

**GVM 2008 Predator and Prowler  
AutoBoom™ Installation Manual**

*P/N 016-0230-083 Rev B*

*09/15*

*E18370*

## ***Disclaimer***

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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: GVM**  
**MODEL: 2008 Predator and Prowler**  
**YEAR:**  
**SERIAL NUMBER:**

FIGURE 1. GVM Predator



**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 117-0231-083)**

<b>Picture</b>	<b>Item Description</b>	<b>Part Number</b>	<b>Qty.</b>
Not Pictured	Manual - 2008 GVM Predator/Prowler AutoBoom Installation	016-0230-083	1
Not Pictured	Manual - CAN AutoBoom Calibration & Operation	016-0130-062	1
	Valve - PowerGlide Plus AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-619	1
	Node - PowerGlide Plus AutoBoom CAN	063-0130-010	1
	Cable - GVM Predator/Prowler PowerGlide Plus/UltraGlide CAN AutoBoom	115-0230-061	1

**TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-083)**

Picture	Item Description	Part Number	Qty.
	U-Bolt - 4" W x 5" L x 3/8" Thread	107-0171-606	2
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	4
	Washer - 5/16" Zinc Plated	313-1000-019	4

**TABLE 2. Hydraulic Kit (P/N 117-0134-079)**

Picture	Item Description	Part Number	Qty.
	Fitting - 7/16" JIC M/F 90° Swivel Elbow	333-0012-154	4
	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 Straight Adapter	333-0012-044	4
	Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	3
	Hydraulic Hose - 7/16" JIC (M) to 7/16" JIC (F) - 12"	214-1000-578	1
	Hydraulic Hose - 7/16" JIC (F) to 7/16" JIC (F) - 40"	214-1000-579	2

TABLE 2. Hydraulic Kit (P/N 117-0134-079)



Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (F) - 58"	214-1000-582	1
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (F) 90° - 58"	214-1000-583	1

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-064)










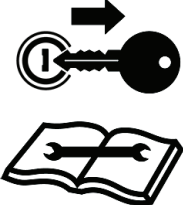

Picture	Item Description	Part Number	Qty.
	Axle Assembly - Right Cushioned AutoBoom	063-0131-585	1
	Axle Assembly - Left Cushioned AutoBoom	063-0131-590	1
	Bracket - Weldment Receiver	116-0159-607	2
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/2" ID x 3.12" L x 3/8"-16 Zinc Plated Clamp	435-3003-043	8
	Bolt - 1/2"-13 x 1-1/2" SS Hex	311-0058-186	4

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-064)


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.



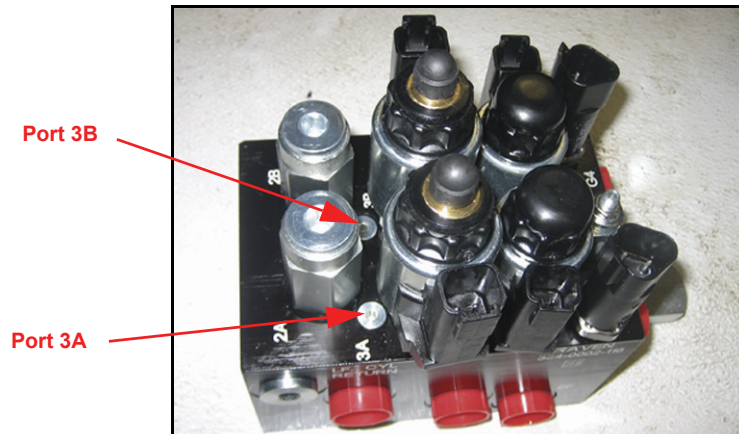
**NOTICE**

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**



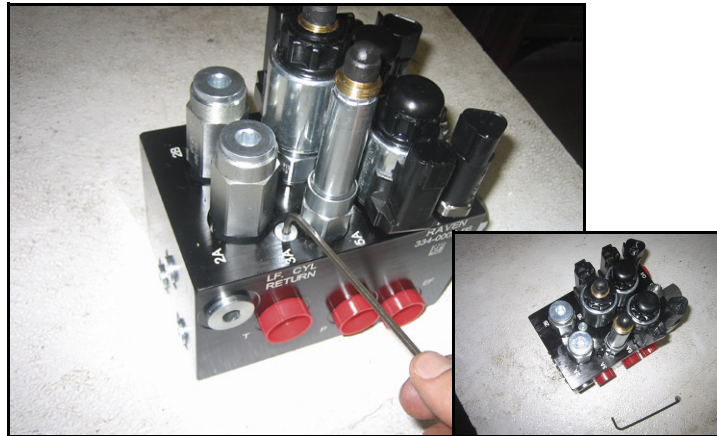
1. Locate Ports 3A and 3B on the AutoBoom valve (P/N 063-0131-124).

**FIGURE 2. Coil Removed from the AutoBoom Valve**



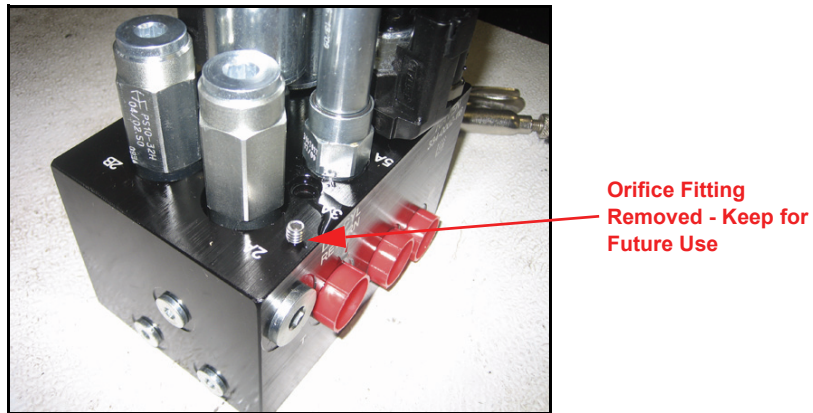
2. Remove the coils from the solenoids near Ports 3A and 3B to gain easy access to those ports.

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.

	<div style="background-color: #e67e22; color: white; padding: 5px; text-align: center;"><b>⚠ WARNING</b></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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Refer to the following table to install the fittings in the appropriate ports of the AutoBoom valve.

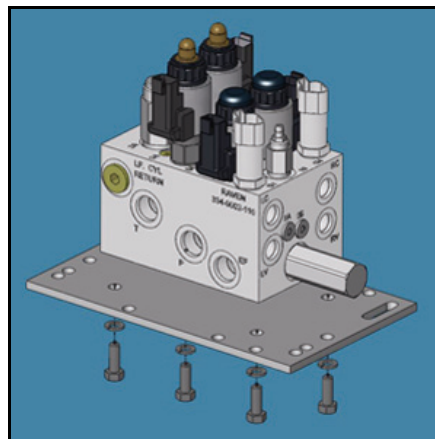
FIGURE 7. Fittings Installed on the AutoBoom Valve.



Fitting	Part Number	Port
Fitting - 7/16" JIC (M) to 9/16" (M) SAE O-Ring Straight Adapter	333-0012-044	LC, RC LV, RV
Fitting - 7/16" JIC M/F 90° Swivel Elbow	333-0012-154	LC, RC LV, RV
Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	P, T, EF

## Mount the AutoBoom Valve

FIGURE 8. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-126) to the mounting plate (P/N 107-0171-619) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" zinc lock washers (P/N 313-1000-019).




FIGURE 9. AutoBoom Valve Mounted on the Machine



2. Secure the mounting plate to the machine's center rack using two 4" W x 5" L x 3/8" thread U-bolts (P/N 107-0171-606) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

## Install the Pressure and Tank (Return) Hoses

	<p><b>! WARNING</b></p> <p>Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's system may be extremely hot and under high pressure.</p>
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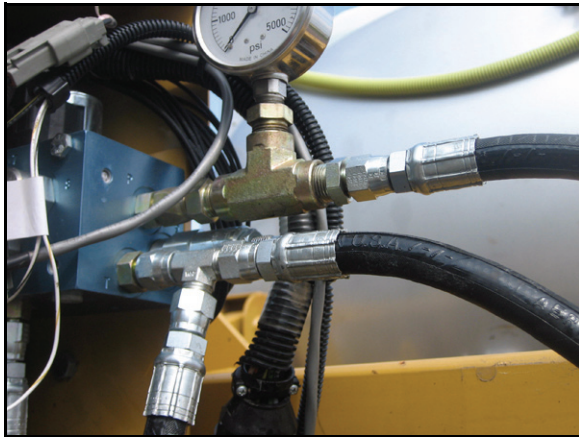
	<p><b>! CAUTION</b></p> <p>When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.</p> <p>Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly cause damage to the AutoBoom hydraulic valve.</p>
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FIGURE 10. Pressure and Tank (Return) Hoses Installed



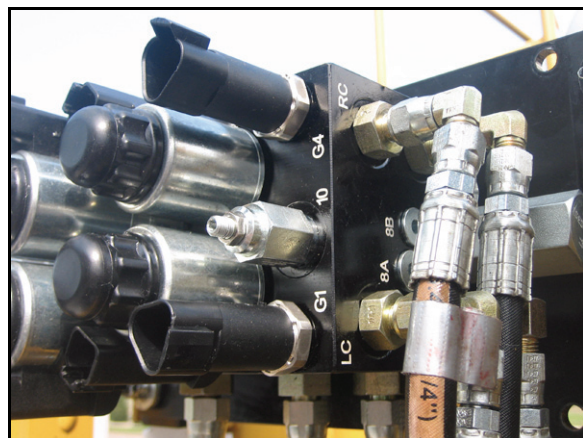
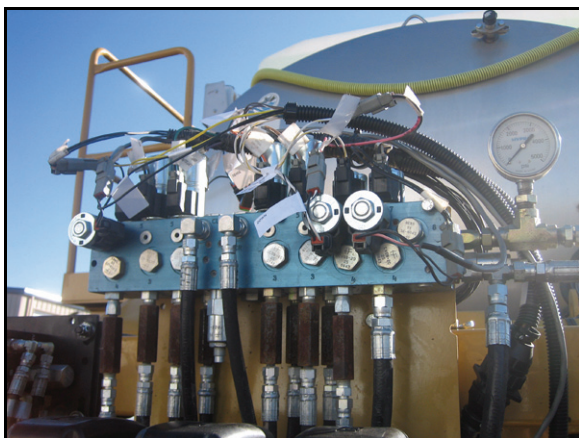
1. Disconnect the machine's pressure hose from port P on the machine's hydraulic valve.

**Note:** There may or may not be a tee fitting and pressure gauge installed in the machine's pressure port.

2. Connect the machine's pressure hose to the installed fitting in Port P of the AutoBoom valve.
3. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-583) on the pressure port of the machine's hydraulic valve.
4. Connect the straight end of the supplied hydraulic hose to Port EF of the AutoBoom valve.
5. Disconnect the machine's return hose from Port T on the machine's hydraulic valve.
6. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open return port on the machine's hydraulic valve.
7. Connect the machine's return hose to the straight end of the installed tee fitting.
8. Install one end of the supplied hydraulic hose (P/N 214-1000-582) on the 90° end of the installed tee fitting.
9. Connect the other end of the installed hydraulic hose to the installed fitting in Left Port T of the AutoBoom valve.

## Install the Left and Right Cylinder Hoses

FIGURE 11. Cylinder Hoses Installed

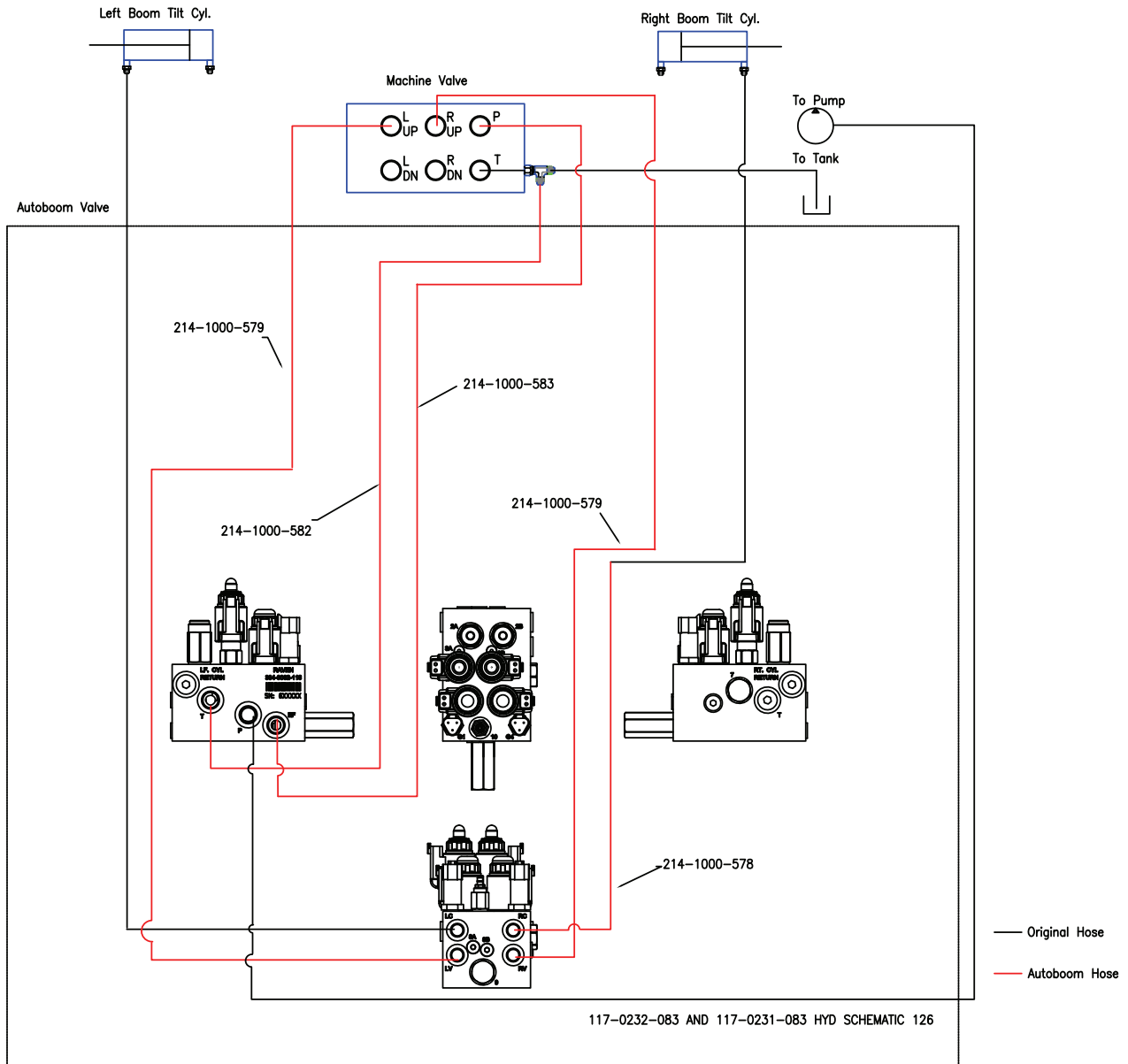


1. Trace the machine's cylinder hose from the rod-end of the left tilt cylinder to the machine's hydraulic valve.

2. Disconnect the machine's left cylinder hose from the hydraulic valve.
3. Route the machine's left cylinder hose to the AutoBoom valve and connect it to the installed fittings in Port LC.
4. Install one end of the supplied hydraulic hose (P/N 214-1000-579) on the open left cylinder port of the machine's hydraulic valve.
5. Connect the other end of the installed hydraulic hose to the installed fittings in Port LV on the AutoBoom valve.
6. Trace the machine's cylinder hose from the rod-end of the right tilt cylinder to the machine's hydraulic valve.
7. Disconnect the machine's right cylinder hose from the hydraulic valve.
8. Install the male end of the supplied hydraulic hose (P/N 214-1000-578) on the machine's right cylinder hose.
9. Route the machine's right cylinder hose and the installed extension hose to the AutoBoom valve and connect it to the installed fittings in Port RC.
10. Install one end of the supplied hydraulic hose (P/N 214-1000-579) on the open right cylinder port of the machine's hydraulic valve.
11. Connect the other end of the installed hydraulic hose to the installed fittings in Port RV of the AutoBoom valve.



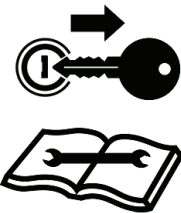

# PowerGlide Plus Hydraulic Schematic



## 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 the boom fold, but inside of the boom breakaway.

	<div style="background-color: #e67e22; color: white; padding: 5px; text-align: center;">  <b>WARNING</b> </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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### 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 left wheel axle (P/N 063-0131-590).
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 116-0159-607) to the front of the left boom using four 2-1/2" ID x 3.12" L x 3/8"-16 thread clamp U-bolts (P/N 435-3003-043) and eight 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 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).
8. Repeat the steps above to install the right wheel.

## Install the PowerGlide Plus Wiring

### Wiring Connections

	<p style="text-align: center;"><b>⚠ CAUTION</b></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. AutoBoom Node Installed



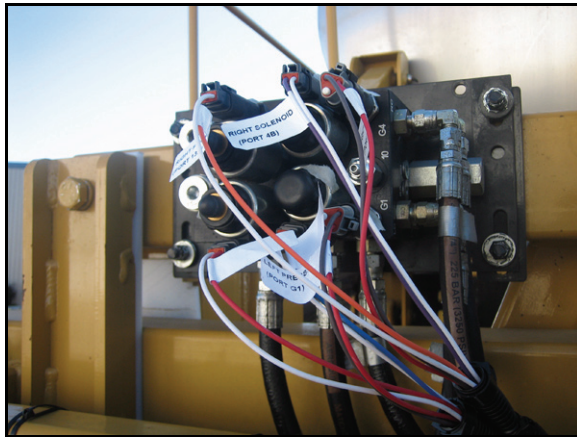
1. Mount the AutoBoom node (P/N 016-0130-010) inside the node mounting enclosure.

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

2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-061) into the correct ports of the AutoBoom node.
3. Tighten the bolts on the node connectors to secure the connections.

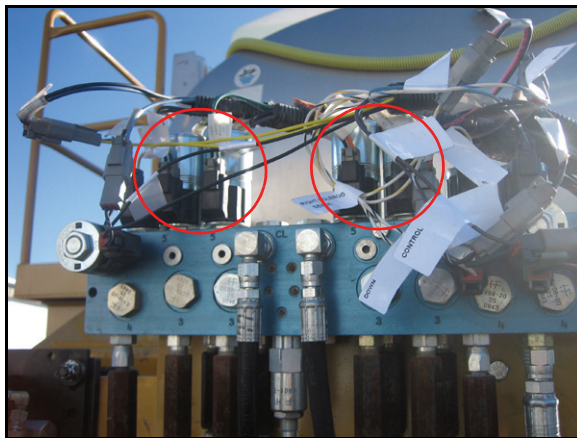
## Connect the Harness Cable to the Boom Function Controls

FIGURE 14. AutoBoom Valve Harness Connections



1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-061).
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 15. Machine's Boom Function Coils



11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Disconnect the cable connection from the machine's left up coil.
13. Locate the Left Solenoid Sense Up connection on the AutoBoom harness cable and connect it to the left up coil.

14. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the left up coil.
15. Disconnect the cable connection from the machine's left down coil.
16. Locate the Left Solenoid Sense Down connection on the AutoBoom harness cable and connect it to the left down coil.
17. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the left down coil.
18. Disconnect the cable connection from the machine's right up coil.
19. Locate the Right Solenoid Sense Up connection on the AutoBoom harness cable and connect it to the right up coil.
20. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the right up coil.
21. Disconnect the cable connection from the machine's right down coil.
22. Locate the Right Solenoid Sense Down connection on the AutoBoom harness cable and connect it to the right down coil.
23. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the right down coil.

## Connect the Field Computer

Refer to the Installation & Operation Manual for installation and wiring instructions for the specific field computer being used.

## Connect the Power

FIGURE 16. Power Connections

---



1. Locate the CAN connector on the machine's harness cable.

**Note:** This connection may have a terminator installed. If so, remove the terminator.

2. Connect the CAN connector to the CAN connector on the AutoBoom harness cable.
3. Install the terminator that was removed on the open connection of the AutoBoom harness cable.
4. Locate the Power connector on the machine's harness cable.
5. Connect the Power connector to the 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 117-0232-083)**

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - 2008 GVM Predator/Prowler AutoBoom Installation	016-0230-083	1
Not Pictured	Manual - CAN AutoBoom Calibration & Operation	016-0130-062	1
	Valve - UltraGlide AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-619	1
	Node - UltraGlide AutoBoom CAN	063-0130-013	1
	Sensor - Right Ultrasonic	063-0130-012	1



**TABLE 1. UltraGlide Installation Kit (P/N 117-0232-083)**

Picture	Item Description	Part Number	Qty.
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Center Ultrasonic	063-0130-018	1
	Bracket - Ultrasonic Sensor	107-0171-798	2
	Cable - 70' Ultrasonic Sensor Extension	115-0171-527	2
	Cable - GVM Predator/Prowler PowerGlide Plus/UltraGlide CAN AutoBoom	115-0230-061	1
	U-Bolt - 4" W x 5" L x 3/8" Thread	107-0171-606	2
	U-Bolt - 2.2" W x 3" L x 3/8" Thread	435-3003-046	6
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 UNC x 1-1/4" Hex	311-0054-106	8
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	12
	Washer - 5/16" Zinc Plated	313-1000-019	4








TABLE 2. Hydraulic Kit (P/N 117-0134-079)

Picture	Item Description	Part Number	Qty.
	Fitting - 7/16" JIC M/F 90° Swivel Elbow	333-0012-154	4
	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 Straight Adapter	333-0012-044	4
	Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	3
	Hydraulic Hose - 7/16" JIC (M) to 7/16" JIC (F) - 12"	214-1000-578	1
	Hydraulic Hose - 7/16" JIC (F) to 7/16" JIC (F) - 40"	214-1000-579	2
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (F) - 58"	214-1000-582	1
	Hydraulic Hose - 9/16" JIC (F) to 9/16" JIC (F) 90° - 58"	214-1000-583	1

TABLE 3. Optional Wheel Kit (P/N 117-0133-064)

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

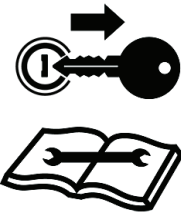
**TABLE 3. Optional Wheel Kit (P/N 117-0133-064)**

Picture	Item Description	Part Number	Qty.
	Bracket - Weldment Receiver	116-0159-607	2
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 2-1/2" ID x 3.12" L x 3/8"-16 Zinc Plated Clamp	435-3003-043	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

## Install the UltraGlide Hydraulic System

### 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.

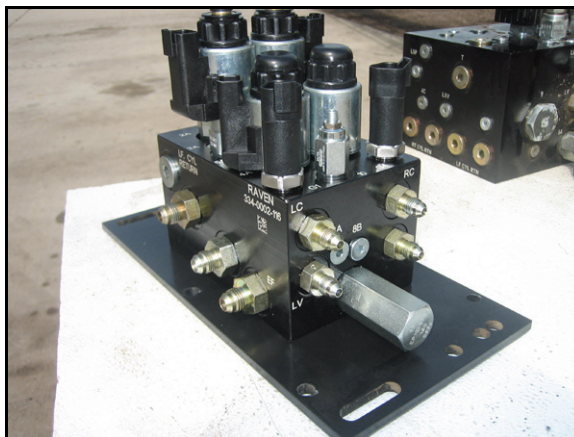


**! WARNING**

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

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

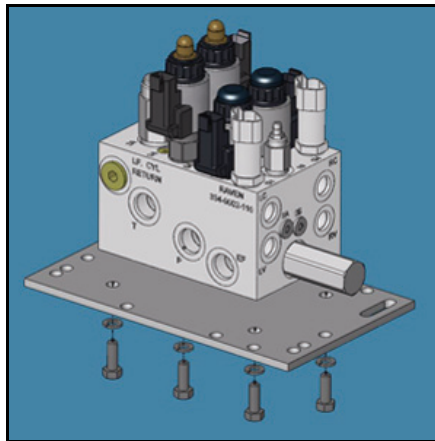
**FIGURE 1. Fittings Installed on the AutoBoom Valve.**



Fitting	Part Number	Port
Fitting - 7/16" JIC (M) to 9/16" (M) SAE O-Ring Straight Adapter	333-0012-044	LC, RC LV, RV
Fitting - 7/16" JIC M/F 90° Swivel Elbow	333-0012-154	LC, RC LV, RV
Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	P, T, EF

## Mount the AutoBoom Valve

FIGURE 2. AutoBoom Valve Mounted on the Valve Mounting Plate



1. Secure the AutoBoom valve (P/N 063-0131-126) to the mounting plate (P/N 107-0171-619) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" zinc lock washers (P/N 313-1000-019).


FIGURE 3. AutoBoom Valve Mounted on the Machine




2. Secure the mounting plate to the machine's center rack using two 4" W x 5" L x 3/8" thread U-bolts (P/N 107-0171-606) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

## Install the Pressure and Tank (Return) Hoses

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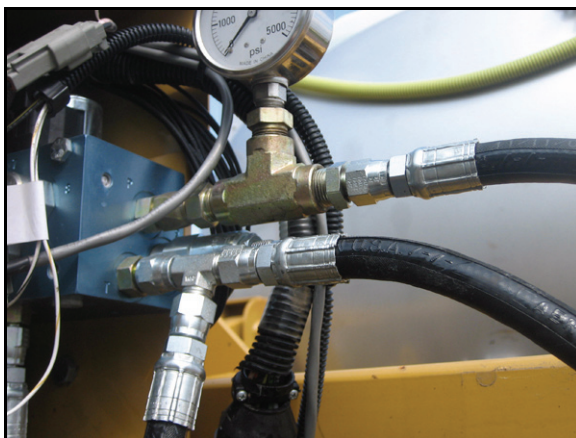



**CAUTION**

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.

**FIGURE 4. Pressure and Tank (Return) Hoses Installed**



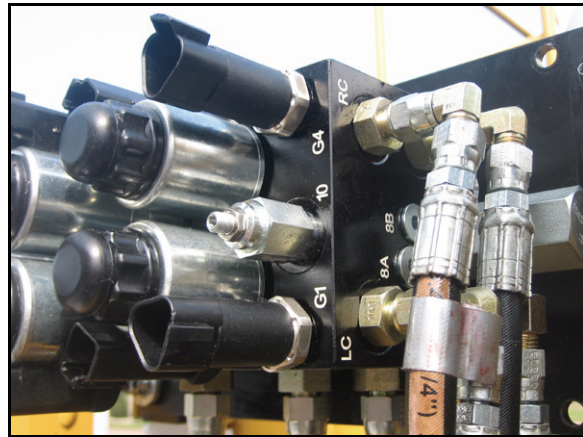
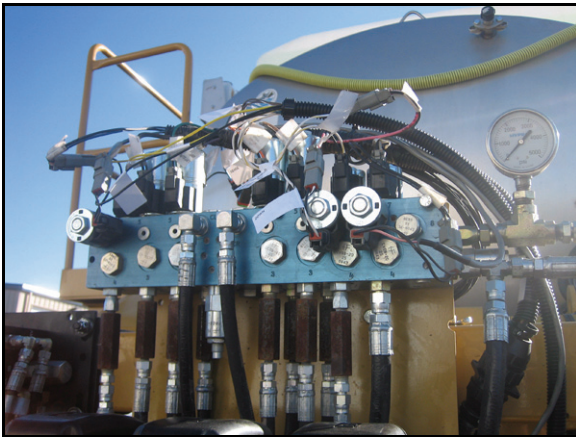
1. Disconnect the machine's pressure hose from port P on the machine's hydraulic valve.

**Note:** *There may or may not be a tee fitting and pressure gauge installed in the machine's pressure port.*

2. Connect the machine's pressure hose to the installed fitting in Port P of the AutoBoom valve.
3. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-583) on the pressure port of the machine's hydraulic valve.
4. Connect the straight end of the supplied hydraulic hose to Port EF of the AutoBoom valve.
5. Disconnect the machine's return hose from Port T on the machine's hydraulic valve.
6. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open return port on the machine's hydraulic valve.
7. Connect the machine's return hose to the straight end of the installed tee fitting.
8. Install one end of the supplied hydraulic hose (P/N 214-1000-582) on the 90° end of the installed tee fitting.
9. Connect the other end of the installed hydraulic hose to the installed fitting in Left Port T of the AutoBoom valve.

## Install the Left and Right Cylinder Hoses

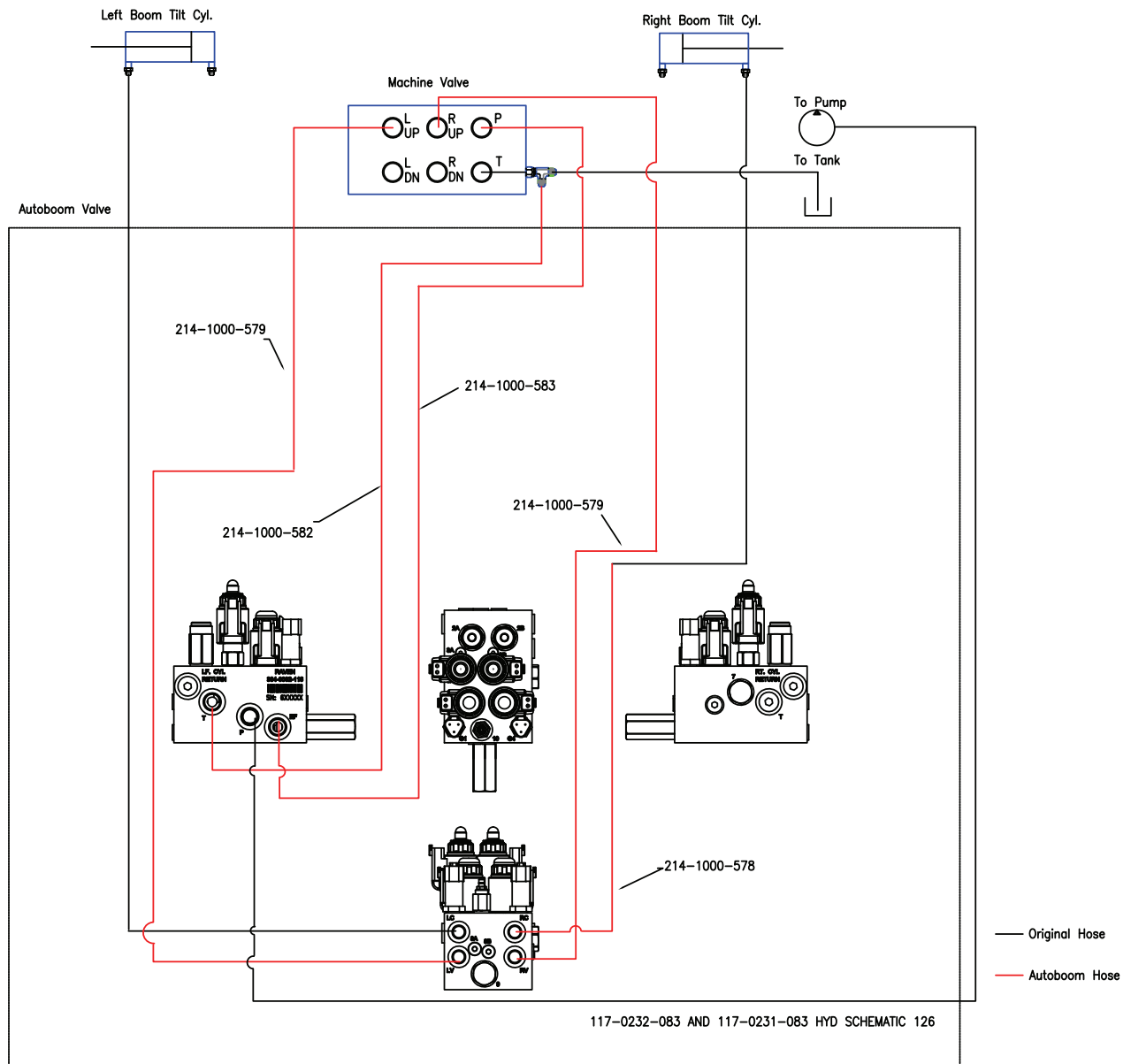
FIGURE 5. Cylinder Hoses Installed



1. Trace the machine's cylinder hose from the rod-end of the left tilt cylinder to the machine's hydraulic valve.
2. Disconnect the machine's left cylinder hose from the hydraulic valve.
3. Route the machine's left cylinder hose to the AutoBoom valve and connect it to the installed fittings in Port LC.
4. Install one end of the supplied hydraulic hose (P/N 214-1000-579) on the open left cylinder port of the machine's hydraulic valve.
5. Connect the other end of the installed hydraulic hose to the installed fittings in Port LV on the AutoBoom valve.
6. Trace the machine's cylinder hose from the rod-end of the right tilt cylinder to the machine's hydraulic valve.
7. Disconnect the machine's right cylinder hose from the hydraulic valve.
8. Install the male end of the supplied hydraulic hose (P/N 214-1000-578) on the machine's right cylinder hose.
9. Route the machine's right cylinder hose and the installed extension hose to the AutoBoom valve and connect it to the installed fittings in Port RC.
10. Install one end of the supplied hydraulic hose (P/N 214-1000-579) on the open right cylinder port of the machine's hydraulic valve.
11. Connect the other end of the installed hydraulic hose to the installed fittings in Port RV of the AutoBoom valve.



# UltraGlide Hydraulic Schematic



## ***Install the UltraGlide Sensors***

### **Boom Sensor Mounting Locations**

Sensor mounting location 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.

**Note:** *Some machines may have factory-installed sensor mounting plates on the booms. If so, do not install the sensors using the Raven-supplied mounting brackets. Instead, attach the sensors to the machine's existing mounting brackets using the supplied hardware.*

### **Mount the Boom Sensors**

FIGURE 6. Mounted Boom Sensor

---



1. Secure the right sensor (P/N 063-0130-012) to the sensor mounting bracket (P/N 107-0171-798) to the using four 3/8"-16 UNC x 1-1/4" hex bolts (P/N 311-0054-106) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Mount the sensor mounting bracket to the right boom using two 2.2" W x 3" L x 3/8" thread clamp U-bolts (P/N 435-3003-046) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
3. Tighten the nuts to ensure the sensor is mounted securely.
4. Repeat the steps above to mount the remaining boom sensor(s).

## Mount the Center Rack Sensor

FIGURE 7. Mounted Center Rack Sensor



1. Mount the center sensor mounting bracket to the machine's center rack using two 2.2" W x 3" L x 3/8" thread clamp U-bolts (P/N 435-3003-046) 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

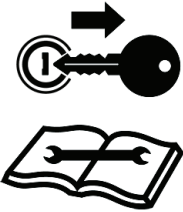
1. Connect the left sensor cable (P/N 115-0171-527) to the connector on the outer left sensor.
2. Route the left sensor cable toward the AutoBoom valve.
3. Loop and tie-off any excess cabling, allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor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

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

## Install the Gauge Wheels - Optional

### Gauge Wheel Mounting Locations

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

	<p><b>WARNING</b></p> <p>The machine must remain stationary and switched off, with the booms unfolded and supported, while installation or maintenance is conducted.</p>
---	--

### 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 left wheel axle (P/N 063-0131-590).
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 116-0159-607) to the front of the left boom using four 2-1/2" ID x 3.12" L x 3/8"-16 thread clamp U-bolts (P/N 435-3003-043) and eight 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 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).
8. Repeat the steps above to install the right wheel.

## Install the UltraGlide Wiring

### Wiring Connections

	<p style="text-align: center;"><b>⚠ CAUTION</b></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>
---	---

**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



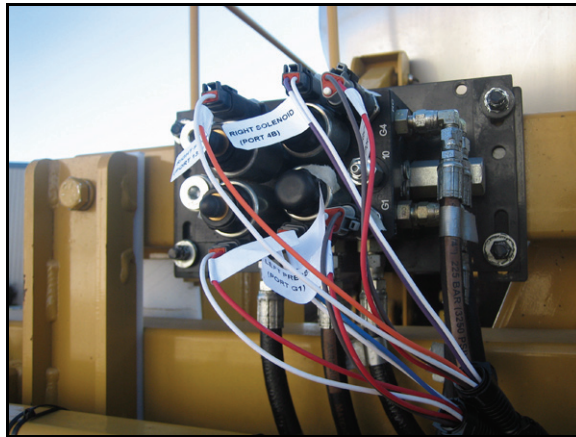
1. Mount the AutoBoom node (P/N 016-0130-013) inside the node mounting enclosure.

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

2. Insert the large, rectangular node connectors on the AutoBoom harness cable (P/N 115-0230-061) into the correct ports of the AutoBoom node.
3. Tighten the bolts on the node connectors to secure the connections.

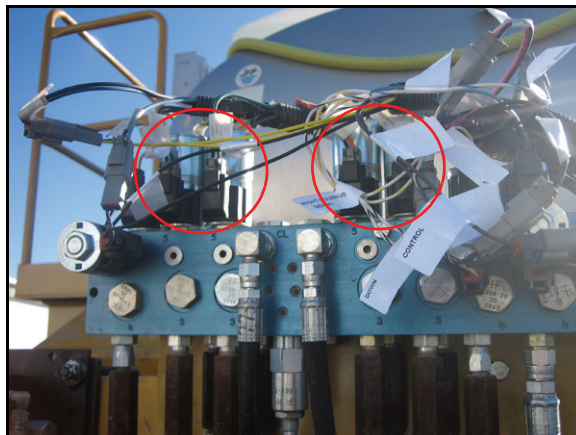
## Connect the Harness Cable to the Boom Function Controls

FIGURE 10. AutoBoom Valve Harness Connections



1. Locate the Left Press and Right Press connectors on the AutoBoom harness cable (P/N 115-0230-061).
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 11. Machine's Boom Function Coils

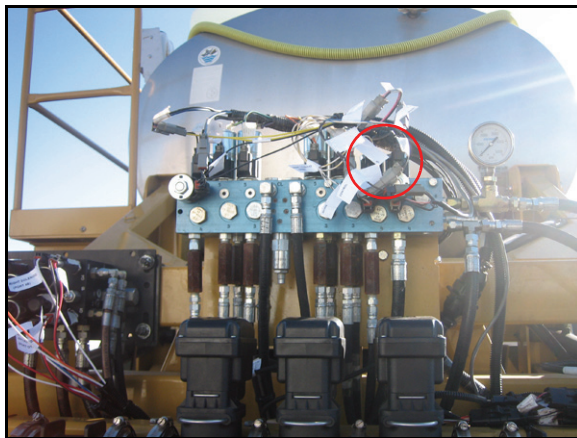


11. Locate the machine's boom function coils on the machine's hydraulic valve.
12. Disconnect the cable connection from the machine's left up coil.
13. Locate the Left Solenoid Sense Up connection on the AutoBoom harness cable and connect it to the left up coil.

14. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the left up coil.
15. Disconnect the cable connection from the machine's left down coil.
16. Locate the Left Solenoid Sense Down connection on the AutoBoom harness cable and connect it to the left down coil.
17. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the left down coil.
18. Disconnect the cable connection from the machine's right up coil.
19. Locate the Right Solenoid Sense Up connection on the AutoBoom harness cable and connect it to the right up coil.
20. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the right up coil.
21. Disconnect the cable connection from the machine's right down coil.
22. Locate the Right Solenoid Sense Down connection on the AutoBoom harness cable and connect it to the right down coil.
23. Connect the unlabeled cable connection on the AutoBoom harness cable to the cable removed from the right down coil.

## Install the Center Rack Control

FIGURE 12. Center Rack Coil Connections



1. Locate the center up and center down coils on the machine's hydraulic valve.
2. Disconnect the cable connection from the center up coil.
3. Connect the machine's center up coil connector to the Center Solenoid Up Sense connector on the AutoBoom harness cable.
4. Plug the Center Solenoid Up Control connector into the center up coil.
5. Disconnect the cable connection from the center down coil.
6. Connect the machine's center down coil connector to the Center Solenoid Down Sense connector on the AutoBoom harness cable.
7. Plug the Center Solenoid Down Control connector into the center down coil.

## Connect the Harness Cable to the Sensors

1. Locate the Center Sensor connector on the AutoBoom harness cable.
2. Connect the Center Sensor connector on 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 on 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 on the installed right sensor cable.
7. If optional inside boom sensors are installed, repeat the steps above to connect the sensors.

## Connect the Field Computer (If Applicable)

Refer to the Installation & Operation Manual for installation and wiring instructions for the specific field computer being used.

## Connect the Power

FIGURE 13. Power Connections



1. Locate the CAN connector on the machine's harness cable.

**Note:** This connection may have a terminator installed. If so, remove the terminator.

2. Connect the CAN connector to the CAN connector on the AutoBoom harness cable.
3. Install the terminator that was removed on the open connection of the AutoBoom harness cable.
4. Locate the Power connector on the machine's harness cable.
5. Connect the Power connector to the Power connector on the AutoBoom harness cable.



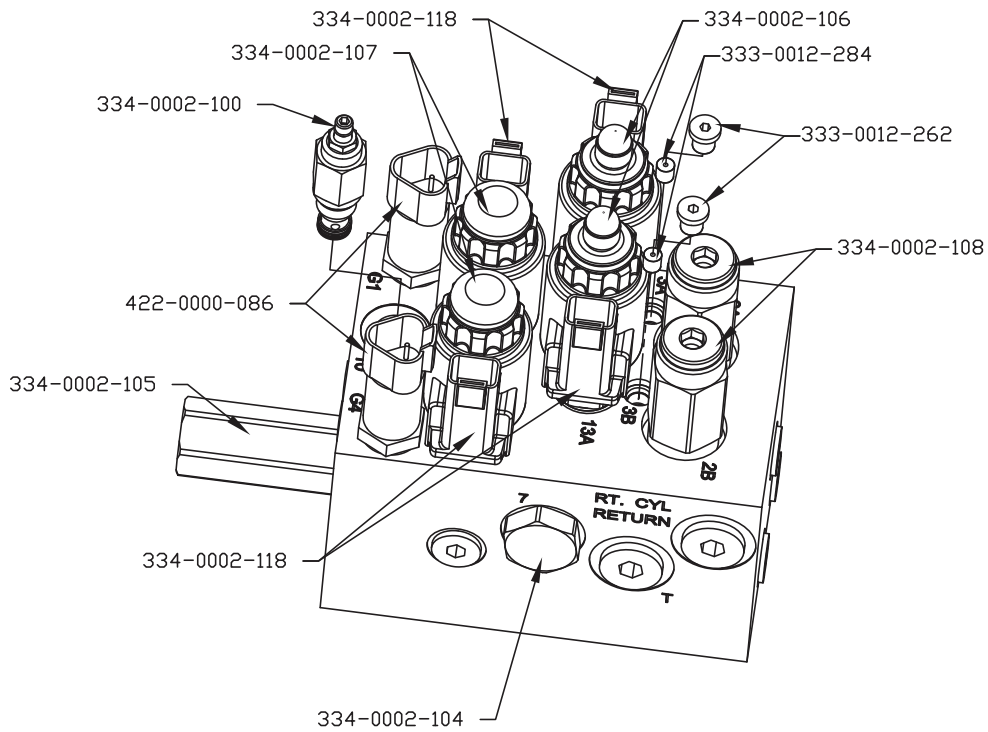
**CHAPTER**

**5**

***Replacement Parts***

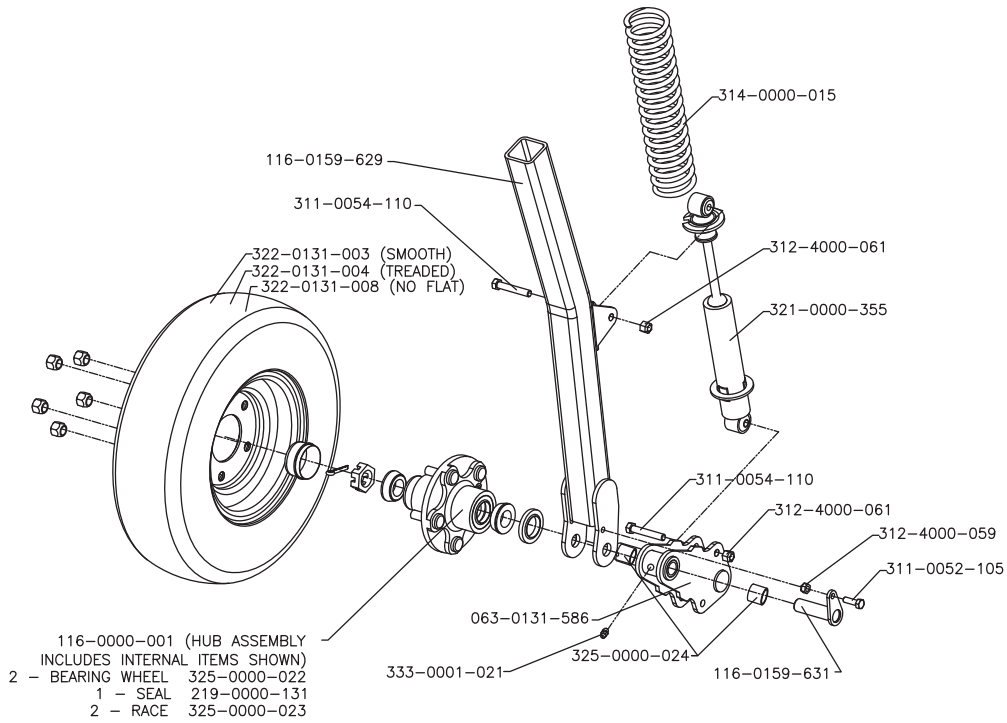
This section contains replacement part diagrams for PowerGlide Plus and UltraGlide systems. Refer to these diagrams when calling to request replacement parts.

***Valve Blocks***

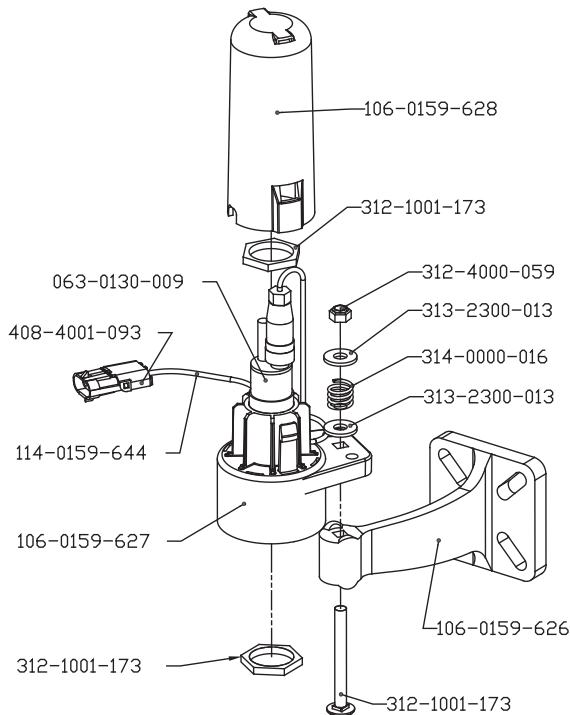


063-0131-126  
VALVE, HYDRAULIC POWERGLIDE  
PLUS/ULTRAGLIDE, OPEN CENTER, AUTOBOOM

# Wheels



# Sensors







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Safety 2

**H****Hydraulic**

Fittings 4

Safety 2

**I****Important Safety Information**

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Hydraulics 2

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**RAVEN**

# **RAVEN INDUSTRIES**

## **Limited Warranty**

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### ***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.