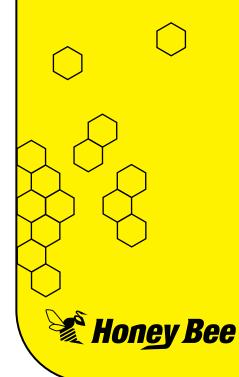
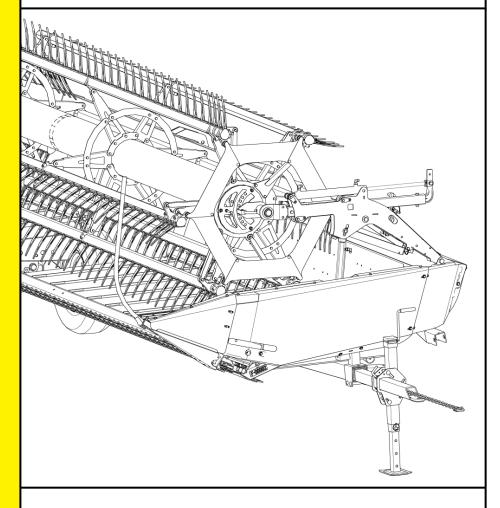
2025

WSC Swather





P/N: 95292-2025 Revision 1.1





Important Notice

This manual covers the WSC swather only.

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

Without proper adjustment, damage to the swather may occur.

Please wash this equipment after transporting

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

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



Original Instructions
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Page 2 Revision 1.1 P/N 95292-2025





	HE DEALER (This form must be completed and retration documentation) (PLEASE PRINT)	eturned to	Hc	ney Bee Manufacturing Ltd. with the Warranty
Mode	l:	Serial #		
	c Completed By:			
	r name:			
Comp		attention	to	be certain that it is in good order and complete. the steps listed below prior to the delivery to the en correct.
	RUN-IN CHECKS	Γ		Safety and warning decals affixed securely and clearly readable.
	Crop dividers and crop divider pipe//stub nose installed (page 10)			Safety guards and shields installed and secure.
	Quick couplers match windrower			Swather lubricated (page 12)
	Reel tie-down removed (page 60)			Optional equipment, as per sales order, is installed
	Reel centered in swather left to right (page 62)			and operates correctly.
	Reel bat that may have been dropped for shippi reinstalled (page 60)	ing		Cab harness and control box installed on windrower. (page 33)
	Reel fingers clear cutter bar by approximately 2 across length of the knife (page 61)	,, [Reel lift kit installed on windrower (page 40)
MOUI	TING CHECKS			wheels, and the transport hitch jack (in its storage
	All adapter installation instructions completed. (page 29) - (page 36)			position). (page 66) - (page 69)
	Calibration of the windrower done successfully. (page 43)			Drapers are tensioned. DO NOT OVERTIGHTEN. (page 68)
	Header lift / lower balanced LH/RH (see windrown manual)	wer		If draper deck shift is installed, ensure all stops are properly set. (page 95)
	Hydraulic oil pressures and flow rates are set. (page 77)			Make sure the reel is in the correct location. (page 63)
	Set lift arms flotation pressure. (page 85)	[Set the cutting height for the header. (page 86)
	Set reel finger pitch to middle position as a start point. (page 64)	ing		Walk around the header while it is running to ensure everything is running smoothly.
	Electrical systems working properly. (page 37)	Г		If possible, test in field or lot and fine-tune settings if needed.
	Hydraulic plumbing is leak-free.	г		Ensure optional equipment as per sales order is
	Drapers on all decks track evenly with adequate clearances between draper, end strut gauge	-		installed and functioning.
PRE-	TRANSPORT CHECKS			
	Hitch and axle attached and secure. (page 54) - (page 57)	. [All fasteners and parts secure.
П	Reel lowered in the full-aft position and tied dow	_		Wiring, hydraulic hoses tied up securely for transport.
	Wheel bolts torqued to 120 ft-lb (163 Nm).	г	7	Reflectors and SMV sign in place and clean.
	Tire pressures @ 80 psi (449 KPa).	٦		Warnings and clearance lights installed and
	All lock pins in place and securely fastened.	_	-	operational



Page 4 Revision 1.1 P/N 95292-2025



1 - Hydraulic Readings

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

Knife pressure gauge (when checking relief pressure):	PSI
Knife Drive speed (at normal working engine RPM):	SPM
Draper Flow Control pressure gauge (at normal working engine R	PM): PSI
Knife pressure gauge (at normal working engine RPM):	PSI
Other Settings:	



Page 6 Revision 1.1 P/N 95292-2025



2 - Purchase Information

Dealers Name:	
Address:	
Phone:	
Purchase Date:	
Model:	
Serial Number:	
Delivery Date:	

Modification Record		
Date	Modification	

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



Page 8 Revision 1.1 P/N 95292-2025



3 - Warranty

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

Warranty Claims

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

Limitations of Liability

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

This warranty shall not apply to any Swather table which has been altered outside the factory in any way so as in the judgment of Honey Bee to affect its operation or reliability, or which has been subject to misuse, neglect, or accident.

Operator's Manual

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



Table of Contents

1 -	Hydraulic Readings	5
2 -	Purchase Information	7
	Warranty	
-	Safety 4.1 - Safety Terms	13
	4.2 - Shields	
	4.3 - Hydraulic Safety	
	4.4 - Operation and Maintenance Requirements	
	4.5 - General Safety	
	4.6 - Operating Safety – Good Practices	
	4.7 - Maintenance Safety	
	4.8 - Transport Safety	
	4.9 - Before Transport Checklist	
	4.10 - During Transport Checks	
	4.11 - In-Field Checks	
	4.12 - Storage	
	4.13 - Safety Decal Locations	
5 -	Windrower Draper Header Ready	
	Installation Instructions	
•	6.1 - Mounting and Dismounting Terminology	
	6.2 - Crop Divider Installation	
	6.3 - Pass-Through Connector Modification	29
	6.4 - Power Unit Modifications	
	6.5 - Basic Windrower Controls	
	6.6 - Draper Header Console Switches	
	6.7 - Mounting the Swather to the Windrower	
	6.8 - Store the Transport Axle	41
	6.9 - Store the Transport Hitch	
	6.9.1 - Double Swath Option	42
	6.10 - Calibrate Power Take-Off (PTO) Draper (6-cylinder units only)	43
	6.11 - Mounting Checklist	
	6.12 - System Tests	
	6.13 - Hydraulics, Electric, and Mechanical Checklist	
	6.14 - Header Drop Rate	
	6.15 - Floatation Calibration	47
7 -	Operation	48
	7.1 - Initial Start-up	
	7.2 - Reel Lift Controls	
	7.3 - Bleeding Air Out Of Reel Lift Circuit	
	7.4 - Single Reel Lift Circuit	
	7.5 - Additional Checks:	
	7.6 - Problems frequently encountered during start-up and break in period.	
	7.7 - Full Dismount	53
	7.8 - Self Storing Hitch – Transport Position	
	7.9 - Install Transport Axle	
	7.10 - Final Dismounting Steps.	
	7.11 - Hydraulic Hose Storage	ວຽ



8 - R	eel	.59
	8.1 - Reel Drive	59
	8.2 - Reel Speed Adjustment	59
	8.3 - Reel Position	
	8.3.1 - Hydraulic Fore & Aft	
	8.3.2 - Reel Bat Timing Position	
	8.3.3 - Solid Reel Hydraulic Circuit	
	8.4 - Reel Arm Leveling and Height Adjustment	
	8.4.1 - Reel Height Adjustment	
	8.5 - Reel Centering	62
	8.6 - Placement of the Reel on the Swather	63
	8.7 - Reel Position in Down Crops	
	8.8 - Reel Position in Standing Crops	
	8.9 - Reel Tine Pitch Adjustment	
	8.10 - Lubrication – Reel Shaft Bearings	65
	8.11 - Check Points Before Operation:	
0 - D	aper and Decks	
9 - DI		
	9.1 - Lining Up the Drive Roller 9.2 - Draper Installation	
	9.3 - Tensioning 9.3.1 - Spring Tension Indicator	
	9.4 - Tracking	.09 .09
	9.4.1 - Drive Roller Tracking Adjustment	.09 07
	9.4.2 - Idler Roller Tracking Adjustment	
	9.5 - Draper Speed	
	9.5.1 - Additional Draper Speed	
	9.6 - Draper Splicing 9.7 - Drive Roller Removal	
	9.8 - Removing Draper Motor	
	9.10 - Installing Draper Motor 9.11 - Idler Roller Removal	
	9.12 - Replace Bearings on Idler Rollers	
	9.13 - Draper Deck Maintenance: 9.14 - Draper & Reel Maximum Speed Adjustment	./0
10 - (Cutting System	.78
	10.1 - Knife Speed	78
	10.2 - Removing the Knife	78
	10.3 - Guards	.79
		.79
	10.5 - Knife Drive/Knife Head	80
	10.6 - Connector Bar	
	10.7 - Overlap Kit	.82
	10.8 - Repair Broken Knife Back	.83
		83
	10.10 - Monitoring Knife Speed	
11 - L	eveling	84
	11.1 - Forward Angle Adjustment – Hydraulic Tilt Cylinder	.84
	11.2 - Table Angle (Tilt)	84
	11.3 - Adjusting Independent Table Floatation	85
	11.4 - Setting the Cut Height	86

Honey Bee Manufacturing Ltd. WSC Swather



12 - Hydraulics	
12.1 - Manifold Block Cartridge Locations	87
12.2 - Flow Controls	87
12.3 - Hydraulic Connection Points	88
12.4 - Operating Pressure - Knife Circuit	
12.5 - Checking or Adjusting Knife Relief Pressure	
12.6 - Knife Drive Speed Adjustment	
12.7 - Draper and Reel Flow Controls	
12.8 - Return Line Filter	
13 - Optional Equipment	
13.1 - Caster Gauge Wheels	
13.2 - Gauge Wheel Height Adjustment	
13.3 - End Strut Gauge Wheels	
13.4 - Cross Auger	
13.5 - Double Swath Option – 30ft and 36ft Tables Only	
13.6 - Increasing Center Swath Opening	
13.7 - Windrower Fixed Shields	
13.8 - Hay Guard / Short Crop Guard	
14 - Lubrication & Maintenance	103
15 - Troubleshooting	104
16 - Lighting	
16.1 - Transport Lights:	
16.2 - Warning Flashers:	
16.3 - Wiring	
16.4 - Transport Lights	
16.5 - Warning Flashers	
17 - Appendix	112
17.1 - Hydraulic Fitting Naming Standards	
17.2 - Electrical Schematics & Charts	
17.2.1 - Swather Table Electrical Schematic	
17.2.2 - Common 21 Pin Plug Features	
17.2.3 - Adapter Wiring Schematic	
17.3 - Hydraulic System Schematics	
17.3.1 - Hydraulic System Schematic Symbols	
17.3.2 - Double Swath - Double Knife - Solid Reel - System Hydraulic Schematic	
17.3.3 - Single Swath - Double Knife - Solid Reel - System Hydraulic Schematic.	
17.4 - Dimensions	
17.5 - Windrow Type	
17.5.1 - Windrow Formations	
17.5.2 - Ground Speed	
17.5.3 - Stubble Height	
17.6 - Specifications/Features	
17.6.1 - Weights	121
17.6.2 - Technical Specifications	122
17.6.3 - Options	122
17.6.4 - Included in Standard Swather	123
17.7 - Bolt Torque	
17.8 - Hydraulic Fitting Torque	124
17.9 - Tightening O-ring Fittings	
17.10 - Compatible Replacement Hydraulic Filters	



4 - Safety

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

4.1 - Safety Terms



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.



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.



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.



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



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

4.2 - Shields

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

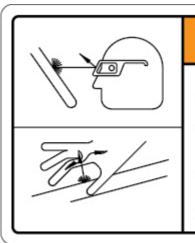
Names given here for parts of the swather are those in use at the time of design.



4.3 - 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.



WARNING

High pressure fluid hazard

To prevent serious injury or death:

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

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Fig. 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.

Page 14 Revision 1.1 P/N 95292-2025



4.4 - 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.

4.5 - General Safety

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

Carry a multipurpose fire extinguisher in the windrower and know how to use it. Check the extinguisher regularly and keep it fully charged.

Provide a first aid kit in the cab for emergencies and know how to use it.

Do not wear loose clothing or jewelry around moving parts.

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

Do not allow any one to ride on the swather while it or the windrower is in motion.

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

Clear the area of bystanders, especially small children before starting the windrower.

Do not allow anyone to operate the swather who has not been instructed in how to operate the machine.

All operators should familiarize themselves with the SAFETY section in the windrower Operators Manual.

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.



4.6 - Operating Safety - Good Practices

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

Either lower both the table and the reel, or raise the 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.

NEVER operate machinery while tired, sick or otherwise impaired.

Do not operate the swather in crowded or confined areas.



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

4.7 - Maintenance Safety

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 windrower. Make sure there is no pressure being supplied to the hydraulic lines.

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.

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

Care should be taken when maintaining the knife. Sickle sections are very sharp and can easily cause severe injury. Use heavy leather or canvas gloves when working with the knife. Always ensure everyone is well clear before moving the knife, manually or under power.

Page 16 Revision 1.1 P/N 95292-2025



4.8 - 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 32 kph (20 mph) during transport.
- 8. Ensure you display the Slow Moving Vehicle sign during transport on roadways.

4.9 - Before Transport Checklist

Do a complete walk-around and check to be sure there are no loose parts or components.

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 80 psi (552 kPa)
- Spindle and hitch lock pins to make sure they are in place and securely fastened.

Inspect all hoses. Ensure they are secured so they will not pinch or drag during transport.

Ensure hitch tongue and safety chain are fastened securely to the swather and to the transporting vehicle.

Make sure that all transport lights are properly connected and in their transport position.



4.10 - During Transport Checks

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.

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

4.11 - 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.

4.12 - 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.

Page 18 Revision 1.1 P/N 95292-2025



4.13 - 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.

Keep them clean.

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

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

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

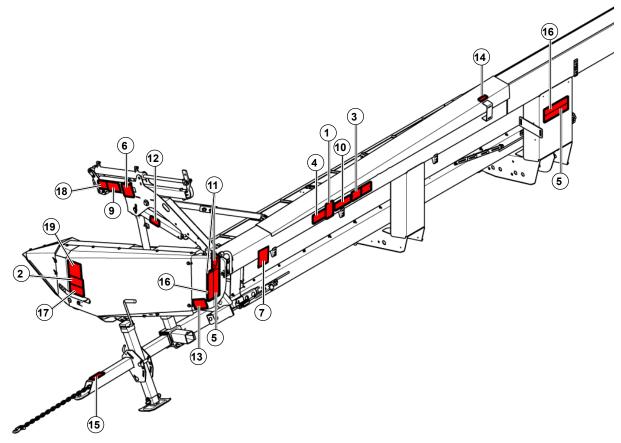


Fig. 2 Decal Location - Left End



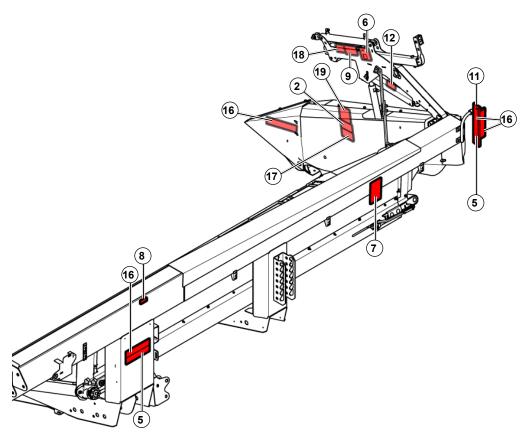


Fig. 3 Decal Location - Right End

Page 20 Revision 1.1 P/N 95292-2025





Fig. 4 Decal - Read the manual before servicing



Fig. 5 Decal - Keep hands away from shield opening

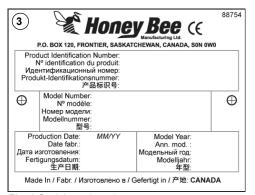


Fig. 6 Serial number plate



Fig. 7 Decal - High pressure fluid warning - Read manual for more details



Fig. 8 Decal - Red/orange retroreflector

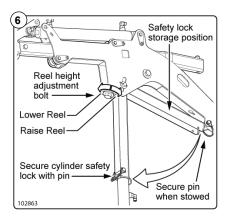


Fig. 9 Decal - Reel arm instructions

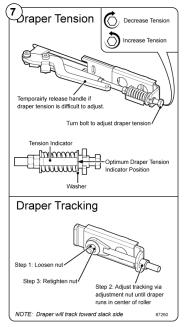


Fig. 10 Decal - Draper adjustment instructions



Fig. 11 Decal - Reel speed gauge label





Fig. 12 Decal - Rotating parts warning, keep your distance.



Fig. 13 Decal - Operator manual location label



Fig. 14 Decal - Yellow reflector



Fig. 15 Decal - Use reel arm lock before servicing

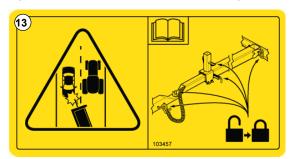


Fig. 17 Decal - Secure transport hitch before transporting



Fig. 20 Decal - Draper pressure gauge label



Fig. 16 Decal - Maximum transport speed



Fig. 18 Decal - Red reflector



Fig. 19 Decal - Warning sharp sections

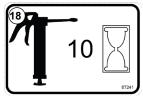


Fig. 21 Decal - grease every 10 hours

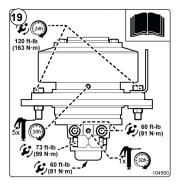


Fig. 22 Decal - Knife drive maintenance

Page 22 Revision 1.1 P/N 95292-2025



5 - Windrower Draper Header Ready

Prior to draper header installation and calibration, it is important to verify that the windrower has the correct installed software and settings.

To authenticate the UCM software, navigate to the diagnostics menu on the control screen of the windrower.

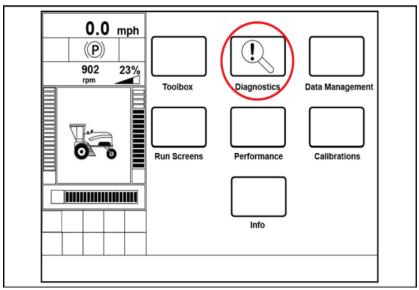


Fig. 24 Display Diagnostics

Select Can tab and verify the software version is V22.6.0.0 or newer.

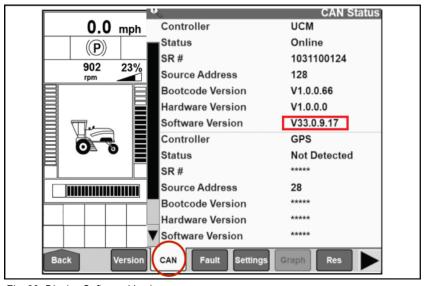


Fig. 23 Display Software Version



Navigate to the *Version* tab and verify the Windrower software is V36.1.0.0 or newer. Refer to the windrower Operator's Manual for instructions on updating the software.

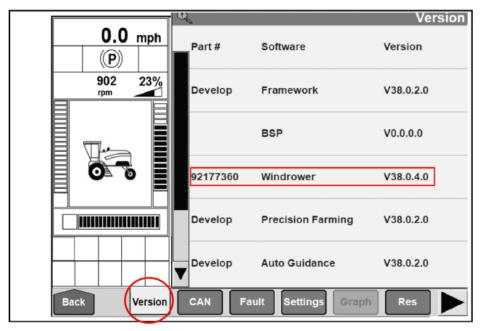


Fig. 26 Display Version Tab

If software installation is adequate for continuation of set-up, navigate to the *Toolbox* menu on the main display.

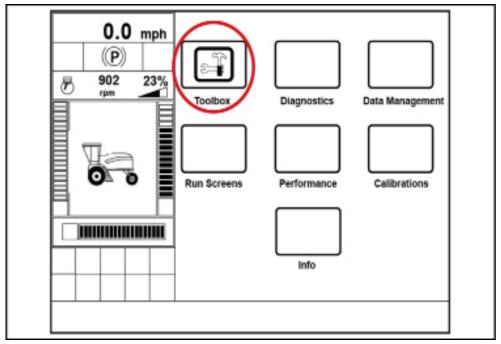


Fig. 25 Display Toolbox Tab

Page 24 Revision 1.1 P/N 95292-2025



Select the *Header* tab to view three options: *Sickle*, *Disc*, and *Draper*. The *Draper* option is required to operate the Honey Bee Swather.

If the *Draper* option is not listed, a CNH dealer will need to enable this feature.

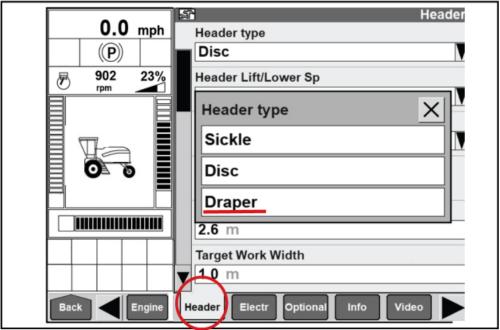


Fig. 27 Display Header Tab

Illustrated below for dealer reference; *Draper Header* must be *Enabled*. This is a dealer only setting.

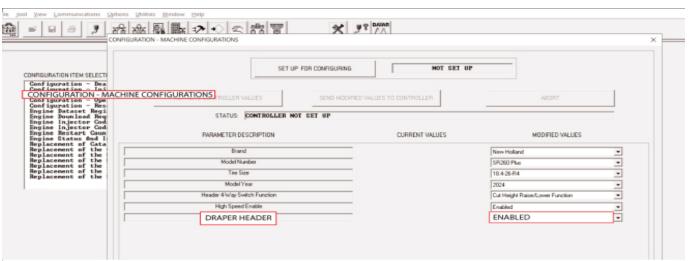


Fig. 28 Software Settings



Once all previous checks and steps have been satisfied, the swather is ready for mounting. It is important that all mechanical, electrical, and hydraulic connections are established prior to initiating calibration. It is also very important to review all safety and process instruction supplied for the swather and the windrower prior to mounting, connecting, and calibrating the equipment.

To review instruction on calibration in the calibration section of this manual (6.10 - Calibrate Power Take-Off (PTO) Draper page 43). Below illustrations lay out the windrower display settings for Honey Bee Swather callibration.

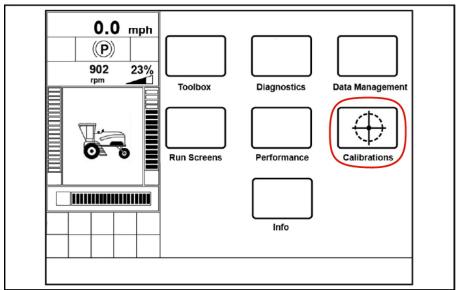


Fig. 29 Display Calibrations

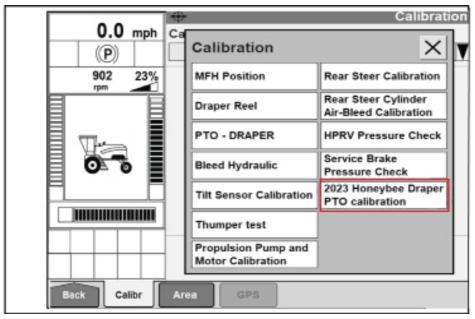


Fig. 30 Display Calibration Selection

Page 26 Revision 1.1 P/N 95292-2025

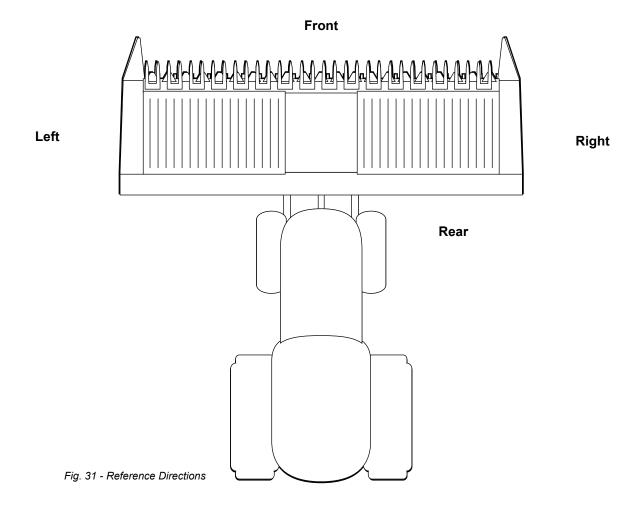


6 - Installation Instructions

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.

6.1 - Mounting and Dismounting Terminology

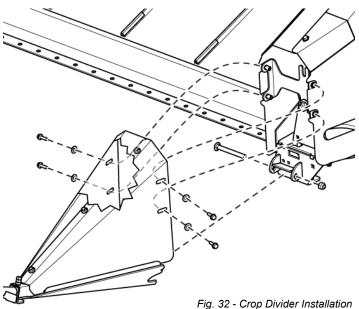
Windrower:	Front	Lift arm end of the windrower
	Back or Rear	Engine end of the windrower
	Right and Left	As seen when sitting in the driver's seat facing the swather.
Swather Table:	Front	Cutter bar side
	Back or Inside	Lift arm mount side
	Dack of Itiside	Lift arm mount side



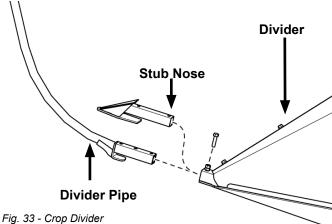


6.2 - Crop Divider Installation

- 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.
- Install the crop dividers, and crop divider pipes (or stub nose) to the ends of the table. The crop divider and pipes are not installed at the factory for shipping purposes. Once installed, operators should be aware of the assembled width of the swather, and should check local regulations before transporting on public roadways.
- 3. The bottom of the crop divider is secured to the swather by 4-1/2" x 1/2" carriage bolt and a 1/2" C/Lock nut. The top of the crop divider is secured to the swather with four 5/16" x 1" Flange bolts and four 5/16" flat washers.



- When properly positioned, the crop divider overlaps the outside of the crop deflector to provide a smooth transition for the crop.
- Insert the crop divider pipe (or stub nose) into the nose of the crop divider. Secure with a 3/8" x 1 1/2" bolt and lock nut.





The divider is designed to be adjusted in order to run without trampling the crop. This will provide good crop separation, and will help prevent crop plugging in the corners. The crop divider pipe is intended to be used when cutting off the ground, and the stub nose is to be used when cutting on the ground.

Page 28 Revision 1.1 P/N 95292-2025



6.3 - Pass-Through Connector Modification

1. Locate the outer pass-through connector on the rear-left outer wall of the cab (located inside the access hatch).

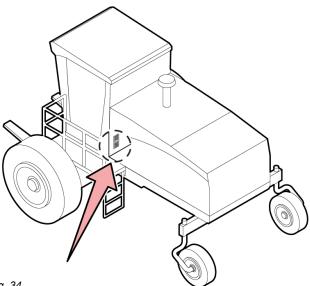
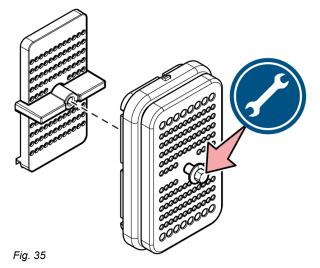


Fig. 34

2. Remove the outer connector using a socket wrench.



3. Remove the two wedge locks from the rear of the connector as shown below.

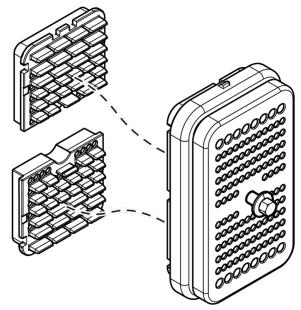


Fig. 36 Wedge Locks



 Secure the harness connector to the external pass-through connector. Take note of the plug style used on the harness connector shown below.

The connector on the end of each wire should be inserted into its corresponding hole until an audible 'click' is heard.

Refer to Fig. 38 on page 30 for details on where the wires should be inserted.

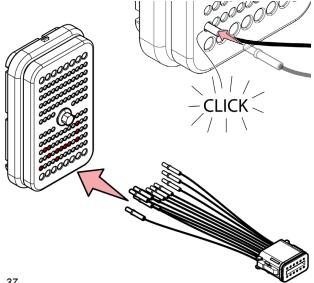
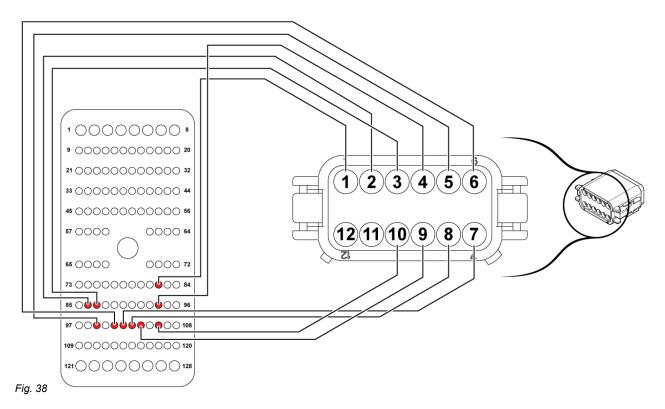


Fig. 37



Page 30 Revision 1.1 P/N 95292-2025



5. Locate the inner pass-through connector on the rear-left inner wall of the cab (located inside the cab, under the instructor's seat).

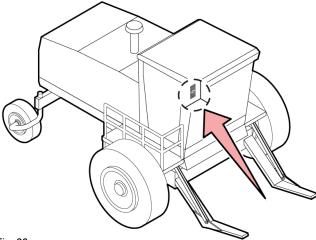


Fig. 39

6. Remove the inner connector, then remove both wedge locks.

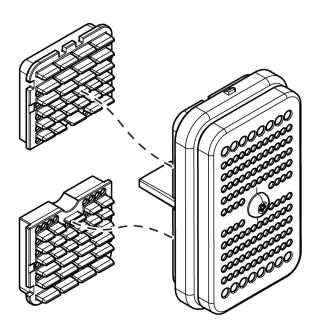
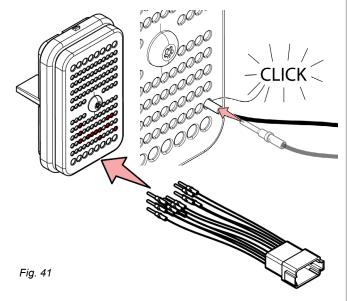


Fig. 40

 Secure the harness connector to the internal pass-through connector. Take note of the plug style used on the harness connector shown below.

The connector on the end of each wire should be inserted into its corresponding hole until an audible 'click' is heard.

Refer to figure Fig. 42 on page 32 for details on where the wires should be inserted.





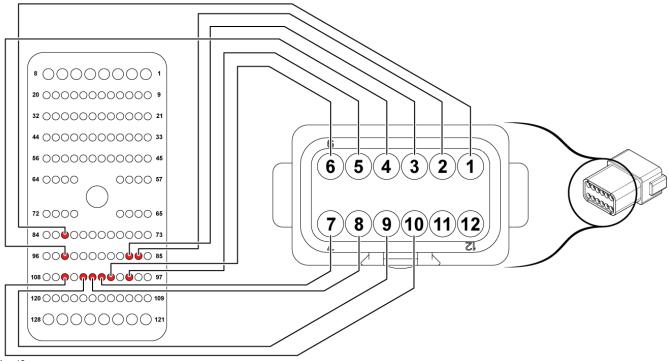


Fig. 42

8. Reinstall the wedge locks on both of the passthrough connectors, taking care to ensure the pins are aligned with the openings in the wedge blocks.

Reinstall the connectors in their original locations on the windrower cab wall.

Page 32 Revision 1.1 P/N 95292-2025



Install the switch box inside the power unit cab.
 The switch box is plugged into the 12V socket and the pass-through connector installed in an earlier step.

The switch box mounting arm is secured to the display mounting arm as shown below.

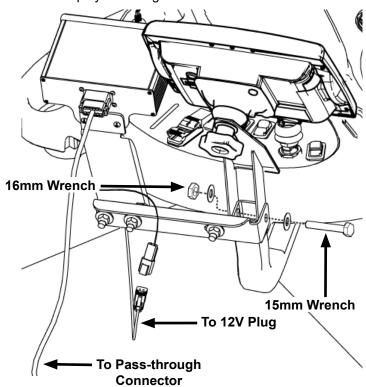
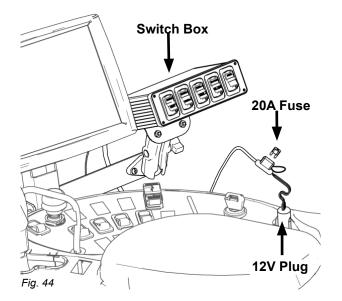
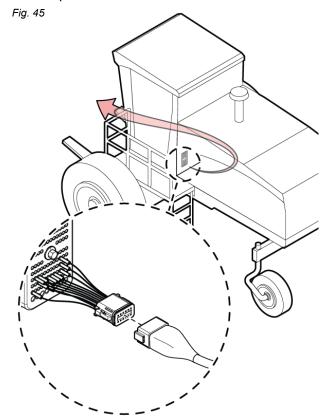


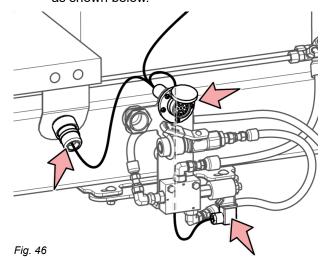
Fig. 43 Switch Box



 Secure the external harness to the connector on the outside of the cab as shown below. Route the harness under the cab between the fuel tanks. Secure the harness along its length using zip-ties.



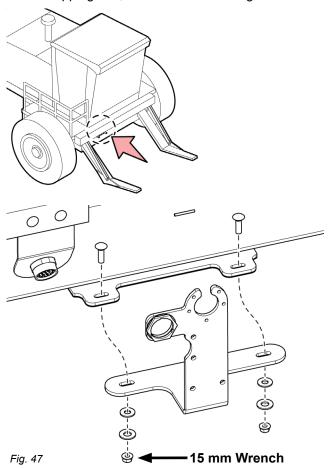
11. Secure the connectors on the end of the harness as shown below.



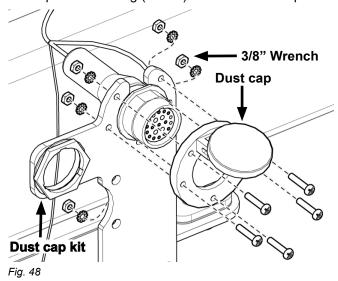


6.4 - Power Unit Modifications

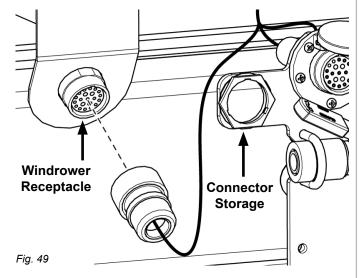
12. Secure the bracket to the front of the power unit cab as shown below. Use the two 3/8" x 1-1/4" UNC carriage bolts and nuts provided in shipping box, do not re-use the original bolts.



Secure the 21 pin plug from the external harness and dust cap to the bracket using #10-32 x
 "machine screws, #10-32 nuts and #10 star lock washers (5 ea.) as shown below. Add the provided O-ring (27449) under the dust cap.



14. Plug in the other 21 pin plug from the external harness to the location shown below.



Page 34 Revision 1.1 P/N 95292-2025



15. Secure the quick coupler to the bracket using the 5/16" x 1-13/32" x 2-3/16" U-bolt, 3/8" fender washer, 5/16" flat washer, and two 5/16" C/lock nuts as shown below. Ensure the dust plug is secured as shown.

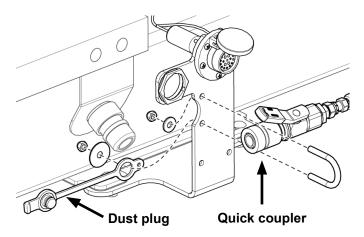


Fig. 50

16. Pre-assemble the manifold block with the supplied fittings as shown below.

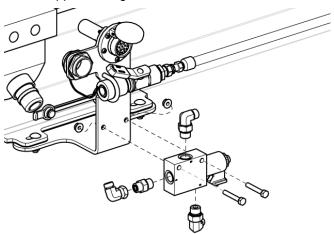
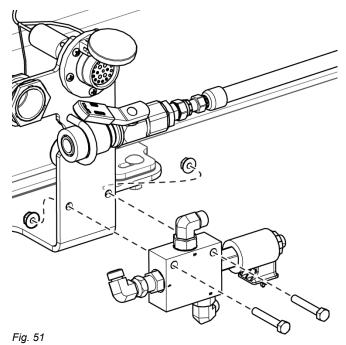


Fig. 52

Revision 1.1

P/N 95292-2025

17. Install the manifold block onto the bracket using two 5/16" x 2" Bolts and two 5/16" F/lock nuts as shown below



Page 35

Path 2 to 1 - No voltage



18. Secure the hirschmann plug and hydraulic hoses as shown below.

Windrower hoses

20" Hose

Hirschmann plug

Fig. 53

Page 36 Revision 1.1 P/N 95292-2025

Reel Lift/Tilt Select

(See control handle)

Fig. 55 - Switch box controls



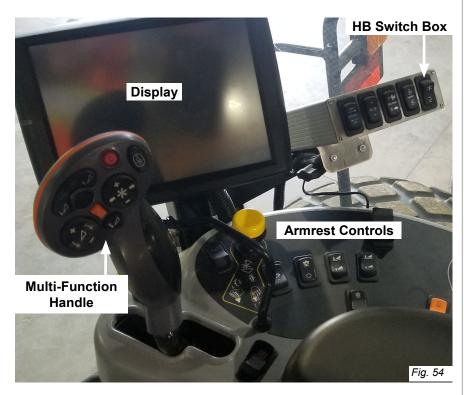
6.5 - Basic Windrower Controls

Basic function controls are located on the multi-function handle, armrest controls, and Honey Bee Switch Box.

See the windrower operators manual for more details.

The reel lift/tilt select switch on the switchbox changes the function of the controls on the control handle. Select the reel symbol to control the reel height. Select the table tilt symbol to control table tilt.

See the Operation and Leveling sections for specific Reel Lift/Tilt and Float functions.

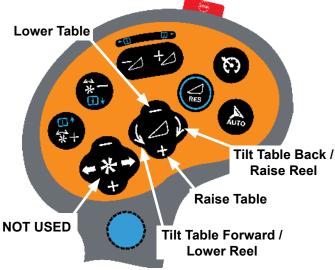


Draper Speed Adjust

Fore/Aft Adjust

Deck Shift Position





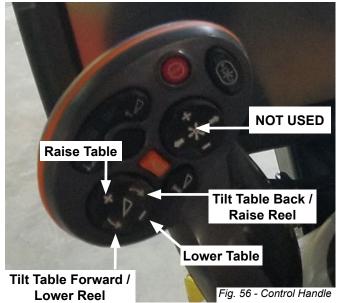


Fig. 57 - .



6.6 - Draper Header Console Switches

The following diagram illustrates the console for the windrower. The following items are critical to understand when setting up the Honey Bee Swather for use.

- 1. Header Power Take-Off (PTO) on/off
- 2. Ground speed range switch
- 3. Header float LH
- 4. Header float RH
- 5. Throttle control
- 6. Autoguidance (if equipped)
- 7. Knife speed control (used on draper headers)
- 8. Park brake
- Header reverser (This is not used with the Honey Bee Swather - Should be deactivated with correct software settings)

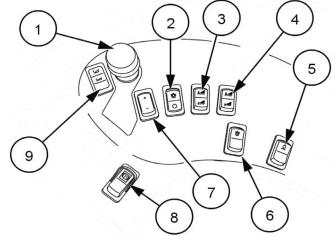


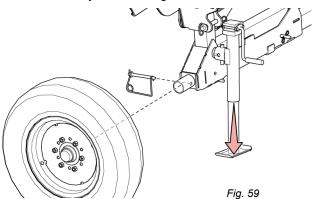
Fig. 58 Windrower Console

Page 38 Revision 1.1 P/N 95292-2025

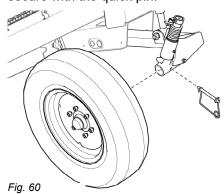


6.7 - Mounting the Swather to the Windrower

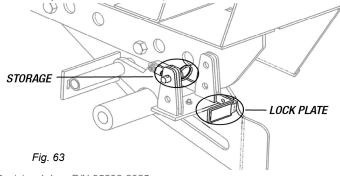
- 1. Park the swather on firm, level ground, where it will be easily accessible for the windrower operator to pick up. Ensure the swather is level.
- Lower the screw jack, located on the side of the transport axle, and raise the axle until the wheel assembly clears the ground.



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 is present, install the wheel into one of the gauge wheel mounts and secure with the quick pin.



 Select 'Header Removal Mode On' as described in your windrower's operator manual.



5. Secure the mounting arms to each mounting roller.

(Refer to CNH Operators Manual for more detail)

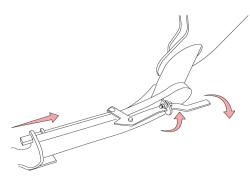
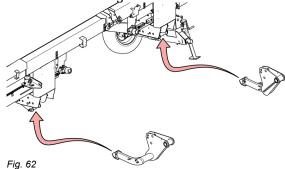
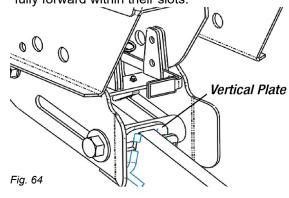


Fig. 61

- Start the Windrower. Select "Header Removal Mode On" as described in your windrower's operator's manual.
- 7. Move the power unit into position, lining up the lift arms with the mounting boots. Ensure the arms are low enough to move under the boots.



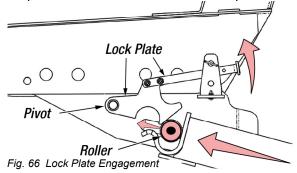
8. Move the windrower forward while raising the lift arms until the vertical plates contact the rear of the boot rollers—without lifting them—on both sides. Continue advancing slowly, raising just enough to maintain contact and guide the rollers fully forward within their slots.



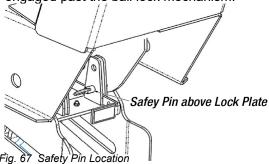
Revision 1.1 P/N 95292-2025



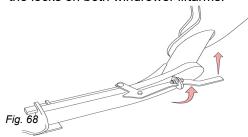
 The lock plates will pivot upward while the windrower is moving forward. When the rollers are in their forward location, the lock plates will drop back down and lock the rollers in place.



10. For both mounting boots, insert the safety pin into the hole above the lock plate to prevent unintended movement. Ensure the safety pin is fully seated and engaged past the ball lock mechanism.



11. Secure both mounting boots, engage the locks on both windrower liftarms.



12. Secure tilt cylinder to the mounting bracket on the upper tube of the swather as shown. Note: Table may need to be lifted. Use the tilt switch on the front of the power unit to extend/retract the cylinder to align holes.

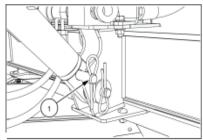
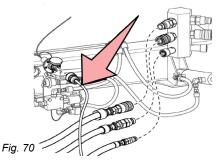
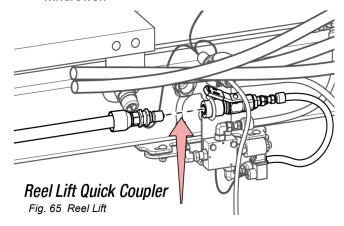


Fig. 69

- 13. Remove the pin(1) shown in and store in a safe place.
- 14. Shut down the engine.
- 15. Secure quick couplers and the 21 pin plug to the windrower as illustrated below. The 21 pin plug is stored on the bracket at the rear of the swather's upper tube.



 Locate the reel lift quick coupler on the storage bracket. Secure to the quick coupler on the bracket that was installed on the front of the windrower.



- 17. Engage the header quick attach located on the lower rear corner of each lifting arm (reverse order of Step 5 on page 39.)
- 18. Select 'Header Removal Mode Off' from the windrower settings as described in your windrower's operator manual.



19. Set the header width in the windrower system to the appropriate width for the header being used, see windrower's operator manual for details.

6.8 - Store the Transport Axle

- 1. Lift the table in order to have ground clearance
- 2. Lock windrower height using the red lever on the front left-hand side.
- 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
- 4. Remove the axle jack and place in a secure storage location. It can also be sored on the axle as illustrated "Fig. 71 Axle Storage".
- 5. Remove the axel pin.
- 6. Remove the pin which holds the axle extension in place, slide the axle extension inside the axle tube, then secure it in place with the pin.



The axle is heavy!

7. Swing the axle up, and secure using the pin.

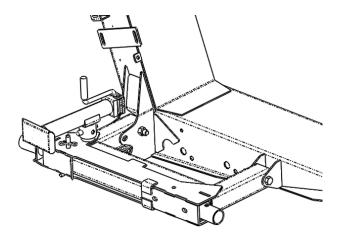
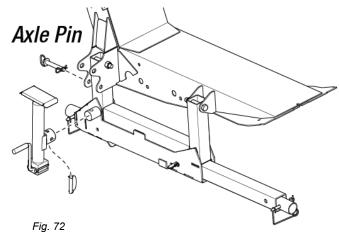
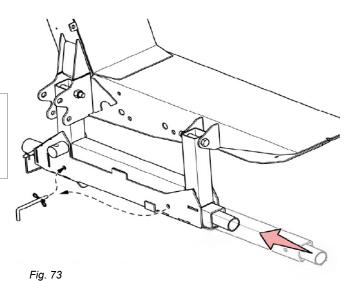
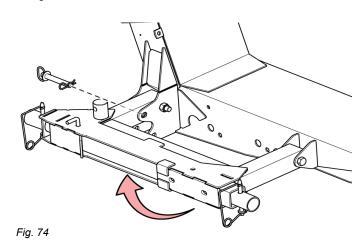


Fig. 71 Axle Storage









6.9 - Store the Transport Hitch

- 1. The swather should still be lifted from the ground at this point, with the table safety lock in place.
- Fully retract the jack on the left end of the table by turning the jack handle, retract the lower leg of the jack and secure it with the jack pin.
- Release the hitch clamp, remove the chain and slide the jack off the hitch tube. Store the jack and tighten the clamp.
- 4. Pull the Lock Pin on the hitch tube and slide the tube into the storage sleeve. Attach the hitch safety chain to the storage stub.



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



When delivering to the left side in double swath mode, the hitch tube will need to be removed.

Locate and remove the hitch pins at both ends of the hitch tube sleeve to remove it from the table.

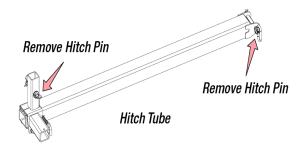


Fig. 79 Hitch Tube

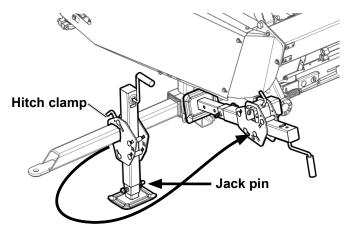
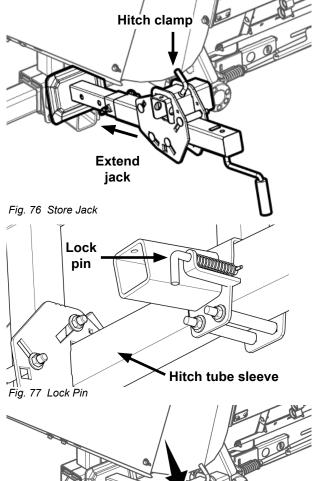


Fig. 75 Hitch Clamp



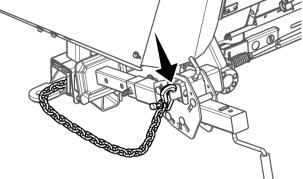


Fig. 78 Safety Chain

Revision 1.1 P/N 95292-2025



6.10 - Calibrate Power Take-Off (PTO) Draper (6-cylinder units only)



To avoid injury, ensure power unit is on level and firm ground. While calibrating, you will be prompted to start the engine. Before starting, use the horn and clear the area of people and pets.

Failure to do so could result in serious injury or death.

Note: Prior to calibration, verify that the hydraulic oil has reached operating temperature. If the oil temperature is low, an A-093 error code ("Hydraulic oil temp low") will be displayed, and engine RPM will be restricted until adequate oil temperature is achieved.

These instructions calibrate the header drive for a draper header on a 6-cylinder windrower. Before starting, ensure the header type is set to "Draper" by navigating to Home > Toolbox > Header and selecting "Draper."

- Turn the ignition key to "On", but do not start the engine.
- 2. From the home screen, navigate to the "Calibrations" screen.
- 3. In the calibrations menu, select "2023 Honeybee Draper PTO calibration" (if available), or "PTO-Draper", then press OK to continue.

4. Header RPM Sensor Check .

When prompted, verify the following before proceeding:

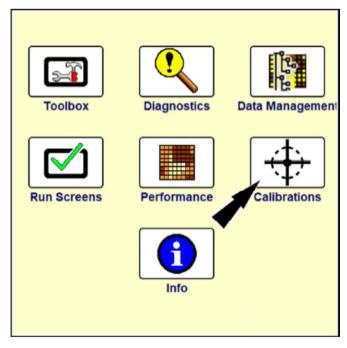
Header RMP Sensor

- Ensure the header RPM sensor is installed, configured, and functioning correctly.
- The sensor is located on the left-hand knife drive
- Check that the gap between the sensor and the disc is between 1/32" and 1/16."

MFH/MFP Lever

 Confirm the MFH/MFP lever is in the neutral position.

- 5. Start the engine as prompted.
- Engage PTO as instructed to continue calibration.
- 7. After calibration, a "Calibration Successful" message will appear, followed by a prompt to turn off the engine.



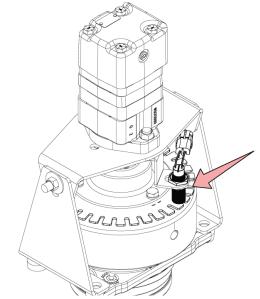


Fig. 80 RMP Sensor



6.11 - Mounting Checklist

Strut mounting boots installed securely in table
Lift arms seated in boots and locked in place by lift arm locks.
Header tilt cylinder installed securely to center of table
Transport axle and hitch tube in storage (field) position
Transport parts stored for future use
Gauge wheels installed and secured (if equipped)
Main hydraulic hoses connected to table quick couplers
Reel lift hose connected to tilt circuit
All electrical connections complete
Reel tie down straps/wires removed
Crop dividers and divider pipes installed
Swather table leveled

Page 44 Revision 1.1 P/N 95292-2025



6.12 - 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.

6.13 - 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 windrower settings to achieve a suitable rate of movement as described in the windrower's operator manual. 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. For each system you activate, monitor its readings on the display 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.

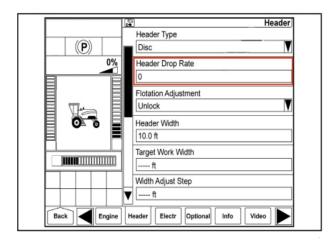


6.14 - Header Drop Rate

Adjustments to the header drop rate regulate the speed at which the header lowers to the ground, enabling the operator to set a preferred descent speed without impacting header flotation during normal operation.

Adjustment

- Select Toolbox / Header / Drop rate. Select the drop rate and adjust with arrows as desired.
- 2. If the descent rate is unsatisfactory, proceed with adjustment.

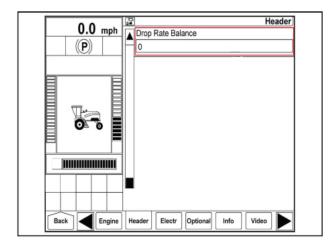


Drop Rate Balancing

To achieve lateral leveling of the header, adjust the header drop rate balance to compensate for the heavier side.

Header Drop Rate Ballance Adjustment

- 1. Slect Toolbox / Header / Drop Rate Balance
- 2. Lower the header and watch how both sides drop.
- 3. If one side drops slower than the other the header is not level.
- 4. Increase the drop rate by +1 on the side that drops more slowly to increase drop speed.
- 5. Test the header again to see if both sides lower evenly.
- 6. Repeat the adjustment (if needed) until the header is level.





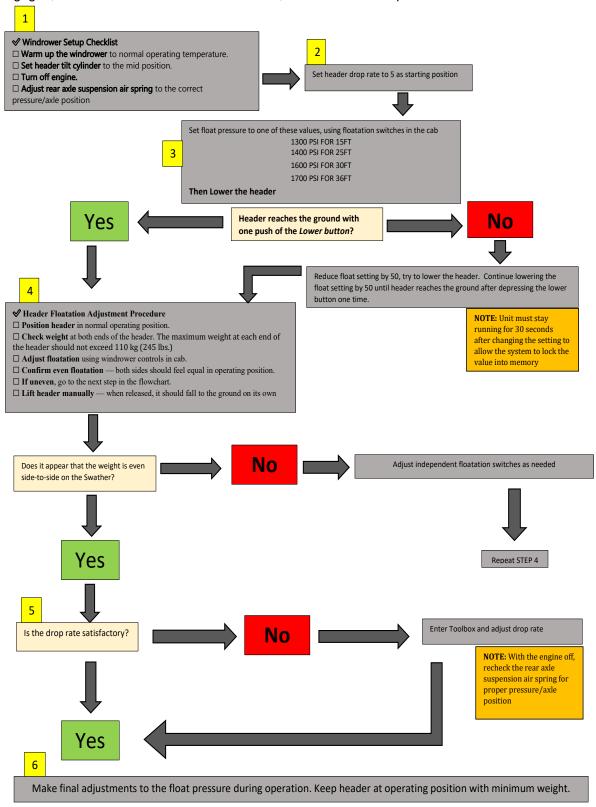
If adjusting the drop rate balance is unsuccessful in balancing the header, the pressure relief valves on the lift arm cylinders of the windrower will need to be adjusted by an authorized CNH Dealer.

Page 46 Revision 1.1 P/N 95292-2025



6.15 - Floatation Calibration

Note: All procedures outlined must be performed with the engine running at high idle (above 2000 RPM), the park brake engaged, and the header PTO switch turned off, unless otherwise specified.





7 - Operation

7.1 - Initial Start-up



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

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



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

- 3. With the swather completely lowered, (in full contact with the ground) inspect the swather for damaged or loose parts, nuts and bolts. Repair or replace any such parts as required.
- 4. Check hydraulic reservoir oil level on the windrower. Fill to recommended level according to instructions in windrower owner's manual.
- 5. Ensure that all protective shields are in place and properly secured.
- 6. Check that transport/gauge wheel tires are inflated to the recommended pressure of 80 psi. (550 kPa).
- 7. Check all hydraulic hoses and fittings to be sure they are tight, properly connected, and that no hose damage has occurred during mounting. Repair or replace any damaged parts before re-starting the machine.



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.

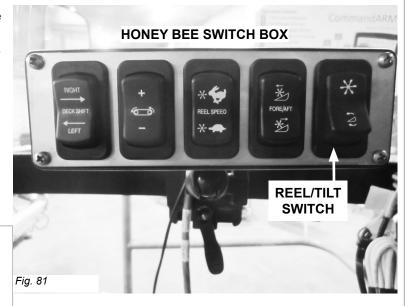
- 8. Lubricate the swather. See service points in the Lubrication section of this manual.
- Restart the windrower (see windrower Operators Manual). Engage the Park Brake.

Page 48 Revision 1.1 P/N 95292-2025



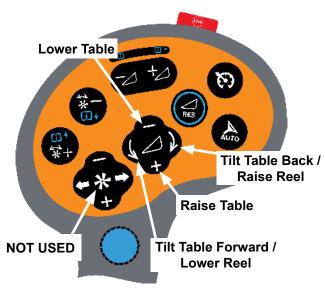
7.2 - Reel Lift Controls

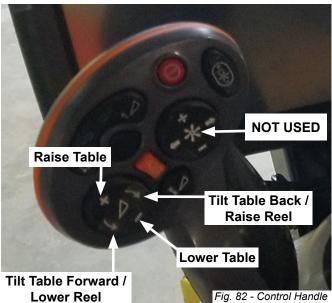
Depress the Right Hand switch on the Honey Bee Switch Box to engage Reel Lift mode. Depress the platform tilt button, on the multi-function handle to raise the Reel until the cylinders are fully extended. Hold the button on momentarily, then drop the reel to its lowest position (cylinder fully retracted). Complete this cycle at least twice to ensure the system is working properly.





The Reel Adjust Quad is not used for reel position adjustment. See the levelling section for details







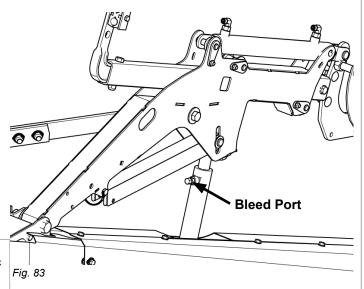
7.3 - Bleeding Air Out Of Reel Lift Circuit

If the reel moves unevenly, bleed the slave cylinder. Perform this only with the swather drive disengaged and the swather resting on the ground. Lower the reel to the bottom of its stroke. The reel cylinders have a collapsed length of 24" and a fully extended length of 40".

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 right 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.

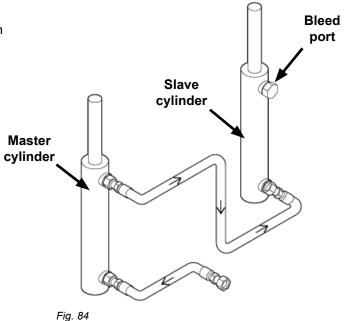


Because of expansion in hydraulic lines, it is normal for the slave cylinder to lag slightly when lifting the reel



7.4 - 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 barrel end of the slave cylinder.



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Page 50 Revision 1.1 P/N 95292-2025



7.5 - Additional Checks:

1. Unlock the platform.



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.



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.
- 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.



7.6 - 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

Page 52 Revision 1.1 P/N 95292-2025



7.7 - Full Dismount



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

 With the windrower running, lower the reel to its lowest position and retract fore/aft fully. Lower the swather to the ground.



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 wires running from the windrower to the swather (21 pin connector).
- Uncouple all hydraulic hoses connecting swather to the windrower. Secure the main hydraulic hoses so that they will not interfere with the windrower or the swather when the windrower is being backed away from the swather.
- 4. Start the engine, lift the table to its fully raised position.



To raise table to full height, windrower float pressure will need to be increased.

Lock platform in fully raised position as described previously, and in your windrower Operator's Manual.

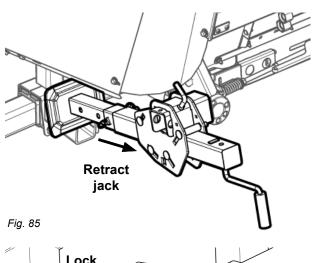


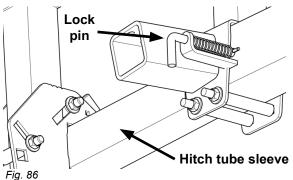
Shut the engine down and wait for all moving parts to stop before leaving the cab. Ensure the park brake is set.



7.8 - Self Storing Hitch – Transport Position

- 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 to secure it in place.
- 9. Extend the lower leg of the jack to a suitable length and secure with the jack pin.
- The swather should still be lifted from the ground at this point with the table safety lock in place.





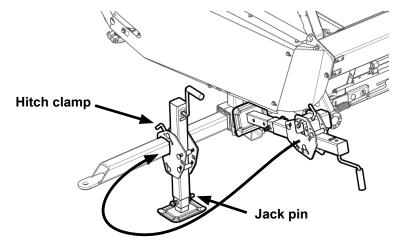


Fig. 87

Page 54 Revision 1.1 P/N 95292-2025



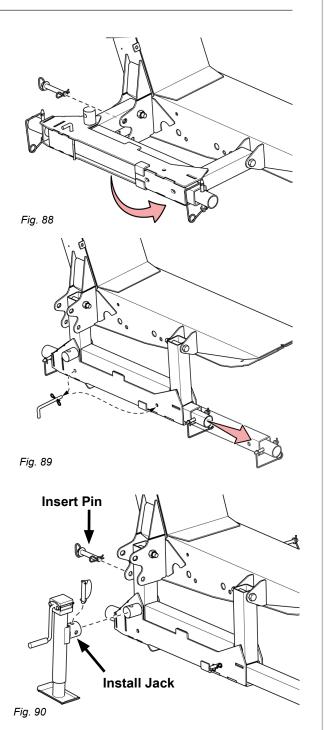
7.9 - Install Transport Axle

11. Carefully lower the axle from the field position to the transport position. Ensure the hitch pin has been inserted back into the bracket in the transport position.



The axle is heavy!

- 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 cutter bar 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.





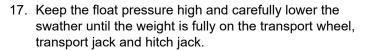


As long as the table is still fully raised, there won't be any pressure on the pin.

- 15. Place the platform lock in the unlock position.
- 16. Restart the windrower.



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



- 18. While float pressure is still high, lower the header as close to the ground as possible while maintaining header weight on the lift arms.
- 19. Disengage the lift arm safety locks and remove safety pins if they exist.
 - Pivot the locking plate upwards to allow the lever to move freely.
 - Pull the lever away from the mounting arm to disengage.
 - Leave both mounting arms in a disengaged position.
 - (Refer to CNH Operators Manual for more detail)
- 20. Lower the header to the ground.
- 21. Select 'Header Removal Mode On'
- 22. Disconnect the top-link header may need to be lifted slightly to relieve pressure on top-link.
- 23. Lower the lift arms until they disengage from the header
- 24. Ensure all hoses and harnesses are disconnected, then slowly back the windrower away from the header.

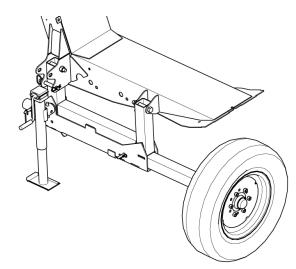


Fig. 91

Page 56 Revision 1.1 P/N 95292-2025



7.10 - Final Dismounting Steps.

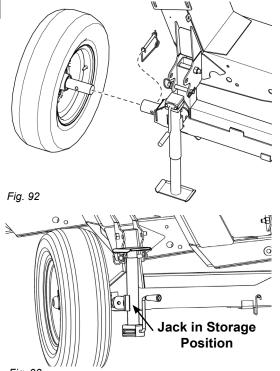


If the swather moves, stop immediately and find the cause.



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.
- 26. Retract 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 boots.



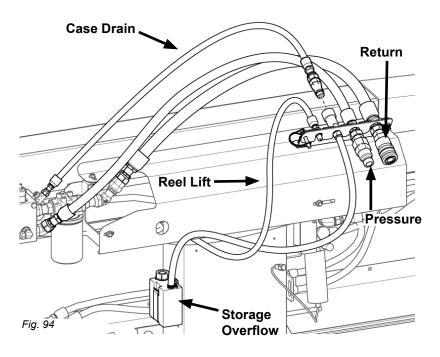


7.11 - Hydraulic Hose Storage

29. Secure disconnected hydraulic hoses in the storage bracket as shown below. Connect the case drain hose to the storage overflow tank, this will catch any overflow in the event of thermal expansion.



Ensure the all disconnect hoses have their dust plugs installed.



Page 58 Revision 1.1 P/N 95292-2025



8 - Reel

8.1 - Reel Drive

Depending on the table model, the reel is powered by one or two hydraulic motors connected via a direct-drive coupler to the reel assembly.

Regularly inspect and torque the coupler bolts and motor mounting bolts to the specified values. Verify motor-to-reel tube alignment and adjust by shimming the mounting bolts as necessary to maintain proper alignment and prevent premature wear.



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.

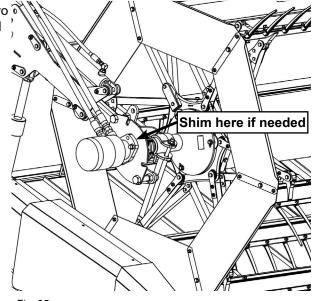


Fig. 95

8.2 - Reel Speed Adjustment

Reel speed is controlled via the switchbox in the windrower cab. The maximum reel speed limit is controlled by the priority flow control cartridge as shown in section 9.14 - Draper & Reel Maximum Speed Adjustment page 76. The flow control should only be adjusted if instructed to do so by the manufacturer or a dealer.

"Down" crops require a higher reel speed compared to standing crops. Adjust the reel speed using the windrower control so that the reel appears to "pull" the windrower forward through the field.

Reel Speed Guidelines and Effects

Reel Speed Too Low

- Crop is not adequately pushed against the cutter bar, causing incomplete transfer onto the draper.
- Cut crop may be pushed forward onto the ground, resulting in loss.
- Increased risk of crop wrapping around the reel due to bunching along the cutter bar front
- The reel should gently guide the crop onto the cutter bar and sweep it onto the draper

Reel Speed Too High

- · Crop may be stripped or shelled by reel impact, reducing grain quality.
- Crop may be pushed down before cutting, leaving uncut sections in the field.
- Cut crop can wrap around the reel because it does not settle onto the draper properly.

General Recommendation

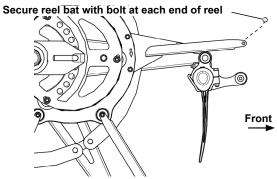
Hay crops can typically be harvested using higher reel speeds without negative effects.



8.3 - Reel Position

8.3.1 - Hydraulic Fore & Aft

All swather reels have hydraulic fore and aft adjustment controlled from the windrower, allowing forward and backward movement of the reel assembly. Note: Remove the reel tie wires securing the fore/aft position before operating.



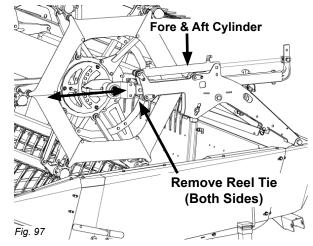


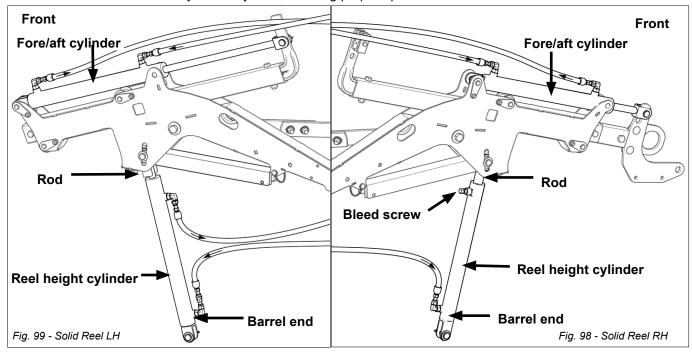
Fig. 96 - Raise reel fingers to operation position

8.3.2 - Reel Bat Timing Position

Raise the front reel bats to the operational position and secure each end to the timing arms using 5/16" x 1-1/2" UNC bolts and 5/16" UNC C-lock nuts

8.3.3 - Solid Reel Hydraulic Circuit

Hydraulic pressure from the windrower is applied to the barrel end of the left-hand reel lift cylinder. As the cylinder rod extends, hydraulic fluid is displaced in a volume equal to the barrel volume of the right-hand cylinder. This displaced fluid actuates the right cylinder, causing it to extend. The right cylinder is equipped with a vent to allow air to bleed from the hydraulic system, ensuring proper operation.



Page 60 Revision 1.1 P/N 95292-2025



8.4 - Reel Arm Leveling and Height Adjustment

8.4.1 - Reel Height Adjustment

Proper setting of minimum reel height will protect against unexpected reel movements that can place reel fingers in contact with cutter bar.



Start the windrower, fully lower the swather and fully lower the reel. Engage the parking brake, shut the windrower down, and allow all moving parts to come to a complete stop before exiting the cab.

- 1. Measure the distance between the reel fingers and the knife on the left and right and center of the reel. The minimum distance should be between 1" and 5" (2.5cm 12.7cm).
- 2. If necessary, the reel height can be adjusted via the adjustment bolt on each reel arm. Turn the bolt clockwise to raise the reel, turn the bolt counter-clockwise to lower the reel.

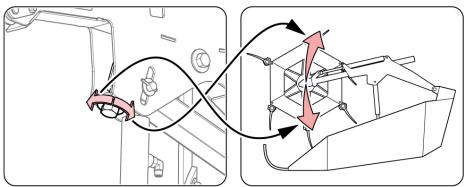


Fig. 100 - Reel Height Adjustment



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



When servicing the reel, it is necessary to have the reel locked into the service position with the reel arm lock, or lowered to its lowest position, this will prevent sudden drops in the event of hydraulic failure.



8.5 - 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.

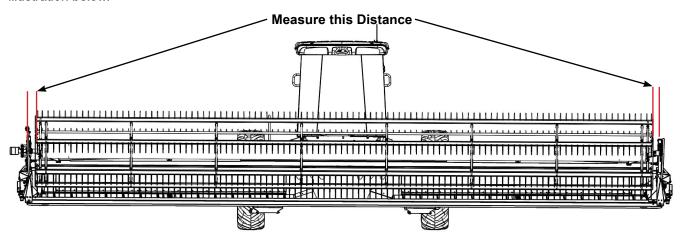


Fig. 101

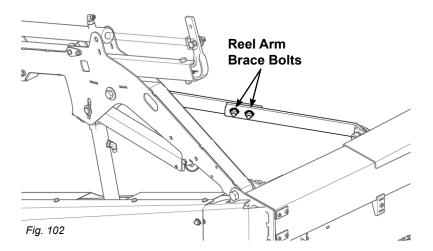
If the reel is not centered on the swather, proceed as follows:



Start the windrower, fully lower the swather and fully lower the reel.

Engage the parking brake, shut the windrower down, and allow all moving parts to come to a complete stop before exiting the cab.

- 1. Loosen the carriage bolts that secure the reel arm braces on both ends of the reel.
- 2. Push the reel arms until reel is centered.
- 3. Tighten bolts when centered.



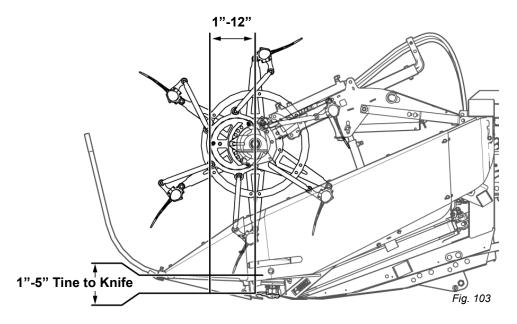
Page 62 Revision 1.1 P/N 95292-2025



8.6 - Placement of the Reel on the Swather

The distance from the tip of the guard to the center of the Reel Tube can be adjusted from 0" to 12" (300 mm) depending on the crop.

- Normally the more "down" the crop, the further ahead the reel should be set. See next section.
- Setting the reel too far ahead will not push the crop into the knife, nor will it efficiently deliver it onto the draper.
- Set the reel tines the same distance from the guards on both ends.
- Adjust the reel height stops so that the tine tips miss the guards and sickle by at least 1" with the cutter bar fully raised, to avoid cutting tines, and breaking knife sections. Wider tables will require more clearance due to increased flexing.
- Normally the more "down" the crop; the closer the tines will need to be placed to the cutter bar, down to this 1" minimum.



8.7 - Reel Position in Down Crops

- The reel height in down crops should be low enough that the tines can lift the crop up and onto the cutter bar.
- The tines should be adjusted so they pick up the crop and lift it onto the cutter bar with a minimum of the crop carrying around the reel.
- The fore and aft position of the reel should be adjusted so the reel center tube is about 12 inches (300 mm) in front of the cutter bar so the crop is lifted before it gets to the cutter bar.



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.



8.8 - Reel Position in Standing Crops

For standing crops, proper reel height adjustment is typically achieved when the reel bats engage the crop approximately midway between the cutter bar and the crop top.

The reel's fore/aft position should be adjusted so that the reel center tube is positioned slightly ahead of the cutter bar.

If the reel is positioned too far forward, the crop will not be adequately pressed against the cutter bar, resulting in a portion of the cut crop falling to the ground. Conversely, if the reel is positioned too far rearward, the crop may be pushed down excessively during cutting, causing some grain heads to be missed.

8.9 - Reel Tine Pitch Adjustment

Plastic reel tines are mounted on the leading edge of the reel bats. To adjust tine pitch, follow the procedure below:

Safety Precaution: To prevent serious injury, raise the reel and engage the reel lift safety stops. Shut off the engine, set the parking brake, and remove the ignition key before exiting the operator's cab.

- Firmly grasp the handle and pull, then rotate the lock pin laterally to disengage it from the reel.
- Raise the handle to decrease finger pitch aggressiveness
- · Lower the handle to increase finger pitch aggressiveness
- Once the desired tine pitch is set, re-engage the lock pin to secure the position.
- Repeat this procedure on the opposite end of the reel to ensure symmetrical finger pitch on both sides.
- After adjustment, readjust the reel height and fore/aft position to maintain a minimum knife clearance of 1" (2.5 cm) for safe operation.

Adjust the tine pitch initially so that the tines are perpendicular to the cutter bar. Excessive pitch can cause the cut crop to be scooped and carried around the reel, reducing efficiency.

For lodged or downed crops, position the reel center ahead of the cutter bar and increase tine aggressiveness to lift the crop effectively while ensuring it is deposited onto the draper decks after cutting.

Proper tine pitch adjustment is critical for optimal swather performance. Adjust the tines according to specific crop conditions, and document the optimal settings for future reference.



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

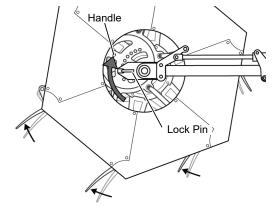
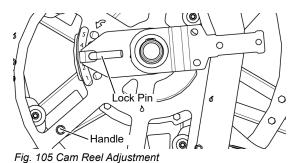


Fig. 104 Less Aggressive Finger Pitch (HB Reel)

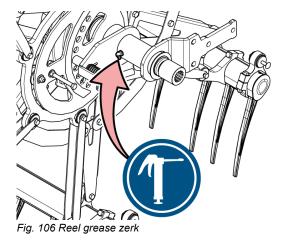


Page 64 Revision 1.1 P/N 95292-2025



8.10 - Lubrication - Reel Shaft Bearings

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



8.11 - 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.)
- Reel tines uniformly clear the knife.
- Reel arms are aligned. (No bow in the bat shaft or bat assemblies.)
- Auxiliary fingers have adequate clearance with side shields.
- Tine pitch has been set for the current application, and is uniform across swather.
- Hydraulic cylinders are functioning smoothly.
- Minimum reel height has been set correctly on the reel height control arms.
- Fore & aft hydraulic cylinders extend and retract fully.
- Vertical distance from the knife to the reel center is set for the current application.
- Reel is horizontally centered in the swather opening.



9 - Draper and Decks

There are two lateral drapers on the table which move the crop to the opening. All drapers must be set, and maintained properly to perform well. Quick release adjusters with spring tensioning allow easy access for cleaning, and maintain proper draper tension. Unpack the draper. Check the size to ensure it is correct for the size of the deck.



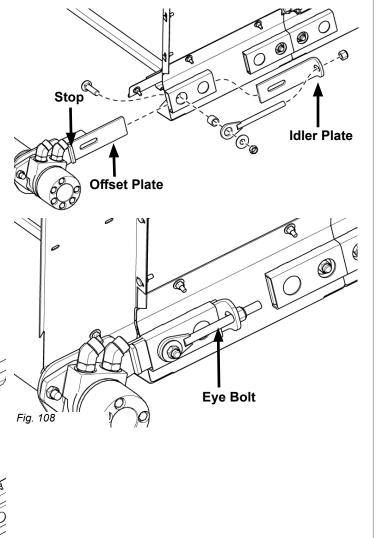
Lower the swather to the ground or onto stable blocks, whichever provides the most comfortable working height.

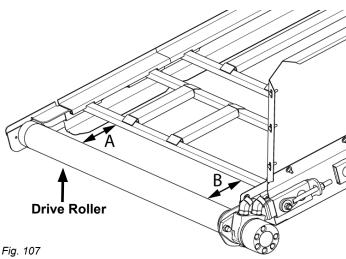
Raise the reel to its maximum height and place the locks on the reel lift cylinders to prevent the reel from falling.

9.1 - Lining Up the Drive Roller

Prior to installing the draper, ensure that the drive roller (the draper roller with the motor) is properly aligned. This is done by setting the end of the offset plate flush with the c-channel of the deck. Adjust the eye bolt until the end of the idler plate contacts the stop on the offset plate if not so already.

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



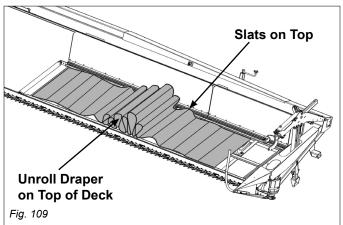


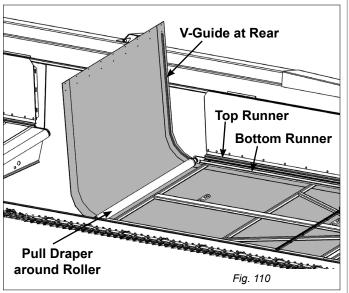
Page 66 Revision 1.1 P/N 95292-2025

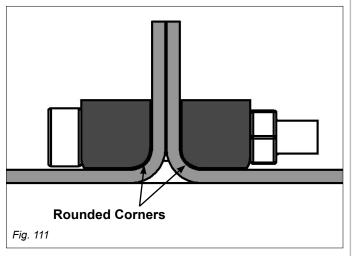


9.2 - Draper Installation

- Ensure that the quick release lever is in the open position prior to installing the draper on the deck. The location of the lever is shown in Fig. 116 on page 70.
- 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.
- Pull draper through bottom runner, and wrap around the other roller. Pull the ends of the draper together. Install a connector bar to close the joint. Take note of the position of the rounded corners on the connector bar.
- 5. The heads of the screws for the connector bar should be installed from the centre opening side. This helps prevent the crop being caught on the screws. Complete the installation by adjusting tension and tracking as described on the following pages.
- 6. Once the draper is installed on the draper deck, close the quick release lever (shown on following page) to apply tension to the draper.









9.3 - Tensioning

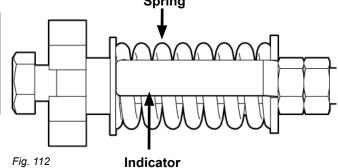
Proper tension must be maintained on the draper to prevent slipping on the drive rollers. The draper tension is changed by adjusting the idler roller of each deck.

9.3.1 - Spring Tension Indicator

The spring tensioners are equipped with a spring length indicator to show the proper amount of tension that should be applied when the decks are tensioned, prior to field operation.



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



To check if tensioning is required:

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



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

If tensioning is still required:

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



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

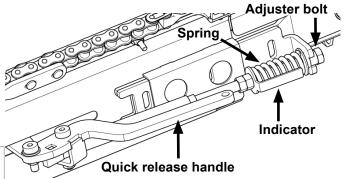


Fig. 113 - Deck Tensioning

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

Page 68 Revision 1.1 P/N 95292-2025





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.

9.4 - Tracking

The draper must track properly on the rollers to avoid damage to the drapers. The draper decks allow for approximately 1/4" clearance on each side.

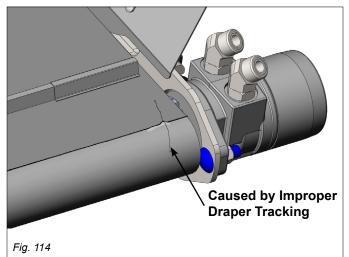
9.4.1 - Drive Roller Tracking Adjustment

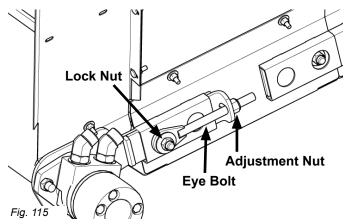
This roller is fixed at the cutter bar, so it is adjustable only at the back panel. If the draper is tracking toward the back panel, tighten the nut on the eye bolt (shorten the eye bolt). This will push the idler mount plate and drive roller at the back panel end out, creating more slack in the draper at the cutter bar.

If the draper tracks toward the cutter bar, lengthen the eye bolt. This will pull the idler mount plate and drive roller in, creating slack in the draper at the back panel end.



The draper will track to the slack side.







9.4.2 - Idler Roller Tracking Adjustment

There is no direct adjustment for tracking on the idler roller end. It is self tracking by way of the v-guide in the drive roller and tensioning system

9.5 - 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 Honey Bee Switch Box Fig. 116 on page 70this page or Fig. 55 - Switch box controls on page 37.

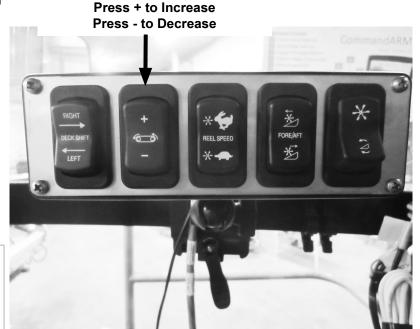
9.5.1 - Additional Draper Speed

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.



Rocker Switch Adjuster

Fig. 116

Page 70 Revision 1.1 P/N 95292-2025



9.6 - Draper Splicing

Honey Bee Manufacturing is committed to delivering high-quality draper materials across its product line. The draper consists of rubberized polyester reinforced with fiberglass slats for enhanced durability. Routine maintenance is essential to maximize service life, with particular attention to proper tension and tracking. Material buildup inside the deck can lead to wrapping around the idler and drive rollers, which increases draper tension. Excessive tension places additional stress on both the draper and the drive motor, potentially resulting in premature failure of either component.

Draper tears may occur due to improper tracking, the presence of foreign objects, or careless operation. If damage is limited to a section of the draper, a splice repair may be performed. Before starting the repair, ensure you have one additional connector bar set and a replacement draper section that is at least $2\frac{1}{2}$ inches longer than the portion being removed.

Let me know if you'd like this formatted as part of a manual or instructional guide.



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.)
- 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. Cut the draper midway between two slats to ensure sufficient material for the new splice. Using a measuring tape, mark a line six inches from a slat on an undamaged section. Place a board beneath the marked line to support the cutting area. Using a utility knife and a straight edge, cut along the mark. Ensure the cut is accurate and square to maintain proper draper tracking. Repeat this process on the opposite side of the damaged area.
- 7. Lay the removed piece flat and measure its width. Add 3½ inches to this measurement to determine the required length of splice material. If two new connector bar sets are needed, add 5 inches instead.



- 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.

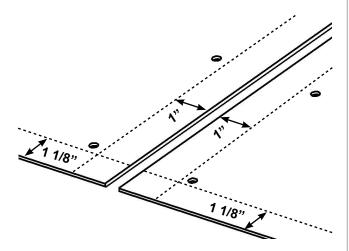


Fig. 117 - Draper Splice Measurements

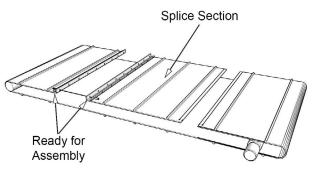


Fig. 118 - Connector Bar Install

Page 72 Revision 1.1 P/N 95292-2025



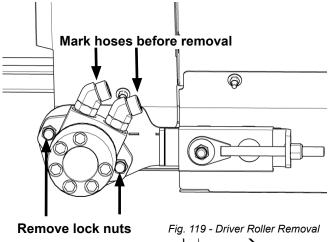
9.7 - Drive Roller Removal

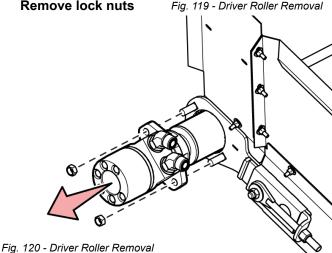
- 1. Relieve draper tension using the quick release lever.
- Mark hydraulic hoses on draper motor. Remove hoses. Insert plugs into hoses and caps on the motor to reduce oil loss and to prevent contamination.
- Remove the lock nuts that secure the motor onto the motor plate. It is not necessary to remove the adjuster bolt from the motor plate.
- 4. Pull the motor with drive roller through the hole in the motor plate.
- 5. Check bearing in end of roller, and remove any build up of material on roller.



Check and remove any built up material from the draper deck runners. If necessary, split draper at connector bar to gain access to inside of the deck.

To re-install drive roller, reverse above procedure. Adjust tension and tracking as necessary.





9.8 - Removing Draper Motor

- 1. Remove Hex Bolt set screws.
- Insert two pry bars—one on each side of the motor and carefully pry the motor out of the drive roller. Do not strike or apply force to the motor housing flanges, as this may cause damage and void the warranty.
- 3. If the motor does not move using pry bars, insert a 7/8" or 3/4" rod through the center of the drive roller and apply force directly to the motor shaft.

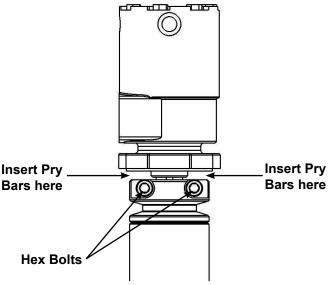


Fig. 121 - Draper Motor Removal



9.9 - Replace Bearings on Drive Roller

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

- Remove the seal securing the bearing assembly in place. Prepare to install a new seal during reassembly.
- 2. Remove the snap ring that retains the bearing in position.
- From the opposite end of the roller—away from the bearing to be removed—insert a small rod through the roller's interior and carefully push the bearing out.
- Use the rod to drive the bearing out.
- Install new bearing, and replace the retaining ring and seal.

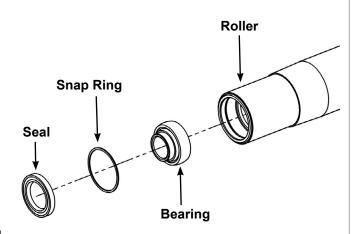
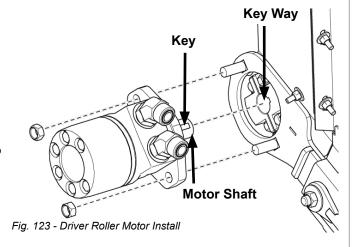


Fig. 122 - Driver Roller Bearing

9.10 - Installing Draper Motor

- 1. Clean motor shaft and hub of drive roller. Apply antiseize to shaft.
- Insert key in motor shaft.
- 3. Insert the motor into the hub, aligning the key on the shaft with the keyway in the hub. Do not strike the motor housing flange, as this can cause damage and void the warranty. Use a soft-faced or rubber mallet to gently apply force to the end of the motor.
- Tighten set screws.



Page 74 Revision 1.1 P/N 95292-2025



9.11 - Idler Roller Removal

- 1. Relieve the draper tension using the quick release lever located next to the idler roller.
- Remove the bolt securing the tensioner to the sway bar as shown in Fig. 124 on page 75. This will allow you to slide the tensioner assembly partially out of the c-channel far enough to remove the roller.
- 3. Remove the roller and check bearing in end of roller, and remove any build up of material on roller.

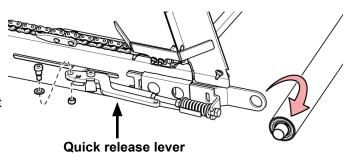


Fig. 124 - Remove Idler Roller

9.12 - Replace Bearings on Idler Rollers

Bearing Retention

The roller bearings are interference-fit (friction fit) into the roller housing and secured with a retaining (snap)

5. Seal Removal

Remove the seal that retains the axle and bearing assembly. Note: The seal is not reusable and must be replaced with a new one during reassembly.

6. Snap Ring Removal

Remove the snap ring securing the bearing and axle assembly.

7. Axle Extraction

Firmly grasp the axle and withdraw it from the roller. Ensure the hexagonal end is extracted first.

Bearing Removal

From the opposite end of the roller (relative to the bearing being removed), insert a suitable rod or drift through the roller core and gently drive the bearing out.

9. Component Installation

Install the new bearing by pressing it into place. Reinstall the axle, snap ring, and a new seal to complete reassembly

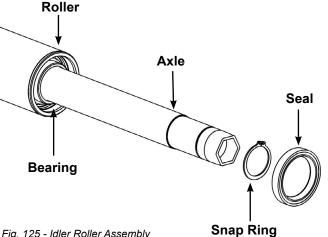


Fig. 125 - Idler Roller Assembly

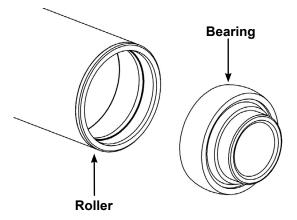


Fig. 126 - Idler Roller Bearing

P/N 95292-2025 Page 75 Revision 1.1



9.13 - Draper Deck Maintenance:

- 1. Remove draper connector bar.
- 2. Remove draper clean draper of debris, both sides.
- 3. Store draper indoors.
- Clean debris from rollers, deck channels, and runners.
- 5. 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.
- 7. Check idler roller bearings; they should spin freely.
- 8. Check drive roller bearings.
- 9. Check bearing stubs.



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

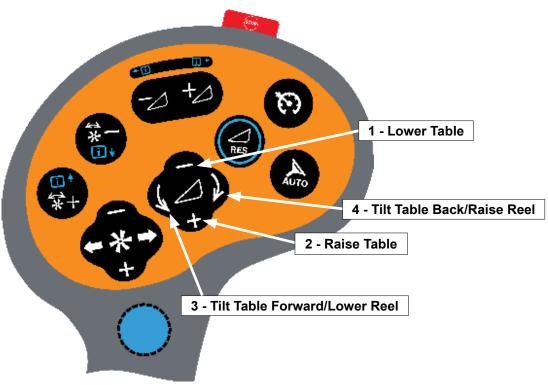


Fig. 127.

Page 76 Revision 1.1 P/N 95292-2025



9.14 - Draper & Reel Maximum Speed Adjustment

Draper and reel speeds are regulated through the control switch panel located in the windrower cab. The maximum achievable speed is hydraulically limited by the priority flow control cartridge mounted on top of the hydraulic manifold at the center rear of the swather. This maximum flow setting is factory-calibrated and must not be adjusted unless explicitly directed by the equipment manufacturer or an authorized dealer.



Ensure that all equipment is shut down and has stopped moving before attempting to adjust the maximum draper and reel speed.

To adjust maximum draper and reel speed:

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

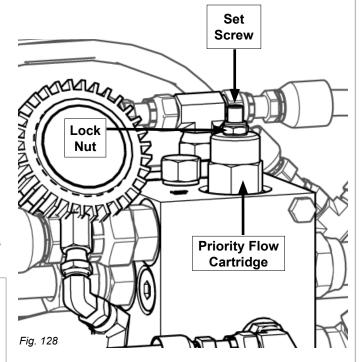


Adjusting the set screw only sets the maximum speed limit.

The pump flow is set by the windrower controls.



To set this cartridge, loosen the nut and turn the screw all the way in, then turn it out four full turns and re-tighten the nut.





10 - 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.



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.

10.1 - Knife Speed

See section 12.6 on page 90

10.2 - Removing the Knife

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

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

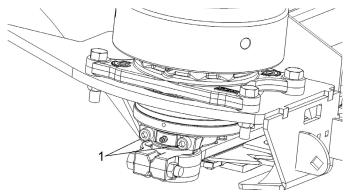


Fig. 129 - Knife Removal

Page 78 Revision 1.1 P/N 95292-2025



10.3 - Guards

When installing replacement guards, ensure the new guard is oriented with the SCH stamp facing upward. The spacer bar must be positioned on top of the cutter bar, and the crimp-lock nut on each guard bolt should be installed on the top side.

Proper alignment is essential for optimal cutting performance and component longevity. Before tightening the guard bolts, push the spacer bar fully rearward against the cutter bar and pull the guard fully forward into position. Use a straight line of sight along the length of the cutter bar to confirm all guards are properly aligned. Once alignment is verified, secure the guard bolts to the specified torque.

10.4 - Sickle Sections

The sickle sections on the knife assembly must be installed in an alternating pattern, with cutting edges positioned alternately on the top and bottom surfaces of consecutive sections. This alternating configuration is essential for proper scissor action and efficient crop cutting. All sickle sections must be in good condition, free from damage or excessive wear, to ensure optimal cutting performance and header efficiency.

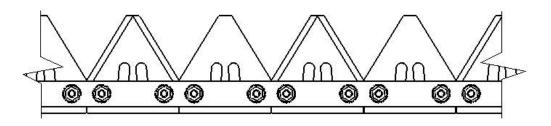


Always alternate the sickle sections, one with the serrations facing up, the next, facing down.

Replace a Section:

- 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.

- 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.



OR

Fig. 130 - Sickle Sections



10.5 - Knife Drive/Knife Head

Routine maintenance of the knife drive and knife head assembly is essential to ensure optimal swather performance and to prevent premature component failure.

Knife Drive Hold-Down Bolts: Inspect daily. Verify tightness and torque bolts to the specified value as required.

Knife Head Bearing: Inspect daily for looseness. If movement is detected, first verify the torque of the bearing retaining bolt. If the bolt is properly tightened and looseness persists, inspect the condition of the bearing and sleeve. Replace any worn or damaged components immediately to prevent failure of the knife drive.

Knife Head Locking Bolt and Cap Screws: Inspect daily. Ensure the knife head locking bolt and all socket head cap screws are properly tightened. After tightening, manually rotate the knife drive to verify that all bearings rotate freely without binding or resistance.



The knife drive must operate in a counter-clockwise direction to maintain proper torque on the bottom cap screw and prevent it from loosening during operation.

Inspect the knife head mounting bolts, which secure the knife head to the knife back, on a daily basis. Tighten these bolts to the specified torque of 120 in-lbs (13.5 Nm / 9.96 ft-lbs) as required to ensure secure fastening.

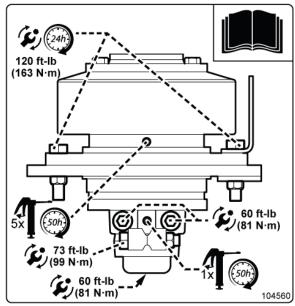


Fig. 131 - Knife Drive Detail

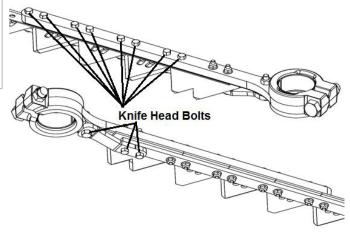


Fig. 132 - Knife Head Detail

Page 80 Revision 1.1 P/N 95292-2025



10.6 - Connector Bar

On select Honey Bee swather models, a connector bar is utilized to join two knife back sections. The sickle sections are fastened to the knife back. The connector bar mounts to the underside of the knife back using eight threaded inserts, which protrude slightly on the side contacting the knife back.

The knife back features slightly tapered holes designed to accommodate the sickle sections. The knife sections must be installed on the top side of the knife back—identified by the "TOP" stamp—ensuring the protruding inserts on the connector bar engage snugly within the tapered holes.

During bolt tightening, the threaded inserts in the connector bar are drawn into the knife back, creating a clamping force on the bolts. Fasten the sickle section bolts to a torque of 115 in-lbs (13 Nm) to secure the assembly properly.

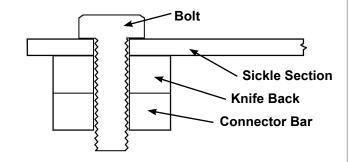
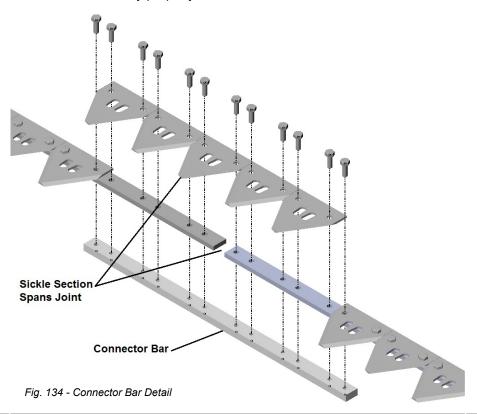


Fig. 133 - Knife Section Cutaway





Do not grind the inserts flush with the connector bar, as this compromises their function and may lead to knife failure. Inspect bolt tightness daily, and replace any broken or worn components as necessary.



10.7 - Overlap Kit

The overlap kit is designed for swathers equipped with dual knife drives. Fasteners located in the knife overlap area are countersunk to create a smooth sliding surface. Overlap guards feature an open-top design and increased depth to accommodate the double thickness of the overlapping knives. The overlap strap, which is bolted to the left-hand knife, slides over the countersunk knife sections in the overlap zone.

If excessive noise or overheating occurs during operation, verify that the overlap guards have been installed correctly. Additionally, the knife sections mounted on both the overlap strap and the right-hand knife back must be securely snugged against the backup bar once the countersunk bolts are fully tightened.

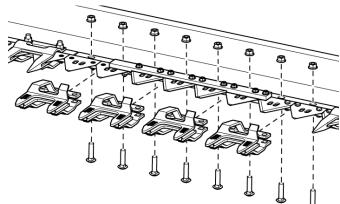
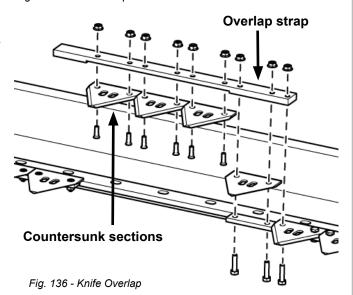


Fig. 135 - Knife Overlap Guards



Procedure for Addressing Loose Knife Sections:

- Remove the countersunk bolts securing the knife sections.
- Inspect the bolt holes in the knife back and overlap strap for the presence of a countersunk recess. This countersink enables the tapered bolt head to fully seat, ensuring proper clamping force on the knife section.
- If a countersunk recess is not present, create one by drilling approximately 1/32 inch (0.8 mm) deep using a 9/32 inch (7.1 mm) drill bit.
- After countersinking, reinstall the bolts and tighten to the specified torque

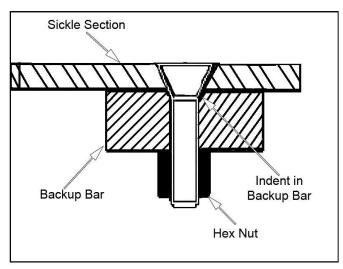


Fig. 137 - Knife Back Insert

Page 82 Revision 1.1 P/N 95292-2025



10.8 - Repair Broken Knife Back

In the event of knife breakage during operation, repairs can generally be performed using a connector bar. Knife back fractures commonly occur across a sickle section bolt hole. The damaged knife section must be removed by cutting out the affected area or by removing one or more knife sections.

If the break occurs near the knife head end, remove the compromised section, reconnect the knife head, and install the replacement section at the opposite end of the knife assembly, where mechanical stress is typically lower.

Important: The connector bar joint must be positioned directly beneath the center of a sickle section, and not at the junction between two sickle sections, to maintain structural integrity.

Regularly inspect the knife assembly for dull or damaged guards and sickle sections, as well as for accumulated crop residue. These are the primary factors contributing to knife breakage.



Correct any of these cause factors before resuming operation.

10.9 - Knife Speed Sensor

The table is equipped with a sensor mounted on the knife drive motor, enabling monitoring and calibration of the knife speed.

Ensure the sensor is positioned to maintain a precise gap of 1/16 inch (1.6 mm) between the pulse wheel and the sensor face for accurate signal detection.

10.10 - Monitoring Knife Speed

Knife speed can be displayed on the CommandTouch Corner Post of the Windrower. It will be seen as Platform Speed. Optimal Knife Speed is preset to 720 rpm.

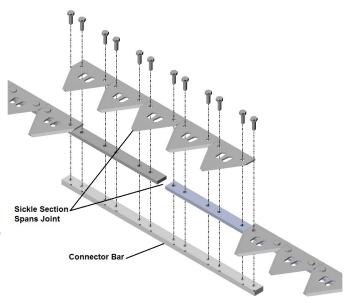


Fig. 138 - Knife Repair

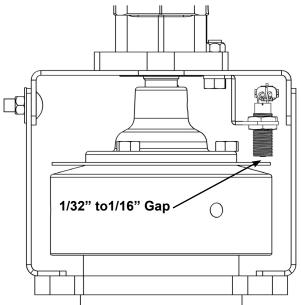


Fig. 139 - Knife Speed Sensor



11 - Leveling

11.1 - Forward Angle Adjustment – Hydraulic Tilt Cylinder

After completing all required hydraulic connections, initiate table tilt by selecting the Tilt mode on the Honey Bee Switch Box, then actuate the Tilt Button on the Multi-function Lever.

11.2 - Table Angle (Tilt)

The views of the windrower and table at the bottom of this page show the results of adjustments to the tilt cylinder.

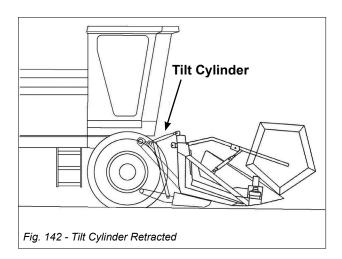
"Fig. 142 - Tilt Cylinder Retracted" Illustrates the tilt cylinder in its fully retracted position, which pulls the top of the table rearward. This adjustment causes the draper decks to operate closer to a horizontal orientation relative to the ground.

"Fig. 143 - Tilt Cylinder Extended" Depicts the tilt cylinder in its fully extended position, which tilts the table forward. This adjustment results in the draper decks operating at an increased angle relative to the ground.

The illustrated positions represent the full range of tilt adjustment. Operators should fine-tune the table angle within this range to optimize performance based on specific field conditions and desired swath characteristics.



In rocky, short-crop conditions, shorten the tilt cylinder to keep guard tips raised and reduce damage. For bushy crops like mustard, tilt the swather forward to maximize the header opening.





ia. 141

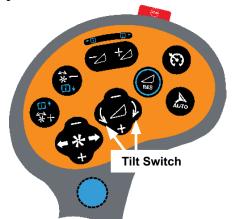
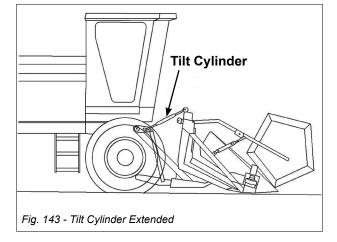


Fig. 144



Page 84 Revision 1.1 P/N 95292-2025



11.3 - Adjusting Independent Table Floatation

The Windrower Floatation feature enables the operator to laterally tilt the Honey Bee Swather Table, allowing it to conform to varying terrain contours or to compensate for weight imbalances for optimal cutting performance.

Refer to the windrower operator manual for detailed instructions on adjusting table floatation.

The table below provides approximate floatation settings for various Honey Bee WSC Swather models. Adjust these settings as needed to suit specific field conditions and equipment configurations, as additional attachments may necessitate modified floatation parameters.

TABLE SIZE	SUGGESTED PRESSURE	
15 ft	1200-1300 psi (83 - 90 bar) (8274 - 8963 kPa)	
25 ft	1400-1500 psi (97 - 103 bar) (9653 - 10342 kPa)	
30 ft	1500 – 1600 psi (103 - 110 bar) (10342 - 11031 kPa)	
36 ft	1600 – 1700 psi (110 - 117 bar) (11031 - 11721 kPa)	



11.4 - Setting the Cut Height

Cut height is controlled through the coordinated adjustment of three factors:

- Liftarm flotation pressure
- Header tilt angle, adjusted via the tilt cylinder (intended for fine-tuning only)
- Gauge wheel positioning

Begin by positioning the gauge wheels in the fully extended setting. Fig. 154 - Gauge Wheel on page 92. Adjust the flotation pressure to the values specified in 11.3 - Adjusting Independent Table Floatation Page 84. Drop the header using the *Lower header* button on the Multi Function Handle.



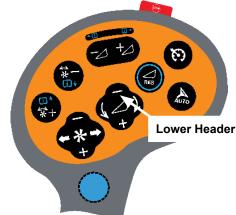


Fig. 145

Fig. 146

If the cutter bar height is unsatisfactory, adjust the flotation pressure incrementally to achieve the desired cut height. Following this, recalibrate the gauge wheels as detailed in Fig. 154 - Gauge Wheel on page 92.

Note: Gauge wheels are available exclusively for 30 ft and 36 ft models. For 15 ft and 25 ft models, use the end strut gauge wheels in conjunction with flotation pressure to support the header and set the cut height.



The header tilt angle is intended for fine adjustments to the cut height and should not be used for major height changes.

Page 86 Revision 1.1 P/N 95292-2025



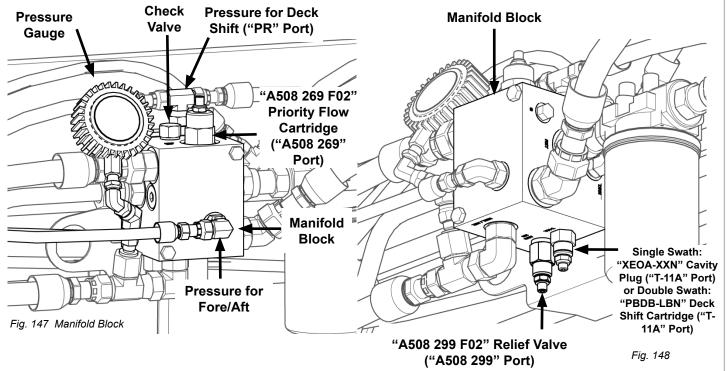
12 - Hydraulics

The swather utilizes the windrower's hydraulic system to operate its key functions. Hydraulic pressure is routed to a manifold block, which regulates distribution by directing primary flow to a 50/50 flow divider, supplying equal flow to the draper and reel circuits. Secondary flow is routed to the knife drive assembly. The system is equipped with a pressure relief valve, factory-set to 3000 psi (20,684 kPa), to protect against overpressure. Return-flow oil is filtered prior to re-entering the windrower's hydraulic reservoir, ensuring system cleanliness and component longevity.

See section 17.3 on page 116 for hydraulic schematics

12.1 - Manifold Block Cartridge Locations

Identification stamps are located on individual components, including port identification markings on the manifold block, to assist with part recognition and hydraulic routing during assembly and servicing.



12.2 - Flow Controls

The system utilizes an 11 GPM (41.6 LPM) flow control valve for the draper circuit and an 18 GPM (68.1 LPM) flow control valve for the reel circuit. The "R" (regulated flow) port on each valve supplies oil to the respective motors—draper motors for the draper flow control and the reel motor for the reel flow control. The "T" (excess flow) port on both flow controls directs surplus hydraulic flow directly to the return circuit, maintaining system efficiency and protecting components from over-supply.



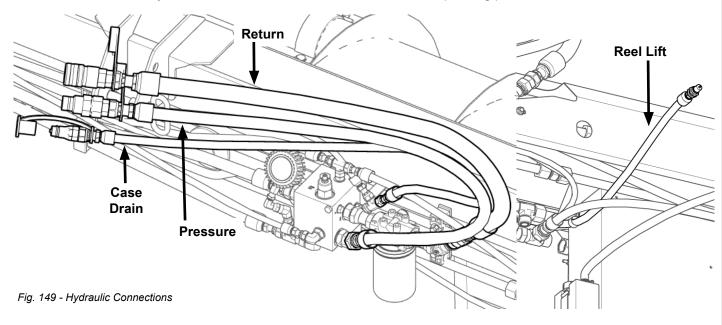
The windrower relief valve is set to 5000 psi (34,474 kPa). Use caution around pressurized hydraulics.

Ensure all quick couplers are securely connected before starting the windrower or powering the swather. Improper connections may cause serious injury or equipment damage.



12.3 - Hydraulic Connection Points

Connect the swather's hydraulic hoses, as illustrated below, to the corresponding ports on the windrower.



12.4 - Operating Pressure - Knife Circuit

The pressure gauge, located adjacent to the manifold block, displays the total hydraulic pressure required to operate the knife system.

For double knife configurations, normal operating pressure should range between 1200–1700 psi when the windrower is running at standard working RPM and the hydraulic oil has reached operating temperature.

Pressure fluctuations during cutting are normal and typically result from changing crop conditions. Additional factors influencing pressure include cutting system condition and ground speed.

Page 88 Revision 1.1 P/N 95292-2025



12.5 - Checking or Adjusting Knife Relief Pressure



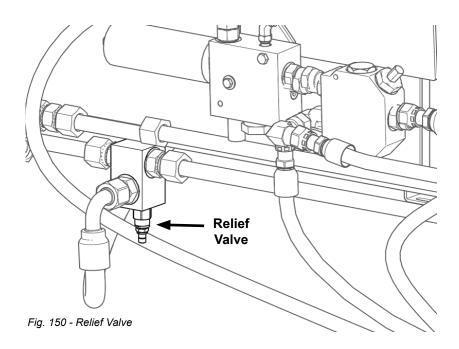
Set the park brake, shut off the engine, and wait for all movement to stop before exiting the cab.

Ensure all bystanders are clear before engaging the pump. Stall the knife only briefly to take pressure readings—prolonged stalling may cause damage.

- 6. Wedge a wood block firmly between a guard and knife section to stall the knife.
- 7. Restart the windrower, raise the reel, and install the cylinder lock.
- 8. Engage the hydraulic pump, bring engine RPM to operating speed, and observe the pressure gauge. If the reading reaches 3000 psi, shut down the windrower, and remove the wood block and reel cylinder lock.

If adjustments are necessary, shut down the windrower before proceeding with the following steps.

- 9. Locate the relief valve on the left side of the header (see below). Adjust the relief screw by turning clockwise to increase pressure or counter-clockwise to decrease pressure.
- 10. With the knife jammed as previously described, restart the windrower, engage the hydraulic pump, and verify the pressure reading.





12.6 - Knife Drive Speed Adjustment

Knife speed is controlled through the windrower's operator interface. The recommended operating speed is 720 RPM. Adjustment of this setting is generally not advised.



Operating the knife above 720 RPM increases the risk of accelerated wear, component breakage, and damage to the cutting system.



Verify that all equipment is powered down and stationary before adjusting knife speed. Do not exceed the maximum recommended speed of 720 RPM.

Page 90 Revision 1.1 P/N 95292-2025



12.7 - Draper and Reel Flow Controls

The draper circuit flow control is located on the upper tube on the left-hand end of the table.

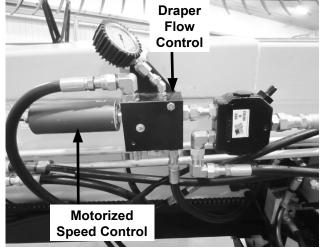


Fig. 151 - Draper Speed Control

The reel circuit flow control is located on the side of the strut on the right-hand end of the table.



Both flow control valves feature tamper-proof, factory-preset relief valves set to 3000 psi (206.9 bar), which are non-adjustable. Each valve incorporates an electrically actuated speed control, regulated via the corresponding draper and reel speed controls within the operator cab.

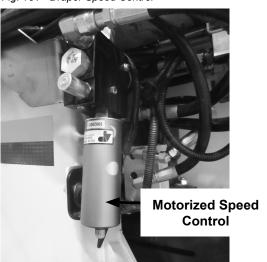


Fig. 152 - Reel Speed Control

12.8 - Return Line Filter

This filter purifies hydraulic oil returning to the windrower. Replace the filter after the initial 50 hours of operation and subsequently on a seasonal basis. The OEM replacement filter is a Donaldson P164375. A partially clogged filter may restrict oil flow, negatively impacting system performance.

See section 17.10 on page 126 for a list of compatible replacement filters.

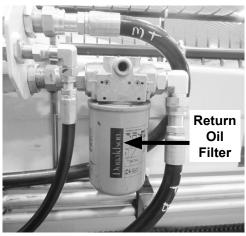


Fig. 153 - Return Oil Filter



13 - Optional Equipment

13.1 - Caster Gauge Wheels

Gauge wheels improve the table's ability to conform to uneven terrain profiles, which is particularly important when cutting short or lodged crops. Designed with a swivel mechanism, the gauge wheels allow for smooth cornering without the need to raise the swather.



Lift the header and gauge wheels clear of the ground when backing up to avoid damage.

Sharp turns may also damage caster wheels by dragging them backward.



Level the swather and park it on flat ground before adjusting gauge wheel height.

Gauge wheels must be adjusted according to the expected operating height of the swather in the field. Under normal conditions, the swather's weight should compress the gauge wheel assembly's spring shaft by approximately 1.5" to 2" (38 mm to 50 mm).



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

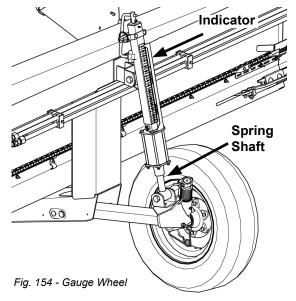
Adjustments to table tilt, spring flotation, and pitch will affect the amount of compression in the Shock Assembly. Check shock shaft exposure, and adjust accordingly, after any of these adjustments.



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

13.2 - Gauge Wheel Height Adjustment

- 11. Fully retract the gauge wheel jack; the pointer should align with or exceed the "1" mark.
- 12. Adjust the swather height to achieve the desired average cutter bar height, corresponding to the target stubble height for the crop.
- 13. Lower the gauge wheel assembly to the ground using the screw jack until the spring shaft compresses by 1.5" to 2" (38 mm to 50 mm). Repeat this procedure for the opposite gauge wheel assembly.
- 14. Verify that the spring shaft compression falls within the specified range. If not, repeat steps 11 through 13.



Page 92 Revision 1.1 P/N 95292-2025



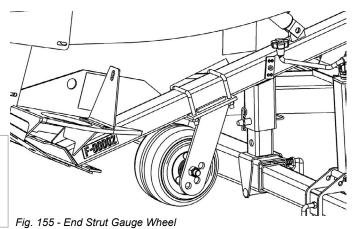
13.3 - End Strut Gauge Wheels

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.



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





13.4 - Cross Auger

The optional cross auger should be adjusted so the flighting engages the crop to help move it towards the feeder deck opening.

The adjustment jacks are used to change how far the cross auger is extended. The lock bolts can be loosened to allow the angle of the cross auger to be adjusted. Always tighten the lock bolts after adjustment.

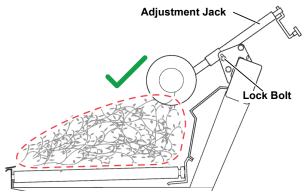
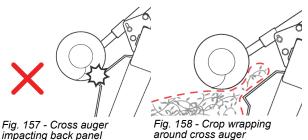
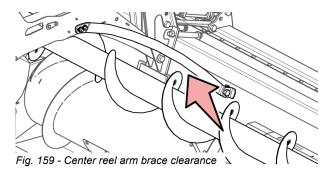


Fig. 156 - Adjust hold-down clearance to cutting section

- Keep a minimum of 3/4" of space between the cross auger and back panel to avoid contact.
- Keep the cross auger close enough to the back panel to avoid crop wrapping, caused by overextending or over adjusting the cross auger angle. If wrapping continues to be a problem, the center paddles can be removed from the cross auger.



 Ensure the center reel arm braces do not contact the cross auger.



The speed of the cross auger can be adjusted via the flow control located on side of the hydraulic manifold as shown below. There is a mechanical limiter to the flow control limiting the range from 1-4, with 1 being the slowest and 4 being the fastest.

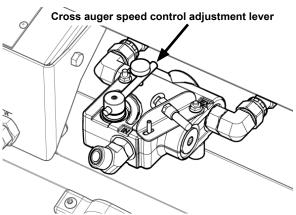


Fig. 160 - Cross auger flow/speed control

! WARNING!

Do not bypass the mechanical speed limiter. Setting a speed higher than 4 can result in equipment damage or injury.

Page 94 Revision 1.1 P/N 95292-2025



13.5 - Double Swath Option – 30ft and 36ft Tables Only

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 laterally shifted via hydraulic motors driving a chain and sprocket assembly.

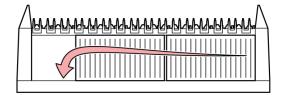
The reverser valve, located beneath the Left Side Hydraulics Shield, reverses hydraulic flow through the output ports when engaged.

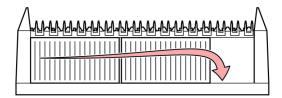
The deck shift and draper reverser operate in parallel via electrical controls. Upon reaching the new deck position, the deck shift motor halts while the draper motor reverses direction.

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.

Chains must be maintained with appropriate tension—avoiding excessive slack or over-tightening. Excessive tension can cause deck distortion or warping.





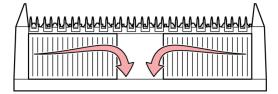


Fig. 161 - Deck Shift System Crop Flow

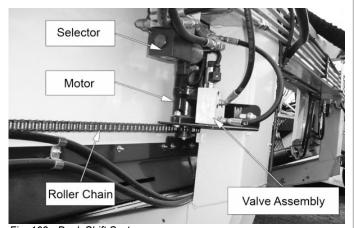


Fig. 162 - Deck Shift System

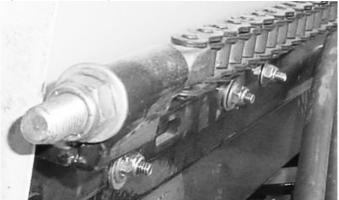


Fig. 163 - Roller Chain Tensioner



13.6 - Increasing Center Swath Opening

(Applies to 2016 & newer "Double Swath" tables with center draper drive motors)

The Honey Bee Swather has a provision for enlarging the center swath opening on a "Double Swath" table.

For high volume crops, it may be necessary to increase the center opening in order to produce a good swath.

To enlarge the center opening, one or both decks may be shortened by removing the 14" wide deck extension near the center opening of the table.



This procedure involves cutting a section from the draper material. If you anticipate changing the opening back to the original size, you will need either a section of draper material and an extra connector bar kit for each draper you shorten, or a second set of drapers to be used with the narrower opening.

Note 1: The section you cut out will be too short for this purpose.

Note 2: newer versions (MY 2024) will include two-piece draper so no need to cut anything, just remove the short one.



Before servicing, engage park brake, shut off engine, and wait for all moving parts to stop. Ensure the swather is safely raised, with safety locks or blocks in place as needed.



The "Double Swath" option must be disabled while operating with the extensions removed. Disconnect the electrical connectors for both LH & RH decks to prevent accidental activation of the decks.

Failure to do so may result in severe damage.



It is recommended to work on one draper deck at a time.

Keep all removed hardware and parts for re-assembly.

Page 96 Revision 1.1 P/N 95292-2025



- Raise the swather table and engage the windrower's table lift lock mechanism. If the table height is inconvenient for access, support it securely on blocks or lower it to the ground.
- Raise the reel and engage the locks on the lift cylinders to prevent the reel from falling.

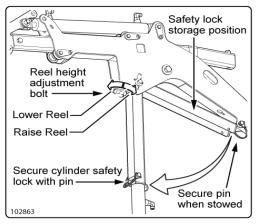


Fig. 164 - Reel Locks

Set the swath opening to the center delivery
position and operate the drapers to position
the connector bars on the top side. For both
left-hand and right-hand decks, disconnect the
deck shift electrical connectors at the control
valves mounted on the struts. Protect the
disconnected connectors with covers to prevent
contamination and secure them away from
moving components.

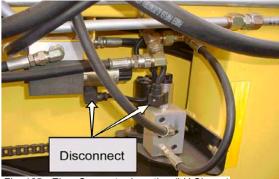
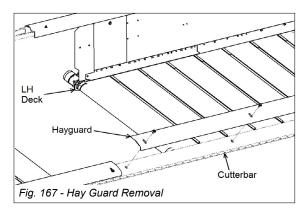


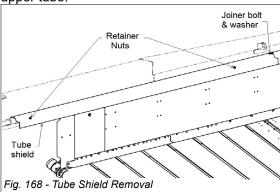
Fig. 165 - Elec. Connector Location (LH Shown)



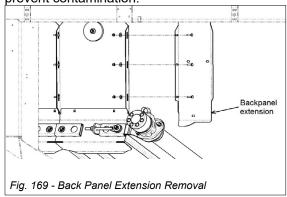
4. Remove the retaining hardware and detach the hay guard sections from the cutter bar on the left-hand side of the table.



 Remove the joiner bolt and washer from the end of the center tube shield. Loosen, <u>but do not</u> <u>remove</u>, the two retainer nuts on the tube shield. Once the tube shield is loose, remove it from the upper tube.



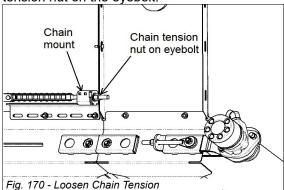
 Remove the retaining hardware and detach the back panel extension. Clearly mark the motor hoses, then disconnect them from the motor fittings. Cap or plug all open connections to prevent contamination.



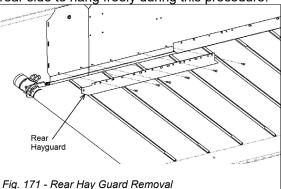
Revision 1.1 P/N 95292-2025



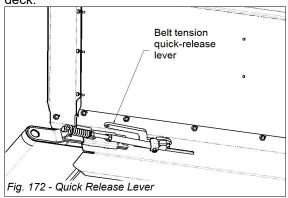
 Release tension on the deck shift chain on the rear side of the deck by loosening the chain tension nut on the eyebolt.



 Remove the retaining hardware and detach the first section of the rear hay guard from the deck.
 Allow the chain mount and attached chain on the rear side to hang freely during this procedure.

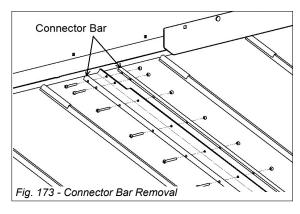


Release tension on the draper belt using the quick-release lever at the idler roller end of the deck.

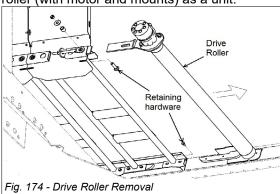


10. Manually rotate the draper to align the connector bar near the center opening.

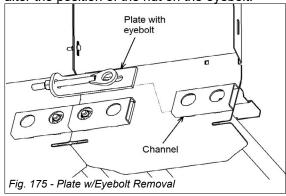
Disengage the draper joint at the connector bar and roll the draper back over the top to provide sufficient clearance around the drive roller. If additional space is required, retract the lower draper section accordingly.



11. Remove the retaining hardware at the front and rear ends of the deck, then remove the drive roller (with motor and mounts) as a unit.

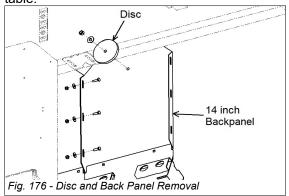


12. Remove the formed plate with eyebolt out of the channel of the 14 inch deck. **Do not** remove or alter the position of the nut on the eyebolt.

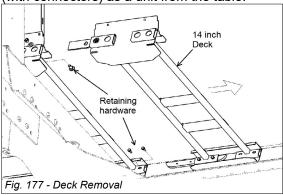




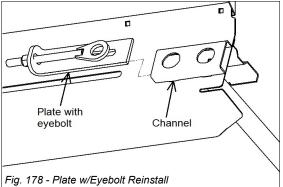
13. Remove the retaining hardware and detach the black disc from the 14-inch back panel. Then, remove the retaining hardware securing the 14inch back panel and remove the panel from the table.



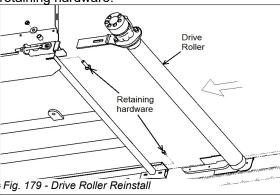
14. Remove the retaining hardware and 14 inch deck (with connectors) as a unit from the table.



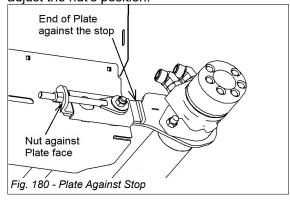
15. Re-install the formed plate with eyebolt into the channel of the main deck.



16. Re-install the drive roller (with motor and mounts) as a unit into the main deck, and secure with the retaining hardware.



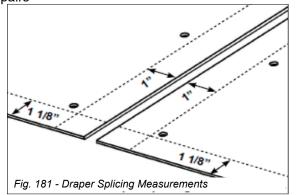
Before tightening the retaining hardware, make sure that the end of the formed plate is butted-up against the stop on the mount, and that the nut is against the face of the formed plate. **Do not** adjust the nut's position.





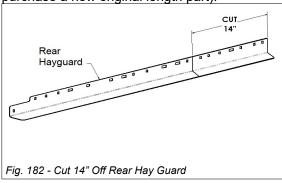
- 17. Draper shortening *for one piece draper only*.
 - Stretch the draper back into place and carefully measure to determine the amount of material to be removed.
 - The draper should be cut between two slats to provide ample material for the new join. Place a board directly under the line you have 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.
 - To mark the location for holes, measure 1" in from each edge to be joined, and mark a line parallel to the cut edges.
 - On each of these lines, measure 1-1/8" from the front edge of the draper, and make a mark for the first hole.
 - Drill 3/16" holes through each mark.
 - Place the backs of the draper together, lining up these drilled holes.
 - Place a connector bar on each side, line up the holes, and secure with a machine screw and nut.
 - 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.
 - Adjust draper tension. Trim all joins to 1/2" above connector bar.

PRO TIP: Retain the section of draper material you have removed as possible patch material for future repairs

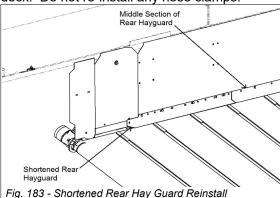


18. Shorten the end of the rear hay guard (removed (in Step 8) by 14 inches, using an appropriate cut-off tool. Deburr all cut edges and touch-up with spray paint as required.

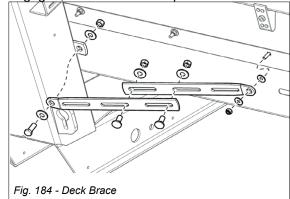
Keep the 14 inch cut-off piece for re-use if ever re-installing the 14 inch decks in the future (or purchase a new original length part).



19. Using the retaining hardware, re-install the shortened rear hay guard at the end of the existing middle section of rear hay guard. Reinstall the chain mount on the rear side of the deck. Do not re-install any hose clamps.



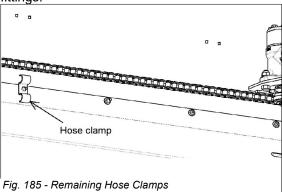
20. If removing the chain and shift motor, deck braces (shown below) must be installed to secure the decks. If the chain and motor remain engaged, braces are not required.



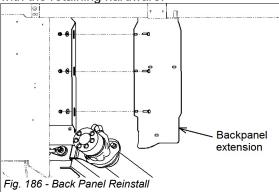
Page 100 Revision 1.1 P/N 95292-2025



21. Loosen any remaining hose clamps, pull the hoses back enough to match-up to the motor fittings, and re-connect the hoses to the motor fittings.



22. Re-install the back panel extension and secure with the retaining hardware.



- Route and secure the draper motor hoses to the frame, ensuring they are kept clear of the swather opening and any moving components.
- Adjust canvas tension and tracking as explained on (page 68) & (page 69).
- Repeat these steps for the RH deck.

13.7 - Windrower Fixed Shields

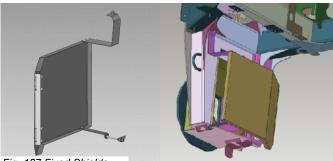


Fig. 187 Fixed Shields

Install the fixed shields on the windrower frame as shown in "Fig. 187 Fixed Shields".



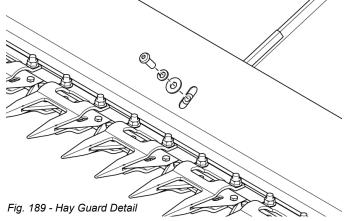


13.8 - Hay Guard / Short Crop Guard

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

The hay guard should fit tight against the rise of the cutter bar leaving approximately ¼" clearance between the ribs of the draper and the underside of the hay guard.

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



Page 102 Revision 1.1 P/N 95292-2025



14 - Lubrication & Maintenance



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

Component	Lubricant	Frequency/Notes
Knife Drives	Grease	Five(5) shots every 50 hours(fitting on side of knife drive)
Knife Head Bearing	Grease	One(1) shot every 50 hours(fitting above knife head)
Knife	Diesel	Soak with diesel or clean with a pressure washer
Reel Bearings	Grease	10 hours
Gauge Wheels – King Pin	Grease	10 hours
Wheel Bearings	Grease	Disassemble and re-pack yearly.
Hydraulic Return Line Filter	n/a	Change after first 50 hours of operation and seasonally thereafter. (Filter: HB - 27281/Donaldson – P164375) Refer to "17.10 - Compatible Replacement Hydraulic Filters page125" for a list of compatible filters.

Maintenance decals and lubrication point indicators have been strategically placed on the machine in the specified locations. Refer to this manual while performing a walk-around inspection to become familiar with each lubrication point and the corresponding decal information. Ensure all operators review this material and maintain decals in a clean, legible condition at:

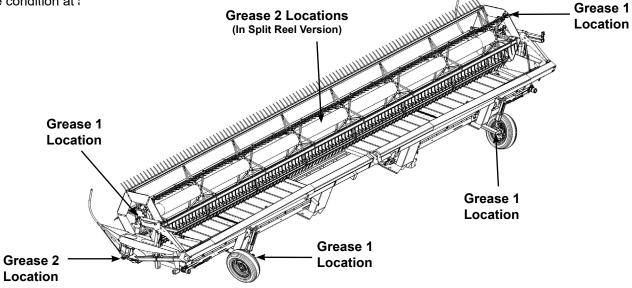


Fig. 190 - Swather Lubrication Points and Decal Locations



15 - Troubleshooting

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

Page 104 Revision 1.1 P/N 95292-2025



Problem	Possible Cause	Solution
Knife (continued)		
Knife Stalls Easy	Type of material being cut.	Reduce ground speed
	Low pressure at knife motor.	Check system pressure
	Bent guards or cutter bar.	Repair or replace
	Faulty knife drive.	Check for loose crank shaft
	Seized knife head bearing.	Replace
	Knife head out of alignment.	Adjust knife head bearing
Unloaded system pressure too high	Faulty draper motor.	Repair or replace
	Relief valve set too low (Should be set to 3000 psi).	Adjust
	Relief valve stuck open.	Remove and clean or replace cartridge
	Wrong type of hydraulic oil.	Change windrower hydraulic oil
	Flow control set low.	Set control higher
	Low oil level.	Add oil, locate cause and repair
	Low oil volume.	Reset volume, 19.5 gpm required
	Wrong motor size.	Check with manufacturer
	Worn pump or motor.	Repair or replace
Excessive vibration	Knife speed is too high.	Reduce knife speed
	Loose bearings in drive.	Replace bearings
	Loose knife head bolts.	Tighten knife head bolts
	Damaged sickles or guards.	Replace
Excessive noise	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 out of adjustment	Adjust Knife Head bearing
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
	Section or Knife Back installed on wrong side	Remove sections, turn Knife over and replace sections



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

Page 106 Revision 1.1 P/N 95292-2025



Problem	Possible Cause	Solution
Decks (continued)		
Heads shattering or breaking off.	Reel speed too fast.	Reduce reel speed.
	Ground speed too high.	Reduce ground speed.
	Crop over-ripe.	Cut earlier in morning or late at night when humidity is higher.
Cut grain falling off cutter bar.	Reel set too high.	Lower reel.
	Table set too high.	Lower table.
	Reel too slow for ground speed.	Increase reel speed.
Does not pick up lodged crop.	Table too high.	Lower table.
	Reel too high.	Lower reel.
	Reel too far back.	Move reel forward.
	Ground speed too fast for reel speed.	Reduce ground speed or increase reel speed.
Hydraulic Oil		
Temperature is too high.	Excessive oil going over reliefs.	Check reliefs on flow controls.
	Faulty pump or motors.	Repair or replace.
	Draper too tight or not tracking.	Adjust draper alignment.
	Oil too light.	Refill with correct grade.
Leveling		
Swather not level.	Float pressure is not set correctly	Adjust float pressure 6.15 - Floatation Calibration pg.47
Table Angle		
Draper running too flat or too steep.	Tilt cylinder extended or retracted too much	Adjust.
Raising and lowering the Swather		•
Swather will not lift.	Windrower lift cylinder not set cor- rectly	CNH Dealer needs to adjust
Swather table lifts and lowers too slowly.	Lift rate set too low	Adjust lift rate via windrower settings.
Swather lift is unbalanced	Floatation pressure not set correctly	CNH Dealer may need to adjust lift cylinders.
		Hydraulic bleeding of pressure relief valve Customer/CNH Dealer.



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

Page 108 Revision 1.1 P/N 95292-2025



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.

16.1 - 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.

16.2 - Warning Flashers:

- 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.

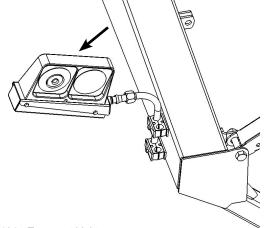


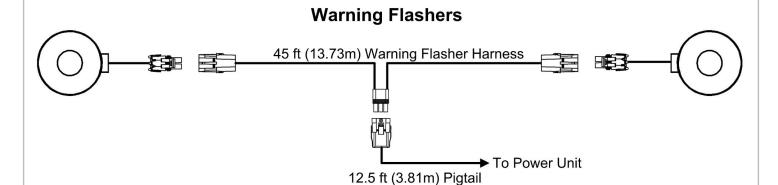
Fig. 191 - Transport Light

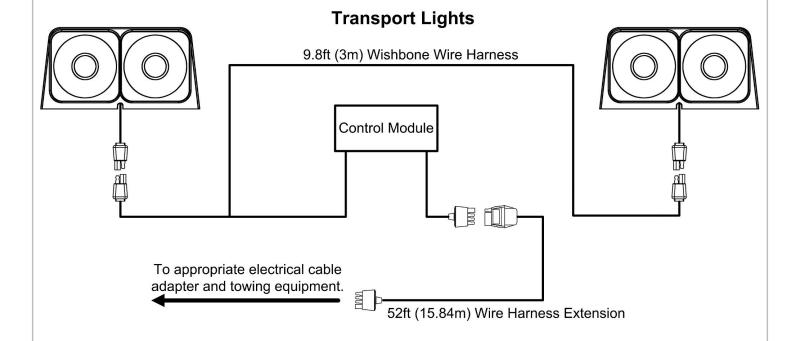


16.3 - Wiring

Amber - Warning Flasher

Red/Amber - Tail. Signal and Stop





Page 110 Revision 1.1 P/N 95292-2025



The lights operate on two circuits:

- Transport lights.
- · Warning flashers.

16.4 - 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

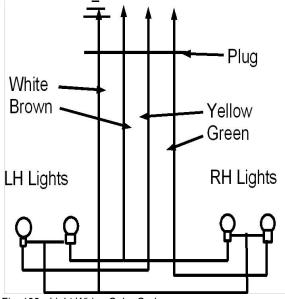


Fig. 192 - Light Wiring Color Codes

16.5 - Warning Flashers

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

Be Seen. Be Safe!

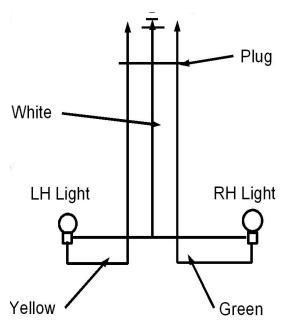


Fig. 193 - Hazard Light Wiring Color Codes



17 - Appendix

17.1 - 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.

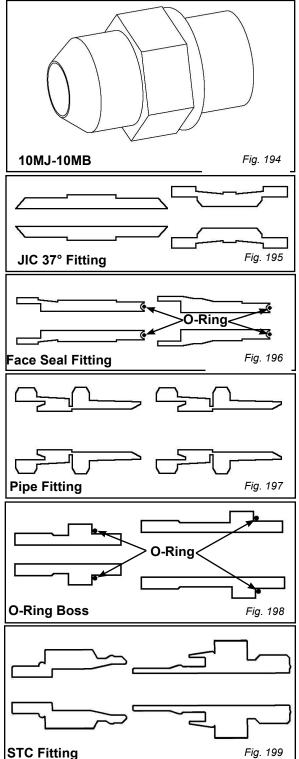
A 'T' fitting will be named in the following format:

##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.

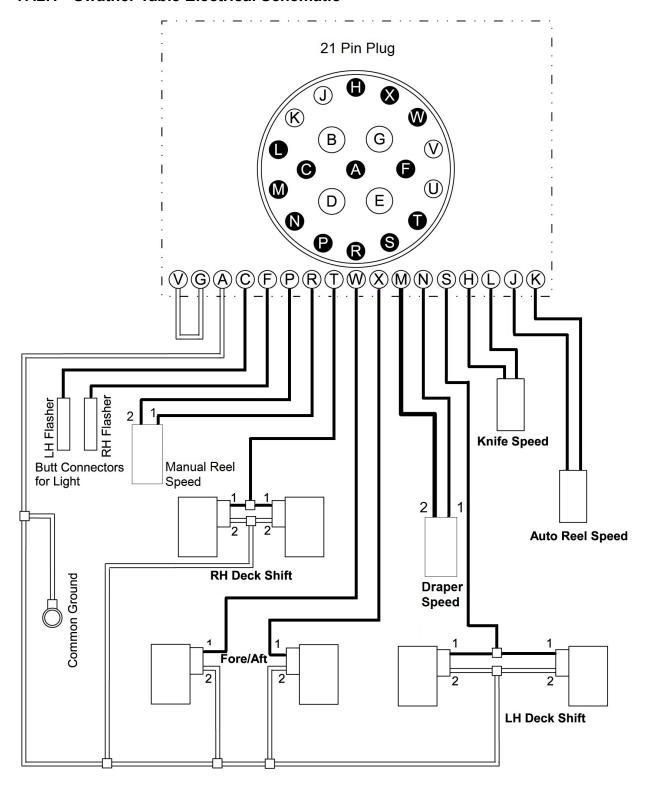
Hydraulic Fitting Types				
Prefix	Suffix	Description		
M or F	J	JIC 37° flared connectors		
M or F	F	Face Seal		
M or F	Р	Pipe Fitting		
M or F	В	O-Ring Boss		
F only	Χ	Swivel (no image shown)		
M or F	STC	Snap To Connect		





17.2 - Electrical Schematics & Charts

17.2.1 - Swather Table Electrical Schematic

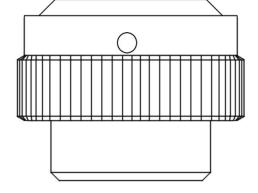




17.2.2 - Common 21 Pin Plug Features

Cavity	Circuit Reference
Α	Power Ground
В	
С	LH header Flashing Light
D	
E	
F	RH header Flashing Light
G	Recog Jumper to V
Н	Header Speed Sensor
I	
J	Auto Reel Speed (decrease)
К	Auto Reel Speed (increase)
L	Knife Speed
M	Draper Speed (decrease)
N	Draper Speed (increase)
0	
Р	Manual Reel Speed (decrease)
R	Manual Reel Speed (increase)
S	LH Deck Shift*
Т	RH Deck Shift*
U	
V	Recog Jumper to G
W	Fore/Aft (Aft)
Х	Fore/Aft (Fore)

^{*}Double swath header only



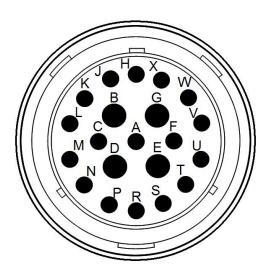
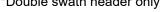


Fig. 200



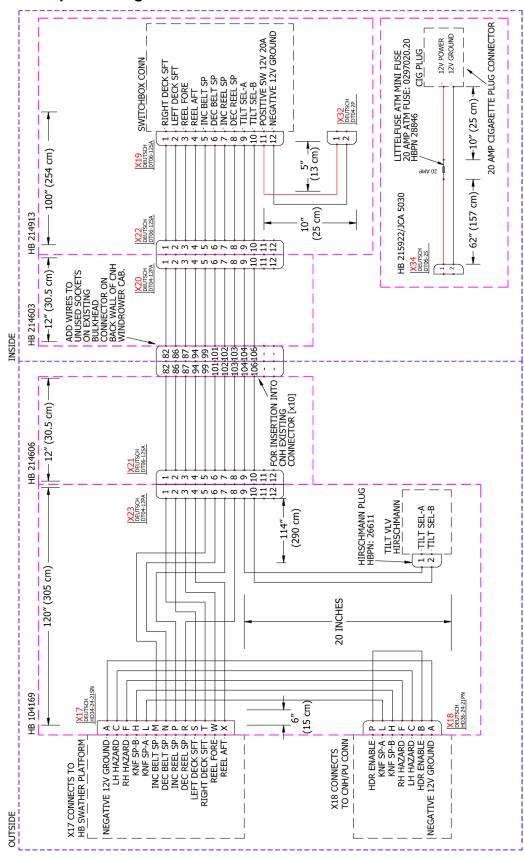


Pins G, J, K, and V do not apply to Honey Bee swathers.

Page 114 Revision 1.1 P/N 95292-2025



17.2.3 - Adapter Wiring Schematic





17.3 - Hydraulic System Schematics

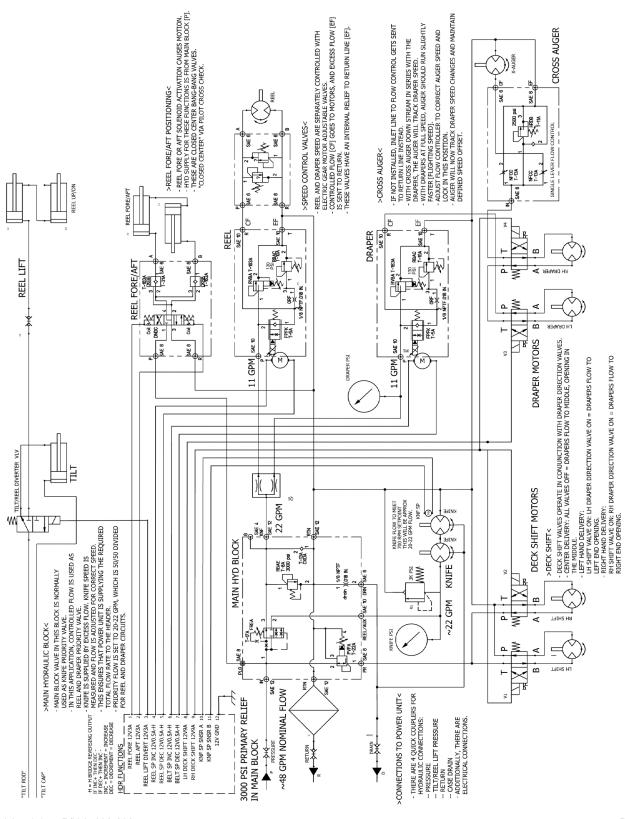
17.3.1 - Hydraulic System Schematic Symbols

← →	Oil flow - bidirectional	-	Capped port
	Oil flow - unidirectional		Hydraulic motor - bidirectional
	Bypass flow - unidirectional	<u> </u>	Hydraulic motor - unidirectional
	Motor rotation - bidirectional		Oil filter
	Motor rotation - unidirectional	125053 IN	Flow divider
	Hydraulic cylinder	A B 27303	Selector valve
	Pressure gauge	P T A B 27313	2 position deck shift valve
	Quick coupler	2 84751 G	3 port relief valve
G T B4544	Flow control with relief valve	V2 V1 V1	Cross-over relief valve
84466 KNF CXDA T-13A A508 299 T-10A T-11A T-10A T-10	Upper tube hydraulic manifold block		

Page 116 Revision 1.1 P/N 95292-2025



17.3.2 - Double Swath - Double Knife - Solid Reel - System Hydraulic Schematic

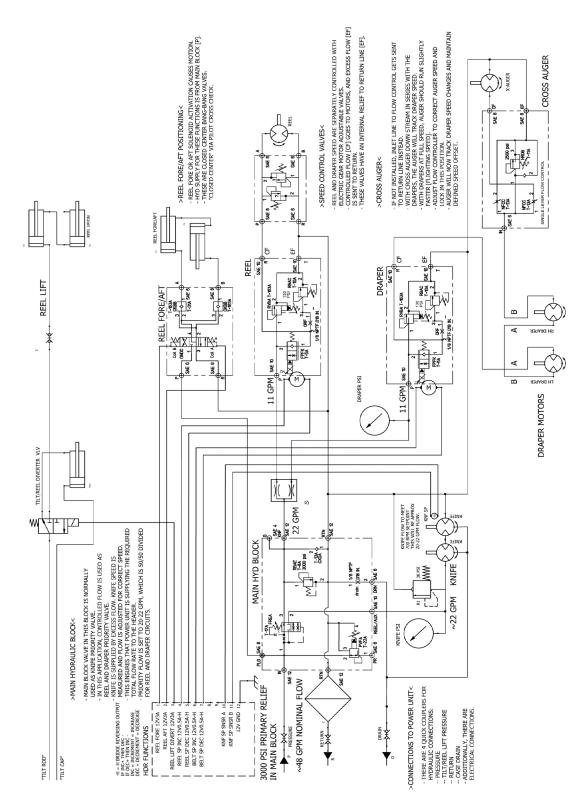


Revision 1.1 P/N 95292-2025

Page 117



17.3.3 - Single Swath - Double Knife - Solid Reel - System Hydraulic Schematic



Page 118 Revision 1.1 P/N 95292-2025



17.4 - Dimensions

Refer to the illustration below for the following dimensions:

Model (ft/m)	A (in/cm)	B (in/cm)	C (in/cm)
15ft (15/4.5)	100/254	80/203	100/254
25ft (25/7.6)	110/280	80/203	110/280
30ft (30/9.1) Single Swath	135/342	80/203	135/342
30ft (30/9.1) Double Swath with center delivery	149/378	56/142	149/378
36ft (36/11) Single Swath	174/441	80/203	174/441
36ft (36/11) Double Swath with center delivery	188/477	56/142	188/477

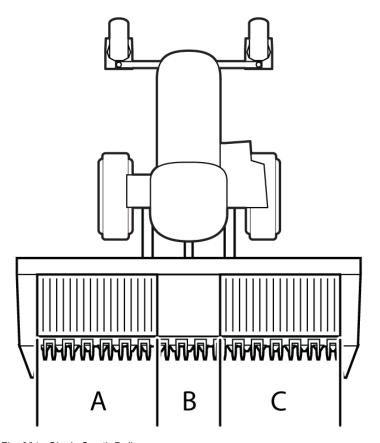


Fig. 201 - Single Swath Delivery



17.5 - 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.

17.5.1 - 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.

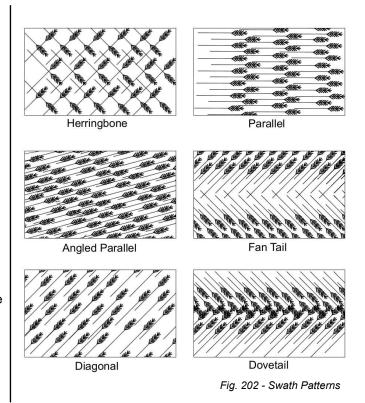
Parallel: A good windrow that is easier to form.

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.



17.5.2 - 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.

17.5.3 - 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.

Page 120 Revision 1.1 P/N 95292-2025



17.6 - Specifications/Features

17.6.1 - Weights

This weight includes the following options:

- Reel
- Flotation (caster) gauge wheel
- · End strut gauge wheels
- · Transport axle/hitch
- Double swath (the single swath will be 210 lb lighter)

Model	WSC15	WSC25	WSC30	WSC36
Width	15'	25'	30'	36'
Weight	3465 lbs 1572 kg	4950 lbs 2245 kg	5500 lbs 2495 kg	6346 lbs 2878 kg

Windrower required ballast weights (For MY23-MY25 6 Cyl)

Model	WSC15	WSC25	WSC30	WSC36
Width	15'	25'	30'	36'
Weight	550-725 lbs	1000-1100 lbs	1150-1184 lbs	1320 lbs
Notes	27-35 plates in rear weight box (No rear weight bracket kit needed)	Combination of rear weight kit and weight box plates needed	Combination of rear weight kit and weight box plates needed	Combination of rear weight kit and weight box plates needed. 20 plates in weight box (320lbs) and 6 suitcase weights (600lbs), plus rear bracket weight (100lbs) is currently the recommended setup



17.6.2 - Technical Specifications

- Knife Drive SCH epicyclic 3 5/16" stroke, hydraulically driven, 1100-1400 strokes per minute. (2 strokes = 1 RPM)
- Cutting System SCH Easy Cut, spring steel guards and bolted sections.
- V-Guided Draper 42" Rubberized polyester, fiberglass reinforced, tie bar connectors.
- Draper Speed adjustable in cab, 0-760 fpm.
- Reel Speed adjustable in cab.
- · Adjustable cutting angle.
- Standard single swath opening is approximately ~80".
- Standard double swath opening is approximately ~56".



Specifications are subject to change without notice or obligation.

17.6.3 - Options

- End Strut Gauge Wheels
- Cross Auger Kit (Not available for WSC21)
- · Swath Delivery Kits Hydraulic deck shift.
- Ziegler vertical shear mounting brackets.

Page 122 Revision 1.1 P/N 95292-2025



17.6.4 - Included in Standard Swather

- · Storage Axle and Hitch
- Remote Draper Speed Control + Reel Speed Control
- · Hay Guard
- UHMW Poly Skid Plate
- Caster Gauge Wheels WSC30, WSC36
- · Tires/Wheels/Hubs/Spindles
- Fore/Aft Hydraulic Reel Adjustment

17.7 - Bolt Torque

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

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

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



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



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



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

Page 124 Revision 1.1 P/N 95292-2025



17.9 - Tightening O-ring Fittings

- Inspect O-ring and seat for dirt or obvious defects.
- On angle fittings, back the lock nut off until washer bottoms out at top of groove.
- Hand tighten fitting until back-up washer or washer face (if straight fitting) bottoms on face and O-ring is seated.
- Position angle fittings by unscrewing no more than one turn.
- Tighten straight fittings to torque shown.
- Tighten angle fittings to torque shown while holding body of fitting with a wrench.

	O-ring Fitting Values							
OD Thread	Nut Size	Torque Value	Torque Value	Flats to Tighten	Turns to Tighten			
Inches	Inches	Nm	Lb-ft	-	-			
3/8	1/2	8	6	2	1/3			
7/16	9/16	12	9	2	1/3			
1/2	5/8	16	12	2	1/3			
9/16	11/16	24	18	2	13			
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.



17.10 - Compatible Replacement Hydraulic Filters

When replacing the OEM hydraulic filter (Donaldson P164375) on the swather, ensure you select a compatible filter. Acceptable replacement filters must meet the following specifications:

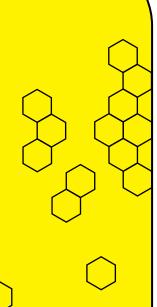
- Working pressure to 500 psi
- Rated static burst to 1000 psi
- MIN filter collapse rating is 150 psi
- Flow range to min 35 gpm
- Beta rating β<9(c)=1000
- Filter rate 9 µm
- Thread size is 1 3/8-12UNF-2B
- Bypass rating 25 psi

Page 126 Revision 1.1 P/N 95292-2025



Operator's Notes and Records





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