

R A V E N

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AutoBoom™ Installation Manual



**Gregson 2008 & Older
(Fasse Valve and Live Hydraulics)**

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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, during installation or maintenance.



Hydraulic Safety

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

Introduction

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

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

MAKE: Gregson

MODEL: Machines containing Fasse valve and live hydraulics

YEAR: 2008 & Older

SERIAL NUMBER:

FIGURE 1. Gregson



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 the 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 117-0231-031)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Gregson 2008 & Older (Fasse Valve and Live Hydraulics) AutoBoom Installation	016-0230-031	1
	Valve - PowerGlide Plus AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Cable - Boom Sense Adapter	115-0171-546	3
	Cable - Single Weatherpack Boom Sense Adapter	115-0171-790	1
	U-Bolt - 2-1/16" W x 3" L x 3/8" Thread	107-0171-609	2

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-031)

Picture	Item Description	Part Number	Qty.
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 x 1-1/4" Zinc 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 117-0134-031)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" JIC M/M/F Swivel Run Tee Adapter	333-0012-043	1
	Fitting - 7/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-044	2
	Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	2
	Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	5
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 102"	214-1000-294	1
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 36"	214-1000-305	2

TABLE 2. Hydraulic Kit (P/N 117-0134-031)



Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (M) - 24"	214-1000-430	1
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 144"	214-1000-682	1

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-031)

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 - Hub Retainer	107-0171-617	2
	Bracket - Left Weldment Receiver	116-0159-547	1
	Bracket - Right Weldment Receiver	116-0159-579	1
	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" SS Hex	311-0058-186	4

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-031)










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


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

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CAN AutoBoom Calibration & Operation	016-0130-062	1
	Node - PowerGlide Plus AutoBoom	063-0130-010	1
	Cable - 37' CAN PowerGlide/UltraGlide	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1

Install the PowerGlide Plus Hydraulic System

	<div data-bbox="808 275 1122 331"> WARNING</div> <p>The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.</p>
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	<div data-bbox="813 604 1117 661"> CAUTION</div> <p>When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.</p> <p>Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly cause damage to the AutoBoom hydraulic valve.</p>
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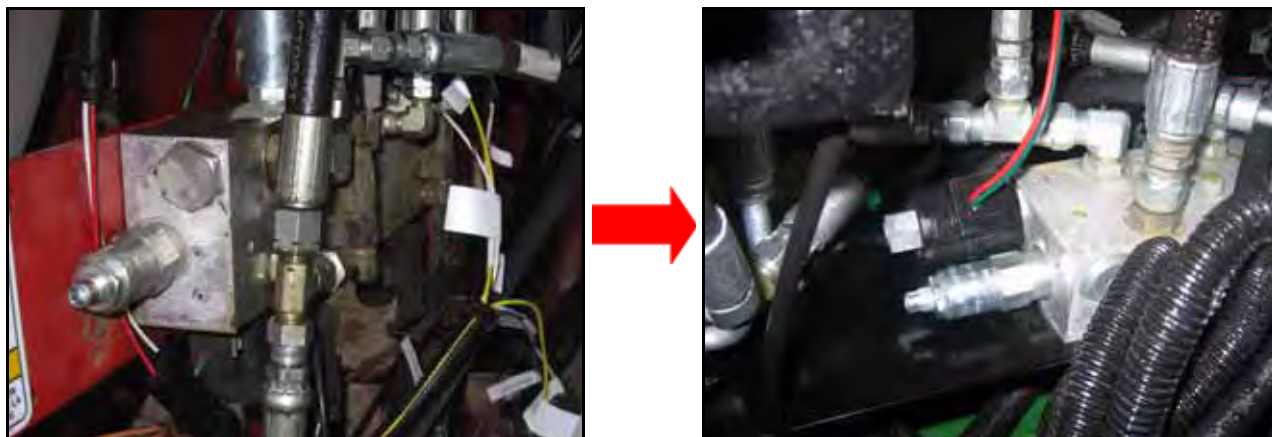
	<div data-bbox="868 1087 1062 1136">NOTICE</div> <p>The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.</p>
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Convert the Sprayer's Hydraulic Valve to Open Center (If Applicable)

By factory default, the machine's main hydraulic valve may be configured as a "closed center" hydraulic system. In order for AutoBoom to function properly and to prevent the hydraulic system from overheating, Raven recommends converting the machine's hydraulic system to an "open center" system.

Note: Contact your Gregson dealer to obtain the open center conversion kit.

FIGURE 1. Converted Hydraulic Valve - Closed Center to Open Center



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.

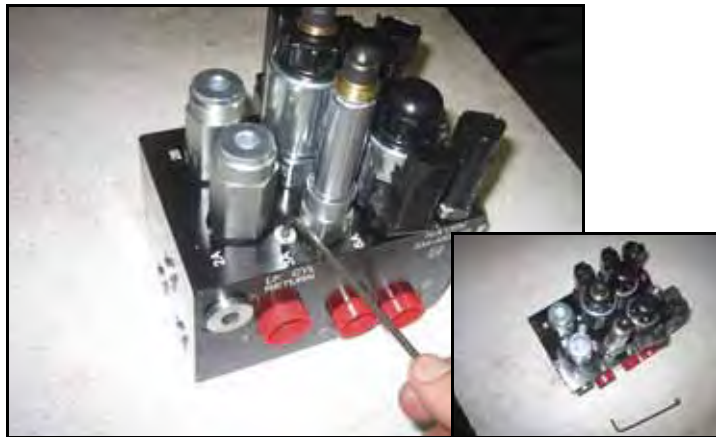
FIGURE 2. Port 3A and 3B Location



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

FIGURE 3. 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 4. Port Plugs Removed from the AutoBoom Valve

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

FIGURE 5. Orifice Fitting Removed from the AutoBoom Valve

Orifice Fitting
Removed - Keep for
Future Use

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

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

FIGURE 6. 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 7. Coil Reinstalled on the AutoBoom Valve



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

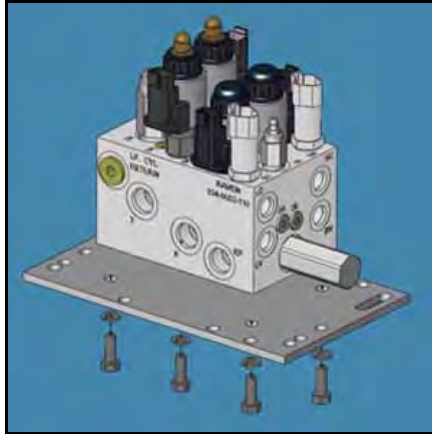
Install Fittings on the AutoBoom Valve

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

Fitting	Part Number	Qty.
Fitting - 7/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-044	LV, RV
Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	Left T, P, EF

Mount the AutoBoom Valve

FIGURE 8. AutoBoom Valve Mounted to Mounting Plate




1. Mount the AutoBoom valve (P/N 063-0131-126) to the valve mounting plate (P/N 107-0171-802) using four 5/16"-18 x 7/8" Hex bolts (P/N 311-0052-104) and four 5/16" zinc plated lock washers (P/N 313-1000-019).

FIGURE 9. AutoBoom Valve Mounted to the Machine



2. Mount the AutoBoom valve to the machine's center rack using two 2-1/16" W x 4" 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).

Install the Pressure and Tank Hoses



⚠ WARNING

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

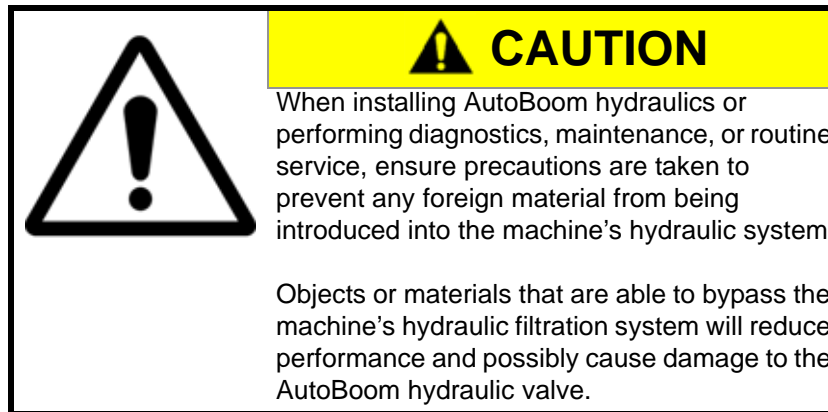
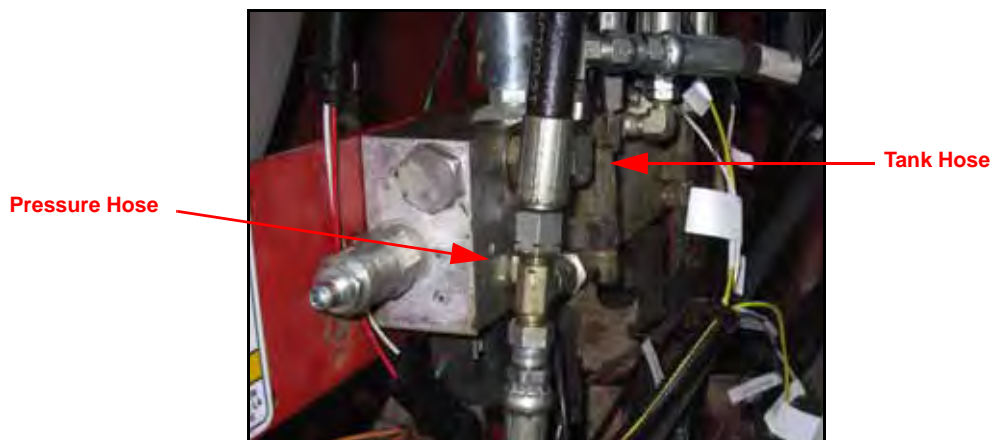


FIGURE 10. Pressure and Tank Hoses Installed



Note: The picture above shows a tee adapter fitting installed in the pressure port. The machine shown is a closed-center hydraulic system. The instructions in this manual assume that the machine has been converted to an open-center system, so this tee fitting is not included or installed.

1. Locate and disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the male end of the supplied hydraulic hose (P/N 214-1000-430) on the end of the machine's pressure hose.
3. Connect the other end of the installed hydraulic hose to the fitting installed in Port P of the AutoBoom valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-305) to port P of the machine's hydraulic valve.
5. Connect the other end of the installed hydraulic hose to the fitting installed in Port EF of the AutoBoom valve.
6. Locate and disconnect the machine's tank hose from the machine's hydraulic valve.
7. Install the 9/16" JIC M/M/F swivel run tee adapter fitting on the open tank port on the machine's hydraulic valve.
8. Connect the machine's tank hose to the opposite end of the installed fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-305) to the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 11. Cylinder Hoses Installed



1. Disconnect the machine's left up cylinder hose from the rod-end of the left tilt cylinder.
2. Connect the machine's left up cylinder hose to the installed fitting in Port LV of the AutoBoom valve.
3. Remove the fitting from the rod-end of the left tilt cylinder.

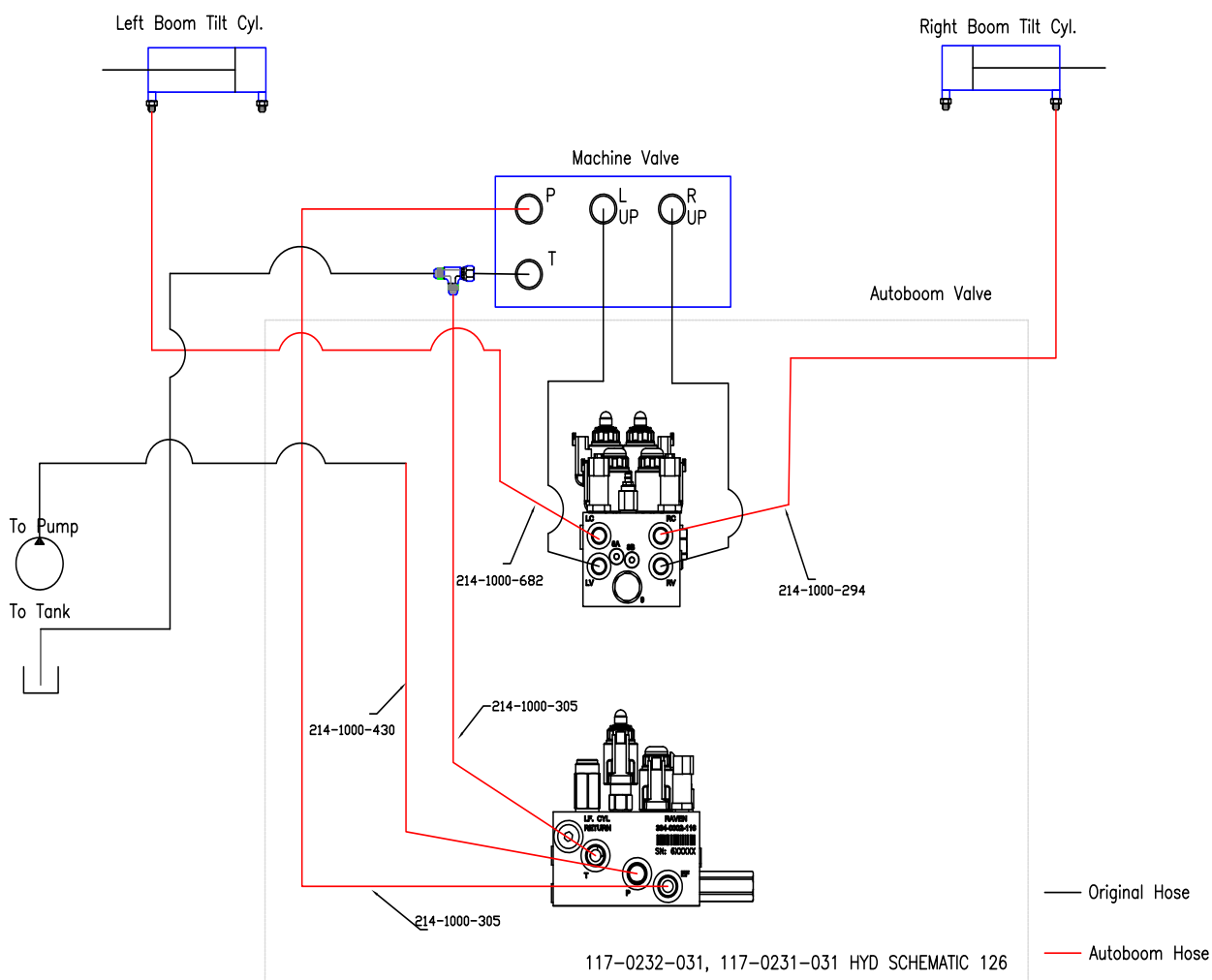
Note: Keep the fitting for future use.

4. Install a 9/16" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-046) in the open port of the machine's left tilt cylinder.
5. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-682) on the fitting installed in the rod-end of the left tilt cylinder.
6. Connect the other end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
7. Disconnect the machine's right up cylinder hose from the rod-end of the right tilt cylinder.
8. Connect the machine's right up cylinder hose to the installed fitting in Port RV of the AutoBoom valve.
9. Remove the fitting from the rod-end of the right tilt cylinder.

Note: Keep the fitting for future use.

10. Install a 9/16" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-046) in the open port of the machine's right tilt cylinder.
11. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-294) on the fitting installed in the rod-end of the right tilt cylinder.
12. Connect the other end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

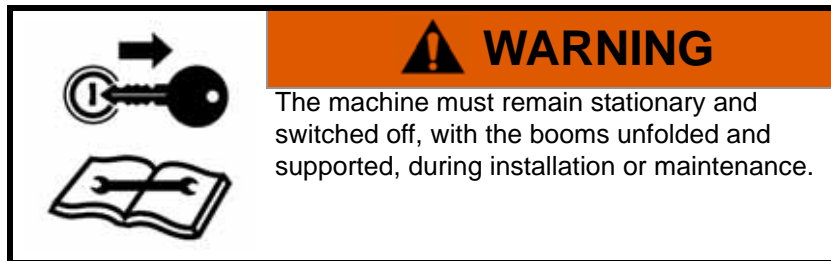
PowerGlide Plus Hydraulic Schematic



Install the Gauge Wheels

Gauge Wheel Mounting Locations

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



Mount the Gauge Wheels

Note: The appearance of the wheel axles may vary.

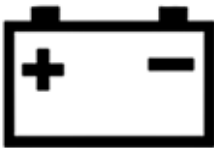

FIGURE 12. Gauge Wheel Installed



1. Remove the lug nuts from the right wheel axle (P/N 063-0131-585).
2. Place the wheel (P/N 322-0131-008) on the 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. Mount the receiver bracket (P/N 116-0159-579) 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 right 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
6. 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.
7. Secure the gauge wheel assembly into 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"-16 zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

Install the PowerGlide Plus Wiring

Wiring Connections

	<div data-bbox="771 336 1063 399"> 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 13. AutoBoom Node Installed



1. Mount the AutoBoom node (P/N 063-0130-010) to the hydraulic block mounting plate using three 3/8"-16 zinc hex bolts (P/N 311-0054-106) and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: Install the AutoBoom node so that the cable connections face to the side.

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

Connect the Harness Cable to the Boom Function Controls

1. Locate the Left Press and Right Press connectors on the harness cable (P/N 115-0230-045).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-126).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.
5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.

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

FIGURE 14. Directional Valve Boom Sense Adapter Cables Installed



11. Locate the machine's directional valve.
12. Disconnect the machine's directional valve connector from the directional valve.
13. Install a boom sense adapter cable (P/N 115-0171-546) on the machine's directional valve connector.
14. Install the single weatherpack boom sense adapter cable (P/N 115-0171-790) on the installed boom sense adapter cable.
15. Connect the right and left down connectors on the AutoBoom harness cable (P/N 115-0230-045) to the connectors on the installed weatherpack boom sense adapter cable (P/N 115-0171-790).
16. Install boom sense adapter cables (P/N 115-0171-546) between the machine's cylinder up coils and the connectors.
17. Connect the cable connectors to the Right Solenoid Sense Up and Left Solenoid Sense Up connectors on the AutoBoom harness cable (P/N 115-0230-045) to the installed boom sense adapter cables.

Connect the Harness Cable to the Controller Cable

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

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

Connect the Controller (If Applicable)

1. Route the controller cable (P/N 115-0230-007) into the right side of the machine's cab.
2. Locate the two controller connectors and connect them to the AutoBoom controller (P/N 063-0130-011).

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

Connect the Field Computer (If Applicable)

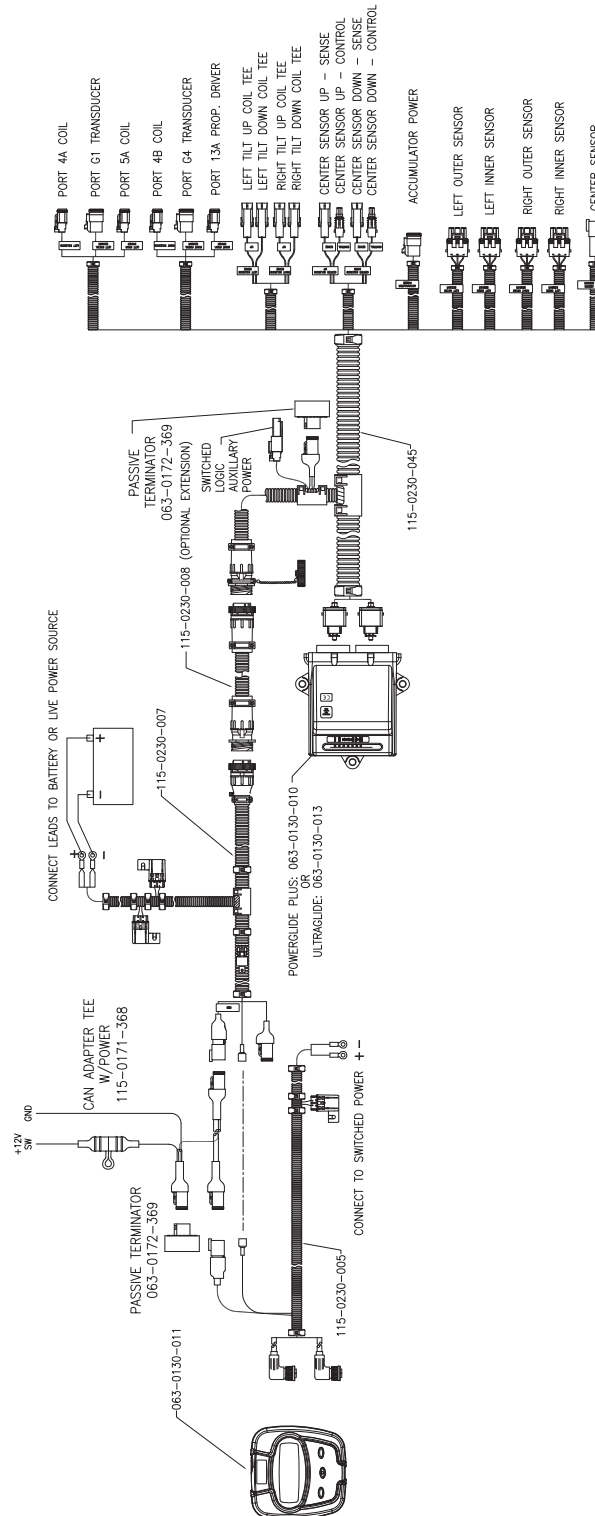
Refer to the Installation & Operation Manual and the appropriate wiring schematics beginning on page 21 for installation and wiring instructions for the specific field computer being used.

Connect the Power Leads

1. Locate the power cable that has the red and white power leads at one end.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the red power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the white power lead on the negative battery terminal and reinstall the machine's battery connector.

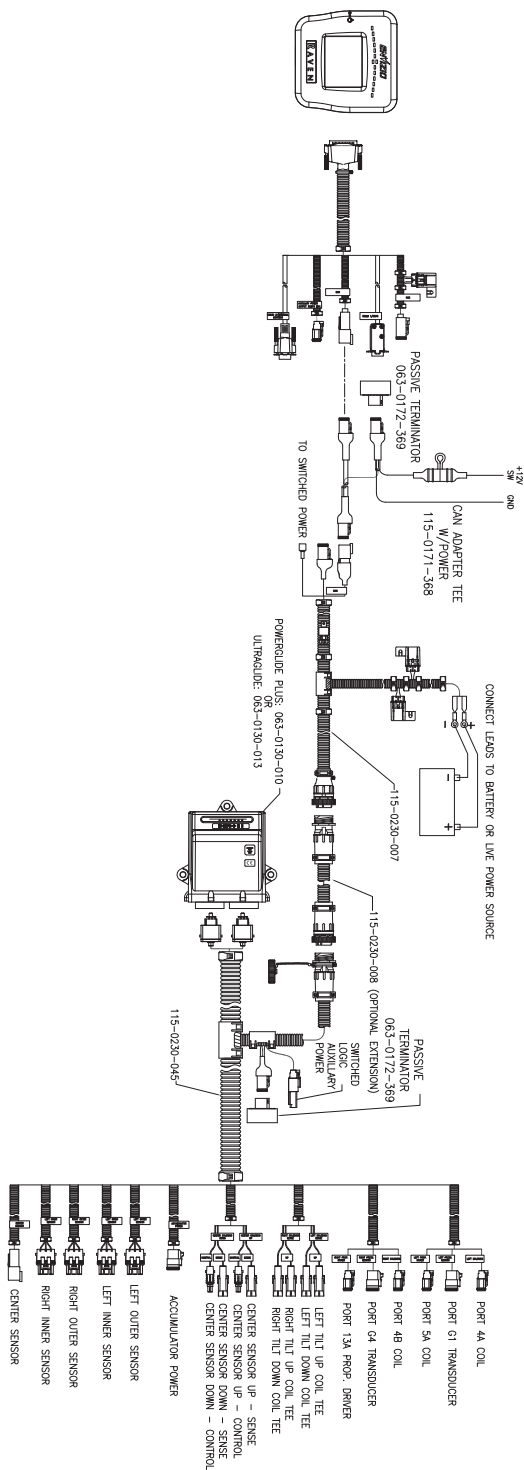
PowerGlide Plus Wiring Schematics

AutoBoom Controller

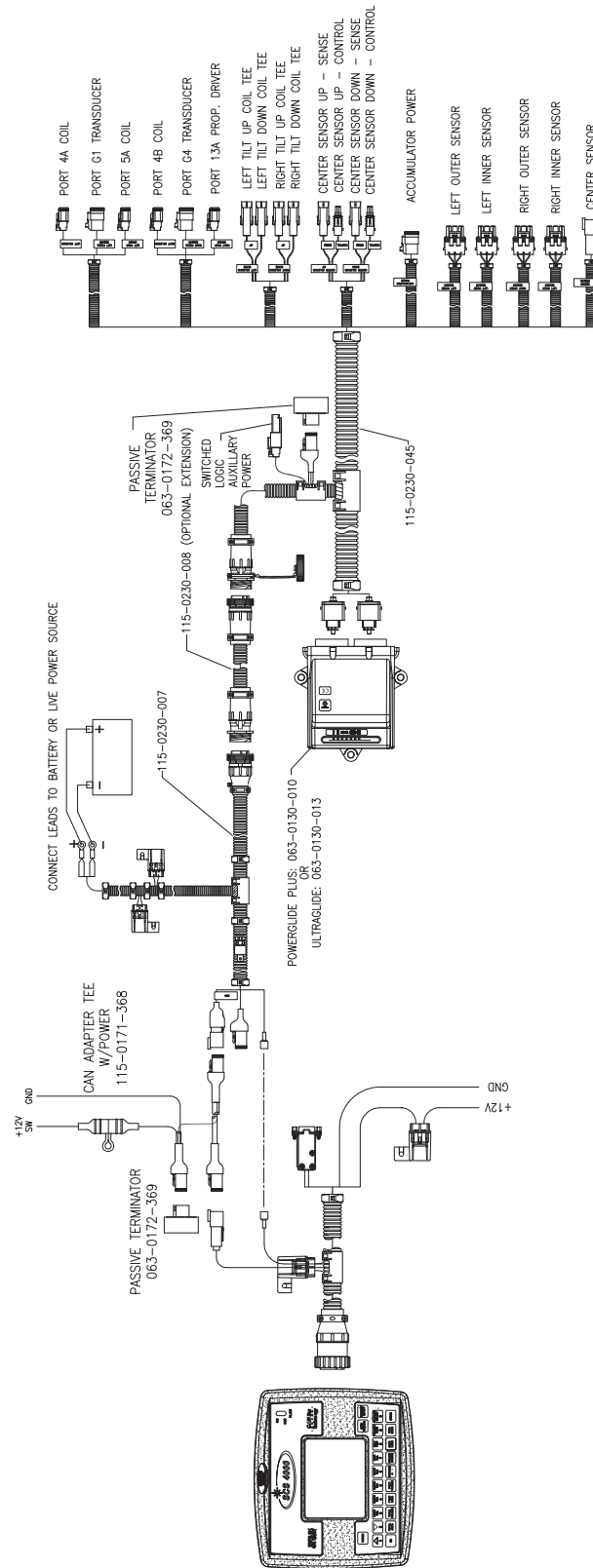


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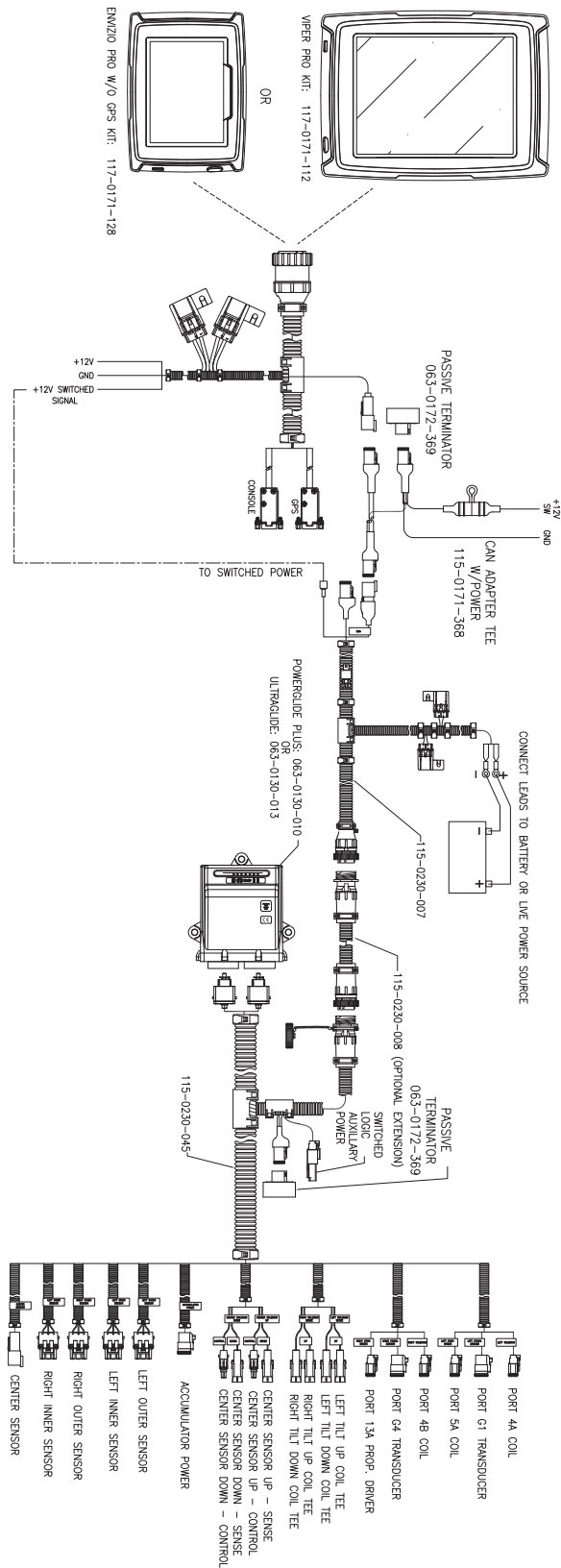
Envizio Plus



SCS 4000/5000



Viper Pro & Envizio Pro



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 117-0232-031)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Gregson 2008 & Older (Fasse Valve and Live Hydraulics) AutoBoom Installation	016-0230-031	1
	Valve - UltraGlide AutoBoom	063-0131-126	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 117-0232-031)

Picture	Item Description	Part Number	Qty.
	Cable - Boom Sense Adapter	115-0171-546	3
	Cable - Center Rack Control Boom Sense Adapter	115-0230-039	2
	U-Bolt - 2-1/16" W x 3" L x 3/8" Thread	107-0171-609	2
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	6
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 x 1-1/4" Zinc Hex	311-0054-106	3
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	19
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-031)



Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" JIC M/M/F Swivel Run Tee Adapter	333-0012-043	1
	Fitting - 7/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-044	2

TABLE 2. Hydraulic Kit (P/N 117-0134-031)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	2
	Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	5
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 102"	214-1000-294	1
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 36"	214-1000-305	2
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (M) - 24"	214-1000-430	1
	Hydraulic Hose - 9/16" JIC (F) 90° to 9/16" JIC (F) - 144"	214-1000-682	1

TABLE 3. Optional Wheel Kit (P/N 117-0133-031)

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 - Hub Retainer	107-0171-617	2
	Bracket - Left Weldment Receiver	116-0159-547	1

TABLE 3. Optional Wheel Kit (P/N 117-0133-031)

Picture	Item Description	Part Number	Qty.
	Bracket - Right Weldment Receiver	116-0159-579	1
	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" 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 4. UltraGlide Wiring Kit (P/N 117-0137-024)






Picture	Item Description	Part Number	Qty.
Not Pictured	Manual AN AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1
	Cable - Sensor	115-0171-527	2

TABLE 4. UltraGlide Wiring Kit (P/N 117-0137-024)


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



NOTICE

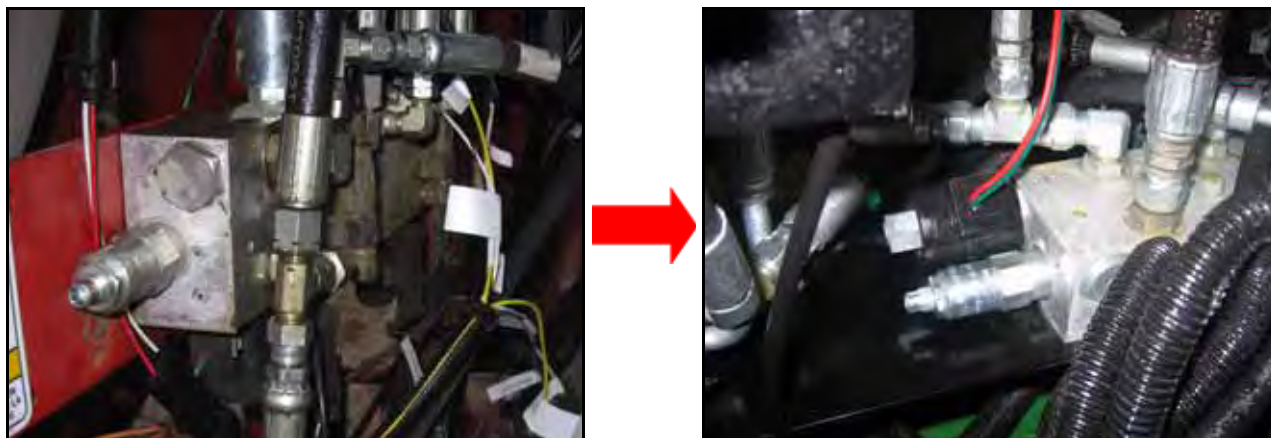
The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

Convert the Sprayer's Hydraulic Valve to Open Center (If Applicable)

By factory default, the machine's main hydraulic valve may be configured as a "closed center" hydraulic system. In order for AutoBoom to function properly and to prevent the hydraulic system from overheating, Raven recommends converting the machine's hydraulic system to an "open center" system.

Note: Contact your Gregson dealer to obtain the open center conversion kit.

FIGURE 1. Converted Hydraulic Valve - Closed Center to Open Center



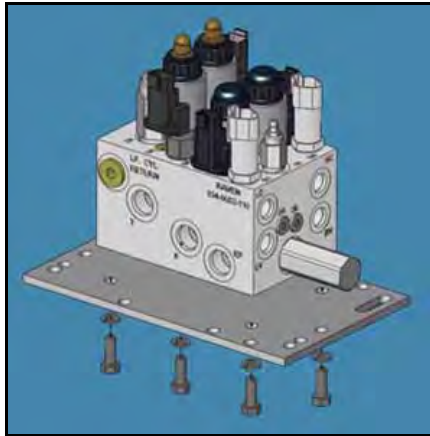
Install Fittings on the AutoBoom Valve

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

Fitting	Part Number	Qty.
Fitting - 7/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-044	LV, RV
Fitting - 9/16" JIC (M) to 9/16" SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	Left T, P, EF

Mount the AutoBoom Valve

FIGURE 2. AutoBoom Valve Mounted to Mounting Plate




1. Mount the AutoBoom valve (P/N 063-0131-126) to the valve mounting plate (P/N 107-0171-802) using four 5/16"-18 x 7/8" Hex bolts (P/N 311-0052-104) and four 5/16" zinc plated lock washers (P/N 313-1000-019).

FIGURE 3. AutoBoom Valve Mounted to the Machine



2. Mount the AutoBoom valve to the machine's center rack using two 2-1/16" W x 4" 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).

Install the Pressure and Tank Hoses



⚠ WARNING

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

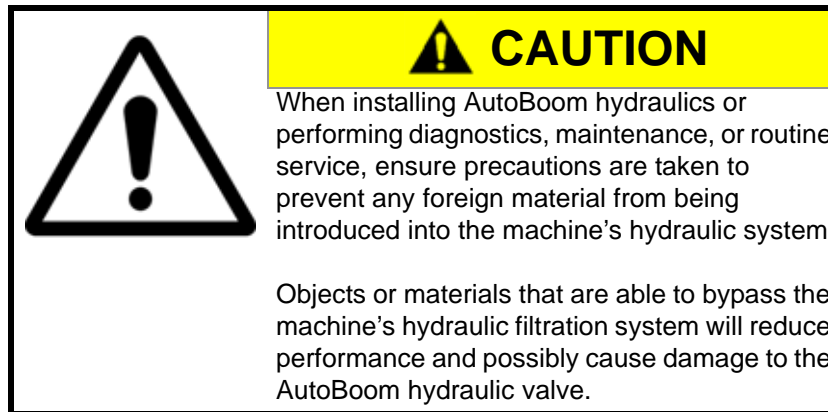
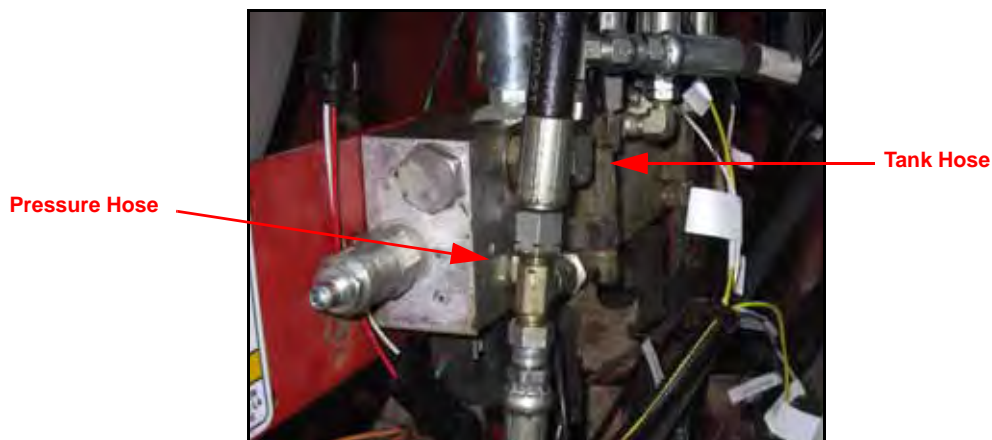


FIGURE 4. Pressure and Tank Hoses Installed



Note: The picture above shows a tee adapter fitting installed in the pressure port. The machine shown is a closed-center hydraulic system. The instructions in this manual assume that the machine has been converted to an open-center system, so this tee fitting is not included or installed.

1. Locate and disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the male end of the supplied hydraulic hose (P/N 214-1000-430) on the end of the machine's pressure hose.
3. Connect the other end of the installed hydraulic hose to the fitting installed in Port P of the AutoBoom valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-305) to port P of the machine's hydraulic valve.
5. Connect the other end of the installed hydraulic hose to the fitting installed in Port EF of the AutoBoom valve.
6. Locate and disconnect the machine's tank hose from the machine's hydraulic valve.
7. Install the 9/16" JIC M/M/F swivel run tee adapter fitting on the open tank port on the machine's hydraulic valve.
8. Connect the machine's tank hose to the opposite end of the installed fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-305) to the 90° end of the installed tee fitting.
10. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

FIGURE 5. Cylinder Hoses Installed



1. Disconnect the machine's left up cylinder hose from the rod-end of the left tilt cylinder.
2. Connect the machine's left up cylinder hose to the installed fitting in Port LV of the AutoBoom valve.
3. Remove the fitting from the rod-end of the left tilt cylinder.

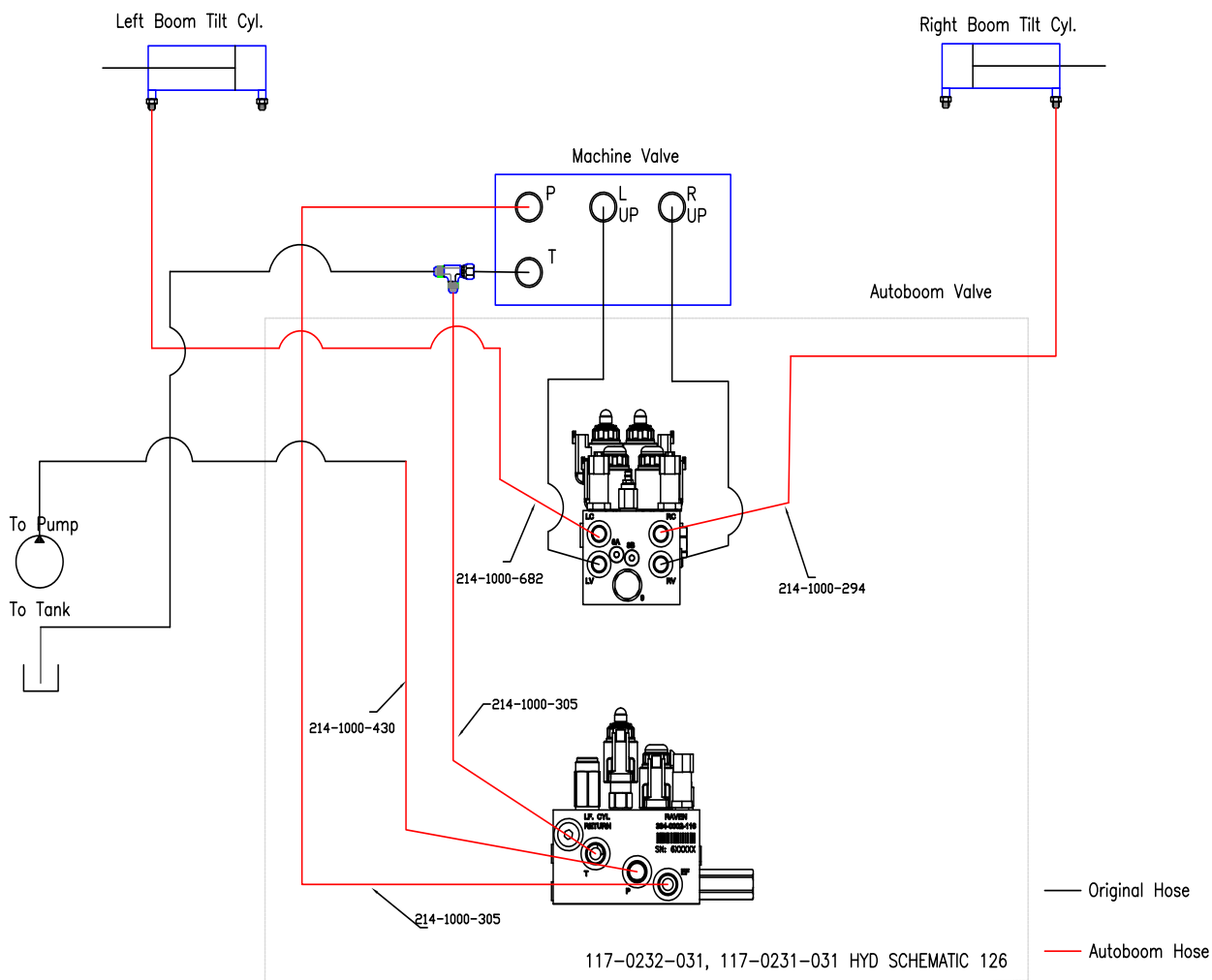
Note: Keep the fitting for future use.

4. Install a 9/16" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-046) in the open port of the machine's left tilt cylinder.
5. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-682) on the fitting installed in the rod-end of the left tilt cylinder.
6. Connect the other end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
7. Disconnect the machine's right up cylinder hose from the rod-end of the right tilt cylinder.
8. Connect the machine's right up cylinder hose to the installed fitting in Port RV of the AutoBoom valve.
9. Remove the fitting from the rod-end of the right tilt cylinder.

Note: Keep the fitting for future use.

10. Install a 9/16" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-046) in the open port of the machine's right tilt cylinder.
11. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-294) on the fitting installed in the rod-end of the right tilt cylinder.
12. Connect the other end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

UltraGlide Hydraulic Schematic



Install the UltraGlide Sensors

Boom Sensor Mounting Locations

Sensor mounting locations may be influenced by the boom configuration. Determine the appropriate location for mounting the sensors on the boom, ensuring the sensors will not interfere with or be damaged while folding or unfolding the booms.

Mounting the Boom Sensors

FIGURE 6. Mounted Boom Sensors

Outside Boom Sensor Mounting Location



Optional Inside Boom Sensor Mounting Location



1. Secure the left sensor (P/N 063-0130-014) to the front of the left boom 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.
3. Repeat the steps above to mount the remaining boom sensor(s).

Mount the Center Rack Sensor

FIGURE 7. Center Rack Sensor Mounting Location



1. Mount the center sensor 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.

Connect the Sensor Cables

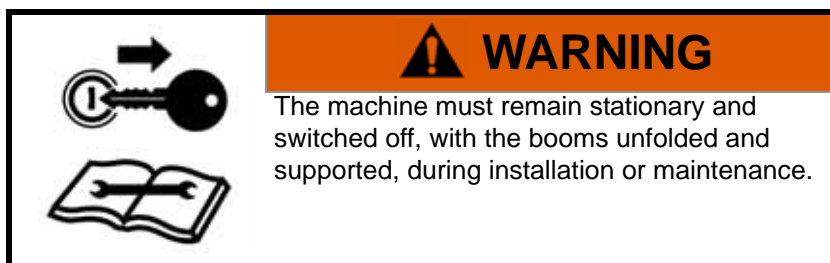
1. Connect the left sensor cable (P/N 115-0171-527) to the connector on the left outer sensor.
2. Route the left sensor cable toward the AutoBoom valve.
3. Loop and tie-off any excess cabling, allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor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

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

Install the Gauge Wheels - Optional

Gauge Wheel Mounting Locations

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



Mount the Gauge Wheels

Note: The appearance of the wheel axles may vary.

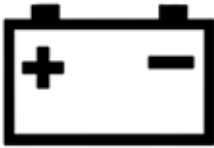

FIGURE 8. Gauge Wheel Installed



1. Remove the lug nuts from the right wheel axle (P/N 063-0131-585).
2. Place the wheel (P/N 322-0131-008) on the 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. Mount the receiver bracket (P/N 116-0159-579) 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 right 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
6. 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.
7. Secure the gauge wheel assembly into 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"-16 zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

Install the UltraGlide Wiring

Wiring Connections

	<div data-bbox="769 338 1068 394"> 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>
---	--

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. AutoBoom Node Installed



1. Mount the AutoBoom node (P/N 063-0130-013) to the hydraulic block mounting plate using three 3/8"-16 zinc hex bolts (P/N 311-0054-106) and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: Install the AutoBoom node so that the cable connections face to the side.

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

Connect the Harness Cable to the Boom Function Controls

1. Locate the Left Press and Right Press connectors on the harness cable (P/N 115-0230-045).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-126).
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 10. Boom Sense Adapter Cables Installed



11. Disconnect machine's harness cable connection from the left up/down coil on the machine's hydraulic valve.
12. Install a boom sense adapter cable (P/N 115-0171-546) on the coil.
13. Connect the machine's harness cable to the installed boom sense adapter cable.
14. Connect the Left Solenoid Sense Up connector from the AutoBoom harness cable (P/N 115-0230-045) to the installed boom sense adapter cable.
15. Disconnect the machine's harness cable connection from the right up/down coil on the machine's hydraulic valve.
16. Install a boom sense adapter cable (P/N 115-0171-546) on the coil.
17. Connect the machine's harness cable to the installed boom sense adapter cable.
18. Connect the Right Solenoid Sense Up connector from the AutoBoom harness cable (P/N 115-0230-045) to the installed boom sense adapter cable.
19. Disconnect the machine's harness cable connection from the open center coil on the machine's hydraulic valve.
20. Install a boom sense adapter cable (P/N 115-0171-546) on the open center coil.
21. Connect the machine's harness cable to the installed boom sense adapter cable.
22. Connect the Open Center Valve connection on the AutoBoom harness cable to the single weatherpack connection of the installed boom sense adapter cable.

Install the Center Rack Control

FIGURE 11. Directional Coil Boom Sense Adapter Cable Installed



1. Locate the directional coil on the machine's hydraulic valve.
2. Disconnect the directional coil connector from the coil.
3. Install a center rack control boom sense adapter cable (P/N 115-0230-039) on the machine's directional coil.
4. Connect the machine's directional coil connector to the installed center rack control boom sense adapter cable.
5. Connect the Center Solenoid Down Sense and Control connectors on the AutoBoom harness cable (P/N 115-0230-045) to the installed center rack control boom sense adapter cable.
6. Locate the machine's center rack coil.
7. Disconnect the center rack coil connector from the coil.
8. Install a center rack control boom sense adapter cable (P/N 115-0230-039) on the machine's center rack coil.
9. Connect the machine's center rack coil connector to the installed center rack control boom sense adapter cable.
10. Connect the Center Solenoid Up Sense and Control connectors on the AutoBoom harness cable (P/N 115-0230-045) to the installed center rack control boom sense adapter cable.

Connect the Harness Cable to the Sensors

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

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-045) toward the machine's cab.
2. Connect the harness cable to the controller cable (P/N 115-0230-007).

3. Tighten the connector cap to secure the connection.

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

Connect the Controller (If Applicable)

1. Route the controller cable (P/N 115-0230-007) into the right side of the machine's cab.
2. Locate the two controller connectors and connect them to the AutoBoom controller (P/N 063-0130-011).

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

Connect the Field Computer (If Applicable)

Refer to the Installation & Operation Manual and the appropriate wiring schematics beginning on page 42 for installation and wiring instructions for the specific field computer being used.

Connect the Power Leads

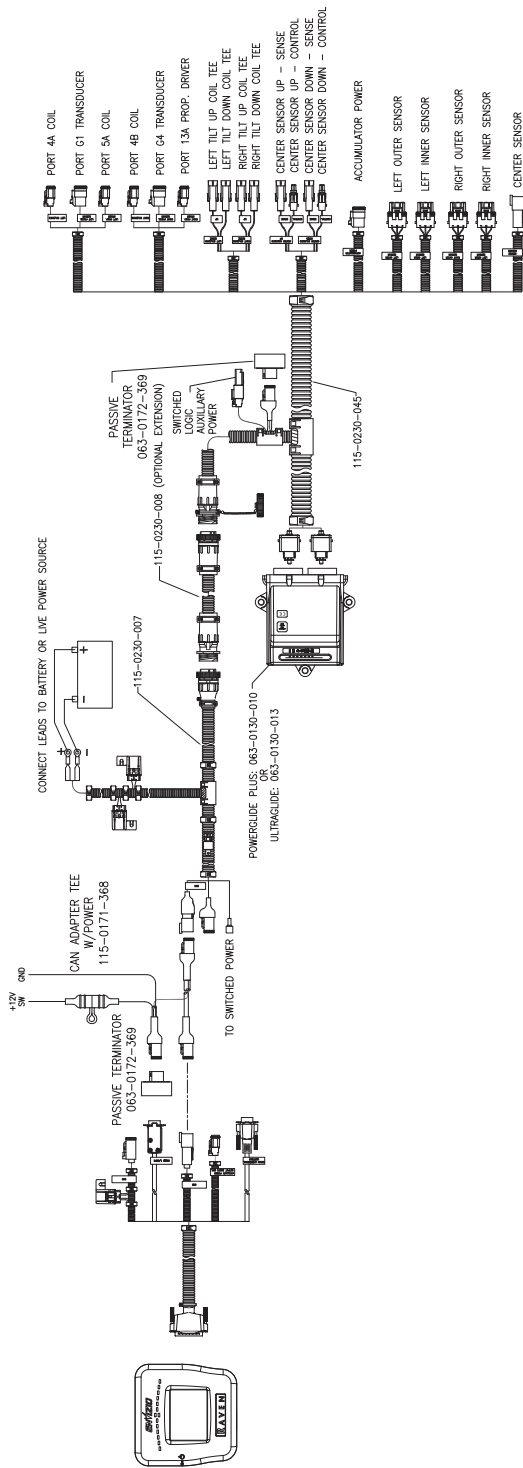
1. Locate the power cable that has the red and white power leads at one end.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the red power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the white power lead on the negative battery terminal and reinstall the machine's battery connector.



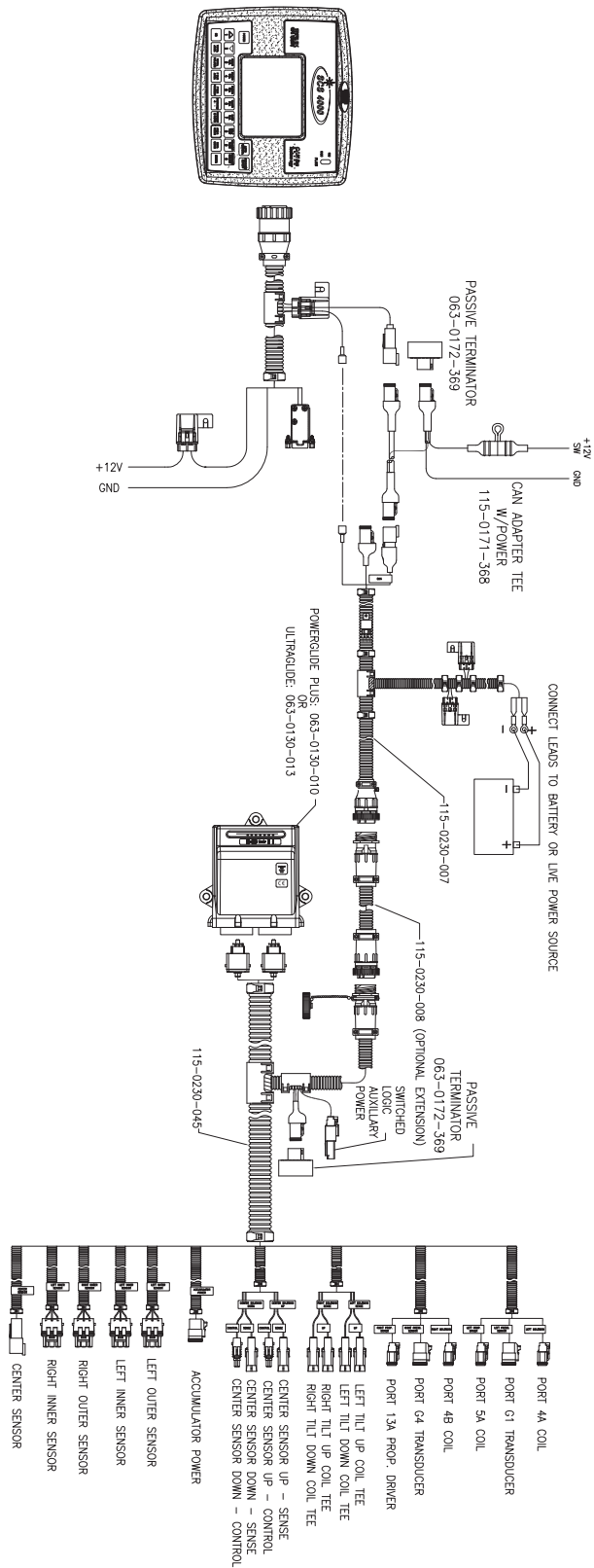
Diagram illustrating the connections for the 063-0130-011 cable assembly. The assembly includes a handheld device connected to a cable with multiple connectors. Key components and connections shown include:

- Handheld Device:** Connected to the cable via a connector labeled 063-0130-011.
- Power Source:** A battery or live power source connected to the cable via a connector labeled 115-0230-007. The connection is labeled "CONNECT LEADS TO BATTERY OR LIVE POWER SOURCE".
- Terminators:** Two "PASSIVE TERMINATOR" units (063-0172-369) are connected to the cable. One is labeled "CAN ADAPTER TEE w/POWER 115-0171-368".
- Logic Auxiliary Power:** A "LOGIC AUXILIARY POWER" connector (115-0230-008) is connected to the cable, with a note "(OPTIONAL EXTENSION)".
- Power Plug:** A "POWER PLUG: 063-0130-010 OR ULTRAGLIDE: 063-0130-013" is connected to the cable.
- Accumulator Power:** A connector labeled 115-0230-045 is connected to the cable, labeled "ACCUMULATOR POWER".
- Sensors:** The cable terminates in several sensors:
 - PORT 4A COIL
 - PORT G1 TRANSDUCER
 - PORT 5A COIL
 - PORT 4B COIL
 - PORT G4 TRANSDUCER
 - PORT 13A PROP. DRIVER
 - LEFT TILT UP COIL TEE
 - LEFT TILT DOWN COIL TEE
 - RIGHT TILT UP COIL TEE
 - RIGHT TILT DOWN COIL TEE
 - CENTER SENSOR UP - SENSE
 - CENTER SENSOR UP - CONTROL
 - CENTER SENSOR DOWN - SENSE
 - CENTER SENSOR DOWN - CONTROL
 - ACCUMULATOR POWER
 - LEFT OUTER SENSOR
 - LEFT INNER SENSOR
 - RIGHT OUTER SENSOR
 - RIGHT INNER SENSOR
 - CENTER SENSOR

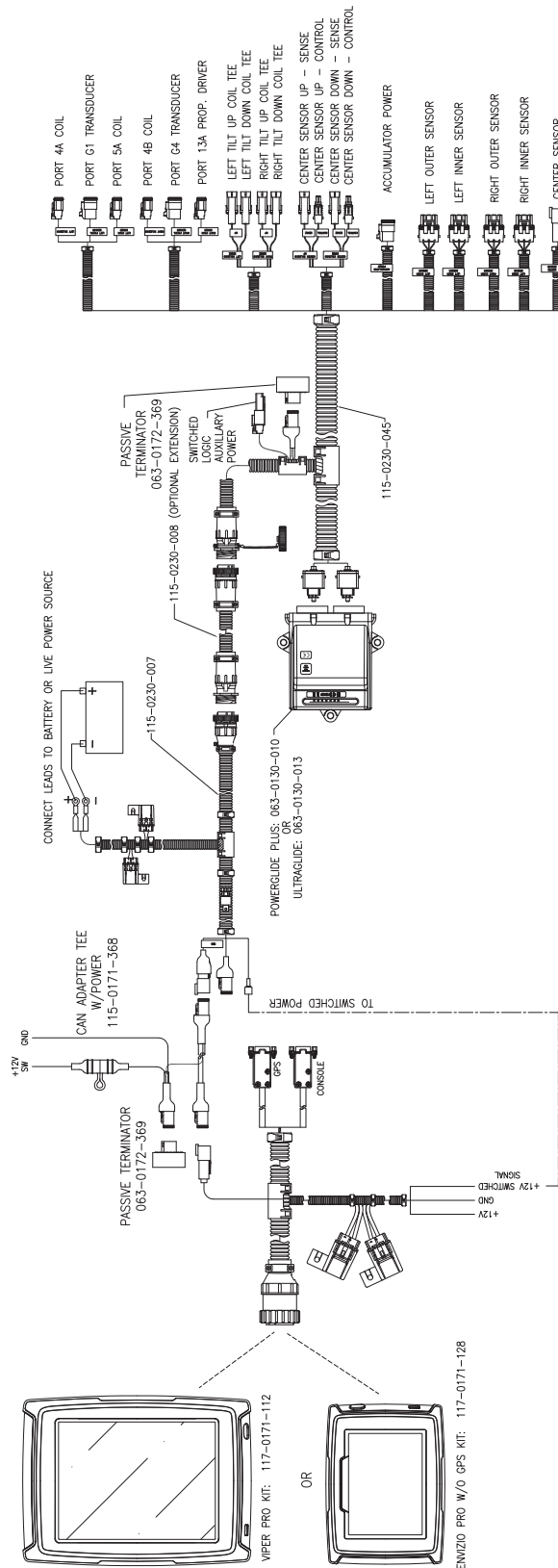
Envizio Plus



SCS 4000/5000



Viper Pro & Envizio Pro



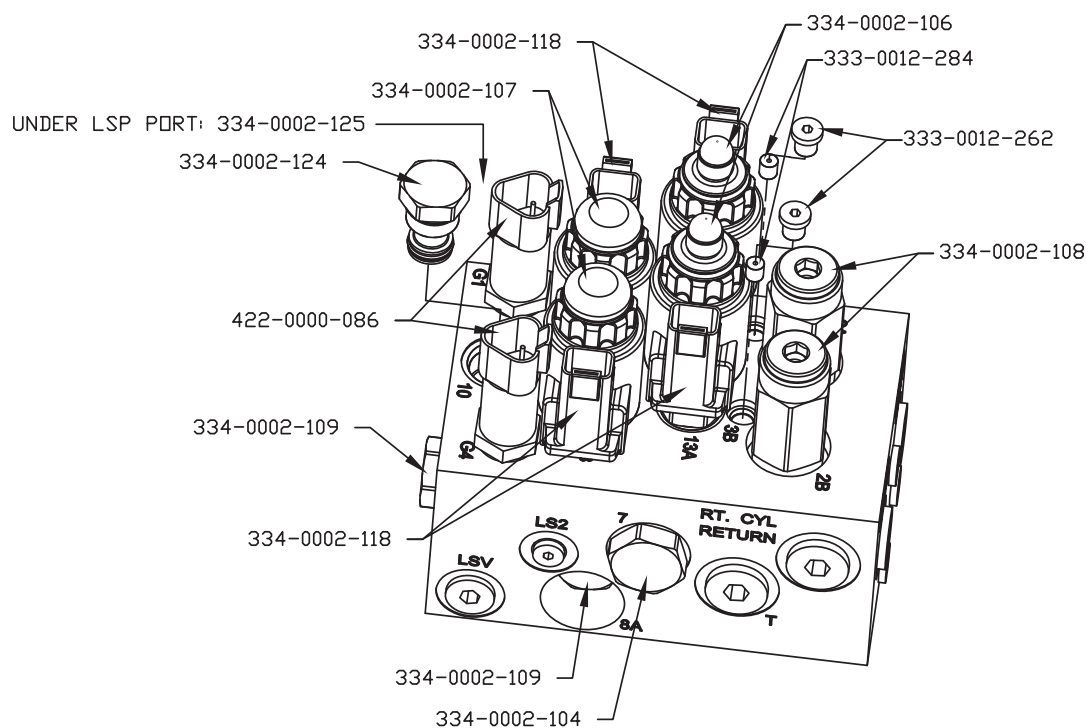
CHAPTER

5

Replacement Parts

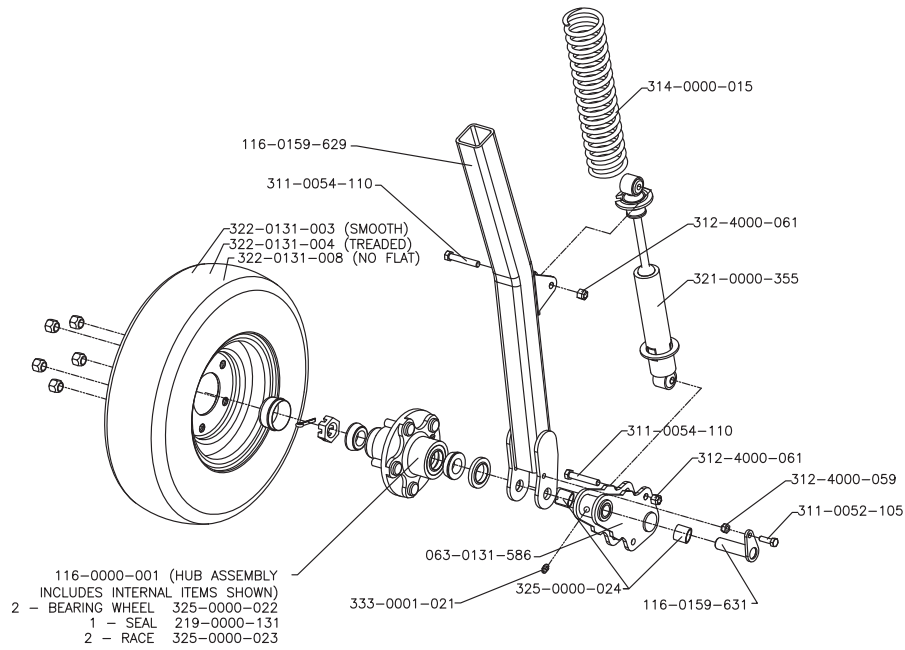
This section contains replacement part diagrams and listings for PowerGlide, PowerGlide Plus, and UltraGlide systems. Please refer to these diagrams when calling to request replacement parts.

Valve Blocks

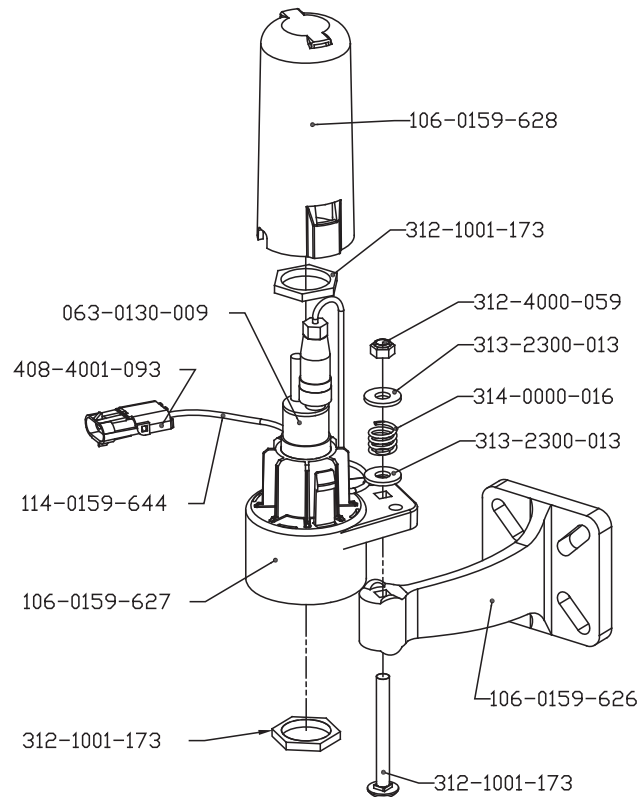


063-0131-125
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, DYNAMIC LS, AUTOBOOM

Wheels



Sensor



K

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UltraGlide 25

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PowerGlide Plus 5

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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 Division product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Applied Technology Division 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.

R A V E N

Gregson 2008 & Older
(Fasse Valve and Live Hydraulics)
AutoBoom™ Installation Manual
(P/N 016-0230-031 Rev B 05/10 E16096)

Simply improving your position.SM



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Applied Technology Division
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