

**Case IH 3320, 3330, and 4420 - 0120'
Booms**

AutoBoom™ Installation Manual

P/N 016-0230-091 Rev B

06/15

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CHAPTER

1

Important Safety Information

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 been 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 while installation or maintenance is conducted.

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 adversely reduce performance and possibly damage the AutoBoom hydraulic valves.

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

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: CaseIH

MODEL: 3320, 3330, and 4420 - 120' Booms

YEAR:

SERIAL NUMBER:

FIGURE 1. CaseIH 4420



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.*

Recommendations

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

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.

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 117-0231-091)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CaseIH 3320, 3330, and 4420 120' Booms AutoBoom Installation	016-0230-091	1
Not Pictured	Manual - AutoBoom Calibration	016-0230-062	1
	Valve - PowerGlide Plus AutoBoom	063-0131-124	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Node - PowerGlide Plus CAN AutoBoom	063-0130-010	1
	Cable - PowerGlide Plus/UltraGlide CMO B/K Autofold CAN AutoBoom	115-0230-032	1

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-091)


Picture	Item Description	Part Number	Qty.
	U-Bolt - 2-9/16" W x 3-1/2" L x 3/8" Thread	107-0171-616	2
	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
	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 117-0134-075)




Picture	Item Description	Part Number	Qty.
	Fitting - 13/16" ORFS M/M/F Swivel Run Tee	333-0012-028	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	4
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-165	2

TABLE 2. Hydraulic Kit (P/N 117-0134-075)





Picture	Item Description	Part Number	Qty.
	Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	2
	Fitting - 11/16" Hex 9/16" O-Ring Plug	333-0012-194	2
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 36"	214-1000-311	2
	Hydraulic Hose - 11/16" ORFS (F) 90° to 11/16" ORFS (F) - 44"	214-1000-494	4

TABLE 3. Wheel Kit (P/N 117-0133-075)








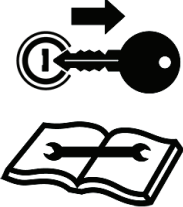
Picture	Item Description	Part Number	Qty.
	Axle Assembly - Straight AutoBoom	063-0131-567	2
	Bracket - CaseIH 120' Boom Weldment	116-0159-680	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/16" W x 3" L x 3/8" Thread	107-0171-609	8
	Bolt - 1/2"-13 x 1-1/2" Stainless Steel Hex	311-0058-186	4

TABLE 3. Wheel Kit (P/N 117-0133-075)


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	16

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



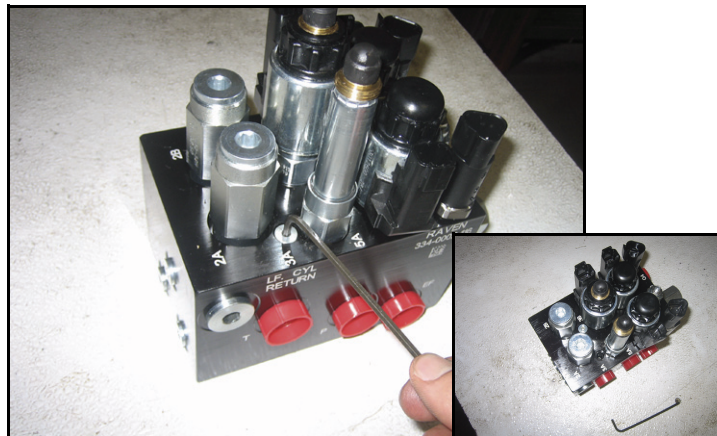
1. Locate Ports 3A and 3B on the AutoBoom valve.

FIGURE 2. Coil Removed from the AutoBoom Valve



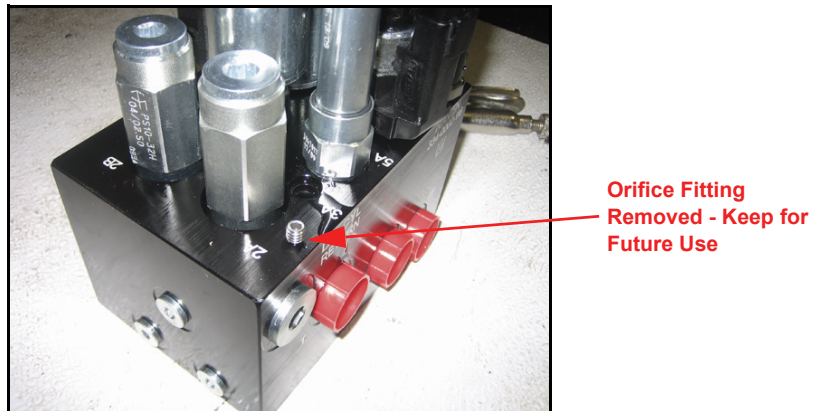
2. Remove the coils from the solenoids near Ports 3A and 3B to gain easy access to those ports.

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



- 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



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

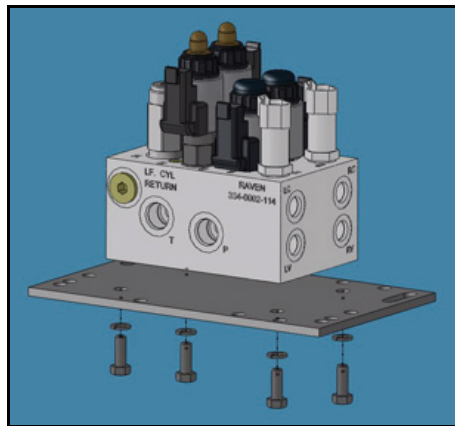
Install Fittings on the AutoBoom Valve

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 3/4" SAE O-Ring (M) 90° Elbow	333-0012-165	LF CYL RTN, RTCYLRTN
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	LC, RC
Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	P, T
Fitting - 11/16" Hex 9/16" O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

FIGURE 7. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the PowerGlide Plus AutoBoom valve (P/N 063-0131-124) to the mounting plate (P/N 107-0171-802) using four 5/16" 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 2-9/16" W x 3-1/2" L x 3/8" thread U-bolts (P/N 107-0171-616) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).


Note: Mount the AutoBoom valve so that Port P is facing up and LC and RC Ports are facing the center of the machine.

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 valves.

FIGURE 9. Pressure and Tank Hoses Installed

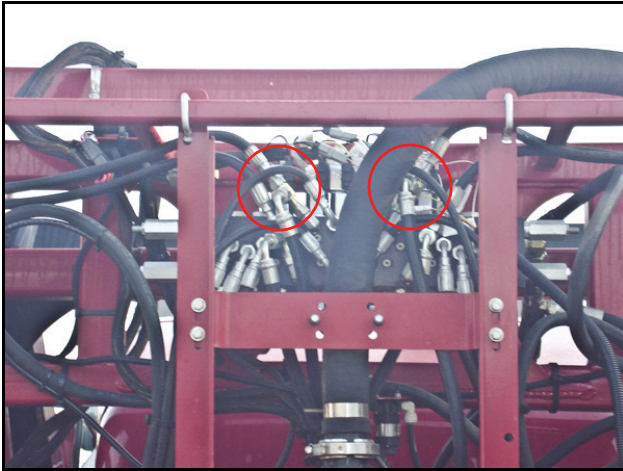


1. Disconnect the machine's pressure line from the machine's hydraulic valve.
2. Install a 13/16" ORFS M/M/F swivel run tee fitting (P/N 333-0012-028) in the machine's pressure port.
3. Attach the machine's pressure line to the opposite end of the installed tee fitting.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-311) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to Port P on the AutoBoom valve.
6. Disconnect the machine's tank line from 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. Attach the machine's tank line to the opposite end of the installed tee fitting.
9. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-311) to the 90° end of the installed tee fitting.
10. Connect the straight end of the installed hydraulic hose to Port T on the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 10. Left and Right Cylinder Hoses Installed

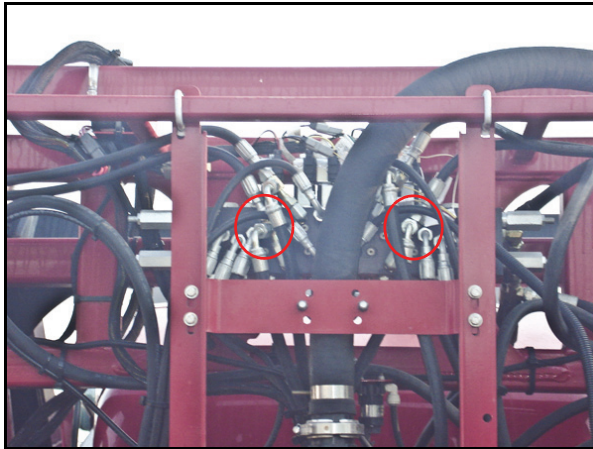


Trace Hoses to Rod End of Tilt Cylinders

1. Disconnect the machine's left and right tilt hoses from the machine's hydraulic block.
2. Install 11/16" ORFS M/M/F swivel run tee adapter fittings (P/N 333-0012-069) in the tilt hose ports of the machine's hydraulic block.
3. Connect the machine's right tilt hose to the opposite end of the tee fitting installed in the right tilt port of the machine's hydraulic block.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the installed fitting in Port RC of the AutoBoom valve.
6. Connect the machine's left tilt hose to the opposite end of the tee fitting installed in the left tilt port of the machine's hydraulic block.
7. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
8. Connect the straight end of the installed hydraulic hose to the installed fitting in Port LC of the AutoBoom valve.

Install the Left and Right Down Hoses

FIGURE 11. Left and Right Down Hoses Installed

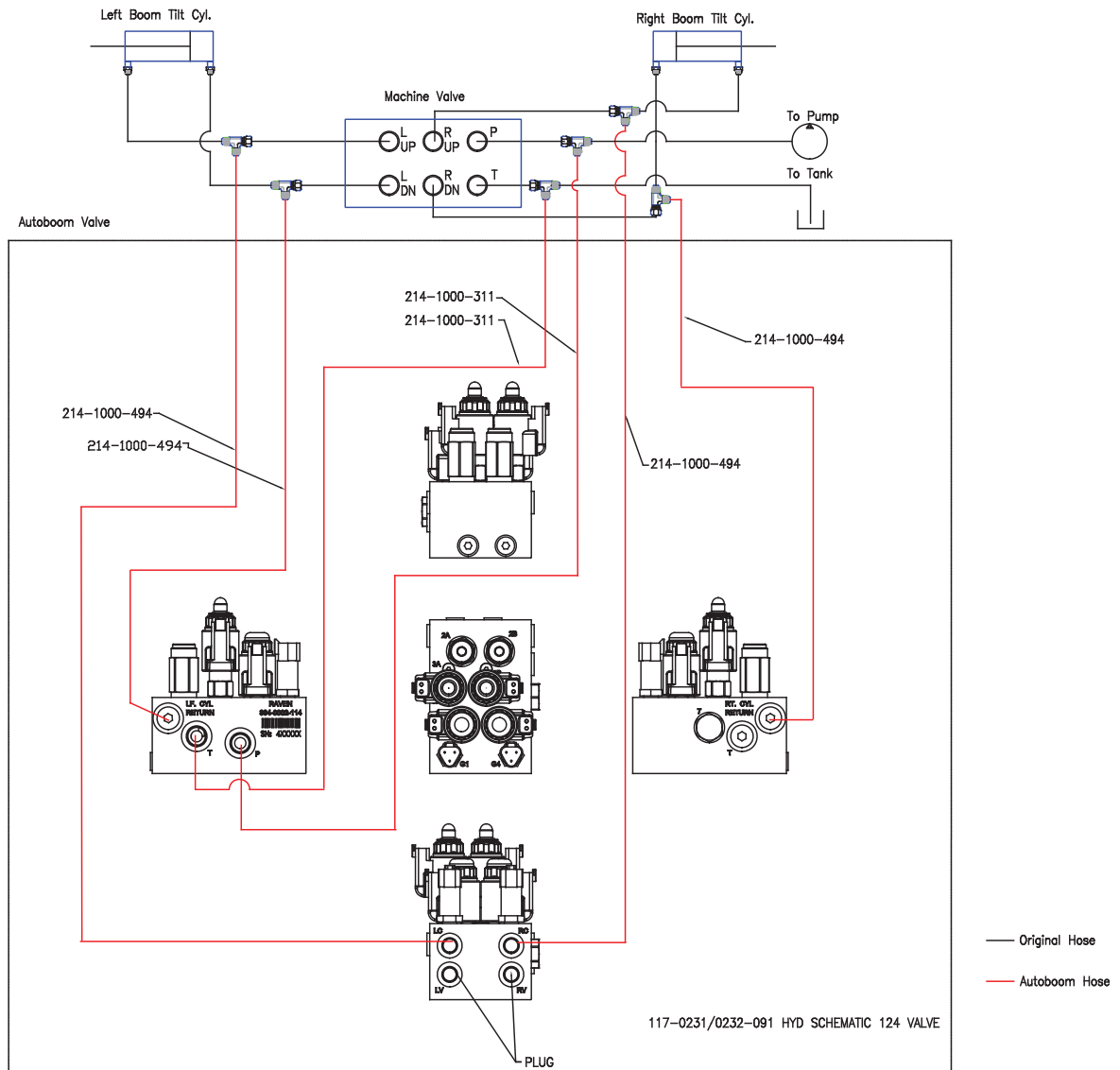


Trace Hoses to Base End of Tilt Cylinders



1. Disconnect the machine's left and right cylinder return hoses from the machine's hydraulic valve.
2. Install 11/16" ORFS M/M/F swivel run tee adapter fittings (P/N 333-0012-069) in the machine's return ports.
3. Connect the machine's right cylinder return hose to the opposite end of the tee fitting installed in the right return port.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the installed fitting in Port RT CYL RTN of the AutoBoom valve.
6. Connect the machine's left cylinder return hose to the opposite end of the tee fitting installed in the left return port.
7. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
8. Connect the straight end of the installed hydraulic hose to the installed fitting in Port LF CYL RTN of the AutoBoom valve.

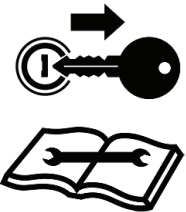

PowerGlide Plus Hydraulic Schematic



Install the Gauge Wheels

Mount the Gauge Wheels

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 wheel should be mounted outside of the boom fold, but inside the boom breakaway.

	<div style="background-color: #e67e22; color: white; padding: 5px; text-align: center;">  WARNING </div> <p>The machine must remain stationary and switched off, with the booms unfolded and supported, while installation or maintenance is conducted.</p>
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Note: The appearance of the wheel axles may vary.

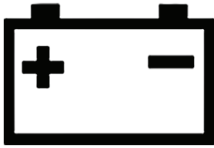
FIGURE 12. Gauge Wheel Installed



1. Remove the nuts from the wheel axle (P/N 063-0131-567).
2. Remove the hub retainer bracket from the wheel axle.
3. Place the wheel (P/N 322-0131-008) on the wheel axle.
4. Align and place the hub retainer bracket over the wheel.
5. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
6. Mount the receiver bracket (P/N 116-0159-680) to the front of the right boom using four 2-1/16" W x 3" L x 3/8" thread U-bolts (P/N 107-0171-609) and eight 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
7. Insert the wheel axle into the receiver bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
8. 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"-13 zinc hex nuts (P/N 312-1001-043).
9. Repeat the steps above to install the left wheel.

Install the PowerGlide Plus Wiring

Wiring Connections

	<p>⚠ 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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Note: 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. UltraGlide AutoBoom Node Installed



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

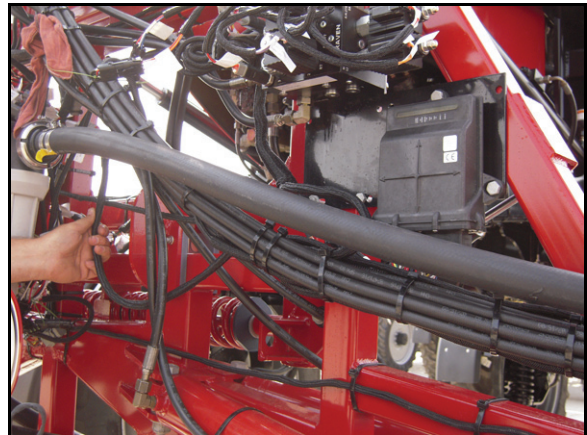
2. Insert the large, rectangular node connector on the harness cable (P/N 115-0230-032) into both ports of the AutoBoom node.
3. Tighten the bolt on the node connector to secure the connection.

Connect the Harness to the AutoBoom Valve

1. Locate the Left Press and Right Press connectors on the harness cable (P/N 115-0230-032).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-124).
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.

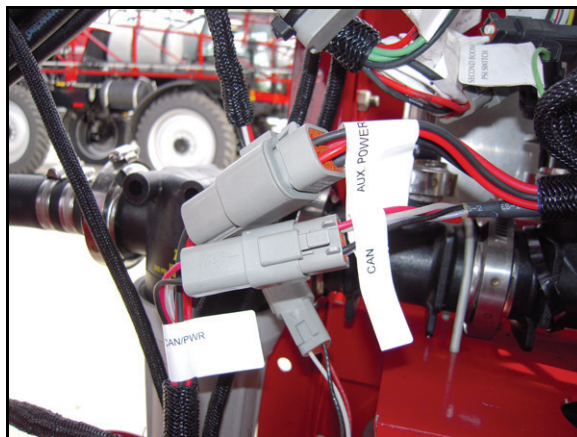
Connect the Harness to the Power/CAN Controls

FIGURE 14. AutoBoom Harness Cable Installed



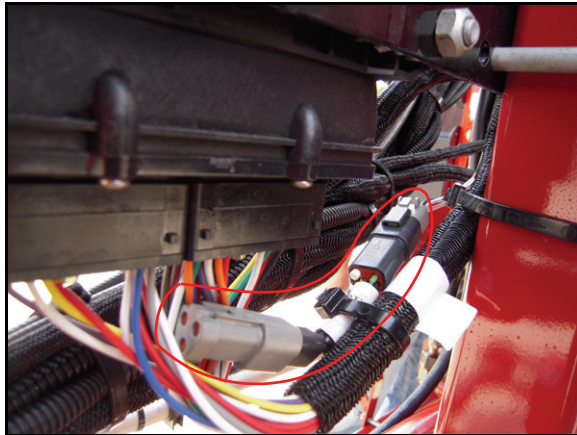
1. Locate the machine's harness cable on the center boom section, near the pressure transducers on the spray line.

FIGURE 15. Machine's CAN Terminator



2. Disconnect the machine's CAN terminator from the machine's harness.

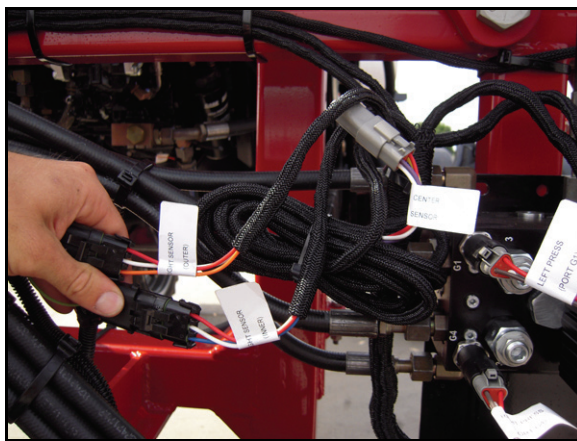
FIGURE 16. Machine's CAN Terminator Connected to AutoBoom Harness Cable



3. Connect the machine's CAN terminator to the harness cable's (P/N 115-0230-032) CAN connection.
4. Connect the AutoBoom harness cable's CAN connection to the open CAN connection on the machine's harness.

Connect the Harness to the Sensors

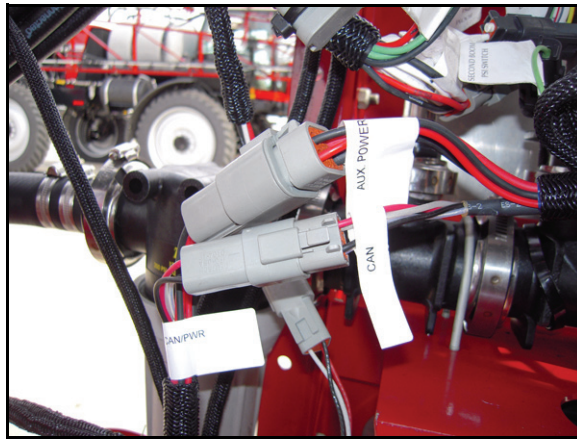
FIGURE 17. Sensor Cables Connected



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

Connect the Power Leads

FIGURE 18. Power Leads Connected



1. Locate the machine's CAN and auxiliary power connectors on the center boom section, near the flow meter and filter.
2. Connect the machine's CAN connector to the CAN/PWR connector on the AutoBoom harness cable.
3. Connect the machine's AUX POWER connector to the AUX POWER connector on the AutoBoom harness cable.

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 117-0232-091)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CaseIH 3320, 3330, and 4420 120' Booms AutoBoom Installation	016-0230-091	1
Not Pictured	Manual - AutoBoom Calibration	016-0230-062	1
	Valve - UltraGlide AutoBoom	063-0131-124	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Bracket - Weldment Mounting	116-0159-684	1
	Node - UltraGlide AutoBoom CAN	063-0130-013	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-091)

Picture	Item Description	Part Number	Qty.
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Center Ultrasonic	063-0130-018	1
	Cable - UltraGlide Sensor 70' Extension	115-0171-527	2
	Cable - PowerGlide Plus/UltraGlide CMO B/K Autofold CAN AutoBoom	115-0230-032	1
	U-Bolt - 2-1/16" W x 3" L x 3/8" Thread	107-0171-609	4
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	2
	U-Bolt - 2-9/16" W x 3-1/2" L x 3/8" Thread	107-0171-616	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	7

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-091)

Picture	Item Description	Part Number	Qty.
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	31
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-075)

Picture	Item Description	Part Number	Qty.
	Fitting - 13/16" ORFS M/M/F Swivel Run Tee	333-0012-028	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	4
	Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	2
	Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-165	2
	Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	2
	Fitting - 11/16" Hex 9/16" O-Ring Plug	333-0012-194	2

TABLE 2. Hydraulic Kit (P/N 117-0134-075)










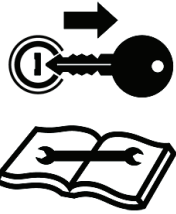
Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - 13/16" ORFS (F) to 13/16" ORFS (F) 90° - 36"	214-1000-311	2
	Hydraulic Hose - 11/16" ORFS (F) 90° to 11/16 ORFS (F) - 44"	214-1000-494	4

TABLE 3. Optional Wheel Kit (P/N 117-0133-075)

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Straight AutoBoom	063-0131-567	2
	Bracket - CaseIH 120' Boom Weldment	116-0159-680	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/16" W x 3" L x 3/8" Thread	107-0171-609	8
	Bolt - 1/2"-13 x 1-1/2" Stainless Steel 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

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.



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 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.

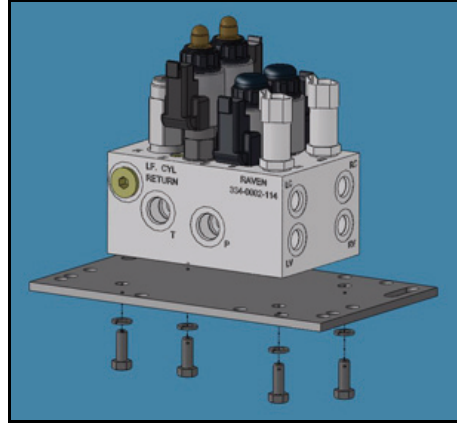
Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - 11/16" ORFS (M) to 3/4" SAE O-Ring (M) 90° Elbow	333-0012-165	LF CYL RTN, RTCYLRTN
Fitting - 11/16" ORFS (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-084	LC, RC
Fitting - 13/16" ORFS (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-168	P, T
Fitting - 11/16" Hex 9/16" O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

1. Secure the UltraGlide AutoBoom valve (P/N 063-0131-124) to the mounting plate (P/N 107-0171-802) using four 5/16" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).

FIGURE 1. AutoBoom Valve Mounted on the Valve Mounting Plate



2. Secure the mounting plate to the machine's center rack using two 2-9/16" W x 3-1/2" L x 3/8" thread U-bolts (P/N 107-0171-616) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

FIGURE 2. AutoBoom Valve Mounted on the Sprayer



Note: Mount the AutoBoom valve so that Port P is facing up and LC and RC Ports are facing the center of the machine.

Install the Pressure and Tank Hoses



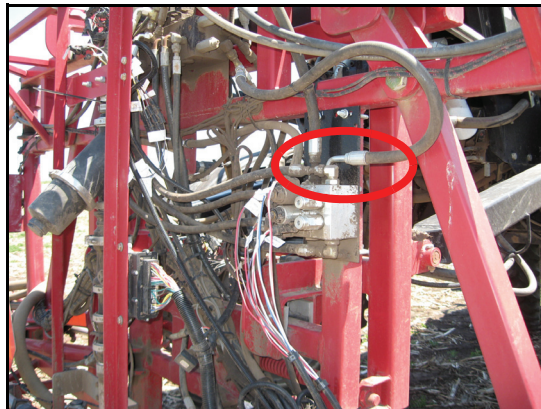
	<p>⚠ WARNING</p> <p>Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's system may be extremely hot and under high pressure.</p>
	<p>⚠ CAUTION</p> <p>When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

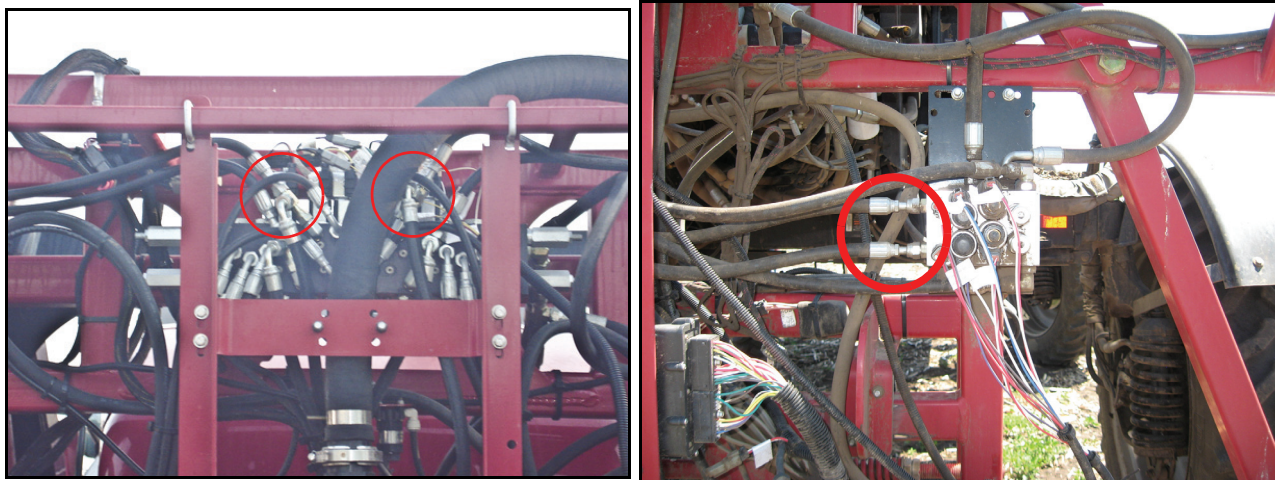
FIGURE 3. Pressure and Tank Hoses Installed



1. Disconnect the machine's pressure line from 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. Attach the machine's pressure line to the opposite end of the installed tee fitting.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-311) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to Port P on the AutoBoom valve.
6. Disconnect the machine's tank line from 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. Attach the machine's tank line to the opposite end of the installed tee fitting.
9. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-311) to the 90° end of the installed tee fitting.
10. Connect the straight end of the installed hydraulic hose to Port T on the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 4. Left and Right Cylinder Hoses Installed

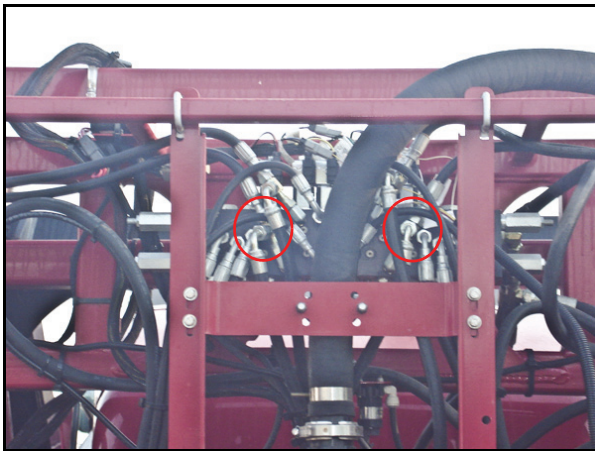


Trace Hoses to Rod End of Tilt Cylinders

1. Disconnect the machine's left and right tilt hoses from the machine's hydraulic block.
2. Install 11/16" ORFS M/M/F swivel run tee adapter fittings (P/N 333-0012-069) in the tilt hose ports of the machine's hydraulic block.
3. Connect the machine's right tilt hose to the opposite end of the tee fitting installed in the right tilt port of the machine's hydraulic block.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the installed fitting in Port RC of the AutoBoom valve.
6. Connect the machine's left tilt hose to the opposite end of the tee fitting installed in the left tilt port of the machine's hydraulic block.
7. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
8. Connect the straight end of the installed hydraulic hose to the installed fitting in Port LC of the AutoBoom valve.

Install the Left and Right Down Hoses

FIGURE 5. Left and Right Down Hoses Installed

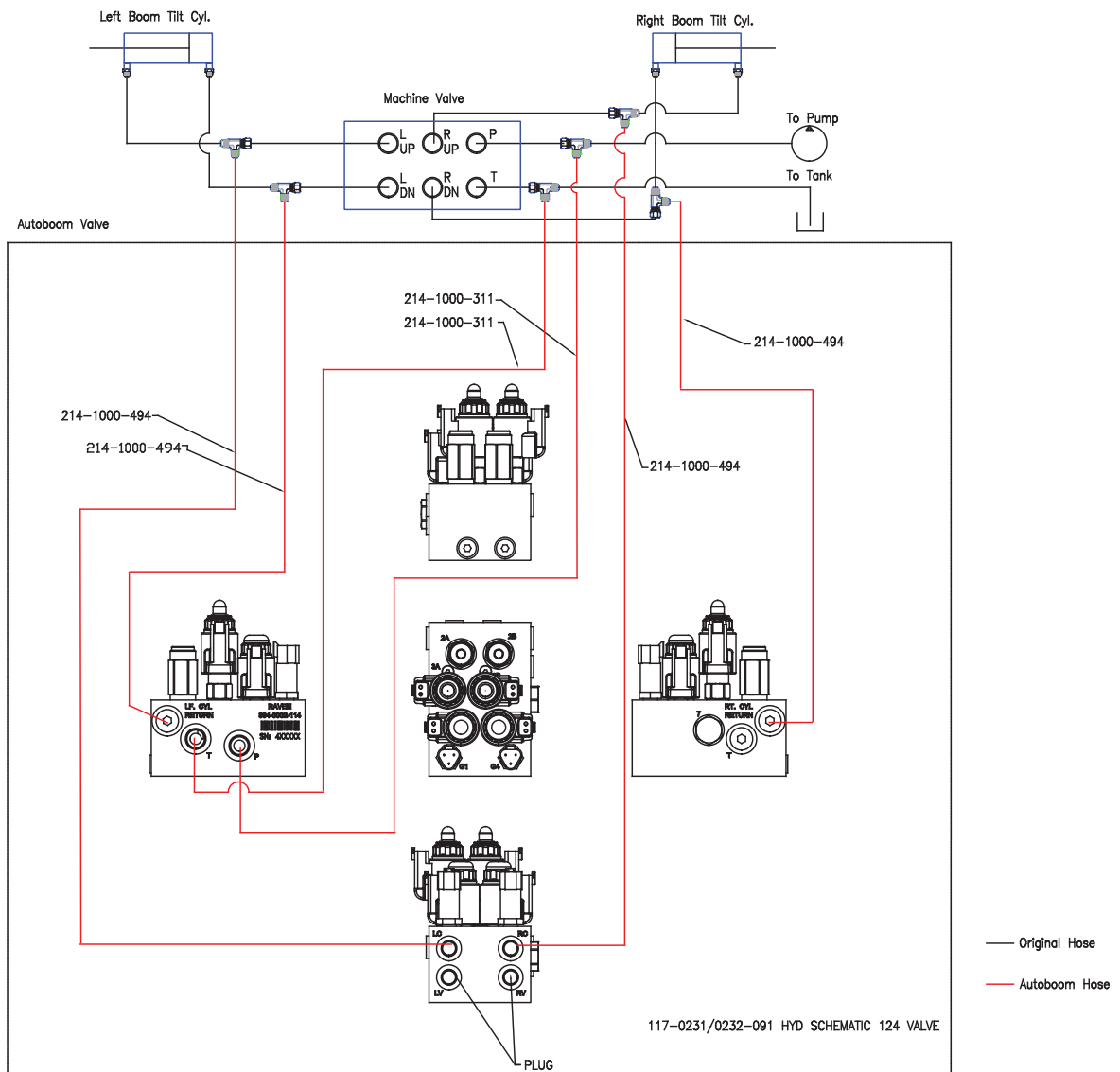


Trace Hoses to Base End of Tilt Cylinders



1. Disconnect the machine's left and right cylinder return hoses from the machine's hydraulic valve.
2. Install 11/16" ORFS M/M/F swivel run tee adapter fittings (P/N 333-0012-069) in the machine's return ports.
3. Connect the machine's right cylinder return hose to the opposite end of the tee fitting installed in the right return port.
4. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the installed fitting in Port RT CYL RTN of the AutoBoom valve.
6. Connect the machine's left cylinder return hose to the opposite end of the tee fitting installed in the left return port.
7. Connect the 90° end of the supplied hydraulic hose (P/N 214-1000-494) to the 90° end of the installed tee fitting.
8. Connect the straight end of the installed hydraulic hose to the installed fitting in Port LF CYL RTN of the AutoBoom valve.

UltraGlide Hydraulic Schematic



Install the UltraGlide Sensors

Mount the UltraGlide Boom Sensors

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

Note: When mounting two sensors per boom, the inside sensor must be turned sideways to prevent the sensors from interfering when folding the booms.

FIGURE 6. Boom Sensor Mounting Locations



1. Secure the left sensor (P/N 063-0130-014) to the front of the left boom using two 2-1/16" W x 3" L x 3/8" thread U-bolts (P/N 107-0171-609) 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.
3. Repeat the steps above to install the remaining boom sensor(s).

Mount the Center Rack Sensor

FIGURE 7. Center Rack Sensor Mounted to the Machine



Mount to Cross-beam on Center Section

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"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Tighten the nuts to ensure the sensor is mounted securely.

MY2009 Sprayers

1. For MY2009 sprayers, mount the supplied weldment bracket (P/N 116-0159-684) to the machine using four 3/8"-16 UNC x 1-1/4" zinc plated hex bolts (P/N 311-0054-106) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Mount the center sensor (P/N 063-0130-018) to the weldment bracket (P/N 116-0159-684), using two 2-9/16" W x 3-1/2" L x 3/8" thread U-bolts (P/N 107-0171-616) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Connect the Sensor Cables

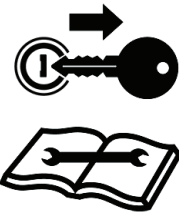
1. Connect the left sensor cable (P/N 115-0171-527) to the connector on the left sensor.
2. Route the left sensor cable toward the AutoBoom valve.
3. Loop and tie-off any excess cable, allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor cables.

Note: The sensor cables will be connected to the AutoBoom in the next phase of installation.

Install the Gauge Wheels - Optional

Mount the Gauge Wheels

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 wheel should be mounted outside of the boom fold, but inside the boom breakaway.

	<p style="text-align: center;">⚠ WARNING</p> <p>The machine must remain stationary and switched off, with the booms unfolded and supported, while installation or maintenance is conducted.</p>
---	--

Note: The appearance of the wheel axles may vary.


FIGURE 8. Gauge Wheel Installed



1. Remove the nuts from the wheel axle (P/N 063-0131-567).
2. Remove the hub retainer bracket from the wheel axle.
3. Place the wheel (P/N 322-0131-008) on the wheel axle.
4. Align and place the hub retainer bracket over the wheel.
5. Reinstall the lug nuts on the wheel axle to secure the wheel and hub retainer bracket.
6. Mount the receiver bracket (P/N 116-0159-680) to the front of the right boom using four 2-1/16" W x 3" L x 3/8" thread U-bolts (P/N 107-0171-609) and eight 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
7. Insert the wheel axle into the receiver bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so) and the wheel faces away from the machine.
8. 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"-13 zinc hex nuts (P/N 312-1001-043).
9. Repeat the steps above to install the left wheel.

Install the UltraGlide Wiring

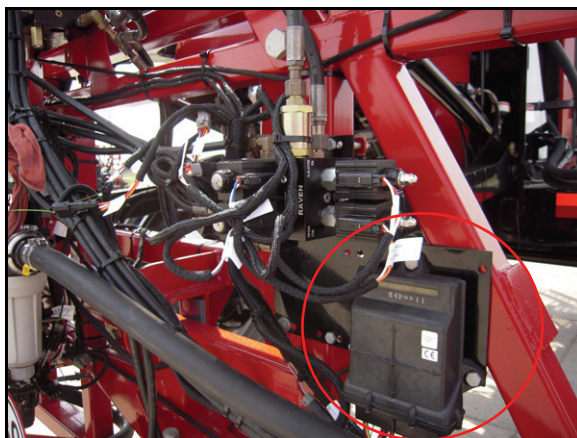
Wiring Connections

	<div style="background-color: yellow; text-align: center; padding: 5px;">⚠ 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>
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Note: 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 9. UltraGlide AutoBoom Node Installed



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

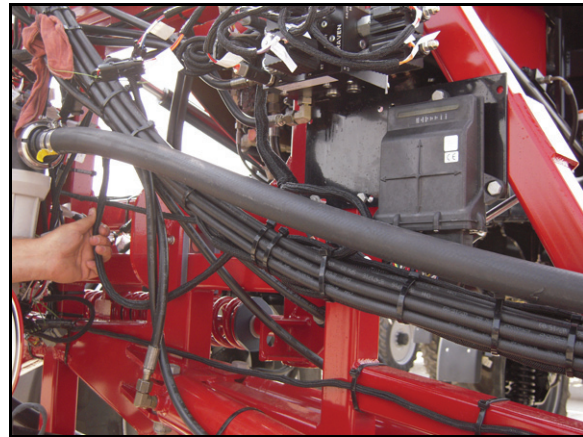
2. Insert the large, rectangular node connector on the harness cable (P/N 115-0230-032) into the both ports of the AutoBoom node.
3. Tighten the bolt on the node connector to secure the connection.

Connect the Harness to the AutoBoom Valve

1. Locate the Left Press and Right Press connectors on the harness cable (P/N 115-0230-032).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-120).
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.

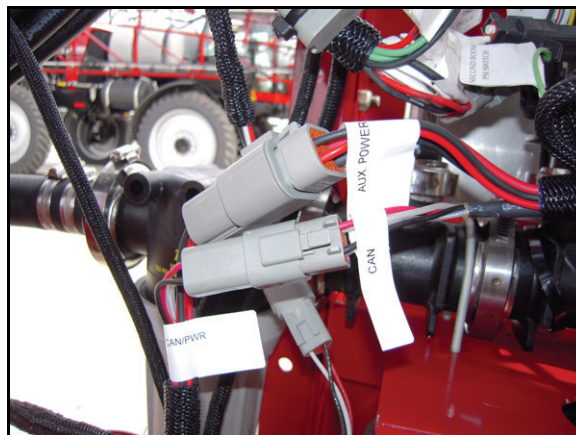
Connect the Harness to the Power/CAN Controls

FIGURE 10. AutoBoom Harness Cable Installed

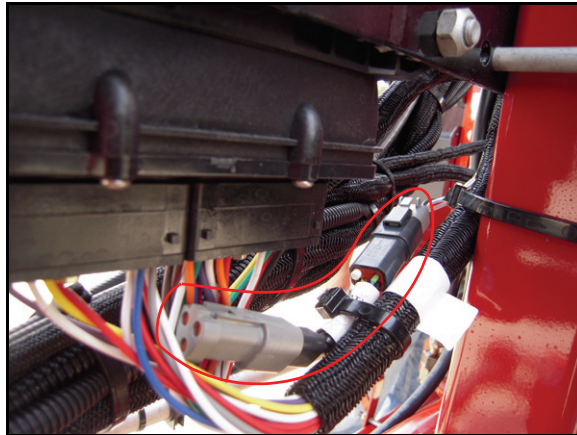


1. Locate the machine's harness cable on the center boom section, near the pressure transducers on the spray line.

FIGURE 11. Machine's CAN Terminator

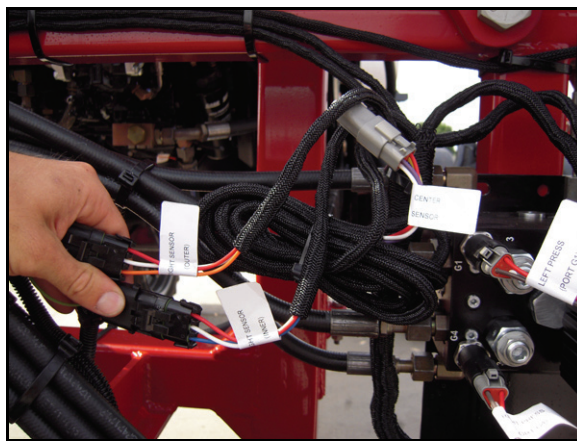


2. Disconnect the machine's CAN terminator from the machine's harness.

FIGURE 12. Machine's CAN Terminator Connected to AutoBoom Harness Cable

3. Connect the machine's CAN terminator to the harness cable's (P/N 115-0230-032) CAN connection.
4. Connect the AutoBoom harness cable's CAN connection to the open CAN connection on the machine's harness.

Connect the Harness to the Sensors

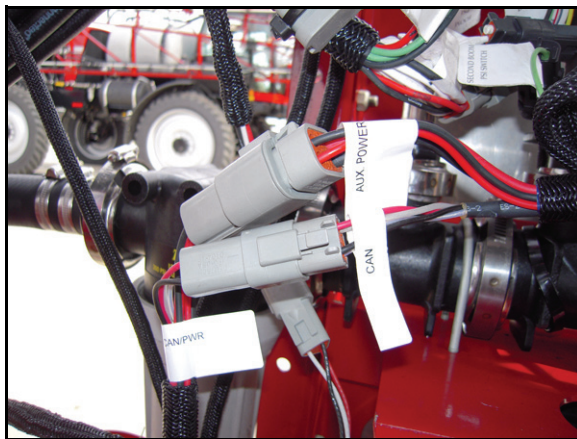
FIGURE 13. Sensor Cables Connected

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



Connect the Power Leads

FIGURE 14. Power Leads Connected



1. Locate the machine's CAN and auxiliary power connectors on the center boom section, near the flow meter and filter.
2. Connect the machine's CAN connector to the CAN/PWR connector on the AutoBoom harness cable.
3. Connect the machine's AUX POWER connector to the AUX POWER connector on the AutoBoom harness cable.

CHAPTER

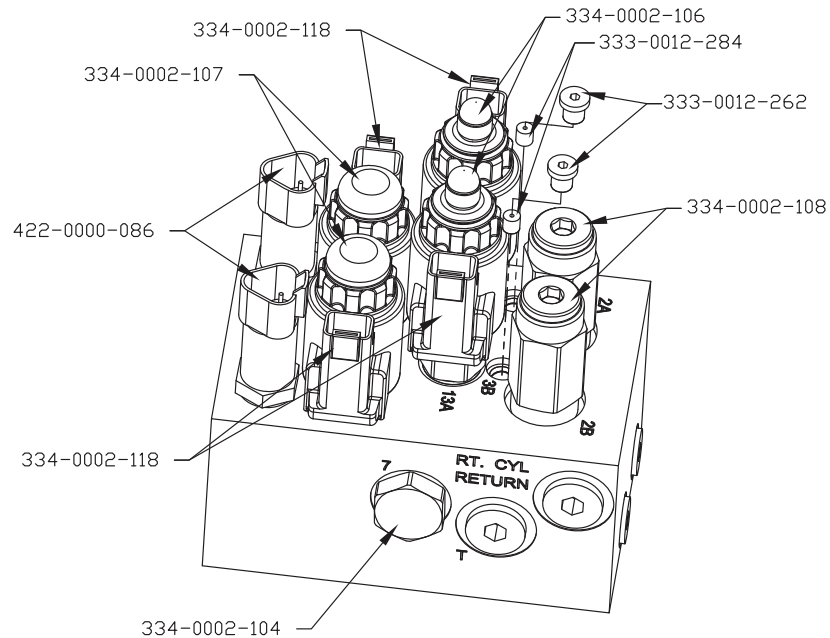
5

Replacement Parts

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

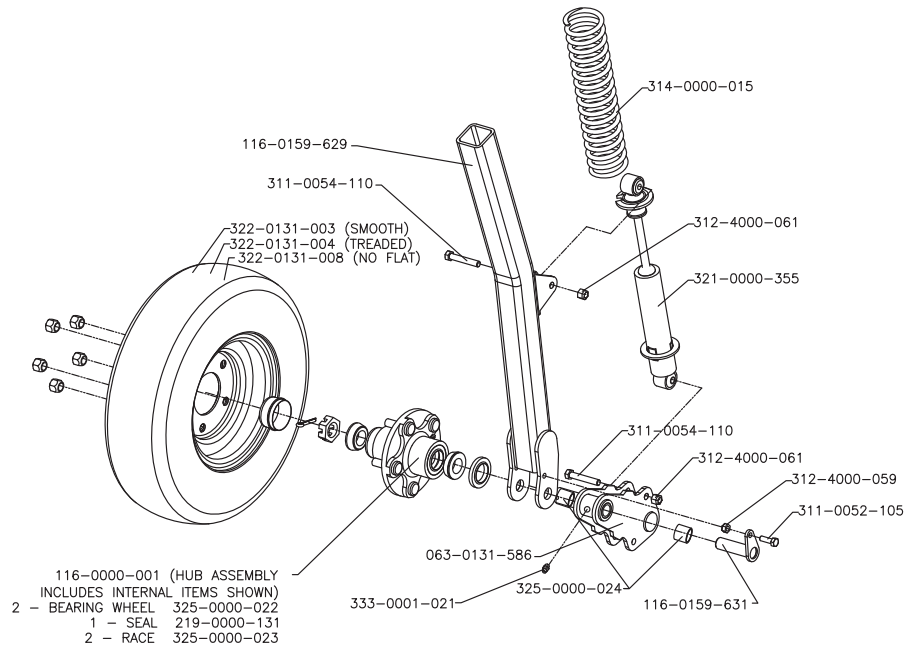
Valve Blocks

PowerGlide Plus and UltraGlide Replacement Parts

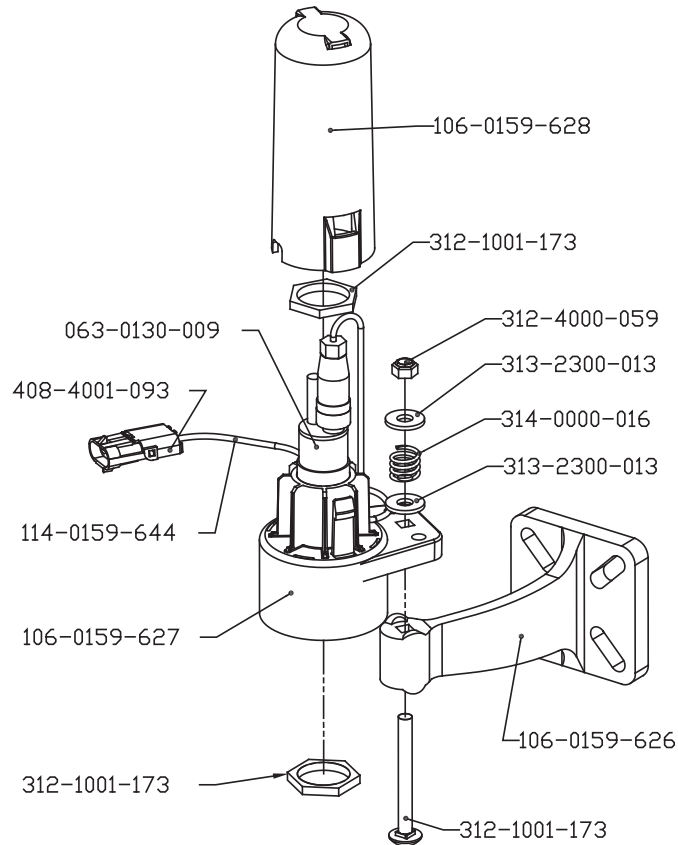


063-0131-124
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, CLOSED CENTER, AUTOBOOM

Wheels



Sensors



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Safety 2

H**Hydraulic**

Fittings 4

Safety 2

I**Important Safety Information**

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RAVEN

RAVEN INDUSTRIES

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Applied Technology Products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is nontransferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven Dealer. If your Dealer agrees with the warranty claim, the Dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

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 or other special 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.