

John Deere 4930 and 4940 AutoBoom™ Installation Manual

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CHAPTER

1

IMPORTANT SAFETY INFORMATION

NOTICE

Read this manual and the operation and safety instructions included with your implement and/or controller carefully before installing the AutoBoom™ system.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of your Raven equipment, contact your local Raven dealer for support.
- Follow all safety labels affixed to the AutoBoom system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact your local Raven dealer.

When operating the machine after installing AutoBoom, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate AutoBoom or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times when AutoBoom is engaged.
- Disable AutoBoom when exiting from the operator's seat and machine.
- Do not drive the machine with AutoBoom enabled on any public road.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling AutoBoom when the safe working distance has diminished.
- Ensure AutoBoom is disabled prior to starting any maintenance work on AutoBoom or the machine.

WARNING

- When starting the machine for the first time after installing AutoBoom, be sure that all persons stand clear, in case a hose has not been properly tightened.
- The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

CAUTION

HYDRAULIC SAFETY

- Raven Industries recommends that appropriate protective equipment be worn at all times when working on the hydraulic system.
- Never attempt to open or work on a hydraulic system with the equipment running. Care should always be taken when opening a system that has been previously pressurized.
- When disconnecting the hydraulic hoses or purging is required, be aware that the hydraulic fluid may be extremely hot and under high pressure. Caution must be exercised.
- Any work performed on the hydraulic system must be done in accordance with the machine manufacturer's approved maintenance instructions.
- When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure that precautions are taken to prevent any foreign material or contaminants from being introduced into the machine's hydraulic system. Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valve.

INSTRUCTIONS FOR WIRE ROUTING

The word "harness" is used to mean all electrical leads and cables, bundled and unbundled. When installing harness, secure it at least every 30 cm (12in) to the frame. Follow existing harness as much as possible and use these guidelines:

Harness should not contact or be attached to:

- Lines and hoses with high vibration forces or pressure spikes
- Lines and hoses carrying hot fluids beyond harness component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps
- Wire exiting conduit without protection, either ends or side of conduit
- Hose and tube fittings

Routing should not allow harnesses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of harness components
- Wiring should be protected or shielded if it needs to route near hot temperatures beyond harness component specifications

Harnessing should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets

- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For harness sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp harnesses securely to force controlled movement to occur in the desired harness section
- Avoid sharp twisting or flexing of harnesses in short distances
- Connectors and splices should not be located in harness sections that move

Protect harnesses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures

IMPORTANT: Avoid directly spraying electrical components and connections with high pressure water. High pressure water sprays can penetrate seals and cause electrical components to corrode or otherwise become damaged. When performing maintenance:

- Inspect all electrical components and connections for damage or corrosion. Repair or replace components, connections, or cable as necessary.
- Ensure connections are clean, dry, and not damaged. Repair or replace components, connections, or cable as necessary.
- Clean components or connections using low pressure water, pressurized air, or an aerosol electrical component cleaning agent.
- Remove visible surface water from components, connections, or seals using pressurized air or an aerosol electrical component cleaning agent. allow components to dry completely before reconnecting cables.

INSTRUCTIONS FOR HOSE ROUTING

The word "hose" is used to mean all flexible fluid carrying components. Follow existing hoses as much as possible and use these guidelines:

Hoses should not contact or be attached to:

- Components with high vibration forces
- Components carrying hot fluids beyond component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads

- Ends of adjustable hose clamps

Routing should not allow hoses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of hose components
- Hoses should be protected or shielded if it needs to route near hot temperatures beyond hose component specifications

Hoses should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For hose sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp hoses securely to force controlled movement to occur in the desired hose section
- Avoid sharp twisting or flexing of hoses in short distances

Protect hoses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures
- High pressure wash

INTRODUCTION

Congratulations on your purchase of the Raven AutoBoom system! This system is designed to provide automated boom height adjustment for agricultural equipment.

This manual applies to the following machines. For future reference, write your serial number in the space below.

MAKE: John Deere
MODEL: 4930 and 4940
YEAR:
SERIAL NUMBER:

FIGURE 1. John Deere 4930



NOTE: This manual contains the installation instructions for the PowerGlide Plus and UltraGlide systems. Be sure to identify which system you have and follow only the instructions for that system.

PREPARING FOR INSTALLATION

Before installing AutoBoom, park the machine where the ground is level, clean, and dry. Leave the machine turned off for the duration of the installation process.

During the installation process, follow good safety practices. Be sure to carefully read the instructions in this manual as you complete the installation process.

RECOMMENDATIONS

Raven Industries recommends the following best practices before installing or operating the AutoBoom system for the first time, at the start of the season, or when moving the AutoBoom system to another machine:

- Ensure the machine's hydraulic filters have been recently changed and there are no issues with the machine's hydraulic system (e.g., pump issues, faulty hydraulic motors, fine metal deposits in the hydraulic hoses, etc.).
- Operate each of the machine's boom hydraulic functions (i.e., tilt, fold, center rack, tongue extension, or other hydraulic valve functions) three times to ensure the machine's hydraulic valve is using fresh oil and debris is flushed from the hydraulic hoses, valves, and filters.
- Upon installation of the AutoBoom system, operate the boom and center rack raise/lower functions through the machine's manual control functions first before operating them via the AutoBoom controller/field computer to ensure the hydraulic system has been installed correctly and air is released from the system.

Raven Industries recommends the following best practices when installing the AutoBoom system.

- Use part numbers to identify the parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Do not remove plastic caps from a part until it is necessary for installation.

Tools Needed

The following tools are recommended for installation of the AutoBoom system:

- SAE standard-sized wrenches
- Cable ties
- Set of tools

POINT OF REFERENCE

The instructions in this manual assume that you are standing behind the machine, looking toward the cab.

HYDRAULIC FITTINGS

This manual may reference the following types of hydraulic fittings:

- SAE O-ring fittings
- ORFS (O-Ring Face Seal) fittings
- JIC fittings

SAE O-ring fitting



ORFS fitting



JIC fitting (M)



CHAPTER

POWERGLIDE PLUS

3

POWERGLIDE PLUS KIT CONTENTS

This section contains a list of the components that are included in the PowerGlide Plus AutoBoom kit. Before beginning the AutoBoom installation, compare the items in the AutoBoom kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-084)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 4930 AutoBoom Installation	016-0230-084	1
	Valve - PowerGlide Plus AutoBoom	063-0131-125	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Cable- John Deere B-F Polar Boom Sense Adapter	115-0171-674	1
	Cable - John Deere Boom Sense Adapter	115-0171-789	1
	U-Bolt - 3-1/16" W x 5" L x 3/8" Thread	107-0171-607	2
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-084)




Picture	Item Description	Part Number	Qty.
	Bolt - 3/8"-16 UNC x 1-1/4" Hex	311-0054-106	3
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	7
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-084)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" ORFS M/M/F Swivel Run Tee	333-0012-022	1
	Fitting - 13/16" ORFS M/M/F Swivel Run Tee	333-0012-028	2
	Fitting - 11/16" ORFS M/F 90° Elbow	333-0012-065	2
	Fitting - 11/16" ORFS M/M/F Swivel Run Tee	333-0012-069	3
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	2
	Fitting- 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	1

TABLE 2. Hydraulic Kit (P/N 117-0134-084)

Picture	Item Description	Part Number	Qty.
	Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	2
	Fitting - 11/16" ORFS (F) to 9/16" ORFS (M) Reducer	333-0012-255	1
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice Straight Adapter	333-0012-289	2
	Hydraulic Hose - 9/16" ORFS (F) 90° to 9/16" ORFS (F) - 228"	214-1000-421	1
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 52"	214-1000-516	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS (F) 45° - 40"	214-1000-518	2
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 82"	214-1000-546	1
	Hydraulic Hose - 11/16" ORFS (F) 90° to 11/16" ORFS (F) - 30"	214-1000-608	2

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-011)

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Right Cushioned AutoBoom	063-0131-585	1
	Axle Assembly - Left Cushioned AutoBoom	063-0131-590	1

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-011)

Picture	Item Description	Part Number	Qty.
	Bracket - John Deere Left Weldment Receiver	116-0159-545	1
	Bracket - John Deere Right Weldment Receiver	116-0159-546	1
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2" W x 3-3/4" L x 3/8" Thread	435-3003-046	6
	Bolt - 1/2"-13 x 1-1/2" SS Hex	311-0058-186	4
	Nut - 1/2"-13 Zinc Hex	312-1001-043	4
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	12

TABLE 4. PowerGlide Plus Wiring Kit (P/N 117-0137-023)


Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - PowerGlide Plus AutoBoom	063-0130-010	1

TABLE 4. PowerGlide Plus Wiring Kit (P/N 117-0137-023)






Picture	Item Description	Part Number	Qty.
	Cable - Harness	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1


TABLE 5. ISO CAN AutoBoom, PowerGlide Plus, JD 4920/4930 (117-0137-038)

Picture	Image Description	Part Number	Qty.
Not Pictured	Manual, Calibration and Operation	016-0130-078	1
	Node, ISO CAN Control AutoBoom	063-0130-016	1
Not Pictured	Cable, Adapter, ISO CAN BUS Terminator	115-0230-024	1
Not Pictured	Cable, ISO CAN AutoBoom, JD SP Power Harness	115-0230-025	1
Not Pictured	Cable, ISO CAN AutoBoom, JD SP Valve Connection for JD4920/4930	115-0230-026	1

INSTALL THE POWERGLIDE PLUS HYDRAULIC SYSTEM

	<p>WARNING</p> <p>The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.</p>
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	<p>CAUTION</p> <p>When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.</p> <p>Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valve.</p>
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	<p>NOTICE</p> <p>The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.</p>
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REMOVE THE ORIFICE FITTINGS

Before populating the hydraulic fittings on the AutoBoom valve, it is necessary to remove orifice fittings from the valve in the PowerGlide Plus system. Failure to remove these fittings from the valve will restrict the down speed of the booms when the system is enabled.

FIGURE 1. Port 3A and 3B Location



1. Locate Ports 3A and 3B on the AutoBoom valve (P/N 063-0131-125).

FIGURE 2. Coil Removed from the AutoBoom Valve



2. Remove the coils from the solenoids near Ports 3A and 3B to gain easy access to those ports.

FIGURE 3. Port Plugs Removed from the AutoBoom Valve



3. Use an Allen wrench to remove the plugs from Ports 3A and 3B.

FIGURE 4. Orifice Fitting Removed from the AutoBoom Valve



Orifice Fitting
Removed - Keep
for Future Use

4. Remove the orifice fittings from Ports 3A and 3B.

IMPORTANT: Tip the AutoBoom valve on its side and use the Allen wrench to remove the orifice from the cavity, taking care not to let the fitting fall into the valve.

FIGURE 5. Port Plug Reinstalled on the AutoBoom Valve



5. Use the Allen wrench to reinstall the port plugs on Ports 3A and 3B of the AutoBoom valve.

FIGURE 6. Coil Reinstalled on the AutoBoom Valve



6. Reinstall the coils on the solenoids of the AutoBoom valve.

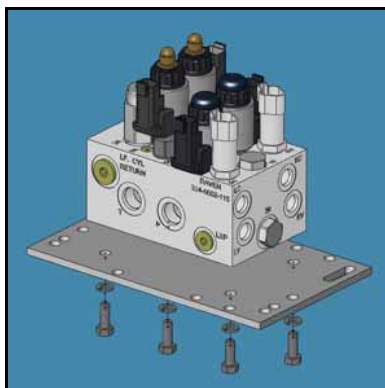
INSTALL FITTINGS IN THE AUTOBOOM VALVE

Before mounting the AutoBoom valve on the machine, install the proper fittings in the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure. Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	LC, RC
Fitting - 11/16" ORFS M/F 90° Elbow	333-0012-065	LC, RC
Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	Left T, P
Fitting- 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	LSP
Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	LF CYL RTN, RT CYL RTN
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice Straight Adapter	333-0012-289	LV, RV

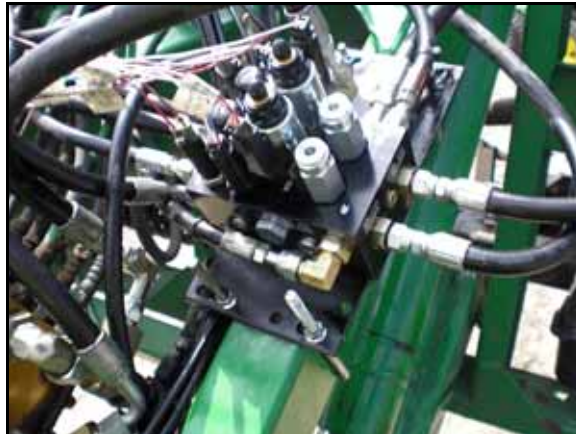
MOUNT THE AUTOBOOM VALVE

FIGURE 7. AutoBoom Valve Mounted to the Valve Mounting Plate



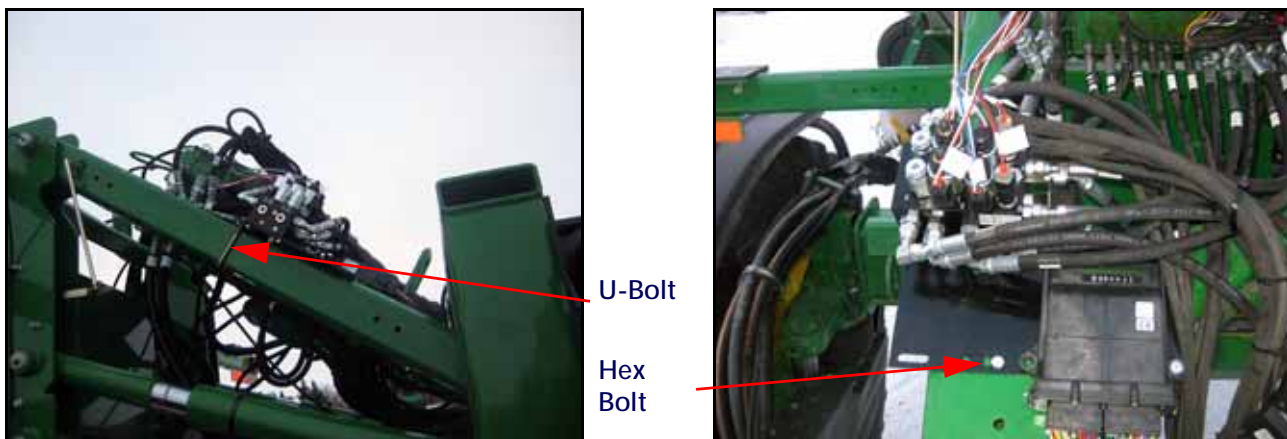
1. Secure the AutoBoom valve (P/N 063-0131-125) to the mounting plate (P/N 107-0171-802) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).
2. Secure the mounting plate to the machine's center rack.

FIGURE 8. AutoBoom Valve Mounted to the Machine's Center Rack - Model 4930




- Model 4930 Only - Secure the mounting plate to the upper-right parallel arm using two 3-1/16" W x 5" L x 3/8" thread U-bolts (P/N 107-0171-607) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).


FIGURE 9. AutoBoom Valve Mounted to the Machine's Center Rack - Model 4940



- Model 4940 Only - Secure the mounting plate to the upper-left parallel arm using one 3-1/16" W x 5" L x 3/8" thread U-bolt (P/N 107-0171-607), one 3/8" UNC x 1-1/4" hex bolt (P/N 312-0054-106), and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses




WARNING

Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's system may be extremely hot and under high pressure.

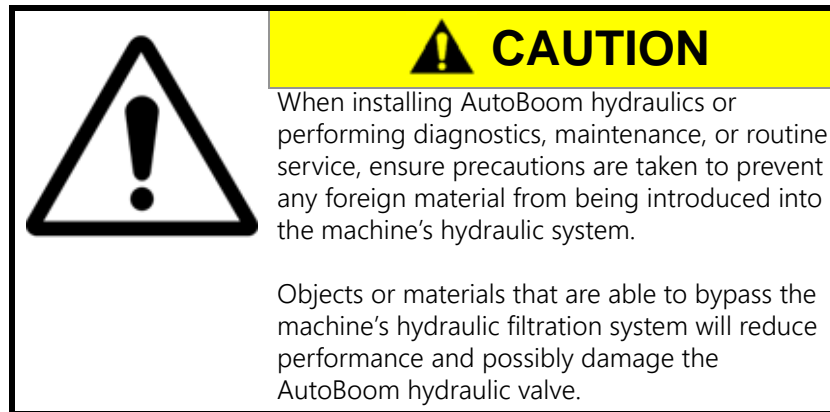
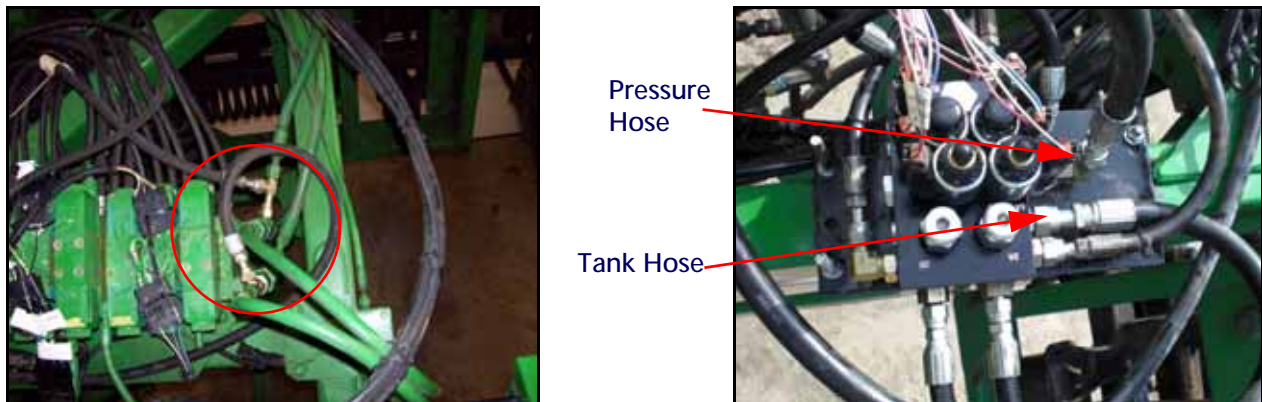


FIGURE 10. Pressure and Tank Hoses Installed



1. Locate and disconnect the machine's pressure hose from the left side of the machine's hydraulic valve.
2. Install a 13/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-028) in the machine's pressure port.
3. Connect the machine's pressure hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-546) on the 90° end of the tee fitting.
5. Connect the 90° end of the installed hydraulic hose to the installed fittings in Port P of the AutoBoom valve.
6. Locate and disconnect the machine's tank port from the left side of the machine's hydraulic valve.
7. Install a 13/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-028) in the machine's tank port.
8. Connect the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-516) on the 90° end of the tee fitting.
10. Connect the 90° end of the installed hydraulic hose to the installed fittings in Port T of the AutoBoom valve.

REMOVE THE ORIFICES FROM THE MACHINE'S TILT CYLINDERS

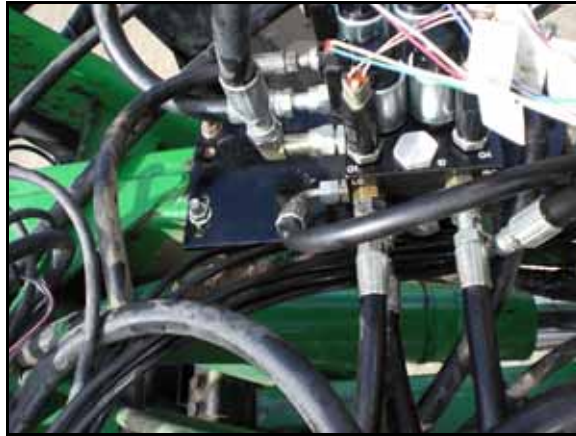
1. Disconnect the machine's raise hose from the rod-end of the left tilt cylinder.
2. Remove the machine's cylinder fitting and the orifice located behind the fitting, if applicable.
3. Reinstall the machine's original cylinder fitting in the rod-end of the left tilt cylinder.
4. Reconnect the machine's raise hose on the rod-end of the left tilt cylinder.
5. Disconnect the machine's down hose from the base-end of the left tilt cylinder.
6. Remove the machine's cylinder fitting and the orifice located behind the fitting, if applicable.
7. Reinstall the machine's original cylinder fitting in the base-end of the left tilt cylinder.
8. Reconnect the machine's down hose to the base-end of the tilt cylinder.

9. Repeat the steps above to remove the orifice fittings from the machine's right tilt cylinder.

NOTE: Keep the orifice fittings for future use.

INSTALL THE LEFT AND RIGHT CYLINDER HOSES

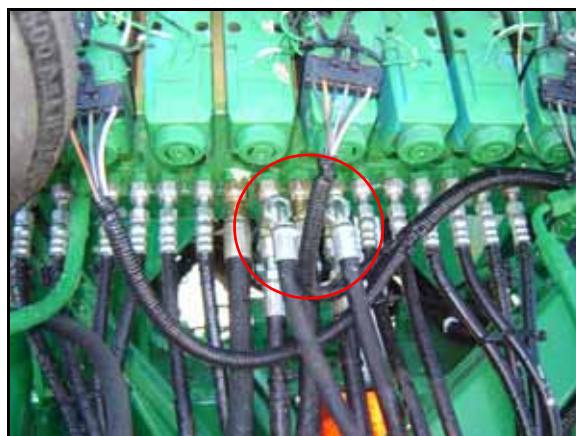
FIGURE 11. Left and Right Cylinder Hoses Installed



1. Disconnect the machine's left raise hose from the machine's hydraulic valve.
2. Route the machine's raise hose to the AutoBoom valve and connect it to the installed fittings in Port LC.
3. Install the straight end of the supplied hydraulic hose (P/N 214-1000-518) on the left raise port of the machine's hydraulic valve.
4. Connect the 45° end of the installed hydraulic hose to Port LV of the AutoBoom valve.
5. Disconnect the machine's right raise hose from the machine's hydraulic valve.
6. Route the machine's raise hose to the AutoBoom valve and connect it to the installed fittings in Port RC.
7. Install the straight end of the supplied hydraulic hose (P/N 214-1000-518) on the right raise port of the machine's hydraulic valve.
8. Connect the 45° end of the installed hydraulic hose to Port RV of the AutoBoom valve.

INSTALL THE LEFT AND RIGHT DOWN HOSES

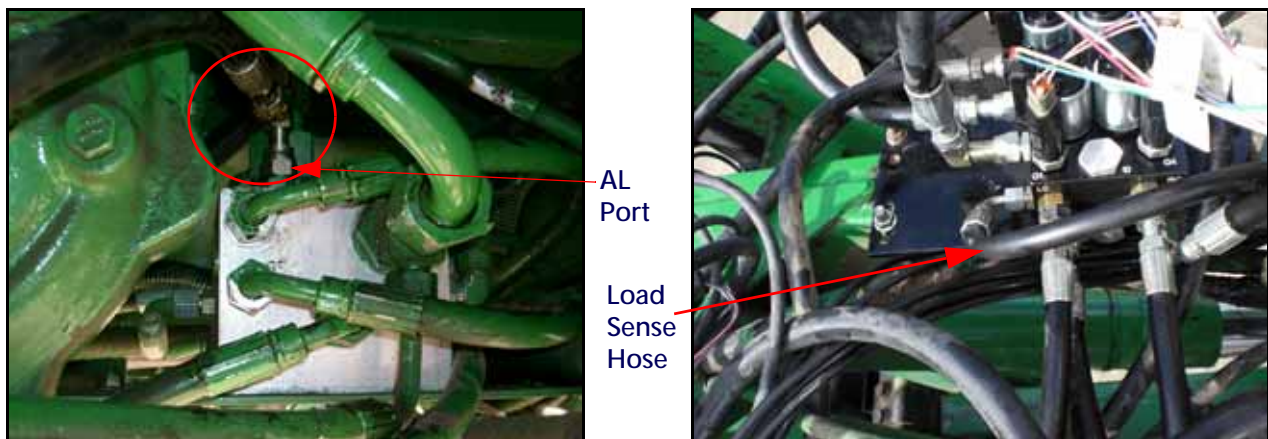
FIGURE 12. Down Hoses Installed on the AutoBoom Valve



1. Disconnect the machine's left down hose from the machine's hydraulic valve.
2. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the down port of the machine's hydraulic valve.
3. Connect the machine's down hose to the opposite end of the installed tee fitting.
4. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-608) on the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to Port LF CYL RTN of the AutoBoom valve.
6. Disconnect the machine's right down hose from the machine's hydraulic valve.
7. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the down port of the machine's hydraulic valve.
8. Connect the machine's down hose to the opposite end of the installed tee fitting.
9. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-608) on the 90° end of the installed tee fitting.
10. Connect the straight end of the installed hydraulic hose to Port RT CYL RTN of the AutoBoom valve.

INSTALL THE LOAD SENSE HOSE - MODEL 4930 ONLY

FIGURE 13. Load Sense Hose Installed



1. Locate the load sense combo valve beneath the cab/tank of the machine.
2. Disconnect the machine's load sense hose from port AL on the load sense combo valve.
3. Install a 9/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-022) on the load sense combo valve.

NOTE: Depending on the machine, it may be necessary to install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) and an 11/16" ORFS (M) to 9/16" ORFS (M) reducer adapter fitting (P/N 333-0012-255) in the load sense combo valve before installing the tee fitting.

4. Reconnect the machine's load sense hose to the opposite end of the installed tee fitting.
5. Connect the straight end of the supplied hydraulic hose (P/N 214-1000-421) on the 90° end of the installed tee fitting.
6. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port LSP of the AutoBoom valve.

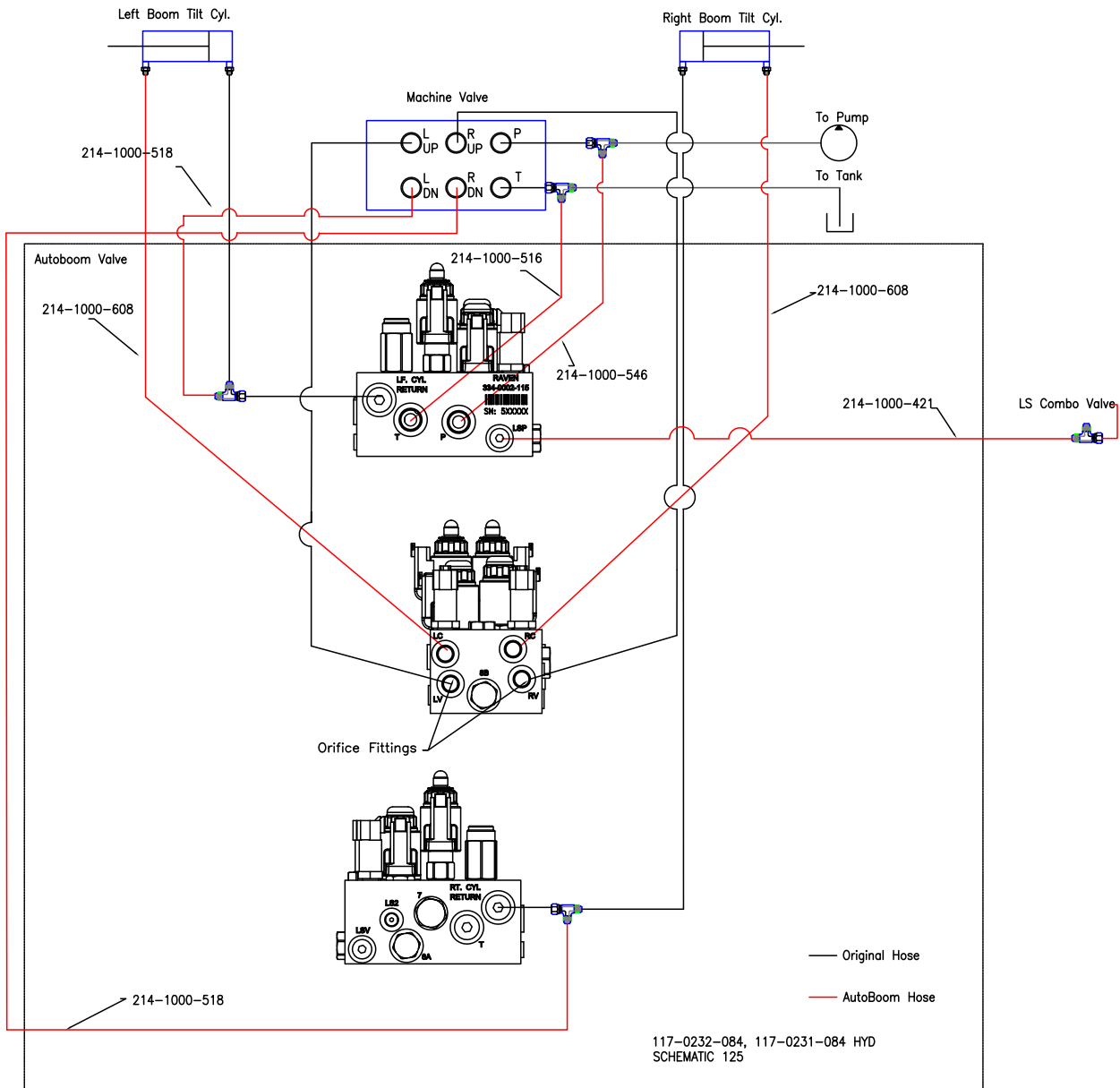
INSTALL THE LOAD SENSE HOSE - MODEL 4940 ONLY

FIGURE 14. Load Sense Hose Installed



1. Trace the load sense hose from the breakaway valve to the machine's existing tee fitting located below the spray tank at the rear of the machine.
2. Disconnect the load sense hose from the tee fitting.
3. Install a 9/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-022) on the existing tee fitting.
4. Connect the machine's load sense hose to the opposite end of the installed tee fitting.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1000-421) on the 90° end of the installed tee fitting.
6. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LSP of the AutoBoom valve.

POWERGLIDE PLUS HYDRAULIC SYSTEM

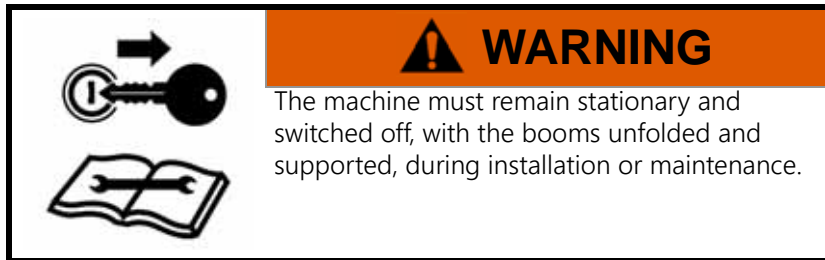


INSTALL THE GAUGE WHEELS

GAUGE WHEEL MOUNTING LOCATIONS

Wheel mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the wheels on the boom, ensuring the wheels will not interfere with or be damaged while folding or unfolding the booms. The wheels should be mounted outside of the boom fold, but inside the boom breakaway.

Mount the Gauge Wheels.



NOTE: The appearance of the wheel axles may vary.

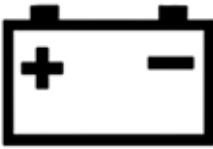
FIGURE 15. Gauge Wheel Installed



1. Remove the lug nuts from the right wheel axle (P/N 063-0131-585).
2. Place the wheel (P/N 322-0131-008) on the right wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617) over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
5. Secure the right wheel mounting bracket (P/N 116-0159-546) to the front of the right boom using three 2" W x 3-3/4" L x 3/8" thread U-bolts (P/N 435-3003-046).
6. Insert the right wheel axle into the right wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket by installing two 1/2"-13 x 1-1/2" SS hex bolts (P/N 311-0058-186) and two 1/2" zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

INSTALL THE POWERGLIDE PLUS WIRING

Wiring Connections

	⚠ CAUTION
<p>Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.</p>	

For wiring connections made outside the cab, apply dielectric silicone grease (P/N 222-0000-006) generously on both the male and female ends of the connectors. Application of the grease will prevent corrosion to the pins and wires.

INSTALL THE AUTOBOOM NODE

FIGURE 16. AutoBoom Node Installed

Model 4930



1. Mount the AutoBoom node (P/N 063-0130-010) or ISO node (P/N 115-0230-016) to the valve mounting plate (P/N 107-0171-802) using two (model 4940) or three (model 4930) 3/8"-16 UNC x 1-1/4" zinc plated hex bolts (P/N 311-0054-106) and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

NOTE: Position the node so that the cable connectors face down or to the side.

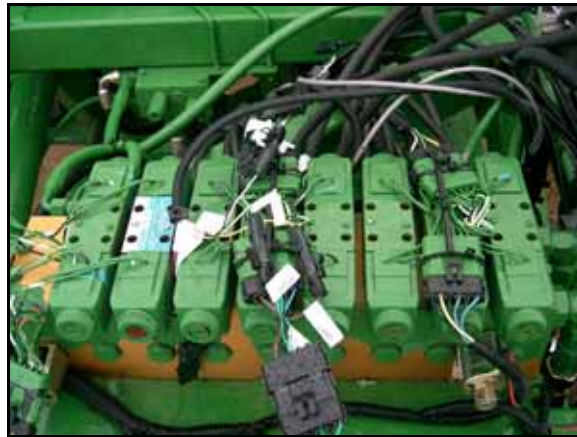
2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-0230-026) into the correct ports of the AutoBoom valve.
3. Tighten the bolts on the node connectors to secure the connections.

CONNECT THE HARNESS TO THE BOOM FUNCTION CONTROLS

1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-0230-026).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-125).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.

5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.
6. Connect the Left Solenoid connector to Port 4A on the AutoBoom valve.
7. Connect the Right Solenoid connector to Port 4B on the AutoBoom valve.
8. Locate the Left Prop and Right Prop connectors on the harness cable.
9. Connect the Left Prop connector to Port 5A on the AutoBoom valve.
10. Connect the Right Prop connector to Port 13A on the AutoBoom valve.

FIGURE 17. Machine's Boom Function Controls



IMPORTANT: Each boom sense adapter cable has unique end connections that will fit on only one of the connectors. If the cables do not easily join, do not force the connection! Instead, try connecting the other boom sense adapter cable to that connector.

11. Locate the machine's boom function controls on the hydraulic valve.
12. Disconnect the connectors from the machine's left/right tilt up coils.
13. Install the A-F or B-F polar John Deere boom sense adapter cable (P/N 115-0171-674 or 115-0171-789) between the coils and the machine's coil connector.
14. Disconnect the connectors from the machine's left/right down coils.
15. Install the remaining boom sense adapter cable between the coils and the machine's coil connector.
16. On the harness cable, locate the Left Solenoid Sense connectors. Isolate the connector labeled Up and connect it to the left tilt up coil via the installed boom sense adapter cable.
17. Connect the down Left Solenoid Sense connector to the left tilt down coil via the installed boom sense adapter cable.
18. Connect the Right Solenoid Sense connectors to the machine's right tilt up and right tilt down coils via the installed boom sense adapter cables.

CONNECT THE HARNESS CABLE TO THE IMPLEMENT EXTENSION TEE - GEN II CABLE ONLY

1. Route the harness cable (P/N 115-030-085) toward the implement extension tee cable.
2. Connect the harness cable to the TO NODE connector.
3. Remove the terminator from the machine's chassis harness or the stand alone console harness.
4. Install the terminator on the remaining open end of the implement extension tee cable.
5. Refer to the machine specific wiring schematic for tee cable routing.
6. Connection the implement extension tee cable to the location identified in the wiring schematic.

CONNECT THE HARNESS CABLE TO THE POWER CABLE - GEN I CABLE ONLY

1. Route the harness cable (P/N 115-0230-045) toward the machine's cab.
2. Connect the harness cable to the power cable (P/N 115-0230-007).
3. Tighten the connector screw cap to secure the connection.

NOTE: Be sure to allow enough slack in the harness cable to allow for boom racking.

4. Install the power lead of the power cable to the positive battery terminal.
5. Install the ground lead of the power cable on the negative battery terminal.
6. Connect the wire with the spade connector to a switched power source.
7. Make the necessary CAN connections. Keep in mind there should be only two CAN terminators in the system, one installed at each end of the CAN bus.

CONNECT THE CONTROLLER (IF APPLICABLE)

1. Locate the two console connectors of the console cable (P/N 115-0230-005) and connect them to the AutoBoom console (P/N 063-0130-021).

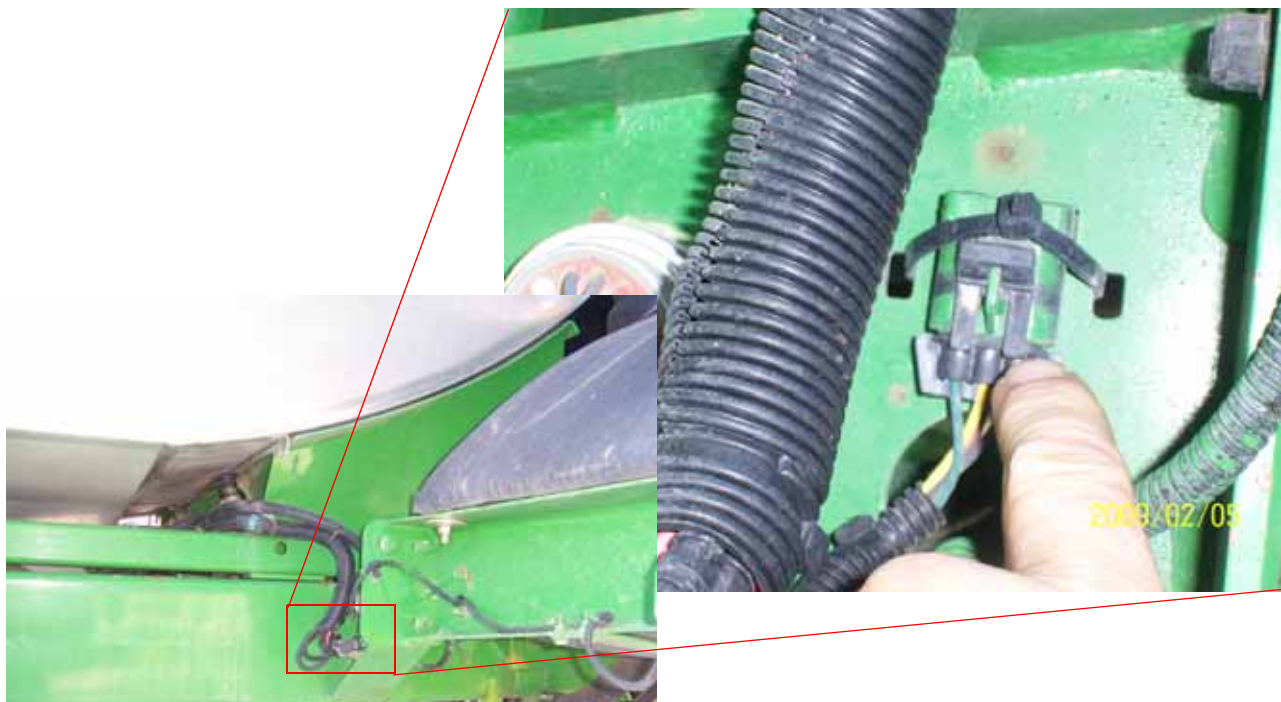
NOTE: Mount the AutoBoom controller in the cab for easy operator access.

2. Install the CAN power tee (P/N 115-0171-368) between the CAN connectors of the console cable (P/N 115-0230-005) and the power cable (P/N 115-0230-007).
3. Install the CAN terminator (P/N 063-0172-369) to the remaining branch of the CAN power tee.
4. Connect the power leads of the CAN power tee to the battery.

ISO CAN WIRING INSTALLATION

1. Remove the sprayer harness cable terminator. This is located under the spray tank on the right side of the machine.

FIGURE 18. Terminator Location



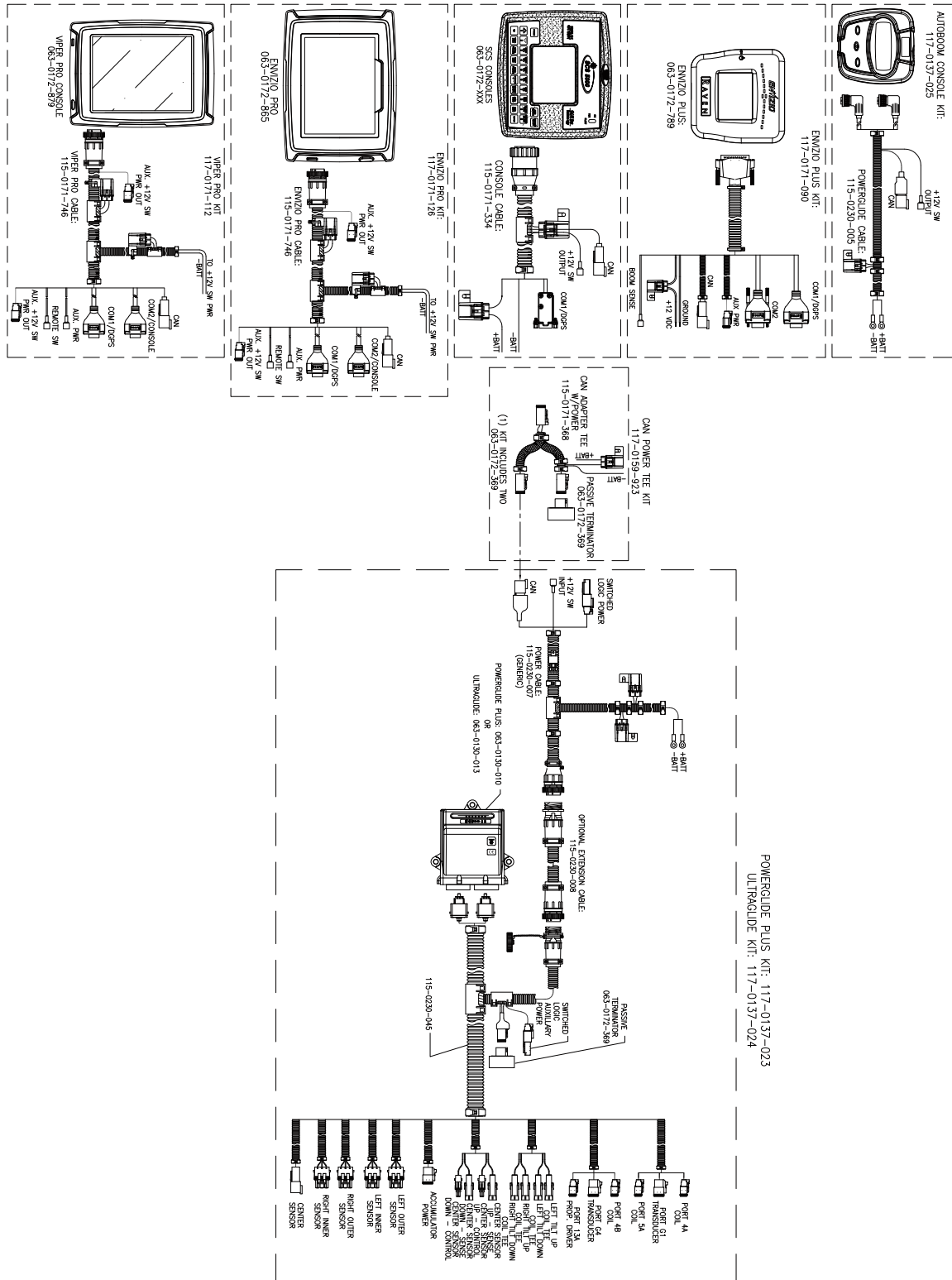
2. Connect the AutoBoom harness CAN connector to the machine's terminator connection.
3. Connect the ISO CAN adapter cable (P/N 115-0230-024) to the CAN BUS connector on the AutoBoom harness cable (P/N 115-0230-026)
4. Install the terminator removed in step 1 to the ISO CAN adapter cable.
5. Connect the CAN power connector of the AutoBoom harness cable (P/N 115-0230-026) to the ISO power harness cable (P/N 115-0230-025).
6. Install the power lead of the ISO power harness to the positive battery terminal.
7. Install the ground power lead of the ISO power harness to the negative battery terminal.
8. Connect the wire with the spade connector to the John Deere power strip in the lower-right corner of the cab.

FIGURE 19. Power Strip

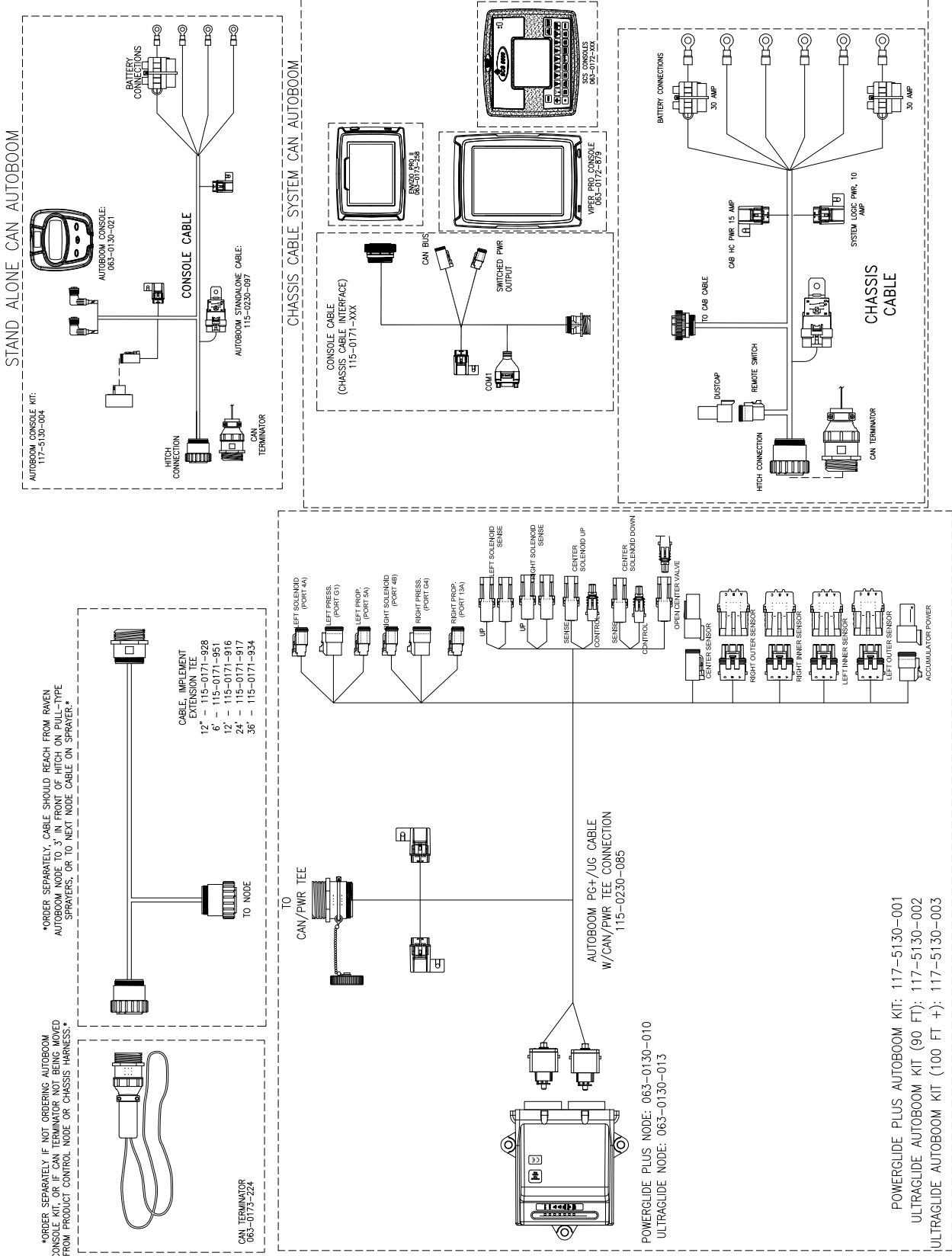


POWERGLIDE PLUS WIRING SCHEMATICS

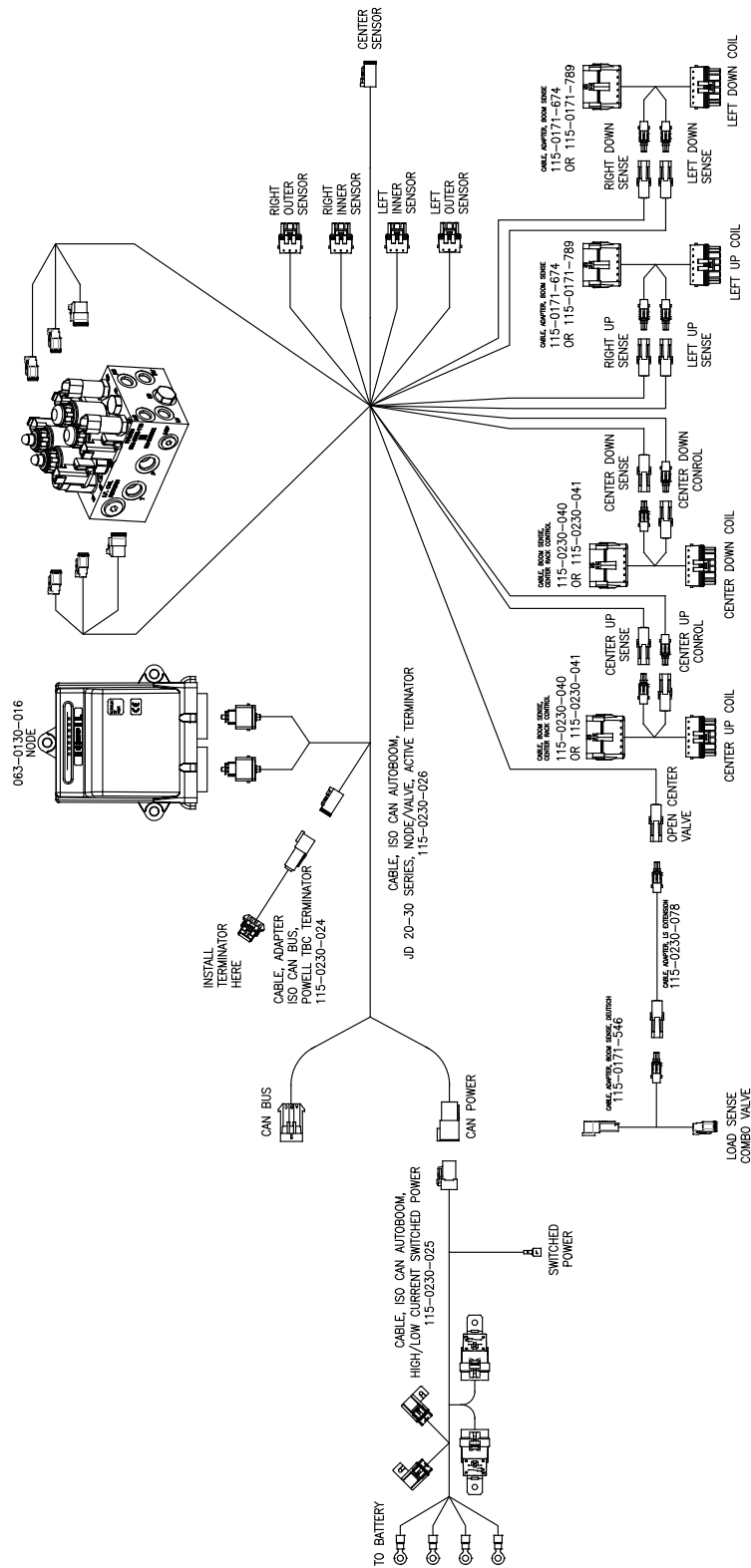
GEN I CABLING



GEN II CABLING



ISO SCHEMATIC



ULTRAGLIDE KIT CONTENTS

This section contains a list of the components that are included in the UltraGlide AutoBoom kit. Before beginning the AutoBoom installation, compare the items in the AutoBoom kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-084)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 4930 AutoBoom Installation	016-0230-084	1
	Valve - PowerGlide Plus AutoBoom	063-0131-125	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Right Ultrasonic	063-0130-018	1
	Cable - Boom Sense Adapter	115-0171-546	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-084)

Picture	Item Description	Part Number	Qty.
	Cable - John Deere B-F Polar Boom Sense Adapter	115-0171-674	1
	Cable - John Deere Boom Sense Adapter	115-0171-789	1
	Cable - B-F Polar Center Rack Control Boom Sense Adapter	115-0230-040	1
	Cable - A-F Polar Center Rack Control Boom Sense Adapter	115-0230-041	1
	Cable - John Deere Load Sense Extension	115-0230-078	1
	U-Bolt - 3-1/16" W x 5" L x 3/8" Thread	107-0171-607	2
	U-Bolt - 2" W x 7" L x 3/8" Thread	107-0171-855	2
	U-Bolt - 2" W x 3-3/4" L x 3/8" Thread Clamp	435-3003-046	4
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 UNC x 1-1/4" Zinc Plated Hex	311-0054-106	3

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-084)


Picture	Item Description	Part Number	Qty.
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	11
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-084)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" ORFS M/M/F Swivel Run Tee	333-0012-022	1
	Fitting - 13/16" ORFS M/M/F Swivel Run Tee	333-0012-028	2
	Fitting - 11/16" ORFS M/F 90° Elbow	333-0012-065	2
	Fitting - 11/16" ORFS M/M/F Swivel Run Tee	333-0012-069	3
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	2
	Fitting- 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	1
	Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	2

TABLE 2. Hydraulic Kit (P/N 117-0134-084)

Picture	Item Description	Part Number	Qty.
	Fitting - 11/16" ORFS (F) to 9/16" ORFS (M) Reducer	333-0012-255	1
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice Straight Adapter	333-0012-289	2
	Hydraulic Hose - 9/16" ORFS (F) 90° to 9/16" ORFS (F) - 228"	214-1000-421	1
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 52"	214-1000-516	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS (F) 45° - 40"	214-1000-518	2
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 82"	214-1000-546	1
	Hydraulic Hose - 11/16" ORFS (F) 90° to 11/16" ORFS (F) - 30"	214-1000-608	2

TABLE 3. Ultrasonic Sensor Bracket Installation Kit (P/N 117-0131-082)



Picture	Item Description	Part Number	Qty.
Not Pictured	Sheet - AutoBoom Sensor Extension	016-0130-070	1
	Bracket - 12" S-Type AutoBoom Sensor	063-0131-592	2
	Bolt - 5/16"-18 x 1-1/4" Hex	311-0052-106	2

TABLE 3. Ultrasonic Sensor Bracket Installation Kit (P/N 117-0131-082)



Picture	Item Description	Part Number	Qty.
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-059	2
	Washer - 5/16" Zinc Flat	313-2300-012	4

TABLE 4. Optional Wheel Kit (P/N 117-0133-011)

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Right Cushioned AutoBoom	063-0131-585	1
	Axle Assembly - Left Cushioned AutoBoom	063-0131-590	1
	Bracket - John Deere Left Weldment Receiver	116-0159-545	1
	Bracket - John Deere Right Weldment Receiver	116-0159-546	1
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2" W x 3-3/4" L x 3/8" Thread	435-3003-046	6
	Bolt - 1/2"-13 x 1-1/2" SS Hex	311-0058-186	4

TABLE 4. Optional Wheel Kit (P/N 117-0133-011)



Picture	Item Description	Part Number	Qty.
	Nut - 1/2"-13 Zinc Hex	312-1001-043	4
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	12

TABLE 5. UltraGlide Wiring Kit (P/N 117-0137-024)







Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1
	Cable - Sensor	115-0171-527	2
	Cable - Harness	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1

TABLE 6. ISO CAN, AutoBoom, UltraGlide, JD 4920, 4930, W/GS2 or Newer Kit (P/N 117-0137-042)


Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Calibration & Operation	016-0130-078	1
	Node - ISO CAN Control, AutoBoom	063-0130-016	1
Not Pictured	Cable - 70' Extension, Ultrasonic Sensor	115-0171-527	2
Not Pictured	Cable - Adapter, ISO CAN BUS Terminator	115-0230-024	1
Not Pictured	Cable - ISO CAN AutoBoom, JD SP Power Harness	115-0230-025	1
Not Pictured	Cable, ISO CAN AutoBoom, JD SP Valve Connection	115-0230-026	1


INSTALL THE ULTRAGLIDE HYDRAULIC SYSTEM



⚠ **WARNING**

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.







CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.

Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valve.





NOTICE

The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

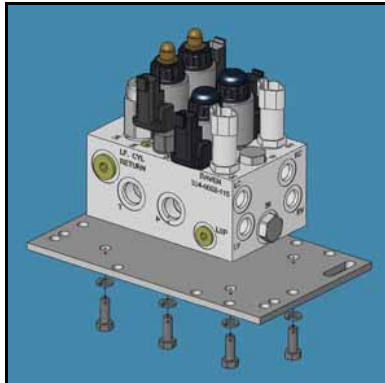
INSTALL FITTINGS IN THE AUTOBOOM VALVE

Before mounting the AutoBoom valve on the machine, install the proper fittings in the valve. This prepares the valve for installation and simplifies the hose connection process later in the procedure. Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	LC, RC
Fitting - 11/16" ORFS M/F 90° Elbow	333-0012-065	LC, RC
Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	Left T, P
Fitting- 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	LSP
Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	LF CYL RTN, RT CYL RTN
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice Straight Adapter	333-0012-289	LV, RV

MOUNT THE AUTOBOOM VALVE

FIGURE 1. AutoBoom Valve Mounted to the Valve Mounting Plate



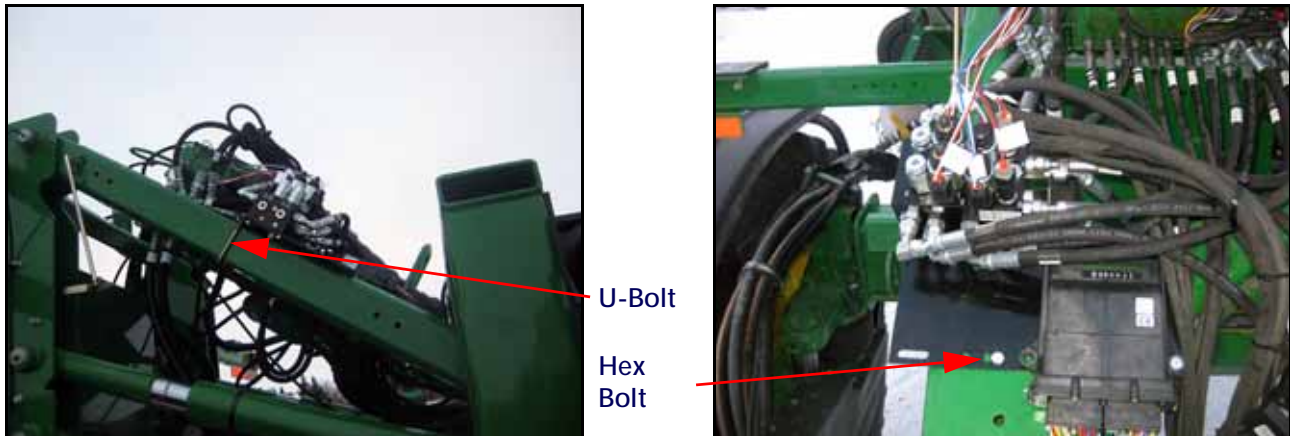
1. Secure the AutoBoom valve (P/N 063-0131-125) to the mounting plate (P/N 107-0171-802) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).
2. Secure the mounting plate to the machine's center rack.

FIGURE 2. AutoBoom Valve Mounted to the Machine's Center Rack - Model 4930



- Model 4930 Only - Secure the mounting plate to the upper-right parallel arm using two 3-1/16" W x 5" L x 3/8" thread U-bolts (P/N 107-0171-607) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

FIGURE 3. AutoBoom Valve Mounted to the Machine's Center Rack - Model 4940



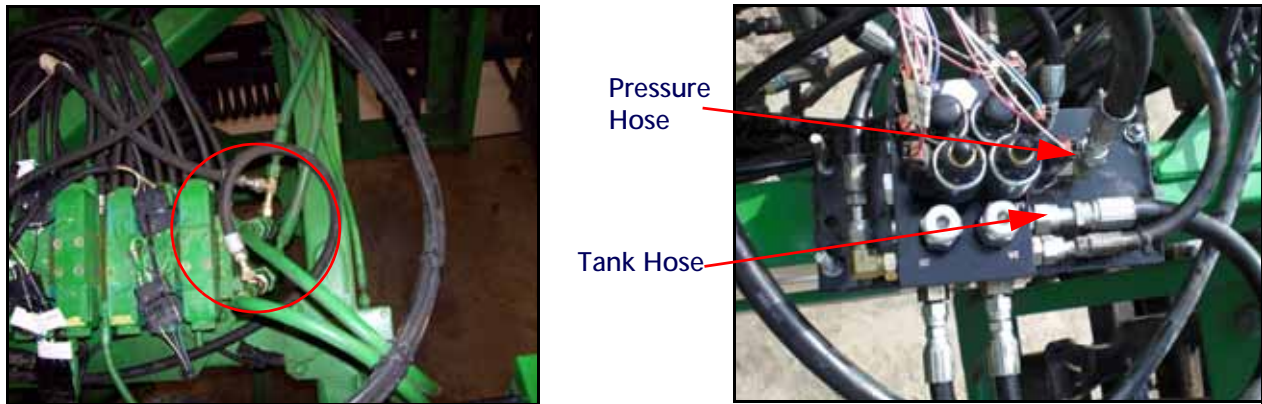
- Model 4940 Only - Secure the mounting plate to the upper-left parallel arm using one 3-1/16" W x 5" L x 3/8" thread U-bolt (P/N 107-0171-607), one 3/8" UNC x 1-1/4" hex bolt (P/N 312-0054-106), and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses

	<p style="text-align: center;">⚠ WARNING</p> <p>Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's system may be extremely hot and under high pressure.</p>
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	<p style="text-align: center;">⚠ CAUTION</p> <p>When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.</p> <p>Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valve.</p>
--	--

FIGURE 4. Pressure and Tank Hoses Installed



1. Locate and disconnect the machine's pressure hose from the left side of the machine's hydraulic valve.
2. Install a 13/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-028) in the machine's pressure port.
3. Connect the machine's pressure hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-546) on the 90° end of the tee fitting.
5. Connect the 90° end of the installed hydraulic hose to the installed fittings in Port P of the AutoBoom valve.
6. Locate and disconnect the machine's tank port from the left side of the machine's hydraulic valve.
7. Install a 13/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-028) in the machine's tank port.
8. Connect the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-516) on the 90° end of the tee fitting.
10. Connect the 90° end of the installed hydraulic hose to the installed fittings in Port T of the AutoBoom valve.

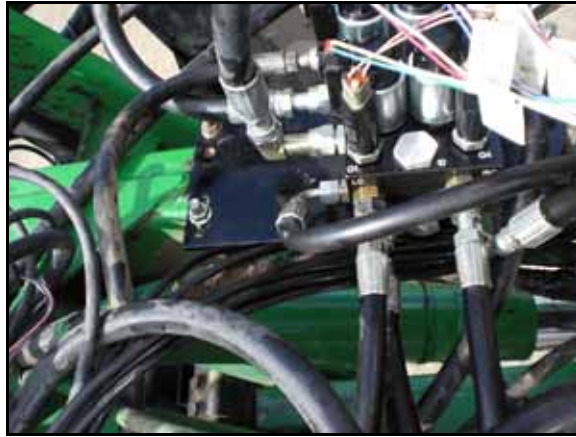
REMOVE THE ORIFICES FROM THE MACHINE'S TILT CYLINDERS

1. Disconnect the machine's raise hose from the rod-end of the left tilt cylinder.
2. Remove the machine's cylinder fitting and the orifice located behind the fitting, if applicable.
3. Reinstall the machine's original cylinder fitting in the rod-end of the left tilt cylinder.
4. Reconnect the machine's raise hose on the rod-end of the left tilt cylinder.
5. Disconnect the machine's down hose from the base-end of the left tilt cylinder.
6. Remove the machine's cylinder fitting and the orifice located behind the fitting, if applicable.
7. Reinstall the machine's original cylinder fitting in the base-end of the left tilt cylinder.
8. Reconnect the machine's down hose to the base-end of the tilt cylinder.
9. Repeat the steps above to remove the orifice fittings from the machine's right tilt cylinder.

NOTE: Keep the orifice fittings for future use.

INSTALL THE LEFT AND RIGHT CYLINDER HOSES

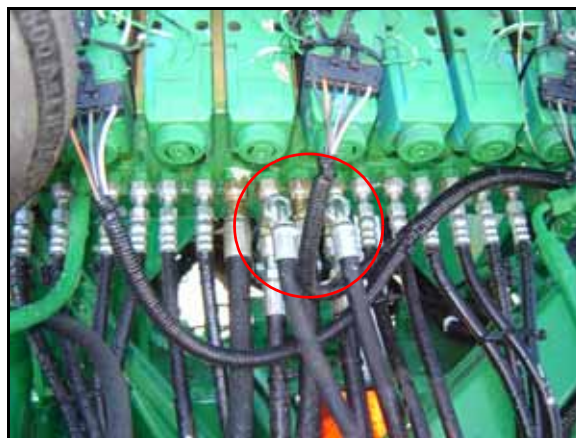
FIGURE 5. Left and Right Cylinder Hoses Installed



1. Disconnect the machine's left raise hose from the machine's hydraulic valve.
2. Route the machine's raise hose to the AutoBoom valve and connect it to the installed fittings in Port LC.
3. Install the straight end of the supplied hydraulic hose (P/N 214-1000-518) on the left raise port of the machine's hydraulic valve.
4. Connect the 45° end of the installed hydraulic hose to Port LV of the AutoBoom valve.
5. Disconnect the machine's right raise hose from the machine's hydraulic valve.
6. Route the machine's raise hose to the AutoBoom valve and connect it to the installed fittings in Port RC.
7. Install the straight end of the supplied hydraulic hose (P/N 214-1000-518) on the right raise port of the machine's hydraulic valve.
8. Connect the 45° end of the installed hydraulic hose to Port RV of the AutoBoom valve.

INSTALL THE LEFT AND RIGHT DOWN HOSES

FIGURE 6. Down Hoses Installed on the AutoBoom Valve

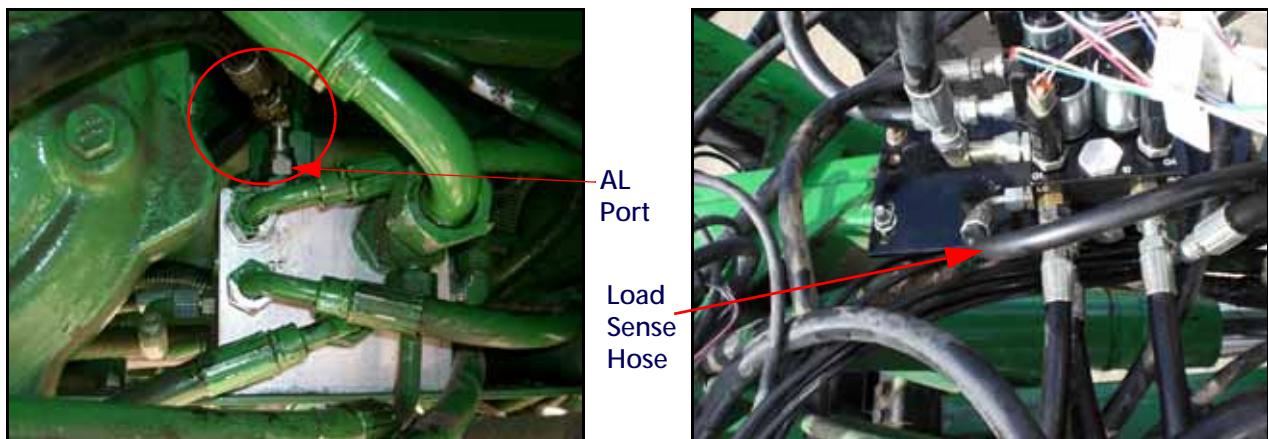


1. Disconnect the machine's left down hose from the machine's hydraulic valve.
2. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the down port of the machine's hydraulic valve.
3. Connect the machine's down hose to the opposite end of the installed tee fitting.

4. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-608) on the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to Port LF CYL RTN of the AutoBoom valve.
6. Disconnect the machine's right down hose from the machine's hydraulic valve.
7. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the down port of the machine's hydraulic valve.
8. Connect the machine's down hose to the opposite end of the installed tee fitting.
9. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-608) on the 90° end of the installed tee fitting.
10. Connect the straight end of the installed hydraulic hose to Port RT CYL RTN of the AutoBoom valve.

INSTALL THE LOAD SENSE HOSE - MODEL 4930 ONLY

FIGURE 7. Load Sense Hose Installed



1. Locate the load sense combo valve beneath the cab/tank of the machine.
2. Disconnect the machine's load sense hose from port AL on the load sense combo valve.
3. Install a 9/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-022) on the load sense combo valve.

NOTE: Depending on the machine, it may be necessary to install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) and an 11/16" ORFS (M) to 9/16" ORFS (M) reducer adapter fitting (P/N 333-0012-255) in the load sense combo valve before installing the tee fitting.

4. Reconnect the machine's load sense hose to the opposite end of the installed tee fitting.
5. Connect the straight end of the supplied hydraulic hose (P/N 214-1000-421) on the 90° end of the installed tee fitting.
6. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port LSP of the AutoBoom valve.

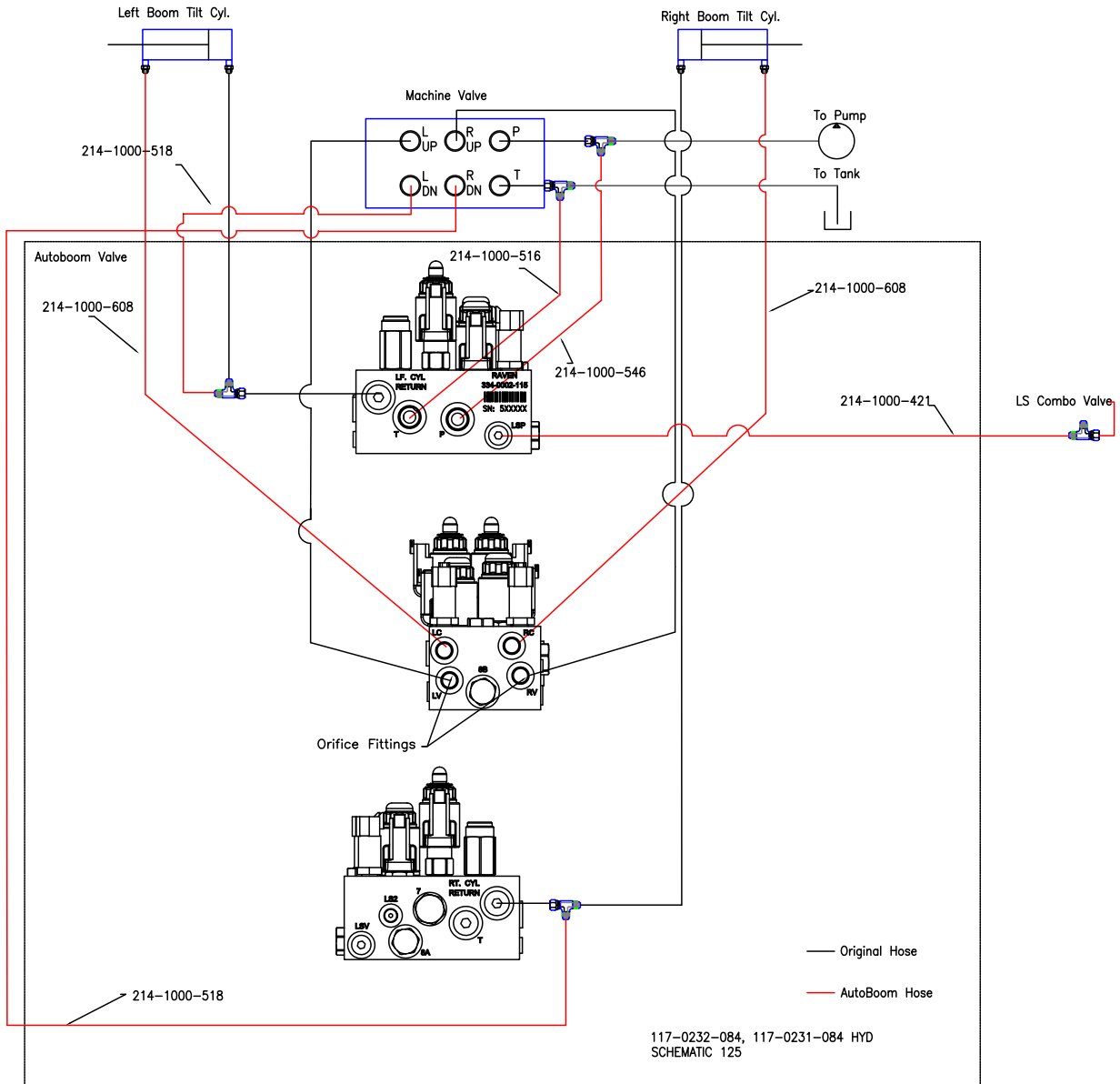
INSTALL THE LOAD SENSE HOSE - MODEL 4940 ONLY

FIGURE 8. Load Sense Hose Installed



1. Trace the load sense hose from the breakaway valve to the machine's existing tee fitting located below the spray tank at the rear of the machine.
2. Disconnect the load sense hose from the tee fitting.
3. Install a 9/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-022) on the existing tee fitting.
4. Connect the machine's load sense hose to the opposite end of the installed tee fitting.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1000-421) on the 90° end of the installed tee fitting.
6. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LSP of the AutoBoom valve.

ULTRAGLIDE HYDRAULIC SYSTEM

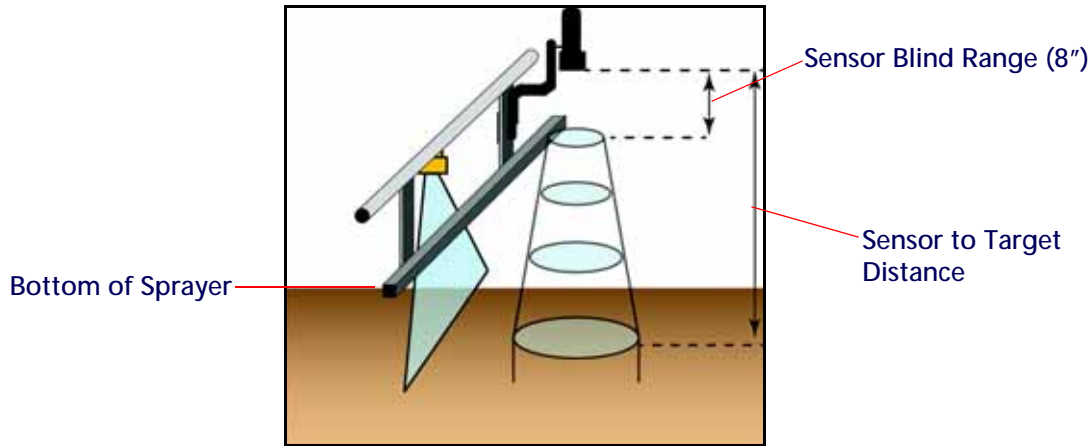


INSTALL THE ULTRAGLIDE SENSORS

BOOM SENSOR MOUNTING LOCATIONS

Sensor mounting locations may be influenced by the boom configuration. If an object enters the sensor's blind range unexpectedly, a false echo return to the sensor could occur, causing the boom to drop and the sensor or boom to be damaged. To ensure optimal operation of the UltraGlide system and to protect the sprayer boom, the sensors should be mounted on the front side of the boom, 8 - 10" above the lowest hanging part of the boom.

FIGURE 9. Illustration of Sensor's Blind Range



Mount the Boom Sensors

⚠ WARNING

The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

FIGURE 10. Mounted Boom Sensor



1. Locate the left and right ultrasonic sensors (P/N 063-0130-012 and 063-0130-014) in the AutoBoom installation kit.
2. Remove the sensor from the existing plastic arm.
3. Install the sensors on the 12" S-type sensor arms (P/N 063-0131-592) using the supplied 5/16"-18 x 1-1/4" bolts (P/N 311-0052-106), 5/16"-18 nylon insert lock nuts (P/N 312-4000-059) and 5/16" zinc flat washers (P/N 313-2300-012).
4. Mount the right sensor (P/N 063-0130-012) to the front of the right boom using two 2" W x 3-3/4" L x 3/8" thread clamp U-bolts (P/N 435-3003-046).
5. Tighten the nuts to ensure the sensor is mounted securely.
6. Repeat the steps above to mount the remaining boom sensor(s).

MOUNT THE CENTER RACK SENSOR

FIGURE 11. Center Rack Sensor



1. Mount the center sensor (P/N 063-0130-018) to the inside-right of the center rack using two 2" W x 7" L x 3/8" thread U-bolts (P/N 107-0171-855) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Tighten the nuts to ensure the sensor is mounted securely.

CONNECT THE SENSOR CABLES

1. Connect the left sensor cable (P/N 115-0171-527) to the connector on the left sensor.
2. Route the left sensor cable toward the AutoBoom valve.
3. Loop and tie-off any excess cable, allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor cable(s).

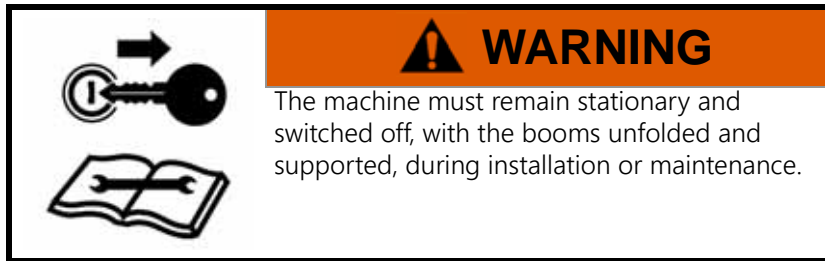
NOTE: The sensor cables will be connected to the AutoBoom system in the wiring phase of installation.

INSTALL THE GAUGE WHEELS - OPTIONAL

GAUGE WHEEL MOUNTING LOCATIONS

Wheel mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the wheels on the boom, ensuring the wheels will not interfere with or be damaged while folding or unfolding the booms. The wheels should be mounted outside of the boom fold, but inside the boom breakaway.

Mount the Gauge Wheels.



NOTE: The appearance of the wheel axles may vary.

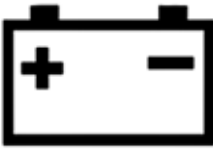
FIGURE 12. Gauge Wheel Installed



1. Remove the lug nuts from the right wheel axle (P/N 063-0131-585).
2. Place the wheel (P/N 322-0131-008) on the right wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617) over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
5. Secure the right wheel mounting bracket (P/N 116-0159-546) to the front of the right boom using three 2" W x 3-3/4" L x 3/8" thread U-bolts (P/N 435-3003-046).
6. Insert the right wheel axle into the right wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket by installing two 1/2"-13 x 1-1/2" SS hex bolts (P/N 311-0058-186) and two 1/2" zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

INSTALL THE ULTRAGLIDE WIRING

Wiring Connections

	<p style="text-align: center;">⚠ CAUTION</p> <p>Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.</p>
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For wiring connections made outside the cab, apply dielectric silicone grease (P/N 222-0000-006) generously on both the male and female ends of the connectors. Application of the grease will prevent corrosion to the pins and wires.

INSTALL THE AUTOBOOM NODE

FIGURE 13. AutoBoom Node Installed

Model 4930



1. Mount the AutoBoom node (P/N 063-0130-013) or the ISO node (P/N 063-0130-016) to the valve mounting plate (P/N 107-0171-802) using two (model 4940) or three (model 4930) 3/8"-16 UNC x 1-1/4" zinc plated hex bolts (P/N 311-0054-106) and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

NOTE: Position the node so that the cable connectors face down or to the side.

2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-0230-026) into the correct ports of the AutoBoom valve.
3. Tighten the bolts on the node connectors to secure the connections.

CONNECT THE HARNESS TO THE BOOM FUNCTION CONTROLS

1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-0230-026).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-125).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.

5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.
6. Connect the Left Solenoid connector to Port 4A on the AutoBoom valve.
7. Connect the Right Solenoid connector to Port 4B on the AutoBoom valve.
8. Locate the Left Prop and Right Prop connectors on the harness cable.
9. Connect the Left Prop connector to Port 5A on the AutoBoom valve.
10. Connect the Right Prop connector to Port 13A on the AutoBoom valve.

FIGURE 14. Machine's Boom Function Controls



IMPORTANT: Each boom sense adapter cable has unique end connections that will fit on only one of the connectors. If the cables do not easily join, do not force the connection! Instead, try connecting the other boom sense adapter cable to that connector.

11. Locate the machine's boom function controls on the hydraulic valve.
12. Disconnect the connectors from the machine's left/right tilt up coils.
13. Install the A-F or B-F polar John Deere boom sense adapter cable (P/N 115-0171-674 or 115-0171-789) between the coils and the machine's coil connector.
14. Disconnect the connectors from the machine's left/right down coils.
15. Install the remaining boom sense adapter cable between the coils and the machine's coil connector.
16. On the harness cable, locate the Left Solenoid Sense connectors. Isolate the connector labeled Up and connect it to the left tilt up coil via the installed boom sense adapter cable.
17. Connect the down Left Solenoid Sense connector to the left tilt down coil via the installed boom sense adapter cable.
18. Connect the Right Solenoid Sense connectors to the machine's right tilt up and right tilt down coils via the installed boom sense adapter cables.

INSTALL THE CENTER RACK CONTROL

FIGURE 15. Machine's Center Rack Coils



IMPORTANT: Each boom sense cable has unique end connections that will fit on only one of the connectors. If the cables do not easily join, do not force the connection! Instead, try connecting the other boom sense cable to that connector.

1. Locate the center up coil on the machine's hydraulic valve.
2. Unplug the coil connector from the center up coil.
3. Install the A-F or B-F polar John Deere boom sense cable (P/N 115-0230-040 or 115-0230-041) on the center up coil connector.
4. Connect the coil connector to the installed boom sense adapter cable.
5. Plug the single connectors on the installed boom sense adapter cable in the Center Up harness connectors of the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-0230-026).
6. Locate the center down coil on the machine's hydraulic valve.
7. Unplug the coil connector from the center down coil.
8. Install the remaining boom sense adapter cable on the center down coil.
9. Connect the coil connector to the installed boom sense adapter cable.
10. Plug the single connectors on the installed boom sense adapter cable in the Center Down harness connectors of the AutoBoom harness cable.

CONNECT THE HARNESS CABLE TO THE LOAD SENSE VALVE

FIGURE 16. Load Sense Combo Valve



1. Locate the load sense valve on the combo valve.

NOTE: The load sense valve is the smallest valve on the combo valve.

2. Disconnect the coil from the load sense valve.
3. Install the boom sense adapter cable (P/N 115-0171-546) between the coil and its connector.
4. Locate the Open Center wire on the AutoBoom harness cable (P/N 115-0230-045).
5. Connect one end of the John Deere load sense extension cable (P/N 115-0230-078) to the Open Center cable on the AutoBoom harness cable.
6. Route the extension cable back to the load sense valve.
7. Connect the other end of the extension cable to the installed boom sense adapter cable.

CONNECT THE HARNESS CABLE TO THE SENSORS

1. Locate the Center Sensor connector on the AutoBoom harness cable.
2. Connect the Center Sensor connector to the installed center sensor (P/N 063-0130-018).
3. Locate the Left Outer Sensor connector on the AutoBoom harness cable.
4. Connect the Left Outer Sensor connector to the installed left sensor cable (P/N 115-0171-527).
5. Locate the Right Outer Sensor connector on the AutoBoom harness cable.
6. Connect the Right Outer Sensor connector to the installed right sensor cable.
7. If optional inside boom sensors are installed, repeat the steps above to connect the sensors.

CONNECT THE HARNESS CABLE TO THE POWER CABLE - GEN II CABLE ONLY

1. Route the harness cable (P/N 115-0230-085) toward the implement extension tee cable.
2. Connect the harness to the TO NODE connector.
3. Remove the terminator from the machine's chassis harness or the standalone console harness.
4. Install the terminator on the remaining open end of the implement extension tee cable.
5. Refer to the wiring schematics (starting at Gen I Cabling section on page 58) specific to the machine for wire routing.
6. Connect the implement extension tee cable to the location determined in step 5.

CONNECT THE HARNESS CABLE TO THE POWER CABLE - GEN I CABLE ONLY

1. Route the harness cable (P/N 115-0230-045) toward the machine's cab.
2. Connect the harness cable to the power cable (P/N 115-0230-007).
3. Tighten the connector screw cap to secure the connection.

NOTE: Allow enough slack in the harness cable to allow for boom racking.

4. Install the power lead of the power cable to the positive battery terminal.
5. Install the ground power lead of the power cable to the negative battery terminal.
6. Connect the wire with the spade connector to a switched power source.
7. Make the necessary CAN connections. There should be two CAN terminators on the system, one installed at each end of the CANbus.

CONNECT THE CONTROLLER (IF APPLICABLE)

1. Locate the two console connectors of the console cables (P/N 115-0230-005) and connect them to the AutoBoom console (P/N 063-0130-021).

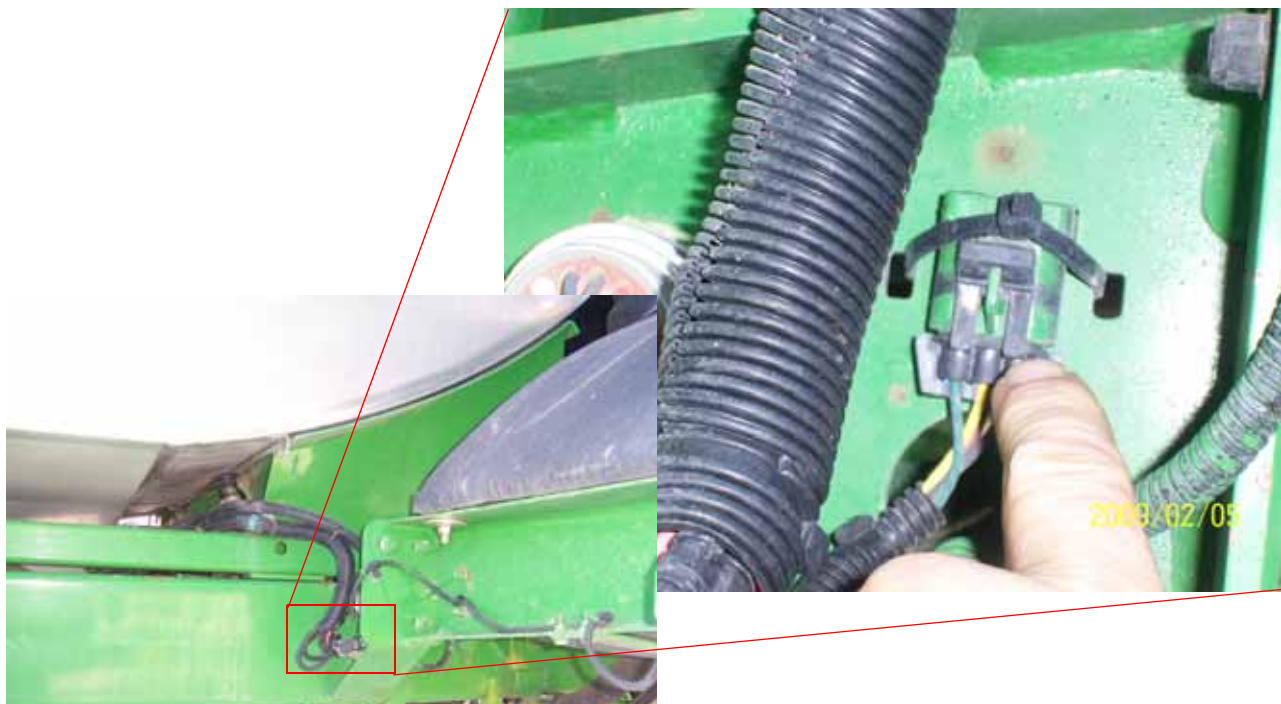
NOTE: Mount the AutoBoom controller in the cab for easy operator access.

2. Install the CAN power tee (P/N 115-0171-368) between the CAN connectors of the console cable (P/N 115-0230-005) and the power cable (P/N 115-0230-007).
3. Install a CAN terminator (P/N 063-0172-369) on the remaining branch of the CAN power tee.
4. Connect the power leads of the CAN power tee to the battery.

ISO CAN WIRING INSTALLATION

1. Remove the sprayer harness cable terminator. This is located under the spray tank on the right side of the machine.

FIGURE 17. Terminator Location

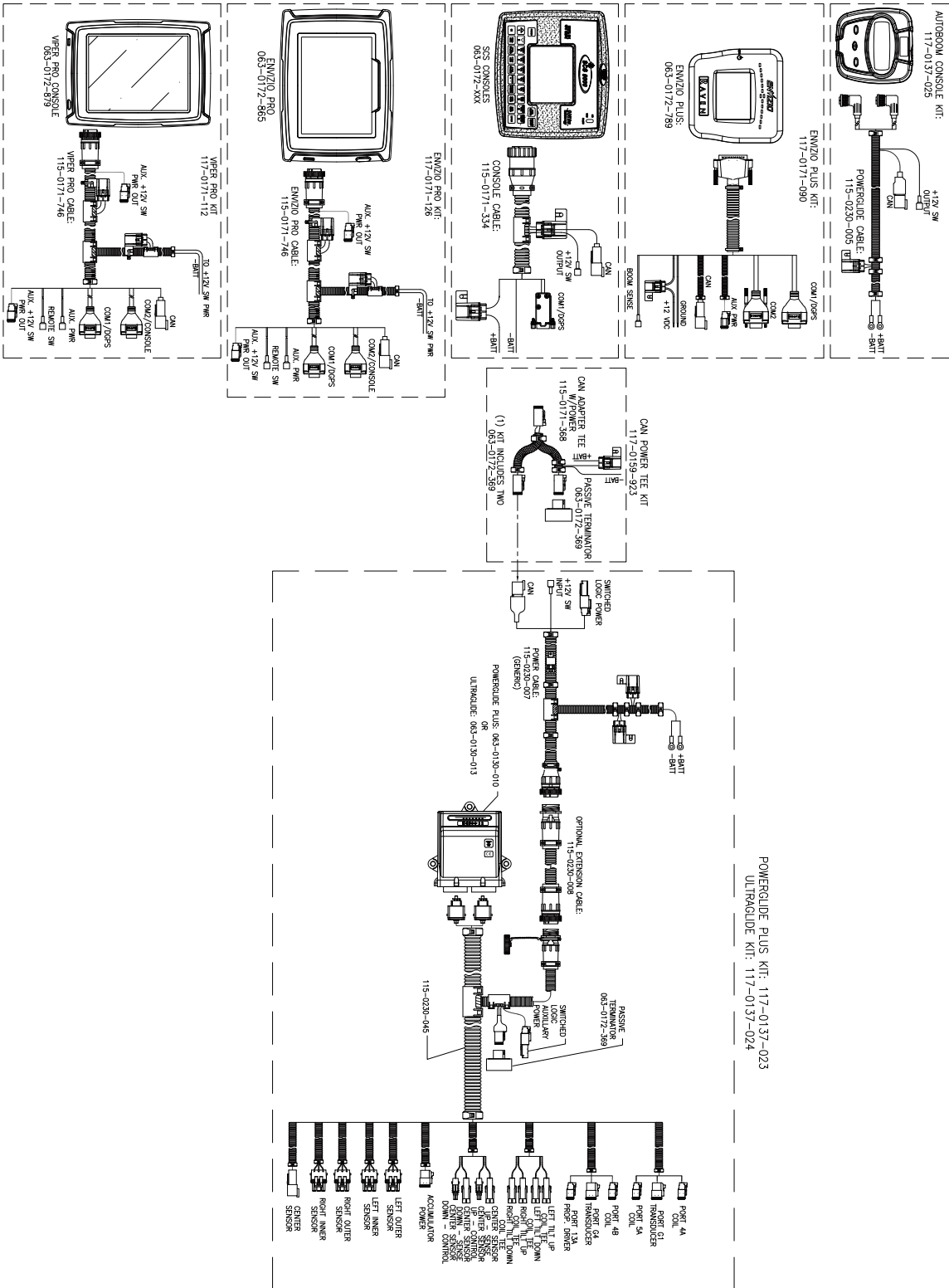


2. Connect the AutoBoom harness CAN connector to the machine's terminator connection.
3. Connect the ISO CAN adapter cable (P/N 115-0230-024) to the CAN BUS connector on the AutoBoom harness cable (P/N 115-0230-026)
4. Install the terminator removed in step 1 to the ISO CAN adapter cable.
5. Connect the CAN power connector of the AutoBoom harness cable (P/N 115-0230-026) to the ISO power harness cable (P/N 115-0230-025).
6. Install the power lead of the ISO power harness to the positive battery terminal.
7. Install the ground power lead of the ISO power harness to the negative battery terminal.
8. Connect the wire with the spade connector to the John Deere power strip in the lower-right corner of the cab.

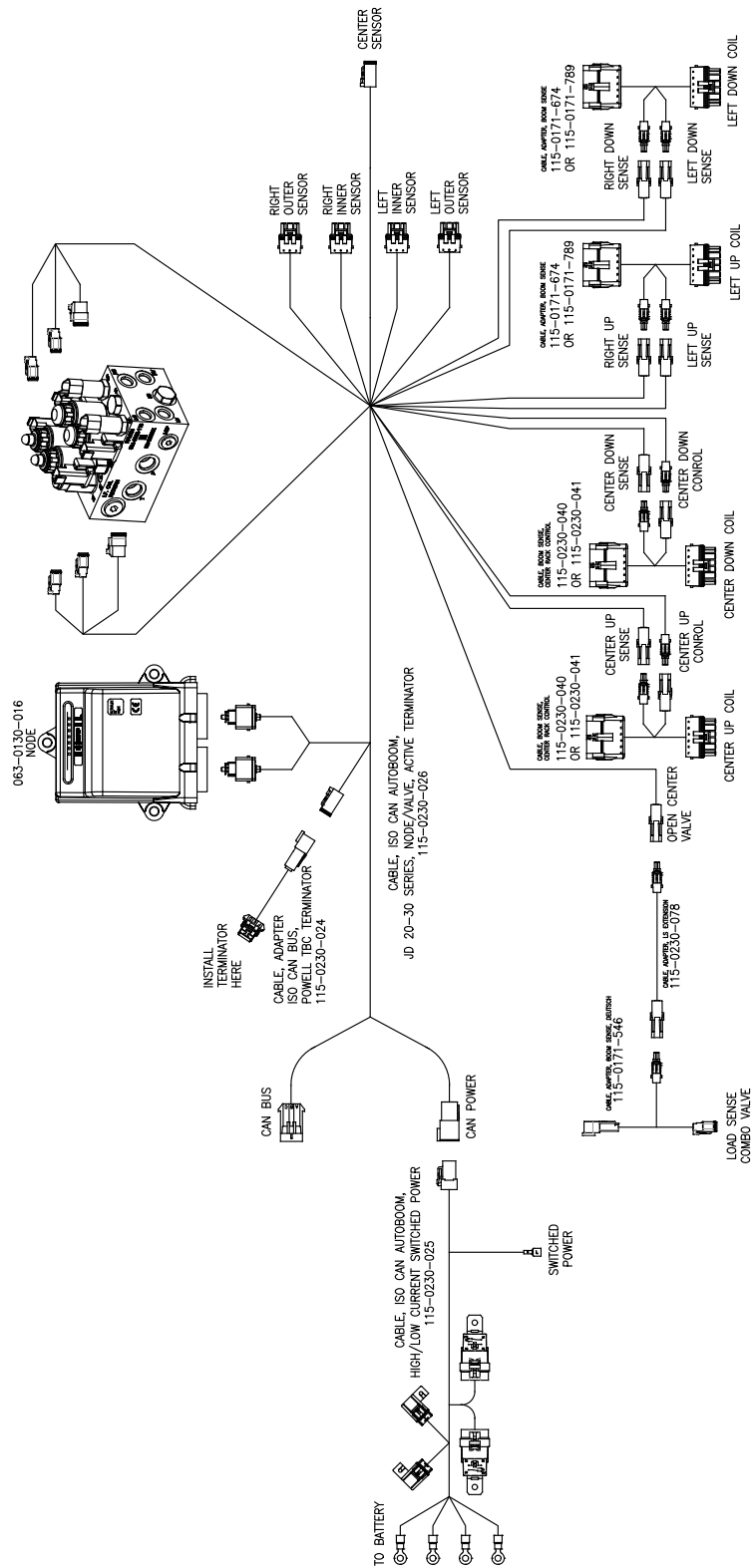
FIGURE 18. Power Strip



GEN I CABLING



ISO SCHEMATIC



CHAPTER

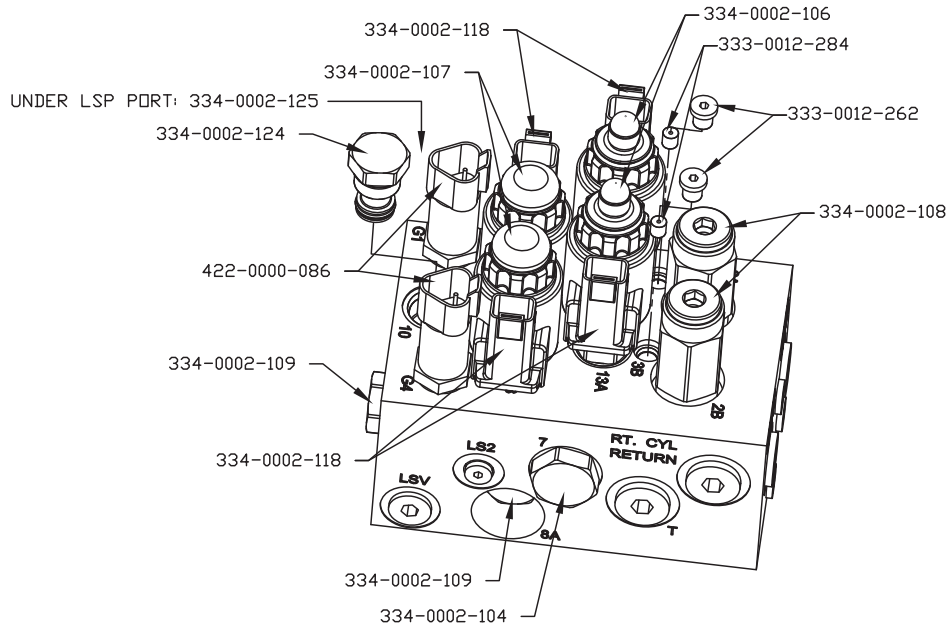
REPLACEMENT PARTS

5

This section contains replacement part diagrams for PowerGlide, PowerGlide Plus, and UltraGlide systems. Please refer to these diagrams when calling to request replacement parts.

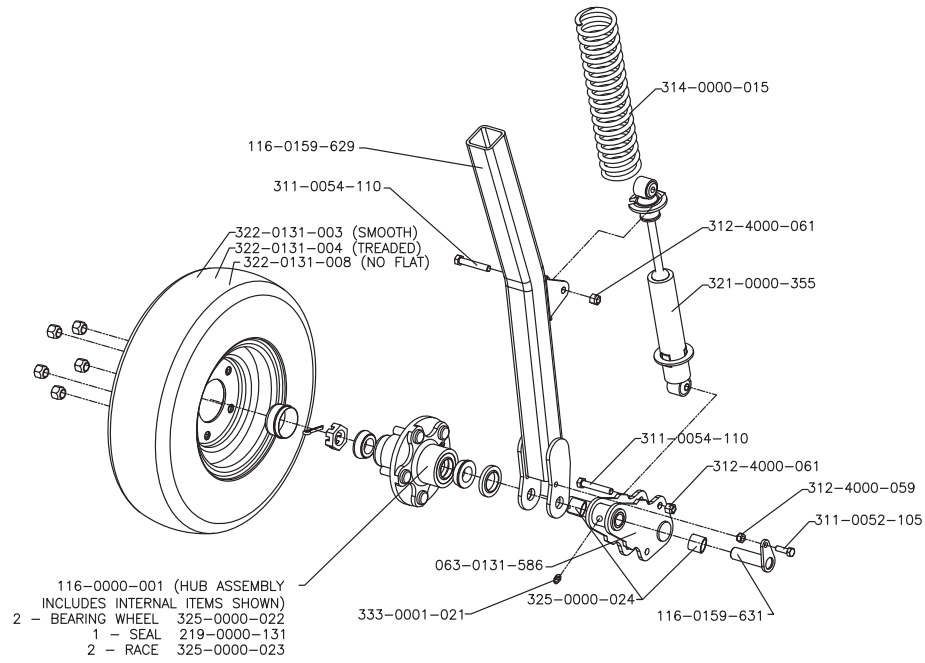
VALVE BLOCKS

POWERGLIDE PLUS AND ULTRAGLIDE REPLACEMENT PARTS

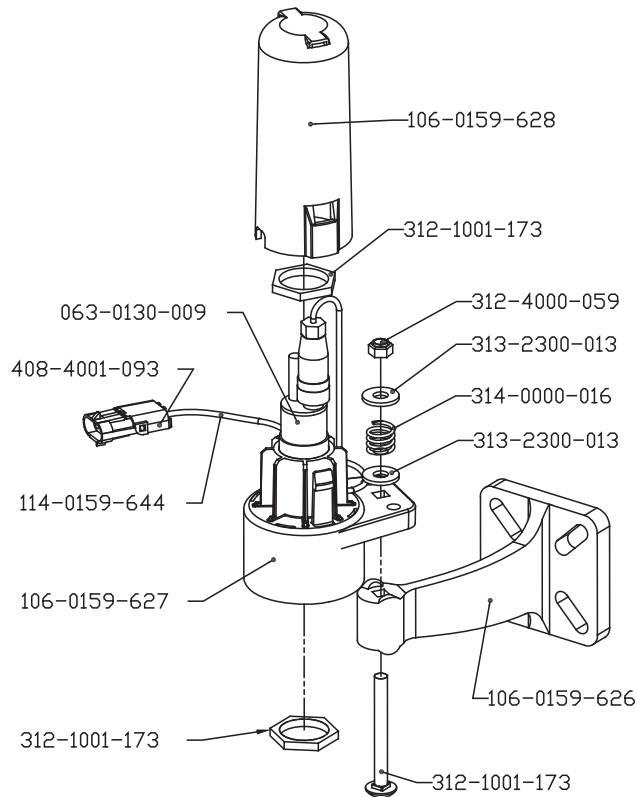


063-0131-125
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, DYNAMIC LS, AUTOBOOM

WHEELS



SENSORS



RAVEN

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

How Long is the Coverage Period?

Raven Applied Technology products are covered by this warranty for 12 months from the date of retail sale. In no case will the Limited Warranty period exceed 24 months from the date the product was issued by Raven Industries Applied Technology Division. This warranty coverage applies only to the original owner and is non-transferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

What is not Covered by this Warranty?

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit, labor, or other damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.



Extended Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

Do I Need to Register My Product to Qualify for the Extended Warranty?

Yes. Products/systems must be registered within 30 days of retail sale to receive coverage under the Extended Warranty. If the component does not have a serial tag, the kit it came in must be registered instead.

Where Can I Register My Product for the Extended Warranty?

To register, go online to www.ravenhelp.com and select Product Registration.

How Long is the Extended Warranty Coverage Period?

Raven Applied Technology products that have been registered online are covered for an additional 12 months beyond the Limited Warranty for a total coverage period of 24 months from the date of retail sale. In no case will the Extended Warranty period exceed 36 months from the date the product was issued by Raven Industries Applied Technology Division. This Extended Warranty coverage applies only to the original owner and is non-transferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries. In addition, the words "Extended Warranty" must appear on the box and all documentation if the failure is between 12 and 24 months from the retail sale.

What Will Raven Industries Do?

Upon confirmation of the product's registration for the Extended Warranty and the claim itself, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

What is Not Covered by the Extended Warranty?

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit, labor, or other damages. Cables, hoses, software enhancements, and remanufactured items are not covered by this Extended Warranty. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.