the bar which protrude slightly on the side that contacts the knife back. The knife back is punched with slightly tapered holes to accommodate the sickle sections.

The knife sections must be installed on the top side of the knife back (the side stamped "TOP") so that the protruding inserts of the connector bar will fit snugly into the tapered section holes. As the section bolts are tightened, the inserts in the connector bar are drawn into the knife back forcing them to clamp down on the bolt. The bolts should be tightened to 120 - 150 in-lbs, (13.5 - 17 Nm).



Knife Section Cutaway - Illustration A - Page 89 .



Connector Bar Detail - Illustration B - Page 89 .



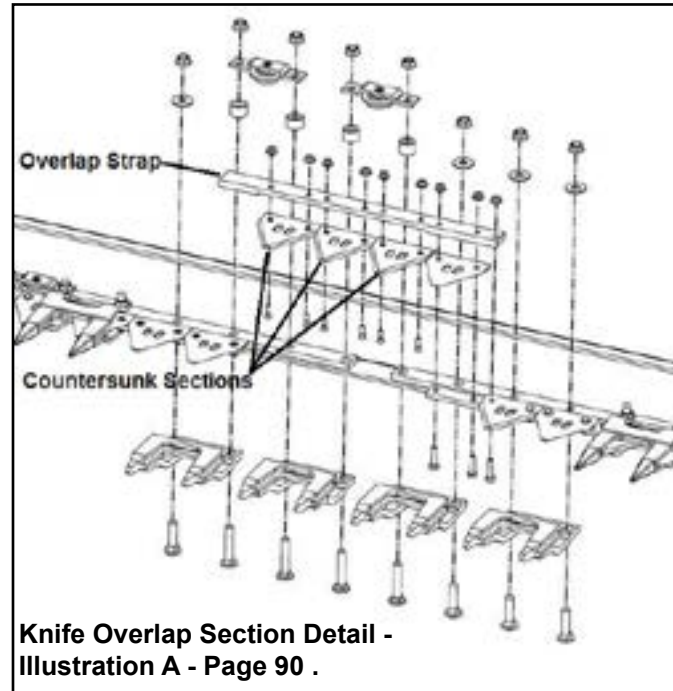
Do not grind the inserts flush with the connector bar. This will defeat their function, and may cause a knife failure. Check tightness of bolts daily; replace broken and worn sections as required.



Overlap Kit

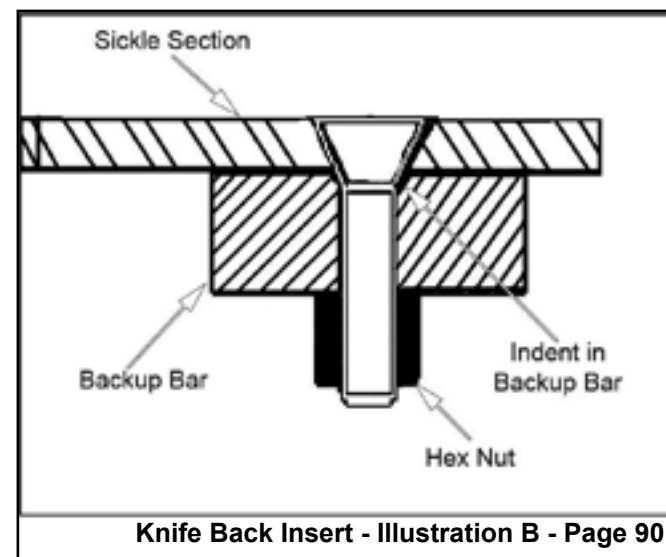
The overlap kit is used on swathers equipped with double knife drives. The fasteners in the overlapping portion of the knife are countersunk to provide a smooth-sliding surface. The overlap guards are open on top, and are deeper to provide room for the double thickness of the knife. The overlap strap bolted to the left-hand knife will slide over the countersunk sections where the knives overlap. If knives are noisy or are over heating, check to see if the overlap guards have been properly installed.

The knife sections that are on the overlap strap and the right hand knife back need to be snugged down to the back up bar when the countersink bolts are tight.



If the sections are loose:

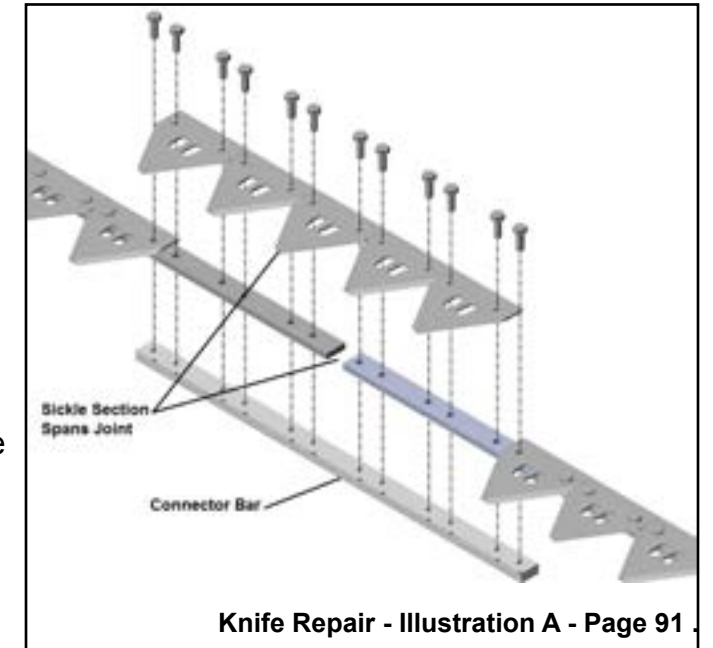
1. Remove the countersink bolts.
2. Inspect the holes drilled into the knife back or overlap strap for a countersunk depression. This allows the tapered head of the bolt to draw down fully, seating in the knife section.
3. If no countersink is found, drill them in (about 1/32" deep) with a 9/32" drill bit.



Repair Broken Knife Back

If the knife breaks during use, repairs can usually be made using a connector bar. Typically, the knife back will break across a sickle section bolt hole. The damaged section needs to be cut out and/or a section of knife removed. If the knife breaks close to the knife head end, remove that section of knife, reconnect the knife head, then add the new piece to the far end of the knife where there is less mechanical stress on the knife.

The join must be directly under the center of a sickle section, not where two sickle sections join. Inspect the knife for dull/damaged guards and sections and built up crop residues. These are the most common causes of knife breakage.



IMPORTANT Correct any of these cause factors before resuming operation.

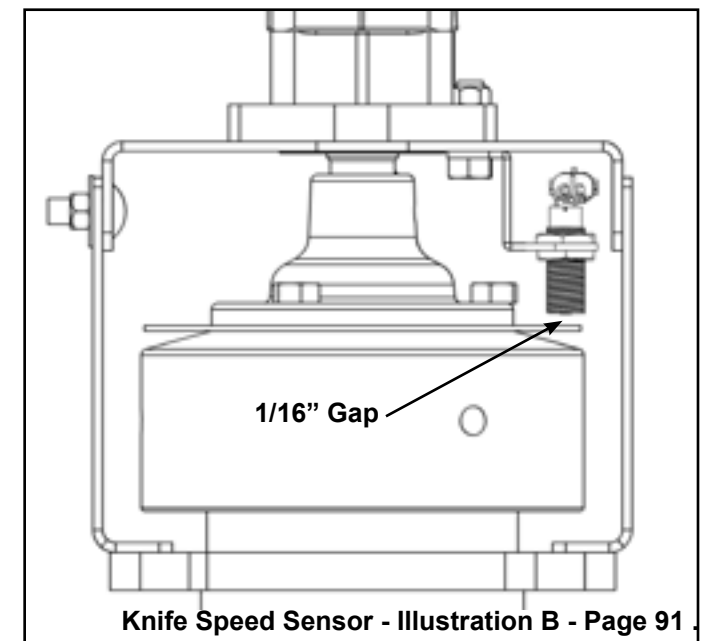
Knife Speed Sensor

The table is equipped with a sensor, located on the knife drive motor, which provides the ability to monitor and calibrate knife speed. The sensor should be positioned so that there is a gap of 1/16" between the pulse wheel and the sensor.

Monitoring Knife Speed

Knife speed can be displayed on the control panel in the cab of the power unit. Optimal Knife Speed is preset to 620 rpm and should never exceed 700 rpm.

The reel speed button on this panel is now used to select the knife speed display see **"A400 & R450 Windrower Controls"** on page 41.





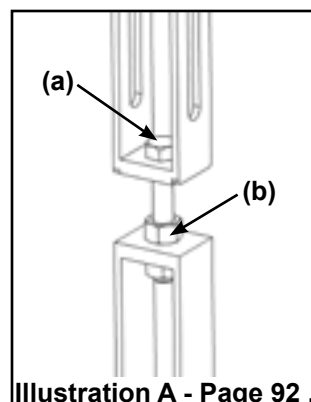
8 - Leveling

The swather is attached to the windrower by one upper suspension link (Hydraulic Top Link) and two lift arm assemblies which slide onto the lift arms of the windrower. The top link adjusts the forward angle of the table. This adjustment affects the angle of the cutter bar in relationship to the ground.

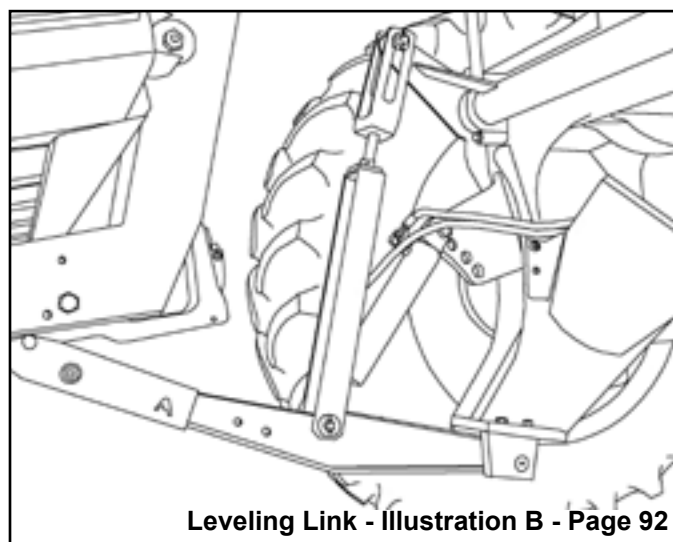
All of the swathers come standard with the Hydraulic Top Link.

Leveling Link

The leveling link is used to connect the right side lift arm to the Rock Shaft, this helps keep both lift arms aligned.



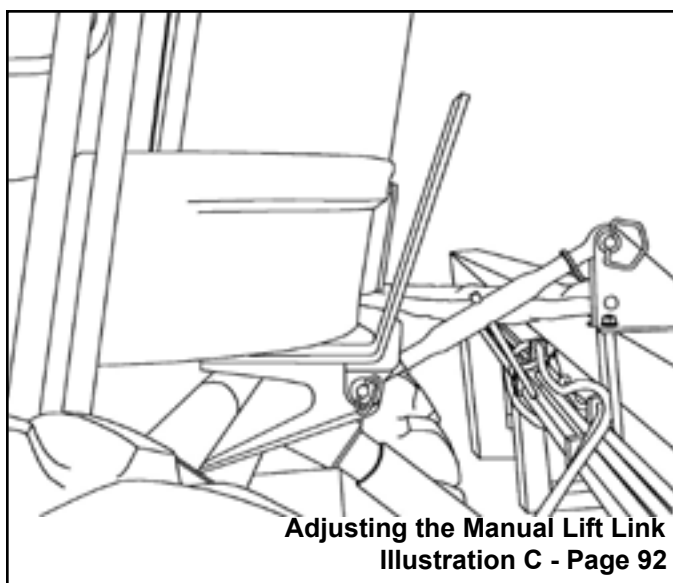
1. Turn the bolt indicated (a) to adjust the length of the leveling link.
2. Lock the leveling link in place with the indicated nut (b).



Leveling Link - Illustration B - Page 92

Forward Angle Adjustment – Manual Top Link

1. Loosen lock tab on the top link. With a suitable size rod, turn top link clockwise to tilt swather back, counter-clockwise to tilt swather forward.
2. Re-tighten lock tab once the desired swather angle has been reached.



Adjusting the Manual Lift Link - Illustration C - Page 92



Forward Angle Adjustment – Hydraulic Top Link

Once all the proper hydraulic connections are made, you can simply tilt the table using the in-cab controls as shown in **Illustration “A”**.

Table Angle

These views of the windrower and table show the results of adjustments to the top link.

Illustration “B” shows the top link fully retracted, drawing the top of the table back. The draper decks will run more horizontal to the ground.

Illustration “C” shows the top link fully extended, tilting the table forward. The draper decks will run at a steeper angle to the ground.

***Remember** that the above examples represent the extreme range of adjustment.

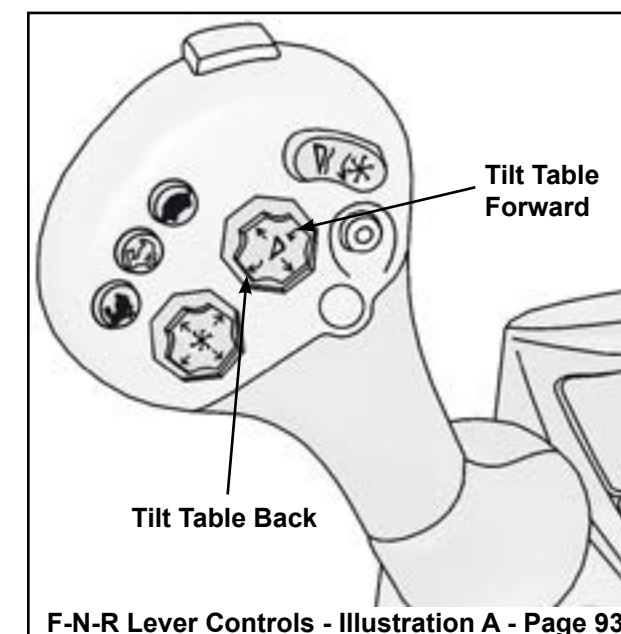
Do not extend the top link beyond 4 ½” of thread exposed at each end. Over-extending the top link may result in the table suddenly tipping forward. Retracted, the top link measures 22”, extended, it measures 31”.

Experiment within this range of adjustment to determine the best setting for your operating conditions and for the type of swath you want.



In rocky conditions, with a short crop, it may be beneficial to keep the guard tips up. Try shortening the top link.

In bushy crops, such as mustard, you may want to tip the swather forward to maximize the opening.



F-N-R Lever Controls - Illustration A - Page 93

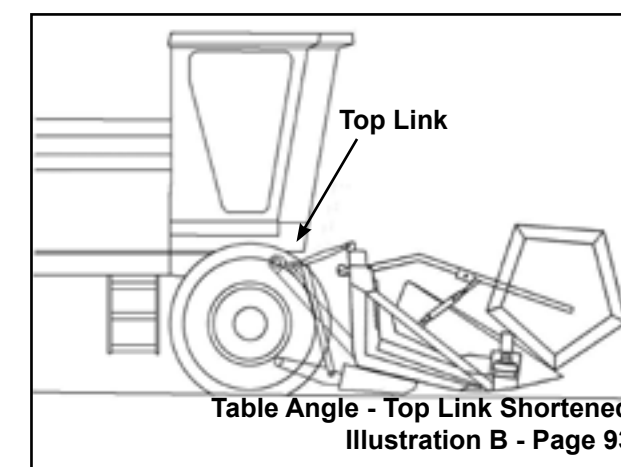


Table Angle - Top Link Shortened - Illustration B - Page 93

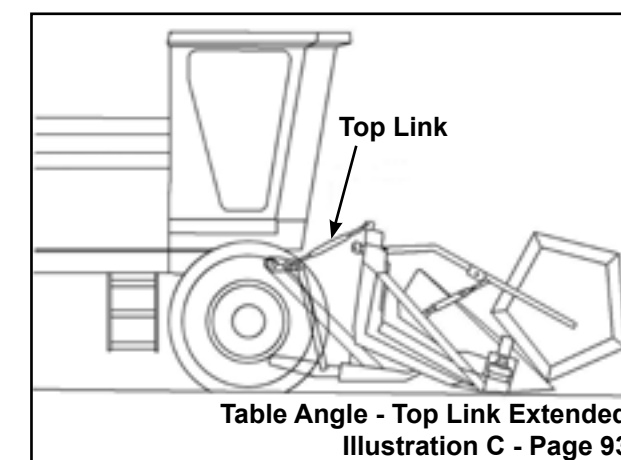


Table Angle - Top Link Extended - Illustration C - Page 93



Adjusting Table Float

Use the lightest float setting, that will keep the table from bouncing, while allowing it to follow uneven ground without gouging or scraping.



If the platform has been raised for any length of time, it may lower slowly or may not lower all the way to the ground. This is due to the temperature difference in the accumulator. Once the platform has been lowered and temperatures equalize, the float will function normally.

If the windrower does not maintain float pressure, check the float release valve on the side of the high pressure valve, it must be closed. Refer to owner-operators manual.

1. Park swather on level ground, lower platform and set engine speed at operating rpm.



Float pressure is displayed in increments of 10 psi.

2. Press the platform float function on the F-N-R Lever. You can find details on the F-N-R lever in **"In Cab Controls - Illustration B - Page ."** on page 41.
3. Slowly turn the rotary adjuster on the cab console clockwise until the platform starts to move upward.
4. Back off the psi reading by slowly turning the rotary adjuster counterclockwise.
5. Raise and lower the swather table several times.
6. With the swather table on the ground, stop the engine.
7. Check the platform float by lifting at each end of the table. Normally it should require less than 150 lbs. (68kg) to lift the end of the table.
8. Adjust float pressure as needed and repeat steps 6 through 8 until desired float pressure is attained.



Once the platform has been set, the system will retain the setting after the swather has been stopped. Refer to your owner's manual for more information on the operation of the JD Self Propelled Windrower.



Preparing the table for further Leveling

If the table requires further leveling, you have 3 options (found on the following pages) that can be completed individually or in combination:

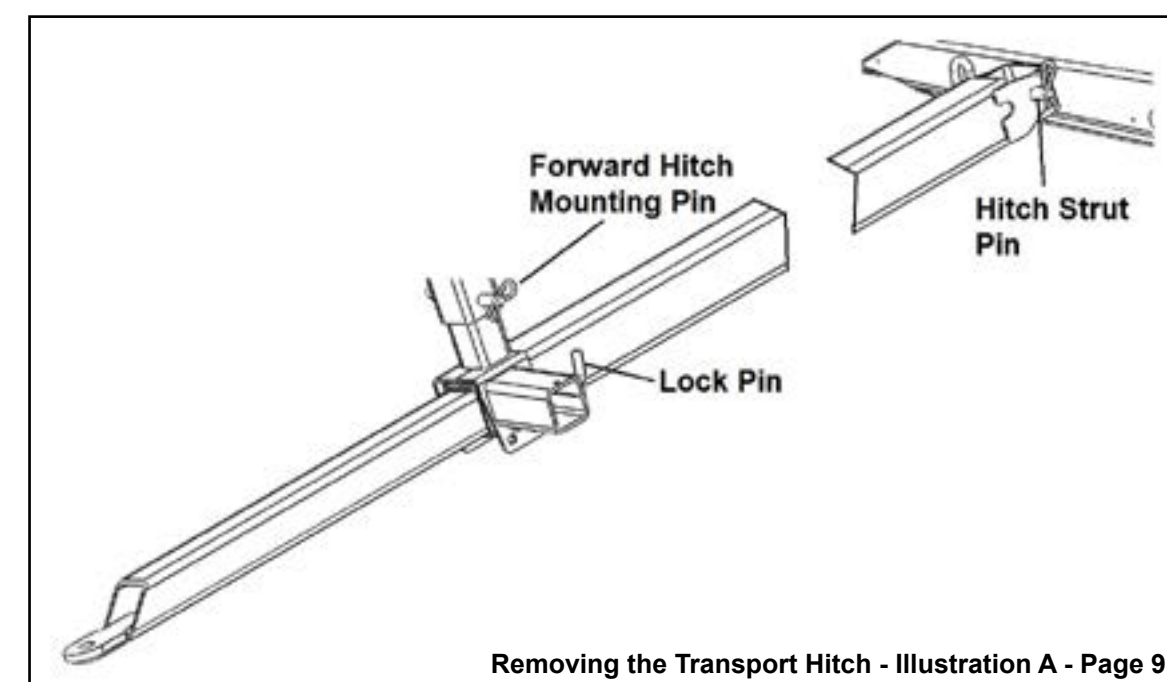
Option 1 - Remove the Transport Hitch

If the hitch end of the swather is low, this condition may be due to the weight of the hitch.



Park the windrower on a hard, level surface, and engage the park brake. Raise the swather to the fully raised position, shut the unit down, and wait for all moving parts to stop. Lock the platform in the fully raised position.

1. Release the safety chain from the jack storage tube, if necessary. Pull the hitch tube lock pin, and extend the hitch tube.
2. Support the hitch, and remove the forward hitch mounting pin. Lower this end of the hitch to the ground.
3. Position yourself under the swather near, but not below the inner end of the hitch sleeve, and remove the pin holding the sleeve onto the strut. Allow the sleeve to drop to the ground.
4. Store the hitch components in an appropriate location.

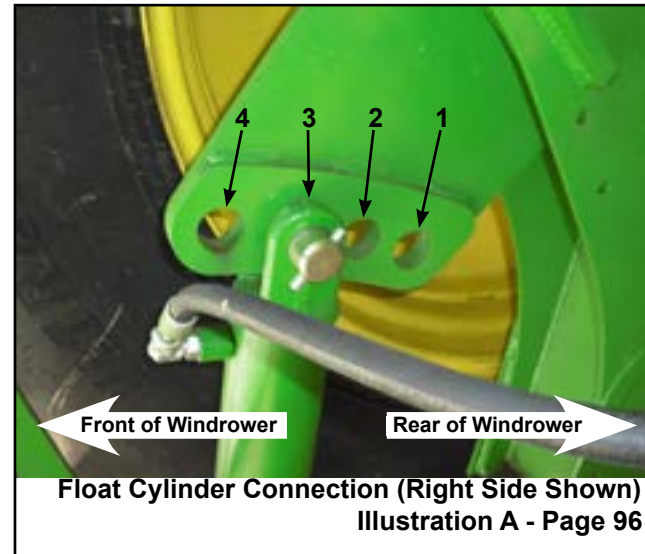


Removing the Transport Hitch - Illustration A - Page 95



Option 2 - Adjust position of float cylinders

1. Start the windrower engine, park on a flat surface and lower the swather to the ground.
2. Reduce float pressure until display monitor shows zero.
3. Shut off the engine, remove the key, and wait for all moving parts to come to a stop before exiting the cab.
4. Balance on each side of the platform is adjusted by moving the float cylinder to different holes in the mounting brackets.



Float Cylinder Connection (Right Side Shown)
Illustration A - Page 96



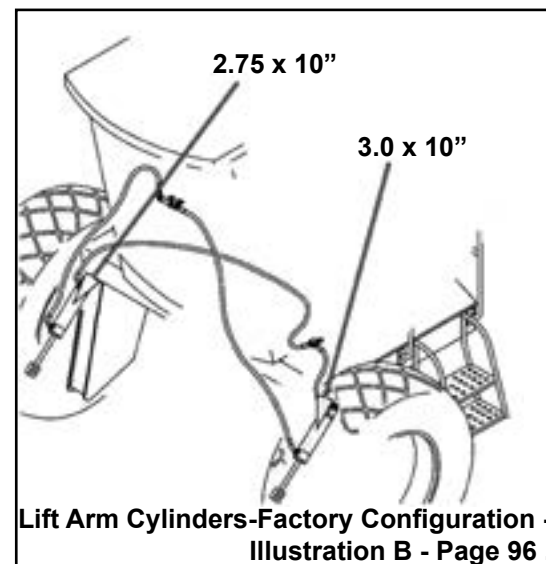
If the two sides differ in weight by more than 27kg (60lb), readjust the float cylinder location on the side that is lighter. Move the cylinder down one hole.

Option 3 - Switch the lift arm float cylinders

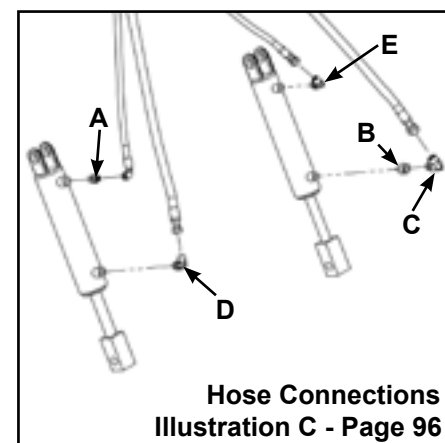


Before you begin this option, refer to the JD Windrower Float Cylinder Recommendation with Honey Bee on page 28 for important recommendations. Take note, you will have to switch back to the original cylinders to use John Deere attachments.

1. Before mounting the table to the windrower, swap the left (3.00 x 10.00) and right (2.75 x 10.00) hand cylinders. The larger cylinder will compensate with the extra power to lift the right side of the table evenly.
 2. The cylinders have different sized hoses flowing to and from the windrower. Fittings will need to be changed.
 3. Make the connections as shown, using the components listed below, which correspond to the numbers in the diagram.
- A. 6MF-8MB
B. 6MB-8FB
C. 8MB-10MF-90°
D. 8MB-8MF-90°
E. 6MB-8MF-90° (from rod-end port of 2.75 inch cylinder.)



Lift Arm Cylinders-Factory Configuration -
Illustration B - Page 96



Hose Connections
Illustration C - Page 96



9 - Hydraulics

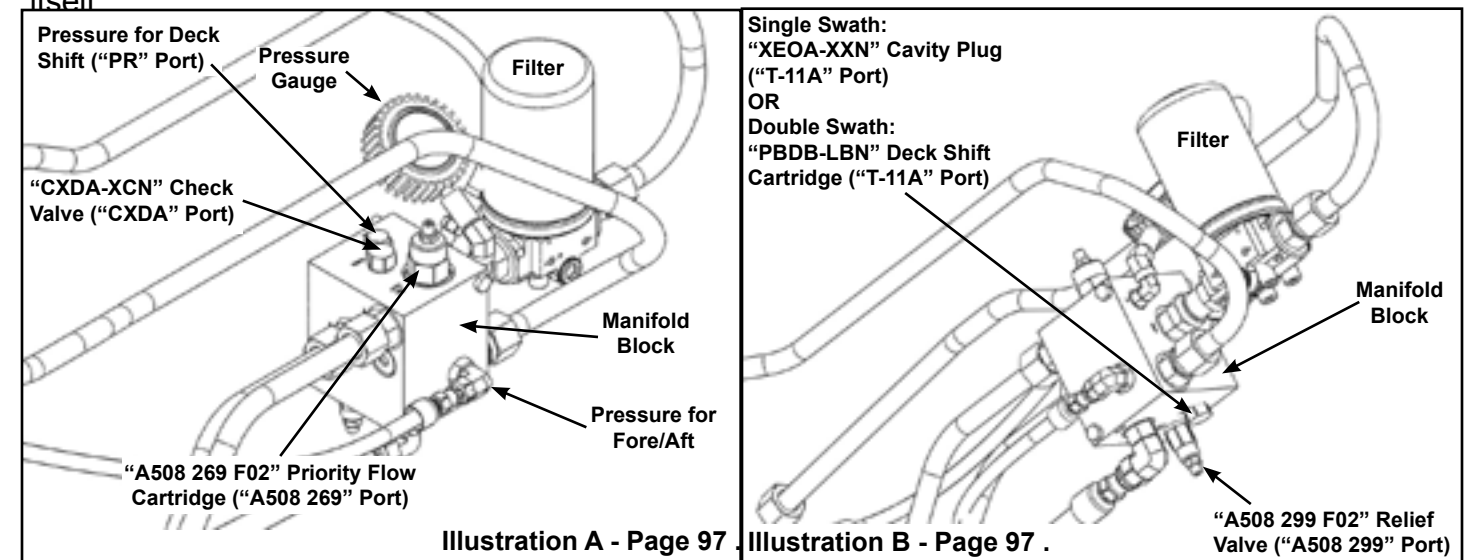
The Swather uses windrower hydraulics to power the various systems. Hydraulic pressure flows to the manifold block, which regulates the flow by sending the majority to the knife drive then on to the reel circuit. An additional smaller secondary flow is directed to the draper circuit from the manifold block. The system is protected by a pressure relief valve which should be set at 3000 psi. Return-flow oil is filtered before returning to the windrower.



JD windrowers require the forward side of the pump to be used to run the table hydraulics.

Manifold Block Cartridge Locations

Identification stamps can be found on individual parts as well as port stamps on the Manifold Block itself



Flow Controls

An 11 GPM (41.6 LPM) flow control is used for the drapers, while an 18 GPM (68.1 lpm) flow control is used for the reel. The "R" (control flow) port of the draper flow control goes to the draper motors. The "R" (control flow) port of the reel flow control goes to the reel motor. The "T" (excess flow) port of both flow controls diverts oil directly to the return circuit.



The windrower relief valve is set to 5000 psi. Care must be used when working around pressurized hydraulic systems. Quick couplers must be securely connected before the windrower is started, and power is applied to the swather. Serious injury, and/or damage to equipment may result from poor connections.

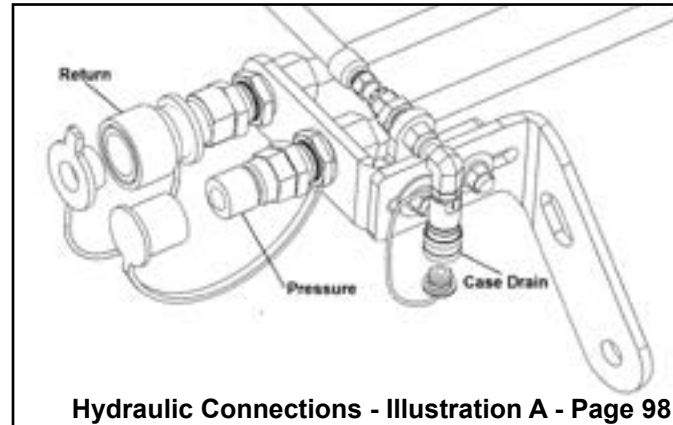


Hydraulic Connection Points

Connect the hydraulic hoses from the windrower to the couplers shown to the right.



For proper operation of the hydraulics using the connections shown to the right, the forward side of the power unit pump must be used.



Hydraulic Connections - Illustration A - Page 98 .

Operating Pressure - Knife Circuit

The pressure gauge, located on the manifold block, indicates the total hydraulic pressure required to run the knife and reel

Normal operating pressure should range between 1000 and 1500 psi when the windrower is operating at normal working rpm, and the oil is at operating temperature.

It's normal for pressure to fluctuate while cutting, due to crop conditions. Other factors that will affect pressure include the condition of the cutting system, and ground speed.

To determine the pressure required to run the knife, set the reel flow controls to zero and read the pressure at the manifold block gauge. This reading will be slightly higher due to back-pressure generated from the flow controls.



Double knife drive systems typically operate at 500 psi higher pressure.



Checking or Adjusting Knife Relief Pressure

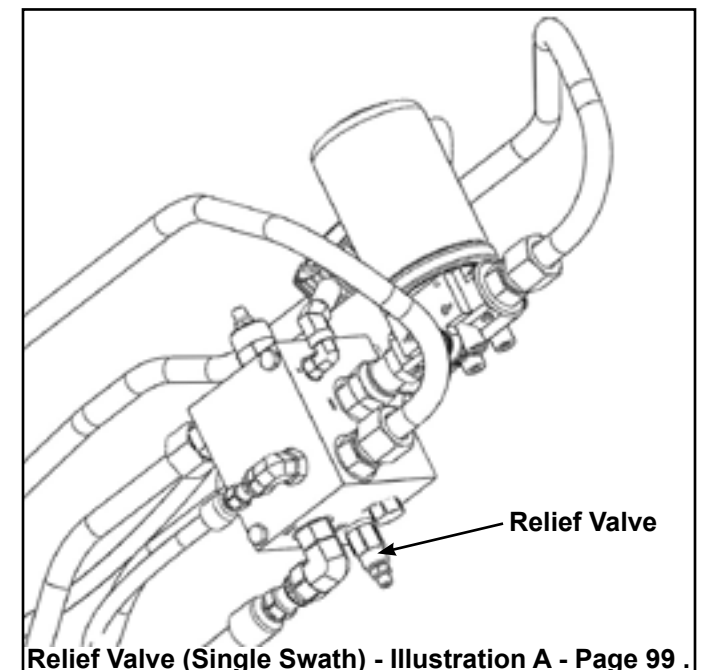


Set the park brake, shut the engine down, and wait for all moving parts to stop before leaving cab.
Be certain all bystanders are away from the machine prior to engaging the pump. Only stall the knife long enough to obtain accurate readings. Prolonged operation in this condition could cause damage.

1. Jam a wood block tightly in the knife, between a guard and cutting section.
2. Restart windrower. Raise the reel, and insert the cylinder lock. Set the reel flow control to minimum.
3. Engage the hydraulic pump drive, bring the engine rpm to the normal working range, and check the pressure on the gauge. If the reading is 3000 psi, shut the windrower down, remove the wood block, and reel cylinder stop.
4. Reset the reel flow control.

If adjustments are required, shut the windrower down, and continue with the following:

1. Locate the relief valve on the bottom of the manifold block ("A508 299" Port). Adjust the relief screw; turning clockwise increases, and counter-clockwise decreases pressure setting.
2. If using a double swath table, do not adjust the deck shift cartridge ("T-IIA" port) by mistake.
3. With the knife jammed as described previously, restart the windrower, engage the hydraulic pump drive, and re-check the pressure reading.



Relief Valve (Single Swath) - Illustration A - Page 99 .



Knife Drive Speed Adjustment

The optimal knife speed is preset at the factory to 620 RPM, it is suggested that you not change this setting.

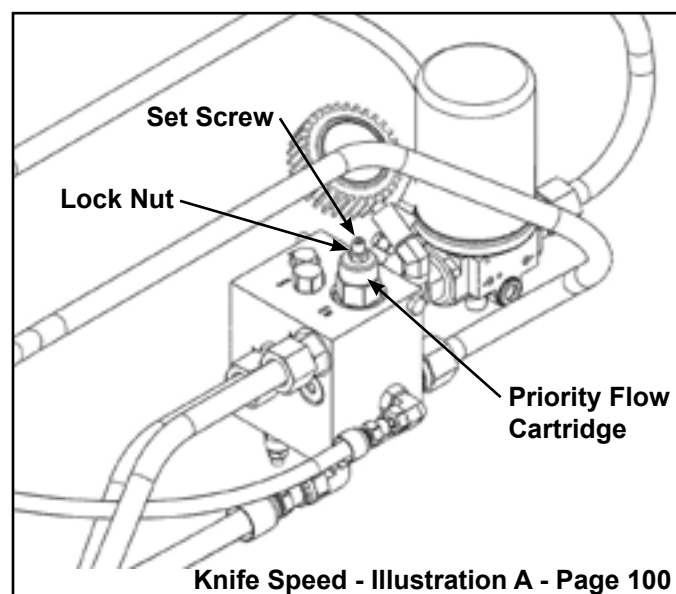


Increasing the knife speed beyond 620 RPM increases the chance of extra wear, additional breakage and/or damage to the cutting system. If the knife speed is increased, the available draper speed will decrease and the available reel speed will increase.

Ensure that all equipment is off and has stopped moving before attempting to adjust the knife speed.
Do not adjust the knife speed beyond the range of 620 RPM to 700 RPM.

To adjust knife speed:

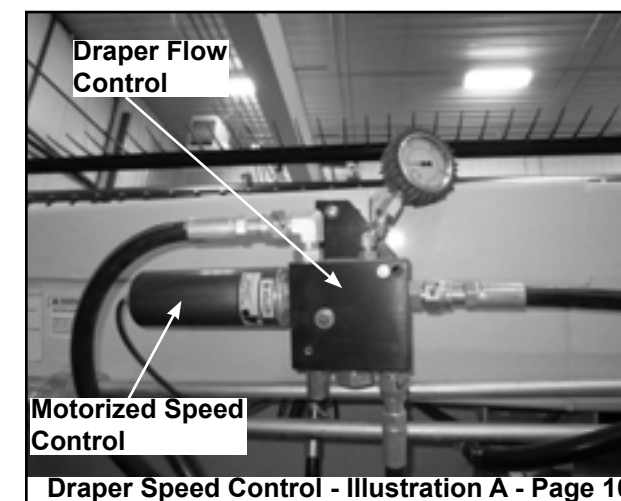
1. Locate the priority flow cartridge on the top of the manifold block ("A508 269" Port)
2. Loosen the lock nut on the cartridge.
3. Adjust the set screw in half-turn increments as required:
 - Turn clockwise to increase knife speed.
 - Turn counterclockwise to decrease knife speed
4. After each half-turn, tighten the lock nut, restart the equipment and check the knife speed. If more adjustment is required, ensure the equipment is turned off.



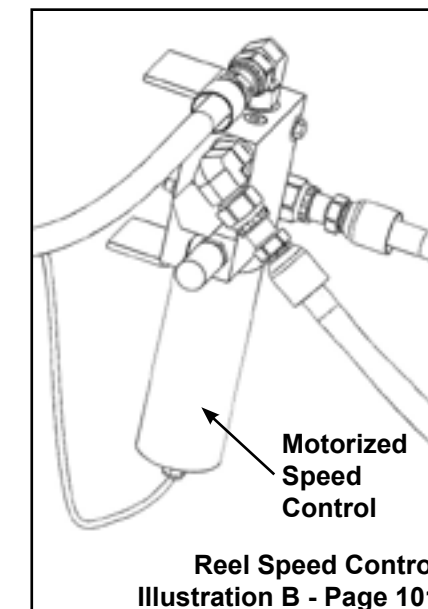
Adjusting the set screw only sets the maximum knife speed limit. The pump flow must be set correctly before adjusting the knife speed. **"JD R450 Install Pump Bracket And Set Pump Flow" on page 57** for setting pump flow.



Draper and Reel Flow Controls



The draper circuit flow control is located on the upper tube on the left-hand end of the table (see **Illustration "A"**).



The reel circuit flow control is located on the side of the strut on the right-hand end of the table (see **Illustration "B"**).



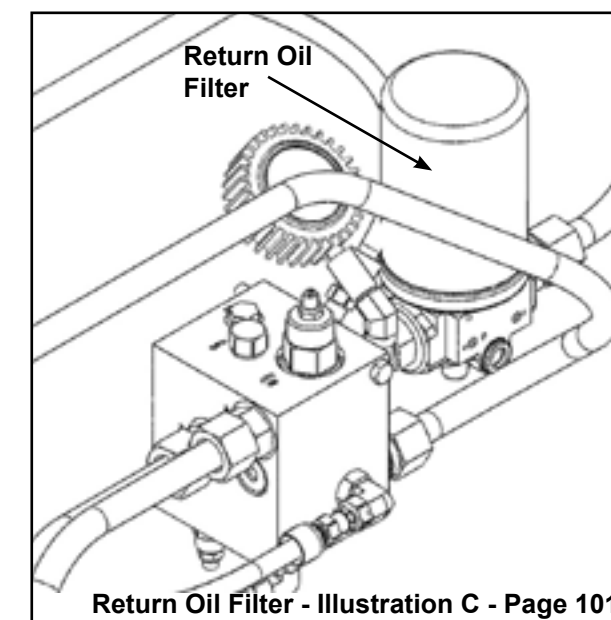
Both flow controls are equipped with a tamper-proof preset relief valve and a motorized speed control. Each relief valve is preset at 3000 psi (206.9 bar) and is non-adjustable. Each speed control is electrically adjustable by corresponding draper speed and reel controls in the cab.

Return Line Filter

This filter cleans the oil as it returns to the windrower. Change this filter after the first 50 hours of operation, and seasonally thereafter. The OEM filter is a Donaldson P164375. A partially plugged oil filter can adversely affect the flow of oil in the system.

Compatible Replacement Filters:

- Fleetguard HF6510 (10 micron) (25048)
- LHA SPE15 - 10
- Gresen K-2202
- Fram P1653A
- NAPA 51551
- Stauff SF6520





10 - Optional Equipment

Caster Gauge Wheels

The gauge wheels are part of the system that keeps the table aligned with the profile of the ground while cutting. They provide improved lateral flotation of the swather in rough and uneven ground conditions by using shock absorbers. The gauge wheels are designed to caster, so it is normally not necessary to raise the swather when cornering. The adjustment of the gauge wheel assembly relative to the cutting height is essential to effective terrain following.

Lift the swather table and gauge wheels off the ground when backing up the windrower. Damage to caster wheels can also result from making sharp turns with the windrower. The sharp turning radius of the windrower can cause one of the wheels to be dragged backwards, potentially causing damage to the wheel.



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

Gauge wheel height adjustment must be checked with the knife set at field operating height. Normal adjustment compresses the shock assembly of the gauge wheels so that a recommended 5" the shock shaft is left exposed to allow for additional field operation compression. Height adjustment is made by placing the top end of the shock assembly in one of the mounting holes on the frame.

The height engagement handle can pivot freely when not locked in place by the lock pin. **Always keep the handle under control.**

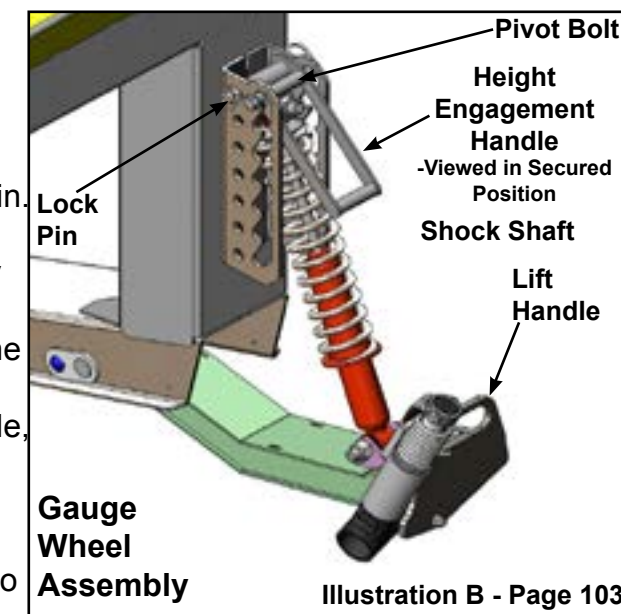


Do not attempt to adjust gauge wheel height when there is compressive load on the shock assembly.



- Gauge Wheel Height Adjustment

1. Park windrower on a level surface, and engage the park brake. Raise the swather table up to its locking position, and lock it in place.
2. Remove the lynch pin from the end of the Lock Pin.
3. While grasping the Height Engagement Handle, push it slightly down towards the shock assembly to release pressure on the Lock Pin, remove the Lock Pin from the frame mounting hole, and let the handle slowly come up under control.
4. While still grasping the Height Engagement handle, use your other hand to grab the Lift Handle and lift the Gauge Wheel Assembly so that the Pivot Bolt comes out of the current slot location on the frame. Lift or lower the Gauge Wheel Assembly to the desired height and place the Pivot bolt in the corresponding slot location.



The Gauge Wheel Assembly is Heavy!

5. Push the Height Engagement Handle down towards the shock assembly until the frame mounting hole lines up. Ensure that the Pivot Bolt stays fully seated in the slot while pushing down. Insert the Lock Pin into the mounting hole to lock the Height engagement Handle in place. Secure Lock Pin with the lynch pin.
6. Repeat steps 2 through 5 on the other Gauge Wheel Assembly, using the same height setting.
7. Lower the swather table until it is at field operation height. Check exposed Shock Shaft length to see if it matches the recommended 5". Re-adjust Gauge Wheel height as needed.



To avoid bottoming out the shock assembly during field operation, it is recommended that the exposed Shock Shaft length be no less than 3". Adjusting table tilt and/or table flotation will affect the amount of compression in the shock assembly. Further adjustments to the Gauge Wheel height will be necessary.



Never operate with the shock assembly fully compressed during field operation. This will result in damage to the shock assembly. Excessive compression of the shock assembly will add stress to the top link, causing premature wear.



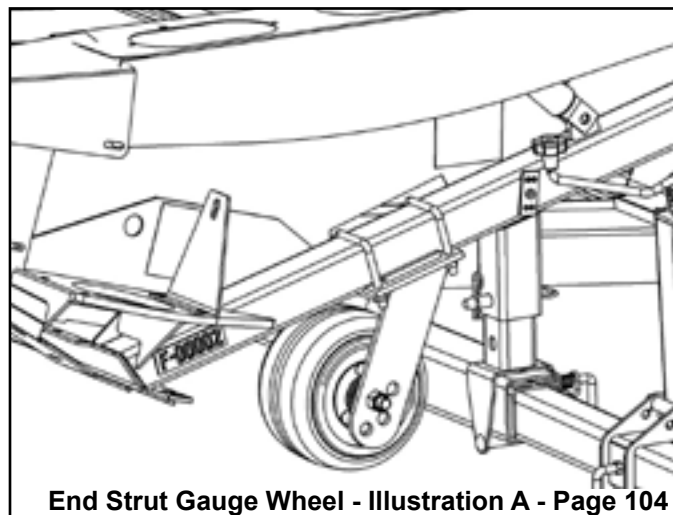
Gauge wheels are not designed to support the weight of the swather table.



End Strut Gauge Wheels

End strut gauge wheels are mounted at the outboard ends of the main table frame to enhance the ability to closely follow the contour of the ground with the cutter bar.

Holes drilled in the wheel mount provide height adjustment by relocating the axle shaft as needed.



End Strut Gauge Wheel - Illustration A - Page 104



The draper decks may need to be moved to allow **at least 1"** of clearance from the end strut gauge wheels.

Vertical Crop Cutters

Vertical crop cutters are offered by a variety of third party vendors. They are designed to cut in a vertical direction for use in cutting entangled crops such as canola and peas and preventing the crop from being entangled on the ends of the cutter bar.

The crop cutters must operate in series from the **last** reel drive motor in the circuit. The circuit flows from the last reel motor return port to the power inlet of the right hand crop cutter motor, to the power inlet of the left hand crop cutter motor, to the main return line of the swather.

End-to-end plumbing is supplied standard on every swather table so that the operator can then add custom end plumbing for their particular cutter setup.



Cross Auger

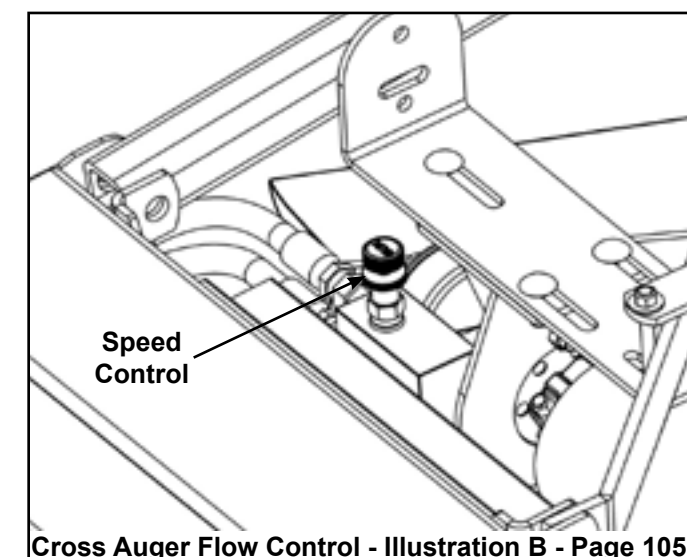
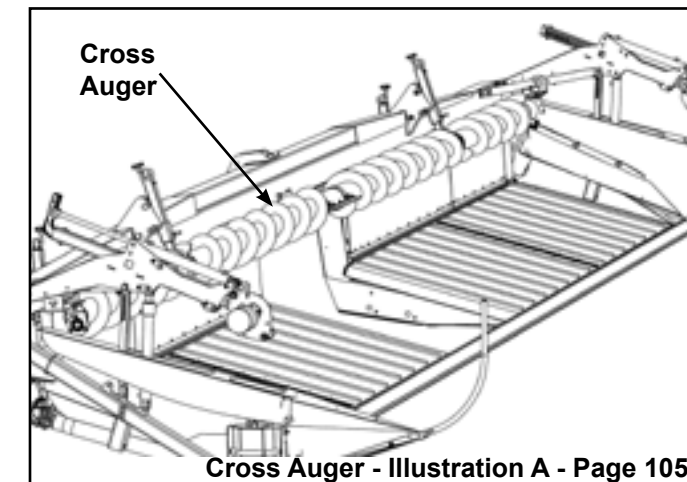
The cross auger can improve the cutting of specialty crops such as peas, canola, mustard, safflower, and lupins. Many of these crops are not heavy enough to keep them firmly on the draper. Bushy or crops with vines tend to slide on the draper, causing them to fall into the windrow in bunches or wads.

The left and right hand flighting on the cross auger gently pushes the crop down onto the draper, assisting its movement toward the windrow.

Some cross auger models include jacks where the cross auger mounts onto the frame. These jacks allow you to raise or lower the cross auger to account for different crop conditions.

The cross auger is plumbed into the draper circuit with a manual speed control (needle valve). The rotation speed should be adjusted no faster than necessary to keep the crop moving evenly. If set to rotate too quickly, the crop may wrap onto the flighting.

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. Draper speed should not be affected.





Double Swath Option – 21, 25, 30, and 36 Foot Tables

Most Honey Bee Swathers can be equipped with a double swath option. This option allows the operator to lay two swaths. The first swath will be delivered to the opening on the right end of the swather. On the next round, the decks can be shifted to the right, creating an opening on the left end of the swather. This places the second swath beside the first. This option is useful in light crop conditions.

The decks are shifted using hydraulic motors activated by an electric solenoid on the selector valve.

The solenoid selector valve reverses the flow through the output ports when activated.

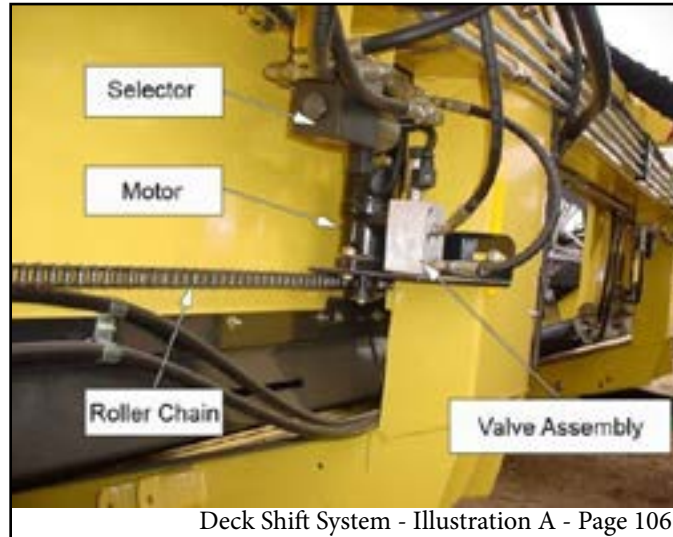
The deck shift motor and the draper motor are connected in parallel, so that when the deck arrives in its new position, the deck shift motor stops and the draper motor will be running in the opposite direction.

The deck shift roller chains are located on the back of the rear panel.

Adjuster bolts at either end of the chain are used to adjust tension.

The chains should not have too much slack, nor should they be too tight.

Excess tension will cause the decks to warp.



Deck Shift System - Illustration A - Page 106



Roller Chain Tensioner - Illustration B - Page 106



Deck shift stops are installed on each chain. Before adjusting these stops, determine how much the deck needs to be shifted. Then move the appropriate stop.

To have a deck move further/less to the left, the right hand stop will need to be moved, conversely, for the deck to move further/less to the right, the left hand stop will need to be moved.

The stop should be set so that the deck does not hit against the other draper decks or the swather frame. Allow approximately 1" of space between the extreme points of the decks.

Check all hose clearances on hydraulic motors after shifting the deck, to ensure they are not pinched or stretched.

Check draper tracking and adjust if required. See Draper Adjustment section of this manual for assistance.



Deck Shift Stops-
Illustration A - Page 107



Setting Deck Gap-
Illustration B - Page 107



When shifting the deck for the double swath option, you must disconnect the cross auger motor from the hydraulic circuit using the quick couplers provided. The cross auger motor is connected in series with the draper motor, therefore the hydraulic lines will become damaged if the draper motor is moved while still connected to the cross auger motor.



Junior Deck Option – For Swathers With the Double Swath Option

When using the double swath option, the Jr. Deck can be installed on the far right hand side of the swather to move the swath away from the standing crop. This leaves a larger gap between the swaths.

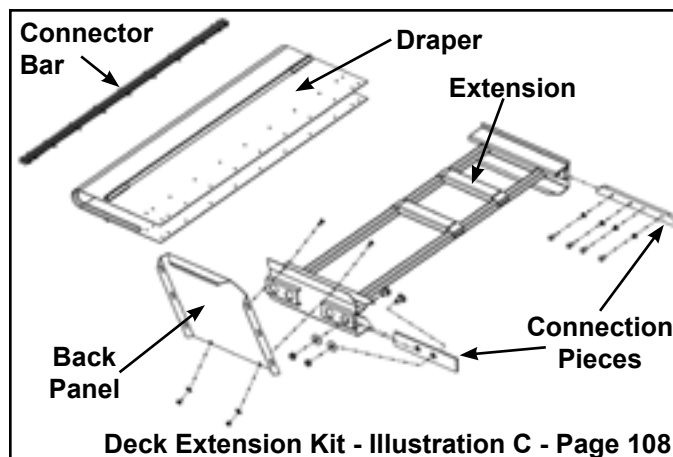
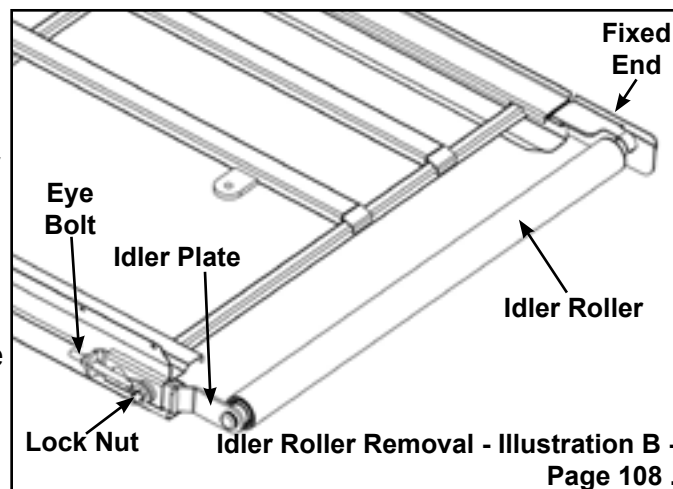
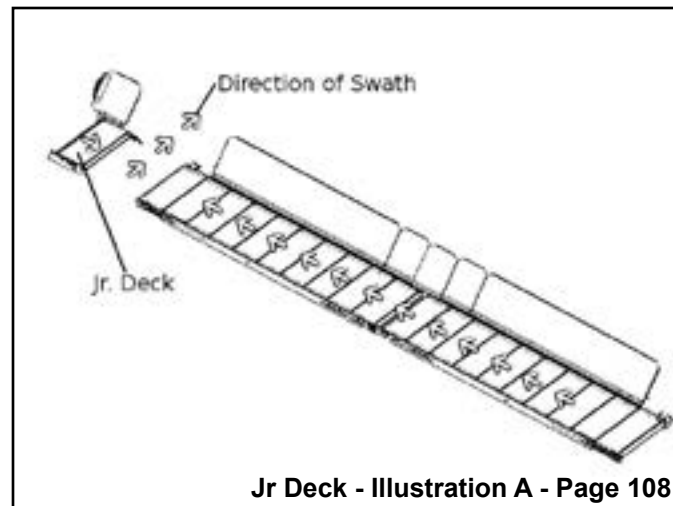
The Jr. Deck can be left on the swather when single swath delivery is required, but will leave a narrower swath.

The Jr. Deck is easily removed if a wider swath is required.

Draper Extension for Swathing

When swathing in light crop conditions, it may be necessary to narrow the opening in order to lay a tight swath. One option is to add the 14 inch deck extension kit to the idler end of a deck, and add to or replace the existing draper with a longer one.

1. Remove the connector bar and open the draper to expose the idler roller.
2. Remove the lock nut and washer that hold the idler plate in place.
3. Remove the idler plate, idler roller, and fixed end.
4. Install the 14" back panel to the 14" extension deck.
5. Install extension deck and back panel onto the end of the deck being extended.
6. Install the front connector and the rear connector.
7. Install the fixed end, idler roller, and idler plate.
8. Join the 30" draper extension to the regular draper with a connector bar.
9. Wrap draper around the rollers and connect ends together with the connector bar.
10. Adjust draper tension and tracking.

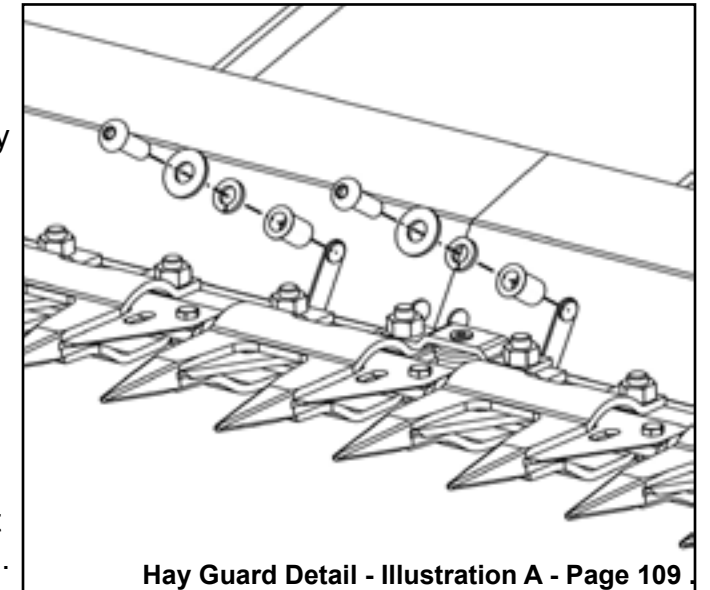


Hay Guard / Short Crop Guard

Lay out Hay Guard starting at the end of the cutter bar. Install the longest section at the ends. The hay guard/ short crop guard butt together end to end.

The hay guard should fit tight against the rise of the cutter bar leaving approximately 1/4" clearance between the ribs of the draper and the underside of the hay guard.

Secure the first hay guard in place using the threaded inserts, lock washers, flat washers and 3/8" x 1" bolts as shown to the right. Install the next section of hay guard, butting it up to the first section. Continue until all sections of hay guard are installed.





SCH Crop Lifters

Install the lifter spools to the underside of the guards using the longer bolts supplied in the kit. The spools should be spaced equally along the cutter bar, one per foot is recommended.

The socket of the lifter has three locking pin positions for adjusting the lifter angle. The lock pin can be placed in any of the three holes. For additional adjustment, flat washers can be added between the guard and the crop lifter spool.

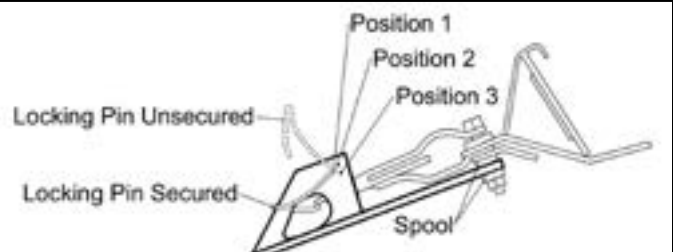
For crop lifters to work properly the bottom runners must be parallel to the ground when the platform is in cutting position. Illustration “C”: Crop Lifter Orientation shows the correct position of a standard crop lifter.

The bottom runner of the Special Series lifter should be parallel to the ground. To find the correct setting of the lifters for a given platform, drive on to a smooth, flat surface. Mount one lifter in the middle of the platform.

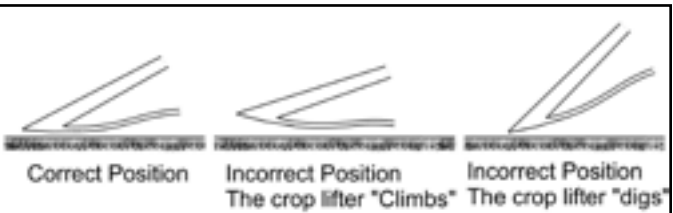
Lower platform until crop lifter just touches the ground. The runner of the lifter should be parallel to the ground. If it is not, change lock pin positions and if necessary, vary number of flat washers until the correct position is achieved.



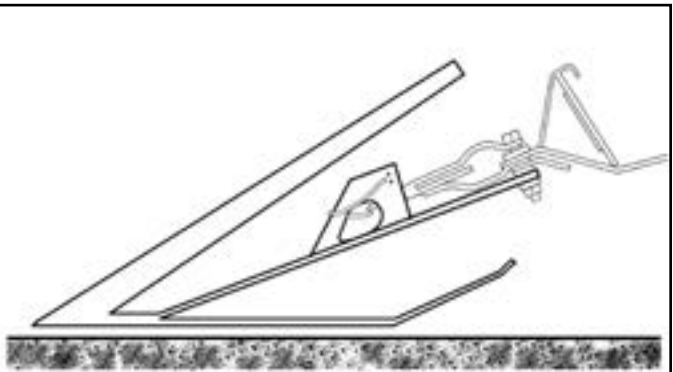
Crop Lifters Installed - Illustration A - Page 110



Crop Lifter Detail - Illustration B - Page 110



Crop Lifter Orientation - Illustration C - Page 110



Special Series Lifter - Illustration D - Page 110



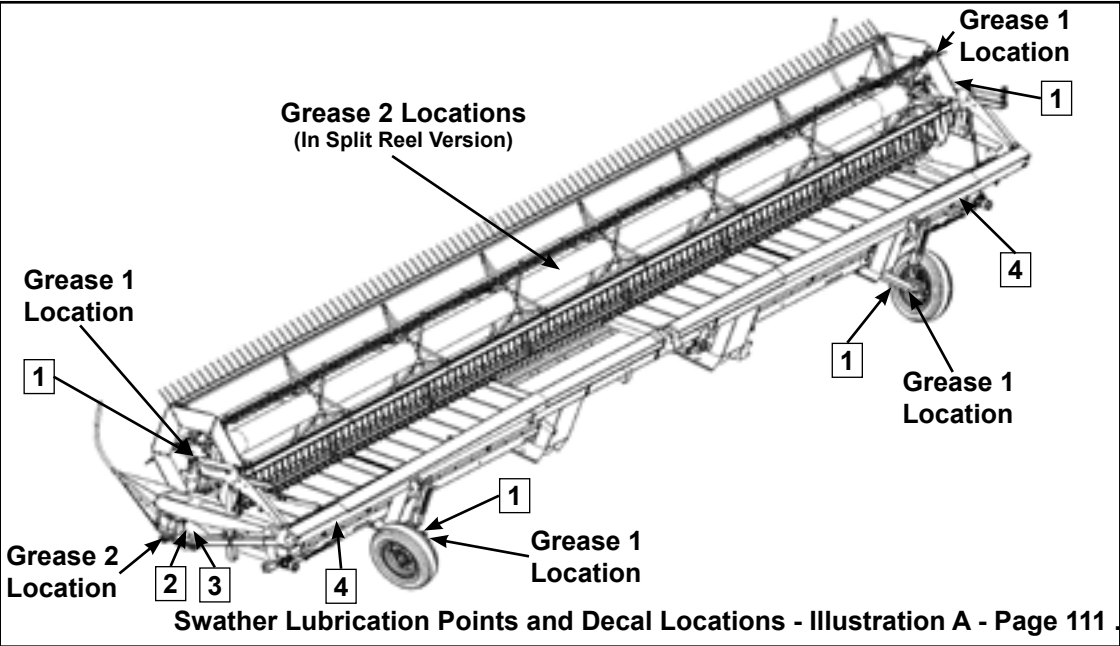
11 - Lubrication & Maintenance



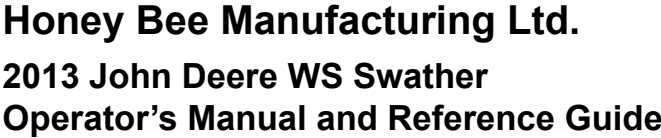
Use good quality, general purpose grease, unless otherwise noted.

Component	Lubricant	Frequency/Notes
Knife Drives	Grease	Five(5) shots every 50 hours(fitting on side of knife drive)
Knife Head Bearing	Grease	One(1) shot every 50 hours(fitting above knife head)
Knife	Diesel	Soak with diesel or clean with a pressure washer
Reel Bearings	Grease	10 hours
Gauge Wheels – King Pin	Grease	10 hours
Wheel Bearings	Grease	Disassemble and re-pack yearly.
Hydraulic Return Line Filter	n/a	Change after first 50 hours of operation and seasonally thereafter. (Filter: HB - 27281/Donaldson – P164375) Refer to page 101 for a list of compatible filters.

The following maintenance decals and lubrication locations have been placed on your machine in the areas indicated. Please take this manual, walk around your machine and familiarize yourself with the lubrication locations and content of these decals. Review this information, with your machine operators. Please keep decals legible.



Swather Lubrication Points and Decal Locations - Illustration A - Page 111



1



12 - Troubleshooting

Problem	Possible Cause	Solution
Reel won't hold height.	Leaking hose or fitting.	Repair or replace.
	Valve in windrower leaking.	See windrower Manual.
Reel won't hold level.	Leaking hose or fitting.	Repair or replace.
	Air in system.	Bleed slave cylinder.
	Faulty master cylinder.	Repair or replace.
Reel raises or lowers erratically.	Reel cylinders binding.	Replace cylinder.
	Arms bent or binding.	Repair or replace.
	Low hydraulic oil.	See windrower Manual.
Reel won't raise.	Hydraulic couplers don't match.	Install correct couplers.
	Valve is not open.	Open Valve.
	Faulty windrower hydraulics.	See windrower Manual.
	Reel not plumbed into tilt circuit.	Check plumbing schematic.
Damage to center of reel.	Reel set too low.	Adjust height.
	Reel tube bent.	Replace.
Reel hitting at end.	Reel not centered.	Adjust centering.
Reel will not turn or turns erratically.	Flow control set too low.	Advance setting.
	Draper flow set too high.	Reduce draper speed.
	Faulty relief valve.	Clean or replace.
	Seized bearing(s).	Replace bearing(s).
	Faulty drive motor.	Replace motor.
	Reel Tied Down.	Release Reel.
Reel Speed cannot be adjusted.	Poor electrical connection.	Check connections and cable.
	Defective reel speed motor.	Replace motor.
	Circuit breaker open or burnt out.	Replace.

Knife

Knife won't run.	Low hydraulic oil.	Add oil. Determine cause of oil loss.
	Cutter Bar jammed.	Check for damaged guards or sections.
	Faulty drive motor.	Repair or replace motor.
	Faulty knife drive.	Repair or replace.
	Faulty hydraulic pump.	Repair or replace.
	Knife gummed	Clean cutter bar.



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Problem	Possible Cause	Solution
Knife (continued)		
Knife Stalls Easy	Type of material being cut.	Reduce ground speed
	Low pressure at knife motor.	Check system pressure
	Bent guards or cutter bar.	Repair or replace
	Faulty knife drive.	Check for loose crank shaft
	Seized knife head bearing.	Replace
	Knife head out of alignment.	Adjust knife head bearing
Unloaded system pressure too high	Faulty draper motor.	Repair or replace
	Relief valve set too low (3000 psi).	Adjust
	Relief valve stuck open.	Remove and clean or replace cartridge
	Wrong type of hydraulic oil.	Change windrower hydraulic oil
	Flow control set low.	Set control higher
	Low oil level.	Add oil, locate cause and repair
	Relief valve stuck open.	Remove and clean or replace cartridge
	Low oil volume.	Reset volume, 19.5 gpm required
	Wrong motor size.	Check with manufacturer
Excessive vibration	Worn pump or motor.	Repair or replace
	Knife speed is too high.	Reduce knife speed
	Loose bearings in drive.	Replace bearings
	Loose knife head bolts.	Tighten knife head bolts
Excessive noise	Damaged sickles or guards.	Replace
	First guard bent or out of alignment	Straighten or replace
	Knife drive bearing faulty	Replace
	Knife drive loose	Tighten bolts and check for damage to housing
Knife leaves strip of crop standing	Knife head out of adjustment	Adjust Knife Head bearing
	Excessive ground speed	Slow down
	Bent or broken guard	Straighten or replace
	Broken knife section	Replace
Connector Bar breaks	Plugged guard	Clean
	Damaged sections or guards	Repair or replace
	Knife gummed up	Soak with diesel fuel, or wash with pressure washer
	Section bolts not tight	Tighten or replace
	Section or Knife Back installed on wrong side	Remove sections, turn Knife over and replace sections

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Problem	Possible Cause	Solution
Knife (continued)		
Knife Head breaks	Section bolts not tight.	Tighten and/or replace bolts.
	Knife gummed up.	Soak with diesel fuel, or wash with pressure washer.
	Damaged sections or guards.	Repair and/or replace.
	Sickle sections dull.	Replace sections.
	Tough crop.	Reduce ground speed.
	Knife drive running to fast.	Check speed with photo tach.
Draper		
Draper not tracking straight	Drive or idler roller out of alignment.	Adjust draper tracking.
	Draper splice not cut straight.	Re-punch connector bar holes in draper.
	Material building up on rollers.	Clean rollers.
Draper slipping	Draper too loose.	Adjust draper tension.
	Draper is snagging.	Check alignment. Look for obstructions.
Draper not turning	Draper is snagged or caught.	Check for interference.
	Flow control is shut off.	Adjust flow control.
	Oil flow is being by-passed.	Check relief valve setting.
		Remove and clean relief cartridge.
Draper oil pressure in excess of 2200 psi	Power unit RPM too low.	Increase power unit RPM.
	Material build up on rollers.	Clean rollers.
	Faulty bearing in roller.	Replace bearing.
	Faulty draper motor.	Check motor temperature, check for oil leaking from shaft seal.
		Replace motor.
Decks		
Decks creep sideways	Restrainer tubes not installed or have fallen off.	Install or replace tubes.
Decks lift out of position	Deck is not locked under rear edge of cutter bar.	Place deck in proper position.
	Hold down clips on back panels are loose or are not installed.	Tighten or replace.
Decks will not shift	Poor electrical connections.	Trace and repair.
	Electrical cable not plugged into windrower or control box.	Check connections.
	Decks or back panels jammed or binding.	Check decks and clean out debris.



Problem	Possible Cause	Solution
Decks (continued)		
Heads shattering or breaking off.	Reel speed too fast.	Reduce reel speed.
	Ground speed too high.	Reduce ground speed.
	Crop over-ripe.	Cut earlier in morning or late at night when humidity is higher.
Cut grain falling off cutter bar.	Reel set too high.	Lower reel.
	Table set too high.	Lower table.
	Reel too slow for ground speed.	Increase reel speed.
Does not pick up lodged crop.	Table too high.	Lower table.
	Reel too high.	Lower reel.
	Reel too far back.	Move reel forward.
	Ground speed too fast for reel speed.	Reduce ground speed or increase reel speed.
	Bat reel not suitable.	Install optional Pickup Reel.
	Crop lying too flat for guards to pickup.	Install optional SCH Crop Lifters.

Hydraulic Oil

Temperature is too high.	Excessive oil going over reliefs.	Check reliefs on flow controls.
	Faulty pump or motors.	Repair or replace.
	Draper too tight or not tracking.	Adjust draper alignment.
	Oil too light.	Refill with correct grade.

Leveling

Swather not level.	Float pressure too low.	Adjust float pressure.
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Table Angle

Draper running too flat or too steep.	Tilt (turnbuckle or hydraulic) out of adjustment.	Adjust.
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Raising and lowering the Swather

Swather will not lift.	Windrower lift capacity.	Check system pressure
		Check the needle valve, table lift circuit.
		Increase needle valve opening.
Swather table lifts and lowers too slowly.	Needle valve set too low.	Adjust needle valve on lift circuit.



Problem	Possible Cause	Solution
Lift and Float Systems		
Platform Does Not Follow Ground Contour. NOTE: If float pressure is set too high platform will feel light and bouncy. If float pressure is too, platform will feel heavy and unresponsive. It should require less than 150 lbs. to lift the end of the platform.	Platform float pressure too high, making platform feel light.	Check windrower operator's manual. Adjust float pressure.
	Field/Road switch in the ROAD Position.	Set switch to Field position.
	Faulty Relay.	Replace Relay.
	Accumulator pre-charge pressure too low.	See your John Deere dealer.
Platform Digs Into Ground and Pushes Hard.	Guards digging into ground.	Adjust guard angle, with turnbuckle or hydraulic tilt.
	Platform float pressure too low, making platform feel too heavy.	Adjust float pressure.
	Accumulator pre-charge pressure too high.	See your John Deere Dealer
Platform Drops Too Fast or Does Not Lower Smoothly.	Platform float pressure too low, making platform too heavy.	Adjust platform float.
	Accumulator pre-charge pressure too high.	Adjust needle valve.
		See your John Deere Dealer.
Platform Will Not Lift or Lifts Too Slow.	Needle valve set too low.	Adjust needle valve.
	Binding lift linkage.	Replace bent or worn parts.
	Platform float pressure too low, making platform too heavy.	Adjust platform Float.
	Worn lift pump.	See your John Deere dealer.
	Low Relief valve setting.	See your John Deere dealer.
	Excessive charge oil flow to pumps.	See your John Deere dealer.
	Faulty switch or relay.	Replace.
	Faulty solenoid or valve cartridge.	Replace.



13 - Lighting

The lighting system incorporates two circuits; the transport running lights for use when moving the swather via the transport hitch and the warning flashers which are used when operating the swather in the field.

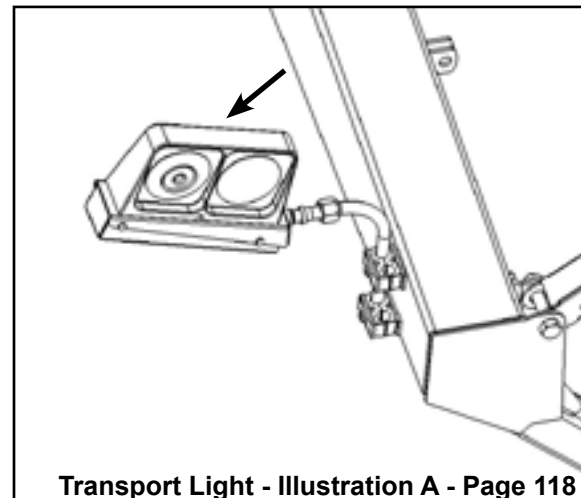
Transport Lights:

- The transport lights consist of two wiring harnesses and two (tail, signal, and stop) lights.
- The 52ft (15.84m) Harness extension with a male (Universal Trailer Connector, 4 Pole) leads to the towing equipment. It is the transporters' responsibility to ensure proper connection to towing equipment.
- The 9.8ft (3m) Harness wishbone with male (Universal Trailer Connector, 4 Pole) that connects to the female end of the 52 ft (15.84m) extension harness. The plugs on the other end connect directly to the pig tail of the lights.

Warning Lights:

- The warning flasher light wiring consists of a 12.5 ft (3.81m) pigtail harness that attaches from the windrower to the warning flasher harness. The adaptor plug (JD - 7 - way connector) is installed at factory with the reel speed wiring plug.
- The warning flasher harness is a total of 45 ft (13.73m) in length and connects the warning flasher lights to the windrower.

All swathers are equipped with clearance lights as well as signal and brake lights. Ensure that all lights are in good working order, and that you swing them out to their transport positions before transporting the header.

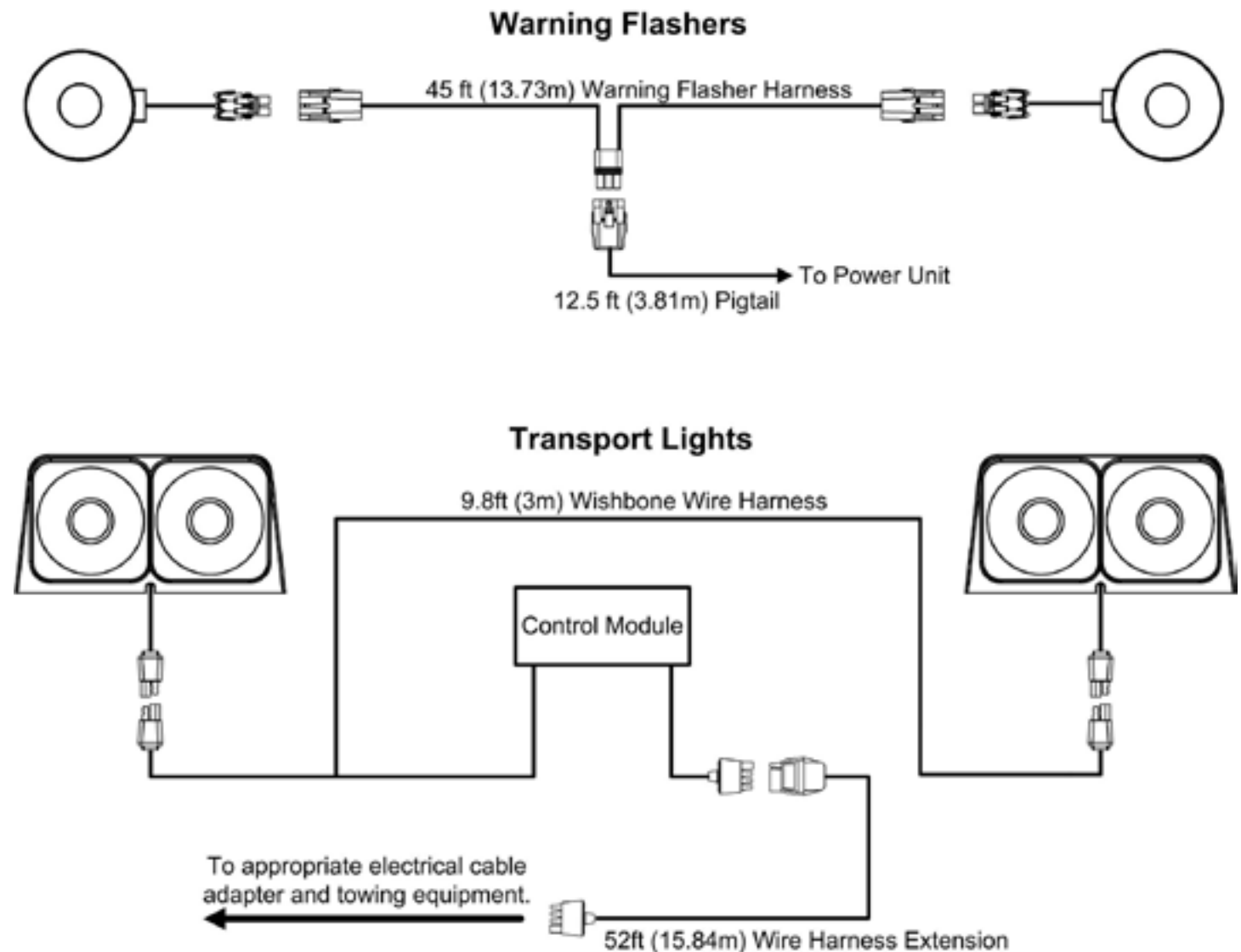


Transport Light - Illustration A - Page 118



Wiring

1. Amber - Warning Flasher
2. Red/Amber - Tail. Signal and Stop





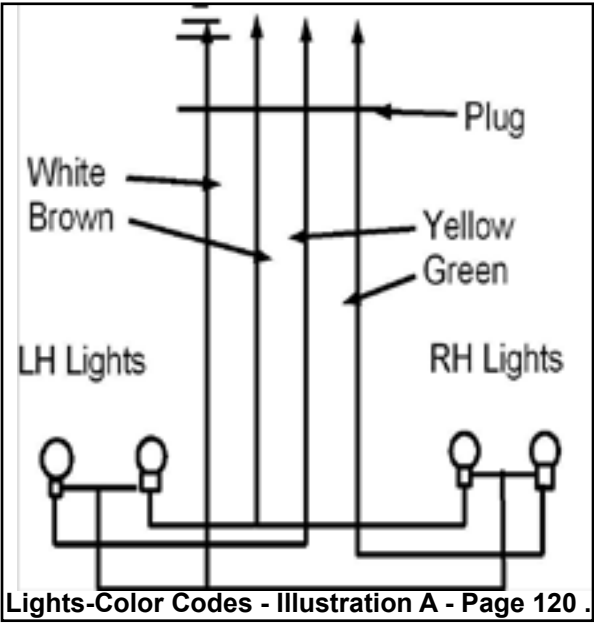
The lights operate on two circuits:

1. Transport running lights.
2. Warning flashers.

Transport Lights

Transport lights should be used at all times when the swather is towed on public roads. Connect to the tow vehicle using the proper plugs.

Wiring color code:
White - Ground
Brown - Tail Lamps
Green - Right Hand Stop / Turn signal
Yellow - Left Hand Stop / Turn signal

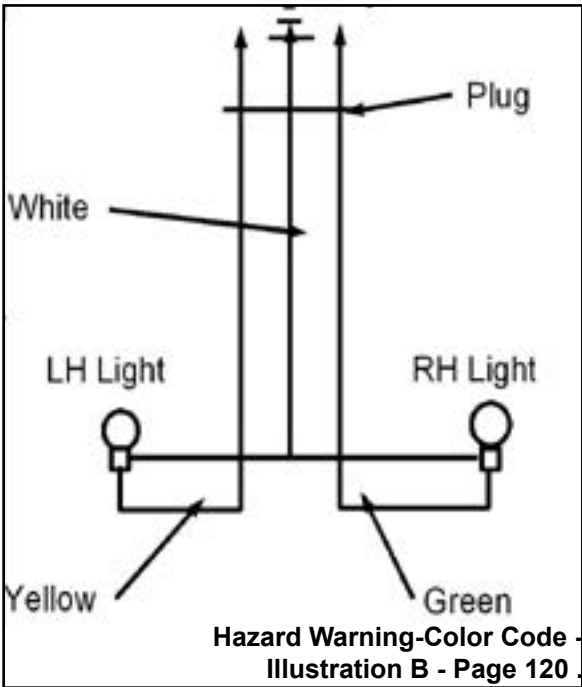


Lights-Color Codes - Illustration A - Page 120 .

Hazard Warning Lights

When transporting the swather while it is mounted to the windrower, hazard warning lights must be connected and operating. The amber warning lamps must be visible from both the front and the rear.

Wiring Layout:
White - Ground
Green - Right Flasher
Yellow - Left Flasher



Hazard Warning-Color Code - Illustration B - Page 120

Be Seen. Be Safe!



14 - Appendix

Appendix A - 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.

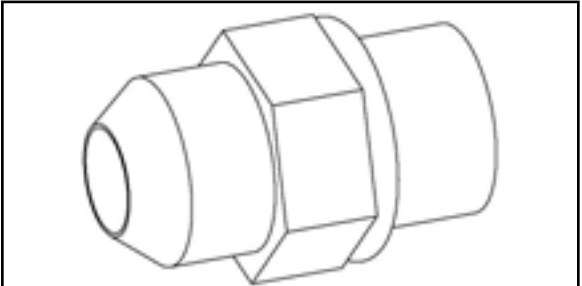
A 'T' fitting will be named in the following format:

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

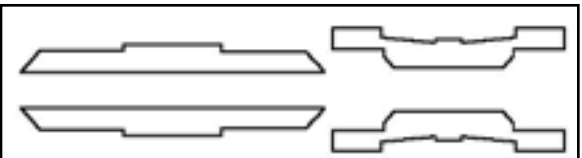
The center set of characters describes the middle port on the 'T' fitting.

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

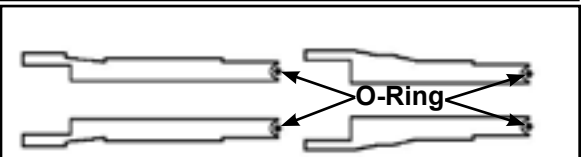
Hydraulic Fitting Types		
Prefix	Suffix	Description
M or F	J	JIC 37° flared connectors
M or F	F	Face Seal
M or F	P	Pipe Fitting
M or F	B	O-Ring Boss
F only	X	Swivel (no image shown)
M or F	STC	Snap To Connect



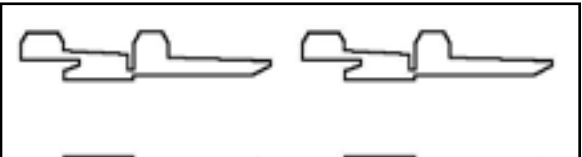
10MJ-10MB Illustration A - Page 121



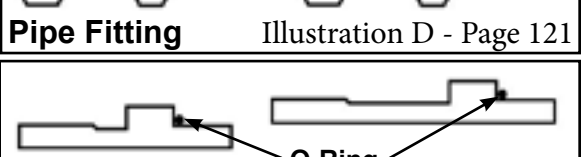
JIC 37° Fitting Illustration B - Page 121



Face Seal Fitting Illustration C - Page 121



Pipe Fitting Illustration D - Page 121



O-Ring Boss Illustration E - Page 121

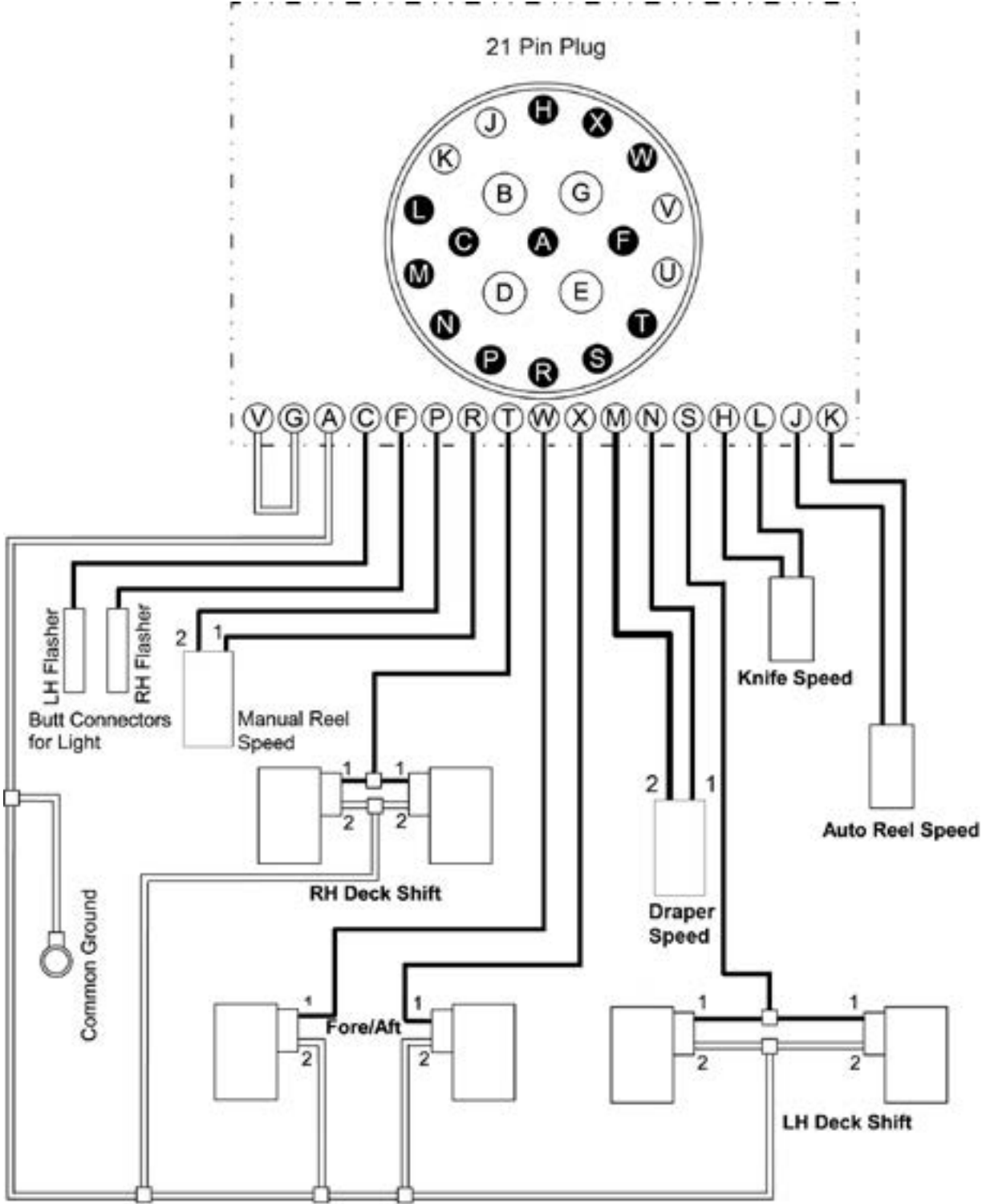


STC Fitting Illustration F - Page 121



Appendix B - Electrical Schematics & Charts

Appendix B-1 - Swather Table Electrical Schematic



Appendix B-2 - Common 21 Pin Plug Features

Cavity	Circuit Reference
A	Power Ground
B	
C	LH header Flashing Light
D	
E	
F	RH header Flashing Light
G	Recog Jumper to V
H	Header Speed Sensor
I	
J	Auto Reel Speed (decrease)
K	Auto Reel Speed (increase)
L	Knife Speed
M	Draper Speed (decrease)
N	Draper Speed (increase)
O	
P	Manual Reel Speed (decrease)
R	Manual Reel Speed (increase)
S	LH Deck Shift*
T	RH Deck Shift*
U	
V	Recog Jumper to G
W	Fore/Aft (Aft)
X	Fore/Aft (Fore)

*Double swath header only

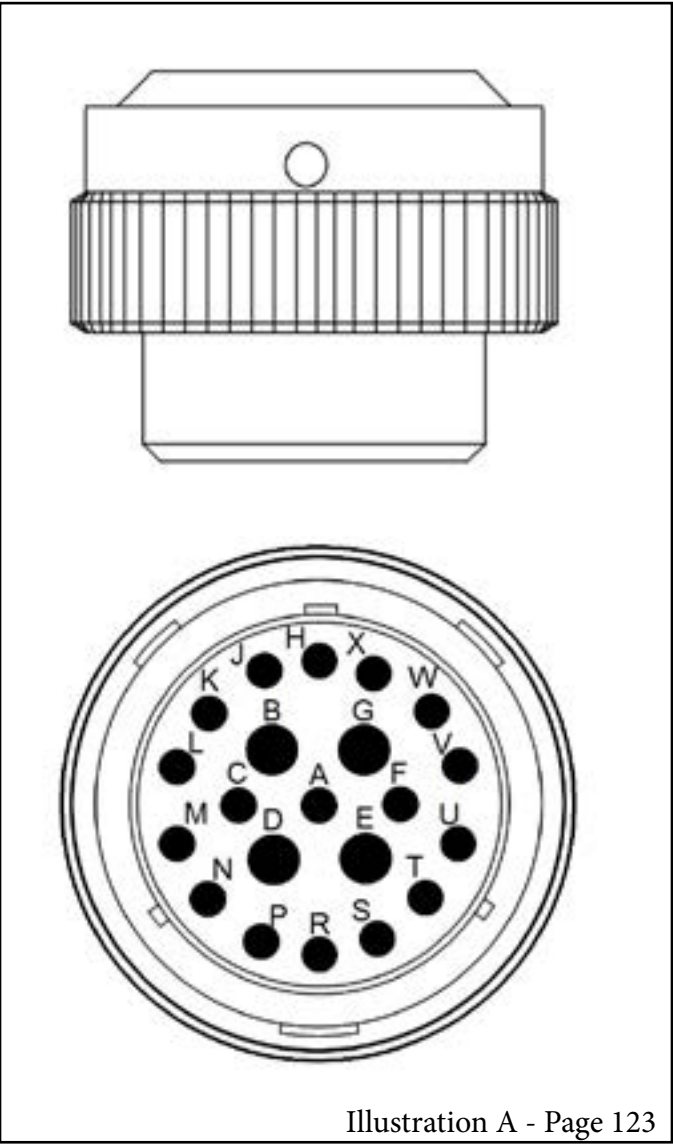


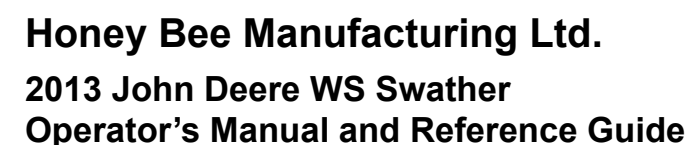
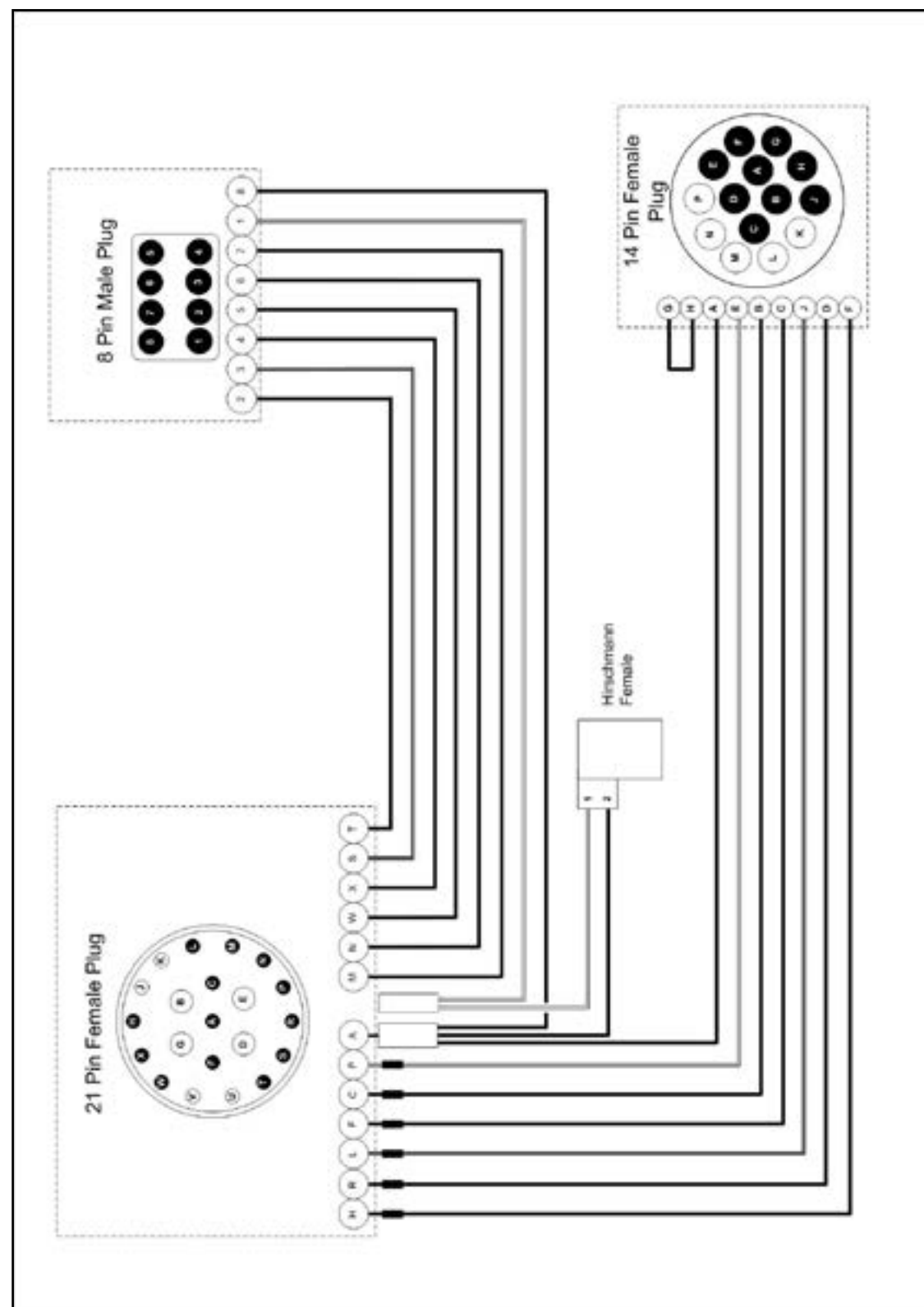
Illustration A - Page 123



Pins G, J, K, and V do not apply to Honey Bee swathers.

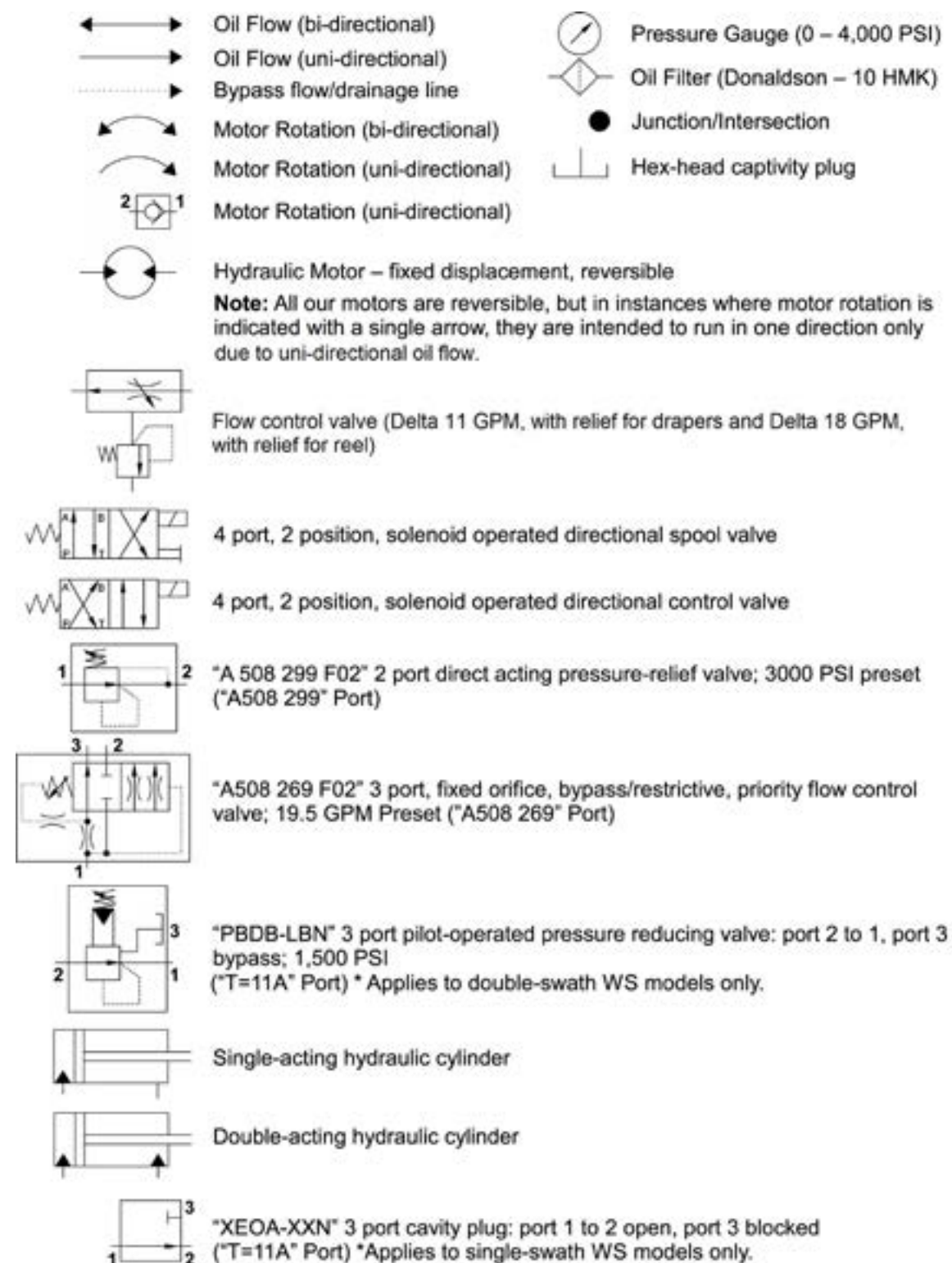


Appendix B-3 - Swather Adapter Wiring Schematic



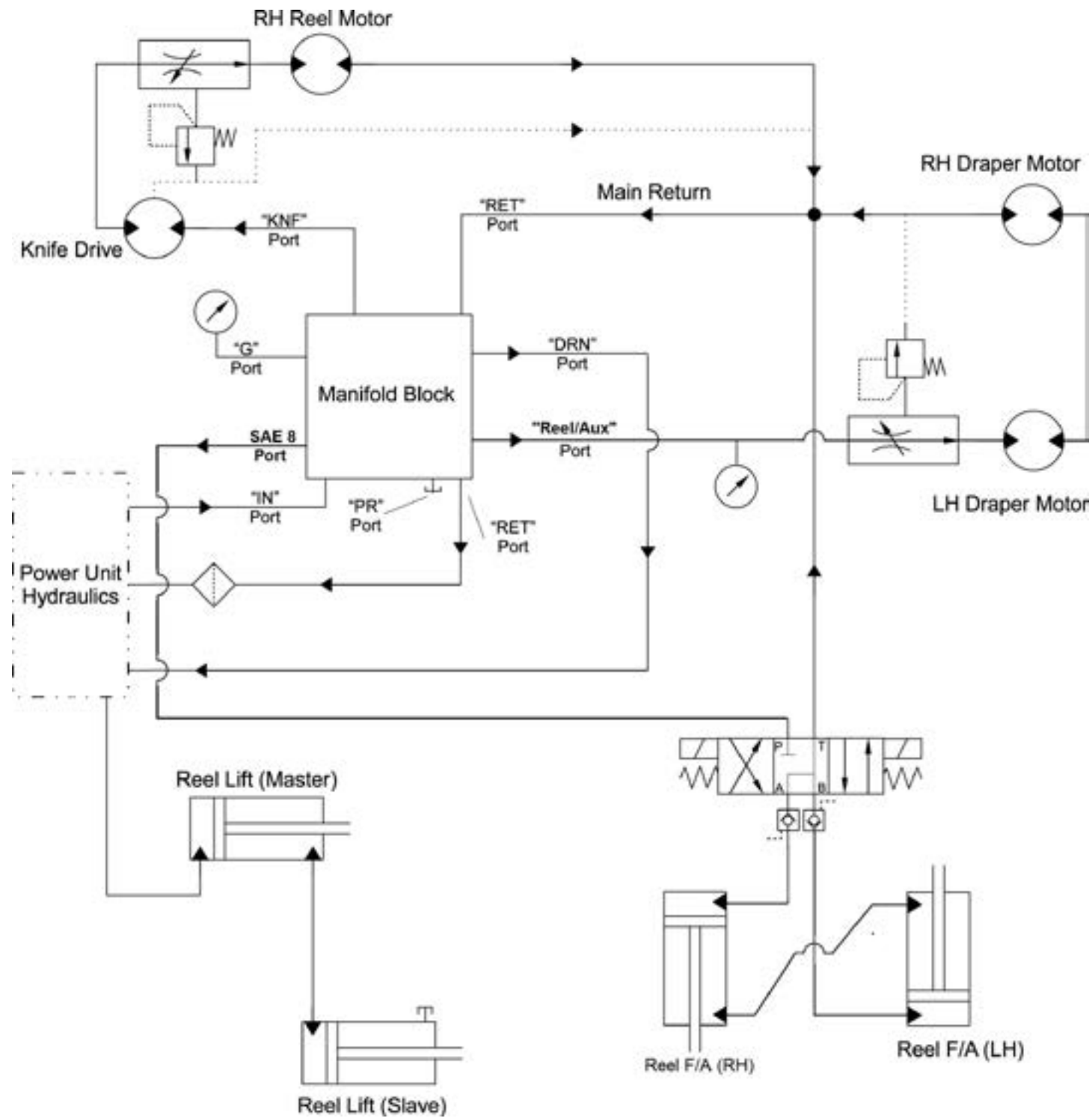
Appendix C - Hydraulic System Schematics

Appendix C-1 - Hydraulic System Schematic Symbols

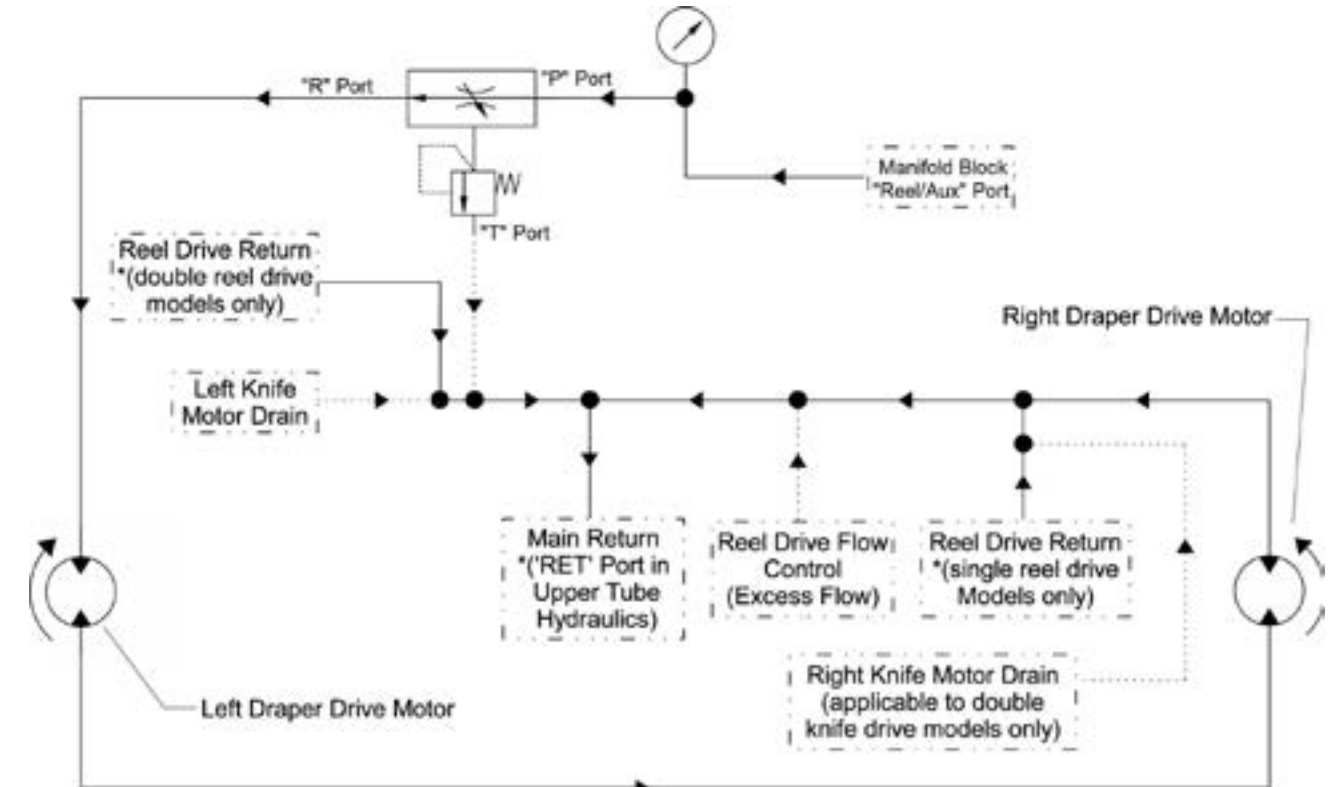




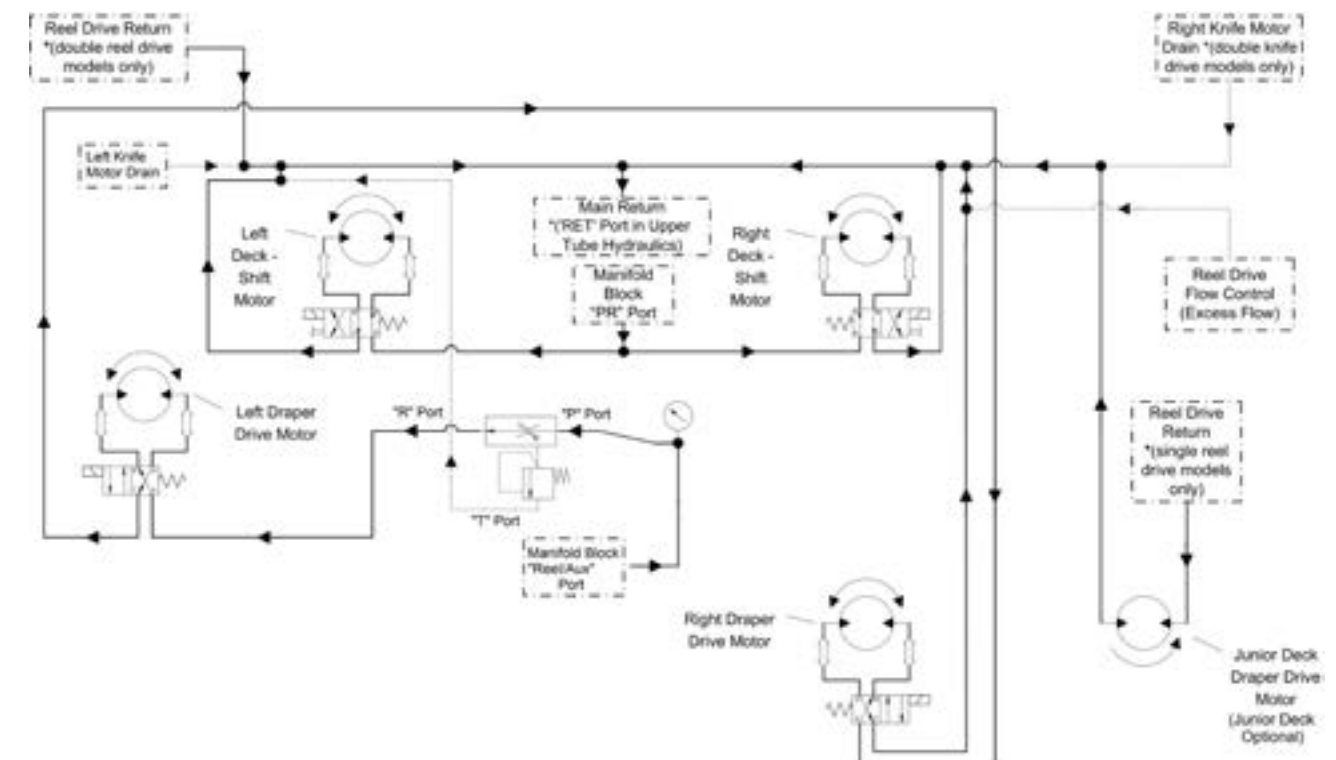
Appendix C-2 - Overall Hydraulic Schematic – Single Swath Single Knife



Appendix C-3 - Draper Drive – Single Swath (WS Models)

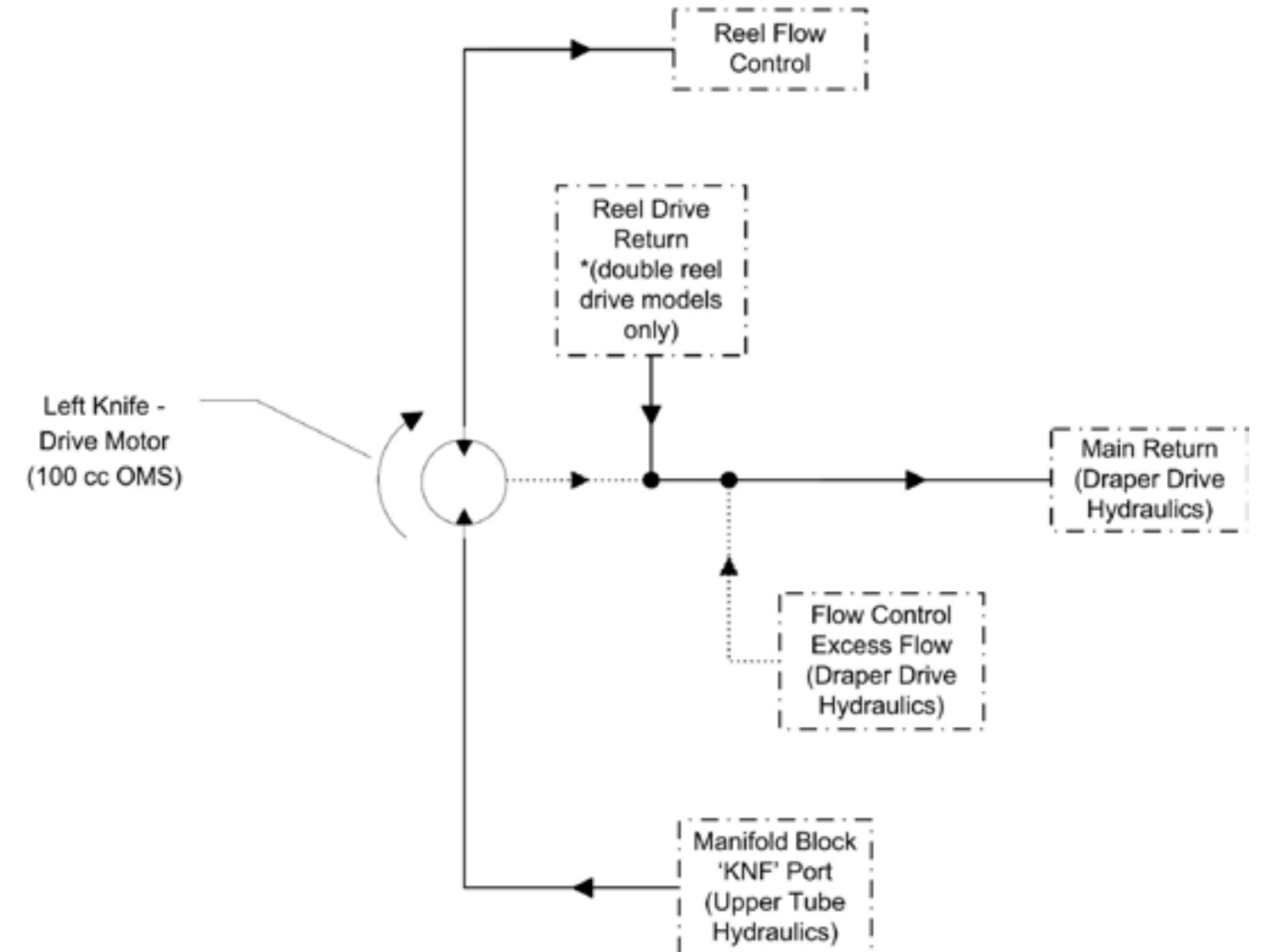
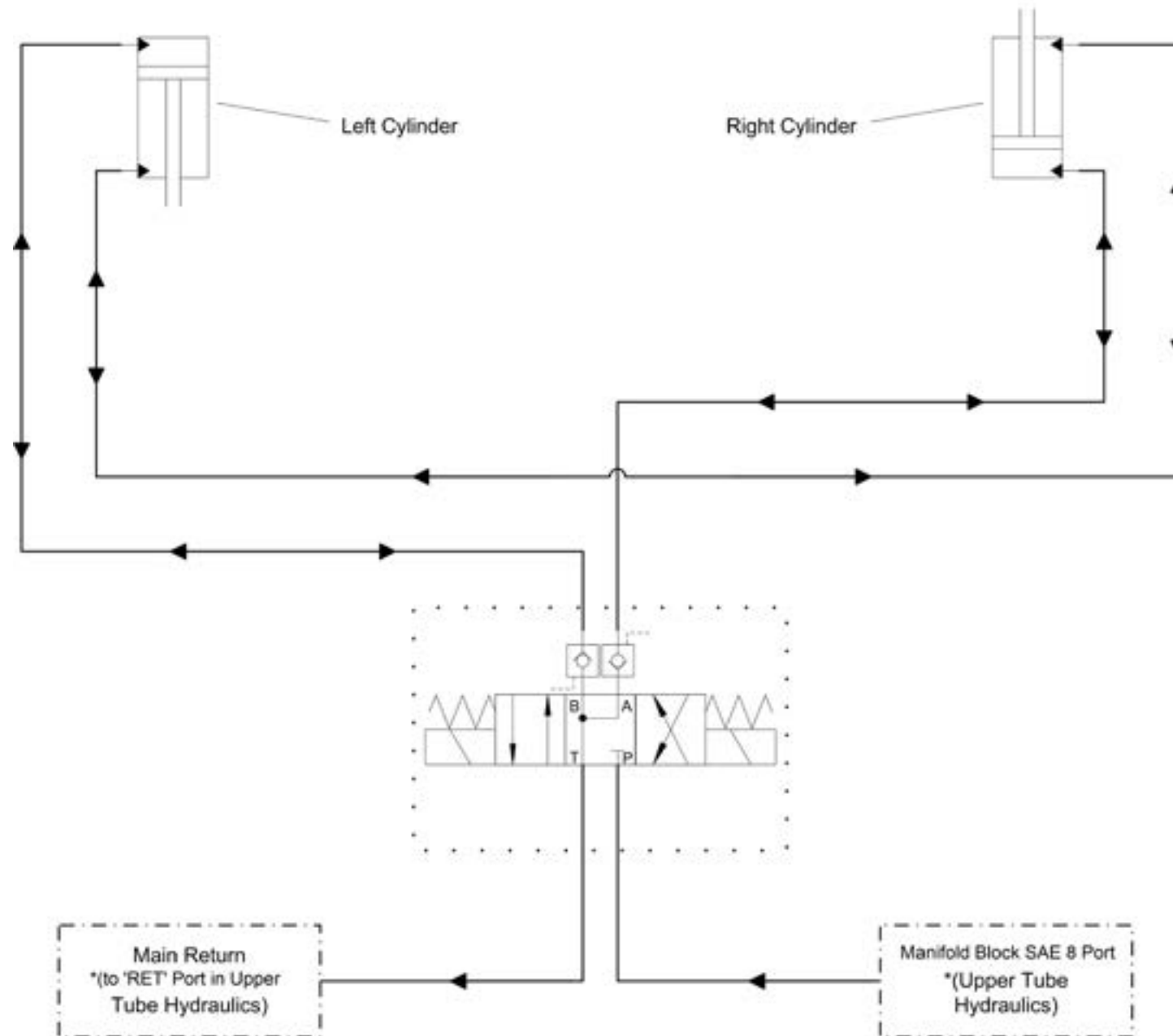


Appendix C-4 - Draper Drive 21-36ft Double Swath (WS Models)



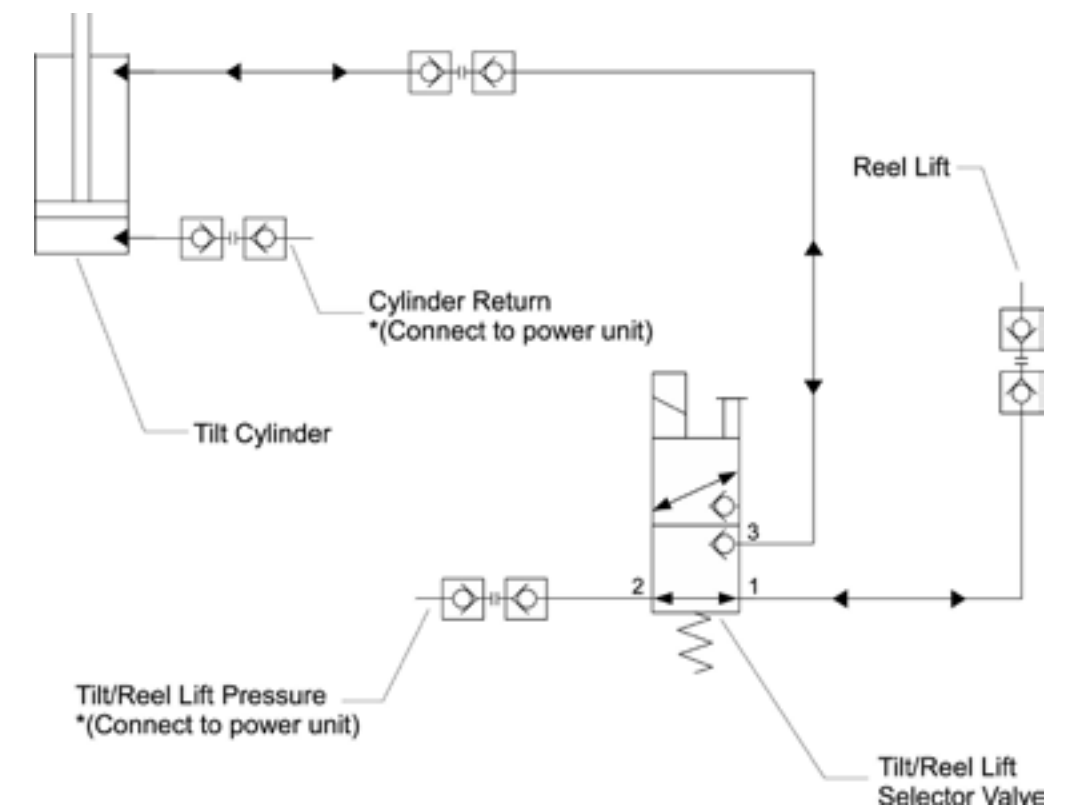
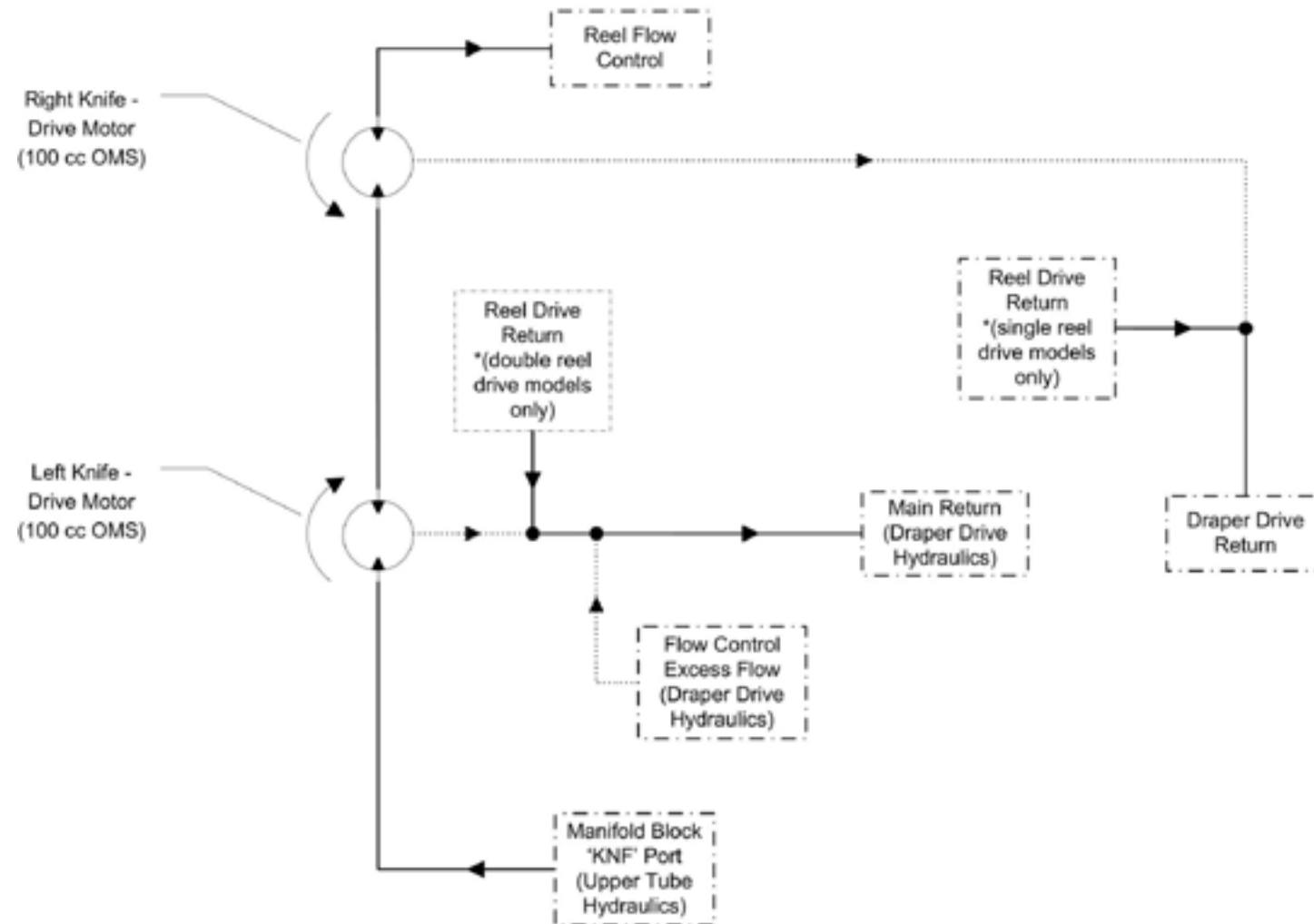


Appendix C-5 - Fore & Aft Assembly – Solid Reel (WS Models w/Hydr. Solenoid Kit)

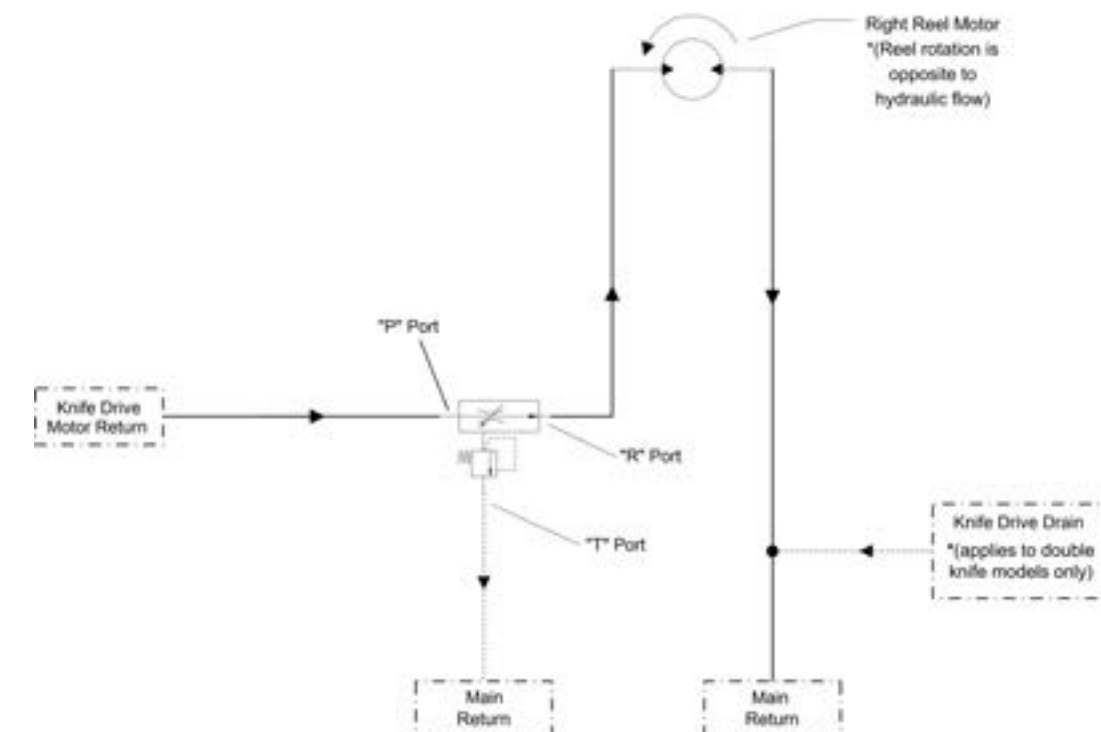




Appendix C-7 - Double Knife – Drive

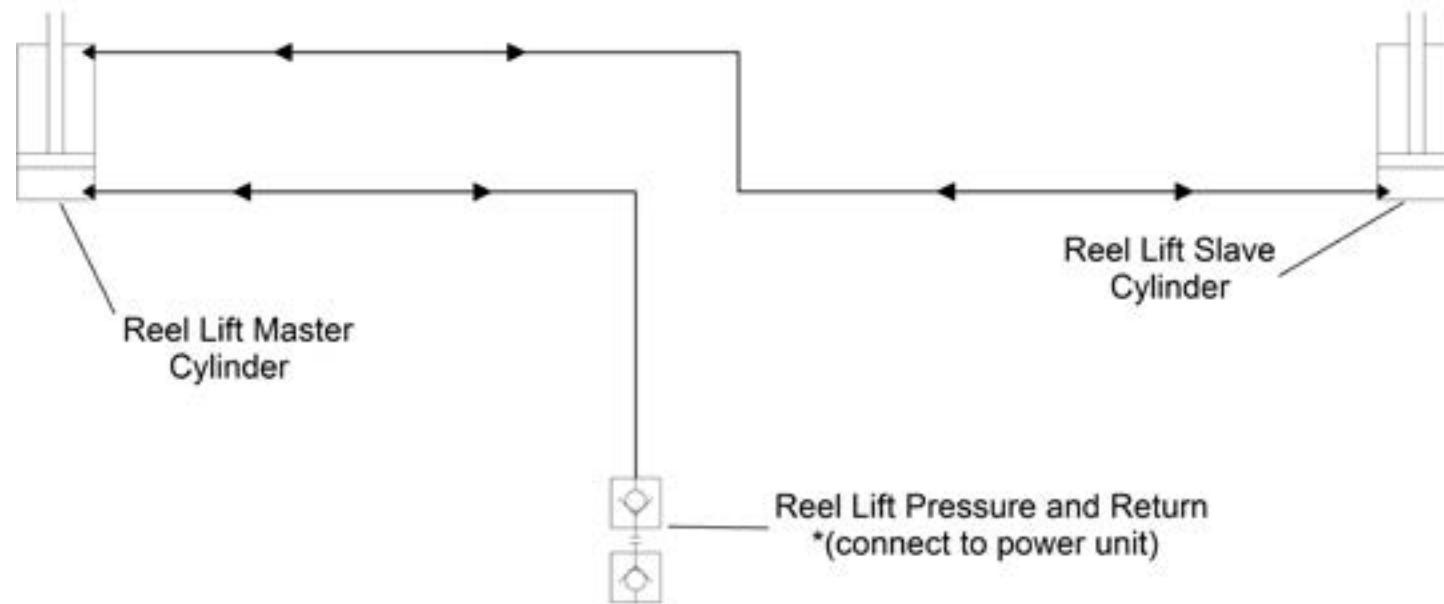


Appendix C-9 - Single Reel Drive – WS Models

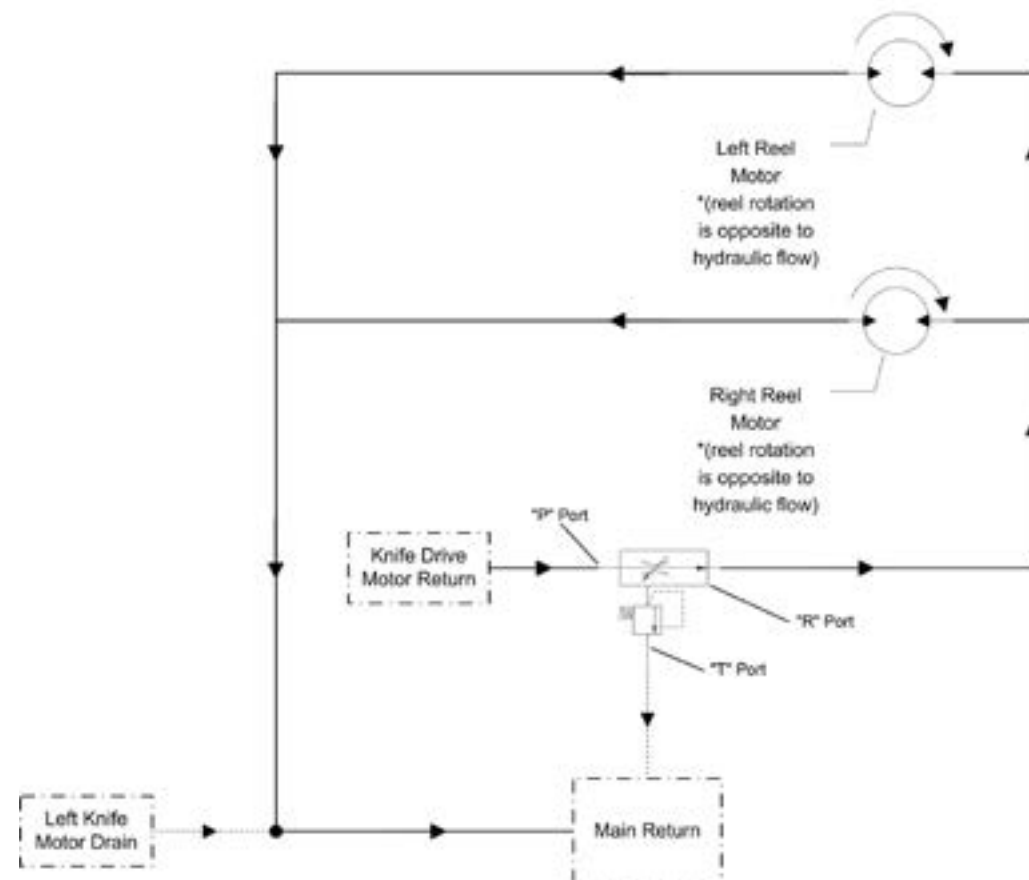




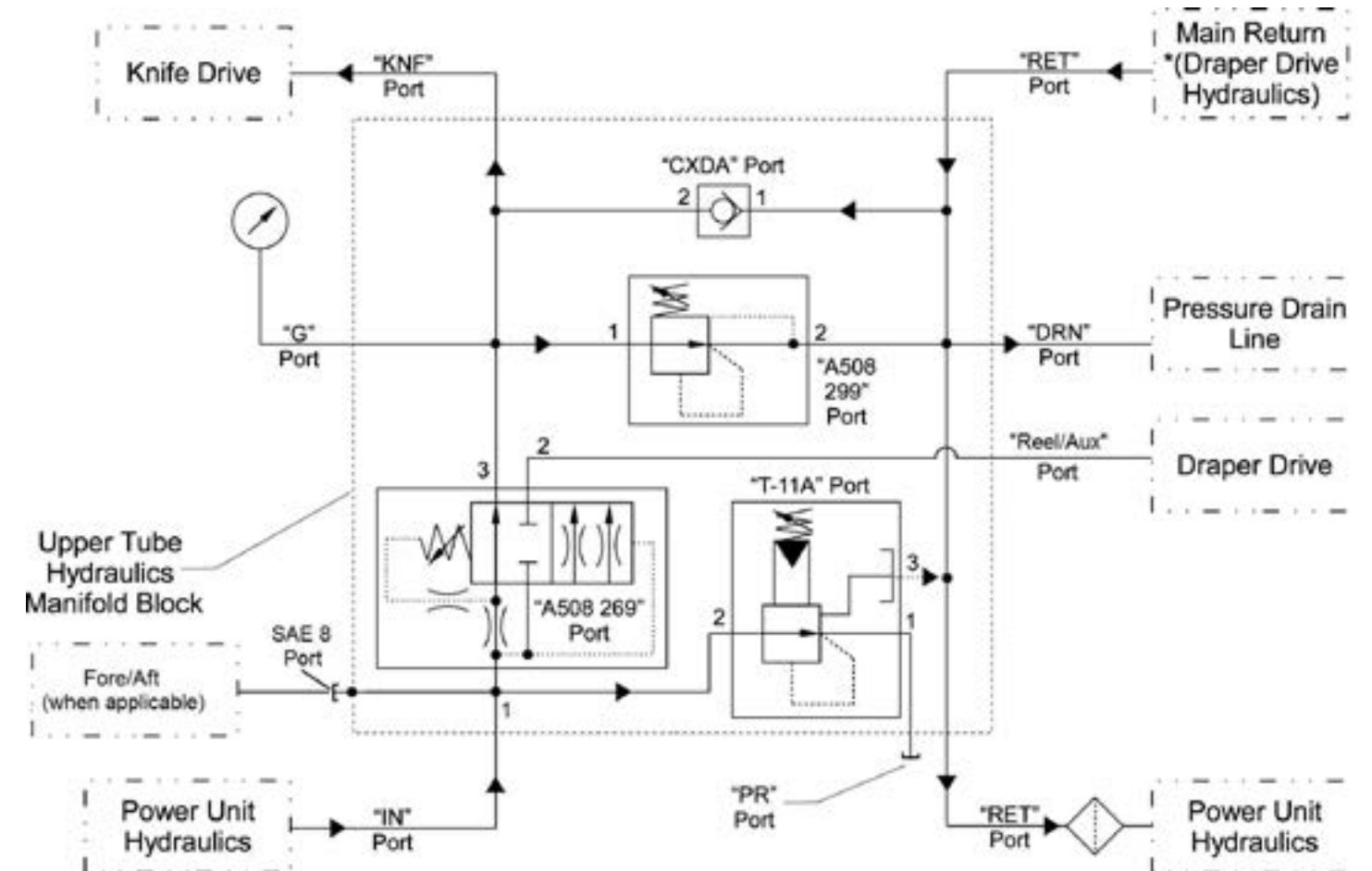
Appendix C-10 - Reel Lift (Solid Reel)



Appendix C-11 - Double Reel Drive (Parallel) – WS Models



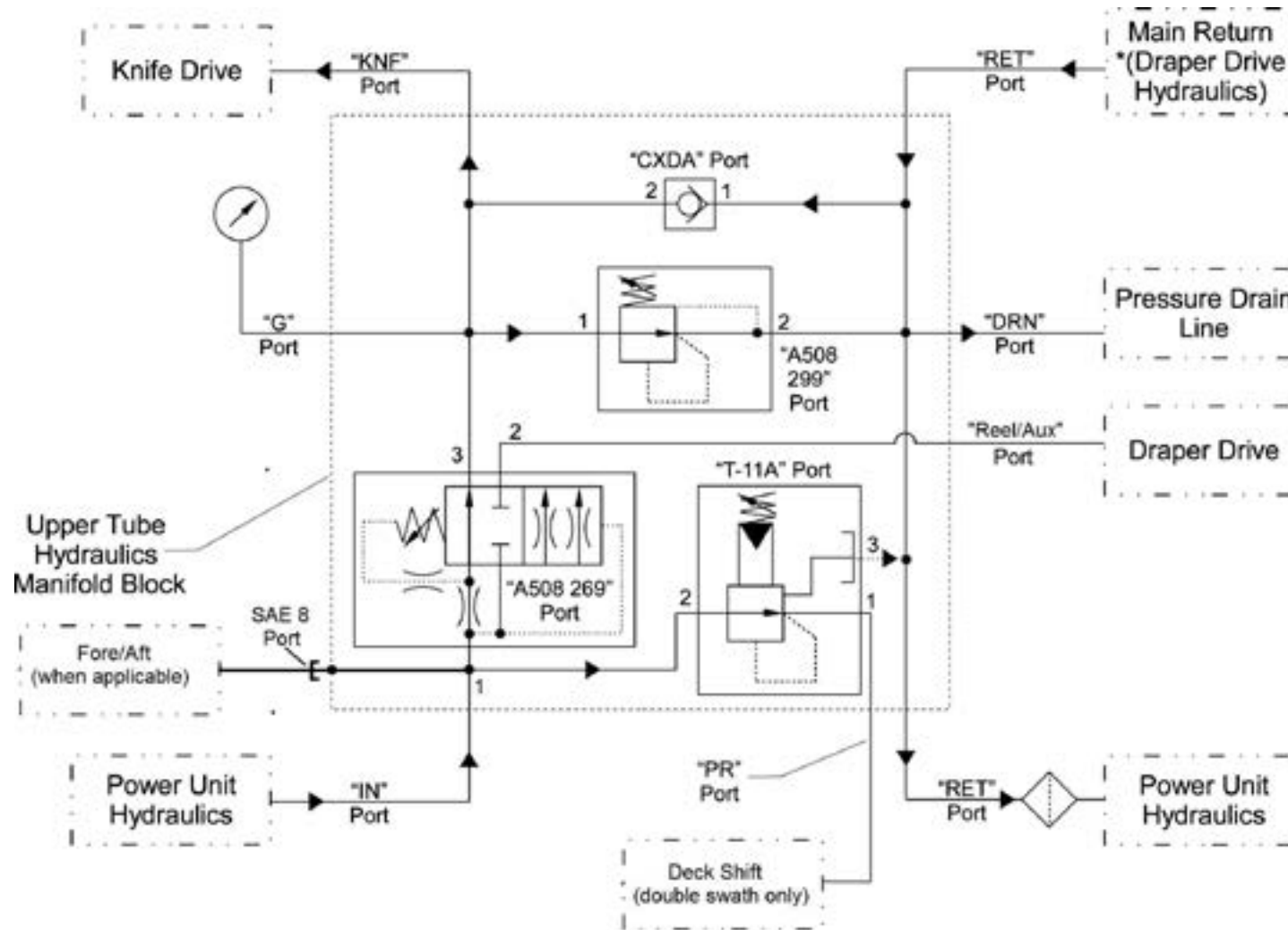
Appendix C-12 - Upper Tube Hydraulics Single Swath (WS Models w/Direct Block Drainage)



See Manifold Block Cartridge Locations ***“Manifold Block Cartridge Locations”*** on page 97 and schematic symbols ***“Appendix C-1 - Hydraulic System Schematic Symbols”*** on page 125 for additional port and function reference.



Appendix C-13 - Upper Tube Hydraulics Dbl Swath (WS Models w/Direct Block Drainage)



See Manifold Block Cartridge Locations **“Manifold Block Cartridge Locations”** on page 97 and schematic symbols **“Appendix C-1 - Hydraulic System Schematic Symbols”** on page 125 for additional port and function reference.

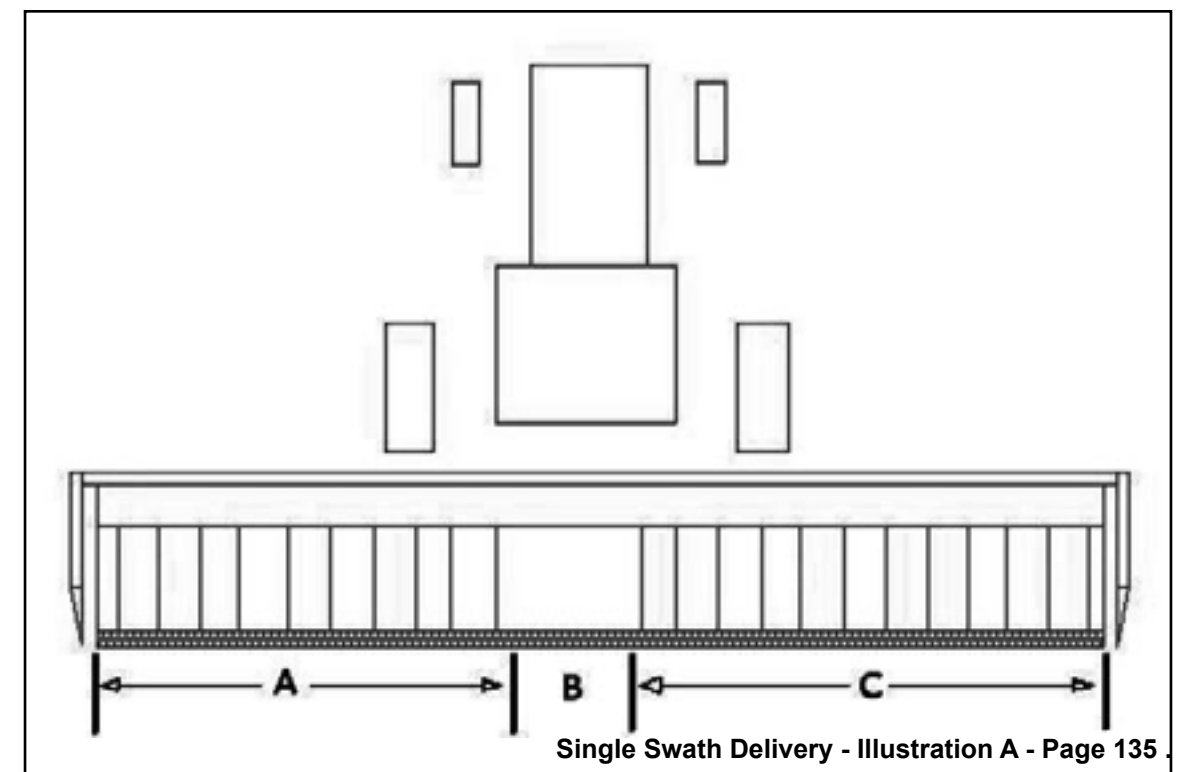


Appendix D - Dimensions - Single Swath Delivery

Refer to the illustration below for the following dimensions:

Model (ft/m)	A (in/cm)	B (in/cm)	C (in/cm)
18HB (18/5.5)	80/208	50/130	80/208
21HB (21/6.4)	99/257	50/130	99/257
25HB (25/7.6)	104/270	80/208	104/270
	104/270	68/177	118/307*
	118/307*	56/146	118/307*
30HB (30/9.1)	136/354	80/208	136/354
	136/354	68/177	150/390*
	150/390*	56/146	150/390*
36HB (36/11)	175/450	80/208	175/450
	175/450	68/177	189/486*
	189/486*	56/146	189/486*

* Indicates the addition of one 14" deck



Single Swath Delivery - Illustration A - Page 135



Appendix E - Dimensions - Double Swath Delivery

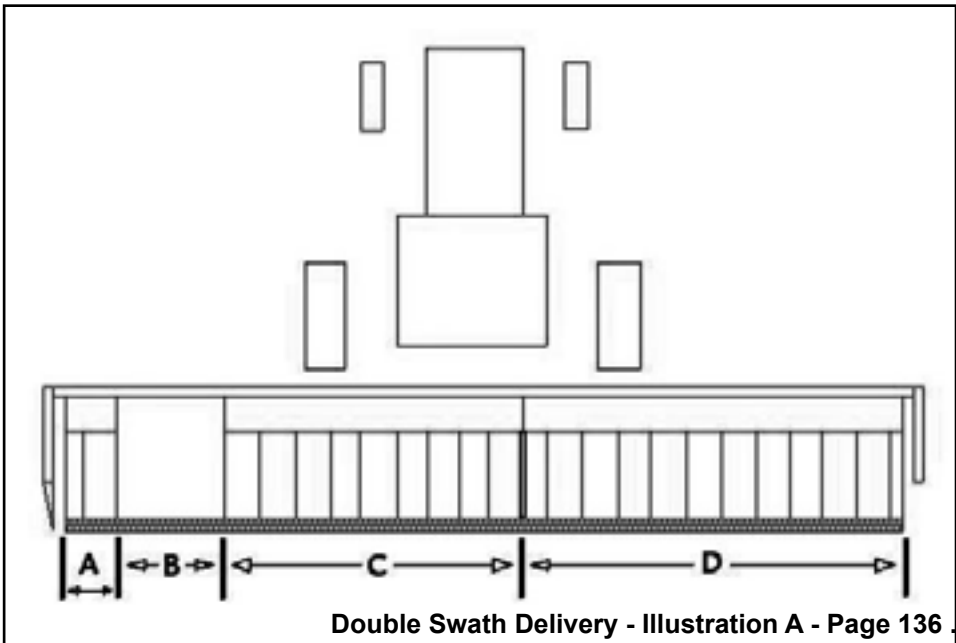
Refer to the illustration below for the following dimensions:

Model	A (in/cm)	B (in/cm)	C (in/cm)	D (in/cm)
21HB (21/6.4)	6/16	45/114	99/257	99/257
	-	50/130 (X)	99/257	99/257
25HB (25/7.6)	19/48	41/135 (J)	118/307	118/307
	6/16	54/140	118/307	118/307
	-	56/142 (X)	118/307	118/307
	-	68/172 (X)	118/307	104/264 *
	-	80/208 (X)	104/264 *	104/264 *
30HB (30/9.1)	19/48	37/121 (J)	150/390	150/390
	6/16	50/130	150/390	150/390
	-	56/142 (X)	150/390	150/390
	-	68/172 (X)	150/390	136/345 *
	-	80/208 (X)	136/345 *	136/345 *
36HB (36/10.9)	19/48	35/115 (J)	189/480	189/480
	6/16	48/158	189/480	189/480
	-	56/142 (X)	189/480	189/480
	-	68/172 (X)	189/480	175/445 *
	-	80/208 (X)	175/445 *	175/445 *

(X) - Indicates only available with centre delivery.

(J) - Indicates the addition of a junior deck.

* - Indicates the the removal of one 14" deck.



Double Swath Delivery - Illustration A - Page 136



Appendix F - Windrow Type

Several factors affect windrow formation: Ground speed, draper speed, type of crop, reel speed, table angle, and stubble height. This manual will give the operator some guidelines in how machine settings can affect windrow formation. It is the operator's responsibility to adjust the settings for the type of windrow desired.

Windrow Formations

Herringbone: The ideal formation for weathering and ease of pick up. The crop needs to be standing straight or leaning uniformly in one direction.

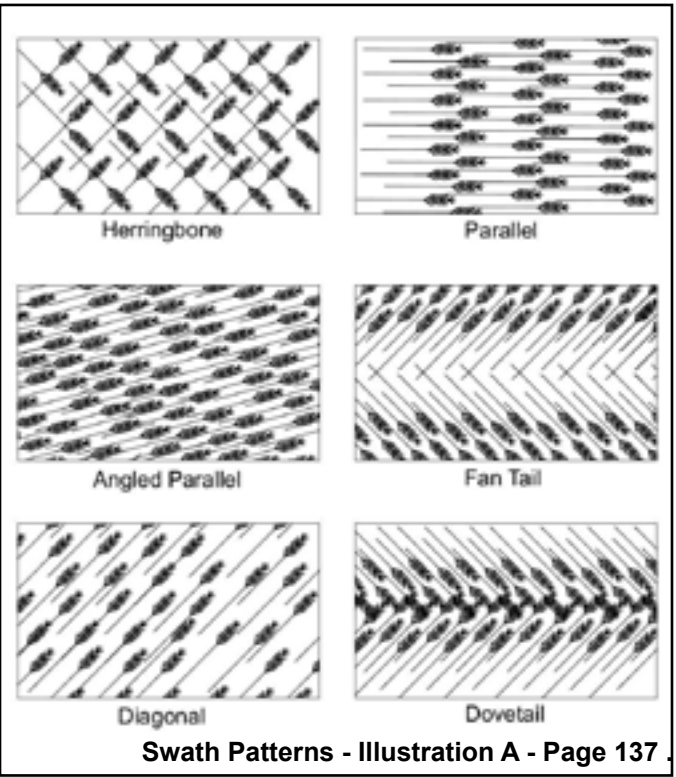
Parallel: A good windrow that is easier to form.

Angled Parallel (75 Degree Diagonal): A good windrow but not as good as the parallel.

Fan Tail: Good weathering ability and easy to pick up, but not as good as the first three types.

Diagonal (45 Degrees): This swath is less desirable, because the heads are concentrated on one side of the swath. It is more difficult to pick up and is more easily affected by wind or rain.

Dovetail: Also less desirable, because heads are concentrated in the middle of the swath. More difficult to pick up and more easily affected by wind or rain.



Swath Patterns - Illustration A - Page 137

Ground Speed

Use windrow quality as a guide to travel speed. Cut at lower speeds when terrain is rough and when crops are lodged or tangled. Excessive speed may be indicated by a ragged cut in the stubble.

Stubble Height

For most crop types, best results are obtained when the table is adjusted for a stubble height of 6" to 8" or (150 to 200 mm). This height of stubble should have strength to support the windrow and to provide air flow underneath. Also, the windrow should be easier to pick up.



Appendix G - Specifications/Features

Weights

Weights are given in lbs/kg format.

Model	WS18	WS21	WS25	WS30	WS36
Width	18'	21'	25'	30'	36'
Weight	1792/815	1980/900	2280/1036	2710/1232	3207/1458

- Weight includes - Swather assembly c/w decks and attached hydraulic components.
- Weight does not include - Double swath decks or lift arms.

Component	WS18	WS21	WS25	WS30	WS36
Pick-up Reel -UII Universal	490/223	562/255	624/283	720/327	980/446
Pick-up Reel HCC ML	502/228	566/257	625/284	718/326	884/401
Lift Arms	200/91	200/91	200/91	200/91	200/91
Transport Axle	206/93	206/93	206/93	206/93	206/93

Knife Drive Availability

Model	WS18	WS21	WS25	WS30	WS36
Single Knife	standard	standard	standard	standard	n/a
Double Knife	optional	optional	optional	optional	standard



Technical Specifications

- Knife Drive - SCH epicyclic 3 5/16" stroke, hydraulically driven, 1100-1400 strokes per minute. (2 strokes = 1 RPM)
- Cutting System - SCH Easy Cut, spring steel guards and bolted sections.
- V-Guided Draper - 42" Rubberized polyester, fiberglass reinforced, tie bar connectors.
- Draper Speed - adjustable in cab, 0-760 fpm.
- Reel Speed - adjustable in cab.
- Adjustable cutting angle.
- Standard single swath opening is approximately 81" +/- 3".
- Standard double swath opening is approximately 46" +/- 6".
- Swath opening may be decreased for WS25, WS30, WS36 tables by inserting 14" Deck extensions.



Specifications are subject to change without notice or obligation.

Options

- Pickup Reel - 6 bat, 42" diameter Universal U-II Pickup Reel, plastic fingers.
- Pickup Reel - 6 bat, 44" diameter HCC Level-II Pickup Reel, plastic fingers
- Steel Fingers for U-II Pickup Reel.
- Double Reel Drive
- End Strut Gauge Wheels
- Castering Gauge Wheels without tires or wheels - WS25 (Not offered for WS21 models)
- Steel Skid Plate (Not available for WS36)
- Quick Coupler Finishing Kit
- Junior Deck for Double Swath Tables.
- 14" Deck Extension Kit
- Cross Auger Kit (Not available for WS21)
- Swath Delivery Kits - Hydraulic deck shift.
- Crop Lifters for cereals and/or specialty crops.



Included in Standard Swather

- Storage Axle and Hitch
- Remote Draper Speed Control
- Hay Guard
- UHMW Poly Skid Plate
- Castering Gauge Wheels - WS30, WS36
- Tires/Wheels/Hubs/Spindles
- Fore/Aft Hydraulic Reel Adjustment
- Hydraulic Tilt

Bolt Torque

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. Always replace fasteners with the same strength rating and size.

Unified Torque Specifications				
Grade	SAE 5		SAE 8	
Size	Nm	Lb-ft	Nm	Lb-ft
1/4"	12	9	17	12
5/16"	25	19	36	27
3/8"	45	33	63	45
7/16"	72	53	100	75
1/2"	110	80	155	115
9/16"	155	115	220	165
5/8"	215	160	305	220
3/4"	390	290	540	400
7/8"	570	420	880	650
1"	915	675	1320	970

Metric Torque Specifications				
Grade	8.8		10.9	
Size	Nm	Lb-ft	Nm	Lb-ft
M6	11	8.5	17	12
M8	28	20	40	30
M10	55	40	80	60
M12	95	70	140	105
M14	150	110	225	165
M16	240	175	350	255
M18	330	250	475	350
M20	475	350	675	500
M22	650	475	925	675
M24	825	600	1150	850



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements increase torque values by 5%.



Hydraulic Fitting Torque

- Tightening Flare Type Tube Fittings
- Check flare and flare seat for defects that might cause leakage.
 - Align tube with fitting before tightening.
 - Lubricate connection and hand tighten swivel nut until snug.
 - To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Hydraulic Torque Fitting Table					
Tube OD Size	Nut Size	Torque Value	Torque Value	Flats to tighten	Turns to tighten
Inches	Inches	Nm	lb-ft	-	-
3/16"	7/16"	8	6	1	1/6
1/4"	9/16"	12	9	1	1/6
5/16"	5/8"	16	12	1	1/6
3/8"	11/16"	24	18	1	1/6
1/2"	7/8"	46	34	1	1/6
5/8"	1"	62	46	1	1/6
3/4"	1-1/4"	102	75	3/4	1/8
7/8"	1-3/8"	122	90	3/4	1/8



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



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.
- Hand tighten fitting 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 shown while holding body of fitting with a wrench.

O-ring Fitting Values					
OD Thread	Nut Size	Torque Value	Torque Value	Flats to Tighten	Turns to Tighten
Inches	Inches	Nm	Lb-ft	-	-
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	1/2	62	146	1-1/2	1/4
1-1/16	1-1/4	102	75	1-1/2	1/6
1-3/16	1-3/8	122	90	1-1/2	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



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



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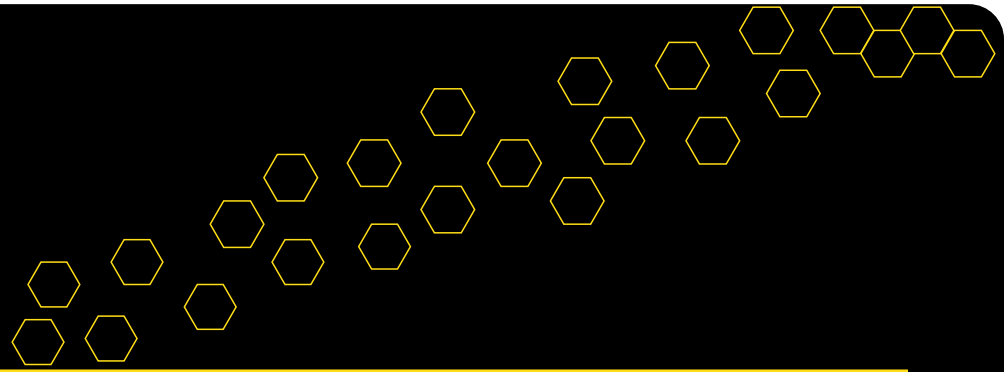
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