

**John Deere 4700 (1999 &
Newer) and 4710 AutoBoom™
Installation Manual**

P/N 016-0230-019 Rev F 04/16

E24070

Disclaimer

While every effort has been made to ensure the accuracy of this document, Raven Industries assumes no responsibility for omissions and errors. Nor is any liability assumed for damages resulting from the use of information contained herein.

Raven Industries shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss, or impairment of data arising out of the use, or inability to use, this system or any of its components. Raven Industries shall not be held responsible for any modifications or repairs made outside our facilities, nor damages resulting from inadequate maintenance of this system.

As with all wireless and satellite signals, several factors may affect the availability and accuracy of wireless and satellite navigation and correction services (e.g. GPS, GNSS, SBAS, etc.). Therefore, Raven Industries cannot guarantee the accuracy, integrity, continuity, or availability of these services and cannot guarantee the ability to use Raven systems, or products used as components of systems, which rely upon the reception of these signals or availability of these services. Raven Industries accepts no responsibility for the use of any of these signals or services for other than the stated purpose.

Chapter 1	<i>Important Safety Information</i>	1
Hydraulic Safety		2
Electrical Safety		2
Chapter 2	<i>Introduction</i>	3
Preparing for Installation		3
Recommendations		4
Point of Reference		4
Hydraulic Fittings		4
Chapter 3	<i>PowerGlide Plus</i>	7
PowerGlide Plus Kit Contents		7
Install the PowerGlide Plus Hydraulic System		12
Remove the Orifice Fittings		13
Install Fittings on the AutoBoom Valve		15
Mount the AutoBoom Valve		16
Install the Pressure and Tank Hoses		17
Remove the Orifices from the Machine's Tilt Cylinders		18
Install the Left and Right Cylinder Hoses		18
Install the Left and Right Down Hoses		19
Install the Load Sense Hoses		20
PowerGlide Plus Hydraulic Schematic		22
Install the Gauge Wheels		23
Move the Wet Boom (If Applicable)		23
Gauge Wheel Mounting Locations		24
Mount the Gauge Wheels		24
Install the PowerGlide Plus Wiring		25
Install the AutoBoom Node		25
Connect the Harness to the Boom Function Controls		26
Connect the Harness Cable to the Implement Extension Tee - Gen II Cable Only		27
Connect the Harness Cable to the Power Cable - Gen I Cable Only		27
Connect the Controller (If Applicable) - Gen I Cable Only		27
ISO CAN Wiring Installation		28
PowerGlide Plus Wiring Schematic		31
Gen I Cabling		31
Gen II Cabling		32
ISO Electrical Schematic		33
Chapter 4	<i>UltraGlide</i>	35
UltraGlide Kit Contents		35
Install the UltraGlide Hydraulic System		42
Install Fittings on the AutoBoom Valve		43

Mount the AutoBoom Valve	44
Remove the Orifices from the Machine's Tilt Cylinders	45
Install the Left and Right Cylinder Hoses	46
Install the Left and Right Down Hoses	47
Install the Load Sense Hoses	48
UltraGlide Hydraulic Schematic	50
Install the UltraGlide Sensors	51
Boom Sensor Mounting Locations	51
Mount the Center Rack Sensor	52
Connect the Sensor Cables	52
Install the Gauge Wheels - Optional	53
Move the Wet Boom (If Applicable)	53
Gauge Wheel Mounting Locations	54
Mount the Gauge Wheels	54
Install the UltraGlide Wiring	55
Install the AutoBoom Node	55
Connect the Harness to the Boom Function Controls	56
Install the Center Rack Control	57
Connect to the Load Sense Combo Valve	58
Connect the Harness Cable to the Sensors	59
Connect the Harness Cable to the Implement Extension Tee - Gen II Cable Only	59
Connect the Harness Cable to the Power Cable - Gen I Cable Only	59
Connect the Controller (If Applicable) - Gen I Cable Only	60
ISO CAN Wiring Installation	60
UltraGlide Wiring Schematic	63
Gen I Cabling	63
Gen II Cabling	64
ISO Electrical Schematic	65

Chapter 5 *Replacement Parts* 67

PowerGlide Plus and UltraGlide Replacement Parts	67
Wheels	68
Sensors	69

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.



Hydraulic Safety

- Raven Industries recommends that appropriate protective equipment must be worn at all times when working on the hydraulic system.
- Never attempt to 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 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.

Electrical Safety

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Ensure that the power cable is the last cable to be connected.

CHAPTER

2

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: 4700 (1999 & Newer) and 4710

YEAR:

SERIAL NUMBER:

FIGURE 1. John Deere 4700



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

3

PowerGlide Plus

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 117-0231-019)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 4700 (1999 & Newer) and 4710 AutoBoom Installation	016-0230-019	1
	Valve - PowerGlide Plus AutoBoom	063-0131-125	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	U-Bolt - 3-1/16" W x 4" L x 3/8" Thread	107-0171-608	2
	Bolt - 5/16"-18 x 7/8" Grade 8 Hex	311-0052-104	4
	Bolt - 3/8"-16 UNC X 1-1/4" Zinc Plated Hex	311-0054-106	3

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-019)



Picture	Item Description	Part Number	Qty.
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	7
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Boom Sense Adapter Kit (P/N 117-0131-009)





Picture	Item Description	Part Number	Qty.
	Cable - Left Up Boom Sense Adapter	115-0171-254	1
	Cable - Left Down Boom Sense Adapter	115-0171-622	1
	Cable - Right Down Boom Sense Adapter	115-0171-623	1
	Cable - Right Up Boom Sense Adapter	115-0171-624	1

TABLE 3. Hydraulic Kit (P/N 117-0134-020)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" ORFS M/M/F Swivel Run Tee	333-0012-022	2
	Fitting - 11/16" ORFS M/F 90° Swivel Elbow	333-0012-065	2
	Fitting - 11/16" ORFS M/M/F Swivel Run Tee	333-0012-069	3

TABLE 3. Hydraulic Kit (P/N 117-0134-020)

Picture	Item Description	Part Number	Qty.
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 9/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-166	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
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice	333-0012-289	2
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 84"	214-1000-318	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 102"	214-1000-319	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 36"	214-1000-333	2
	Hydraulic Hose - 11/16" ORFS (F) to 9/16" ORFS 90° (F) - 144"	214-1000-335	1
	Hydraulic Hose - 9/16" ORFS (F) to 9/16" ORFS (F) - 36"	214-1000-607	2

TABLE 4. PowerGlide Plus Wheel Kit (P/N 117-0133-012)








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 - Weldment Receiver	116-0159-533	2
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	8
	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	16

TABLE 5. Gen I 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
	Cable - Harness	115-0230-045	1
	Cable - Power/CAN	115-0230-007	1

TABLE 6. Gen II PowerGlide Plus Wiring Kit (P/N 117-5130-001)

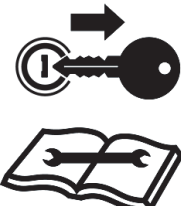
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - PowerGlide Plus AutoBoom	063-0130-010	1
	Cable - PowerGlide Plus/UltraGlide with CAN/Power Tee AutoBoom	115-0230-085	1

Important: In addition to the Gen II wiring kit components listed above, an implement extension tee cable is required for the operation of the PowerGlide Plus AutoBoom system. For available cables and ordering information, contact your local Raven dealer.

TABLE 7. ISO, CAN, AutoBoom, PowerGlide Plus, JD 4700/4710 Kit (P/N 117-0137-052)


Picture	Item 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	115-0230-053	1

Install the PowerGlide Plus 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 cause damage to the AutoBoom hydraulic valve.



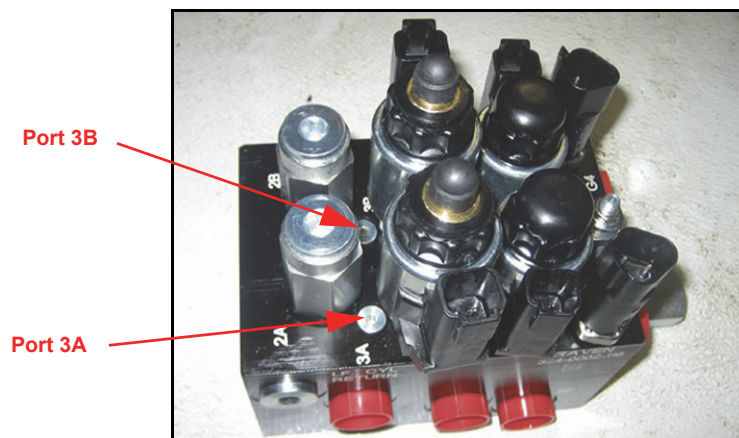
NOTICE

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.

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

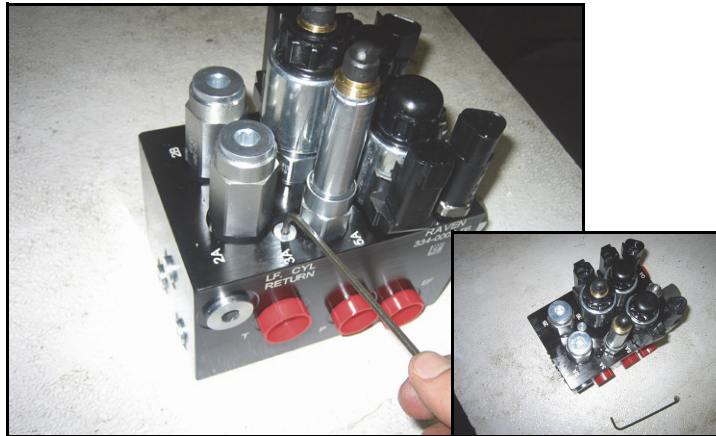


1. Locate Ports 3A and 3B on the AutoBoom valve (P/N 063-0131-125).

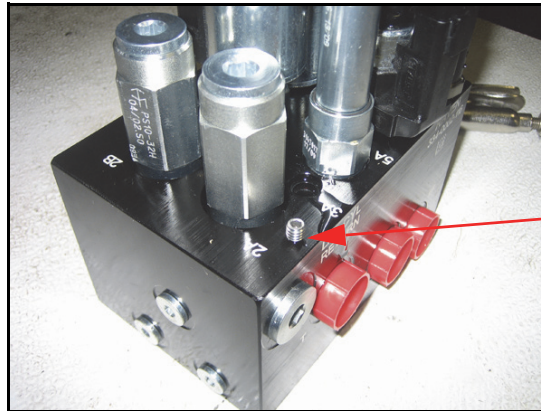
FIGURE 2. Coil Removed from the AutoBoom Valve



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

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.

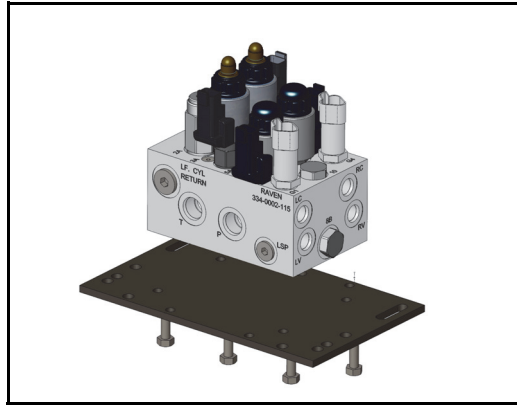
Install Fittings on the AutoBoom Valve

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) to 9/16" SAE O-Ring (M) .060 Orifice	333-0012-289	LV, RV
Fitting - 11/16" ORFS M/F 90° Swivel Elbow	333-0012-065	LV, RV
Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	P, T
Fitting - 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	LSP
Fitting - 9/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-166	LF CYL RTN, RT CYL RTN

Mount the AutoBoom Valve

FIGURE 7. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-125) to the mounting plate (P/N 107-0171-619) 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).


FIGURE 8. AutoBoom Valve Mounted on the Sprayer



2. Secure the mounting plate to the machine's center rack using two 3-1/16" W x 4" L x 3/8" thread U-bolts (P/N 107-0171-608) and four 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.



CAUTION

When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure 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 cause damage to the AutoBoom hydraulic valve.

FIGURE 9. Pressure and Tank Hoses Installed on Machine



Pressure Hose

Tank Hose



1. Disconnect the machine's pressure hose from the left side of 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 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 214-1000-333) on the 90° end of the tee fitting.
5. Connect the 90° end of the hydraulic hose to the installed fitting in Port P on the AutoBoom valve.
6. Disconnect the machine's tank hose from the left side of 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 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 214-1000-333) on the 90° end of the tee fitting.
10. Connect the 90° end of the hydraulic hose to the installed fitting in Port T on 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.

Note: Do not reconnect the machine's raise hose to the tilt cylinder.

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

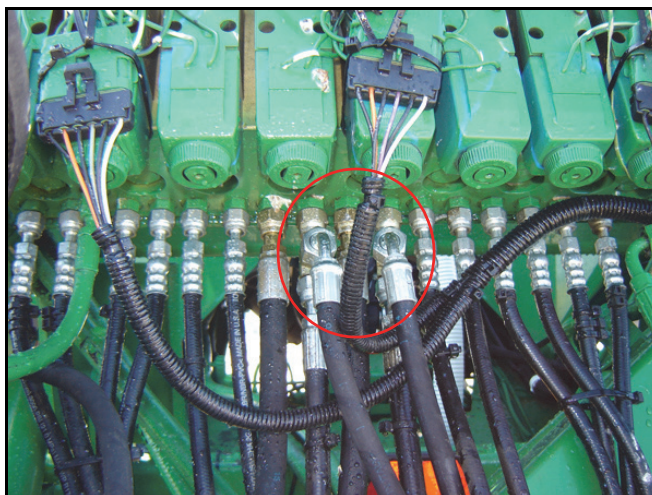
FIGURE 10. Left and Right Cylinder Hoses Installed



1. Route the machine's left cylinder raise hose (hose disconnected from the rod-end of the left tilt cylinder) to the AutoBoom valve and connect it to the installed fittings in Port LV of the AutoBoom valve.
2. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-318) to the installed fitting in Port LC of the AutoBoom valve.
3. Route the installed hydraulic hose back to the left tilt cylinder and connect the it to the cylinder raise port (rod-end of the tilt cylinder).
4. Route the machine's right cylinder raise hose (hose disconnected from the rod-end of the right tilt cylinder) to the AutoBoom valve and connect it to the installed fittings in Port RV of the AutoBoom valve.
5. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-319) to the installed fitting in Port RC of the AutoBoom valve.
6. Route the installed hydraulic hose back to the right tilt cylinder and connect the it to the cylinder raise port (rod-end of the tilt cylinder).

Install the Left and Right Down Hoses

FIGURE 11. Down Hoses Installed on the AutoBoom Valve



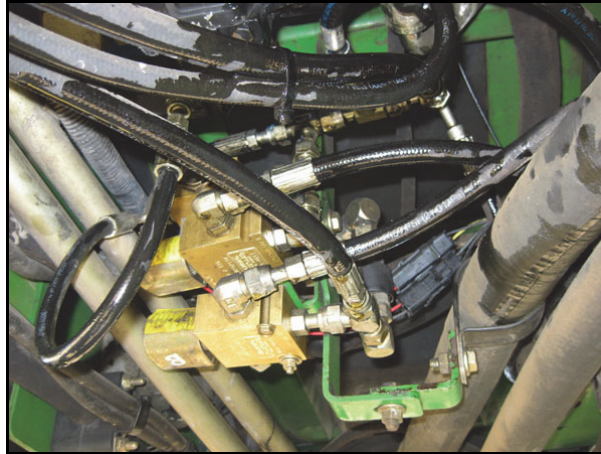
1. Disconnect the machine's left down hose from the machine's hydraulic valve.
2. Install a 9/16" OFS M/M/F swivel run tee fitting (P/N 333-0012-022) in the down port of the machine's hydraulic valve.
3. Connect the machine's down hose to the opposite end of the installed tee fitting.
4. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-607) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the LF CYL RTN Port of the AutoBoom valve.
1. Disconnect the machine's right down hose from the machine's hydraulic valve.
2. Install a 9/16" OFS M/M/F swivel run tee fitting (P/N 333-0012-022) 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 214-1000-607) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the RT CYL RTN Port of the AutoBoom valve.



Install the Load Sense Hoses

John Deere 4700 and Early 4710 Models

FIGURE 12. Machine's Load Sense Valves



1. Locate the three load sense valves under the machine's cab.
2. Locate the valve with the most hoses connected to it (usually found on top).
3. Disconnect any one of the hoses from the valve.

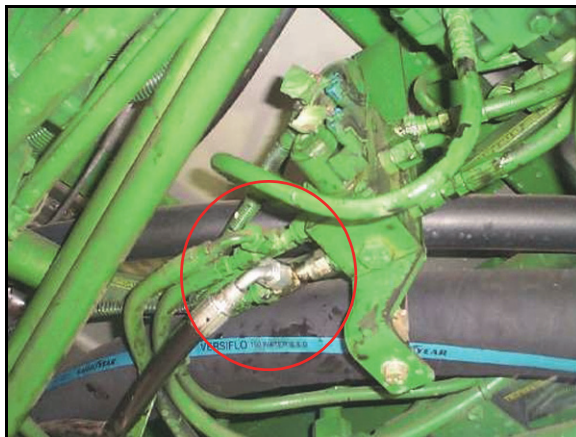
FIGURE 13. Load Sense Hoses Installed



4. Install a 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) on the load sense valve.
5. Reconnect the machine's load sense hose to the opposite end of the installed tee fitting.
6. Connect the straight end of the supplied hydraulic hose (P/N 214-1000-335) on the 90° end of the installed tee fitting.
7. Connect the 90° end of the hydraulic hose to Port LSP on the AutoBoom valve.

John Deere Late 4710 Models

FIGURE 14. Load Sense Hose Connected to the Load Sense Valve



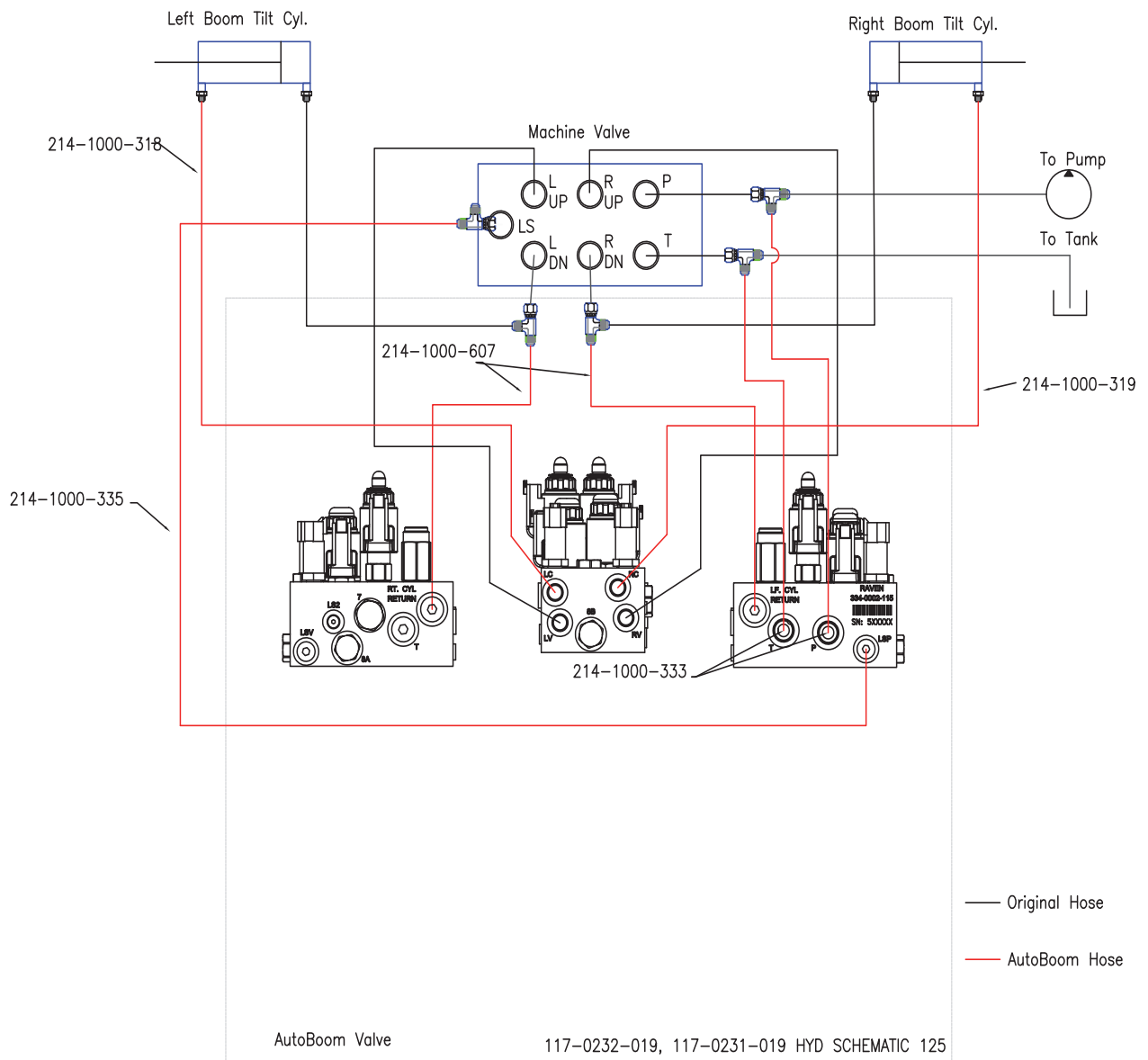
1. Locate the load sense valve under the sprayer at the rear-left side of the machine's frame.
2. Disconnect the load sense hose from the Port P3 mark on the load sense valve.

Note: *The load sense hose is connected to the solution pump valve.*

3. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) on the load sense valve.
4. Connect 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 214-1000-335) to the 90° end of the installed tee fitting.
6. Connect the 90° end of the hydraulic hose to Port LSP on the AutoBoom valve.



PowerGlide Plus Hydraulic Schematic



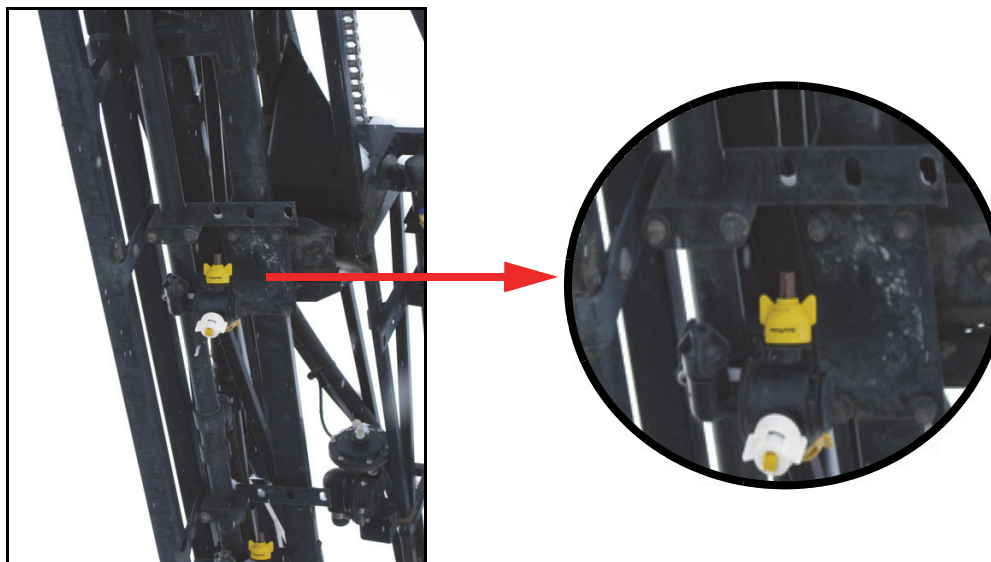
Install the Gauge Wheels

Move the Wet Boom (If Applicable)

To avoid spraying the tires, the wet boom may need to be moved. Complete the following steps to move the wet boom.

Models with Adjustable Boom

FIGURE 15. Adjustable Boom



1. Unbolt the boom from the mounting bracket.
2. Reposition the boom to the rear of the mounting bracket.
3. Reinstall the bolts in the mounting bracket to secure the boom.

Models with Non-Adjustable Boom

FIGURE 16. Non-Adjustable Boom

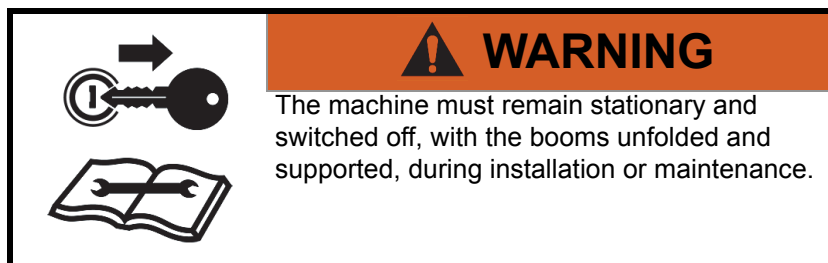


1. Unbolt the clamps holding the wet boom to the frame, leaving the clamps in place.
2. Loosen the hose clamp.
3. Disconnect the hose.
4. Remove the wet boom assembly.
5. Turn the wet boom 1/2 turn (end to end).
6. Reinstall the wet boom on the back of the boom.
7. Reinstall the hose and tighten the clamp.
8. Repeat the steps above on the remaining boom.

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.

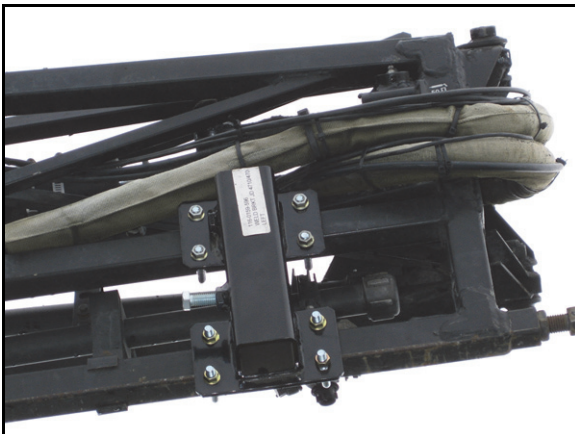
Mount the Gauge Wheels



Note: The appearance of the wheel axles may vary.

FIGURE 17. Gauge Wheel Installed

Wheel Bracket Installed



Gauge Wheel Installed





1. Remove the nuts from the left wheel axle (P/N 063-0131-590).
2. Place the wheel (P/N 322-0131-008) on the left 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 left wheel mounting bracket (P/N 116-0159-533) to the front of the left boom by installing four 1-9/16" W x 2-1/2" L x 3/8" thread U-bolts (P/N 107-0171-611) and eight 3/8" thread zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the left wheel axle into the left 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 right wheel.

Install the PowerGlide Plus Wiring

Wiring Connections

	<div data-bbox="812 724 1117 787"> CAUTION</div> <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 18. AutoBoom Node Installed



1. Mount the AutoBoom node (P/N 063-0130-010 or 016-0130-016) to the valve mounting plate (P/N 107-0171-802) next to the AutoBoom valve using three 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).

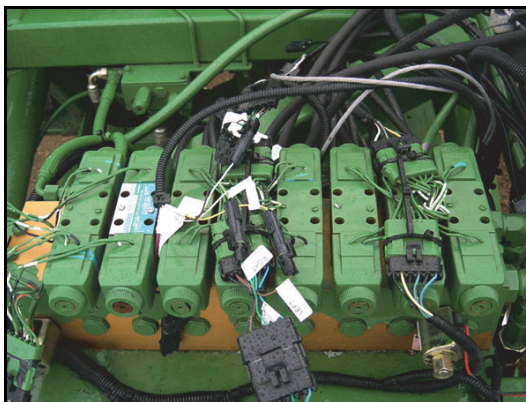
Note: *Position the node so that the cable connectors face down.*

2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-045 or 115-0230-085) 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 115-0230-053).
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 19. Machine's Boom Function Coils



11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Disconnect the connector from the machine's left tilt up coil.
13. Install the left up boom sense adapter cable (P/N 115-0171-254) between the coil and the machine's coil connector.
14. Disconnect the connector from the machine's left tilt down coil.
15. Install the left down boom sense adapter cable (P/N 115-0171-622) between the coil and the machine's coil connector.
16. Disconnect the connector from the machine's right tilt up coil.
17. Install the right up boom sense adapter cable (P/N 115-0171-624) between the coil and the machine's coil connector.
18. Disconnect the connector from the machine's right tilt down coil.

19. Install the right down boom sense adapter cable (P/N 115-0171-623) between the coil and the machine's coil connector.
20. On the harness cable, locate the Left Solenoid Sense connectors.
21. Isolate the connector labeled Up and connect it to the left tilt up coil via the installed boom sense adapter cable.
22. Connect the down Left Solenoid Sense connector to the left tilt down coil via the installed boom sense adapter cable.
23. 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 115-0230-085) 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 standalone console harness.
4. Install the terminator on the remaining open end of the implement extension tee cable.
5. Refer to the wiring schematic (beginning on page 31) appropriate for the machine's configuration to route the implement extension tee cable.
6. Connect the implement extension tee cable to the location determined in the step above.

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 red power lead of the power cable on the positive battery terminal.
5. Install the white power lead of the power cable on the negative battery terminal.
6. Connect the single orange 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) - Gen I Cable Only

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: The AutoBoom controller should be mounted in the machine's cab so that the machine's operator has easy access to it.

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.

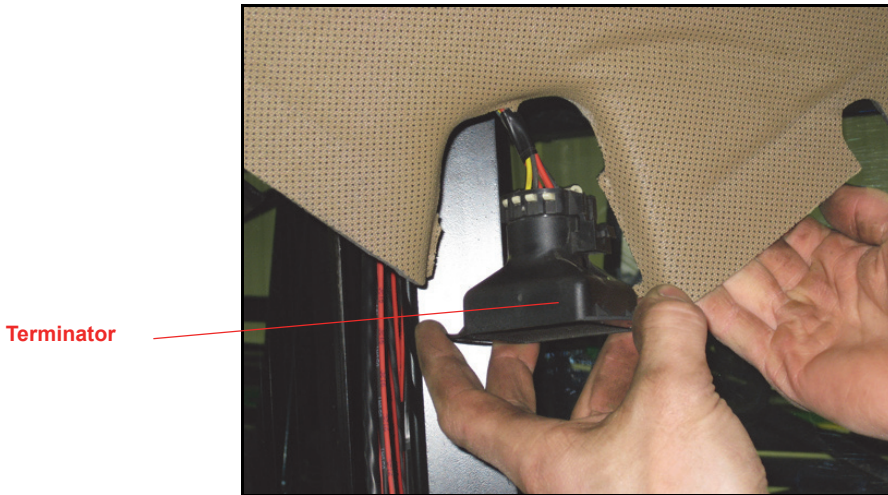


ISO CAN Wiring Installation

4700, 4710 Before 2004

1. Remove the molding securing the padded roof headliner from the right side of the cab.
2. Pull the headliner down to locate the terminator in the corner of the cab.

FIGURE 20. Terminator in Cab Corner



3. Unbolt and remove the terminator from the machine harness cable.
4. Remove the right corner post cover.

FIGURE 21. Open Corner Post



5. Remove the cover under the dash panel.
6. Route the AutoBoom harness cable (P/N 115-0230-053) into the cab via the cut-out on the rear window or by removing the screws from the outside panel below the window.

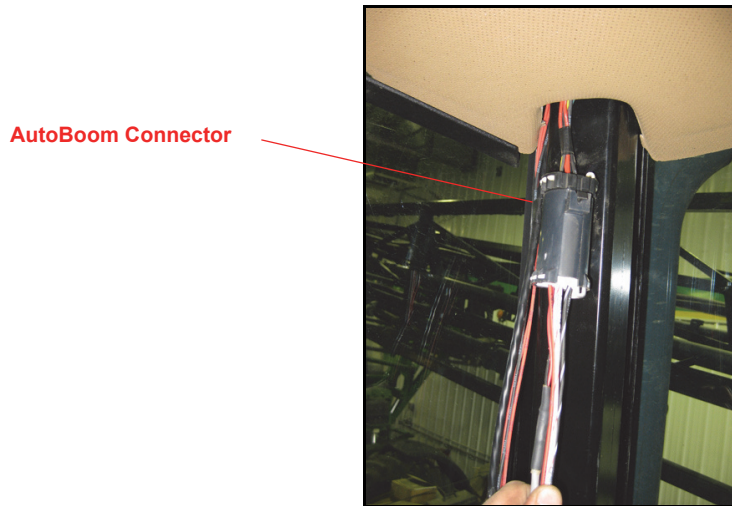
Note: The panel will have to be pried out slightly to route the harness into the cab.

7. Route the AutoBoom harness cable under the dash panel and up the corner post.



8. Connect the AutoBoom harness cable to the machine harness cable.

FIGURE 22. Connected AutoBoom Harness



9. Reinstall the headliner moldings and under the dash panel and up the corner post.
10. Install the terminator that was removed from the corner of the cab to the CAN connector on the AutoBoom harness cable.
11. Connect the CAN power connector of the AutoBoom harness cable (P/N 115-0230-053) to the ISO power harness (P/N 115-0230-025).
12. Install the red power lead of the ISO power harness to the positive battery terminal.
13. Install the white power lead of the ISO power harness to the negative battery terminal.
14. Connect the single orange wire with the spade connector to a switched power source.

4710 (Model Year 2004)

1. Feed the AutoBoom harness cable through the hole in the top-right rear corner of the cab.

FIGURE 23. Hole in the Cab



2. Locate and unplug the machines passive terminator and connect the AutoBoom harness cable to the connection.



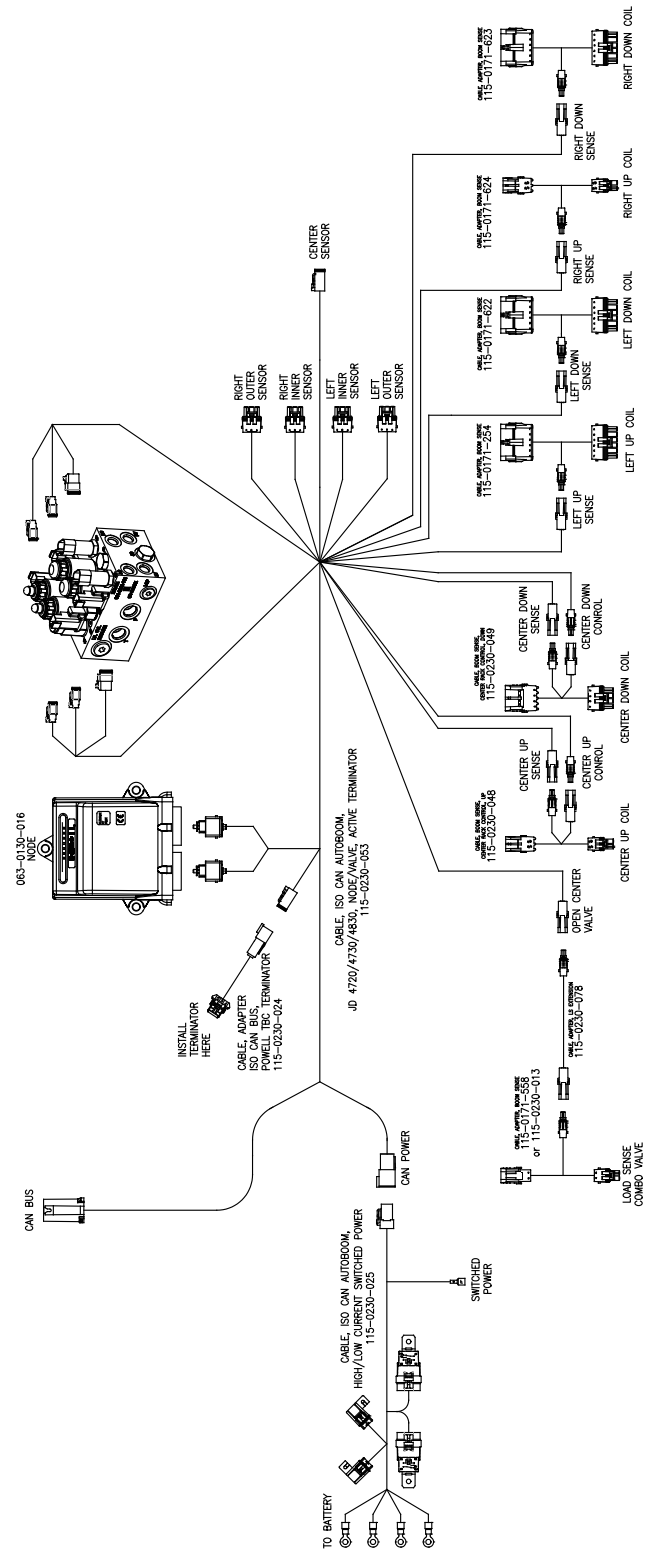
3. Connect the ISO CAN adapter cable (P/N 115-0230-024) to the CAN BUS connector on the AutoBoom harness cable (P/N 115-0230-053).
4. Install the terminator on the ISO CAN adapter cable.
5. Connect the CAN power connector of the AutoBoom harness (P/N 115-0230-053) to the ISO power harness (P/N 115-0230-025).
6. Install the red power lead of the ISO power harness to the positive battery terminal.
7. Install the white power lead of the ISO power harness to the negative battery terminal.
8. Connect the single orange wire with the spade connector to the John Deere power strip in the lower-right corner of the cab.

FIGURE 24. Power Strip





ISO Electrical Schematic



CHAPTER

4

UltraGlide

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 117-0232-019)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 4700 (1999 & Newer) and 4710 AutoBoom Installation	016-0230-019	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 - Center Ultrasonic	063-0130-018	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-019)











Picture	Item Description	Part Number	Qty.
	Cable - Boom Sense Adapter	115-0230-013	1
	Cable - Pin A Signal Weatherpack Boom Sense Adapter	115-0171-558	1
	Cable - JD 4700/4710/4720 Center Rack Control Up Boom Sense Adapter	115-0230-048	1
	Cable - JD 4700/4710/4720 Center Rack Control Down Boom Sense Adapter	115-0230-049	1
	Cable - John Deere Load Sense Extension	115-0230-078	1
	U-Bolt - 3-1/16" W x 4" L x 3/8" Thread	107-0171-608	2
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	2
	U-Bolt - 1-1/8" W x 2" L x 3/8" Thread	107-0171-613	4
	Bolt - 5/16" Zinc Plated Hex	311-0049-235	4
	Bolt - 3/8"-16 UNC x 1-1/4" Zinc Plated Hex	311-0054-106	3

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-019)



Picture	Item Description	Part Number	Qty.
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	19
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Boom Sense Adapter Kit (P/N 117-0131-009)





Picture	Item Description	Part Number	Qty.
	Cable - Left Up Boom Sense Adapter	115-0171-254	1
	Cable - Left Down Boom Sense Adapter	115-0171-622	1
	Cable - Right Down Boom Sense Adapter	115-0171-623	1
	Cable - Right Up Boom Sense Adapter	115-0171-624	1

TABLE 3. Hydraulic Kit (P/N 117-0134-020)




Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" ORFS M/M/F Swivel Run Tee	333-0012-022	2
	Fitting - 11/16" ORFS M/F 90° Swivel Elbow	333-0012-065	2
	Fitting - 11/16" ORFS M/M/F Swivel Run Tee	333-0012-069	3

TABLE 3. Hydraulic Kit (P/N 117-0134-020)

Picture	Item Description	Part Number	Qty.
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 9/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-166	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
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) .060 Orifice	333-0012-289	2
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 84"	214-1000-318	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 102"	214-1000-319	1
	Hydraulic Hose - 11/16" ORFS (F) to 11/16" ORFS 90° (F) - 36"	214-1000-333	2
	Hydraulic Hose - 11/16" ORFS (F) to 9/16" ORFS 90° (F) - 144"	214-1000-335	1
	Hydraulic Hose - 9/16" ORFS (F) to 9/16" ORFS (F) - 36"	214-1000-607	2

TABLE 4. 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
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-059	2
	Washer - 5/16" Zinc Flat	313-2300-012	4

TABLE 5. Optional Wheel Kit (P/N 117-0133-012)






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 - Weldment Receiver	116-0159-533	2
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2

TABLE 5. Optional Wheel Kit (P/N 117-0133-012)

Picture	Item Description	Part Number	Qty.
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	8
	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	16

TABLE 6. Gen I 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 7. Gen II UltraGlide Wiring Kit (P/N 117-5130-003)

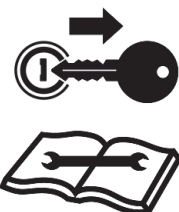
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1
	Cable - Sensor	115-0171-527	2
	Cable - PowerGlide Plus/UltraGlide with CAN/Power Tee AutoBoom	115-0230-085	1

Important: In addition to the Gen II wiring kit components listed above, an implement extension tee cable is required for the operation of the UltraGlide AutoBoom system. For available cables and ordering information, contact your local Raven dealer.

TABLE 8. ISO CAN Kit for John Deere 4700/4710 (P/N 117-0137-053)


Picture	Item Description	Part Number	Quantity
Not Pictured	Manual, Calibration and Operation	016-0130-078	1
	NODE, ISO CAN Control, AutoBoom	063-0130-016	1
Not Pictured	Cable, 60' Extension, Ultrasonic Sensor	115-0230-051	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	115-0230-053	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 cause damage to the AutoBoom hydraulic valve.

	<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>
---	--

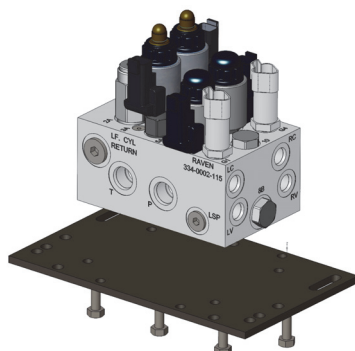
Install Fittings on the AutoBoom Valve

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) to 9/16" SAE O-Ring (M) .060 Orifice	333-0012-289	LV, RV
Fitting - 11/16" ORFS M/F 90° Swivel Elbow	333-0012-065	LV, RV
Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-199	P, T
Fitting - 9/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-195	LSP
Fitting - 9/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-166	LF CYL RTN, RT CYL RTN

Mount the AutoBoom Valve

FIGURE 1. AutoBoom Valve Mounted on the Valve Mounting Plate





1. Secure the AutoBoom valve (P/N 063-0131-125) to the mounting plate (P/N 107-0171-619) 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).

FIGURE 2. AutoBoom Valve Mounted on the Sprayer



2. Secure the mounting plate to the machine's center rack using two 3-1/16" W x 4" L x 3/8" thread U-bolts (P/N 107-0171-608) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Install the Pressure and Tank Hoses

	 WARNING
<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>	

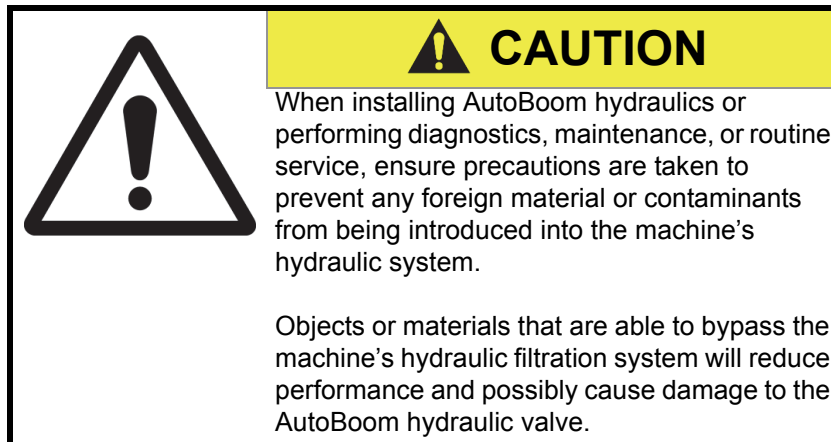
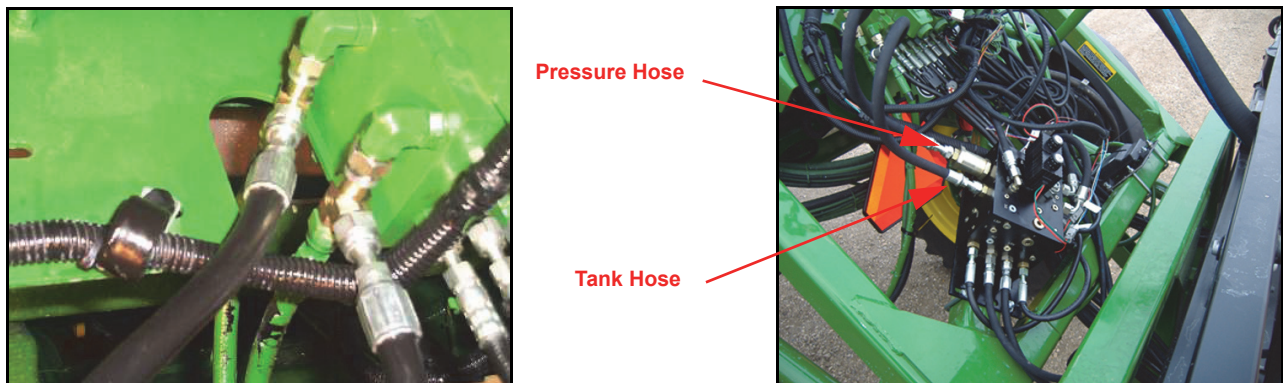


FIGURE 3. Pressure and Tank Hoses Installed on Machine



1. Disconnect the machine's pressure hose from the left side of 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 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 214-1000-333) on the 90° end of the tee fitting.
5. Connect the 90° end of the hydraulic hose to the installed fitting in Port P on the AutoBoom valve.
6. Disconnect the machine's tank hose from the left side of 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 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 214-1000-333) on the 90° end of the tee fitting.
10. Connect the 90° end of the hydraulic hose to the installed fitting in Port T on 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.

Note: Do not reconnect the machine's raise hose to the tilt cylinder.

4. Disconnect the machine's down hose from the base-end of the left tilt cylinder.
5. Remove the machine's cylinder fitting and the orifice located behind the fitting, if applicable.

6. Reinstall the machine's original cylinder fitting in the base-end of the left tilt cylinder.
7. Reconnect the machine's down hose to the base-end of the tilt cylinder.
8. 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

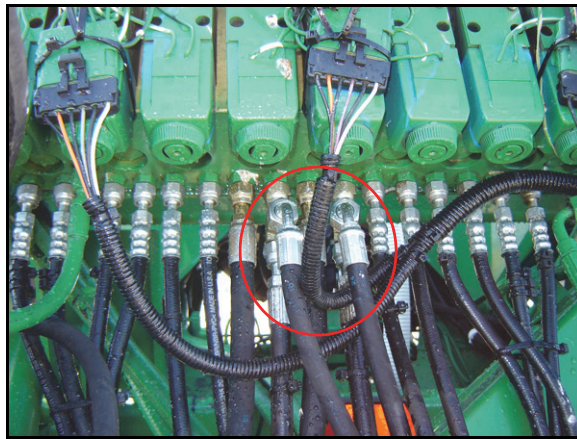
FIGURE 4. Left and Right Cylinder Hoses Installed



1. Route the machine's left cylinder raise hose (hose disconnected from the rod-end of the left tilt cylinder) to the AutoBoom valve and connect it to the installed fittings in Port LV of the AutoBoom valve.
2. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-318) to the installed fitting in Port LC of the AutoBoom valve.
3. Route the installed hydraulic hose back to the left tilt cylinder and connect the it to the cylinder raise port (rod-end of the tilt cylinder).
4. Route the machine's right cylinder raise hose (hose disconnected from the rod-end of the right tilt cylinder) to the AutoBoom valve and connect it to the installed fittings in Port RV of the AutoBoom valve.
5. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-319) to the installed fitting in Port RC of the AutoBoom valve.
6. Route the installed hydraulic hose back to the right tilt cylinder and connect the it to the cylinder raise port (rod-end of the tilt cylinder).

Install the Left and Right Down Hoses

FIGURE 5. Down Hoses Installed on the AutoBoom Valve



1. Disconnect the machine's left down hose from the machine's hydraulic valve.
2. Install a 9/16" OFS M/M/F swivel run tee fitting (P/N 333-0012-022) 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 214-1000-607) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the LF CYL RTN Port of the AutoBoom valve.
1. Disconnect the machine's right down hose from the machine's hydraulic valve.
2. Install a 9/16" OFS M/M/F swivel run tee fitting (P/N 333-0012-022) 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 214-1000-607) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the RT CYL RTN Port of the AutoBoom valve.

Install the Load Sense Hoses

John Deere 4700 and Early 4710 Models

FIGURE 6. Machine's Load Sense Valves



1. Locate the three load sense valves under the machine's cab.
2. Locate the valve with the most hoses connected to it (usually found on top).
3. Disconnect any one of the hoses from the valve.

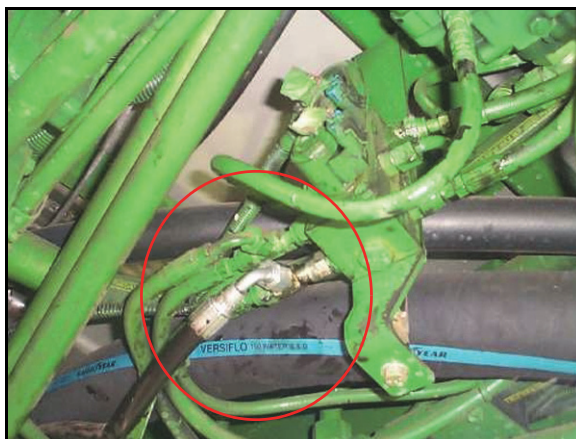
FIGURE 7. Load Sense Hoses Installed



4. Install a 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) on the load sense valve.
5. Reconnect the machine's load sense hose to the opposite end of the installed tee fitting.
6. Connect the straight end of the supplied hydraulic hose (P/N 214-1000-335) on the 90° end of the installed tee fitting.
7. Connect the 90° end of the hydraulic hose to Port LSP on the AutoBoom valve.

John Deere Late 4710 Models

FIGURE 8. Load Sense Hose Connected to the Load Sense Valve

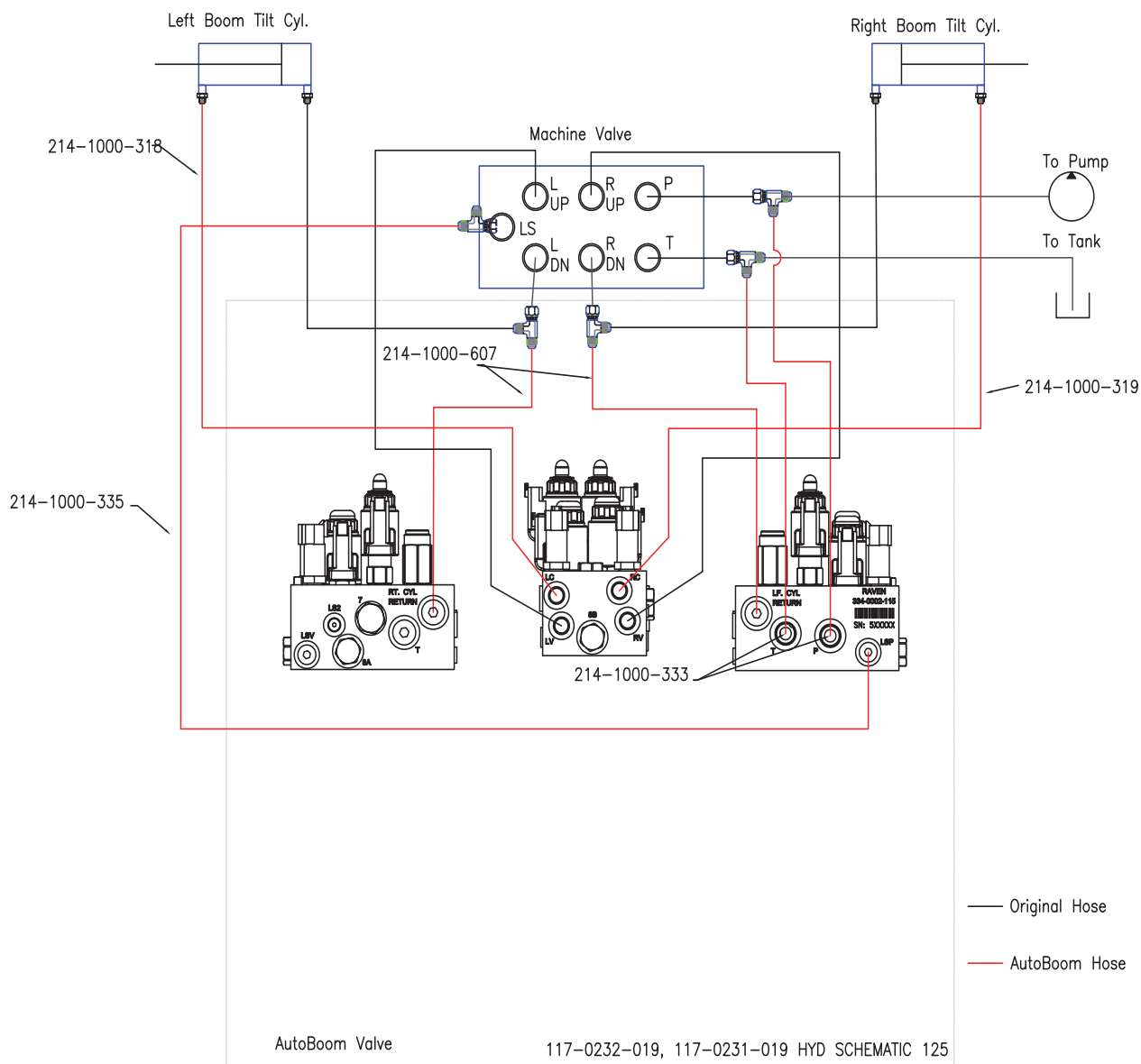


1. Locate the load sense valve under the sprayer at the rear-left side of the machine's frame.
2. Disconnect the load sense hose from the Port P3 mark on the load sense valve.

Note: *The load sense hose is connected to the solution pump valve.*

3. Install an 11/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) on the load sense valve.
4. Connect 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 214-1000-335) to the 90° end of the installed tee fitting.
6. Connect the 90° end of the hydraulic hose to Port LSP on the AutoBoom valve.

UltraGlide Hydraulic Schematic

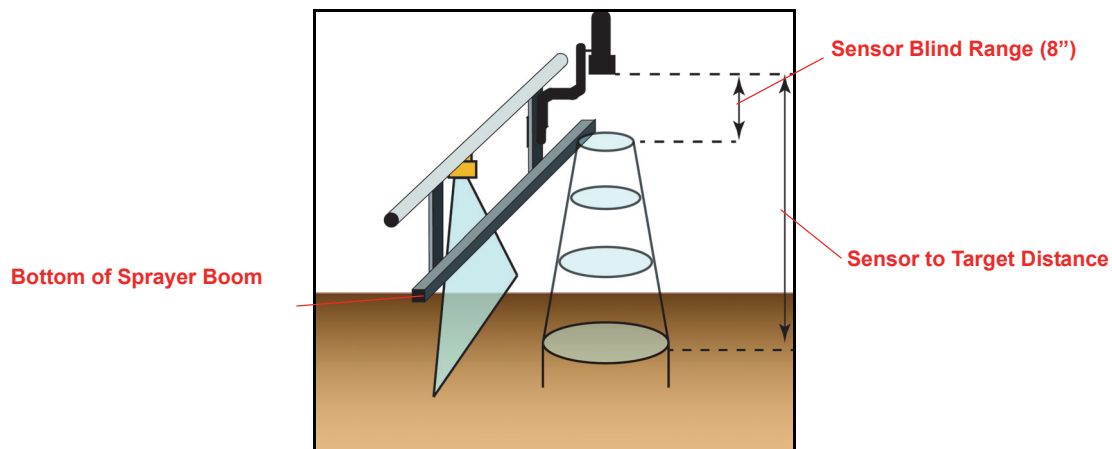


Install the UltraGlide Sensors

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. Secure the left sensor (P/N 063-0130-014) to the front of the left boom using two 1-1/8" W x 2-1/2" L x 3/8" thread U-bolts (P/N 107-0171-613) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
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 Sensor Mounting Location



1. Mount the center sensor (P/N 063-0130-018) to the machine's center rack using two 1-9/16" W x 2-1/2" L x 3/8" thread U-bolts (P/N 107-0171-611) and four 3/8" 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 in the wiring phase of installation.

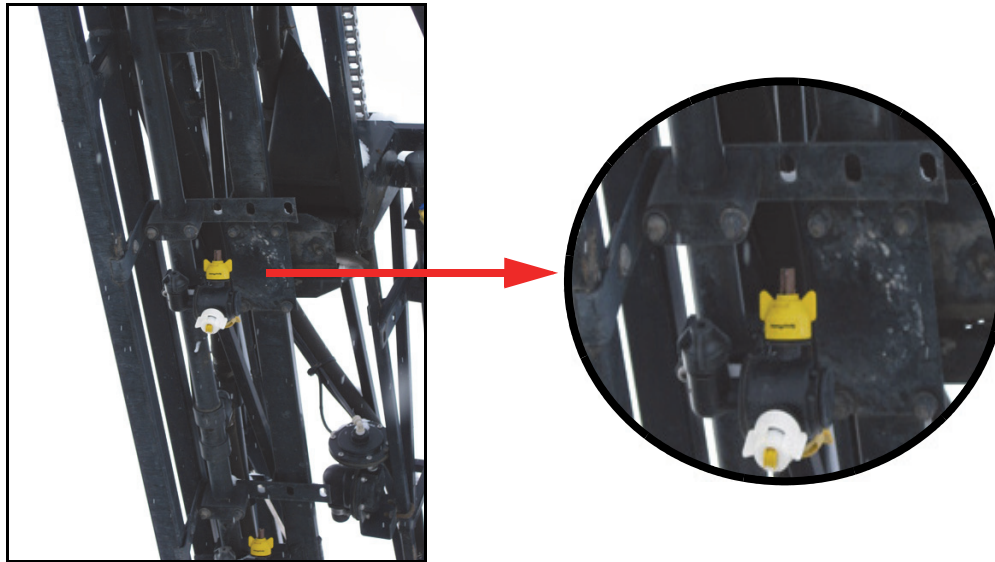
Install the Gauge Wheels - Optional

Move the Wet Boom (If Applicable)

To avoid spraying the tires, the wet boom may need to be moved. Complete the following steps to move the wet boom.

Models with Adjustable Boom

FIGURE 12. Adjustable Boom



1. Unbolt the boom from the mounting bracket.
2. Reposition the boom to the rear of the mounting bracket.
3. Reinstall the bolts in the mounting bracket to secure the boom.

Models with Non-Adjustable Boom

FIGURE 13. Non-Adjustable Boom

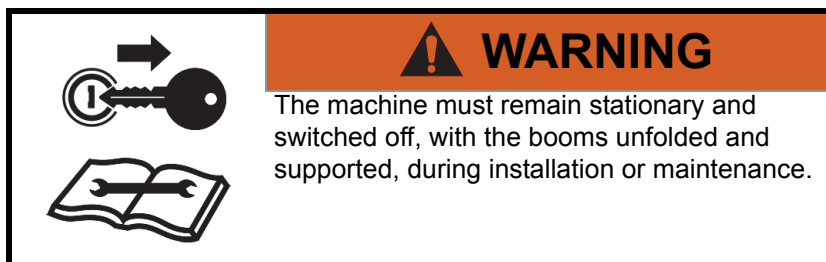


1. Unbolt the clamps holding the wet boom to the frame, leaving the clamps in place.
2. Loosen the hose clamp.
3. Disconnect the hose.
4. Remove the wet boom assembly.
5. Turn the wet boom 1/2 turn (end to end).
6. Reinstall the wet boom on the back of the boom.
7. Reinstall the hose and tighten the clamp.
8. Repeat the steps above on the remaining boom.

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.

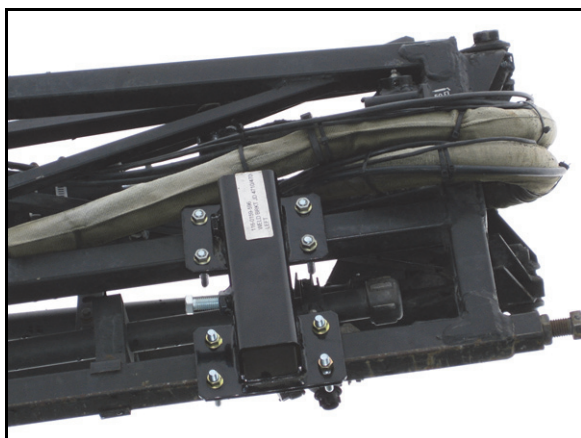
Mount the Gauge Wheels



Note: The appearance of the wheel axles may vary.

FIGURE 14. Gauge Wheel Installed

Wheel Bracket Installed



Gauge Wheel Installed

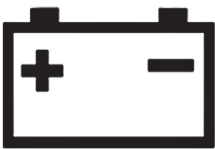



1. Remove the nuts from the left wheel axle (P/N 063-0131-590).
2. Place the wheel (P/N 322-0131-008) on the left wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617) over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.

5. Secure the left wheel mounting bracket (P/N 116-0159-533) to the front of the left boom by installing four 1-9/16" W x 2-1/2" L x 3/8" thread U-bolts (P/N 107-0171-611) and eight 3/8" thread zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the left wheel axle into the left wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so).
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 right wheel.

Install the UltraGlide Wiring

Wiring Connections

	<div data-bbox="812 724 1117 787"> CAUTION</div> <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 15. AutoBoom Node Installed



1. Mount the AutoBoom node (P/N 063-0130-013 or 063-0130-016) to the valve mounting plate (P/N 107-0171-802) next to the AutoBoom valve using three 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).

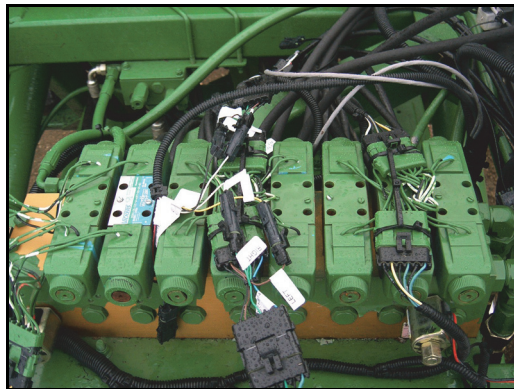
Note: *Position the node so that the cable connectors face down.*

2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-045) into the correct ports of the AutoBoom valve.
3. Tighten the bolt on the node connector to secure the connection.

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 or 115-0230-085 or 115-0230-053).
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 16. Machine's Boom Function Coils



11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Disconnect the connector from the machine's left tilt up coil.
13. Install the left up boom sense adapter cable (P/N 115-0171-254) between the coil and the machine's coil connector.
14. Disconnect the connector from the machine's left tilt down coil.
15. Install the left down boom sense adapter cable (P/N 115-0171-622) between the coil and the machine's coil connector.
16. Disconnect the connector from the machine's right tilt up coil.
17. Install the Right Up boom sense adapter cable (P/N 115-0171-624) between the coil and the machine's coil connector.
18. Disconnect the connector from the machine's right tilt down coil.

19. Install the right down boom sense adapter cable (P/N 115-0171-623) between the coil and the machine's coil connector.
20. 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.
21. Connect the Down Left Solenoid Sense connector to the left tilt down coil via the installed boom sense adapter cable.
22. 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 17. Machine's Center Boom Function Coils

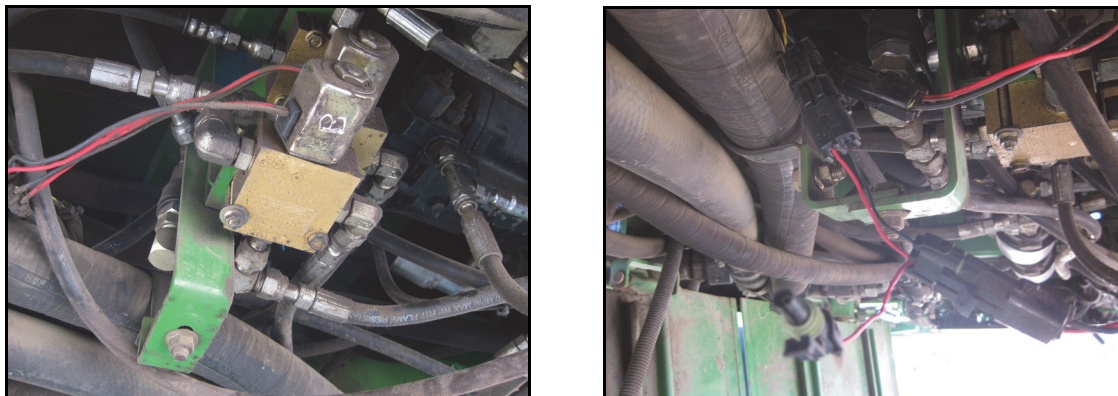


1. Locate the center up coil on the machine's hydraulic valve.
2. Install the JD 4700/4710/4720 center rack control up boom sense adapter cable (P/N 115-0230-048) between the coil and its connector.
3. Locate the Center Solenoid Up Control connector on the main harness cable (P/N 115-0230-045 or 115-0230-085 or 115-0230-053) and plug it into the installed center rack boom function adapter cable.
4. Locate the Center Solenoid Up Sense connector on the main harness cable and plug it into the connector that leads to the harness cable.
5. Locate the center down coil on the machine's hydraulic valve.
6. Install the JD 4700/4710/4720 center rack control down boom sense adapter cable (P/N 115-0230-049) between the coil and its connector.
7. Locate the Center Solenoid Down Control connector on the main harness cable and plug it into the installed center rack boom function adapter cable.
8. Locate the Center Solenoid Down Sense connector on the main harness cable and plug it into the connector that leads to the harness cable.

Connect to the Load Sense Combo Valve

John Deere Late 4700 and Early 4710 Models

FIGURE 18. Load Sense Combo Valve



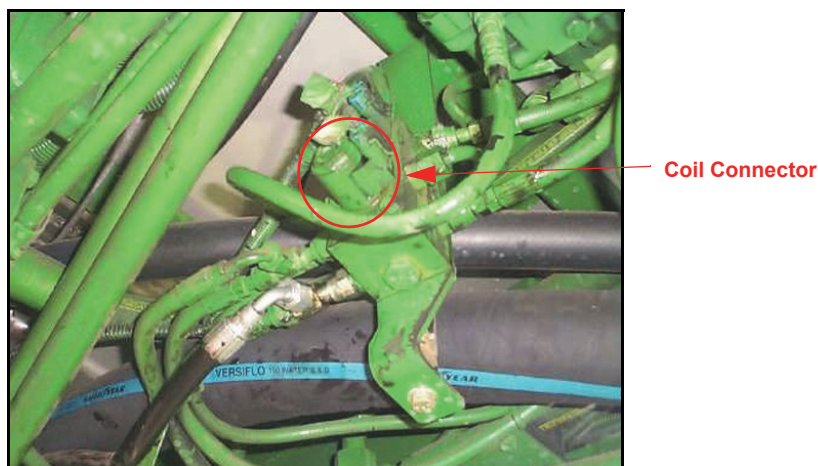
1. Locate the load sense combo valve.

Note: The load sense combo valve is the lowest valve of the three load sense valves connected to the load sense hoses on page 48 of the installation procedure.

2. Disconnect the coil connector from the load sense combo valve.
3. Install the supplied boom sense adapter cable (P/N 115-0171-558) appropriate for the machine between the coil and its connector.
4. Locate the Open Center Valve connector on the AutoBoom harness cable (P/N 115-0230-045 or 115-0230-085 or 115-0230-053).
5. Connect one end of the John Deere load sense extension cable (P/N 115-0230-078) to the Open Center Valve connector.
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 (P/N 115-0171-558).

John Deere Late 4710 Models

FIGURE 19. Coil Connector



1. Locate the load sense combo coil.

Note: *The load sense solenoid is the smaller coil on the load sense combo valve.*

2. Disconnect the coil connector from the load sense combo coil.
3. Install the supplied boom sense adapter cable (P/N 115-0230-013) appropriate for the machine between the coil and its connector.
4. Locate the Open Center wire on the AutoBoom harness cable (P/N 115-0230-045 or 115-0230-085).
5. Connect one end of the John Deere load sense extension cable (P/N 115-0230-078) to the Open Center Valve 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 (P/N 115-0230-013).

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 sensor sensors are installed, repeat the steps above to connect the sensors.

Connect the Harness Cable to the Implement Extension Tee - Gen II Cable Only

1. Route the harness cable (P/N 115-0230-085) 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 standalone console harness.
4. Install the terminator on the remaining open end of the implement extension tee cable.
5. Refer to the wiring schematic (beginning on page 63) appropriate for the machine's configuration to route the implement extension tee cable.
6. Connect the implement extension tee cable to the location determined in the step above.

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.

Note: *Allow enough slack in the harness for boom racking.*

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

Connect the Controller (If Applicable) - Gen I Cable Only

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: *The AutoBoom controller should be mounted in the machine's cab so that the machine's operator has easy access to it.*

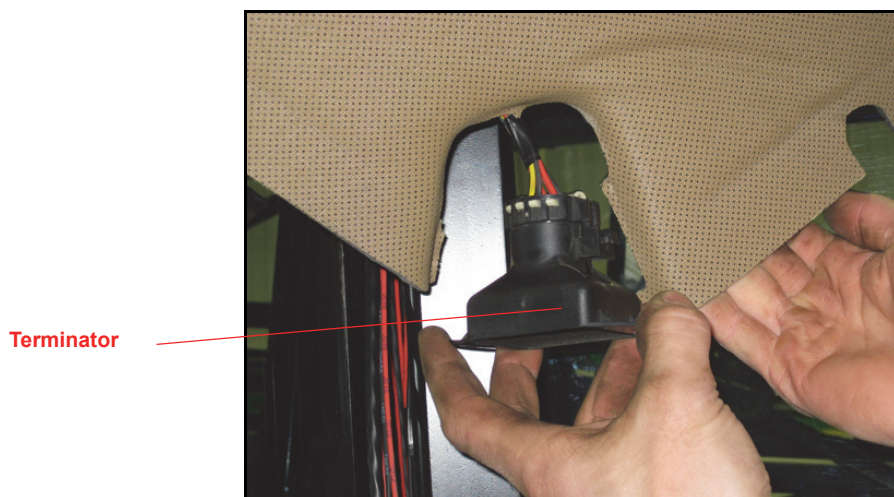
2. Install the CAN power tee (P/N 115-0171-368) between the CAN connectors of the console cable (P/N 115-0230-005) and the power cable (P/N 115-0230-007).
3. Install a CAN terminator (P/N 063-0172-369) on the remaining branch of the CAN power tee.
4. Connect the power leads of the CAN power tee to the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

ISO CAN Wiring Installation

4700, 4710 Before 2004

1. Remove the molding securing the padded roof headliner from the right side of the cab.
2. Pull the headliner down to locate the terminator in the corner of the cab.

FIGURE 20. Terminator in Cab Corner



3. Unbolt and remove the terminator from the machine harness cable.
4. Remove the right corner post cover.

FIGURE 21. Open Corner Post

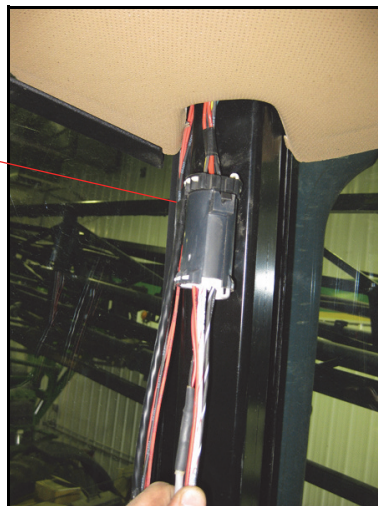
5. Remove the cover under the dash panel.
6. Route the AutoBoom harness cable (P/N 115-0230-053) into the cab via the cut-out on the rear window or by removing the screws from the outside panel below the window.

Note: The panel will have to be pried out slightly to route the harness into the cab.

7. Route the AutoBoom harness cable under the dash panel and up the corner post.
8. Connect the AutoBoom harness cable to the machine harness cable.

FIGURE 22. Connected AutoBoom Harness

AutoBoom Connector



9. Reinstall the headliner moldings and under the dash panel and up the corner post.
10. Install the terminator that was removed from the corner of the cab to the CAN connector on the AutoBoom harness cable.
11. Connect the CAN power connector of the AutoBoom harness cable (P/N 115-0230-053) to the ISO power harness (P/N 115-0230-025).
12. Install the red power lead of the ISO power harness to the positive battery terminal.
13. Install the white power lead of the ISO power harness to the negative battery terminal.

14. Connect the single orange wire with the spade connector to a switched power source.

4710 (Model Year 2004)

1. Feed the AutoBoom harness cable through the hole in the top-right rear corner of the cab.

FIGURE 23. Hole in the Cab



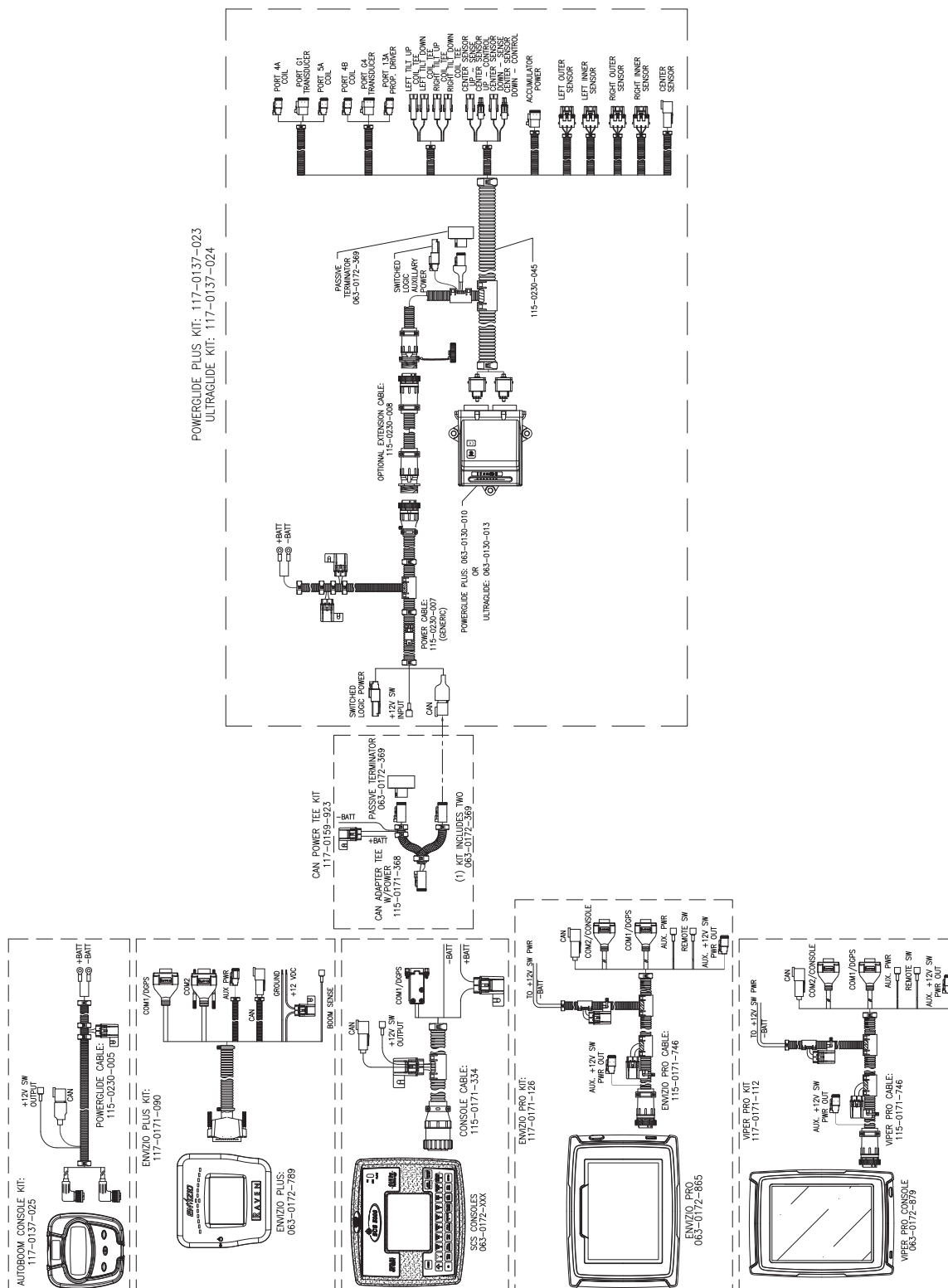
2. Locate and unplug the machine's passive terminator and connect the AutoBoom harness cable to the connection.
3. Connect the ISO CAN adapter cable (P/N 115-0230-024) to the CAN BUS connector on the AutoBoom harness cable (P/N 115-0230-053).
4. Install the terminator on the ISO CAN adapter cable.
5. Connect the CAN power connector of the AutoBoom harness (P/N 115-0230-053) to the ISO power harness (P/N 115-0230-025).
6. Install the red power lead of the ISO power harness to the positive battery terminal.
7. Install the white power lead of the ISO power harness to the negative battery terminal.
8. Connect the single orange wire with the spade connector to the John Deere power strip in the lower-right corner of the cab.

FIGURE 24. Power Strip

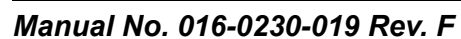


UltraGlide Wiring Schematic

Gen I Cabling







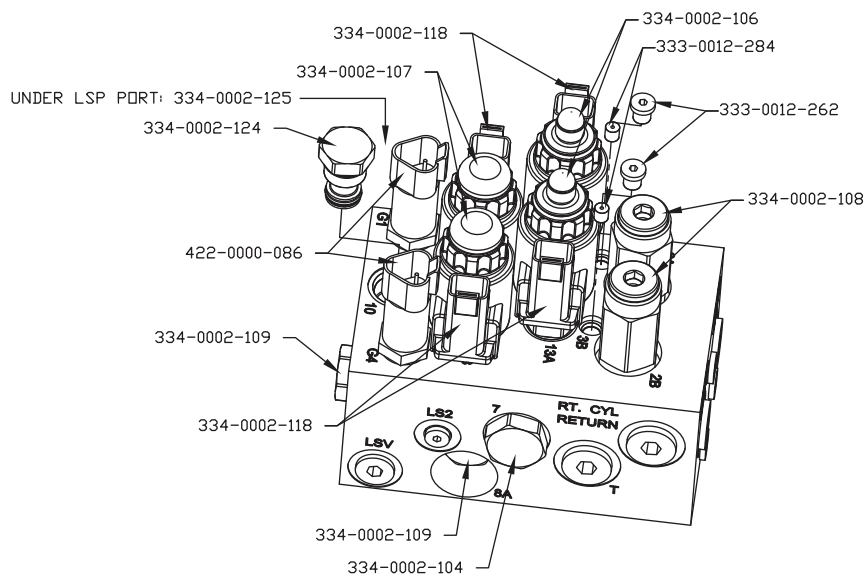
CHAPTER

5

Replacement Parts

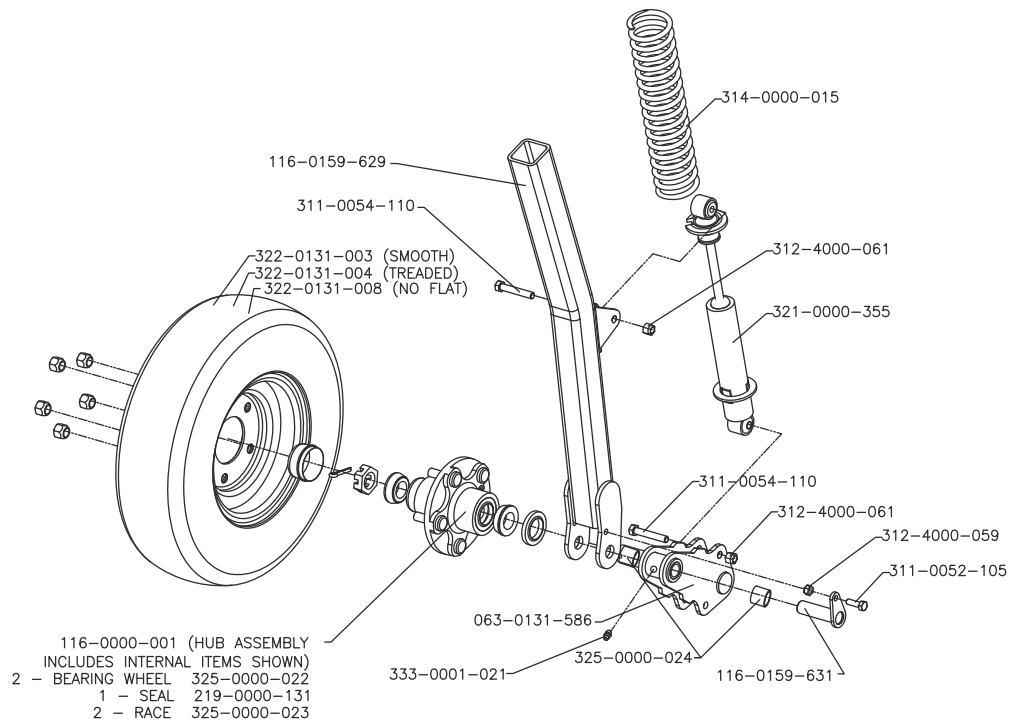
This section contains replacement part diagrams for the PowerGlide Plus and UltraGlide systems. Refer to these diagrams when calling to request replacement parts.

PowerGlide Plus and UltraGlide Replacement Parts

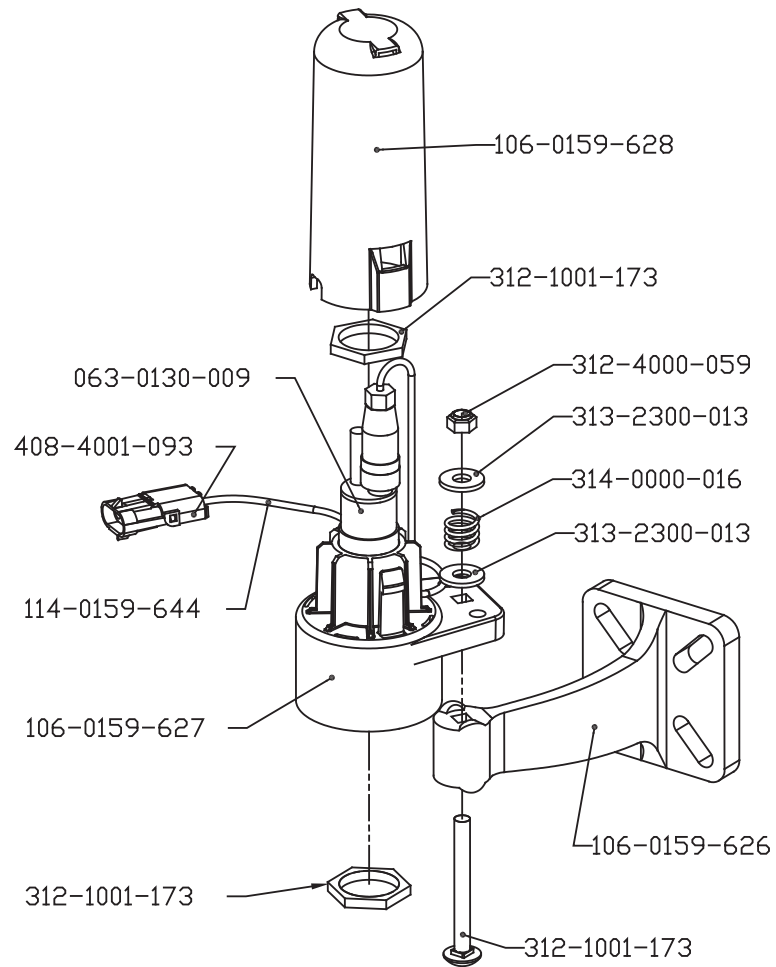


063-0131-125
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, DYNAMIC LS, AUTOBOOM

Wheels



Sensors





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.