



John Deere Swather

Operator's Manual



Revision 3.0 - 2010



Important Notice

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.

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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.

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1.5 - 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 delivery 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.

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 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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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



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.

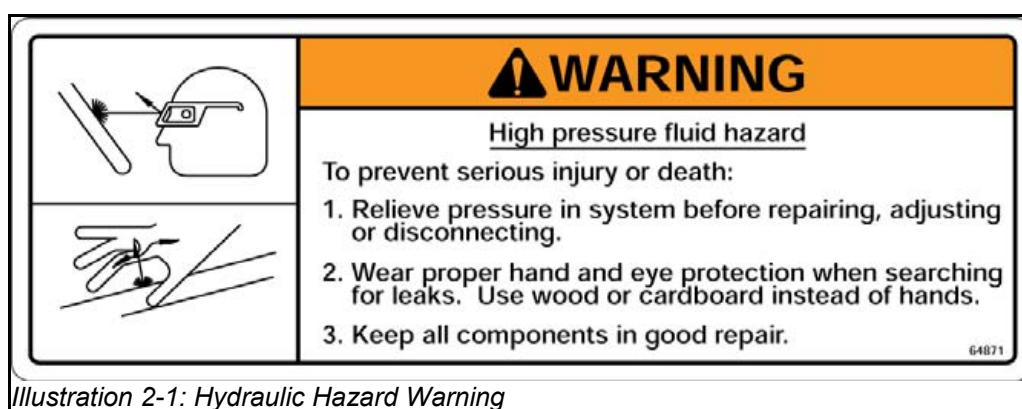


Illustration 2-1: Hydraulic Hazard Warning

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.



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. Sickles 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.

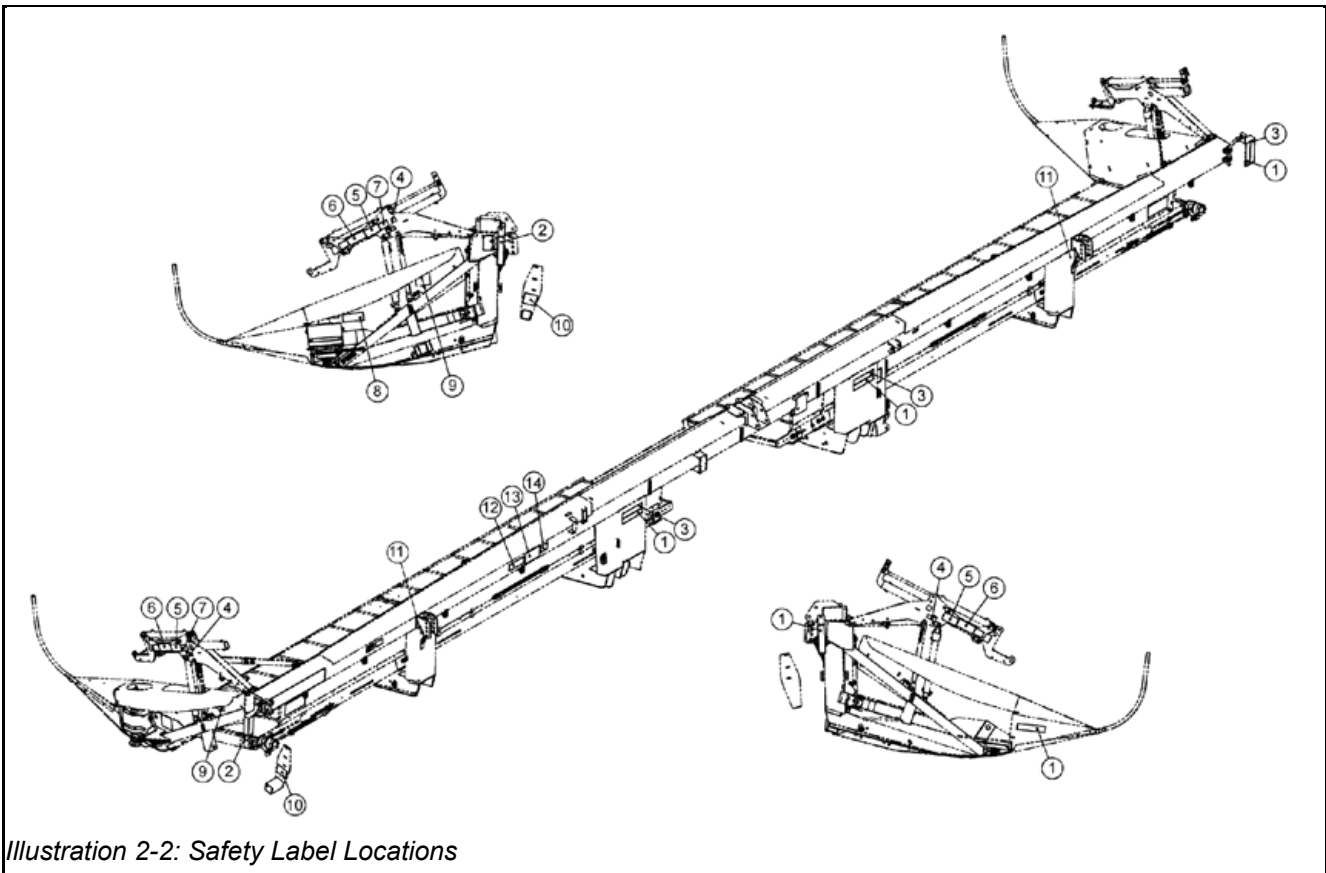
Safety Decal Locations

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



Safety-Related Labels

Vehicle Marking Reflectors:
(not shown on illustration)

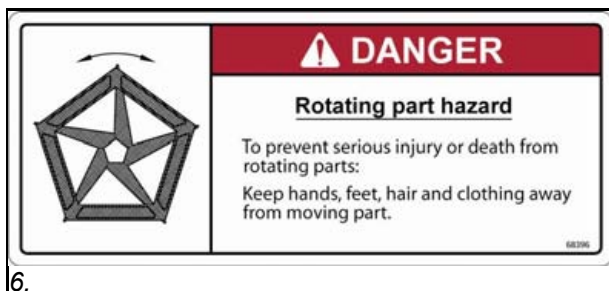
1. Red (2x9) - 6 Locations
2. Yellow (2x9) - 3 Locations
3. Red-Orange (2x9) - 4 Locations



4.



5.



6.



7.

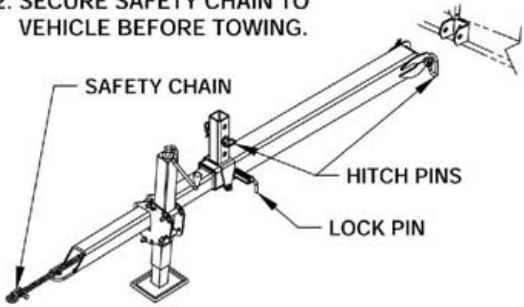


8.

⚠ WARNING

TRANSPORTING

1. INSERT AND SECURE HITCH PINS AND LOCK PIN IN HITCH TUBES BEFORE TOWING IMPLEMENT.
2. SECURE SAFETY CHAIN TO VEHICLE BEFORE TOWING.



SAFETY CHAIN
HITCH PINS
LOCK PIN

76648


9.

⚠ WARNING

- Properly prepare machine for transport / loading.
- 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.

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10.

⚠ WARNING

PINCH AREA

Keep Away!

Failure to comply could result in death or serious injury.



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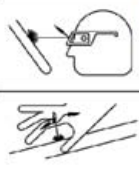
11.

⚠ 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.



64874

12.

⚠ 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 feeder 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.

77008

13.

⚠ WARNING

BEFORE SERVICING

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

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14.

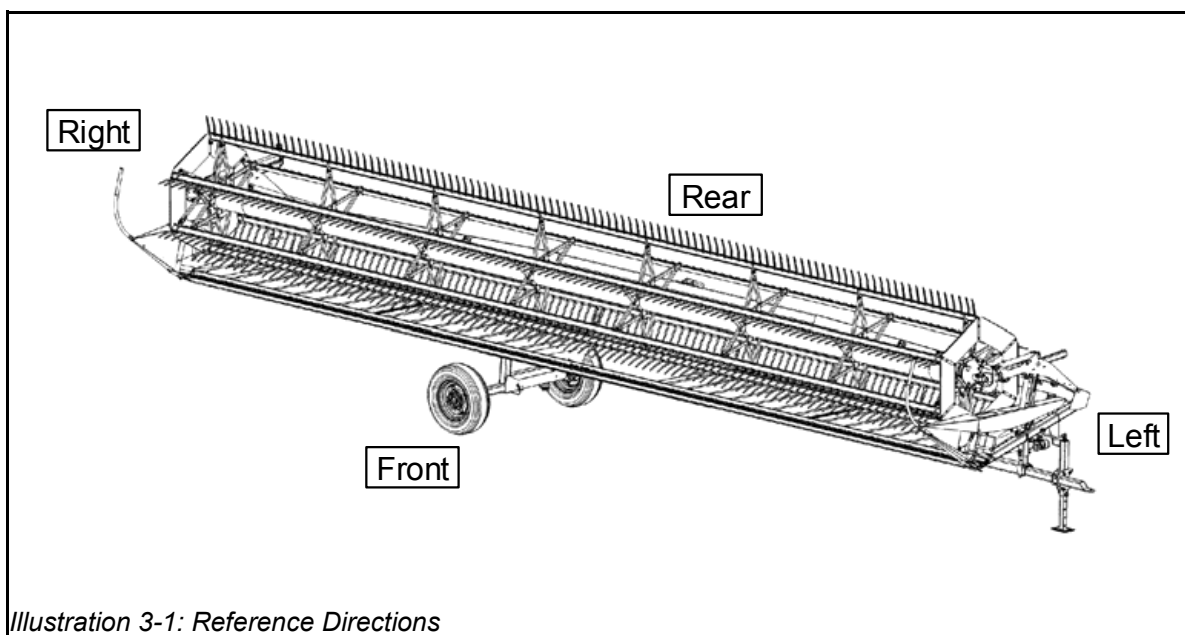
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3 - Installation Instructions

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	Lift arm end of the windrower
	Back or Rear	Engine end of the windrower
	Right and Left	As seen when sitting in the driver's seat facing the swather.
Swather Table:	Front	Cutter bar side
	Back or Inside	Lift arm mount side
	Right and Left	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 2 - 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	Approximately 1200 psi at cutting height
21'	Swap Cylinders	No Change	Approximately 1250 psi at cutting height
25'	Swap Cylinders	No Change	Approximately 1500 psi at cutting height
30'	Swap Cylinders	No Change	Approximately 1700 psi at cutting height
*36'	Swap Cylinders	No Change	Approximately 1900 psi at cutting height

Single Knife / Double Knife - Double Swath

	No Hitch	Hitch	Float Pressure
18'	n/a	n/a	n/a
21'	Swap Cylinders	No Change	Approximately 1250 psi at cutting height
25'	Swap Cylinders	No Change	Approximately 1500 psi at cutting height
30'	Swap Cylinders	No Change	Approximately 1700 psi at cutting height
*36'	Swap Cylinders	No Change	Approximately 1900 psi at cutting height



For 36' Double knife with hitch, floatation may be improved by replacing the 2 3/4" cylinder with another 3" cylinder with 1900 psi float pressure.

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 Line
2. Reverse Pressure Line
3. 16MF 12MB
4. $\frac{3}{4}$ Quick Coupler Female
5. $\frac{3}{4}$ Quick Coupler Male
6. 12MB 12FJX Adapter SW
7. 12MJ 16MB 45°
8. JD Motor
9. Plug
10. 4MP 4MP
11. $\frac{1}{4}$ Quick Coupler Female
12. $\frac{1}{4}$ Quick Coupler Male
13. 4MP 8MF (4MP 8MJ alternate)
14. 4895 & 4995 Motor Drain
15. 8FP 4MP Adapter
16. 12MF 8MP Nipple
17. A400 & R450 Motor Drain
18. 12MJ 16MB 90° Elbow

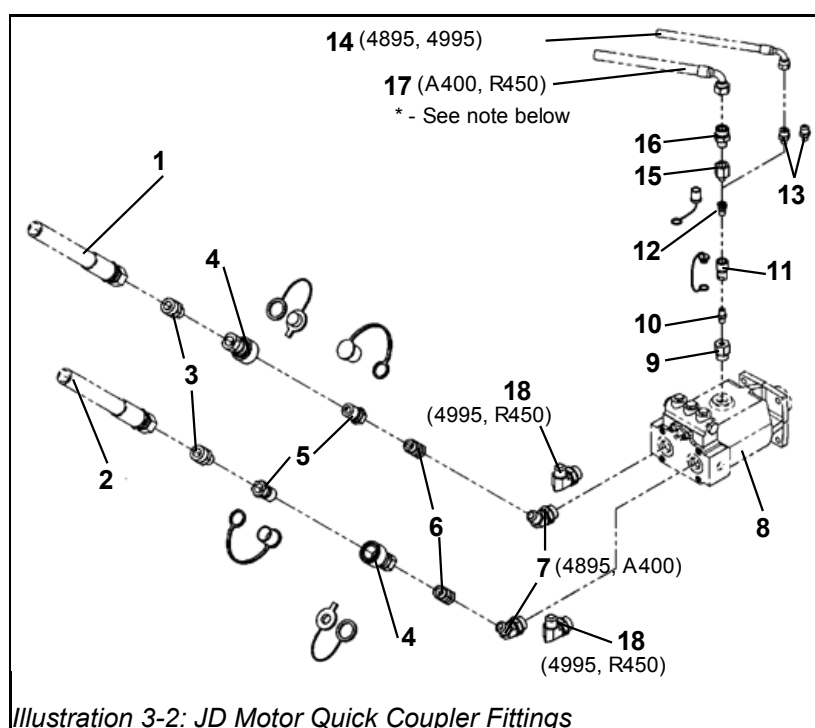


Illustration 3-2: JD Motor Quick Coupler Fittings



*The A400/R450 motor drain (17) does not have a 90° bend at the end as shown above, you will be required to use one additional 90° fitting to compensate.



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 Hydraulic Fitting Naming Standards section of this manual (located on page 126) 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 an auger 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 a 4MP-8MF or 4MP-8MJ nipple onto the case drain hose if you own a 4895 or 4995 swather. If you have an A400 or R450 swather, install the 12MF-8MP nipple, 12FFX-12MF-90° elbow and the 8FP-4MP adapter onto the case drain hose.
 - To this fitting, install the dust cap and the ¼" male quick coupler.
3. If the motor has the 8MF-12MB (8MJ-12MB), or the 12MF-12MB long elbow adapter, remove it from motor and install the plug fitting (#9 in the parts list on the previous page) into the motor. Install a 4MP-4MP nipple onto the plug fitting, and install the dust cap and female quick coupler to the nipple.
4. Remove the 16MF-16MB-45° elbows from the motor, and install 12MJ-16MB-45° elbows in their place if you own a 4895 or A400 power unit. If you own a 4995, or R450 power unit, install the 12MJ-16MB 90° elbows in place of the 16MF-16MB- 90° elbows.
5. Install the 12MB-12FJX swivel adapters, with dust caps to the 3/4" quick couplers; ensuring you put the male coupler on the forward pressure side and female coupler on the return.
6. Thread a 16MF-12MB, dust cap, and 3/4" male quick coupler to the reverse pressure hose.
7. Thread a 16MF-12MB, dust plug, and 3/4" female quick coupler to the forward pressure hose.



Refer to the Hydraulic Fitting Naming Standards section of this manual (located on page 126) for further information on identifying different types of hydraulic fittings.

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.



IMPORTANT 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. On 4895 and 4995 power units install a 4MP - 4MF nipple (alternate fitting 4MJ - 4MP). For A400 and R450 power units, install a 6MF - 4MP nipple.
2. On the return side, install a 1/4" female quick coupler, dust plug. On 4895 and 4995 power units install a 4MP - 4MF nipple (alternate fitting 4MJ - 4MP). For A400 and R450 power units, install a 6MF - 4MP nipple.
3. Install a 4MP - 6MB 90° elbow to the rod end of the cylinder, and from the elbow, a 1/4" female quick coupler and dust plug.
4. Install a 4MP-6MB 90° elbow, a 1/4" male quick coupler and dust cap on the cylinder end

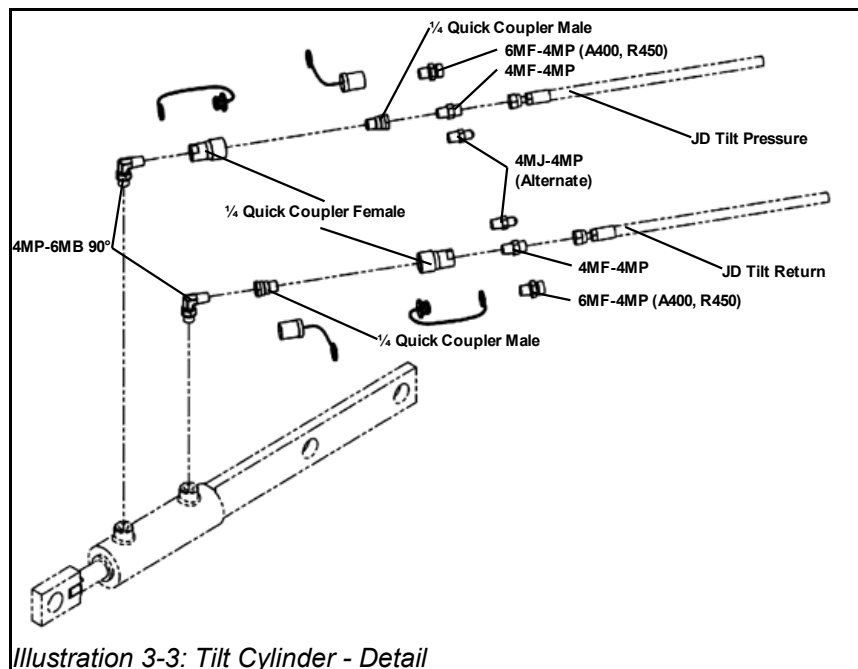


Illustration 3-3: Tilt Cylinder - Detail

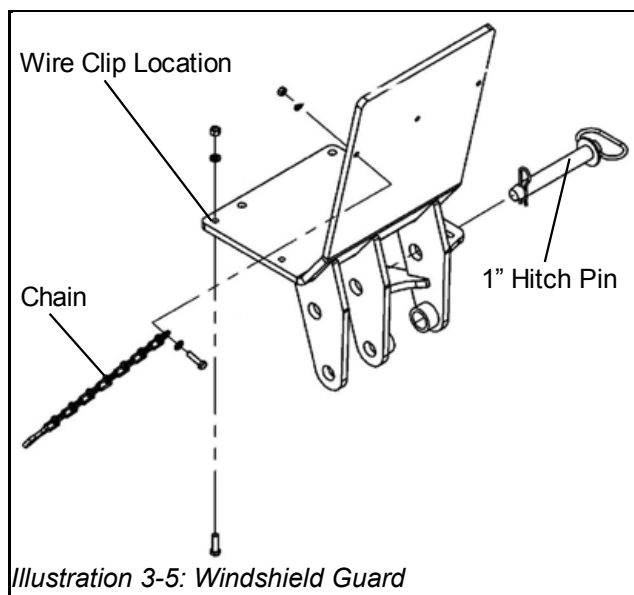
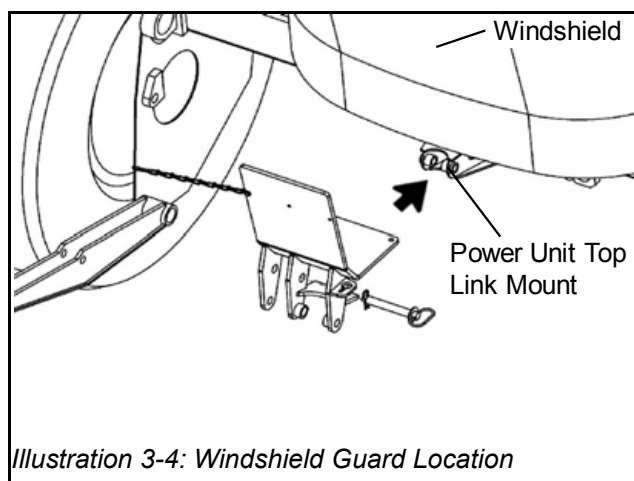


NOTE The reel lift is controlled by the platform tilt circuit on the power unit. The hose connected to the front port of the tilt cylinder will be the reel lift pressure hose. The hose from the power unit must have a male quick coupler. If the reel lift does not work check that the hoses are connected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

Install the Windshield Guard - 4895 & 4995

The windshield guard is designed to prevent the top link rising above the designated limit and destroying the glass in the windshield.

1. Install the guard by inserting the hitch pin in the right side of the windshield guard and through the power unit top link mount as shown to the right.
2. A chain is located on the side of the guard to secure the top link to the guard when the table is not connected to the power unit and a quick disconnect is required. Attach the chain using a 5/16 x 1" bolt, two flat washers, and a c/lock nut.
3. An extra hole is located on the guard to relocate the existing wire clip to the guard, keeping the electrical lines in order. Attach the clamp using a 3/8 x 1-1/4" bolt, lock washer, and nut.



Install the Windshield Guard – A400 and R450

1. At the front of the power unit, you will find a mounting bracket. Install the Windshield Guard on the bracket and secure in place with a hitch pin.

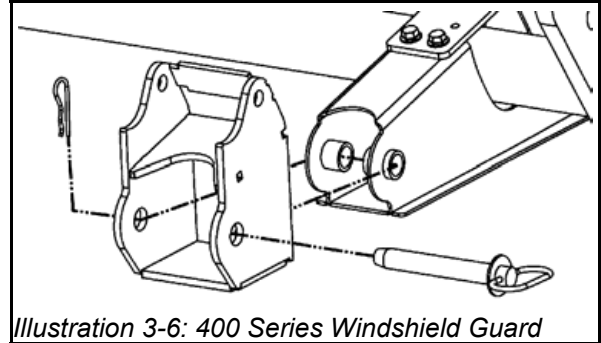


Illustration 3-6: 400 Series Windshield Guard

Install the Manual Lift Link – 4895 and 4995 Swathers

The hydraulic lift link comes standard with all Honey Bee Swathers, however the manual lift link can be used. Install the manual lift link using the following diagram for reference:

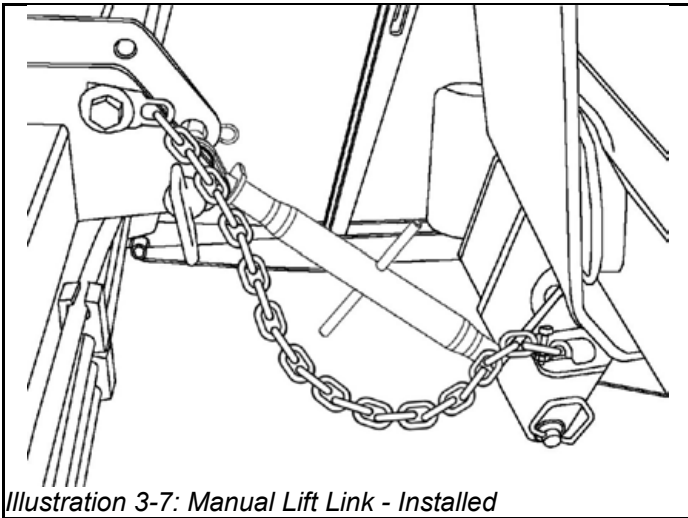


Illustration 3-7: Manual Lift Link - Installed

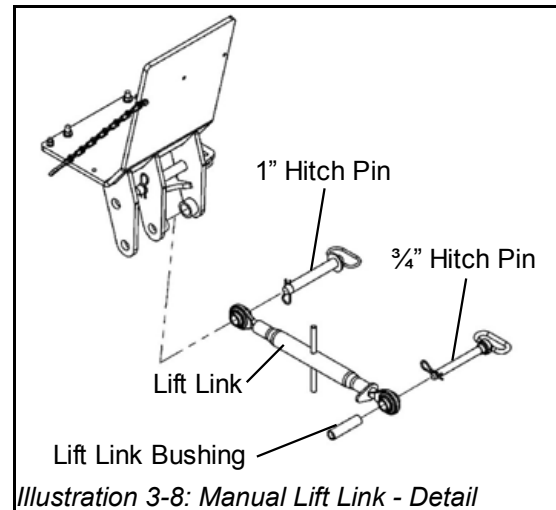


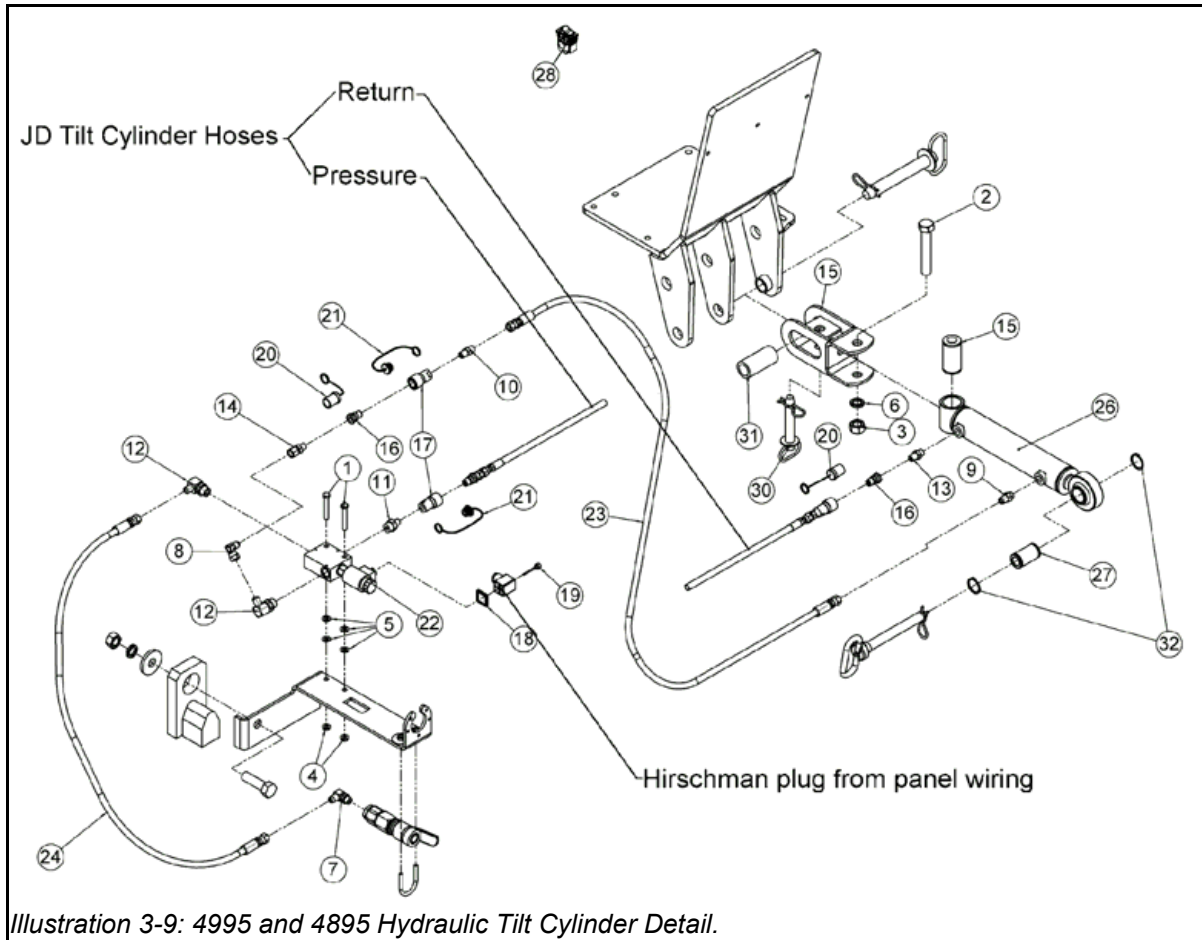
Illustration 3-8: Manual Lift Link - Detail



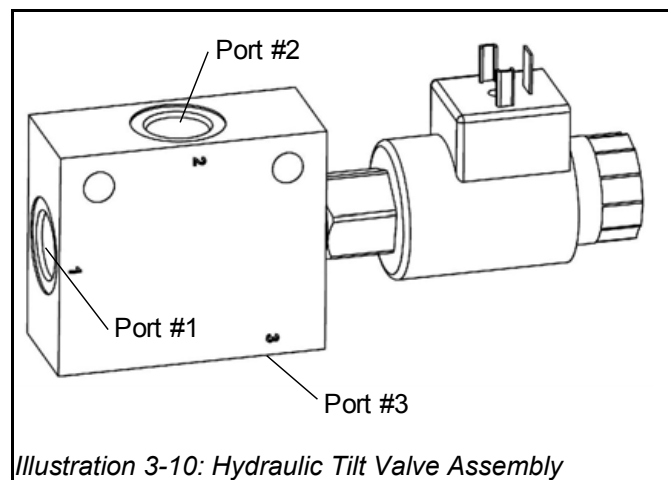
The manual lift link is not available for the A400 or the R450 swathers.

Install the Hydraulic Tilt Cylinder – 4895, 4995 Swathers

Refer to the table on the following page for descriptions of the numbered items below:



1. Connect port #1 to hose #24 using a #12 fitting.
2. Connect port #2 to fitting #11 and coupler #17.
3. Connect port #3 to fitting #12 and hose #23.



4895 & 4995 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	Nut 5/16 UNC Flange Lock
5	4	Washer, flat 5/16 plated
6	1	Washer, lock 3/4 plated
7	1	Elbow 6MB-6MJ – 90°
8	1	Elbow, swivel 6MJ-6FJX – 90°
9	1	Nipple, 6MB-6MJ
10	1	Nipple, 4MP-6MJ
11	1	Nipple, 4MP-8MB
12	2	Elbow, 6MJ-8MB – 90°
13	1	Nipple, 4MP-6MB
14	1	Adaptor, swivel, 4MP-6FJX
15	1	Bushing, RB-58
16	2	Quick Coupler, 1/4 Male PKR
17	2	Quick Coupler, 1/4 Female PKR
18	1	Hirschmann – Gasket
19	1	Hirschmann – Screw
20	2	Quick Coupler, 1/4 Male Dust Cap
21	2	Quick Coupler, 1/4 Female Dust Cap NH
22	1	Valve Assembly – Hydraulic Header Tilt
23	1	HH04 66 6FJX-6FJX
24	1	HH04 13 6FJX-6FJX
25	1	Lift-link bracket - Slotted
26	1	Cylinder 2" x 8"
27	1	Lift-link Cylinder Snap Ring Sleeve
28	1	In-cab Switch
30	1	Hitch Pin
31	1	Lift-link Sleeve
32	2	Snap Ring

4895 and 4995 Hydraulic Tilt Cylinder Installation

1. Attach the lift link bracket as shown to the right, using the items and fasteners shown in Illustration 3-9 on page 30. Ensure that the link bracket is installed into the correct position for your make of windrower.
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 lift-link bracket and secure with the bolt, nut and lock-washer.
3. 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.
4. Install the valve assembly to the mount using the hardware supplied.

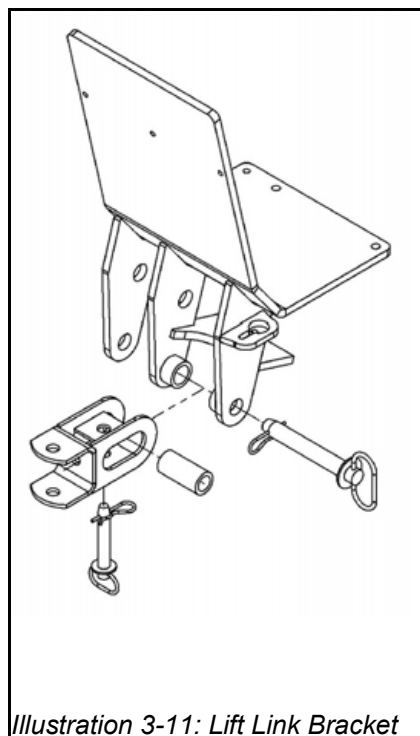


Illustration 3-11: Lift Link Bracket

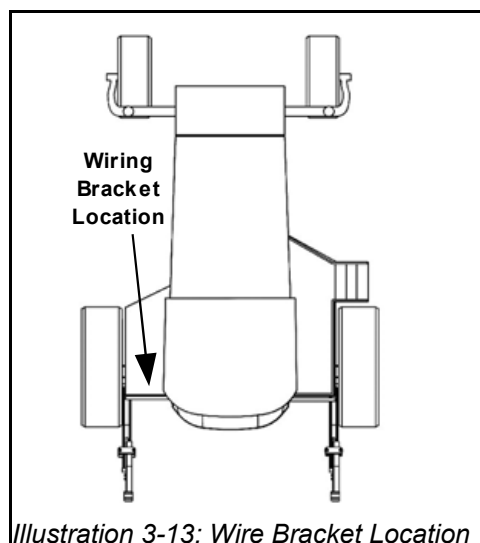


Illustration 3-13: Wire Bracket Location

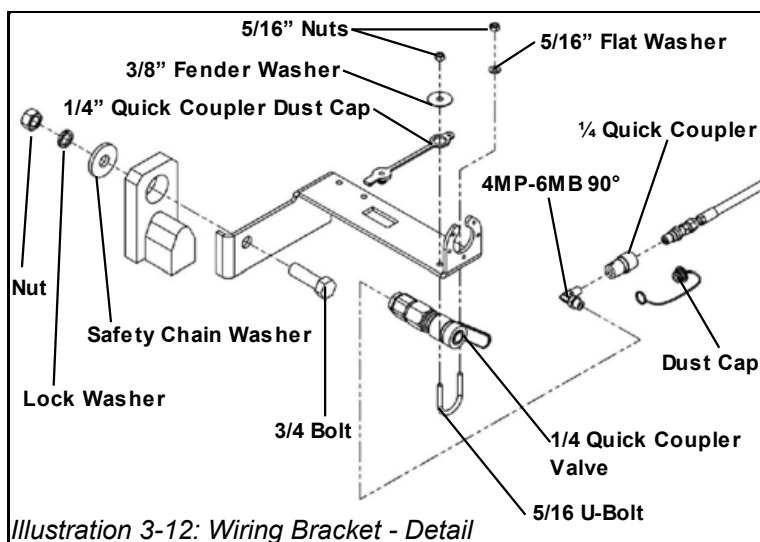


Illustration 3-12: Wiring Bracket - Detail

5. On the tilt pressure hose, install a ¼ inch female quick coupler and dust cap. Install a 4MP – 8 MB nipple to the valve Assembly “2” port.
6. On the return hose, install a 1/4" male quick coupler and dust cap. Install a 4MP - 6MB nipple to the tilt cylinder (cylinder end).
7. From the Rod end of the cylinder, install a 66 inch 6FJX – 6FJX hose with a 6MB – 6MJ nipple. On the other end of the hose install a ¼ inch female quick coupler with a 4MP – 6MJ nipple plus dust plug.
8. From the valve assembly “3” port, connect a 6MJ – 8MB 90° elbow to a 6MJ – 6FJX 90° elbow, to a 4MP – 6FJX adapter, to a ¼ inch male quick coupler and dust plug. This assembly will then be connected to the 66 inch hose assembly.
9. From the “1” port of the valve assembly, install a 6MJ – 8MB 90° elbow to a 13 inch 6FJX – 6 FJX hose, to a 6MB – 6MJ 90° elbow, which is then connected to the quick coupler lever.

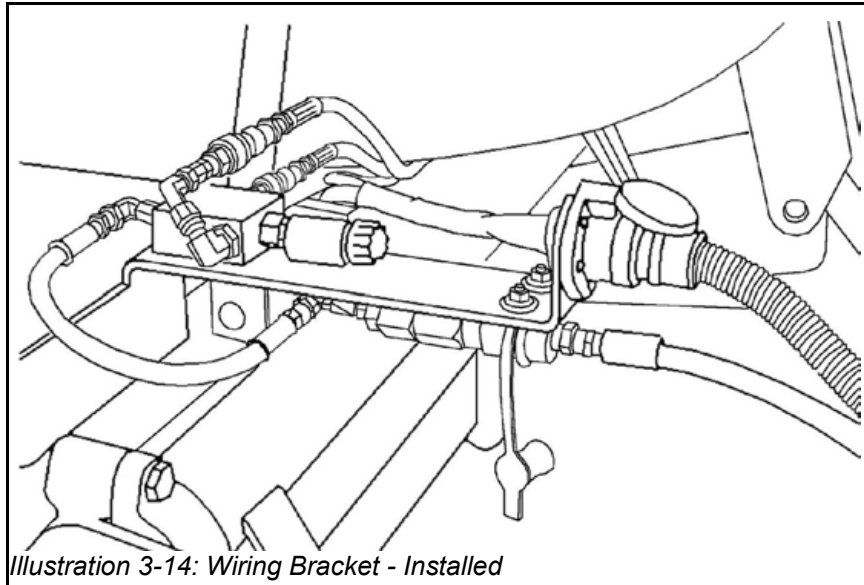


Illustration 3-14: Wiring Bracket - Installed



Refer to Hydraulic Fitting Naming Standards on page 126 for details on identifying hydraulic fittings.

Install the Hydraulic Tilt Cylinder – A400, R450 Swathers

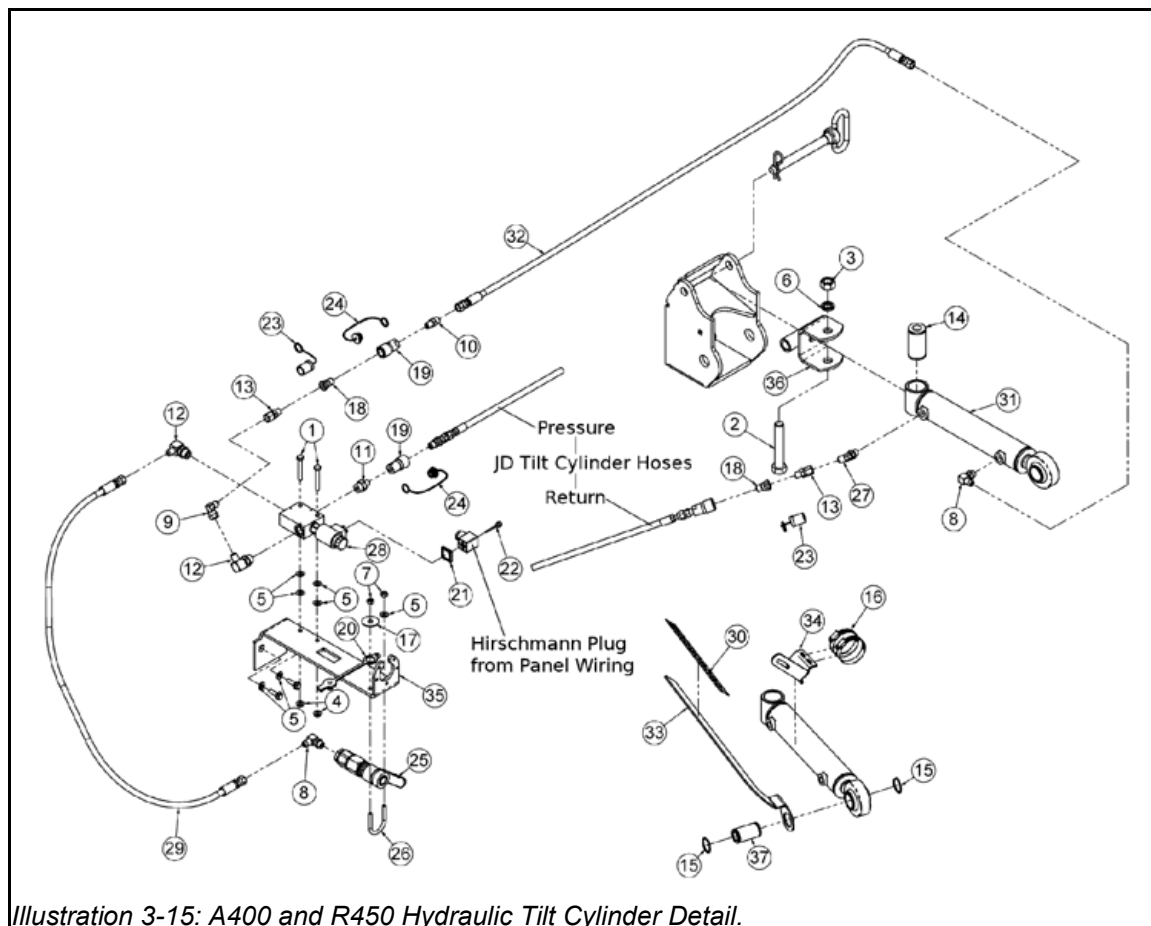


Illustration 3-15: A400 and R450 Hydraulic Tilt Cylinder Detail.

4. Connect port #1 to hose #29 using a #12 fitting.
5. Connect port #2 to fitting #11 and coupler #19.
6. Connect port #3 to fitting #12 and hose #32.

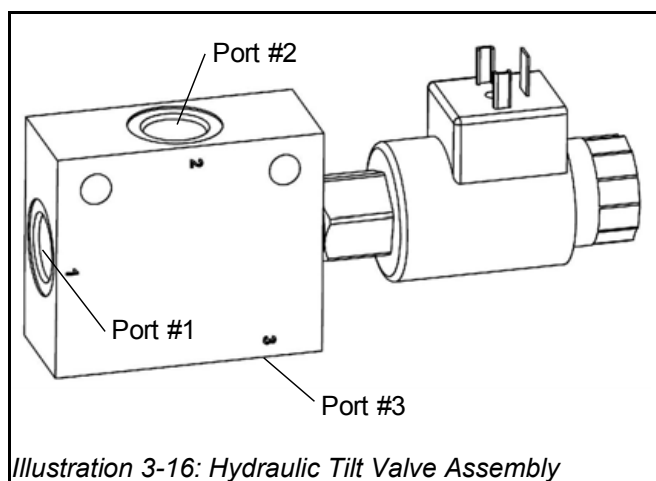


Illustration 3-16: Hydraulic Tilt Valve Assembly

A400 & R450 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-6MJ-90°
9	1	Elbow 6MJ-6FJX-90°
10	1	Nipple 4MP-6MJ
11	1	Nipple 4MP-8MB
12	2	Elbow 6MJ-8MB-90°
13	2	Adapter 4MP-6FJX
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"
19	2	Female Quick Coupler 1/4"
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	Lever Quick Coupler 1/4"
26	1	U Bolt 0.313 X 1.38 X 2.06
27	1	Elbow 6MB-6MJ-45°
28	1	Header Hydraulic Tilt Valve Assembly
29	1	13" Hydraulic Hose 6FJX-6FJX
30	1	Height Indicator Decal
31	1	Hydraulic Cylinder
32	1	44" Hydraulic Hose 6FJX-6FJX
33	1	Tilt Angle Indicator
34	1	Tilt Angle Indicator Guard
35	1	Bracket
36	1	Cylinder Pivot
37	1	Grooved Lift Link Bushing

A400 and R450 Hydraulic Tilt Cylinder Installation

1. Attach the cylinder pivot as shown to the right, using the items and fasteners shown in Illustration 3-15 on page 34.
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.

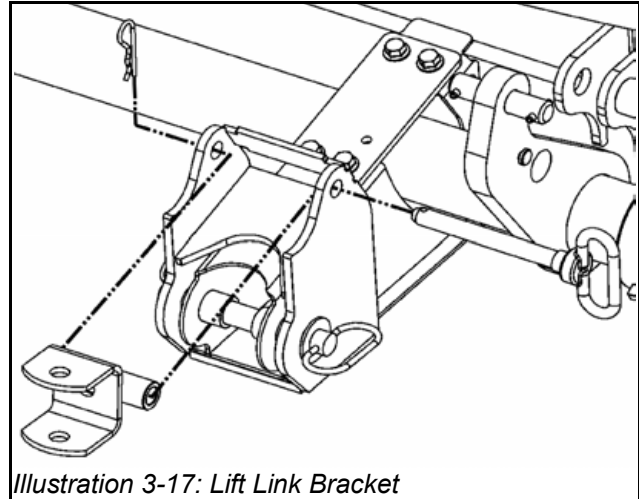


Illustration 3-17: Lift Link Bracket

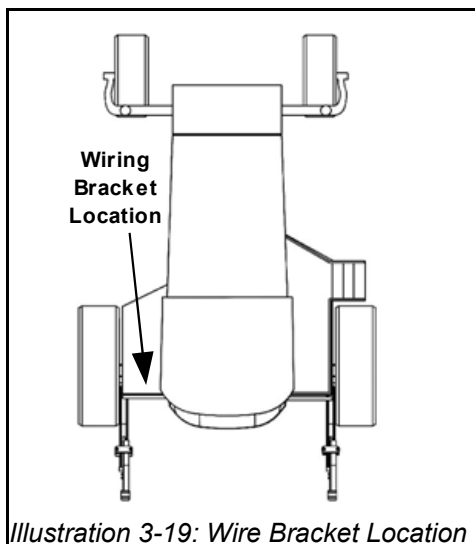


Illustration 3-19: Wire Bracket Location

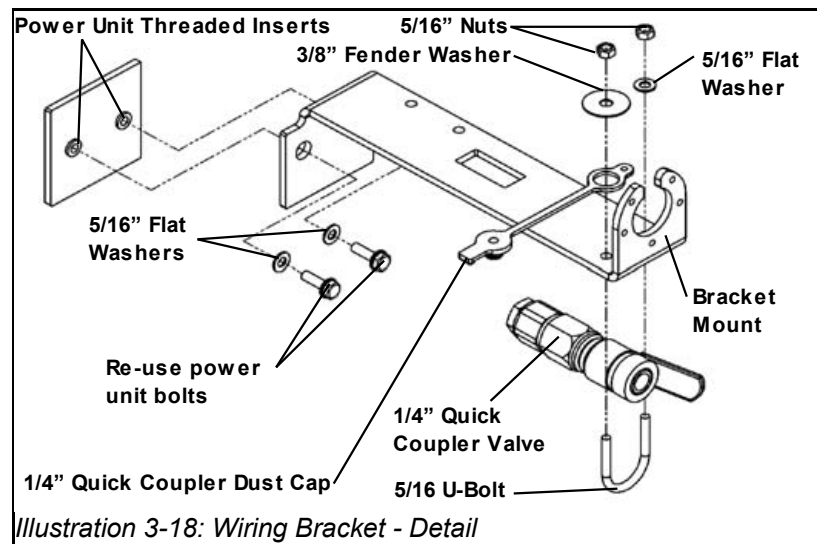


Illustration 3-18: Wiring Bracket - Detail

6. On the tilt pressure hose, install a 1/4 inch female quick coupler and dust cap. Install a 4MP – 8 MB nipple to the valve Assembly "2" port.
7. On the return hose, install a 1/4" male quick coupler and dust cap. Install a 4MP - 6FJX adapter and 6MB – 6MJ 45° elbow to the tilt cylinder (cylinder end).

8. From the Rod end of the cylinder, install a 44 inch 6FJX – 6FJX hose with a 6MB – 6MJ 90° elbow. On the other end of the hose install a ¼ inch female quick coupler with a 4MP – 6MJ nipple plus dust plug.
9. From the valve assembly “3” port, connect a 6MJ – 8MB 90° elbow to a 6MJ – 6FJX 90° elbow, to a 4MP – 6FJX adapter, to a ¼ inch male quick coupler and dust plug. This assembly will then be connected to the 44 inch hose assembly.
10. From the “1” port of the valve assembly, install a 6MJ – 8MB 90° elbow to a 13 inch 6FJX – 6 FJX hose, to a 6MB – 6MJ 90° elbow, which is then connected to the quick coupler lever.

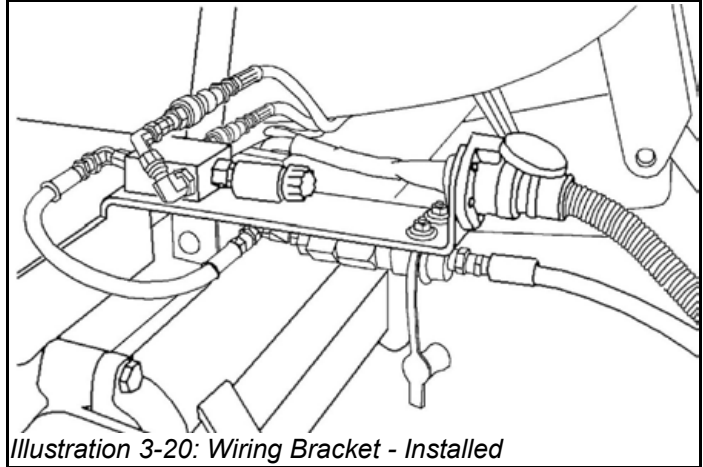


Illustration 3-20: Wiring Bracket - Installed



Refer to Hydraulic Fitting Naming Standards on page 126 for details on identifying hydraulic fittings.

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 lift link bushing. Slide the tilt indicator guard over 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

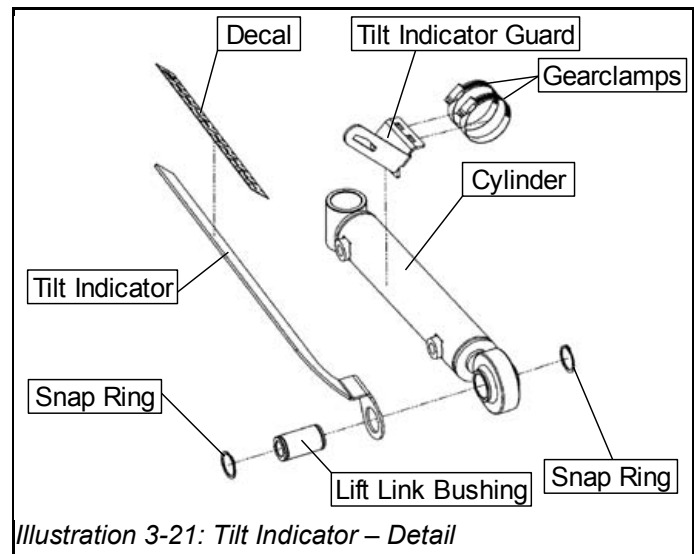


Illustration 3-21: Tilt Indicator – Detail

unnecessary tension on the tilt indicator and guard may cause damage to those parts. With the cylinder retracted the tilt indicator guard should line up with “0” on the decal.

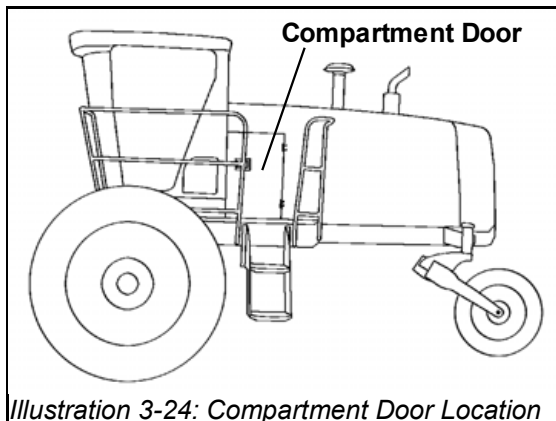
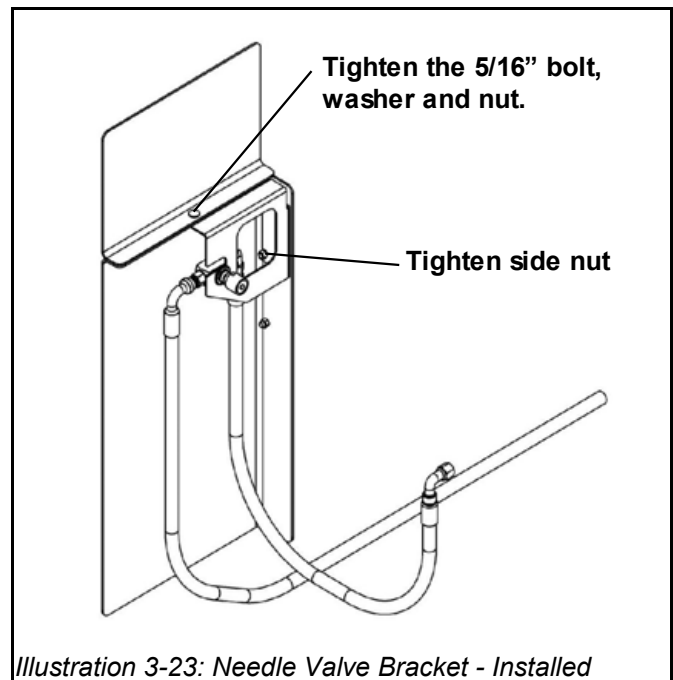
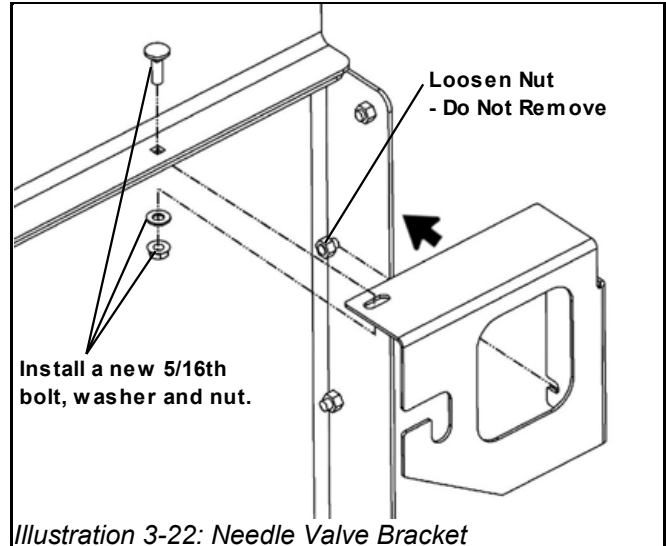
Installing the Needle Valve on 4895 and 4995 Power Units.

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.

At the top-front of the compartment, you will find small nuts and bolts that will line up with the bracket shown at right. Remove the top bolt, but only loosen the side nut.

2. Loosen the nuts from the two locations identified. Remove the nut and bolt from the top location but **DO NOT REMOVE THE NUT** from the side location (since the bolt may fall out making re-installation difficult).
3. Slide the bracket between the previously loosened nut and frame. Insert a 5/16 bolt (included) through the top hole of the frame. Thread the washer and nut onto the top bolt. Tighten the nuts to secure.



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

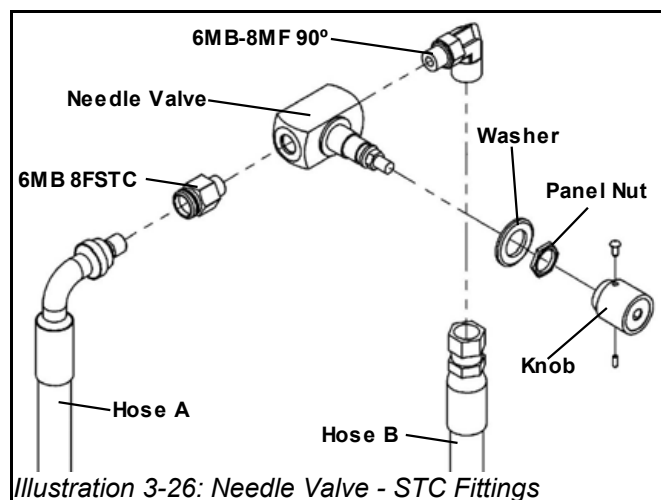
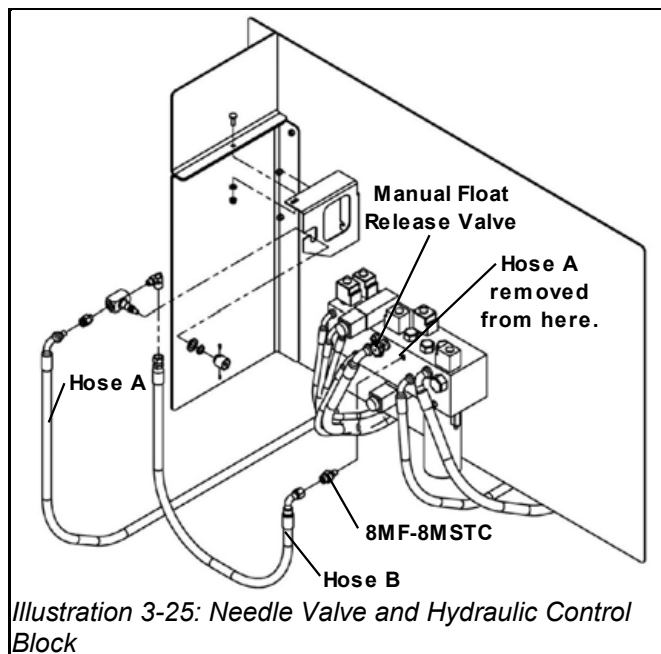


Ensure that you open the valve prior to disconnecting any hoses to avoid excess spillage or potential harm from heated oil.

The following sequence will minimize oil spillage.

5. Disassemble the needle valve knob from the body and reassemble using the panel nut and washer as shown. Install the supplied hose "B."

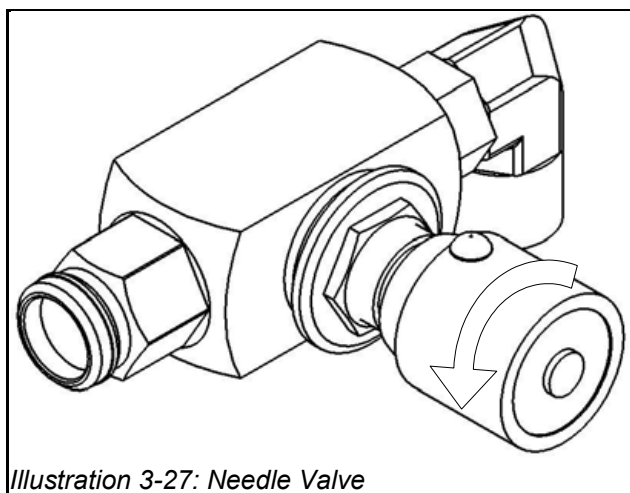
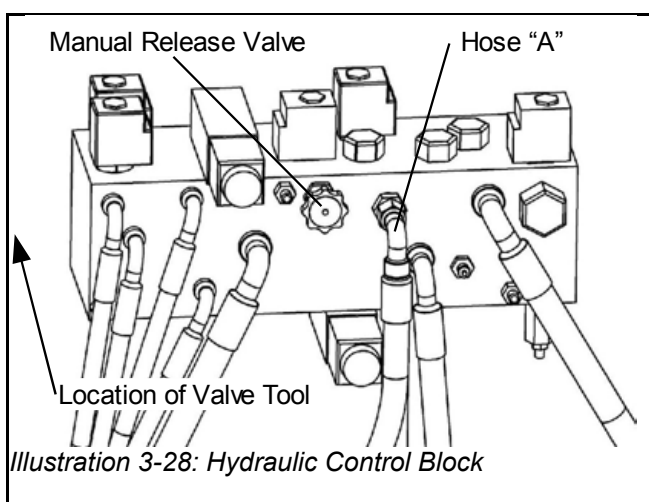
Units with serial numbers starting at 320001 and up will use the needle valve assembly shown to the right in conjunction with non-threaded "STC" fittings.



Units with serial numbers up to and including 320000 will require the threaded hose fittings also included in the installation kit, see Illustration 3-29: Needle Valve - Non-STC Threaded Fittings on the following page.

Refer to Hydraulic Fitting Naming Standards on page 126 for details on identifying hydraulic fittings.

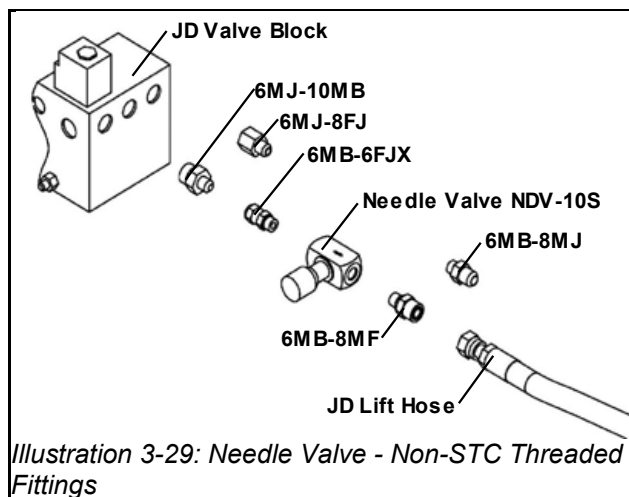
6. Disconnect the platform lift hose "A" at the block, using the valve tool provided in the compartment. Connect the supplied hose "B" as seen in Illustration 3-26: Needle Valve - STC Fittings on page 39. Now connect Hose A to the needle valve, as shown in the same illustration.
7. Slide the needle valve onto the mounting bracket, as *Illustration 3-26: Needle Valve - STC Fittings on page 39*, and secure in place with the panel nut. Close the manual float release valve on the block (clockwise) and set a small flow rate on the needle valve (counter-clockwise.)



Units with serial numbers up to and including 320000 will use the needle valve assembly shown here.



Refer to Hydraulic Fitting Naming Standards on page 126 for details on identifying hydraulic fittings.



Installing the Needle Valve on A400 and R450 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.

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.

2. Attach the bracket to the frame with two 5/16" bolts, washers and nuts. Tighten the nuts to secure.
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).



WARNING

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

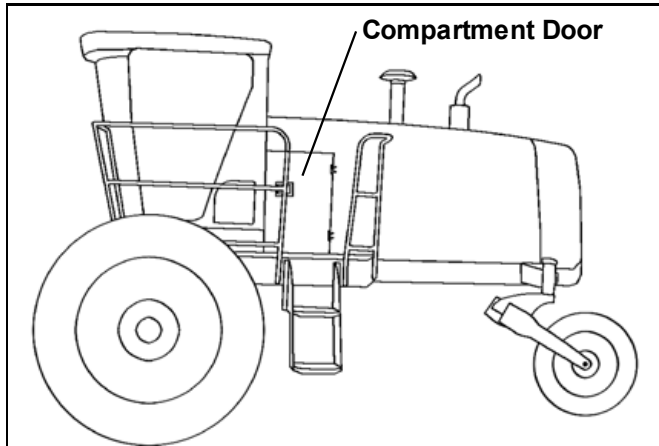


Illustration 3-30: Compartment Door Location

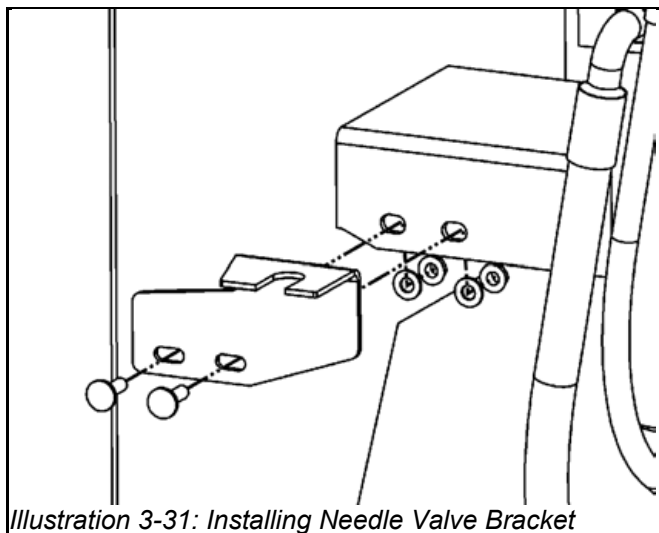


Illustration 3-31: Installing Needle Valve Bracket

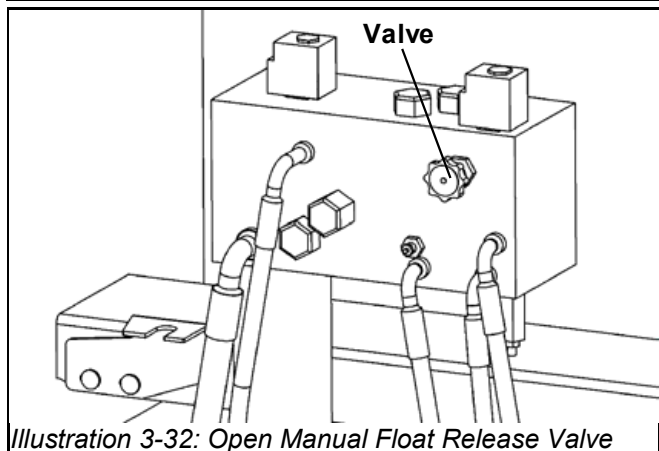
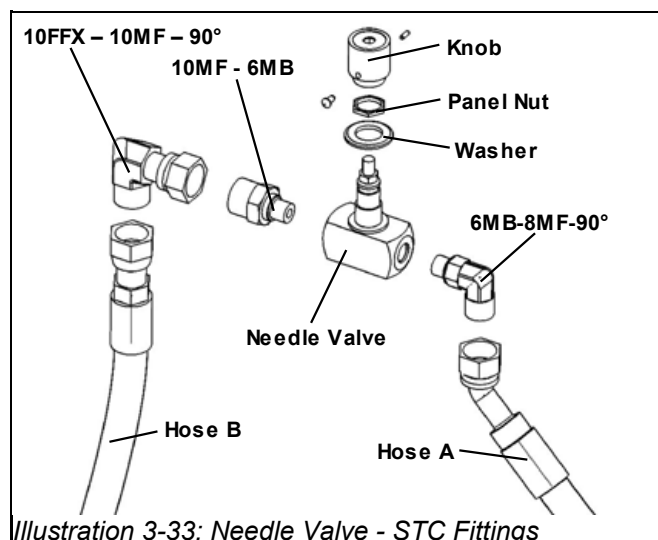


Illustration 3-32: Open Manual Float Release Valve

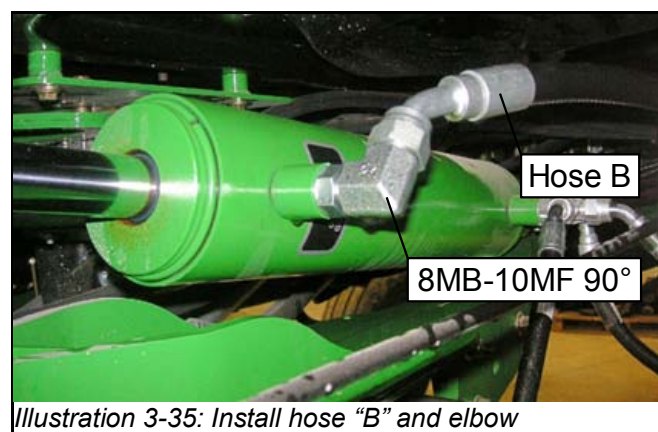
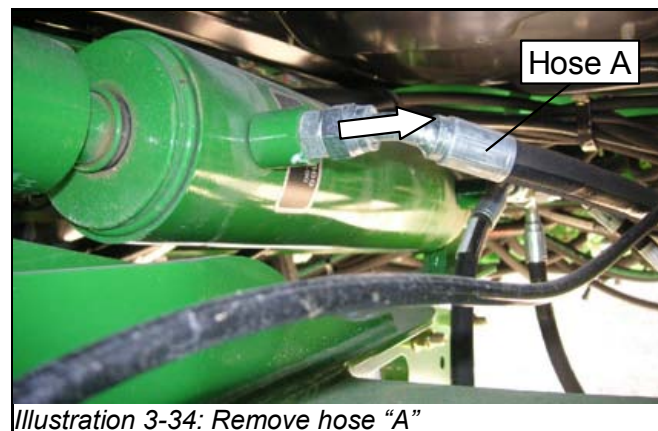
The following sequence will minimize oil spillage.

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.

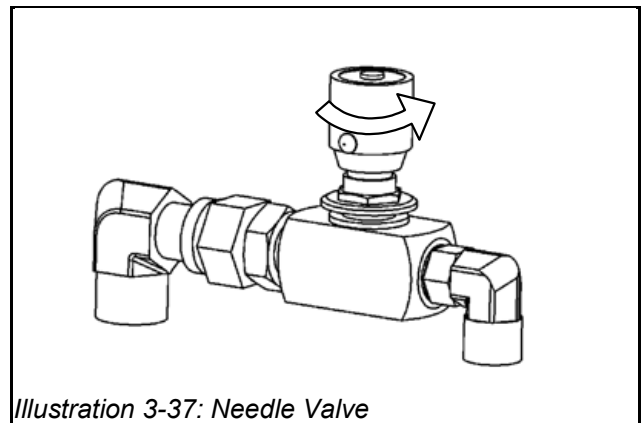
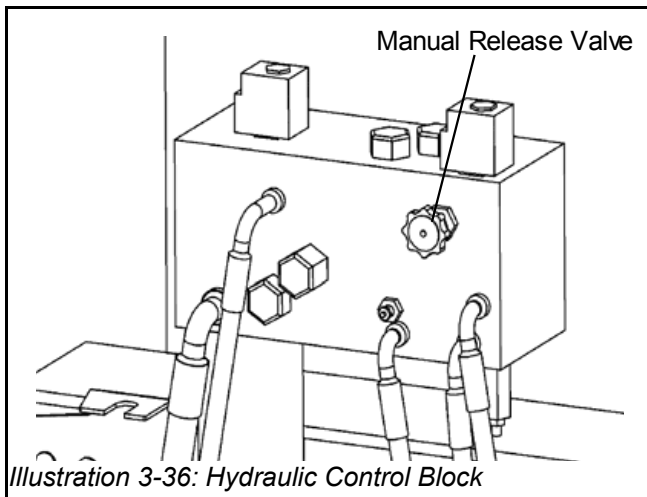


Refer to Hydraulic Fitting Naming Standards on page 126 for details on identifying hydraulic fittings.

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 port that you had removed hose "A" from in the previous step. Connect the supplied hose "B" to the fitting.



9. Now connect Hose “A” to the needle valve, as shown in Illustration 3-33. 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.)



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 (4995 and 4895)

New models include all John Deere 4995 and 4895 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!**

Older Production Models(4995 and 4895)

Old models include all John Deere 4995 and 4895 units with serial numbers prior to EO4995X330675, and EO4895X330107, built before January 29th 2007. Proceed as instructed in Wiring Installation, Older Models on page 49. Switches and in-cab harness will be supplied by Honey Bee.

Draper Option(4995 and 4895)

If the power unit was ordered specifically for use with a Honey Bee draper platform (Honey Bee Ready,) all switches for this option 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.

If you have identified your unit as a “New Model,” proceed to New Model Wiring, on the following page.

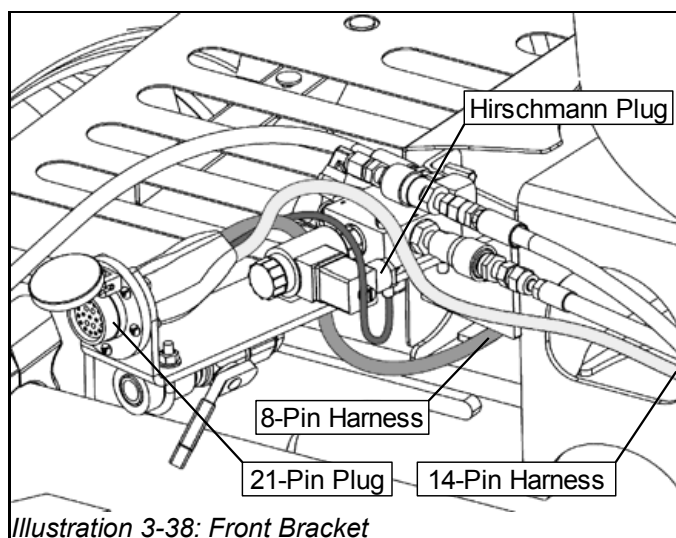


NOTE

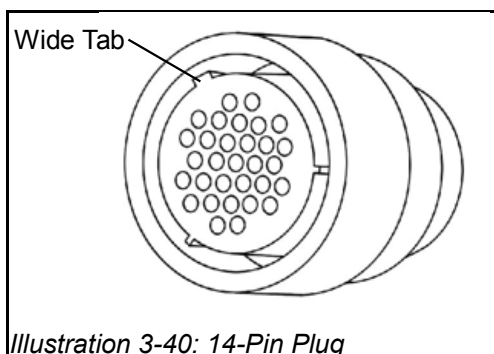
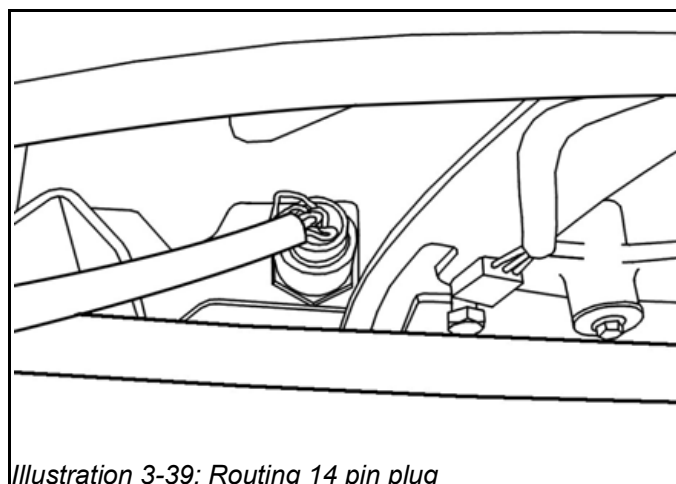
If required, refer to Control Console Wiring Schematics on page 72.

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.
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.



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.

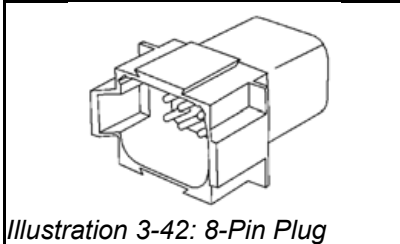


Illustration 3-42: 8-Pin Plug

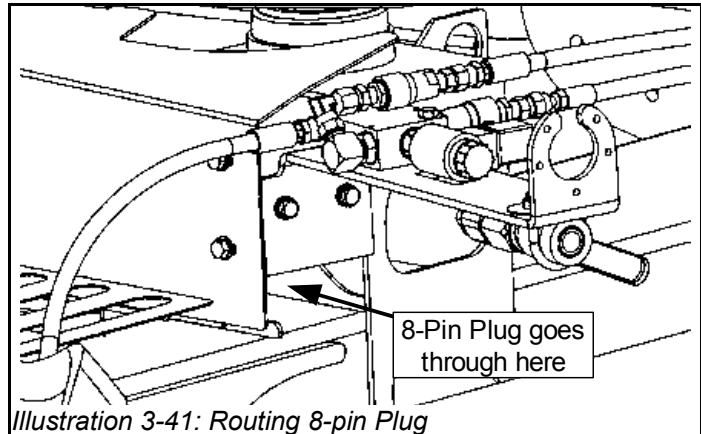


Illustration 3-41: Routing 8-pin Plug

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

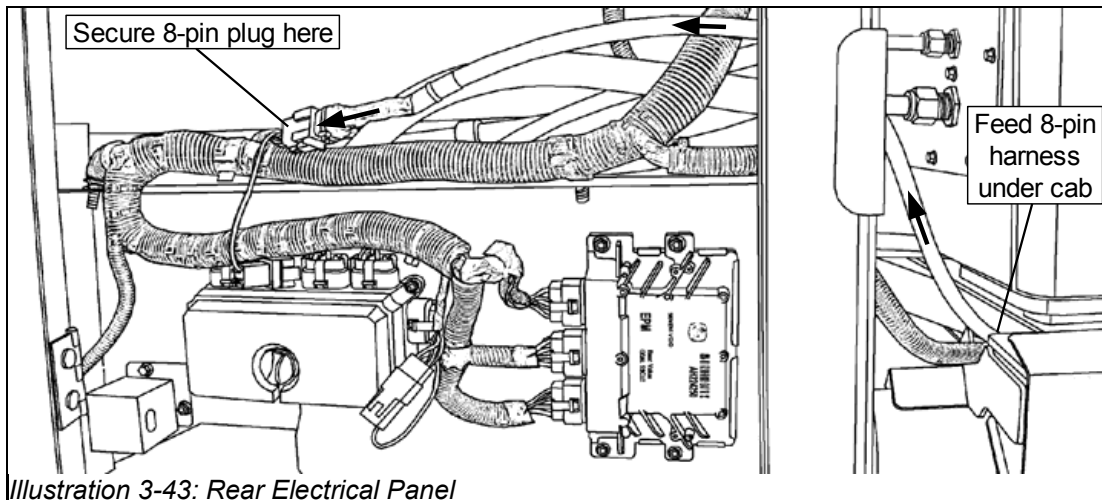
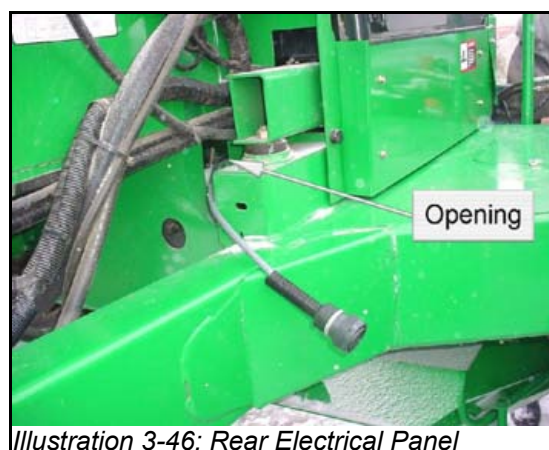
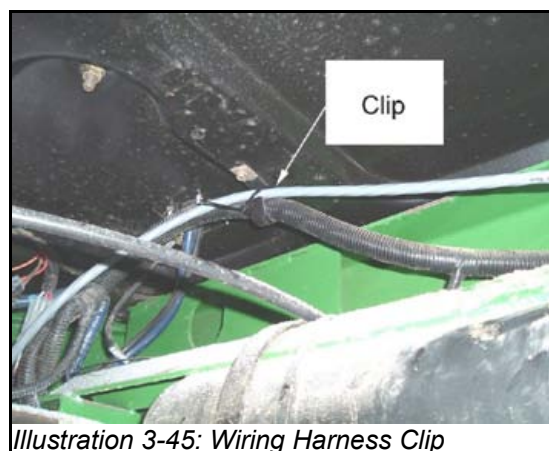
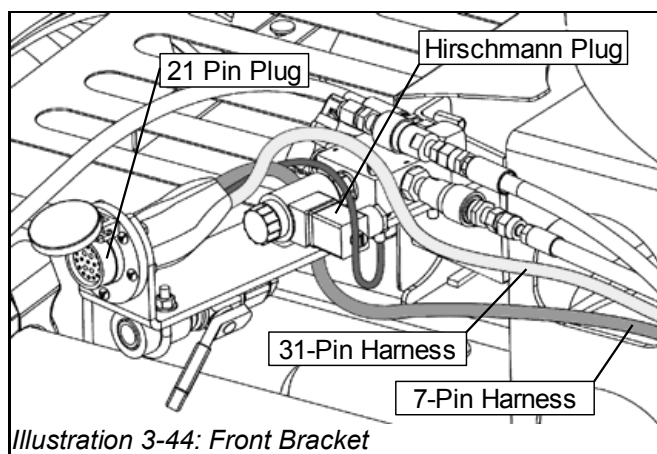


Illustration 3-43: Rear Electrical Panel

New Model Wiring (4895 and 4995 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 to the receptacle on the hydraulic valve solenoid.
3. Feed the 7-pin plug end of the harness under the cab and connect it to the 7 pin receptacle under the cab.
4. You will find a wiring harness clip under the cab floor. Feed the wire into this clip and secure it with a zip-tie.
5. Toward the rear of the cab, you will see an opening in the frame. Feed the 31-pin plug through to the exterior via this access.



6. Insert the 31-pin plug into the receptacle provided. The plug will align in the same fashion as the front plug, by first aligning 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.

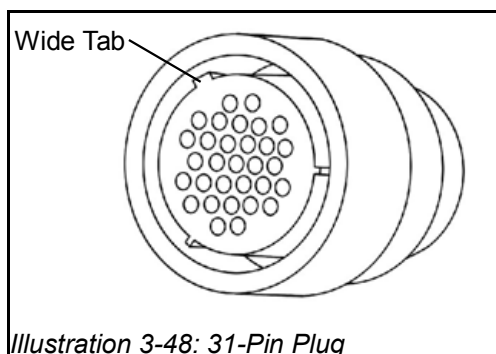


Illustration 3-48: 31-Pin Plug

7. If the unit was not ordered "Honey Bee Ready," remove the screws holding the switch panel in place, and remove the appropriate switch position blank(s). Snap the new switches in place, as shown here, and connect them to the harness plugs as shown in the windrower manual.
8. Open the electrical panel access on the right side of the windrower. Remove the float relay from the electrical panel. Once removed, the table will raise and lower only so long as the switch is activated, and will stop when it is released.

For the successful completion of this installation, the relay should be removed; however, If you prefer, the relay may be replaced for field use. In this mode the table will lift to maximum height when up is selected, and will lower to the preset float height when down is selected.



When hooking up to the swather, this relay should be removed to provide fine control over the operation of the hydraulics.

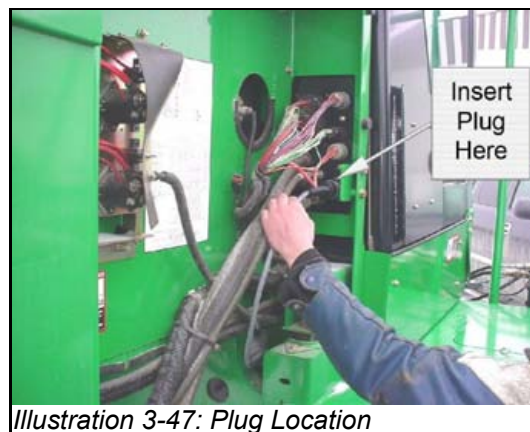


Illustration 3-47: Plug Location

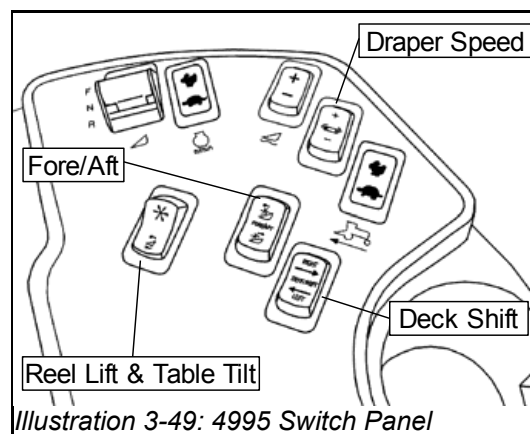


Illustration 3-49: 4995 Switch Panel



Illustration 3-50: Electrical Panel - Float Relay

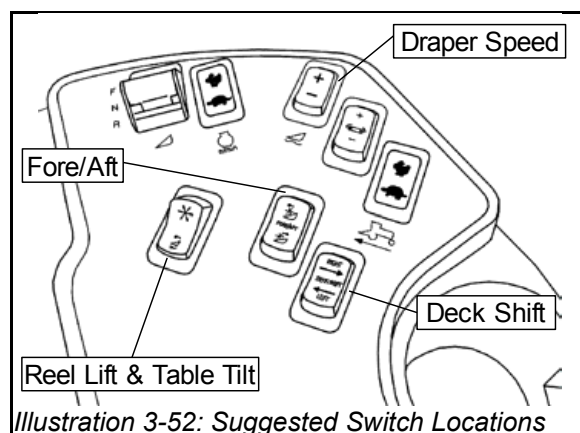
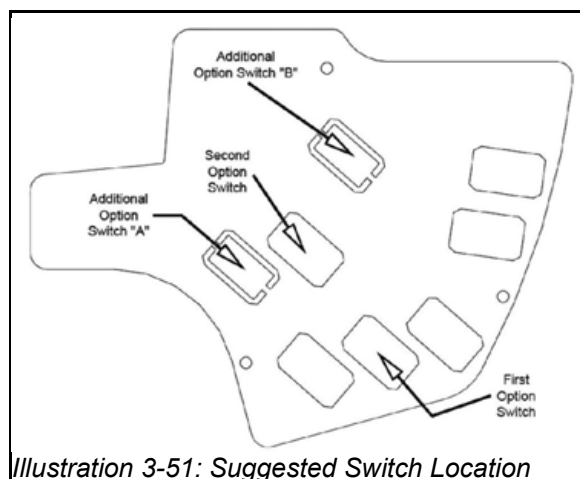
Wiring Installation, Older Models

4995/4895 Model Switch Installation

Reel speed and table tilt reel lift operations are controlled with the standard switches located on the F-N-R control lever.

The switches for the standard draper speed control, optional shifting decks, fore/aft reel options, and the table tilt/reel lift options need to be installed in the control console. If additional switches are required, refer to the illustration to the right.

1. Remove the three screws holding the console panel cover, lift the cover, mark, and unplug the cables to the switches.
2. Locate the knockout(s) for the options to be installed, using the suggested sequence shown.
3. With a sharp knife, cut the vinyl cover along the edge of the knockout.
4. Cut the metal tabs at each end of the opening and file any burrs smooth.
5. Insert the new function switch or switches from the top and snap into place.



If only one option is added, no modification to the control console base are required; however, with two, or more options, the modifications shown to the right are needed.

6. Feed the new harness up, inserting the appropriate plugs through the holes so they will line up with the switches in the panel.
7. Connect the plugs to the corresponding switches, and replace the panel cover using the three screws removed earlier.



Illustration 3-53: Console Modification

The template (Illustration 3-54: Console Cutting Template), will give you the correct sizes for the openings shown above.

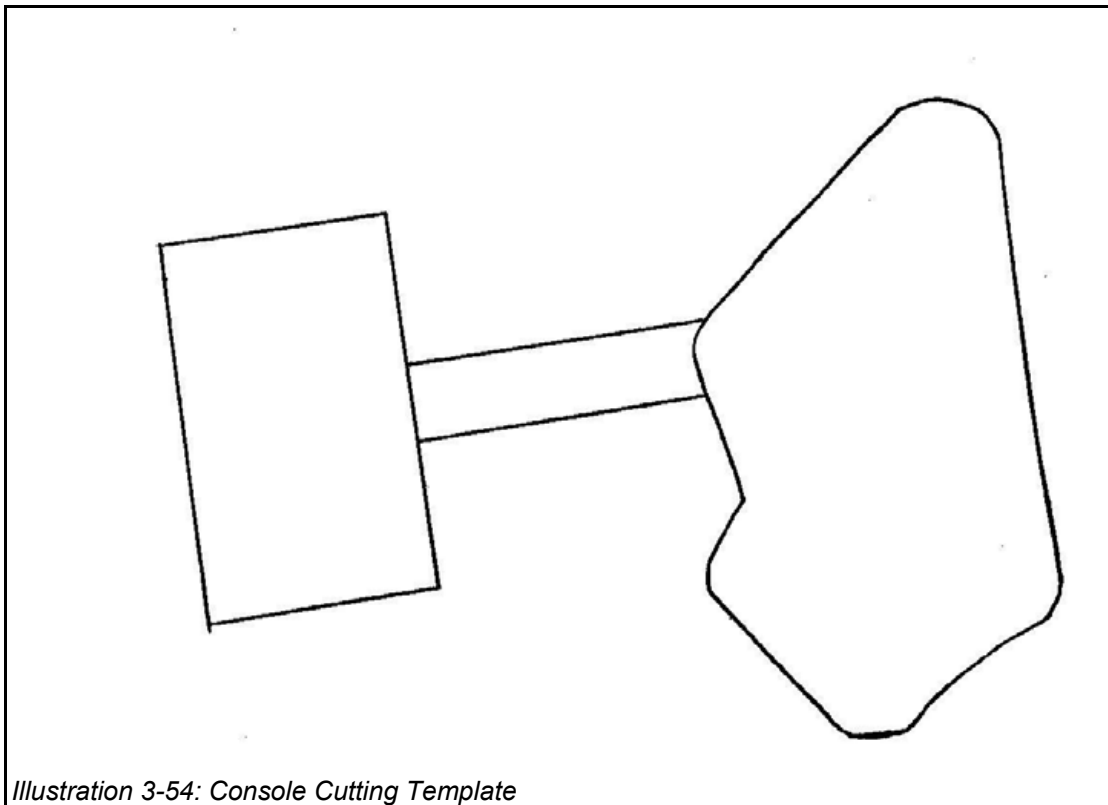


Illustration 3-54: Console Cutting Template

Cab Modifications

1. A hole must be made in the floor for the wiring loom supplied for these options. Raise the floor mat and locate a small plate welded to the floor.

The hole diameter should be at least 2-1/2" to allow the pre-wired plug and wiring loom to be fed through the floor.

(See the photos to the right and below.)

2. Install the wiring harness and re-close the hole with the grommet and plate supplied. Secure with four(4) sheet metal screws.



Illustration 3-55: Hole Location

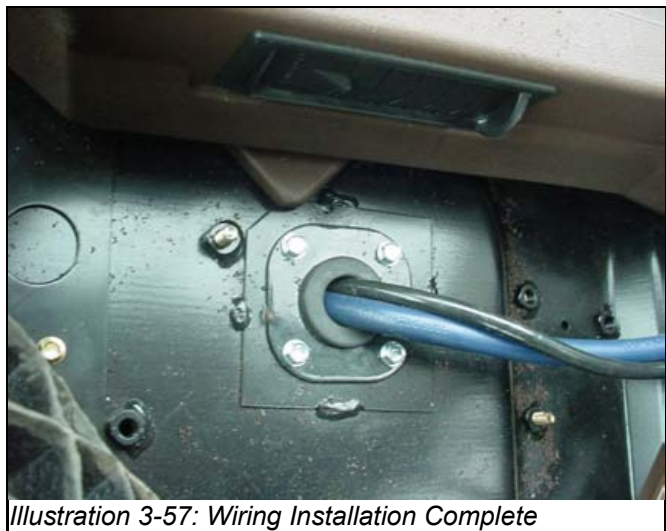


Illustration 3-57: Wiring Installation Complete



Illustration 3-56: Close Up View

3. Open the electrical access panel on the right-hand side of the windrower. Remove the float relay from the panel on the door.
4. If the optional deck shift, draper speed (now standard), fore and aft, and/or hydraulic tilt was purchased, connect the plug from the newly installed console wiring into the optional power source plug.

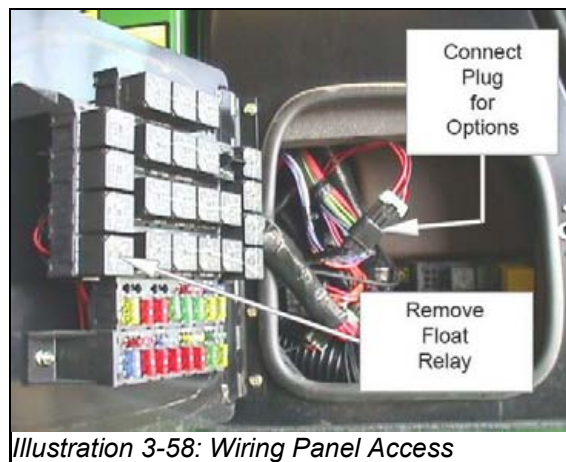


Illustration 3-58: Wiring Panel Access



The swather may be operated with the float relay left in place. In this case, when the “Up” switch is activated, the table will rise to the top of its travel. Similarly, when the “Down” switch is activated, the table will lower to the preset float height.

When hooking up to the swather, this relay should be removed to provide fine control over the operation of the hydraulics.

If the you wish, it may be re-installed once these setup instructions have been completed.

Install Lift-Arm Extensions – A400/4895

- 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.

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

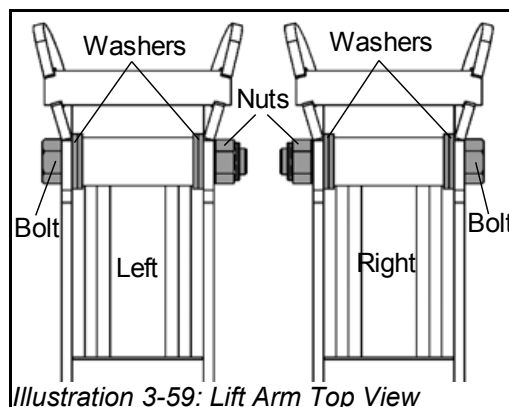


Illustration 3-59: Lift Arm Top View

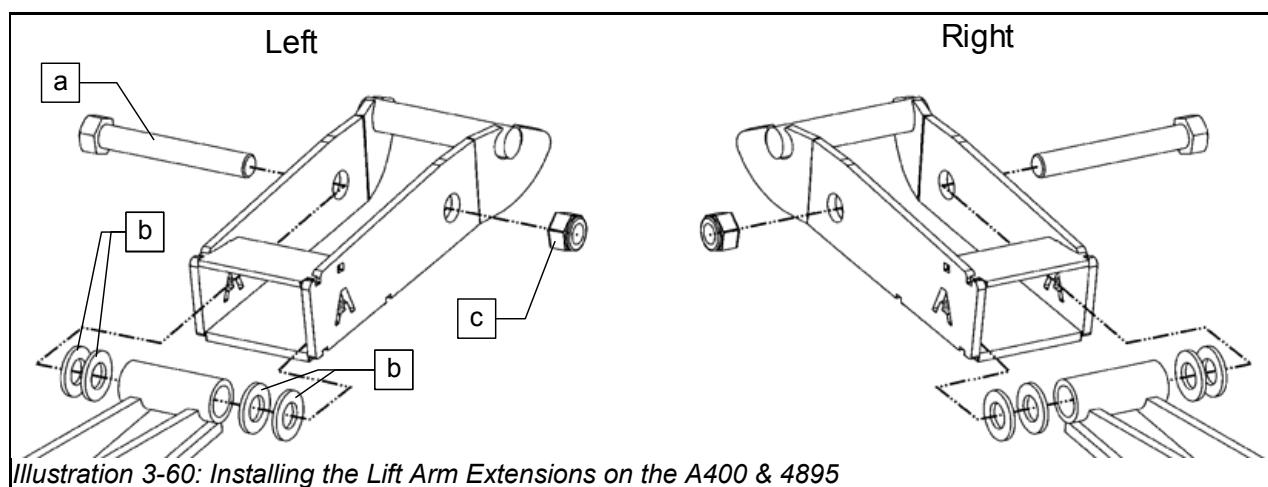


Illustration 3-60: Installing the Lift Arm Extensions on the A400 & 4895



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



4895 lift arm extensions have an "8" cut into the side plate.
A400 lift arm extensions have an "A" cut into the side plate.

Install Lift-Arm Extensions – R450/4995

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

- M24-3.0 x 170mm Bolt
- Four 1" SAE washers
- M24 Nylock nut.

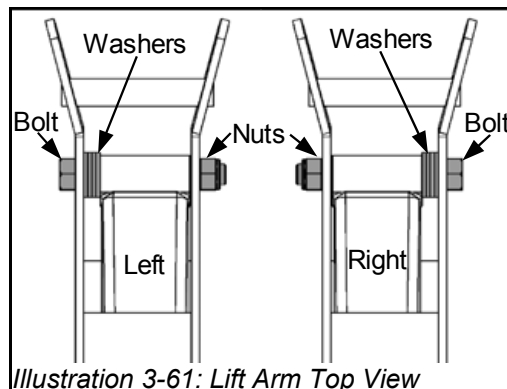


Illustration 3-61: Lift Arm Top View

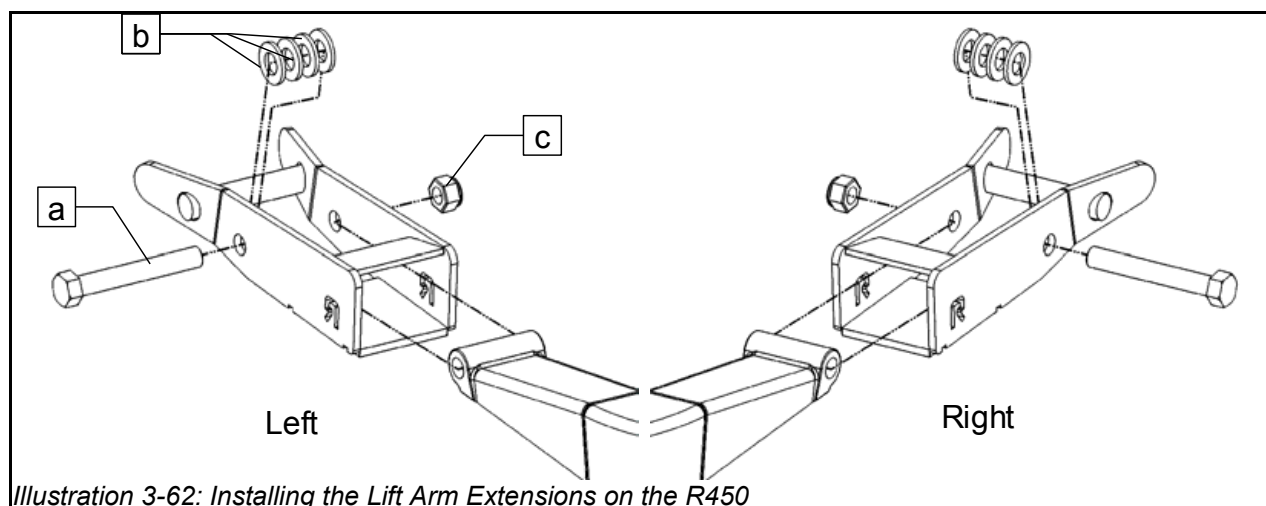


Illustration 3-62: Installing the Lift Arm Extensions on the R450



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



4995 lift arm extensions have a "9" cut into the side plate.
 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 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 held in place with six (6) 3/8 x 1-1/4" carriage-head bolts. Three bolts are installed through the base of the divider, and the table shoes at each end of the table. They are held in place using the supplied flat washers and lock-crimp nuts. All holes are pre-drilled.
4. When properly positioned, the crop divider overlaps the outside of the crop deflector to provide a smooth transition for the crop. The remaining three carriage-head bolts are installed from the inside of the formed sheet metal portion of the crop divider, into the crop deflector using flat washers and crimp-lock nuts.
5. Insert the crop divider pipe into the nose of the crop divider and insert a 3/8 x 2" carriage-head bolt. With the bolt in place, place a bushing-spacer followed by a flat washer, and tighten with a lock nut. The bushing should press firmly against the crop divider pipe to hold it firmly in place.

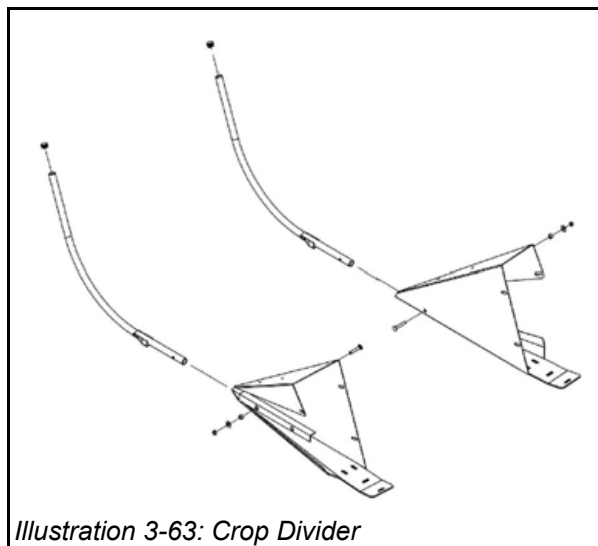


Illustration 3-63: Crop Divider

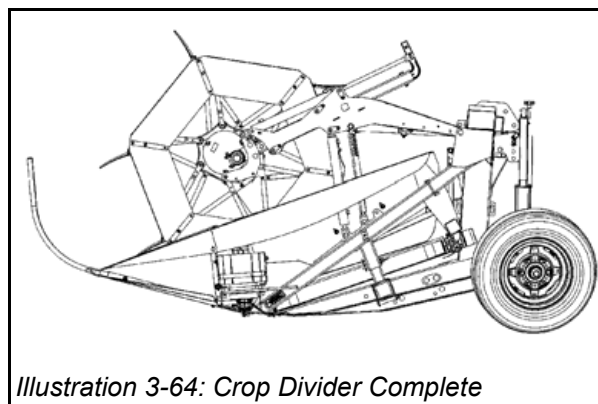


Illustration 3-64: Crop Divider Complete



The inside edge of the crop divider and pipe should be aligned so that they are approximately 90 degrees (right angle) to the cutter bar. This will provide good crop separation, and will help prevent crop plugging in the corners.

Install Strut Mounting Boots – A400/4895 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 – 1½" x 1⅞"
- c) Nylock Nut – 1"
- d) Bolt – 1" x 2"

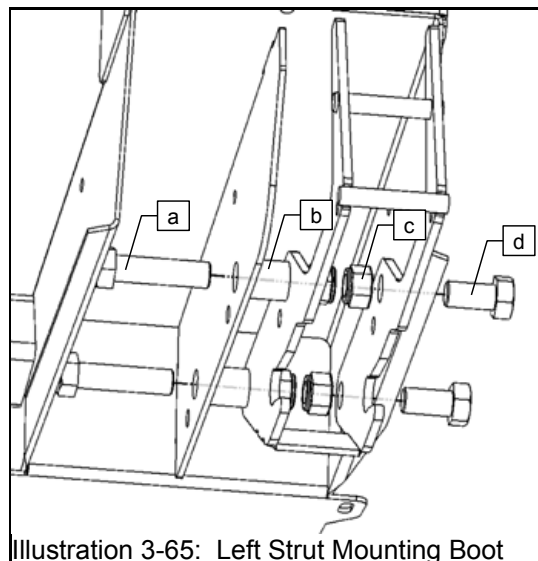


Illustration 3-65: Left Strut Mounting Boot

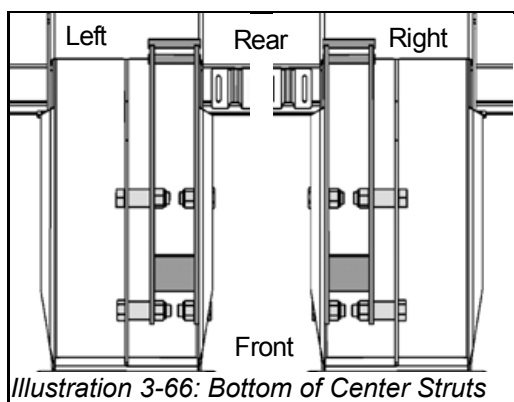


Illustration 3-66: Bottom of Center Struts



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

Install Strut Mounting Boots – R450/4995 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"

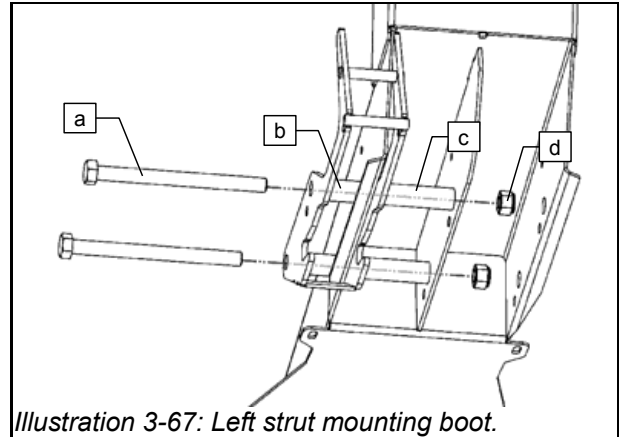


Illustration 3-67: Left strut mounting boot.



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

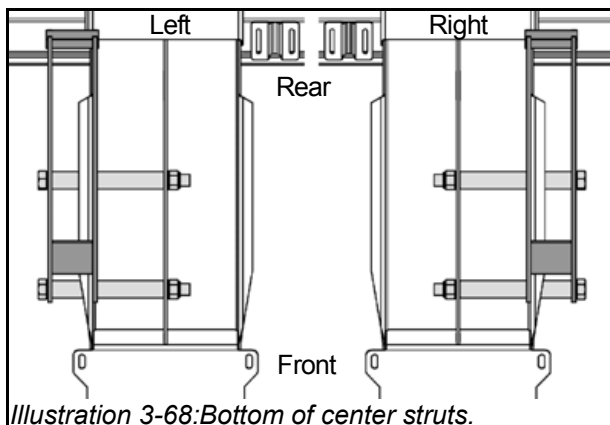


Illustration 3-68: Bottom of center struts.

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 3-71).

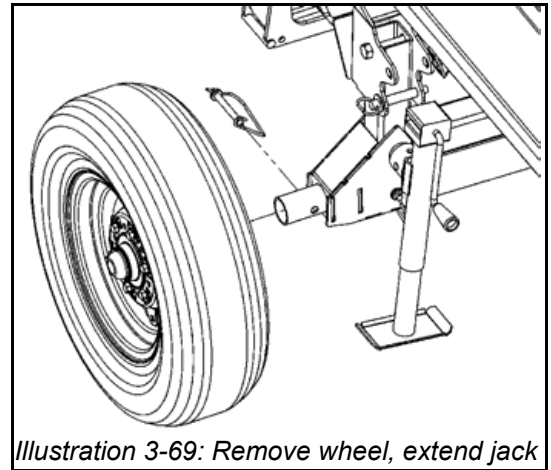


Illustration 3-69: Remove wheel, extend jack

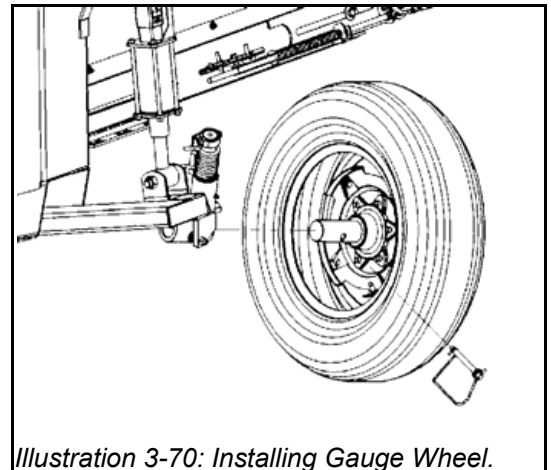


Illustration 3-70: Installing Gauge Wheel.



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 Illustration 3-27: Needle Valve on page 40.

If they raise and lower fully with one cycle of the control, remove the relay as shown in Illustration 3-50: Electrical Panel - Float Relay on page 48. (If applicable)

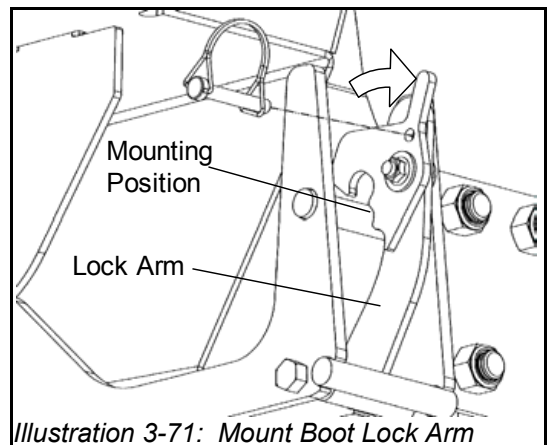


Illustration 3-71: Mount Boot Lock Arm

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.

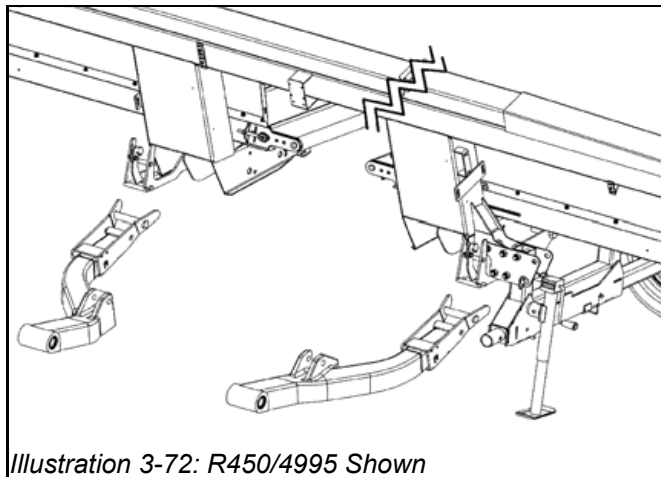


Illustration 3-72: R450/4995 Shown

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.

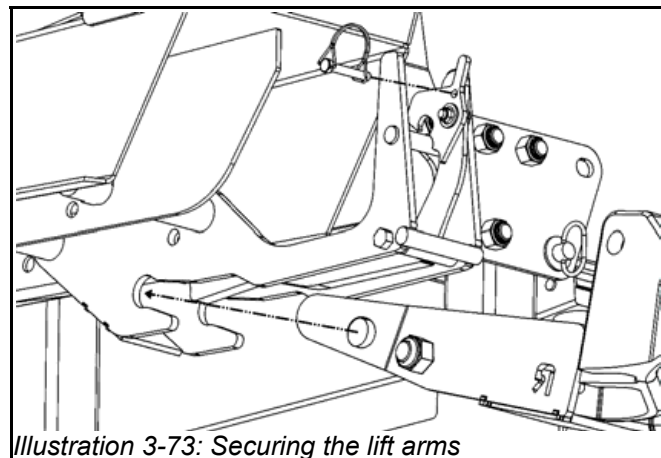


Illustration 3-73: Securing the lift arms



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.

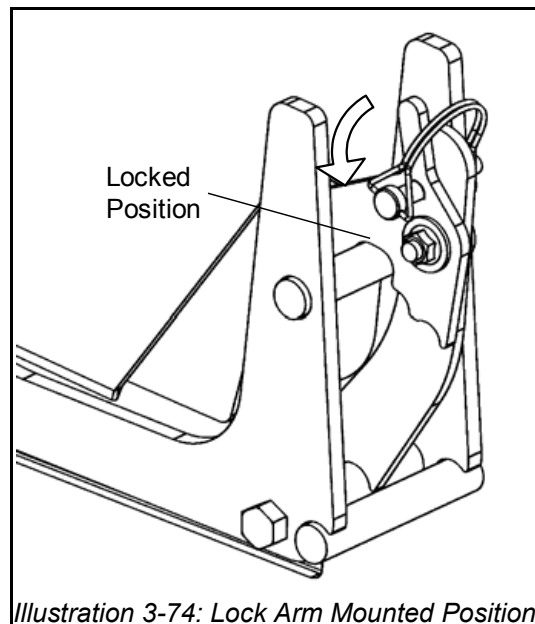


Illustration 3-74: Lock Arm Mounted Position

9. All 4895 and 4995 tables require that you secure the safety chain as shown. The chain is supplied with a bolt through one end of the links to mark the minimum length of chain to be used. Do not remove this bolt!

10. All 4895 and 4998 tables require that you connect the hydraulic tilt cylinder to the lower hole on the bracket on the table as shown to the right.



Do not attempt to lift the swather until the safety chain is attached.



If lining up the cylinder is difficult, carefully raise the swather by small amounts until it aligns.

11. For A400 and R450 tables, 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 reinstall Pin 1 yet.

12. Start the windrower.

13. 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.

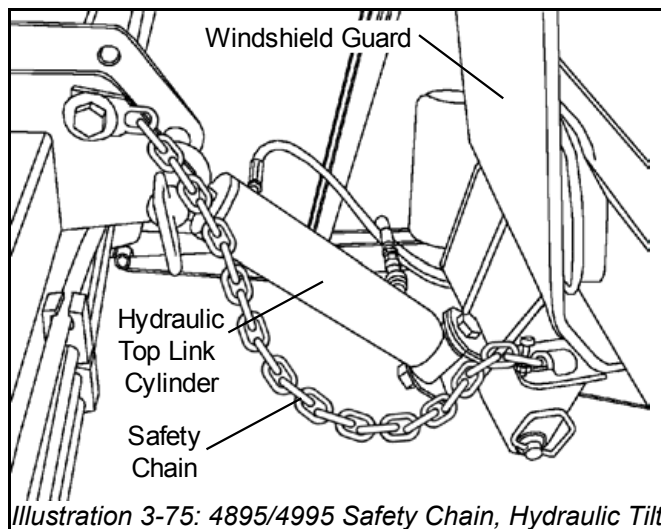


Illustration 3-75: 4895/4995 Safety Chain, Hydraulic Tilt

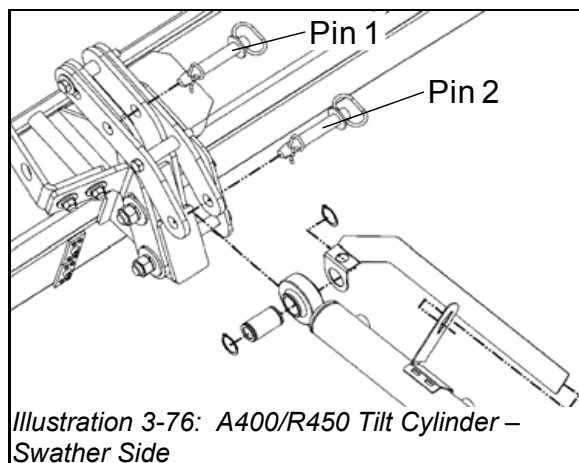


Illustration 3-76: A400/R450 Tilt Cylinder – Swather Side

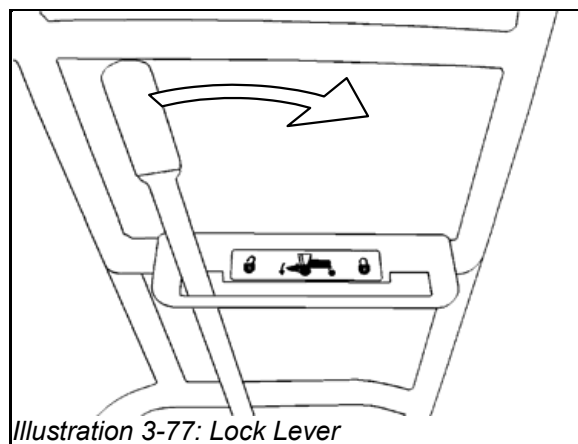


Illustration 3-77: Lock Lever

14. For all 4995 or 4895 tables, ensure that the hydraulic tilt cylinder is secured in place using the hitch pin provided, if not already in place. Ensure that the hitch pin is inserted from below as shown to the right.

15. For all A400 or R450 tables, re-install Pin 1 (shown in Illustration 3-76, on the previous page) to secure the cylinder mounting bracket in place.

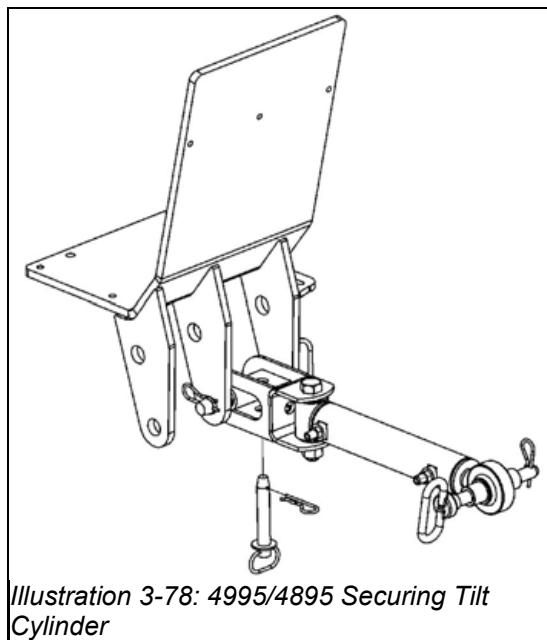


Illustration 3-78: 4995/4895 Securing Tilt Cylinder

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



CAUTION The axle is heavy!



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

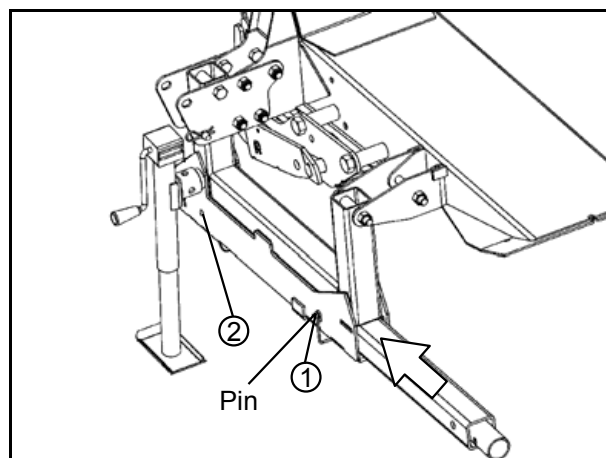


Illustration 3-79: Axle Tube Retraction

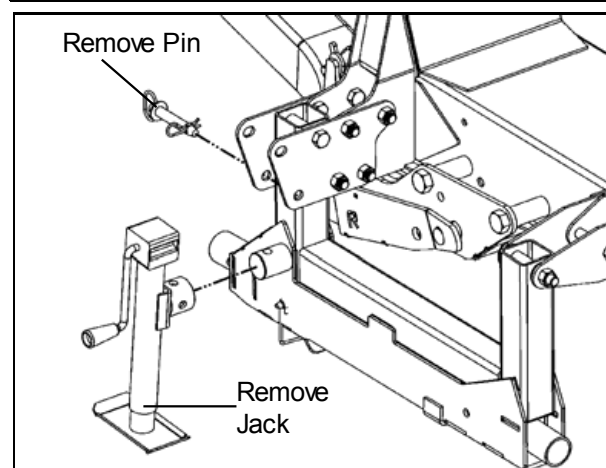


Illustration 3-80: Axle in Road Position

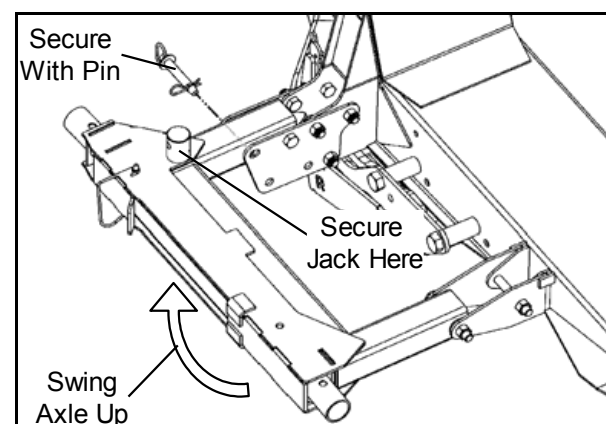


Illustration 3-81: Axle in Field Position

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 raising the screw-driven section, and by collapsing the lower section (foot) to the first hole.
3. Release the hitch clamp, and slide the jack off the hitch tube. Store the jack as shown below, and tighten the clamp.
4. Pull the lock pin on the hitch tube and slide the tube into the storage sleeve. Refer to Illustration 3-82: Hitch Components. Attach the hitch safety chain to the storage stub as shown below.

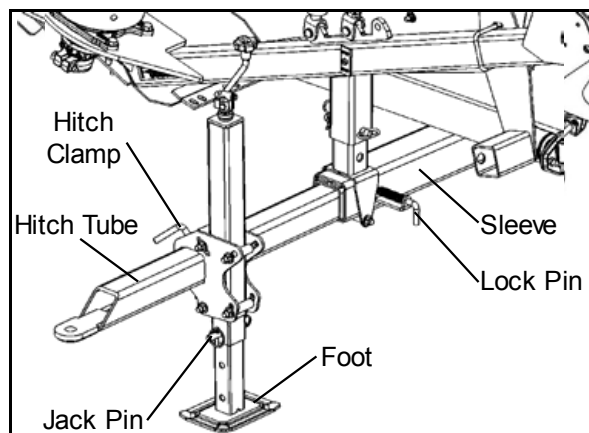


Illustration 3-82: Hitch Components

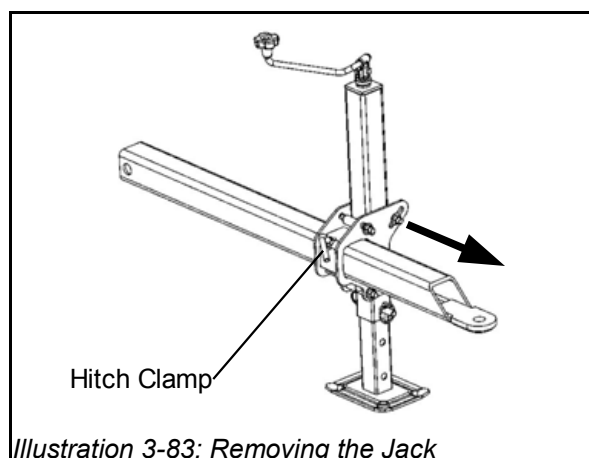


Illustration 3-83: Removing the Jack



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

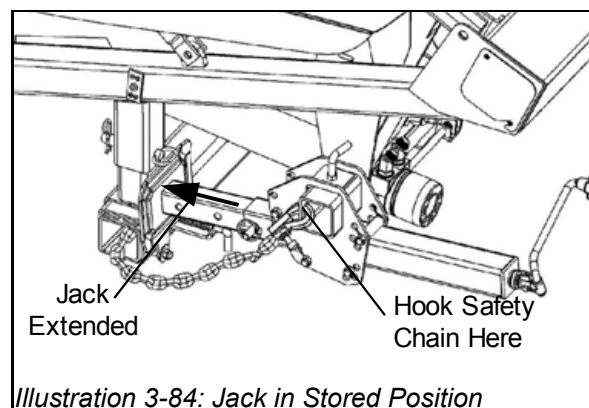


Illustration 3-84: Jack in Stored Position

Connect Electrical and Hydraulic Systems

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.

1. 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.
2. Open the valve to the reel lift/tilt cylinder (curved arrow).
3. Connect hydraulics for Pressure, Return, and Case Drain to the swather.

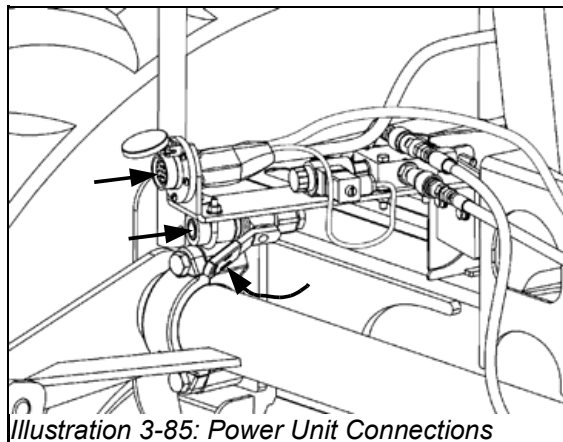


Illustration 3-85: Power Unit Connections



If you need to refer to hydraulic schematics, see the Hydraulics chapter.

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

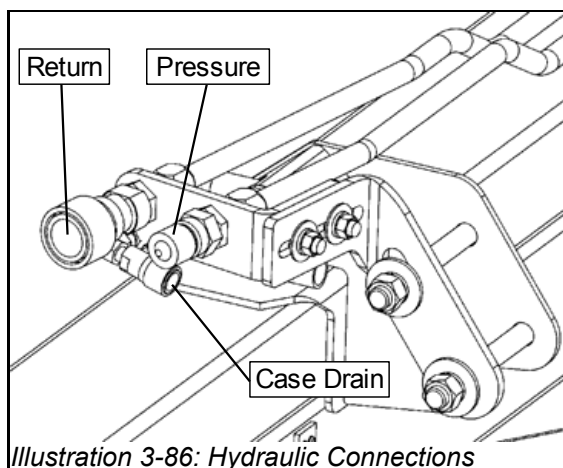


Illustration 3-86: Hydraulic Connections



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 – 4995 & 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.



Illustration 3-87: Hose Connected



Illustration 3-88: Hose Stored

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 the Leveling chapter on page 115 of this manual.

Programming the Tachometer - 4895 & 4995 Only (Not needed for A400/R450)

It is not necessary to start the engine to program the tachometer. These instructions apply to either single or dual display tachometers.

1. Move the key to the "OFF" position.
2. Press, and hold the Ground Speed (C) and Float Pressure (F) buttons while turning the key to the "RUN" position.
3. This will open the setup mode.
4. The "Function Selected" display (A) should highlight the upper left quadrant, and the primary machine code will be displayed in (H)
5. Press the Ground Speed (C) or Engine Speed (D) buttons to incrementally adjust the code up or down until it reads "13."
6. Press Reel Speed (E) and Float Pressure (F) buttons simultaneously to store the code and move to the next step.
7. The upper right quadrant will now be highlighted in the "Function Selected" display (A).
8. Press the Ground Speed (C) or Engine Speed (D) buttons incrementally, until this display reads "1" for the 4990/4890, or "0" for a 4995/4895 which provides greater input range for reel speed and platform speed.

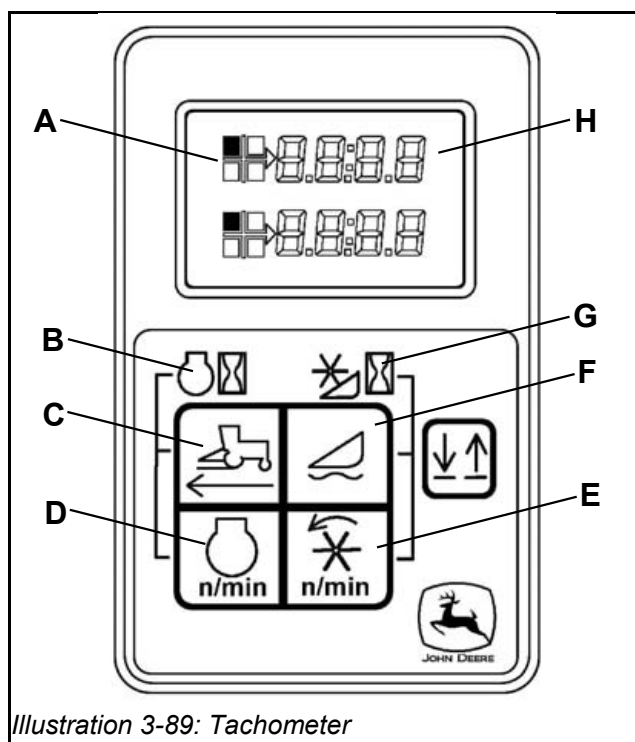


Illustration 3-89: Tachometer

- A – Function Selected
- B – Engine Hours
- C – Ground Speed (mph)
- D – Engine Speed (rpm)
- E – Reel Speed (knife drive)
- F – Float Pressure (psi)
- G – Platform Hours
- H – Digital Display



If the display does not read correctly with Code "1", try Code "0" as an alternate.

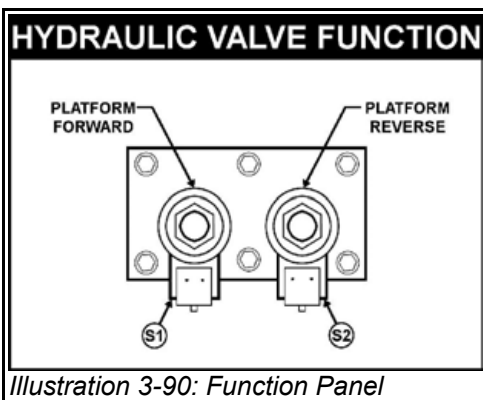
9. Press the Reel Speed (E) and Float Pressure (F) buttons simultaneously to store the code and move to the next step.
10. The Function Selected display (A) will now have the lower right quadrant highlighted. Press the Ground Speed (C) or the Engine Speed (D) button incrementally to adjust this reading to “26” for units prior to the 2002 model year. Beginning with the 2002 model year, this number will be “24.5” to reflect the change in final drive ratios.
11. Press the Reel Speed (E) and Float Pressure (F) buttons simultaneously to store this code and move to the next step. The Function Selected display (A) will now have the lower left quadrant highlighted. The number of pulses per engine revolution will be shown on the digital display (H).
12. Press the Ground Speed (C) or the Engine Speed (D) button incrementally until the display reads “30”.
13. Press the Reel Speed (E) and Float Pressure (F) buttons simultaneously to store this code.
14. Turn the key to the “OFF” position to exit the setup mode. Calibrate the Hydraulic Pump

JD 4895 and A400 Solenoid Modification

For 2010 production, 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.

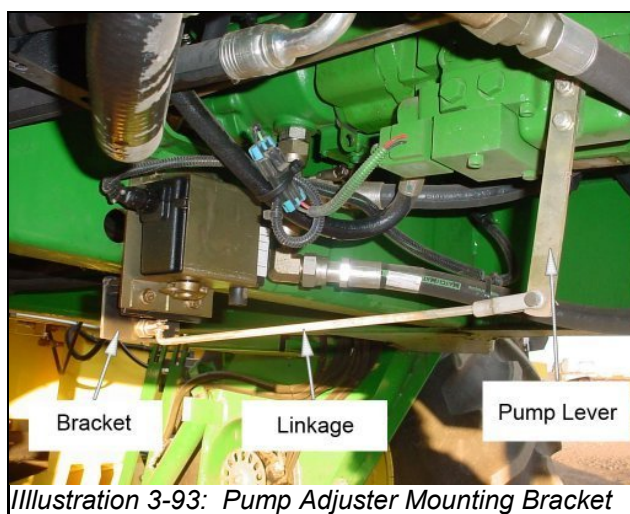
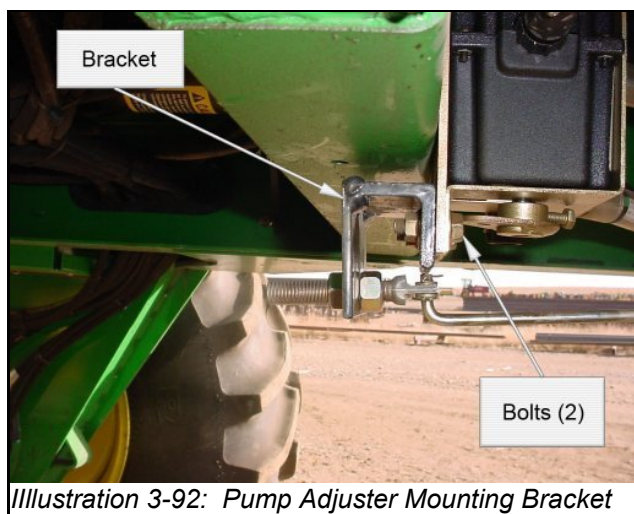
When using the forward side of the pump, adjusting the flow set screw for the reverse side will have no effect.

If in the future, the windrower is being converted back to a mower-conditioner, these connections will be correct as-is.



JD 4995 Install Flow Control Bracket (Hydraulic Pump Calibration)

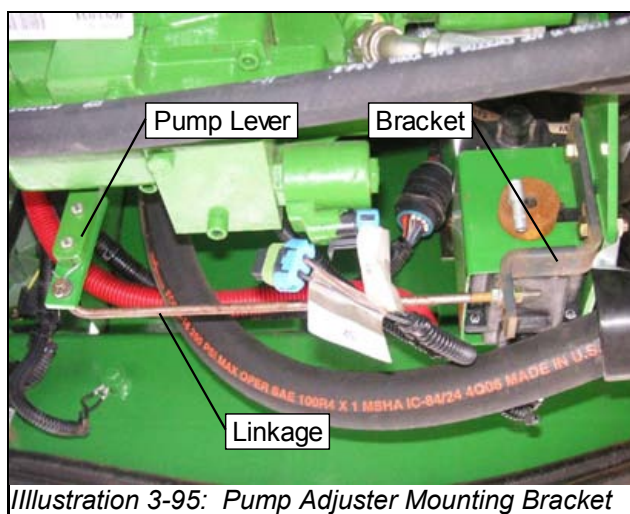
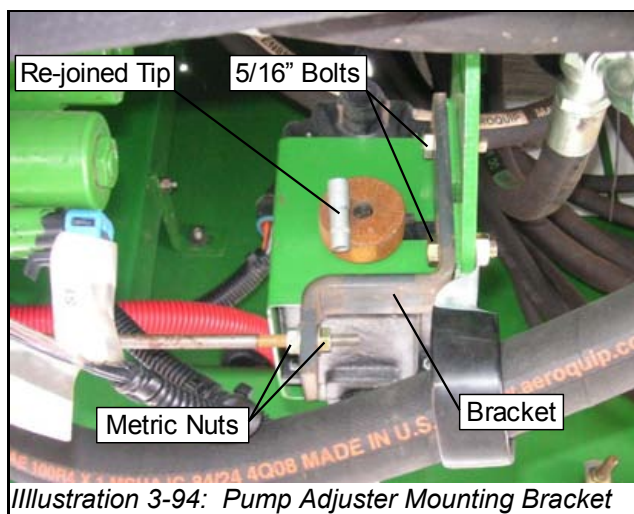
Set the engine high idle to 2100 RPM. Normal pump output is **45 GPM (170 LPM)**. The output from the tractor should be set from **29 to 31 GPM (110 – 117 LPM)**. Install the flow bracket assembly onto the motor mount, located under the windrower, as shown below.



1. Remove the nuts from the two bolts holding the electric swather pump output controller. Place the bracket on these bolts as shown above, replace and tighten the nuts.
2. Remove the cotter key holding the linkage lever onto the electric controller. **Do not permit the linkage rod to turn in the clevis end of the linkage, to avoid calibration problems when the rod is returned to the electric controller arm for other applications.**
3. Relocate the linkage into the adjusting bolt attached to the bracket you installed previously. Secure by replacing the top washer and use a new cotter key to secure the linkage in place.
4. Start the engine and set high idle (2100 rpm). Select the reel speed display, which shows the knife speed on the tachometer. (See your windrower operator's manual.)
5. Adjust the length of the linkage from the bracket until the readout shows 620rpm. Secure the lock nut. Recheck the knife speed to ensure it has not changed. You may verify this setting by installing a flow-meter to the output and return hoses or by using a photo-electric tachometer on the knife drive, in which case the reading should also be 620 rpm.

JD R450 Install Flow Control Bracket (Hydraulic Pump Calibration)

Set the pump flow using high idle. Normal pump output is **45 GPM (170 LPM)**. The output from the tractor should be set from **29 to 31 GPM (110 – 117 LPM)**. Install the flow bracket assembly onto the motor mount, located under the windrower, as shown below.



1. Remove the two nuts and bolts from the electric swather pump output controller. Add the bracket as shown above, using the new 5/16" x 1" bolts and nuts provided. Do not tighten yet.
2. Disconnect the linkage lever from the controller at the ball and socket joint. Unscrew the tip from the linkage lever and re-join the tip to the controller.
3. Screw one new 6mm nut onto the end of the linkage lever and insert the end through the hole in the bracket. Add another 6mm nut to the end of the linkage lever.
4. Tighten the nuts and bolts from step 1 to secure the bracket in place.
5. Start the engine and set at high idle. Select the reel speed display, which shows the knife speed on the tachometer. (See your windrower operator's manual.)
6. Adjust the length of the linkage from the bracket until the readout shows 620rpm. Secure the metric nuts. Recheck the knife speed to ensure it has not changed. You may verify this setting by installing a flow-meter to the output and return hoses or by using a photo-electric tachometer on the knife drive, in which case the reading should also be 620 rpm.

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.
	Float relay removed (4895, 4995 only).
	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.

Control Console Wiring Schematics

JD 4895-4995 WS Swather – New Configuration

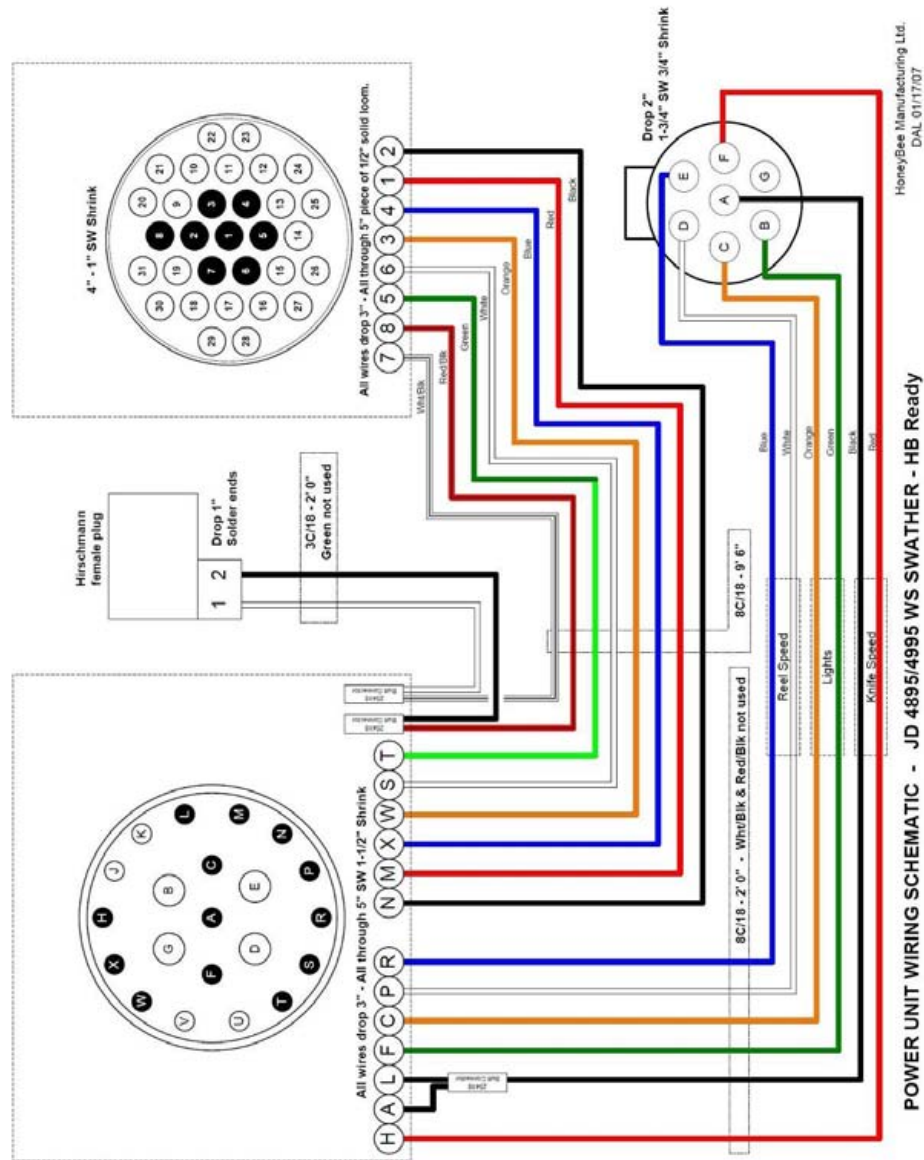


Illustration 3-96: New JD 4895/4995 Wiring Schematic

Applicable to all JD 4995 units with serial numbers including and after E04995X330675 and all JD 4895 units with serial numbers including and after E04895X330107.

JD 4895-4995 WS Swather – Original Configuration

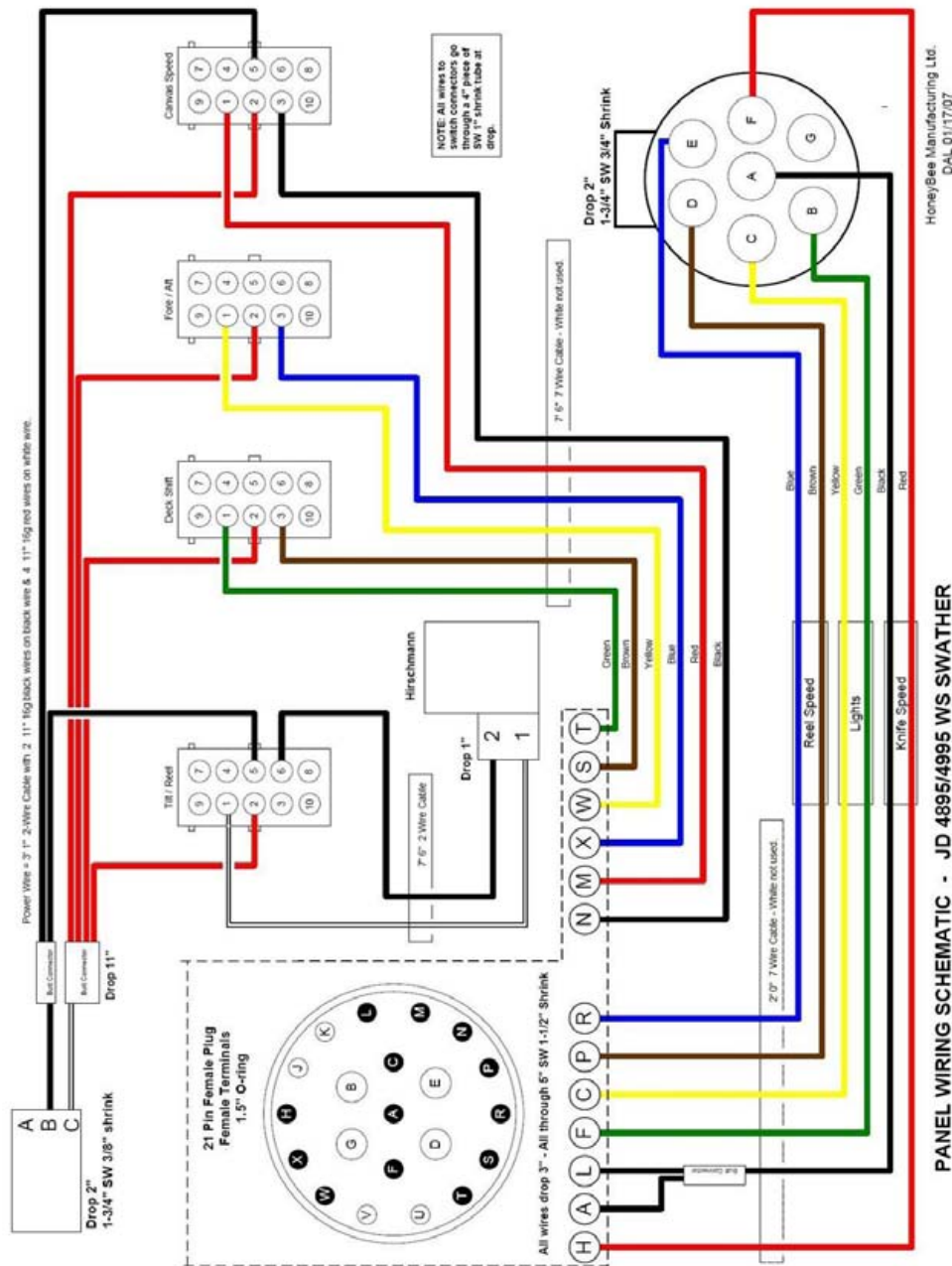


Illustration 3-97: Original JD 4895/4995 Wiring Schematic

Applicable to all JD 4995 units with serial numbers before E04995X330675 and all JD 4895 units with serial numbers before E04895X330107.

JD A400 and R450 Swather – Wiring Schematic

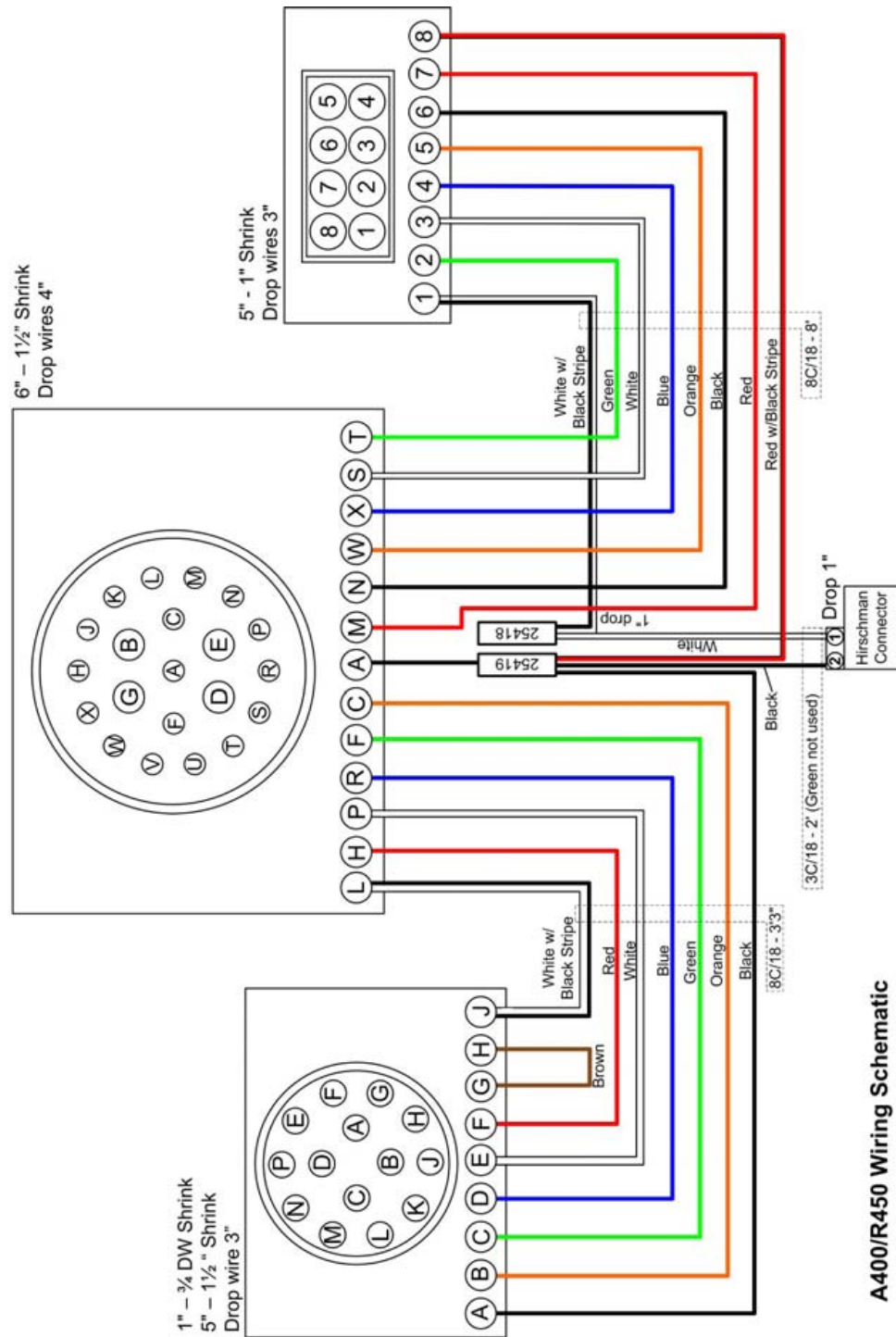


Illustration 3-98: A400 & R450 Wiring Schematic

4 - Operation

Initial Start-up



Keep bystanders, especially children, away from the machine during these operations.

WARNING

Before attempting these steps, complete the mounting checklist to assure the swather is securely mounted.

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.

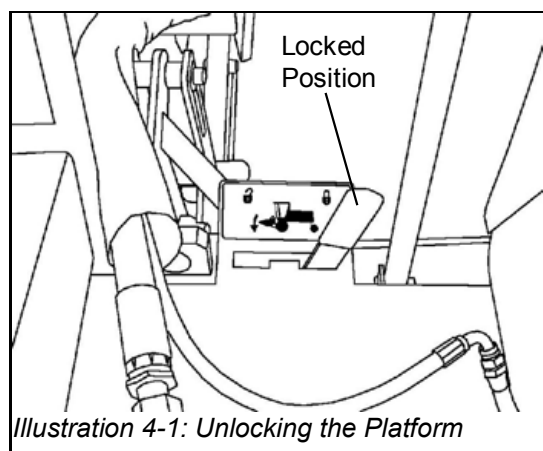


Illustration 4-1: Unlocking the Platform



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

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. (50 psi. (345 kPa) for transport, 24 psi. (166 kPa) for field work.)
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.



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.

F-N-R Lever Controls

4995 & 4895 Controls

1. Locate the platform tilt switch on the F-N-R lever. This switch will be used also as the reel lift/lower control switch. A switch on the console (see below) to the right of the lever allows you to select the function of the switch on the F-N-R lever (if equipped with hydraulic tilt option).
2. Depress the platform tilt 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.

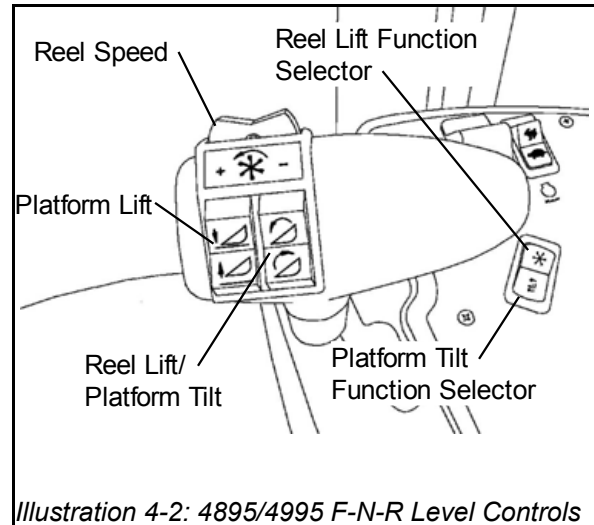


Illustration 4-2: 4895/4995 F-N-R Level Controls

A400 & R450 Controls

1. 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.

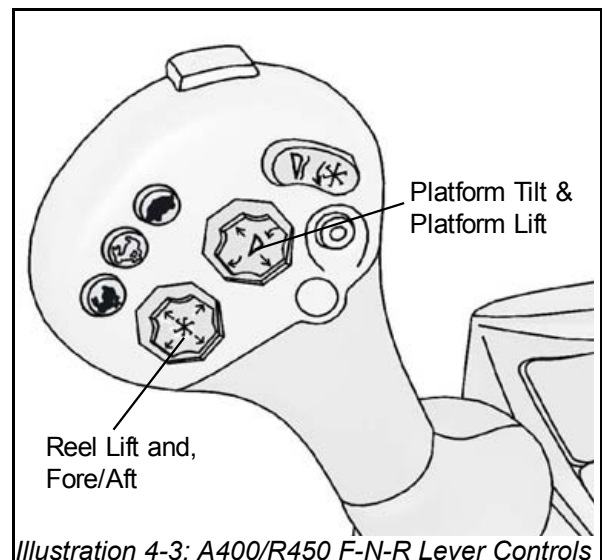


Illustration 4-3: A400/R450 F-N-R Lever Controls

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.

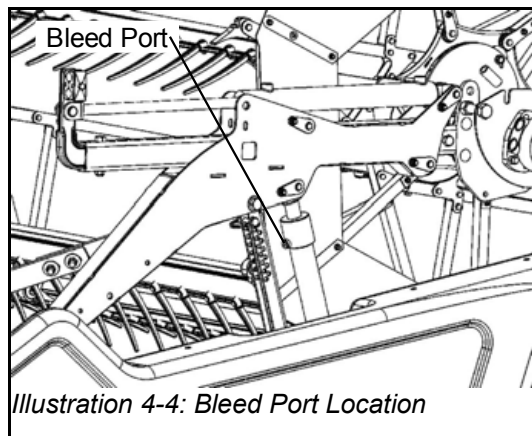


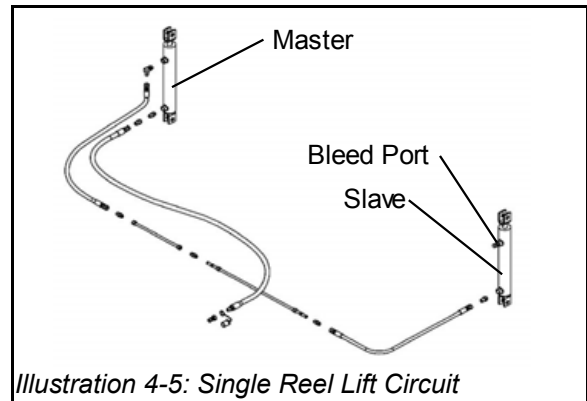
Illustration 4-4: Bleed Port Location



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

Single Reel Lift Circuit

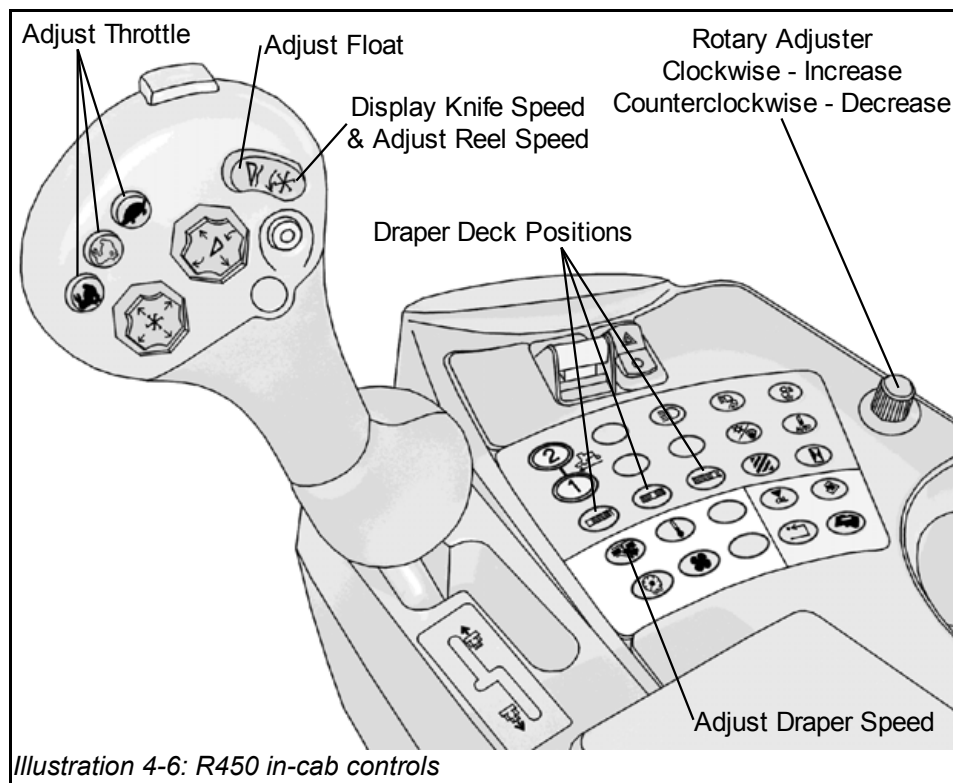
When the operator opens the valve in the windrower, oil is forced into the barrel end of the left hand master cylinder, as the cylinder piston rises, oil on the top side of the piston is forced out of the rod end port, into the port on the slave cylinder.



Additional Windrower Controls

Additional function controls for the throttle rpm, knife speed display, reel speed, draper speed, draper position and float 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.



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 draper, knife and reel should begin to turn.



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



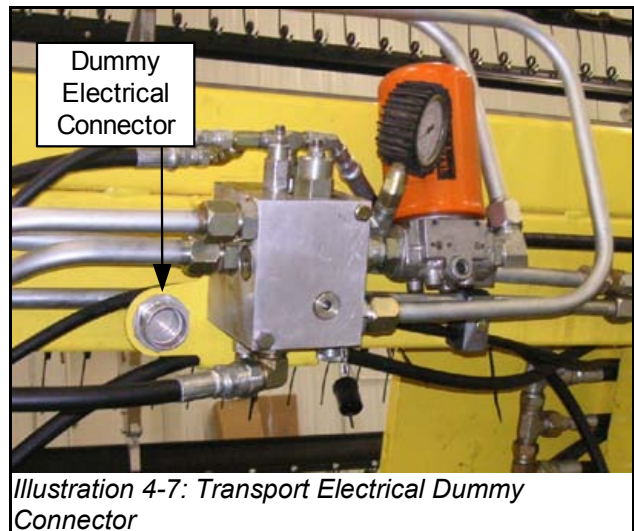
IMPORTANT Park the windrower on a hard, level surface. Engage the park brake.

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.

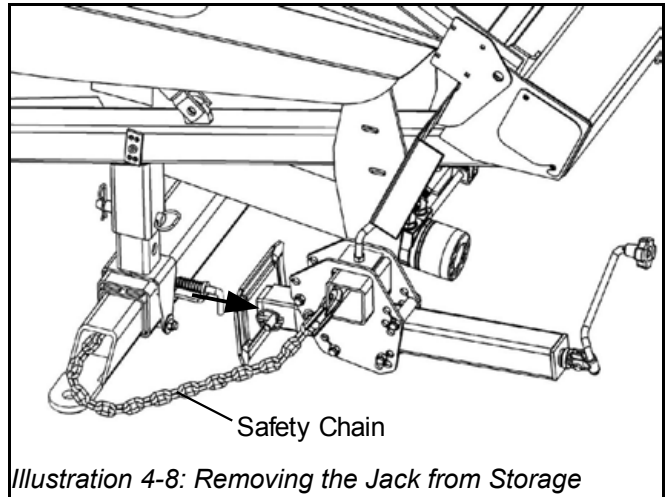
2. Uncouple all hydraulic hoses connecting swather to the windrower. Tie or lay hydraulic hoses in such fashion that they will not interfere with the windrower or the swather when the windrower is being backed away from the swather.
3. Uncouple all wires running from the windrower to the swather (21 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.

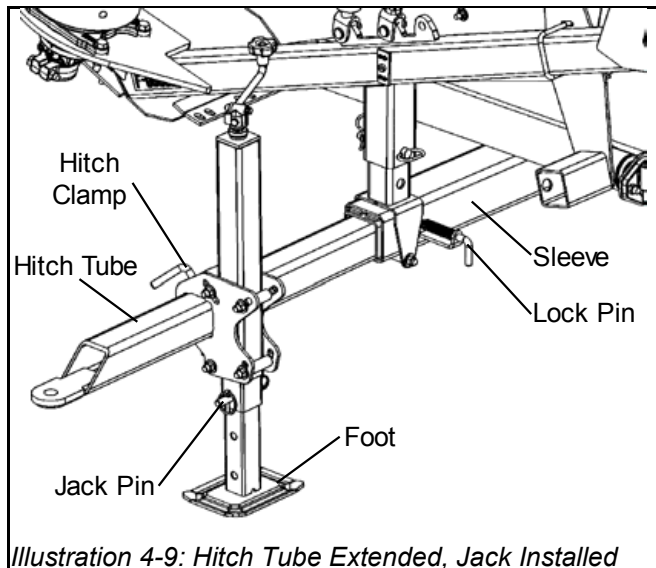
Self Storing Hitch – Transport Position

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 tube, and tighten the hitch clamp on the jack mount.

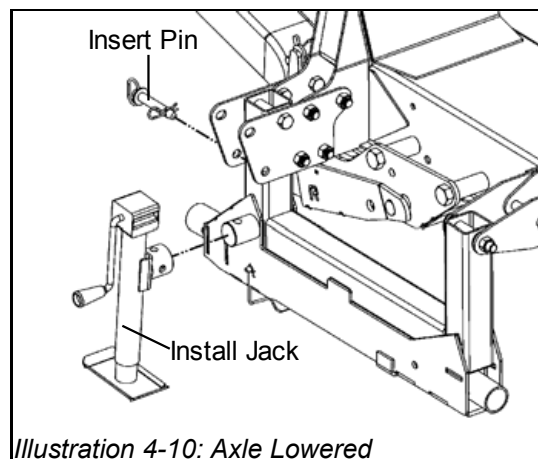
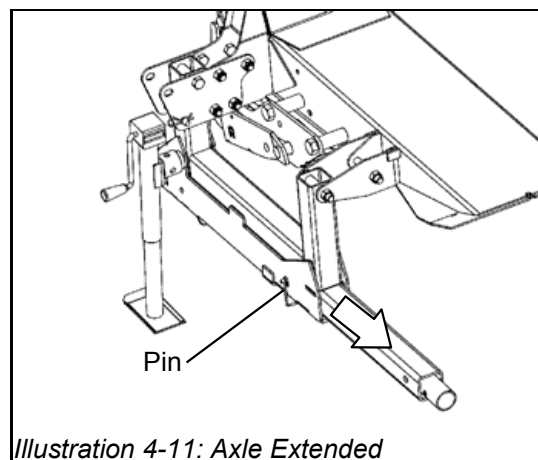
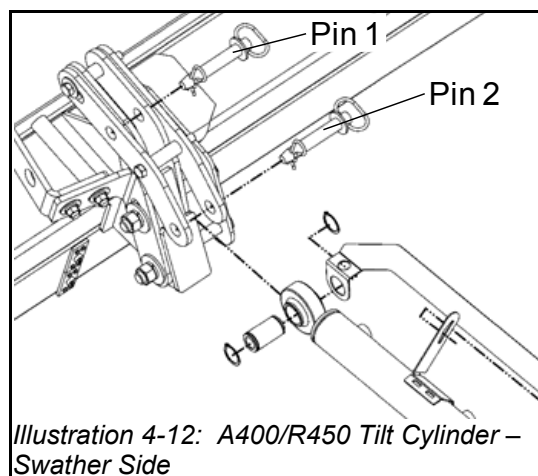


9. Extend the lower leg of the jack to a suitable hole.

10. The swather should still be lifted from the ground at this point with the table safety lock in place.

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.
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. For all A400 and R450 tables only; 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.

*Illustration 4-10: Axle Lowered**Illustration 4-11: Axle Extended**Illustration 4-12: A400/R450 Tilt Cylinder – Swather Side*

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.



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

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

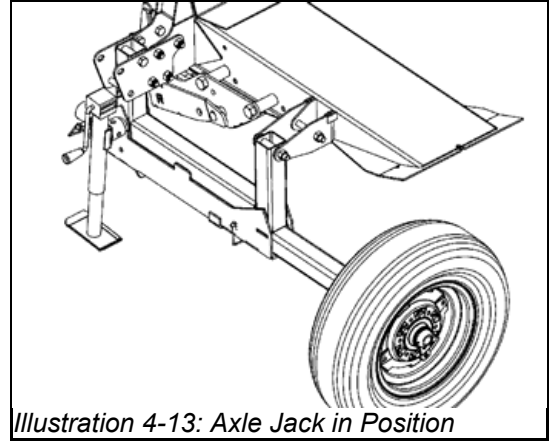


Illustration 4-13: Axle Jack in Position

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.

20. For only 4895 and 4995 tables; if the hydraulic tilt cylinder is used, you may remove the hitch pin from the slotted lift link bracket to help relieve the pressure for disconnection. It may also be necessary to raise the table back up by small amounts to release enough pressure to disconnect the hydraulic cylinder.

- On all 4995 and 4895 windrowers, the hydraulic cylinder is rotated 90° up against the windshield guard and held in place with the small chain secured to the windshield guard.
- On all A400 and R450 windrowers the hydraulic cylinder is rotated 90° to the side and can be held in place with a bungee if required.

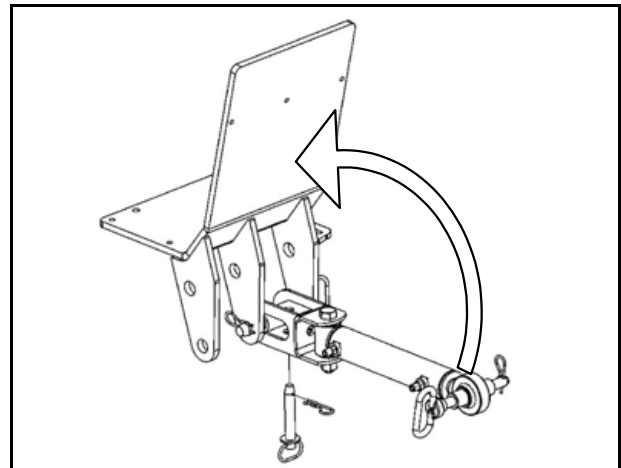


Illustration 4-14: Storing the 4995 & 4895 Hydraulic Link

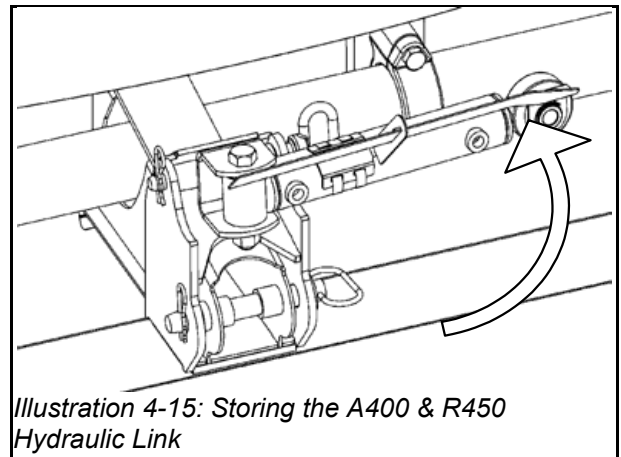


Illustration 4-15: Storing the A400 & R450 Hydraulic Link

21. Disconnect the safety chain if using a 4995 or 4895 swather.

Final Dismounting Steps.

22. 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.

23. 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.

24. 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.

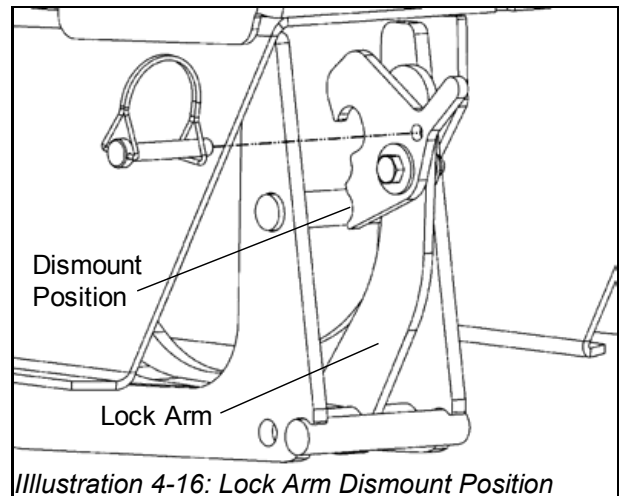


Illustration 4-16: Lock Arm Dismount Position



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.

25. Attach the rear wheel and secure with the hitch pin.

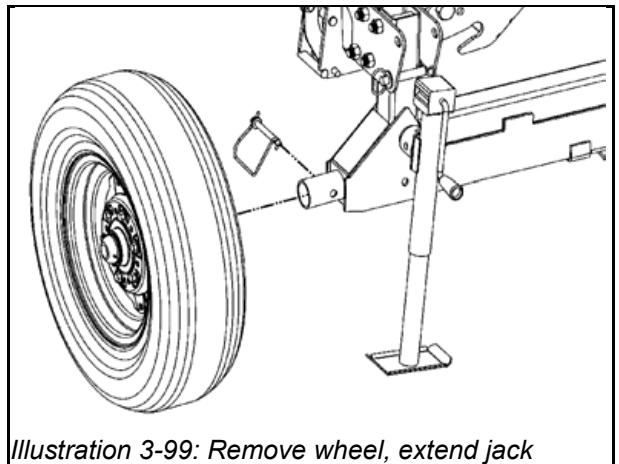


Illustration 3-99: Remove wheel, extend jack

26. Lower the jack, remove it and re-install it in the storage position.
27. Check that the swather is level. If necessary adjust the height of the hitch jack.
28. Re-install the pins for the mounting boot lock arms.
29. For A400 and R450 tables only; re-install Pin 1 to secure the cylinder mounting bracket in place.

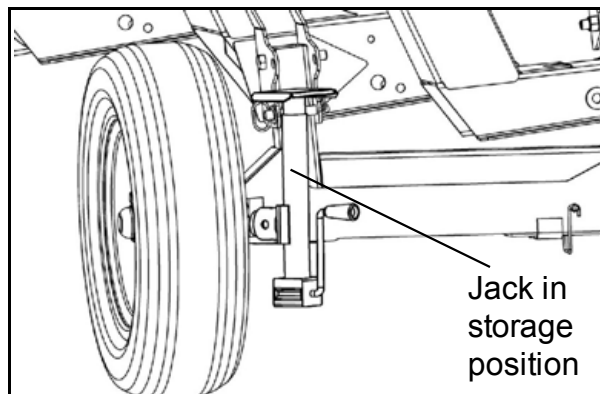


Illustration 4-17: Axle Ready for Transport

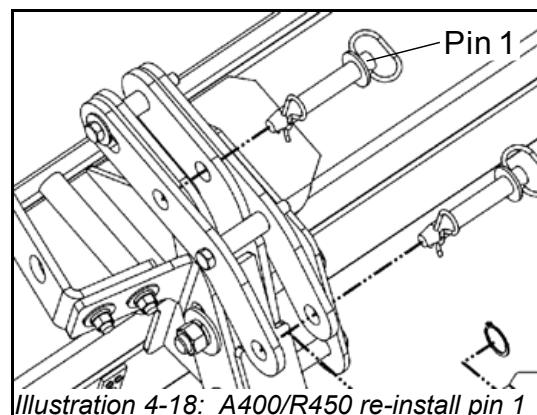


Illustration 4-18: A400/R450 re-install pin 1

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5 - Reel

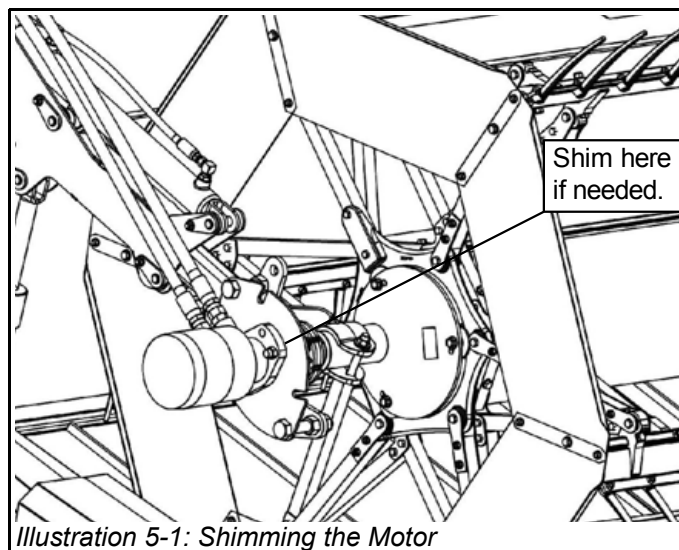
Reel Drive

Depending on the model of , 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.



ATTENTION 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.

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

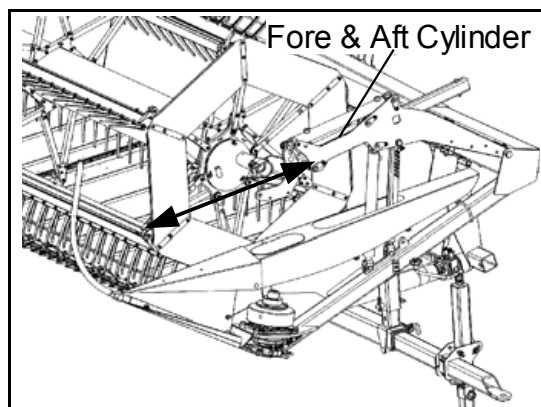


Illustration 5-2: Fore & Aft

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.

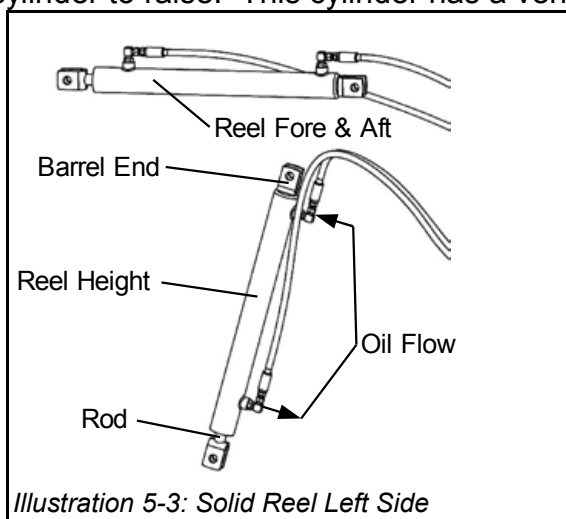


Illustration 5-3: Solid Reel Left Side

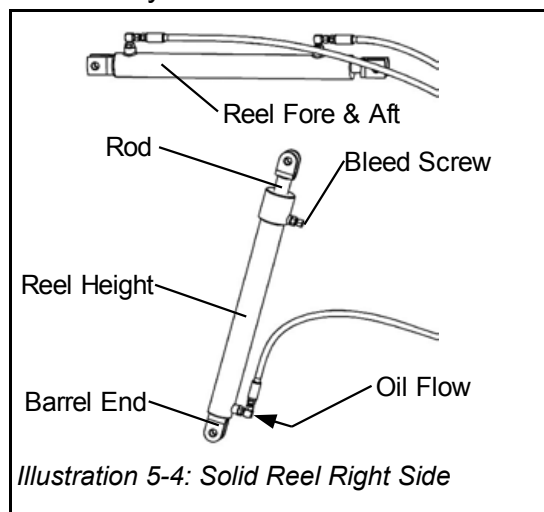


Illustration 5-4: Solid Reel Right Side

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, and how close the reel can come to the swather. These stops are located behind the reel-lift cylinders.

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. Remove lock pin from left side reel height control arm, and replace into the desired location (hole). Ensure that pin is fully engaged and locked in place with the safety clasp. Take note of the exact location of the pin.
4. Repeat this procedure for right side of the swather, ensuring that this pin is inserted at the same height as the left side.
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.

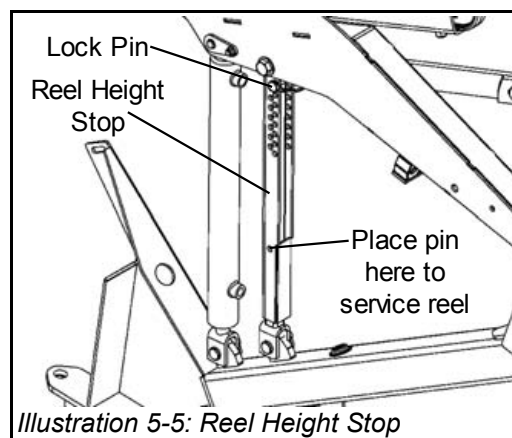


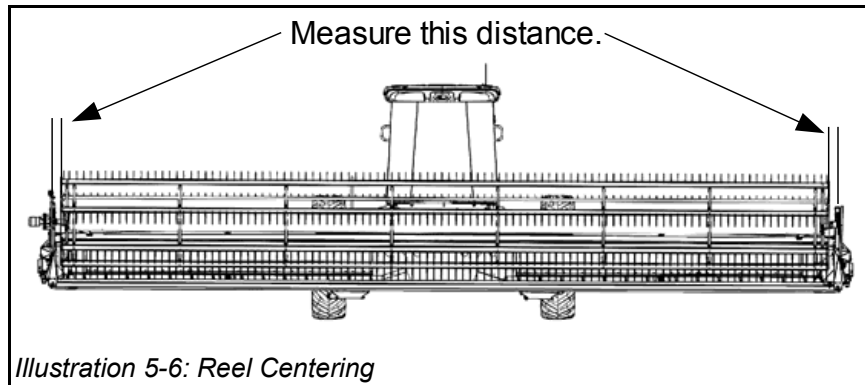
Illustration 5-5: Reel Height Stop



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

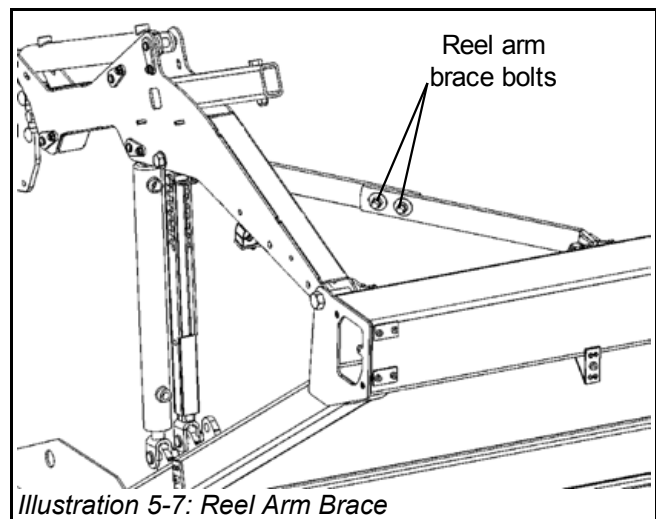
Reel Centering

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



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.



Placement of the Reel on the Swather

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

- Normally the more “down” the crop, the further ahead the reel should be set.
- 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.
- Normally the more “down” the crop; the closer the tines will need to be placed to the cutter bar, down to this 1" minimum.

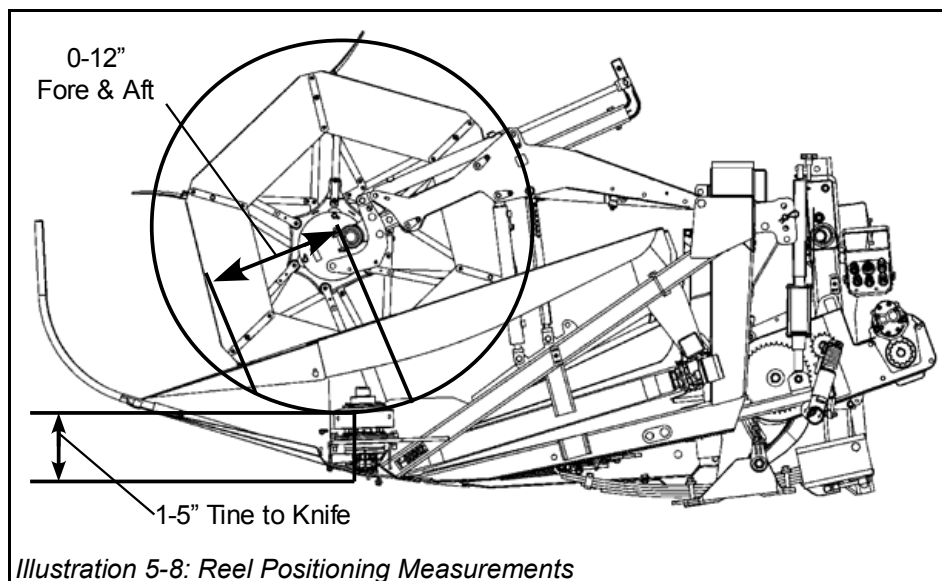


Illustration 5-8: Reel Positioning Measurements

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.

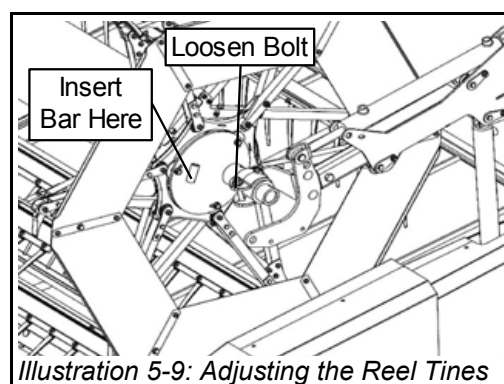


Illustration 5-9: Adjusting the Reel Tines

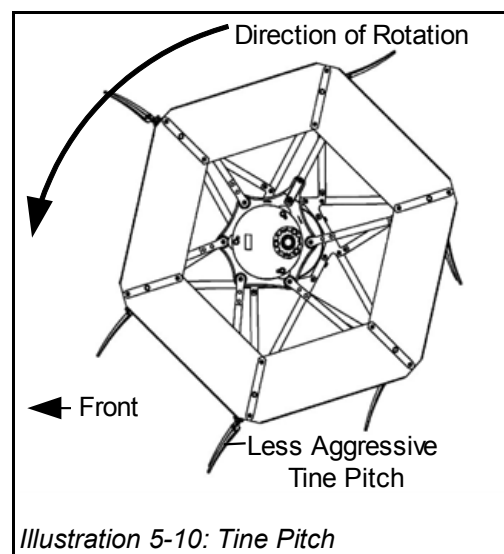


Illustration 5-10: Tine Pitch

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

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.

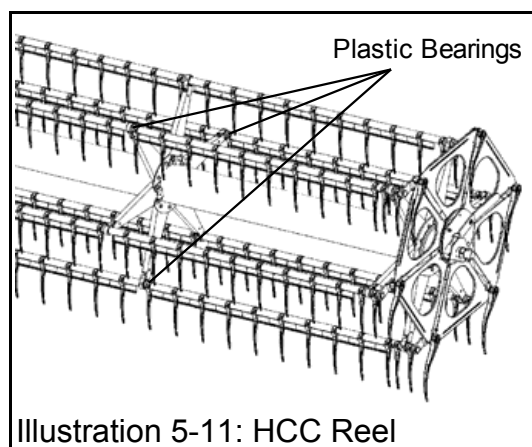


Illustration 5-11: HCC Reel

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.

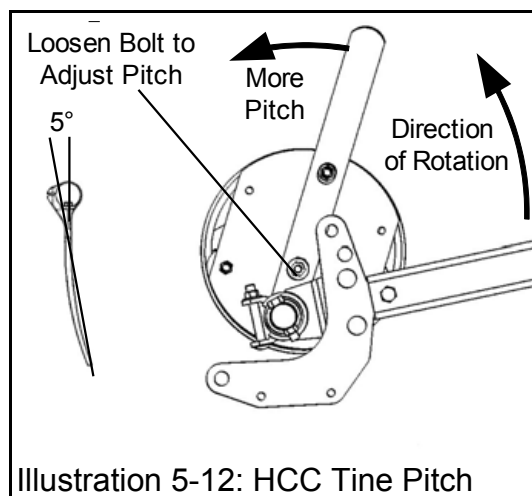


Illustration 5-12: HCC Tine Pitch



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.

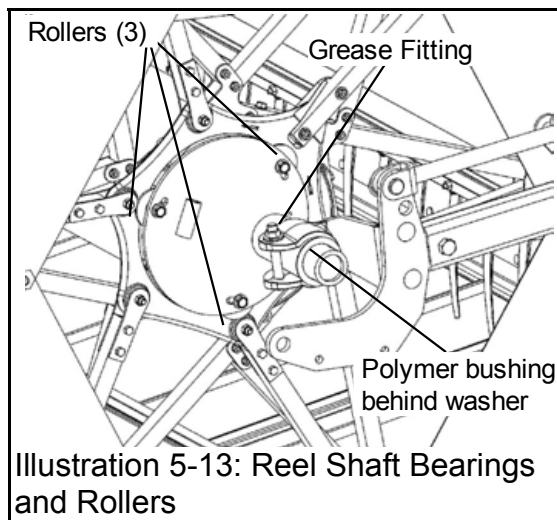
Lubrication – Reel Shaft Bearings

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.



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 (HCC Reels only).
- 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.

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6 - Draper

Depending on the options purchased, there may be two or three 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 usually done by extending the idler plate $\frac{1}{4}$ " past the draper deck. This is accomplished by adjusting the eye bolt.

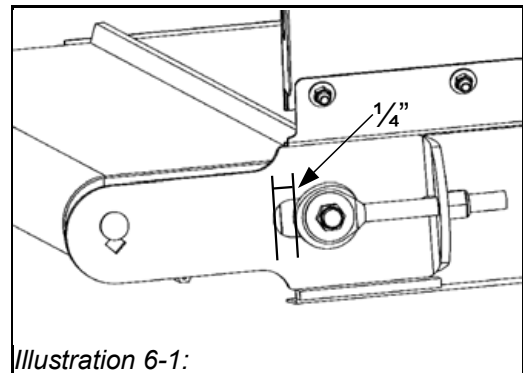


Illustration 6-1:

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.

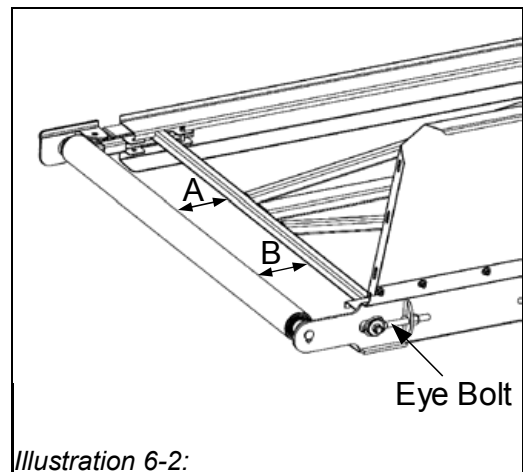
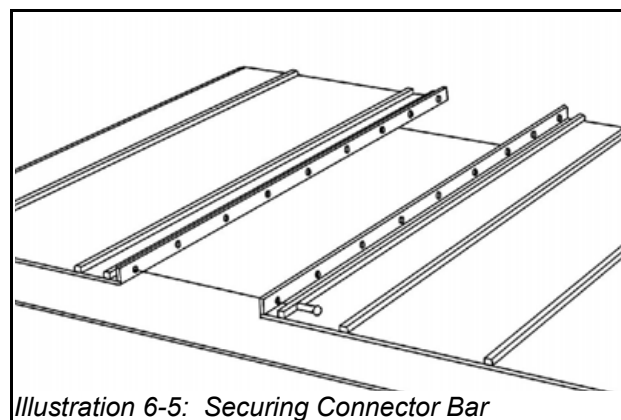
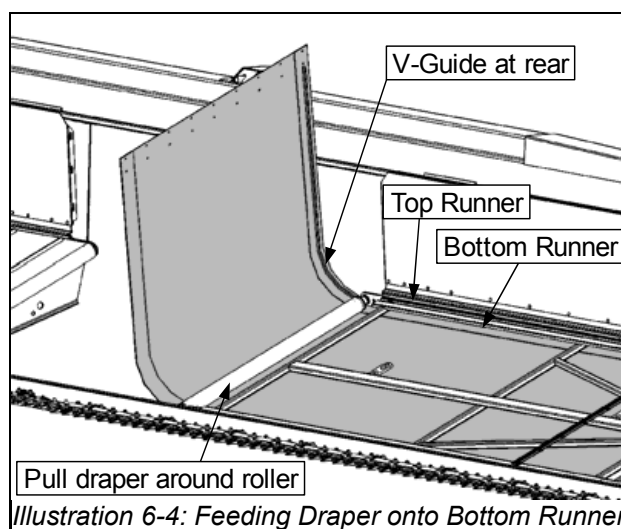
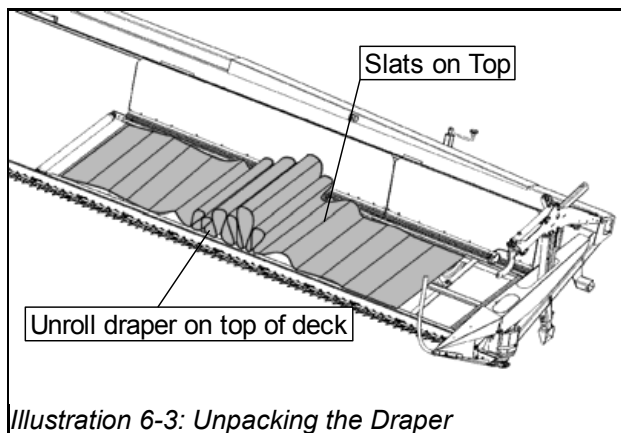


Illustration 6-2:

Draper Installation

1. Make sure that the quick release lever is in the open position prior to installing the canvas on the draper deck. The location of the lever is shown on Illustration 6-6: Draper Tension on page 101.
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.
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.



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.

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:

- Loosen the lock nut if required.
- Release the tension with the quick release lever.
- Pull the roller evenly from the side of the swather to stretch the draper.
- Slide the adjuster clevis to compress the tension spring.
- Complete tightening by over-centering the quick release lever.

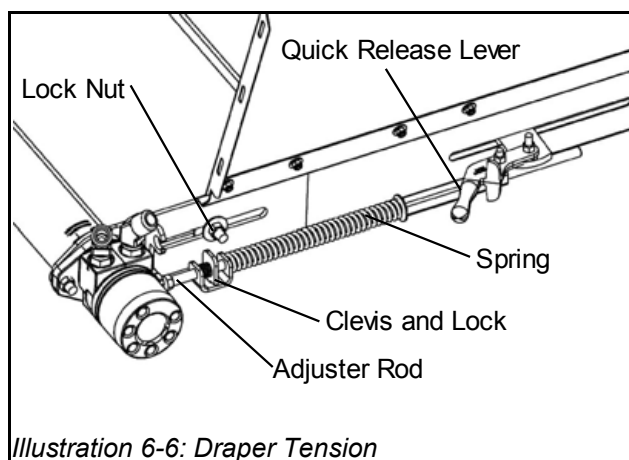


Illustration 6-6: Draper Tension

Restart the windrower and repeat the running test. If tracking is good, leave the lock nut on the motor mount plate loose.



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 canvas must track properly on the rollers to avoid damage to the drapers. The draper decks allow for approximately $\frac{1}{4}$ " 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.

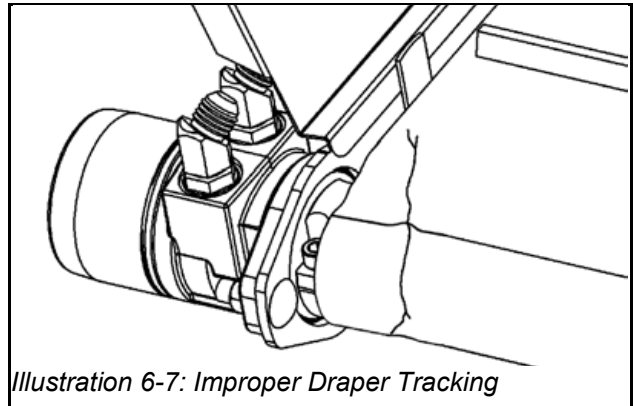


Illustration 6-7: Improper Draper Tracking

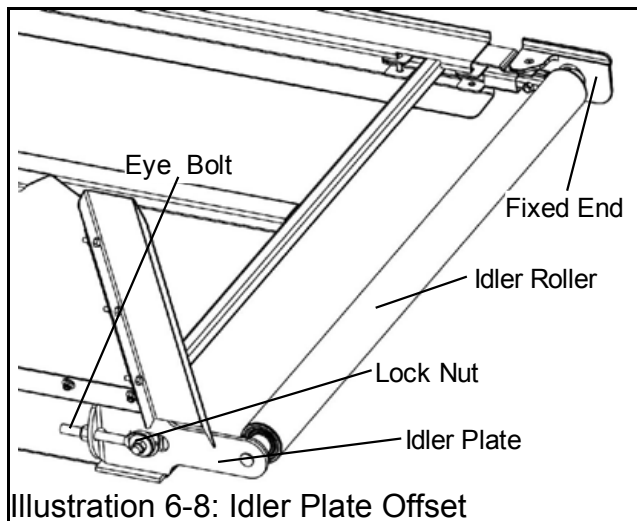


Illustration 6-8: Idler Plate Offset

Drive Roller Tracking Adjustment

With quick release tensioning, the motor mount plate is normally left loose. To adjust the tracking at this end, tighten the lock nut holding the motor mount plate in place. When the motor mount plate is tight, the back panel end of the drive roller will be fixed and the cutter bar end will be adjustable.

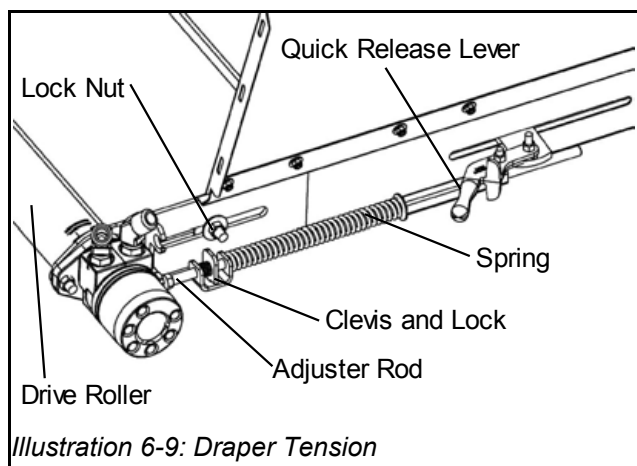


Illustration 6-9: Draper Tension

Adjust the spring tension as needed by sliding the Clevis and lock on the adjuster rod.

- Move the clevis outwards slightly ($\frac{1}{8}$ "") to increase the tension at the back.
- Move the Clevis inwards slightly ($\frac{1}{8}$ "") to increase the tension at the front.

If the roller does not move easily, tapping the motor housing with a rubber mallet will help the roller to move.

Re-test the tracking by running the swather at engine low idle.

Once the roller is tracking properly, loosen the lock bolt.

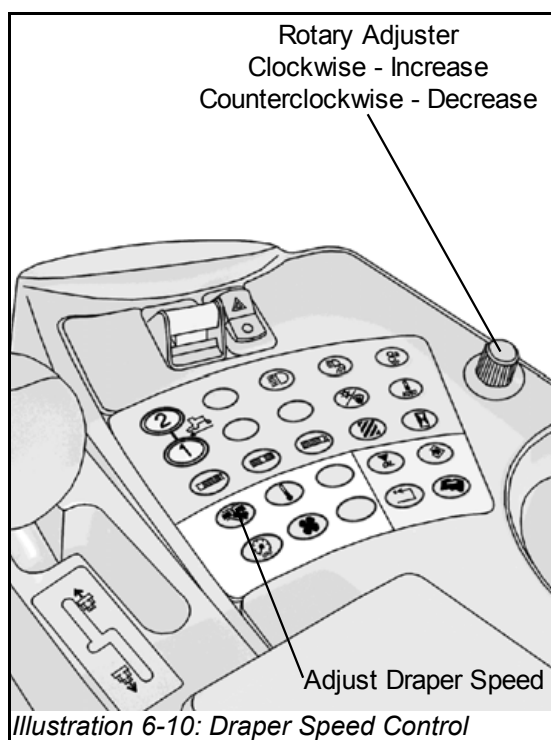
Draper Speed

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.



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 ½" longer than the piece to be removed.



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

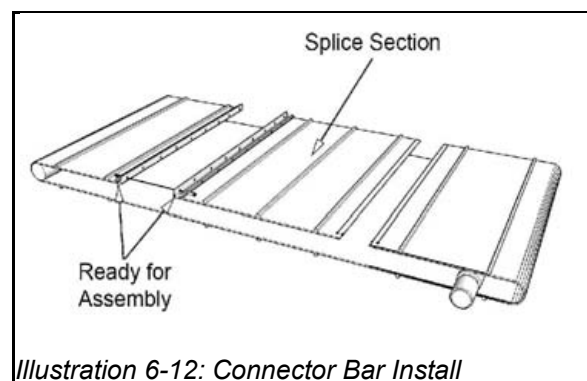
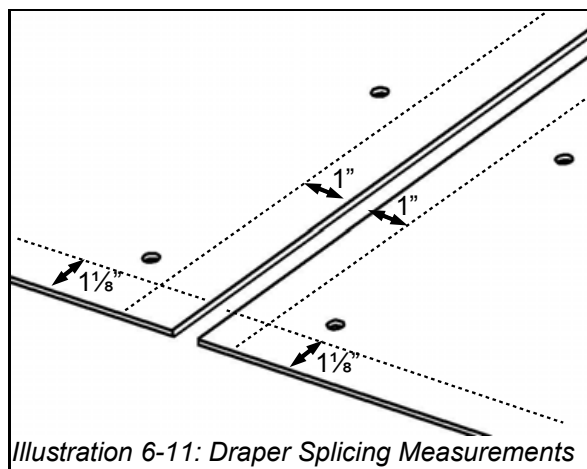
1. Raise swather table and install lift cylinder locks. (If this is too high for comfortable access, the table can be set on blocks or lowered to the ground.)
2. Raise the reel and place the locks on the lift cylinders to prevent the reel from falling.



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

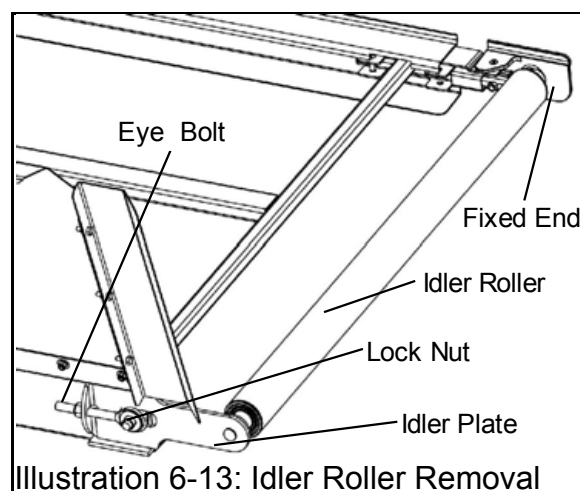
3. Release the draper tension.
4. Remove draper connecting bar.
5. Correct the cause of the draper failure.
6. The draper should be cut midway between two slats to provide ample material for the new join. With a measuring tape, measure, and mark a line six inches from a slat on a good portion of the 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".)

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 the tension from the draper.
2. Remove the nut that holds the eye bolt and the draper idler plate in place.
3. Remove idler plate from deck.
4. Remove spacer from bolt.
5. Pull idler roller out of deck.
6. Check bearings on each end and remove any material build up on roller.
7. Re-assemble in reverse order.



The spacer in step 4 must be re-installed for the idler plate to function.

Drive Roller Removal

1. Ensure lock nut on the motor mount adjuster plate is loose.
2. Release quick tension lever.
3. Loosen lock nuts on adjuster screw. Back off nuts about 3/4". Slide sleeve and spring down adjuster screw. Lift adjuster screw out of adjuster plate.
4. 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.
5. Remove the lock nut from the adjuster plate.
6. Pull adjuster plate, motor, and drive roller out of deck.
7. Check bearing in end of roller, and remove any build up of material on roller.

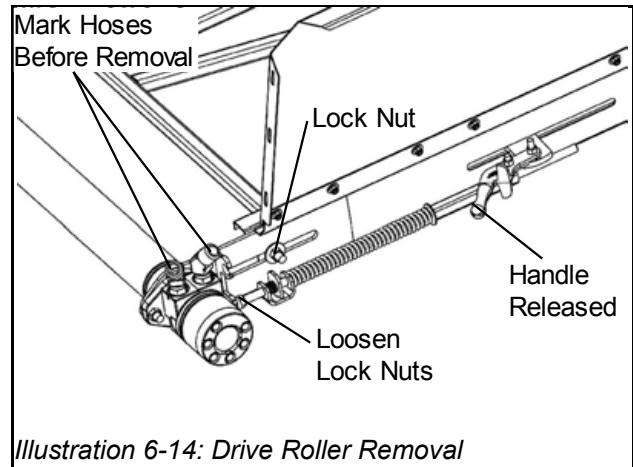


Illustration 6-14: Drive Roller Removal



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.

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.

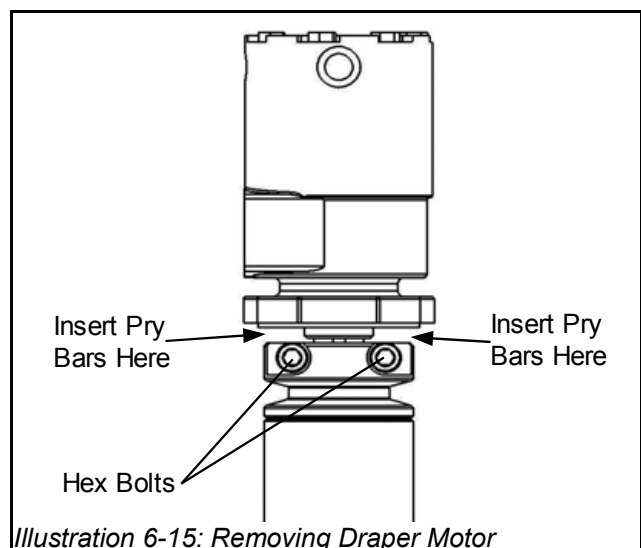


Illustration 6-15: Removing Draper Motor

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.

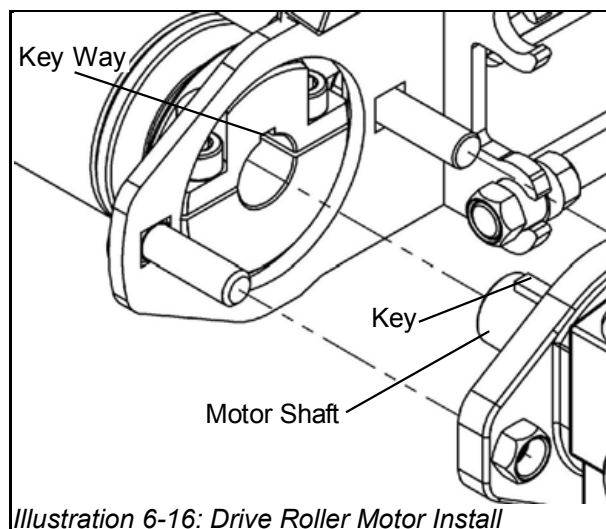


Illustration 6-16: Drive Roller Motor Install

Draper Deck Maintenance:

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



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.

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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.

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

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 - 41 ft-lb (55 Nm)

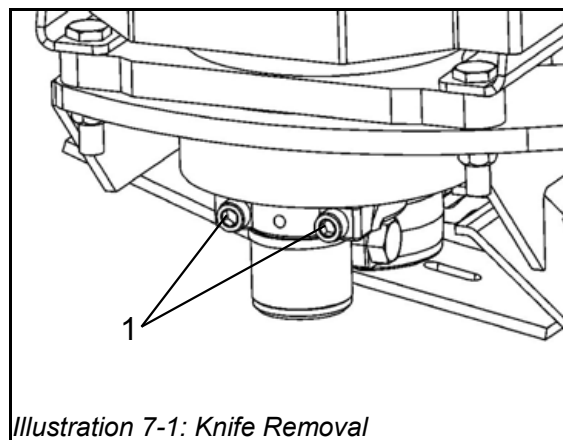


Illustration 7-1: Knife Removal

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:

- | | | |
|--|------|---|
| <ol style="list-style-type: none">1. Remove the guard to expose the section.2. Unbolt the section and install a new one.3. Tighten the section bolts and nuts.4. Install the guard. | -OR- | <ol style="list-style-type: none">1. Turn the knife by hand until one section bolt is exposed.2. Remove the bolt.3. Turn the knife until the other bolt is exposed.4. Remove it, and install a new section by reversing this procedure.5. Tighten section bolts and nuts. |
|--|------|---|



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

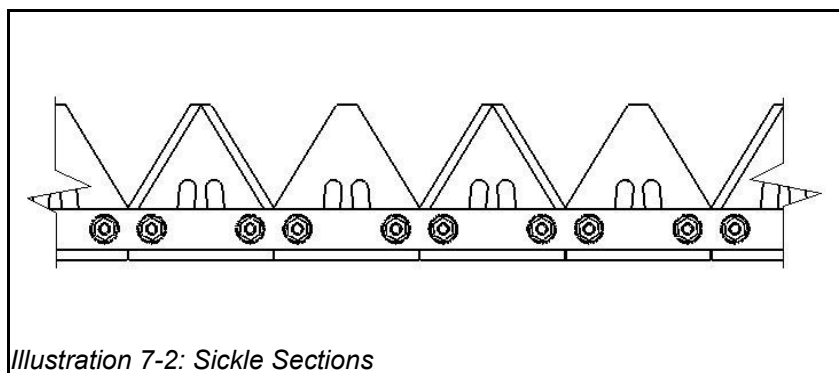


Illustration 7-2: Sickle Sections

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.

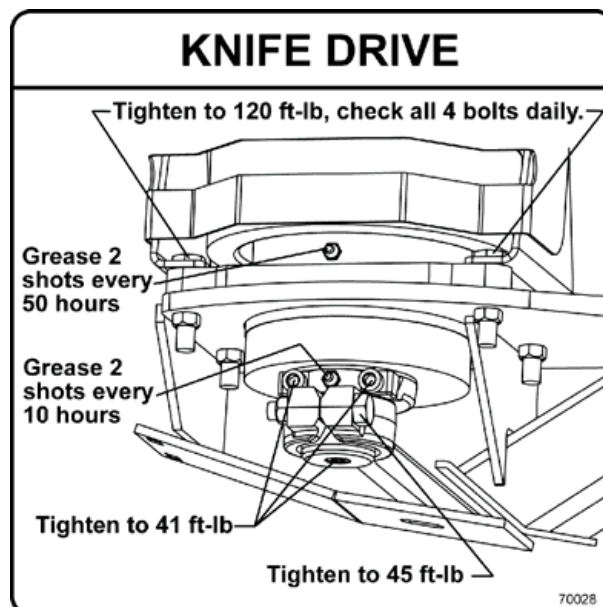


Illustration 7-3: Knife Drive - Detail



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.)

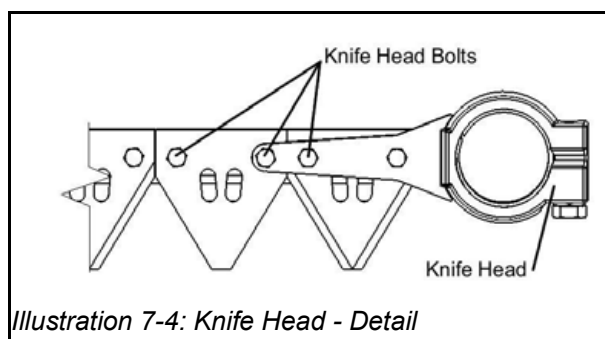
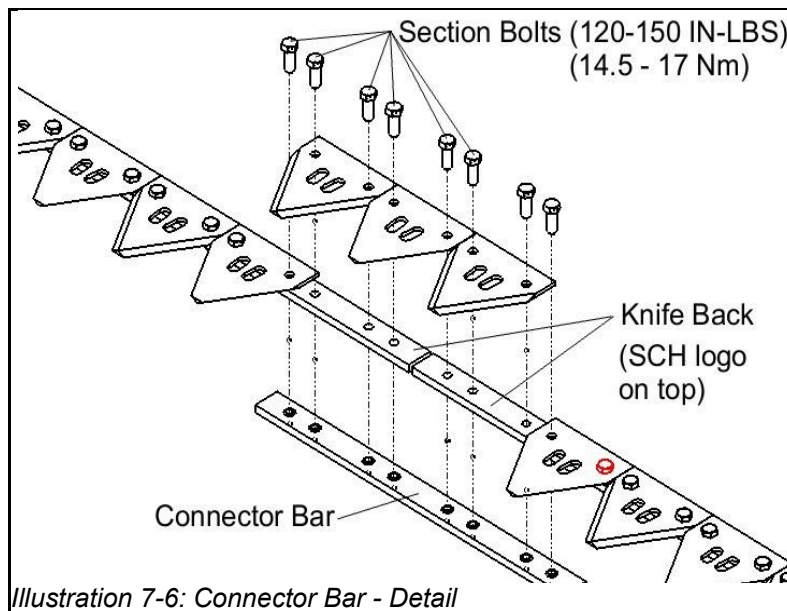
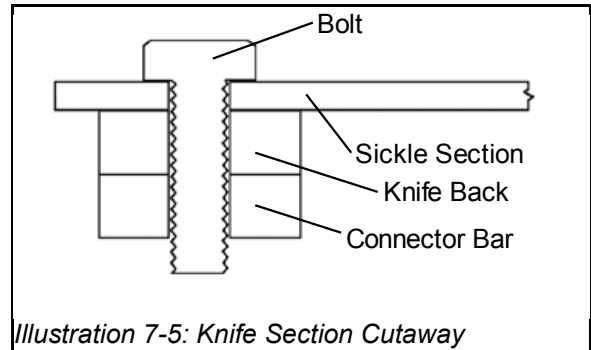


Illustration 7-4: Knife Head - Detail

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).



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.

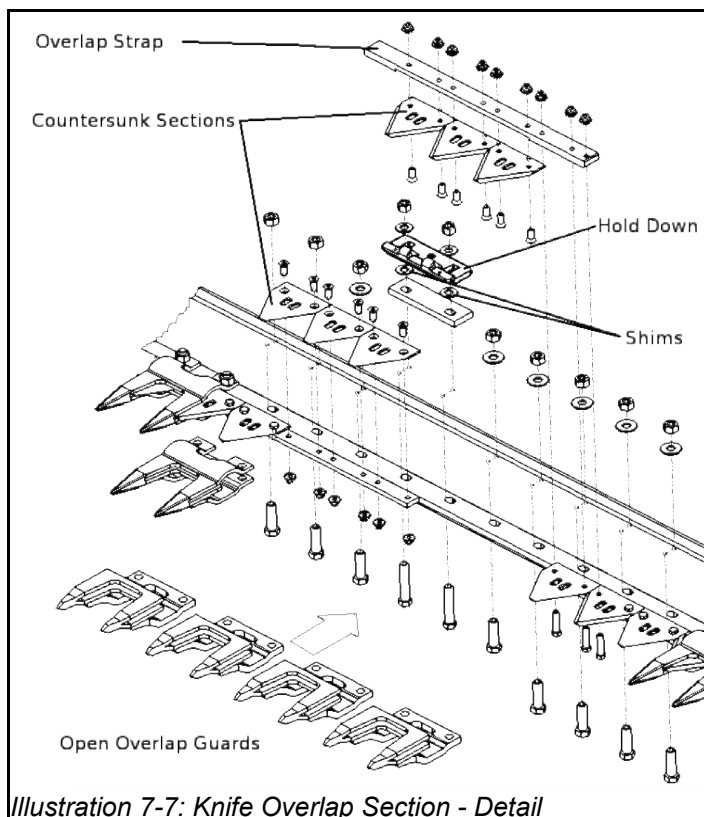


Illustration 7-7: Knife Overlap Section - Detail

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.

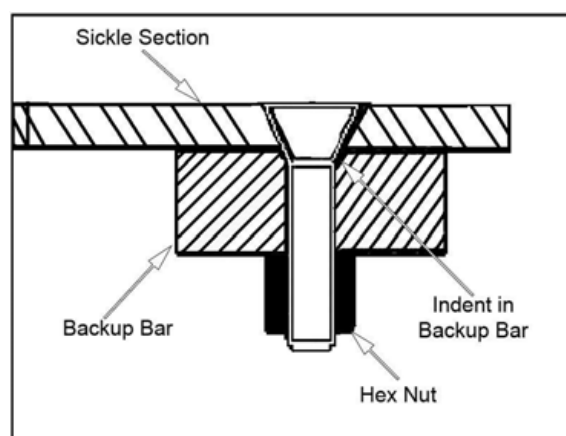


Illustration 7-8: Knife Back Insert

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.

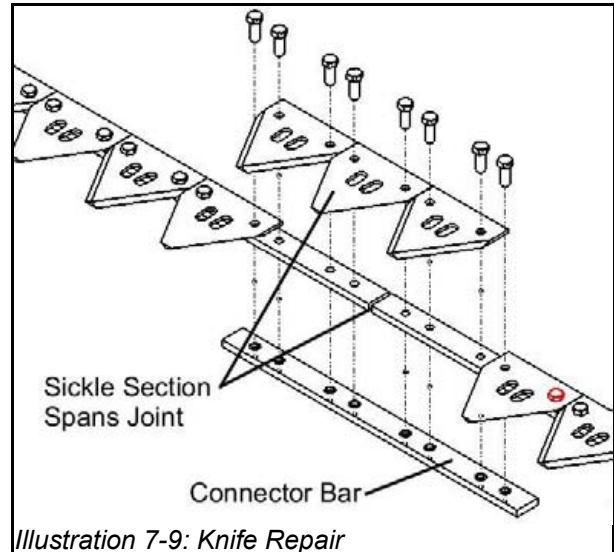


Illustration 7-9: Knife Repair



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.

The reel speed option on this panel is now used to select the knife speed function.

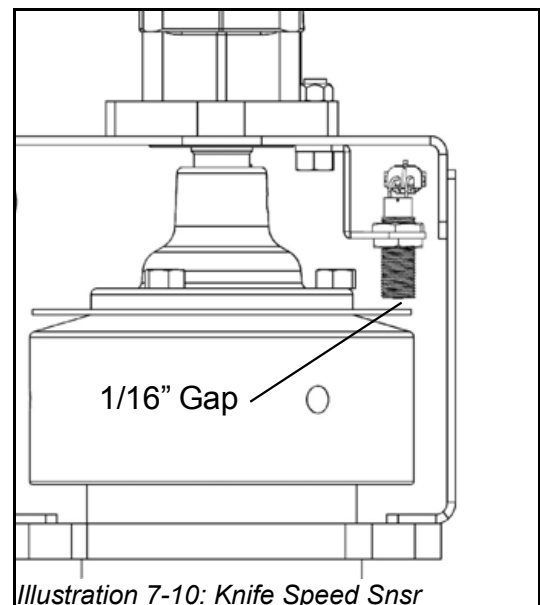


Illustration 7-10: Knife Speed Snsr

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 (A400, R450, 4895 and 4995) come standard with the hydraulic tilt top link. The 4895 and 4995 swathers also come with the manual top link which can be used if desired.

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.

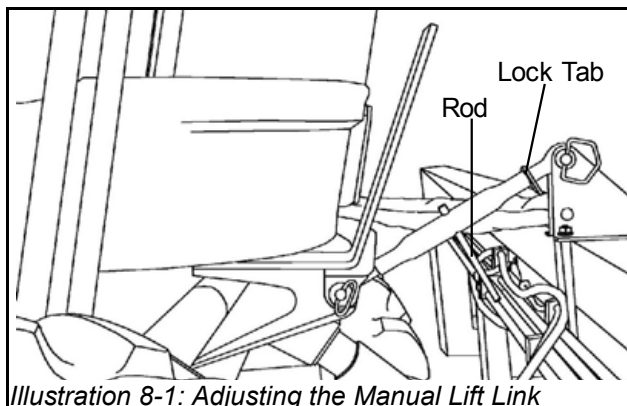


Illustration 8-1: Adjusting the Manual Lift Link

Forward Angle Adjustment – Hydraulic Top Link

1. Once all the proper hydraulic connections are made, you can simply tilt the table using the in-cab controls as shown to the right.

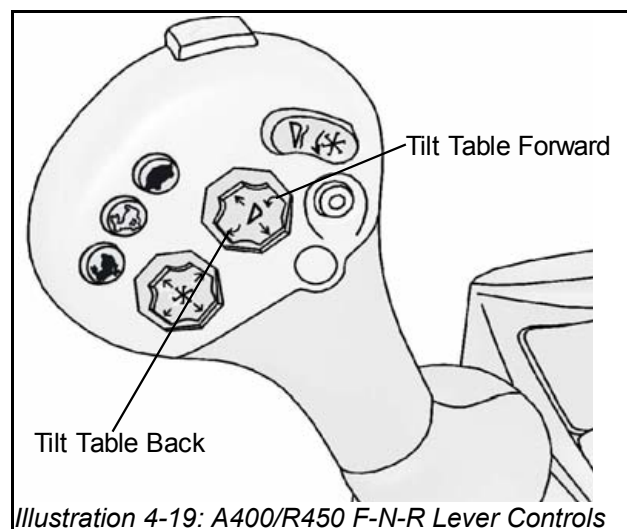


Illustration 4-19: A400/R450 F-N-R Lever Controls

Table Angle

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

Illustration 8-2 shows the top link fully retracted, drawing the top of the table back. The draper decks will run more horizontal to the ground.

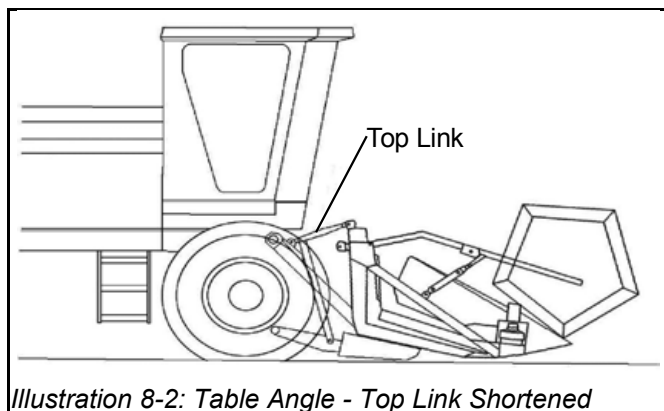
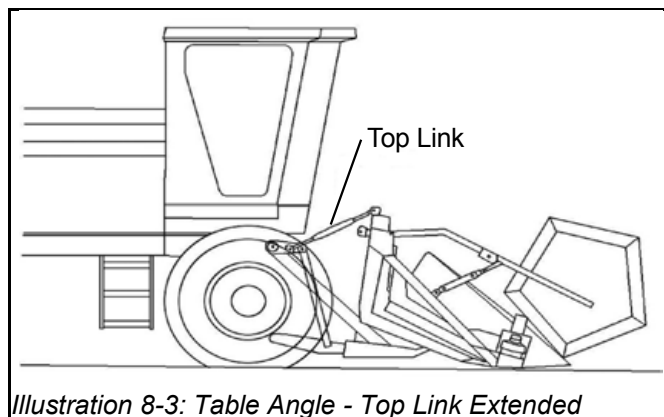


Illustration 8-3 shows the top link fully extended, tilting the table forward. The draper decks will run at a steeper angle to the ground.



*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.

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.



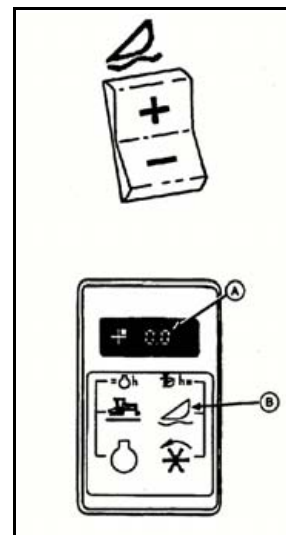
Float pressure is displayed in increments of 10 psi.

2. For 4895 and 4995 tables:

- a) Press platform float function (B) on the digital tachometer.
- b) For 4895 and 4995 tables, press and release '+' on the float switch until platform starts to move upward.
- c) Back off the psi reading, on the digital display (A), 100 psi by pressing and releasing '-' on the float switch.

3. For A400 and R450 tables:

- a) Press the platform float function on the F-N-R Lever. You can find details on the A400 and R450 F-N-R lever in Illustration 4-6: R450 in-cab controls on page 78.
- b) Slowly turn the rotary adjuster on the cab console clockwise until the platform starts to move upward.
- c) Back off the psi reading by slowly turning the rotary adjuster counterclockwise.



4. Raise and lower the swather table several times.
5. With the swather table on the ground, stop the engine.
6. 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.
7. Adjust float pressure as needed and repeat steps 5 through 7 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.

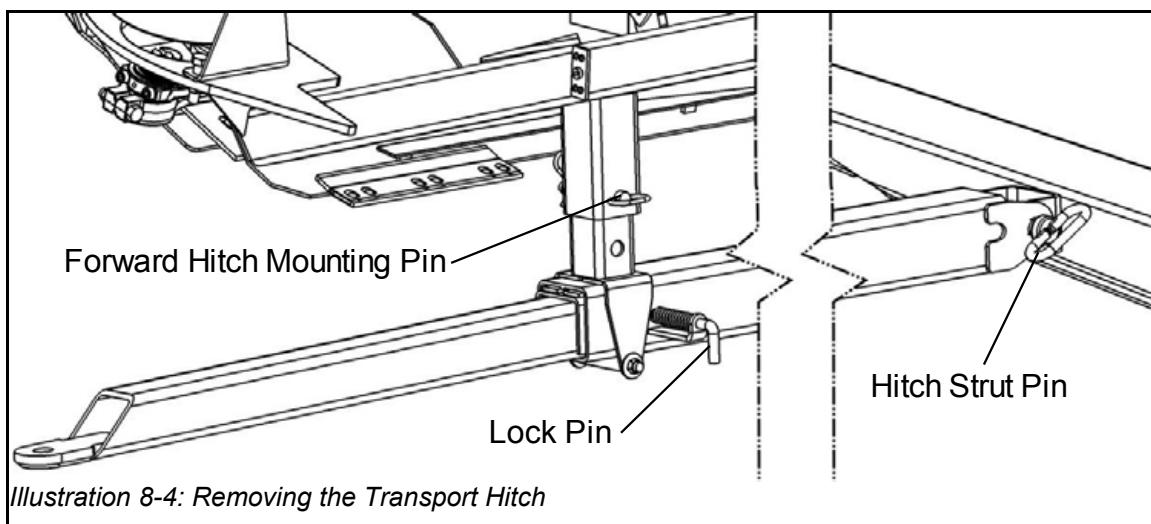


IMPORTANT

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.



Option 2 - Switch the lift arm float cylinders**IMPORTANT**

Before you begin this option, refer to the JD Windrower Float Cylinder Recommendation with Honey Bee on page 24 for important recommendations.

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.

1. 6MF-8MB
2. 6MB-8FB
3. 8MB-10MF-90°
4. 8MB-8MF-90°
5. 6MB-8MF-90° (from rod-end port of 2.75 inch cylinder.)

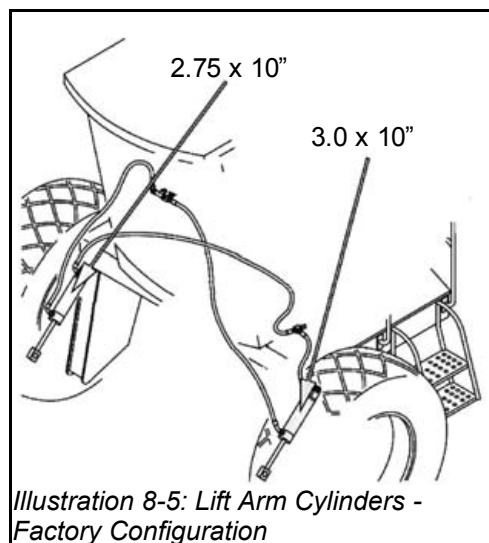


Illustration 8-5: Lift Arm Cylinders - Factory Configuration

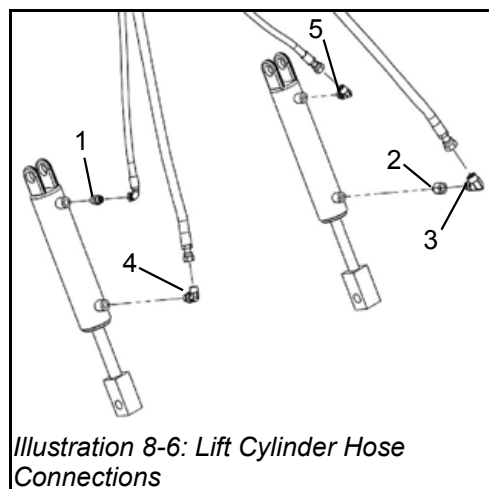


Illustration 8-6: Lift Cylinder Hose Connections

**IMPORTANT**

Please study the information on page 24 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.

JD Windrower Float Cylinder Recommendation with Honey Bee

This table can be found on page 24. In the Installation chapter.

Option 3a - Adjust the set screw on the float cylinders (Only for 4895 and 4995)

1. At the top of the float cylinders on both lift arms, there is a bolt used to set the point from which the cylinder lifts on the windrower.
2. Adjust these screws, alternately raising the low side and lowering the high side, until the swather sits level.



Illustration 8-7: Float Cylinder Set Screw

Option 3b – Adjust position of float cylinders (Only for A400 and R450)

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.

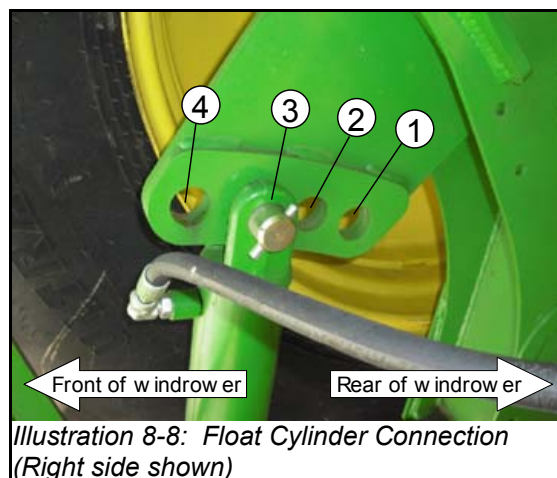


Illustration 8-8: Float Cylinder Connection (Right side shown)



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.

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 set to run the table hydraulics.

Flow Controls

A 10GPM (37.8LPM) flow control is used for the drapers, while a 20 GPM (75.6 lpm) flow control is used for the reel. The "CF" (control flow) port of the draper flow control goes to the draper motors. The "CF" (control flow) port of the reel flow control goes to the reel motor. The "EF" (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.

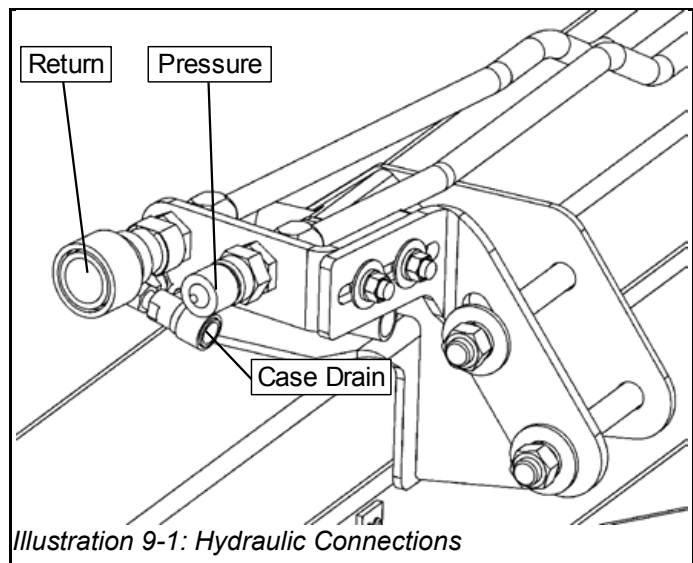
Quick couplers must be securely connected before the windrower is started, and power is applied to the swather. Serious injury, and/or damage to equipment may result from poor connections.

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 must be used.



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 is normal for pressure to fluctuate while cutting, due to changing 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 "0".
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 manifold block. Adjust the relief screw; turning clockwise will increase, and counter-clockwise will decrease the pressure.
2. Adjust the relief screw to the retaining ring; this should give the maximum relief of 3000 psi.
3. With the knife jammed as described previously, restart the windrower, engage the hydraulic pump drive, and re-check the pressure reading.

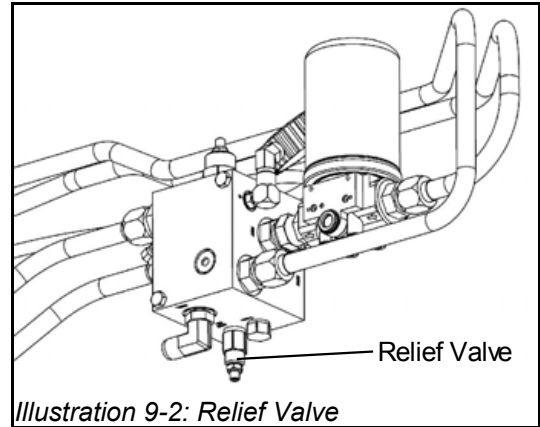


Illustration 9-2: Relief Valve

Flow Control Setting.

There is a separate hydraulic flow control for both the draper and reel, however they should both be set the same way.

With the stop bolt on the flow control pointed to the CF port or the 0 (Zero) setting, the groove on the adjustment should be pointed towards the 10 (Ten).

The location of the flow control for the draper and the reel hydraulic systems is described on the following pages.

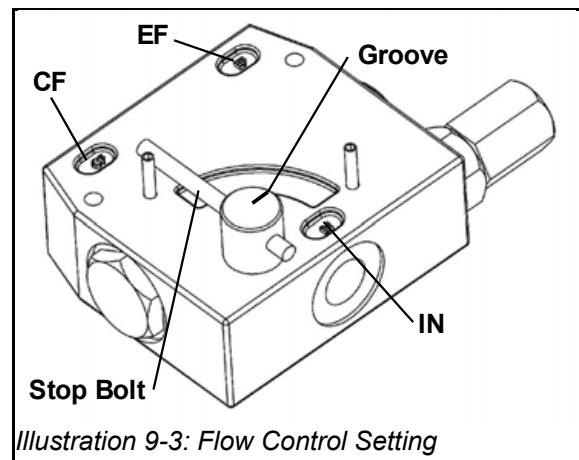


Illustration 9-3: Flow Control Setting

Draper Relief Pressure

The draper circuit flow control is equipped with a preset relief valve which can be adjusted up to 2800 PSI (193.1 bar). If an excessive amount of oil is passing over the relief, a squeal may be heard, and the drapers may stall.

Adjusting Relief Pressure

Locate the flow control, behind the speed control box. See the illustration shown to the right for reference.

Remove the cap (acorn nut) over the relief adjustment screw, loosen the lock nut, and turn the screw clockwise to increase the relief pressure.

Re-check draper operation after each 1/4 turn of adjustment.

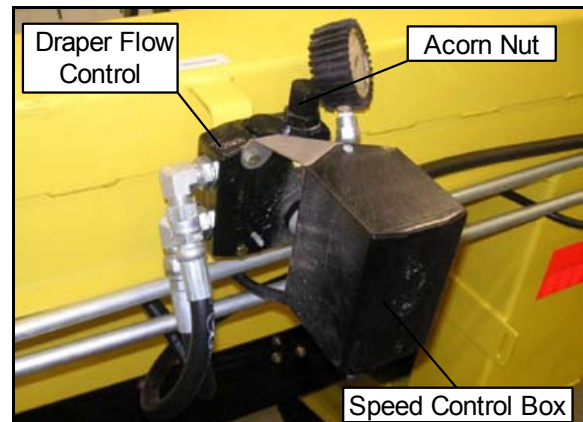


Illustration 9-4: Draper Speed Control



NOTE

Normal operating pressure for the draper circuit, with warm oil, and the flow control set at eight, should be within 1200-2200 psi.



CAUTION

Setting the draper relief pressure too high may cause damage if a foreign object gets caught in the mechanism.

Reel Speed Control

Reel speed is controlled by an electric motor attached to a 20 gpm (75.7 lpm) flow control. The motor is actuated by a switch in the cab.

Oil flow to the reel is supplied from the return flow from the knife drive motor.

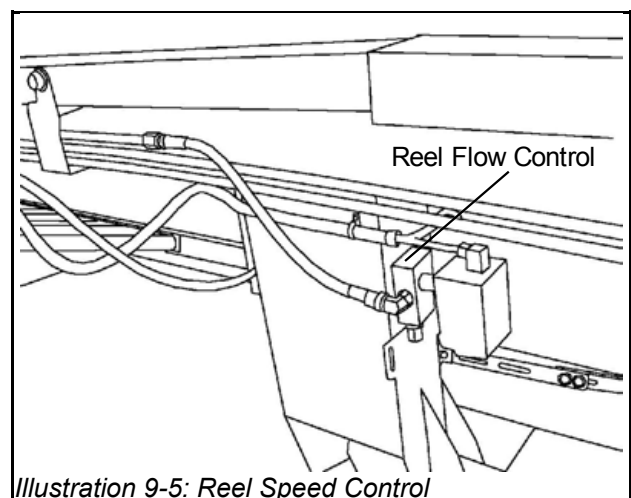


Illustration 9-5: Reel Speed Control

Reel Relief Pressure

The flow control for the reel speed circuit, is equipped with a factory preset relief valve. If excessive oil is passing over the relief valve, a squealing noise may be heard, or the reel may stall.

Adjusting the Relief Pressure

Remove the cap (acorn nut) over the relief adjustment screw, loosen the lock nut, and turn the screw clockwise to increase the relief pressure.

Re-check reel operation after each 1/4 turn of adjustment.



Increasing the relief pressure will not increase reel speed.



Setting the reel relief pressure too high may cause damage if it contacts a solid object.

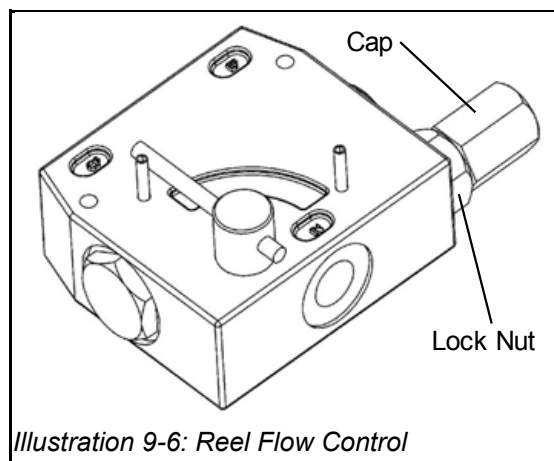


Illustration 9-6: Reel Flow Control

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.

A partially plugged oil filter can adversely affect the flow of oil in the system.

Change the return line hydraulic filter after the first 50 hours of operation and seasonally thereafter.

Compatible Replacement Filters:

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

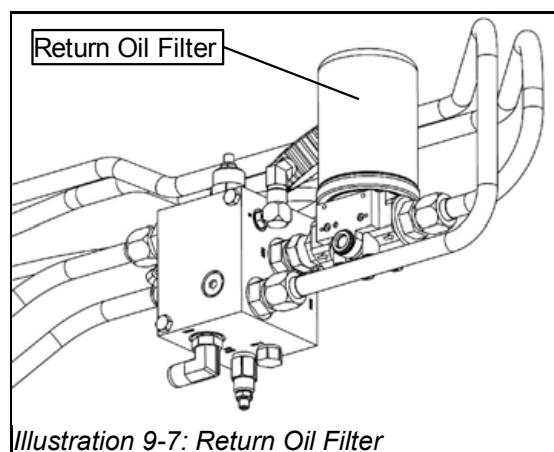


Illustration 9-7: Return Oil Filter

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.

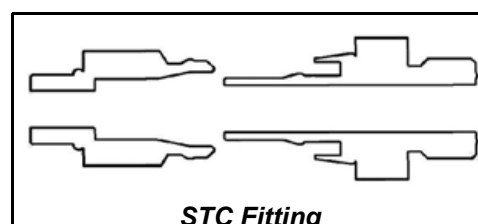
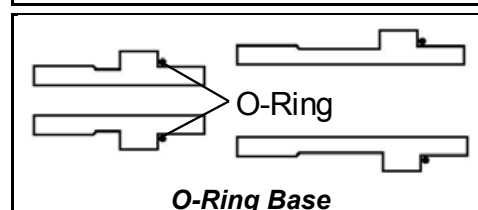
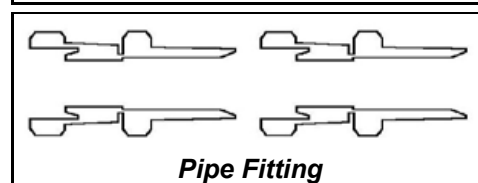
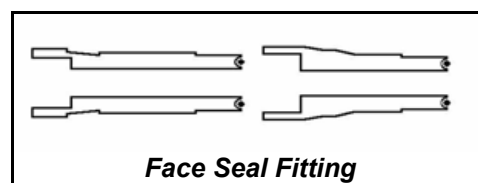
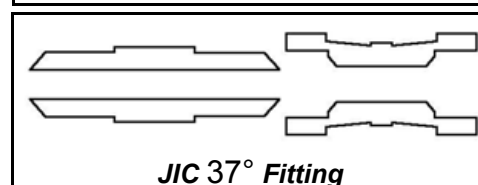
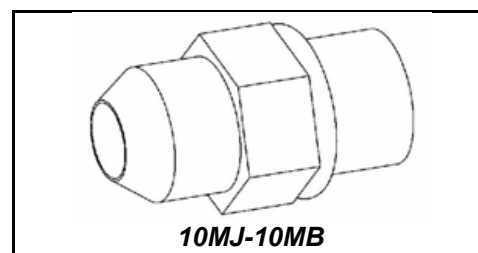
A 'T' fitting will be named in the following format:

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

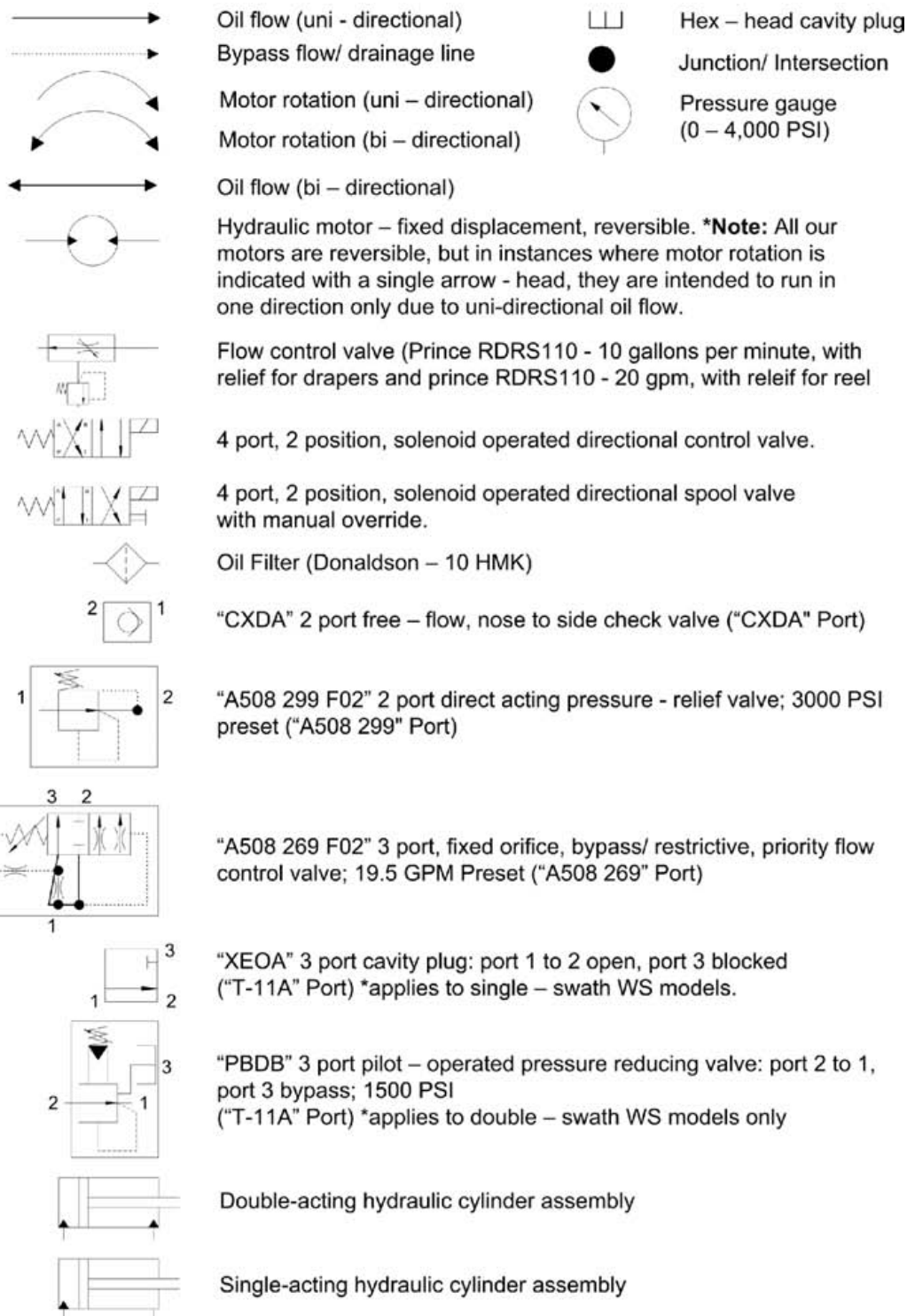
The center set of characters describes the middle port on the 'T' fitting.

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

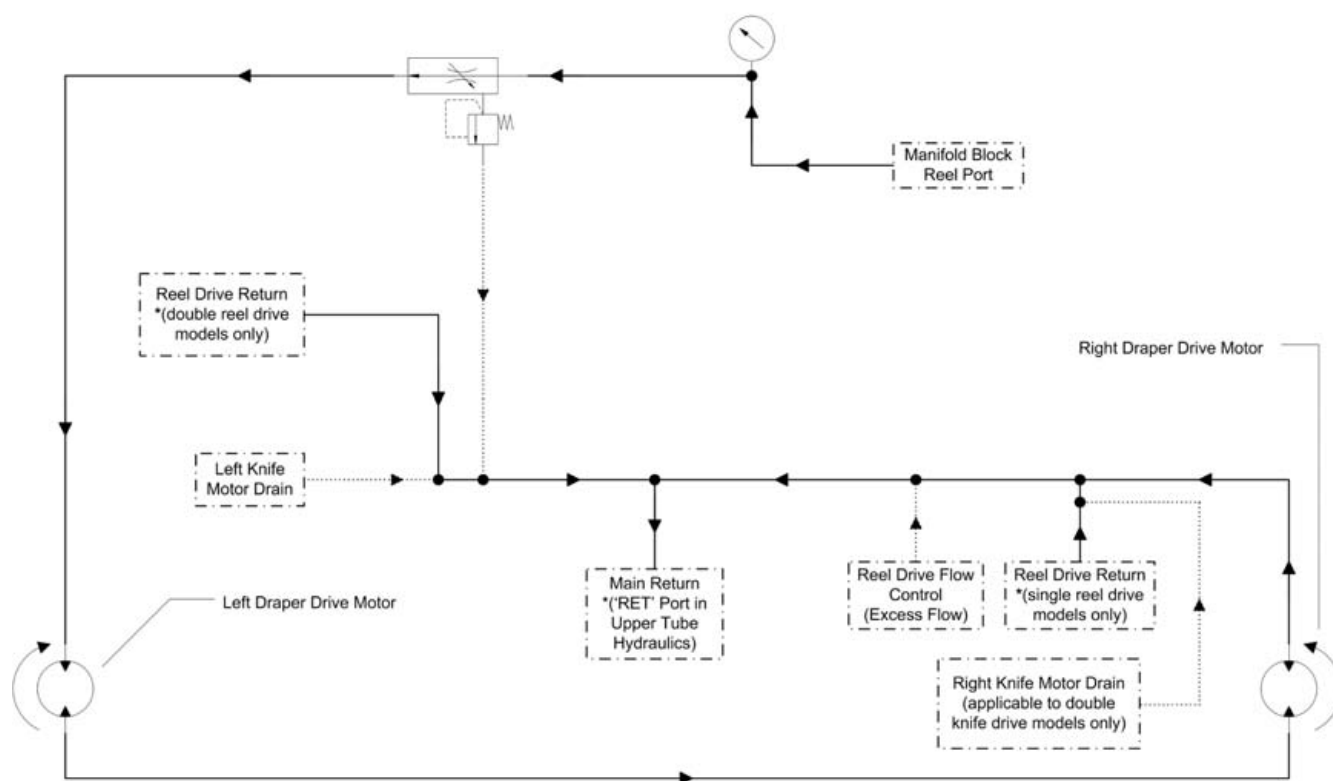
Hydraulic Fitting Types		
Prefix	Suffix	Description
M or F	J	JIC 37° flared connectors
M or F	F	Face Seal
M or F	P	Pipe Fitting
M or F	B	O-Ring Base
F only	X	Swivel (no image shown)
M or F	STC	Snap To Connect



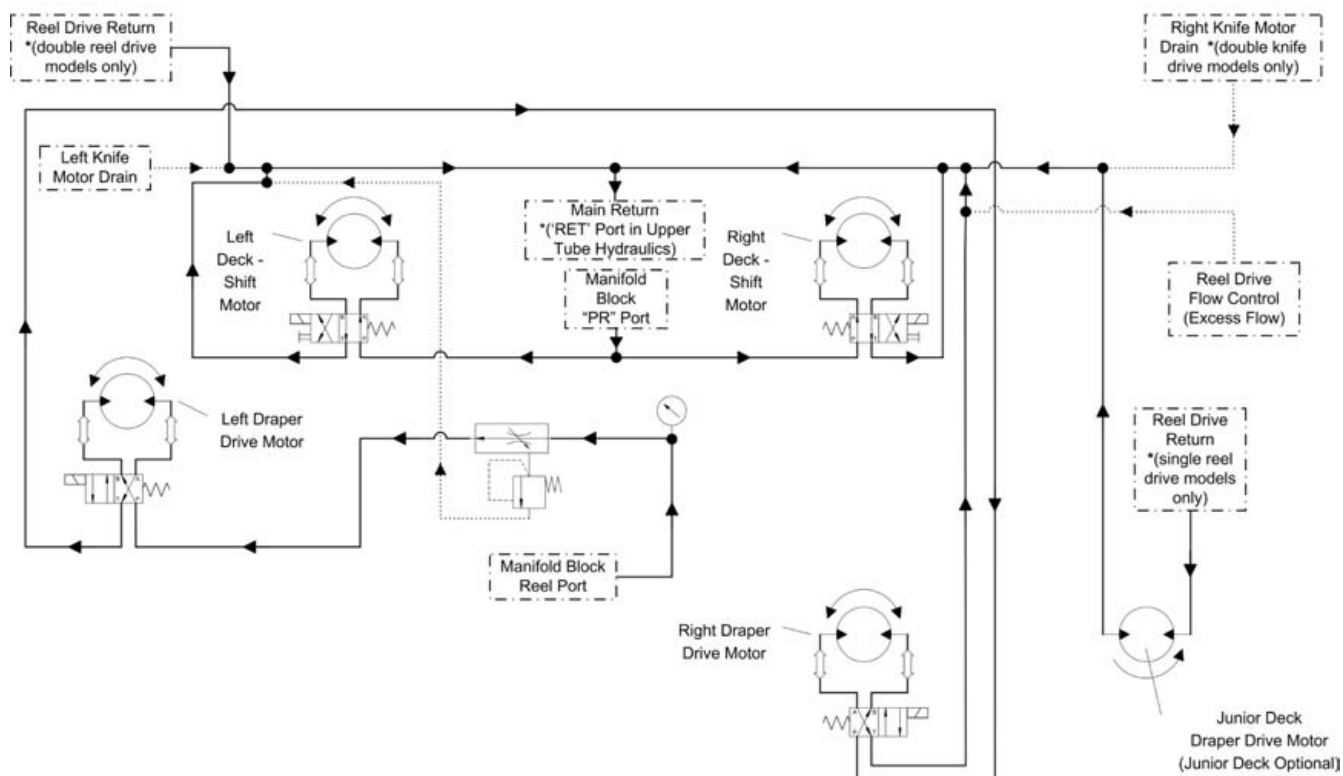
10 - Hydraulic System Schematics



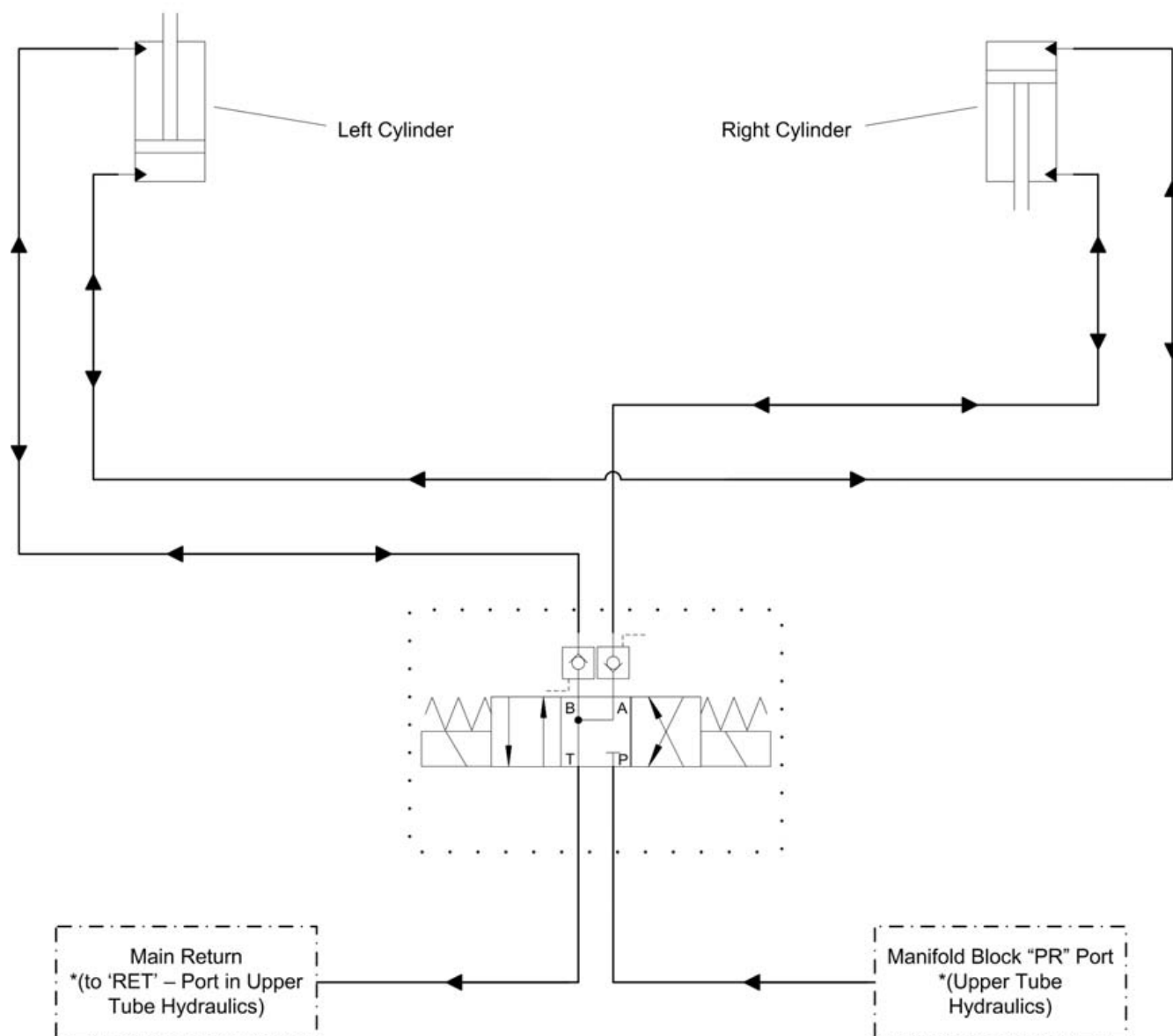
Draper Drive – Single Swath (WS Models)



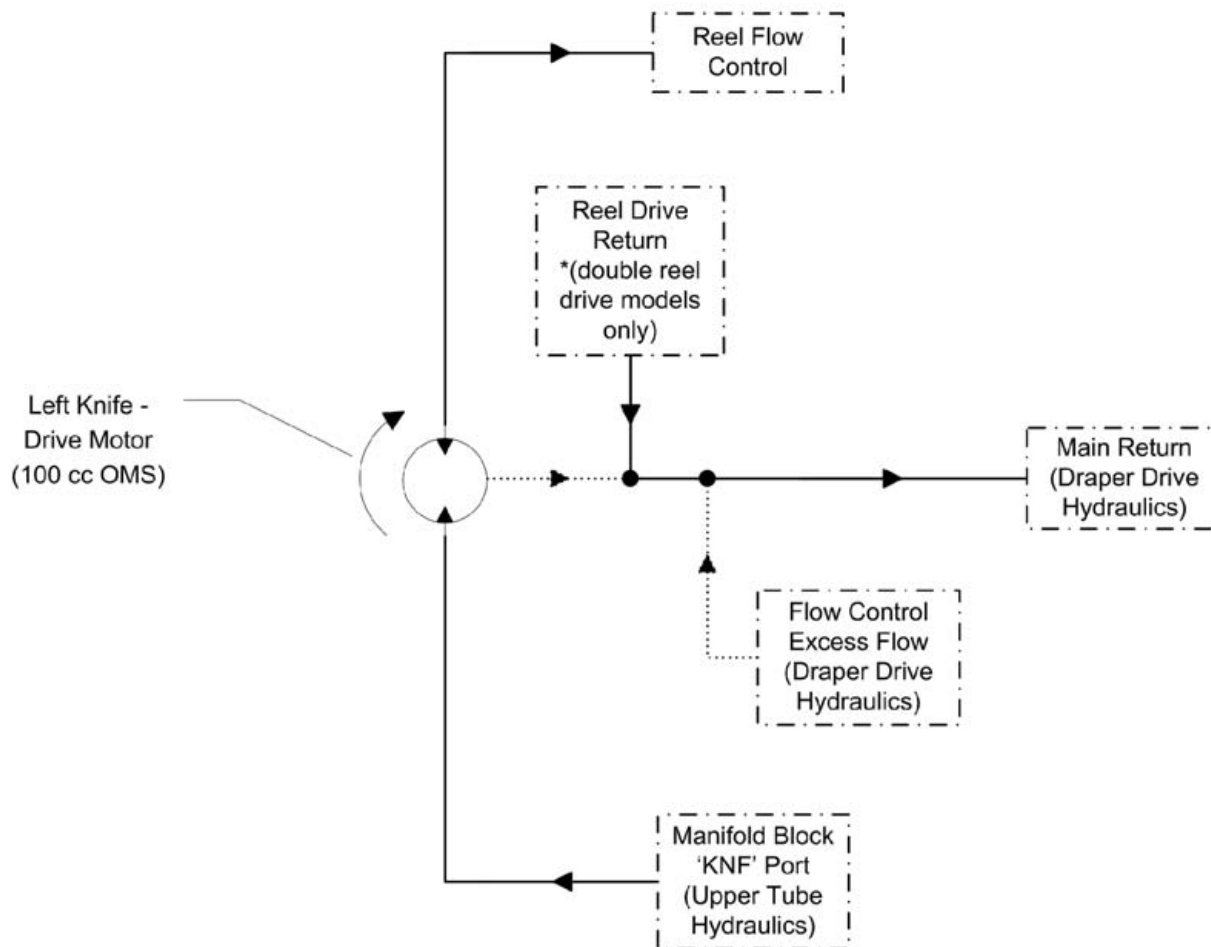
Draper Drive 21-36ft Double Swath (WS Models)



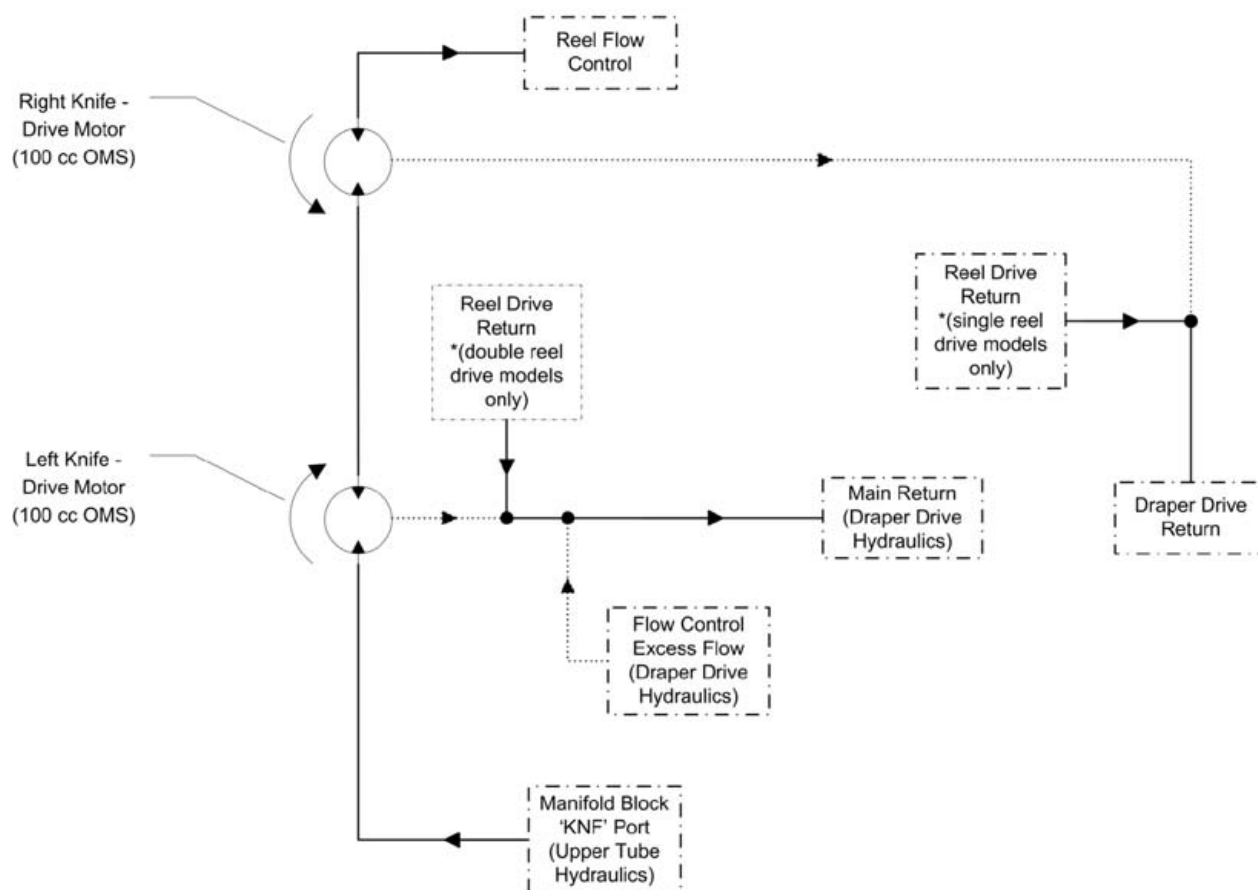
Fore & Aft Assembly – Solid Reel (WS Models w/Hydr. Solenoid Kit)

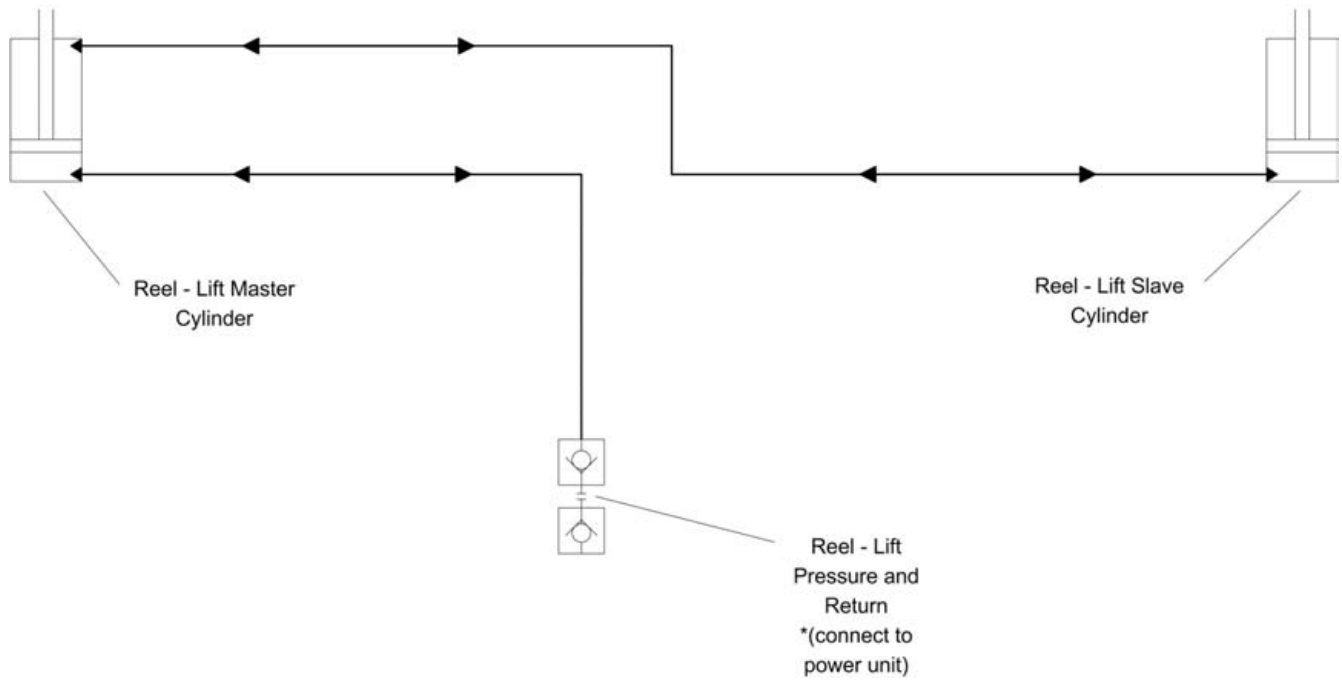


Single Knife - Drive

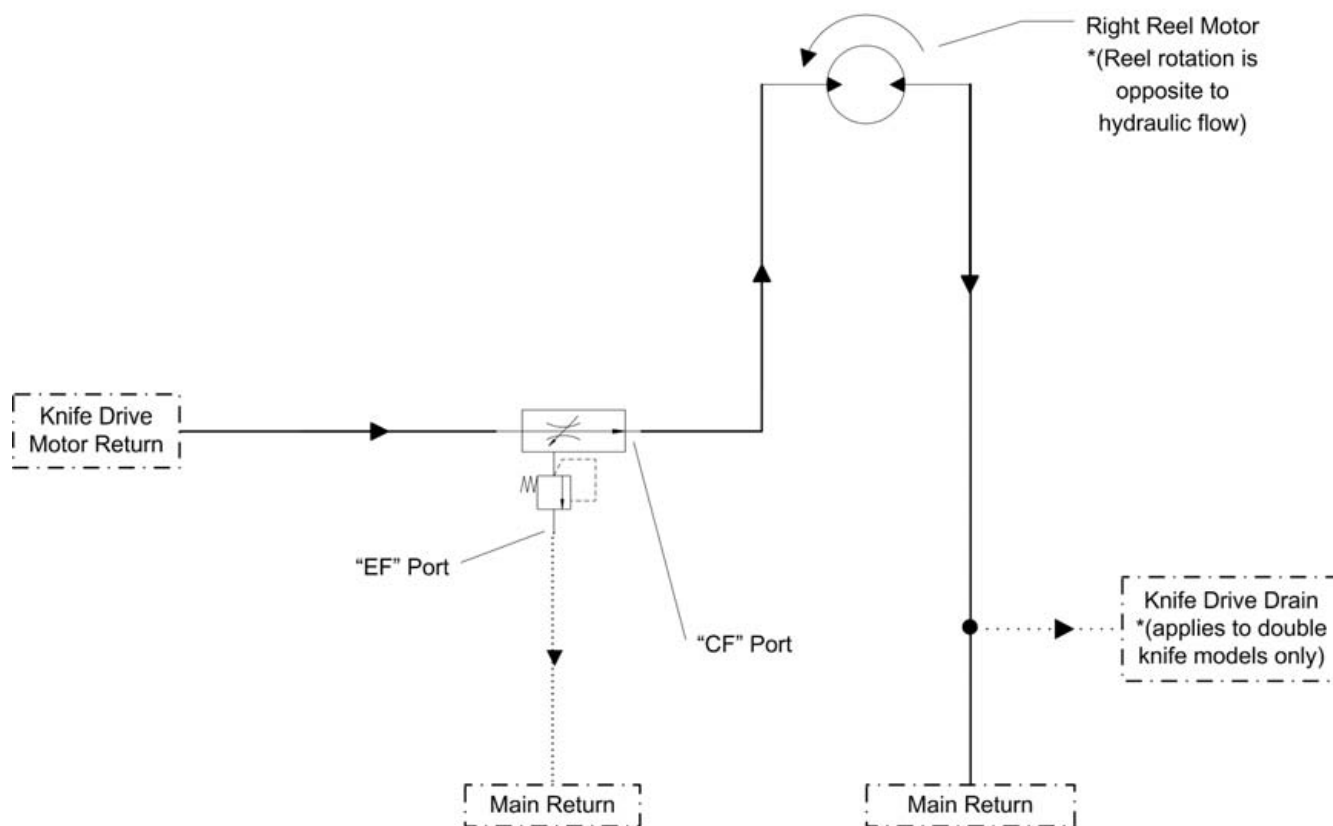


Double Knife – Drive

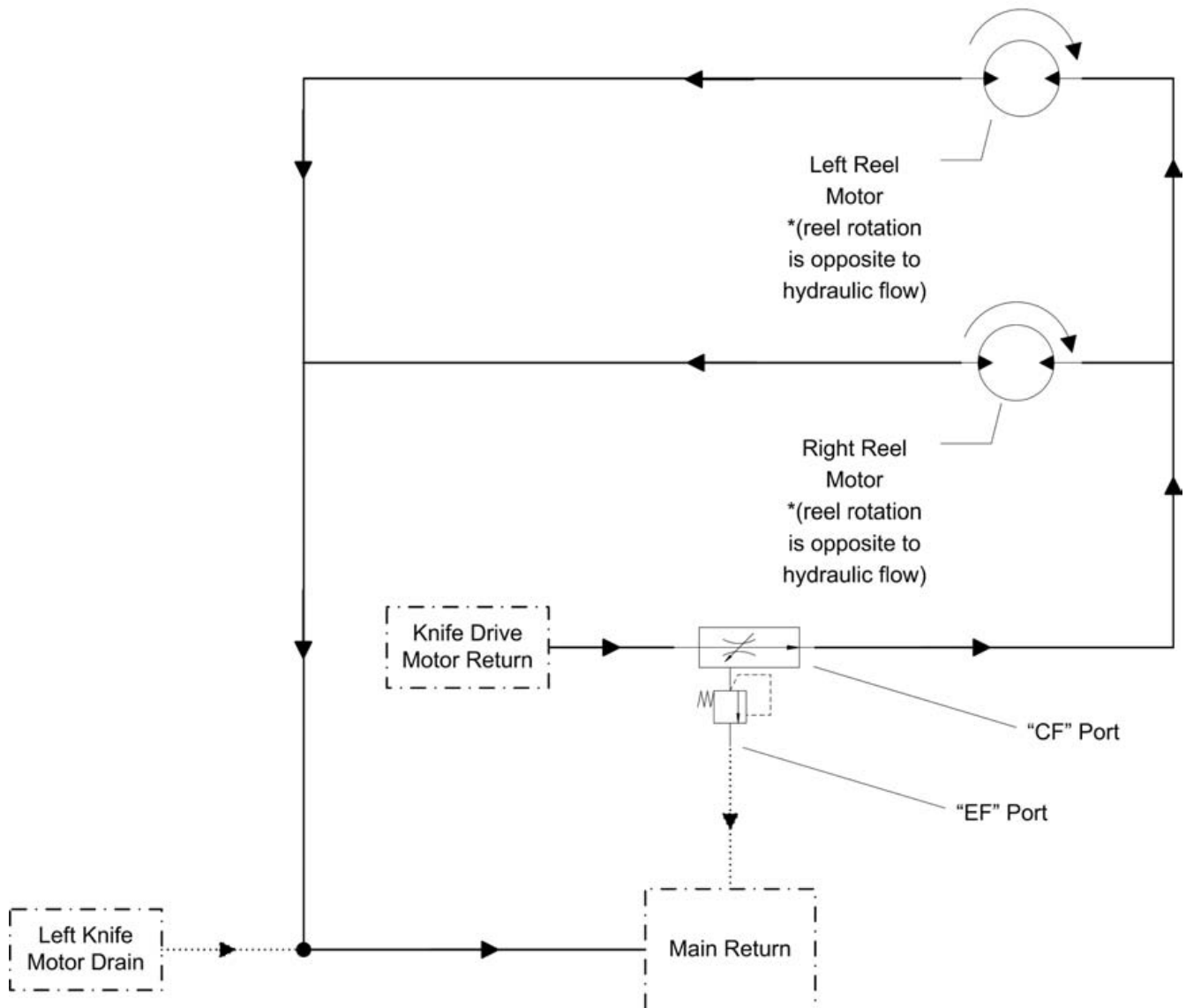


Reel – Lift (Solid Reel)

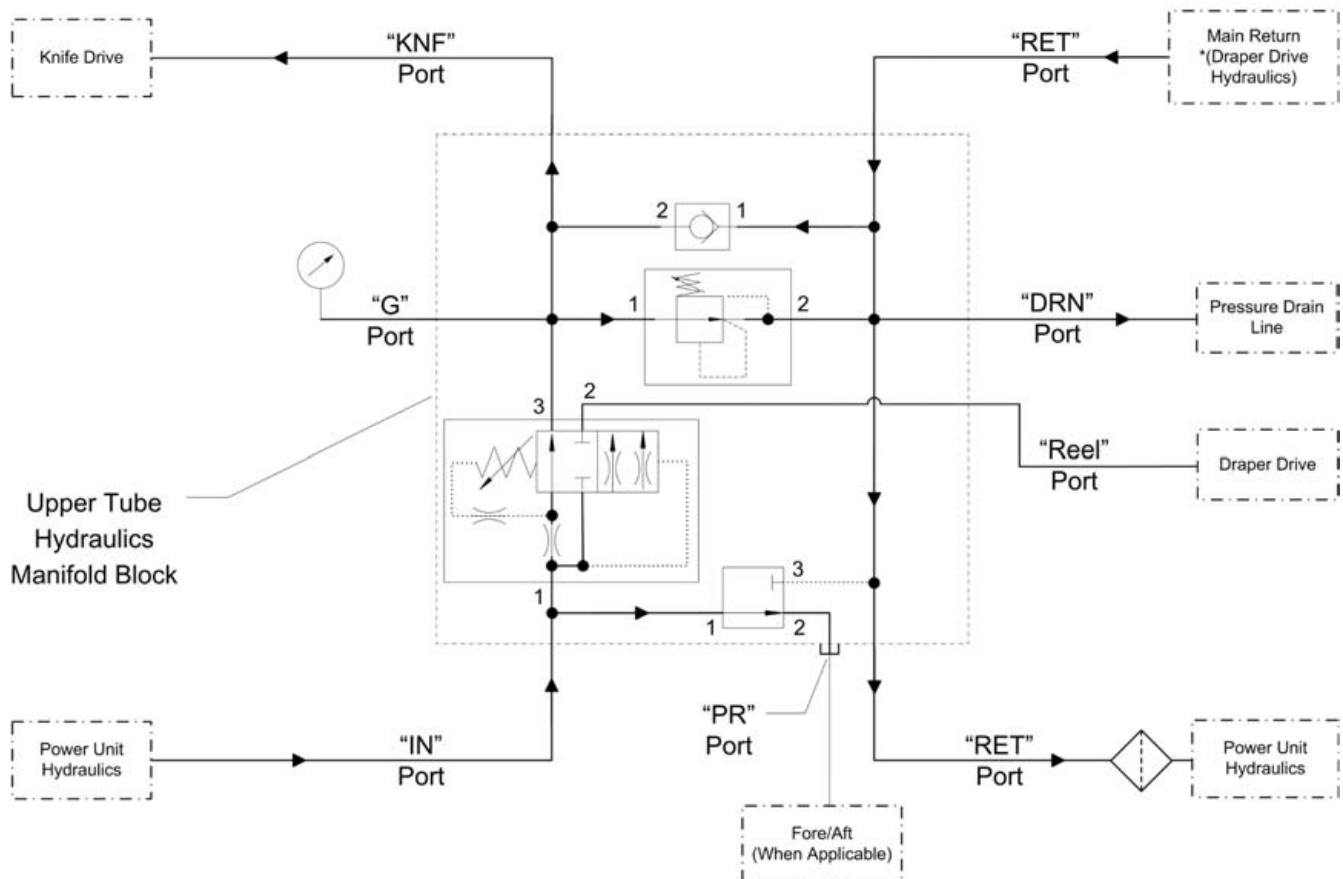
Single Reel Drive – WS Models



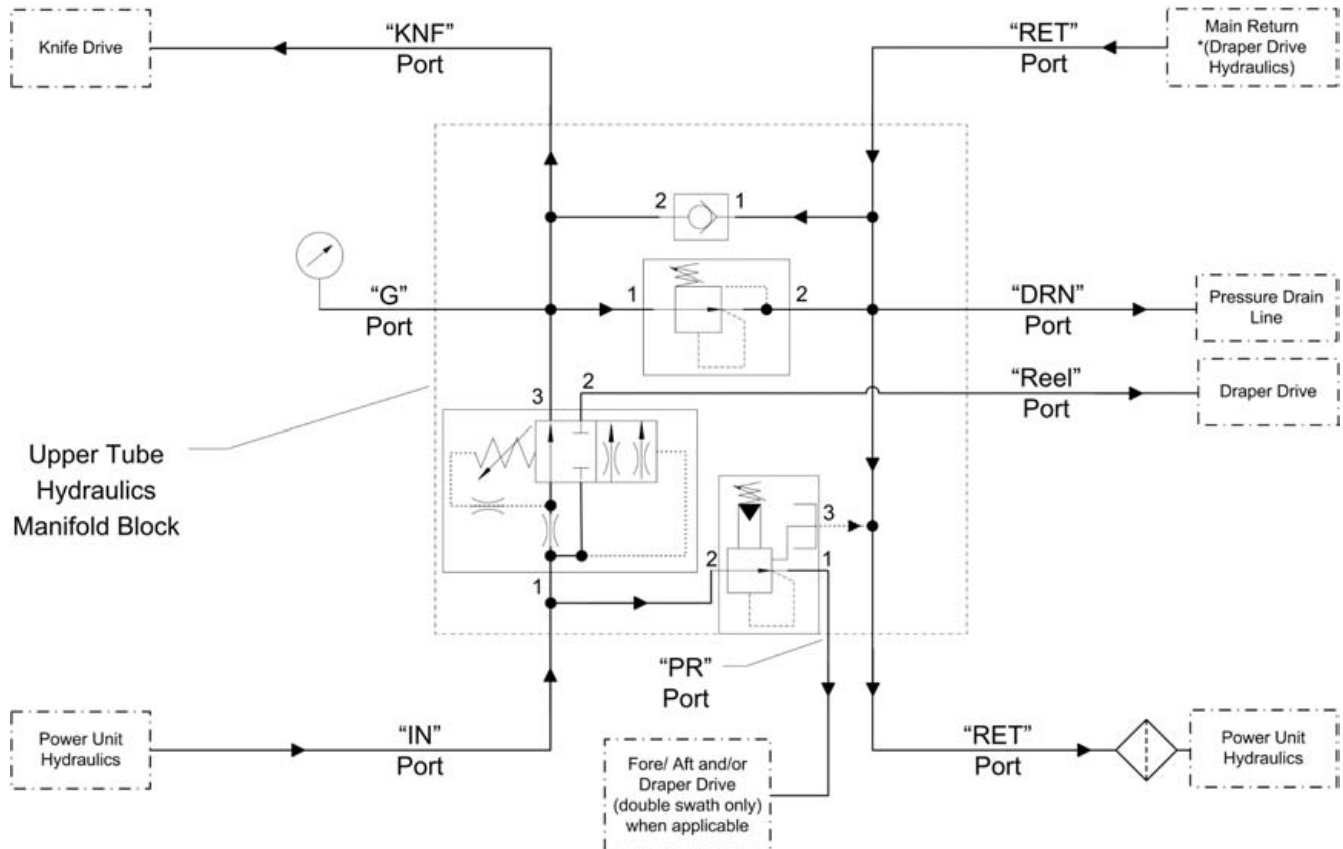
Double Reel Drive (Parallel) – WS Models



Upper Tube Hydraulics Single Swath (WS Models w/Direct Block Drainage)



Upper Tube Hydraulics Dbl Swath (WS Models w/Direct Block Drainage)



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11 - 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. 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 wheels must be adjusted with the knife set at field operating height. Normal adjustment compresses the spring shafts of the gauge wheels approximately 1.5" (38mm) to 2.0" (50mm). Two adjustments are incorporated into the design of the gauge wheel assemblies.

- Top-mount lugs on the back of the swather frame.
- Screw type Jack with height indicator.

Gauge Wheel Height Adjustment

1. Retract the gauge wheel jack to its lowest position, pointer should be above the “1” mark.
2. Set the gauge wheel into one of the mounting holes on the table (usually the second hole from the top).
3. Adjust the swather table height until the cutter bar is at an average cutting height for the crop being cut. ie. desired stubble height.
4. Lower the gauge wheel assembly to the ground using the screw jack.
5. Repeat this procedure on the other gauge wheel assembly.
6. Check the amount of compression on the spring shaft of the gauge wheel assemblies, if incorrect, repeat steps (1) through (4) as described above until both springs are equally compressed within the specified amounts (1.5" (38mm) to 2.0" (50mm)).
7. It may be necessary to re-locate the pin in the top link to obtain satisfactory adjustment.

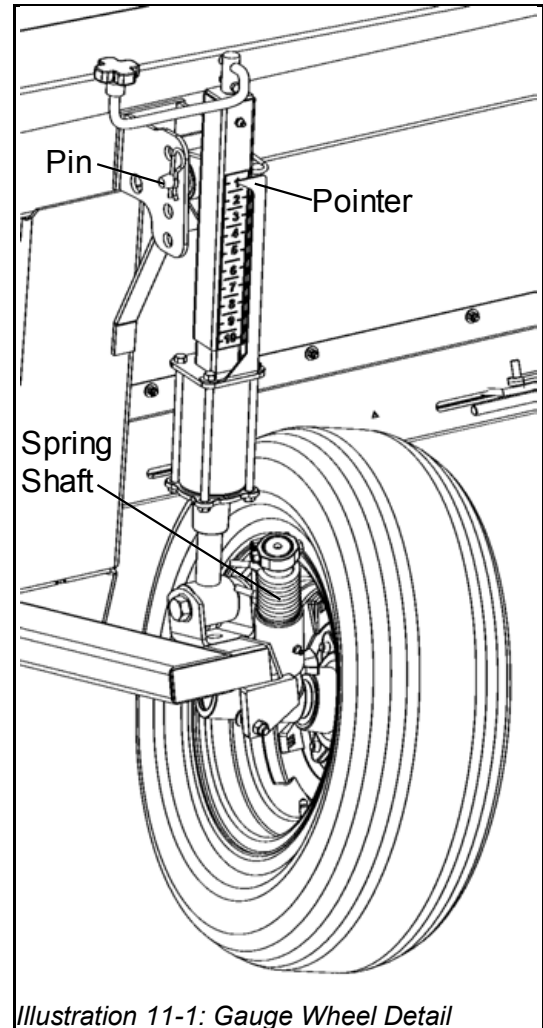


Illustration 11-1: Gauge Wheel Detail



Excessive compression of the spring tubes will add stress to the top link, causing premature wear.



Adjusting table tilt, spring floatation, and pitch will affect the amount of compression in the spring tubes. Further adjustments to the gauge wheels will be necessary.



IMPORTANT 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.

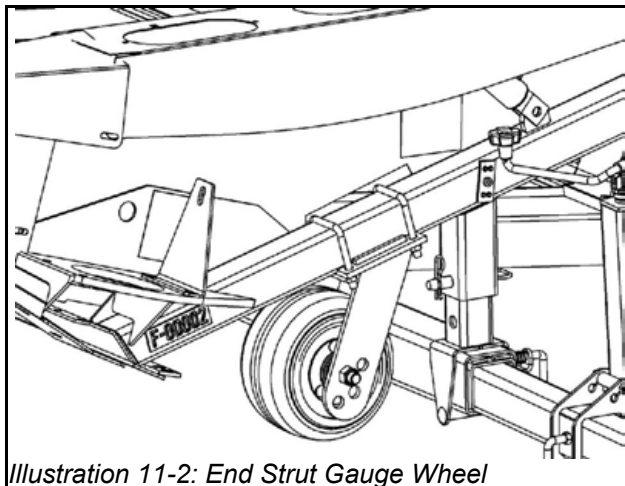


Illustration 11-2: End Strut Gauge Wheel



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 on for use in cutting entangled crops such as canola and peas and preventing the crop from being entangled on the ends of the cutting 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 left-hand crop cutter motor, to the power inlet of the right hand crop cutter motor to the main return line of the swather.

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.

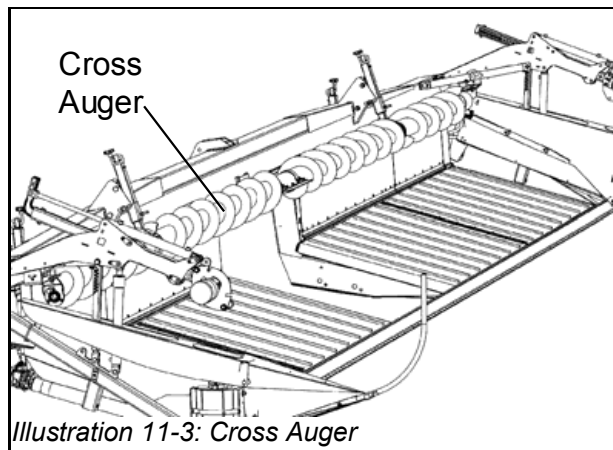


Illustration 11-3: Cross Auger

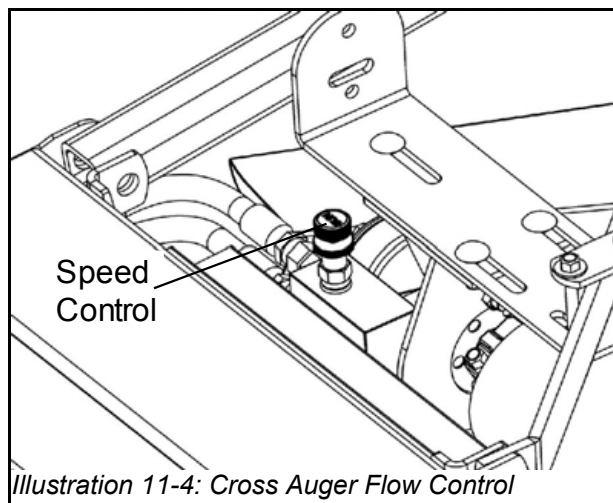


Illustration 11-4: Cross Auger Flow Control

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.

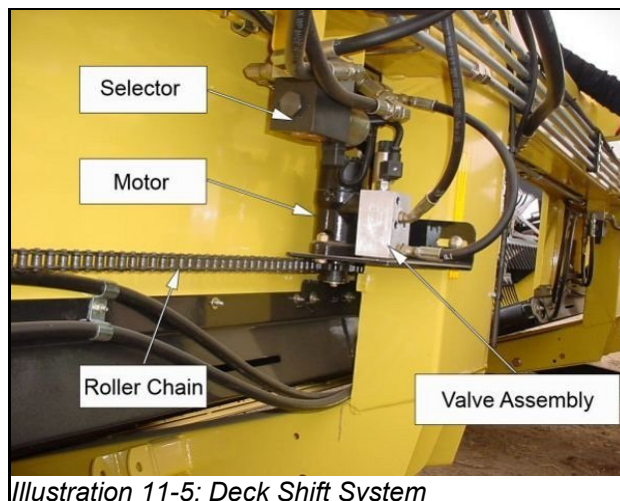


Illustration 11-5: Deck Shift System

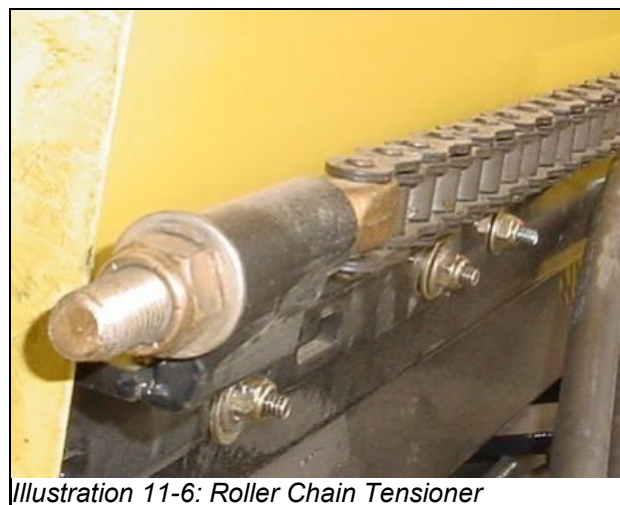


Illustration 11-6: Roller Chain Tensioner

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 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.

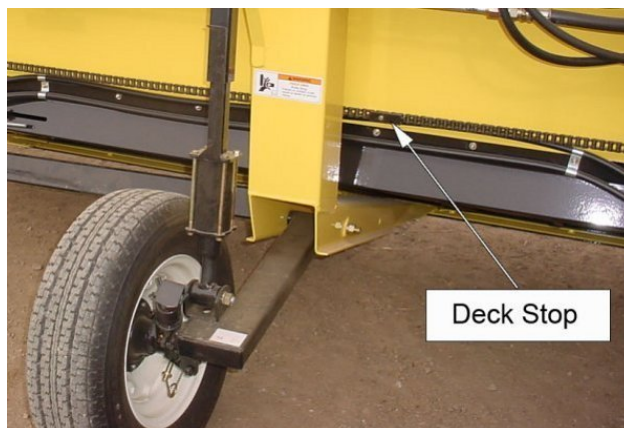


Illustration 11-7: Deck Shift Stops

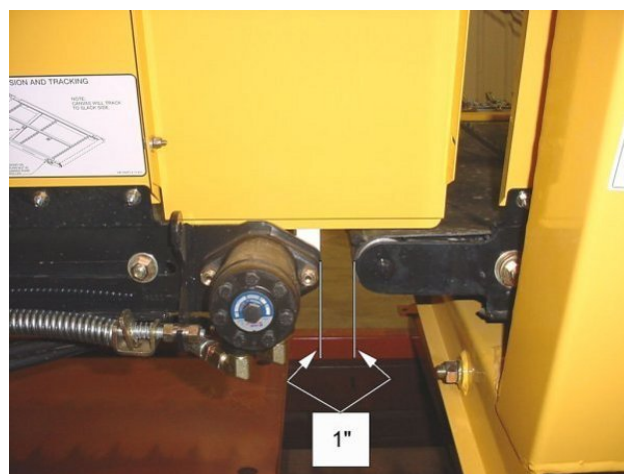


Illustration 11-8: Setting Deck Gap



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.

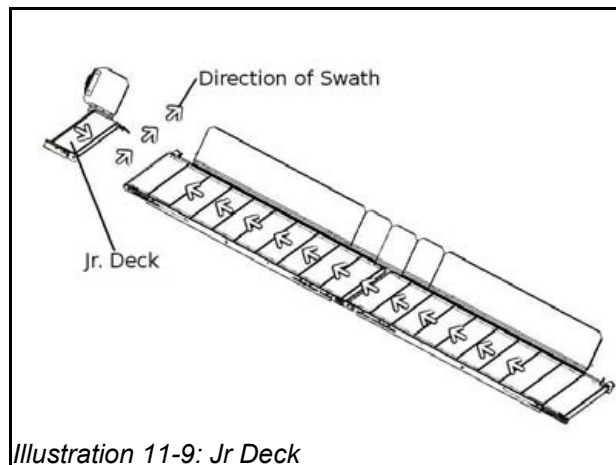


Illustration 11-9: Jr Deck

Steel Skid Plates

Steel skid plates are available for your swather unit as an add on option. They ensure your ability to hug the ground, without unnecessary wear to your swather.

These plates are located on the bottom of the cutter bar, bolted to the guard sections of the knife.

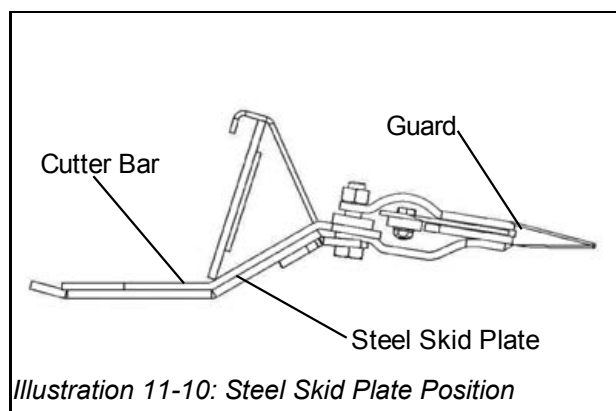


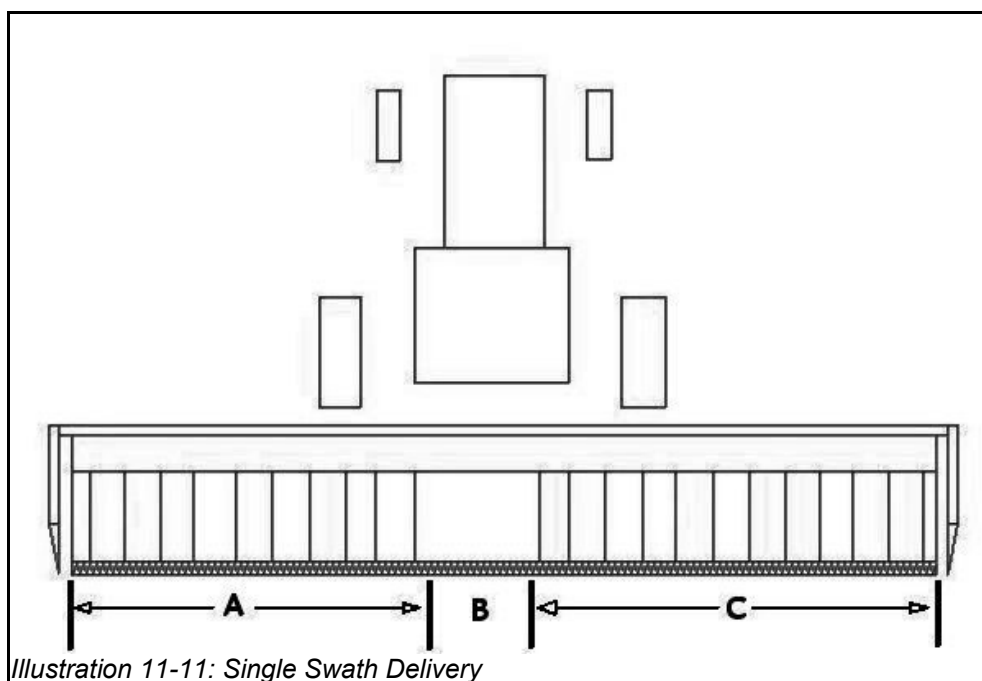
Illustration 11-10: Steel Skid Plate Position

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
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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.

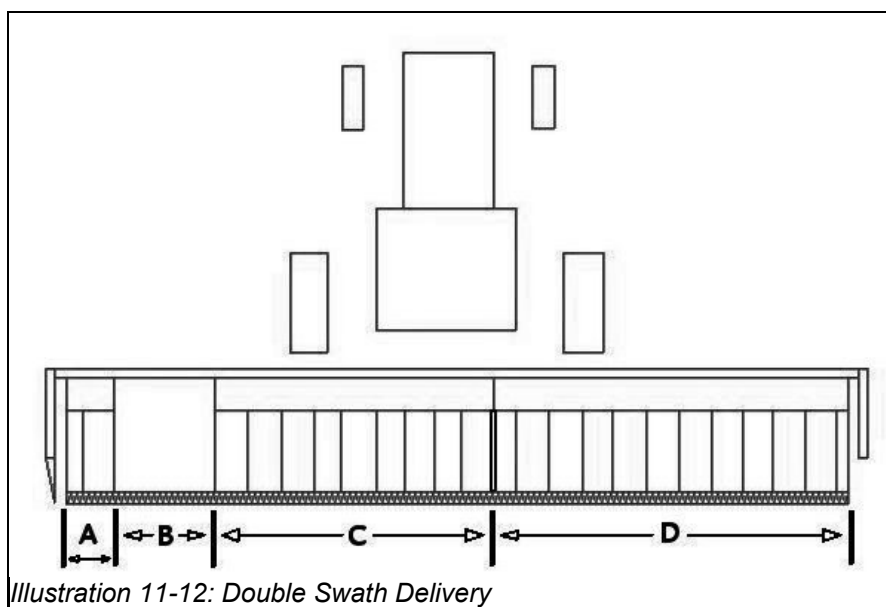
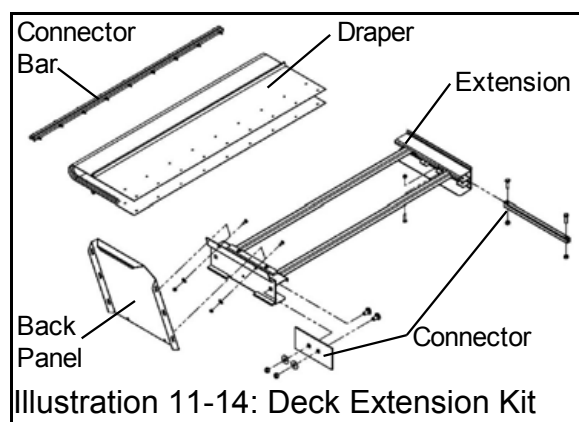
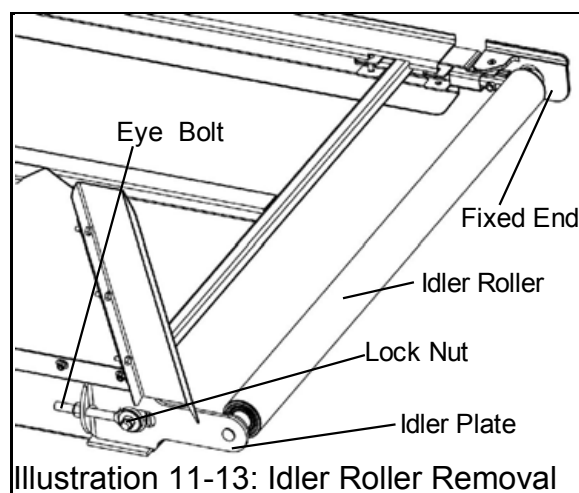


Illustration 11-12: Double Swath Delivery

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 nut and washer that hold the idler adjuster plate in place.
3. Remove the idler plate, idler roller, and front adjuster.
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 deck connector.
7. Install the front adjuster, 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 $\frac{1}{2}$ " clearance between the ribs of the draper and the underside of the hay guard.

Secure tab through hay guard and into the cutter bar. Install the remainder of the bolts to hay guard. Install the next section of hay guard, butting it up to the first section. Continue until all sections of hay guard are installed.

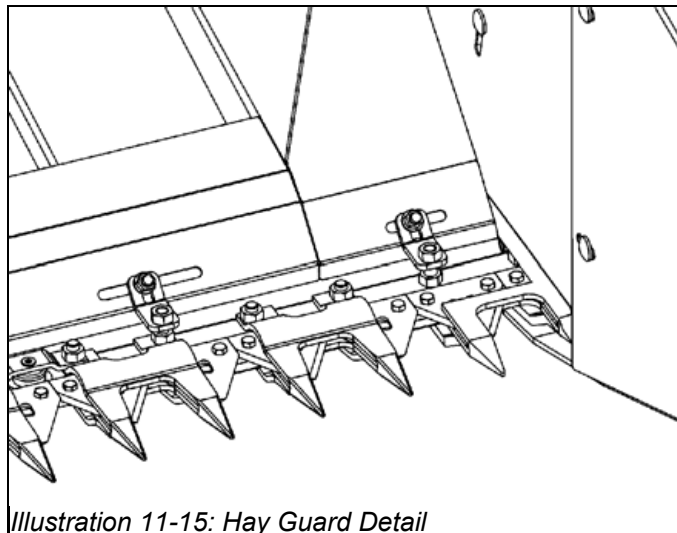


Illustration 11-15: Hay Guard Detail

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 11-18: 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.



Illustration 11-16: Crop Lifters Installed

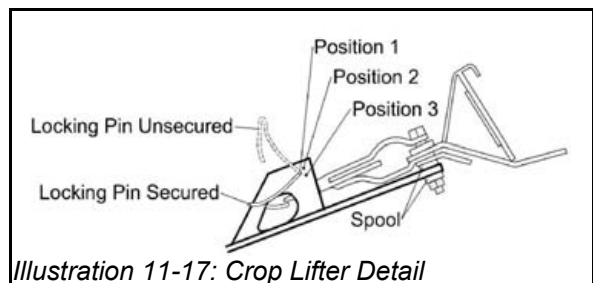


Illustration 11-17: Crop Lifter Detail

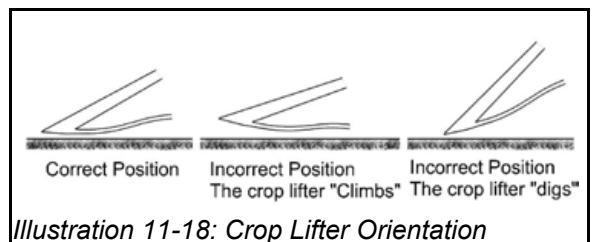


Illustration 11-18: Crop Lifter Orientation

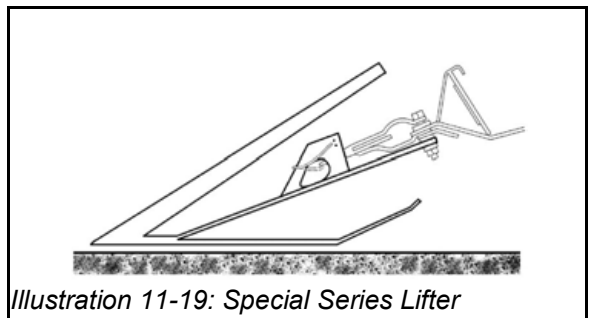


Illustration 11-19: Special Series Lifter

12 - 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.

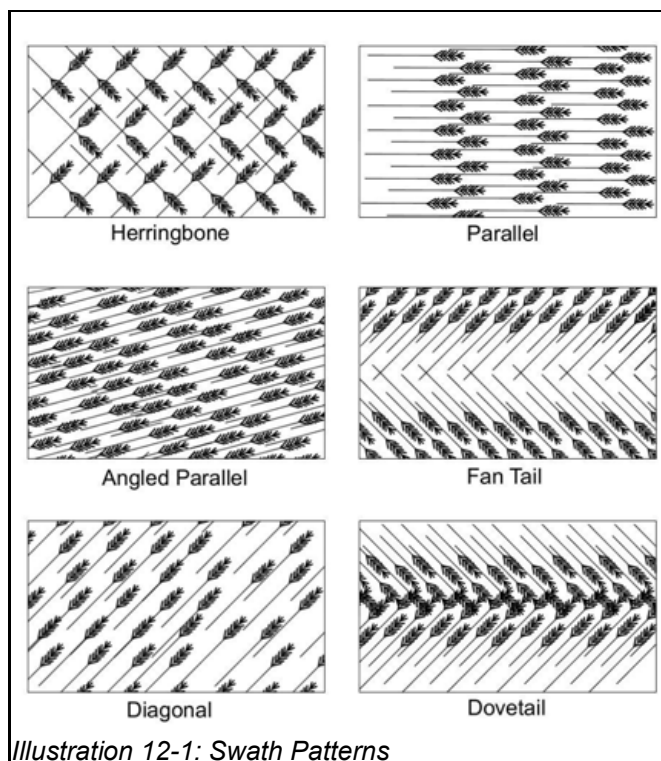


Illustration 12-1: Swath Patterns

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.

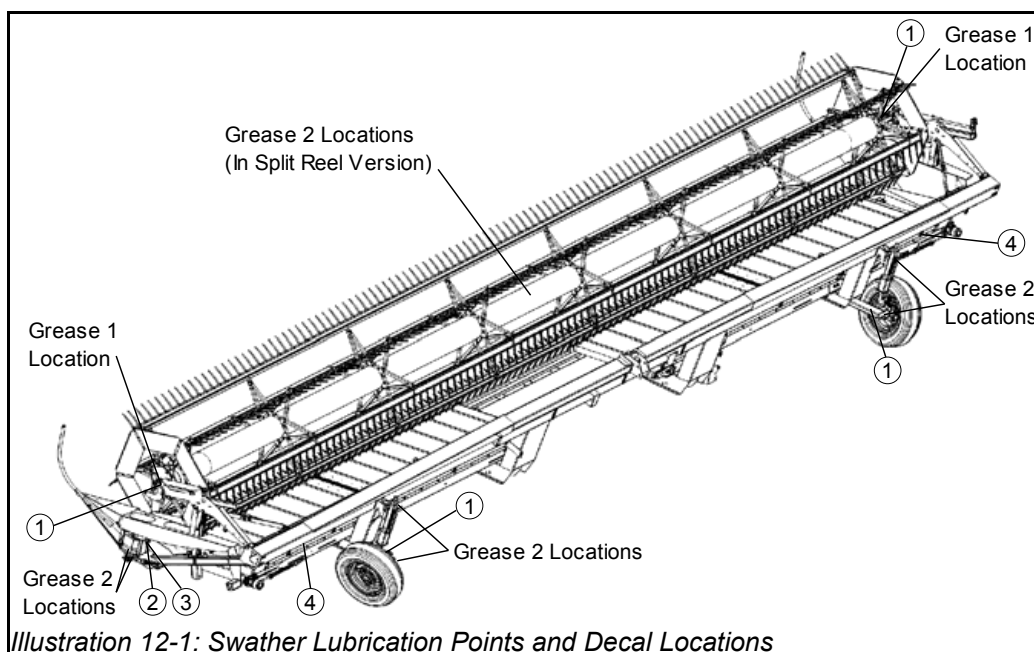
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13 - Lubrication & Maintenance

IMPORTANT Use good quality, general purpose grease.

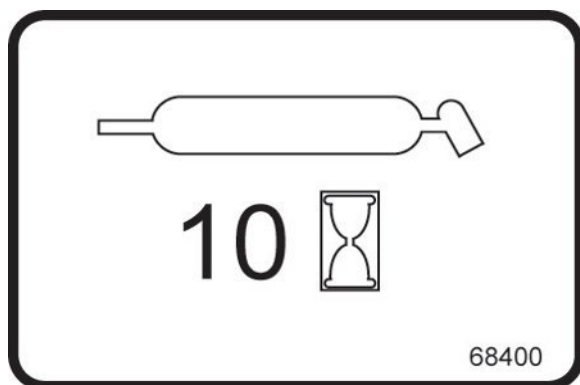
Component	Lubricant	Frequency/Notes
Knife Drives	Grease	Two shots every 50 hours
Knife Head Bearing	Grease	Grease fitting on bottom of crank shaft)
Main Bearing and Gear	Grease	Grease fitting on side of knife drive
Knife	Diesel	Soak with diesel or clean with a pressure washer
Reel Bearings	Grease	10 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 125 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.



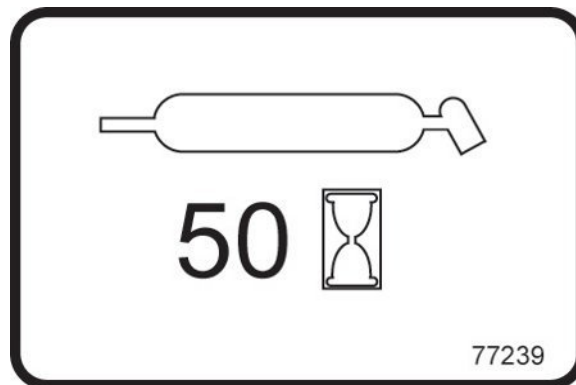
Maintenance Related Decals

1.



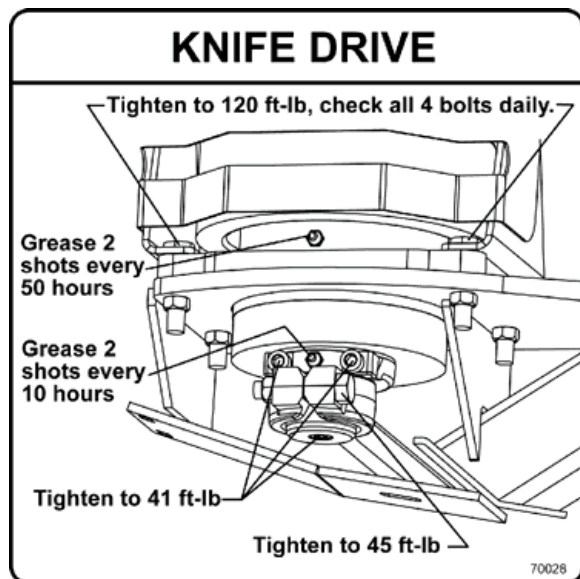
Grease every 10 hours

2.



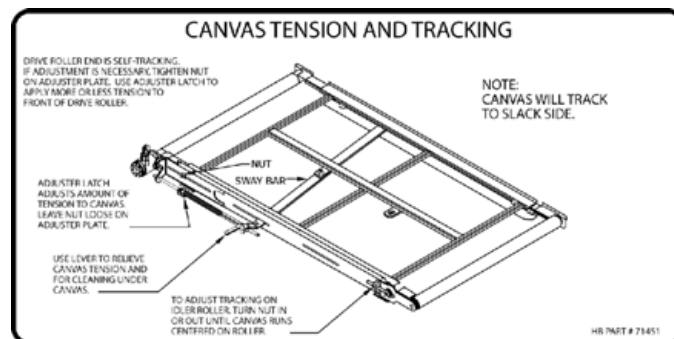
Grease every 50 hours

3.



Torque and Grease Requirements

4.



Draper Tension and Tracking

14 - Troubleshooting

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

Problem	Possible Cause	Solution
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 stalls easy.	Knife gummed.	Clean cutter bar.
	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.
Knife running too slow.	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.
	Worn pump or motor.	Repair or replace.

Problem	Possible Cause	Solution
Excessive vibration.	Check oil volume (19.5 gpm)	Reset if needed.
	Loose bearings in drive.	Replace bearings.
	Loose knife head bolts.	Tighten.
	Damaged sickles or guards.	Replace.
Excessive noise.	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 head adjusted too high or too low.	Loosen clamp bolt on knife head bearing and adjust.
Knife leaves strip of crop standing.	Excessive ground speed.	Slow down.
	Bent or broken guard.	Straighten or replace.
	Broken knife section.	Replace.
	Plugged guard.	Clean.
Connector bar breaks	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.
	Sections on knife back installed on wrong side.	Remove sections, turn knife over and replace sections.
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.

Problem	Possible Cause	Solution
Draper		
Draper not tracking straight.	Drive or idler roller out of alignment. Draper splice not cut straight. Material building up on rollers.	Adjust draper tracking. Re-punch connector bar holes in draper. Clean rollers.
Draper slipping.	Draper too loose. Draper is snagging.	Adjust draper tension. Check alignment. Look for obstructions.
Draper not turning.	Draper is snagged or caught. Flow control is shut off. Oil flow is being by-passed.	Check for interference. Adjust flow control. Check relief valve setting. Remove and clean relief cartridge.
Draper oil pressure in excess of 2200 psi.	Power unit RPM too low. Material build up on rollers. Faulty bearing in roller. Faulty draper motor.	Increase power unit RPM. Clean rollers. Replace bearing. 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. Hold down clips on back panels are loose or are not installed.	Place deck in proper position. Tighten or replace.
Decks will not shift.	Poor electrical connections. Electrical cable not plugged into windrower or control box. Decks or back panels jammed or binding.	Trace and repair. Check connections. Check decks and clean out debris.

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

Hydraulic Oil

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

Problem	Possible Cause	Solution
Swather table lifts and lowers too slowly.	Needle valve set too low.	Adjust needle valve on lift circuit.
Lift and Float Systems		
Platform Does Not Follow Ground Contour.	Platform float pressure too high, making platform feel light.	Check windrower operator's manual. Adjust float pressure.
NOTE: <i>If float pressure is set too high platform will feel light and bouncy. If float pressure is too low, platform will feel heavy and unresponsive. It should require less than 150 lbs. to lift the end of the platform.</i>	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.
Platform Drops Too Fast or Does Not Lower Smoothly	Accumulator pre-charge pressure too high.	See your John Deere Dealer
	Platform float pressure too low, making platform too heavy.	Adjust platform float.
Platform Will Not Lift or Lifts Too Slow	Accumulator pre-charge pressure too high.	Adjust needle valve. See your John Deere Dealer.
	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.	
	Low Relief valve setting.	See your John Deere dealer.
	Excessive charge oil flow to pumps.	See your John Deere dealer.
	Faulty switch or relay.	See your John Deere dealer.
	Faulty solenoid or valve cartridge.	Replace. Replace.

15 - 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, 0-575 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
- Windrower Ballast Bracket Kit (4895 and 4995 only)

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.

<i>Unified Torque Specifications</i>				
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

<i>Metric Torque Specifications</i>				
Grade	8.8		10.9	
Size	Nm	Lb-ft	Nm	Nm
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"	1 1/16"	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 Size - Inches	Nut Size - Inches	Torque Value - Nm	Torque Value - Lb-ft	Flats to Tighten	Turns to Tighten
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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16 - 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.

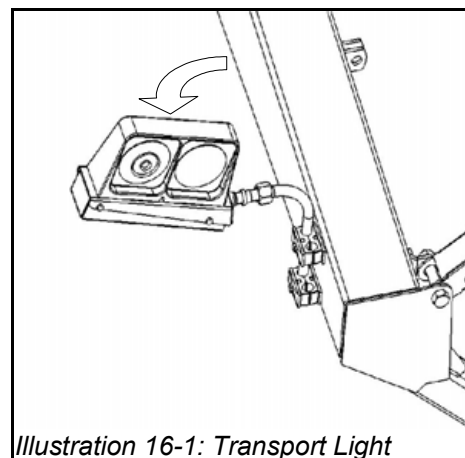
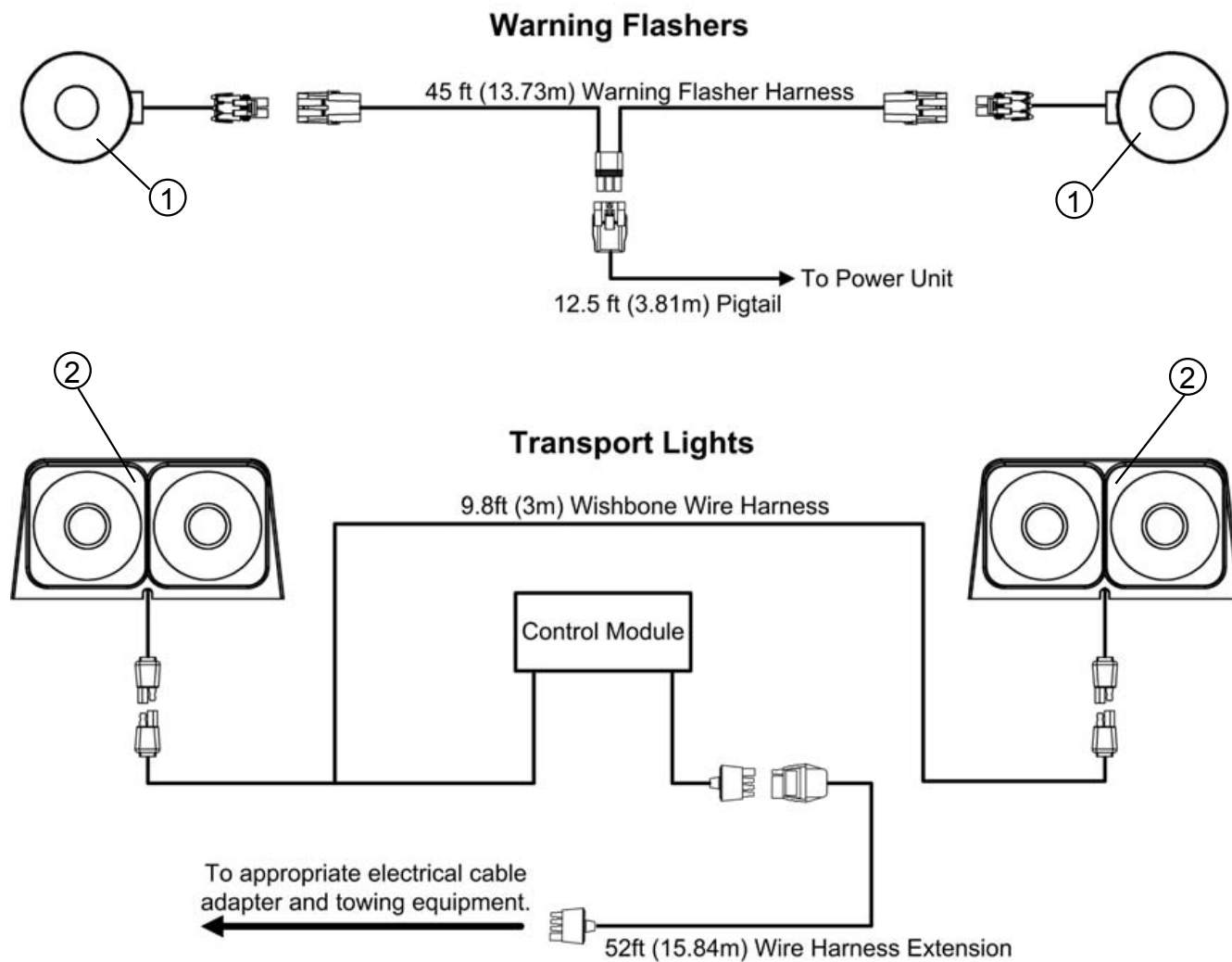


Illustration 16-1: Transport Light

Wiring Schematics

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



Light Wiring

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

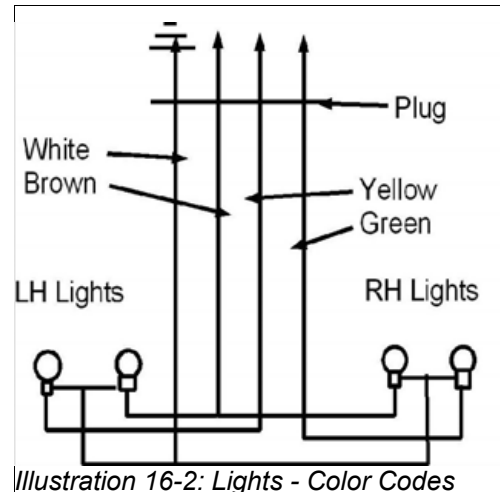


Illustration 16-2: Lights - Color Codes

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

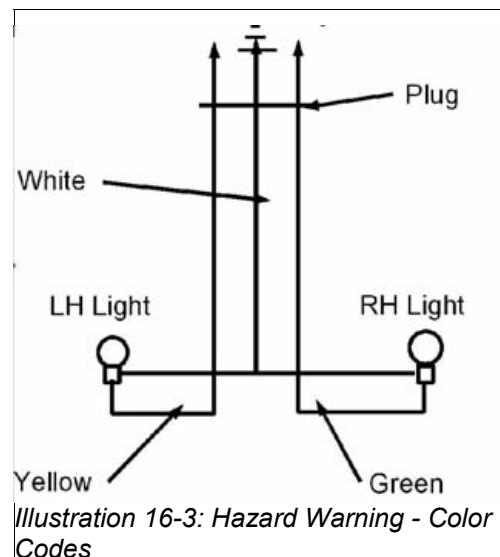


Illustration 16-3: Hazard Warning - Color Codes

Be Seen. Be Safe!

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