Versatile SX275 AutoBoom™ Installation Manual

Manual No. 016-0230-097 Rev. H 03/17 E29365

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CHAPTER 1

Important Safety Information

NOTICE

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

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

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

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

⚠ WARNING

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

⚠ CAUTION

Hydraulic Safety

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

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 the serial number of your machine in the space below.

MAKE: Versatile
MODEL: SX275

FIGURE 1. Versatile SX275

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

Preparing for Installation

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

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

Important: *Do not allow the booms to rest on the on the boom stops during the calibration process!*

Recommendations

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

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

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

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

Tools Needed

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

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

Point of Reference

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

Hydraulic Fittings

This manual may reference the following types of hydraulic fittings:

- SAE O-ring fittings

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

SAE O-ring fitting

ORFS fitting

JIC fitting

Updates

Software and manual updates are available on the Raven Applied Technology website:

http://www.ravenhelp.com

At Raven Industries, we strive to make your experience with our products as rewarding as possible. One way to improve this experience is to provide us with feedback on this manual.

Your feedback will help shape the future of our product documentation and the overall service we provide. We appreciate the opportunity to see ourselves as our customers see us and are eager to gather ideas on how we have been helping or how we can do better.

To serve you best, please send an email with the following information to

techwriting@ravenind.com

-Versatile SX275 AutoBoom™ Installation Manual
-Manual No. 016-0230-097 Rev. H
-Any comments or feedback (include chapter or page numbers if applicable).
-Let us know how long have you been using this or other Raven products.

We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.

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 117-0231-097)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CAN AutoBoom Calibration & Operation	016-0130-062	1
Not Pictured	Manual - Versatile SX275 AutoBoom Installation	016-0230-097	1
	Valve - PowerGlide Plus Hydraulic	063-0131-124	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Node - PowerGlide Plus AutoBoom	063-0130-010	1
	Cable - Boom Sense Adapter Cable	115-0171-546	4

TABLE 1. PowerGlide Plus Installation Kit (P/N 117-0231-097)

Picture	Item Description	Part Number	Qty.
	Cable - Power/CAN Controller	115-0230-007	1
	Cable - Harness	115-0230-033	1
	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
	Bolt - 3/8”-16 x 1-1/4” Hex	311-0054-106	3
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	7
	Washer - 5/16” Zinc Plated	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-097)

Picture	Item Description	Part Number	Qty.
	Fitting - 3/4” JIC M/M/F Swivel Run Tee Adapter	333-0012-039	2
	Fitting - 9/16” JIC M/M/F Swivel Run Tee Adapter	333-0012-043	4
	Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	2

TABLE 2. Hydraulic Kit (P/N 117-0134-097)

Picture	Item Description	Part Number	Qty.
	Fitting - 9/16” JIC (M) TO 3/4” SAE O-Ring (M) Straight Adapter	333-0012-046	2
	Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	2
	Fitting - 9/16” SAE O-Ring Internal Hex Plug	333-0012-104	2
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 26”	214-1000-623	2
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 45”	214-1000-624	1
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 32”	214-1000-625	1
	Hydraulic Hose - 3/4” JIC (F) 45° to 3/4” JIC (F) - 22”	214-1000-655	2

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-097)

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	116-0159-707	2

TABLE 3. PowerGlide Plus Wheel Kit (P/N 117-0133-097)

Picture	Item Description	Part Number	Qty.
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 1-5/16” W x 2” L x 3/8” Thread	107-0171-612	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 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.

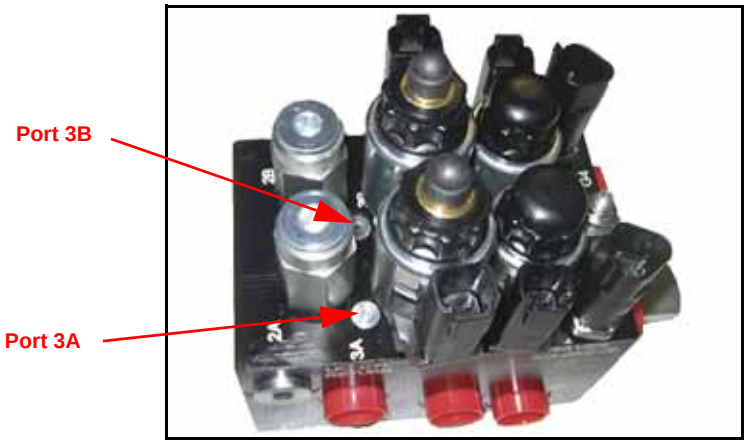
NOTICE

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 063-0131-126).

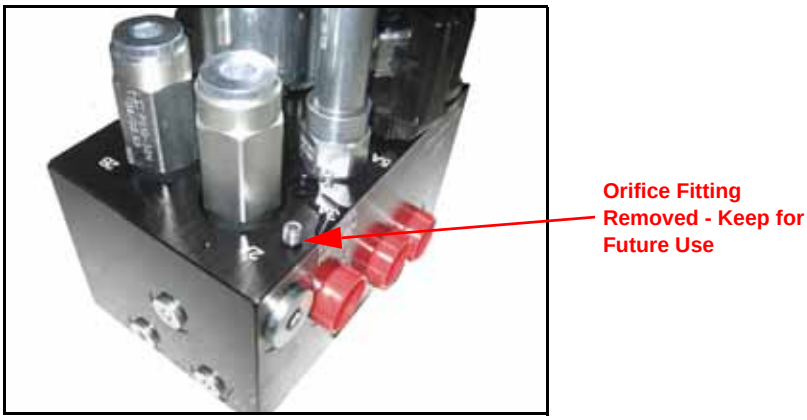
FIGURE 2. **Coil Removed from the AutoBoom Valve**

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

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

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

FIGURE 4. **Orifice Fitting Removed from the AutoBoom Valve**



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

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

FIGURE 5. **Port Plug Reinstalled on the AutoBoom Valve**

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

FIGURE 6. **Coil Reinstalled on the AutoBoom Valve**

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

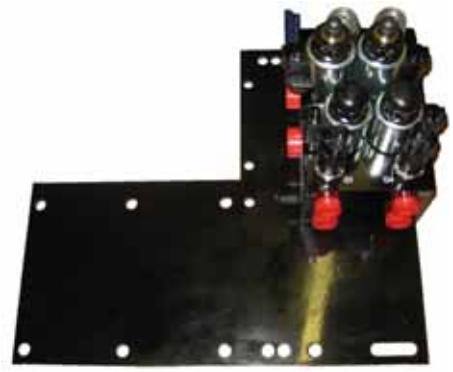
Install Fittings on the AutoBoom Valve

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

Fitting	Part Number	Port
Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	P, T
Fitting - 9/16” SAE O-Ring Internal Hex Plus	333-0012-104	LV, RV
Fitting - 9/16” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-046	LF CYL RTN, RT CYL RTN

Mount the AutoBoom Valve

FIGURE 7. AutoBoom Valve Mounting the on Valve Mounting Plate



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

FIGURE 8. AutoBoom Valve Mounted on the Sprayer

2. Secure the mounting plate to the machine's center rack top-right parallel link 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 Hoses

⚠ WARNING

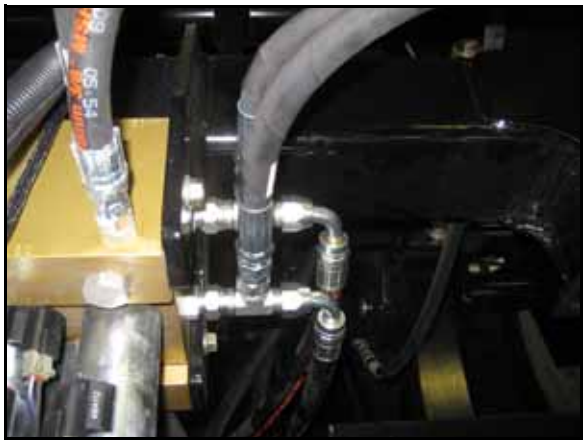
Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's system may be extremely hot and under high pressure.

⚠ CAUTION

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

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

FIGURE 9. Pressure and Tank Hoses Installed



1. Disconnect the pressure hose from the pressure port (P) of the machine's hydraulic valve.
2. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) in the pressure port of the machine's hydraulic valve.
3. Attach the machine's pressure hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-655) on the 90° end of the installed tee fitting.
5. Connect the 45° end of the installed hydraulic hose to Port P of the AutoBoom valve.

6. Disconnect the tank hose from the tank port of the machine's hydraulic valve.
7. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) in the tank port of the machine's hydraulic valve.
8. Attach the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-655) on the 90° end of the installed tee fitting.
10. Connect the 45° end of the installed hydraulic hose to Port T of the AutoBoom valve.

Install the Left and Right Cylinder Up Hoses

Note: *The left cylinder up hose is located in port C6 in machines with 90 - 100 ft. booms and in port C10 in machines with 120 ft. booms. The right cylinder up hose is located in port C15 in machines with 90 - 100 ft. booms and in port C17 in machines with 120 ft. booms.*

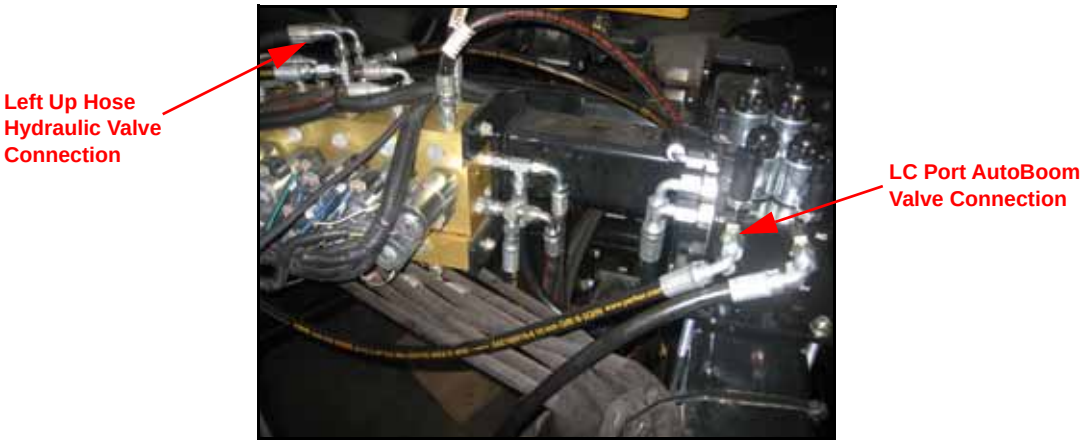
FIGURE 10. Machine's Cylinder Orifice Fitting

1. Disconnect the machine's cylinder up hoses from the base-end of the machine's tilt cylinders.
2. Remove the orifice fittings installed between the existing elbow fittings and the cylinder up hoses.

Note: *Keep the orifice fittings for future use.*

3. Reattach the cylinder up hoses to the base-end of the machine's tilt cylinders.

FIGURE 11. Left Cylinder Up Hoses Installed

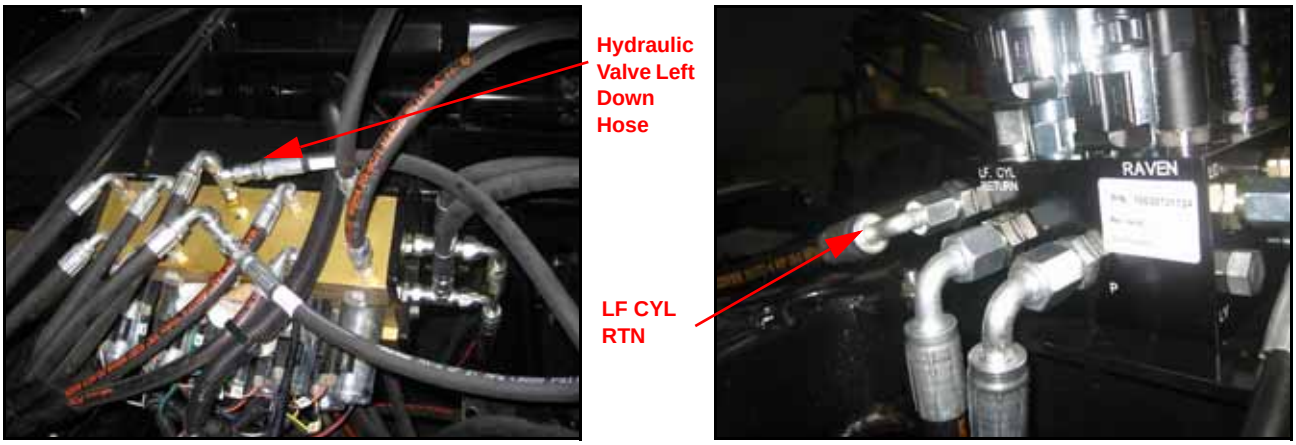


4. Disconnect the machine's left cylinder up hose from port C6 (90-100' booms) or C10 (120' booms) of the machine's hydraulic valve.
5. Install the machine's orifice fitting removed in step 2 above into the open port.
6. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in port C6 or C10 of the hydraulic valve.
7. Connect the machine's left cylinder up hose to the opposite end of the installed tee fitting.
8. Install the straight end of the supplied hydraulic hose (P/N 214-1000-623) on the 90° end of the installed tee fitting.
9. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
10. Disconnect the machine's right cylinder up hose from port C15 (90-100' booms) or C17 (120' booms) of the machine's hydraulic valve.
11. Install the machine's orifice fitting removed in step 2 above into the open port.
12. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in port C15 or C17 of the machine's hydraulic valve.
13. Connect the machine's right cylinder up hose to the opposite end of the installed tee fitting.
14. Install the straight end of the supplied hydraulic hose (P/N 214-1000-625) on the 90° end of the installed tee fitting.
15. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

Install the Left and Right Cylinder Down Hoses

Note: *The left cylinder down hose is located in port C5 in machines with 90 - 100 ft. booms and in port C9 in machines with 120 ft. booms. The right cylinder down hose is located in port C16 in machines with 90 - 100 ft. booms and in port C18 in machines with 120 ft. booms.*

FIGURE 12. Left Cylinder Down Hoses Installed

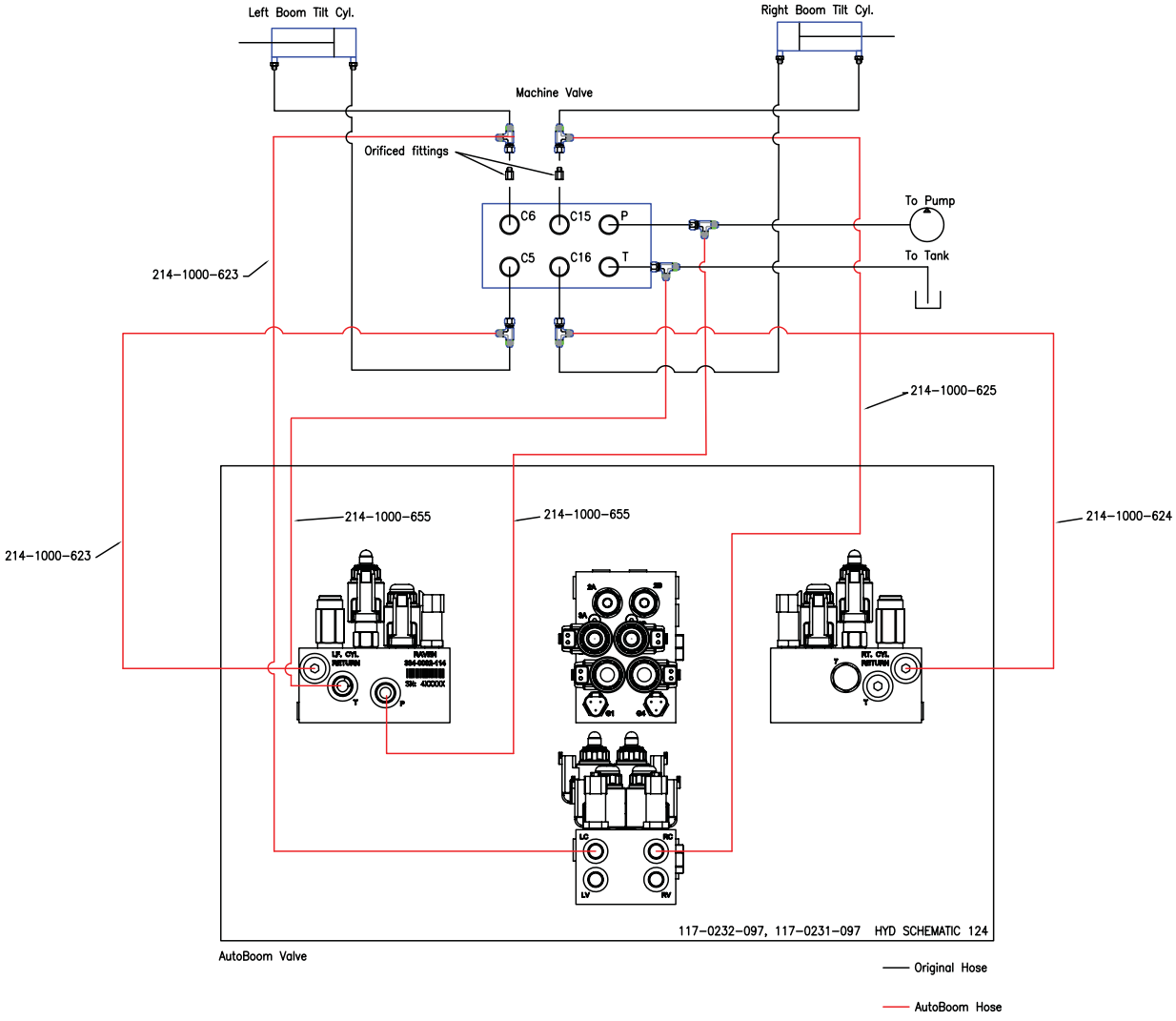


1. Remove the left tilt cylinder down hose from port C5 (90-100' booms) or C9 (120' booms) of the machine's hydraulic valve.
2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the left cylinder down port of the machine's hydraulic valve.
3. Connect the machine's left cylinder down hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-623) on the 90° end of the installed tee fitting in port C5 or C9.

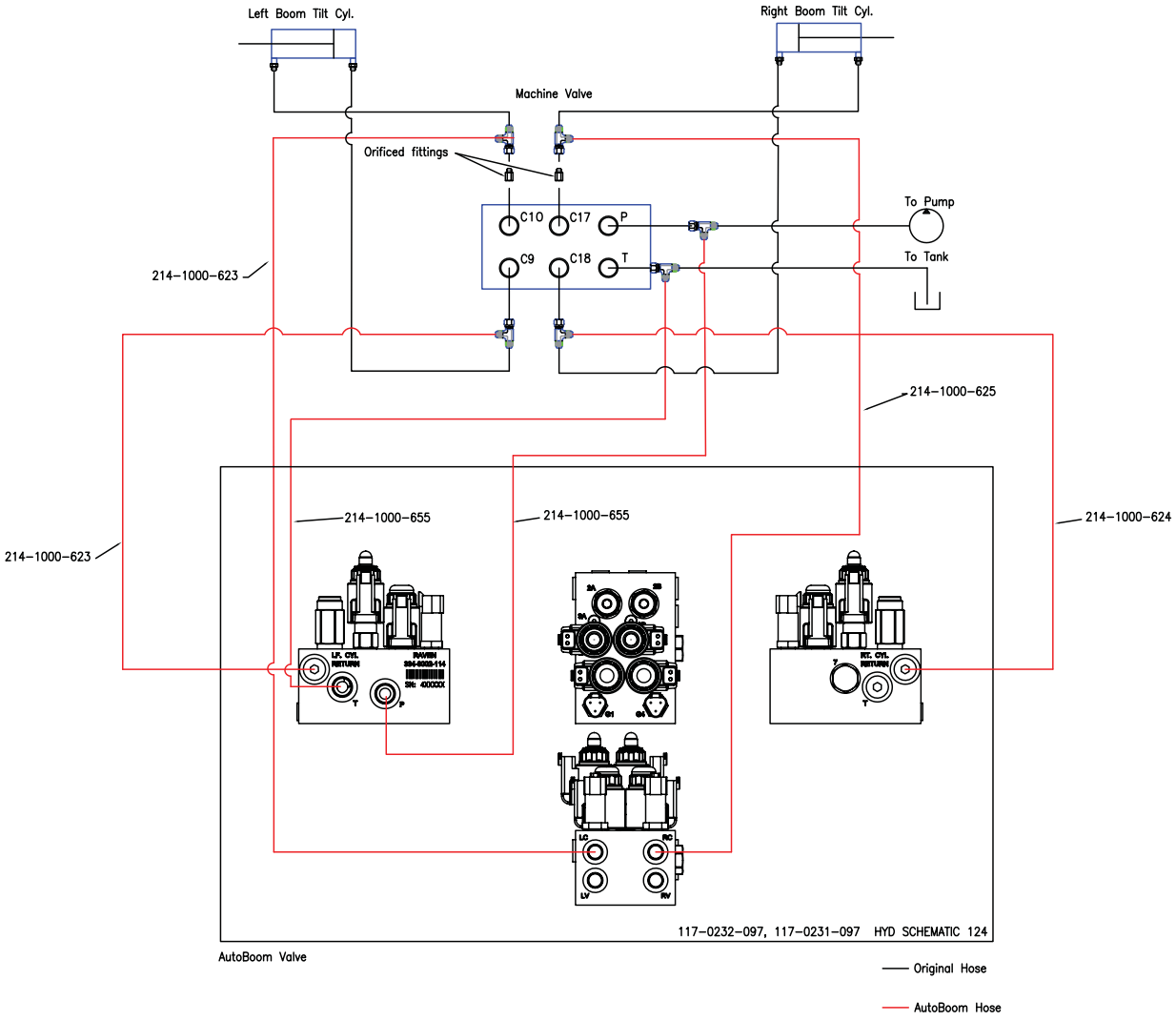
5. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port LF CYL RTN of the AutoBoom valve.
6. Remove the right tilt cylinder down hose from port C16 (90-100’ booms) or C18 (120’ booms) of the machine’s hydraulic valve.
7. Install a 9/16” JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the right cylinder down port of the machine’s hydraulic valve.
8. Connect the machine’s right cylinder down hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-624) on the 90° end of the installed tee fitting in port C16 or C18.
10. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port RT CYL RTN of the AutoBoom valve.

Hydraulic Schematic

90’ - 100’ Booms



120' Booms


Left Boom Tilt Cyl.
Right Boom Tilt Cyl.
Machine Valve
Orificed fittings
C10
C17
P
C9
C18
T
To Pump
To Tank
214-1000-623
214-1000-625
214-1000-655
214-1000-655
214-1000-624
214-1000-623
117-0232-097, 117-0231-097 HYD SCHEMATIC 124
AutoBoom Valve
Original Hose
AutoBoom Hose

Remove the Boom Stops

1. Rack the machine's booms.

FIGURE 13. Machine's Boom Stops

2. Remove the boom stops that limit travel between the left and right booms and the center rack.

Note: *Keep the boom stops for future use.*

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 wheels.

Mount the Gauge Wheels

⚠ WARNING

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

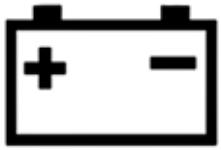
Note: *The appearance of the wheel axles may vary.*

FIGURE 14. **Gauge Wheel Installed**

1. Remove the nuts from the right wheel axle (P/N 063-0130-585).
2. Place the wheel (P/N 322-0131-003) on the right wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617) over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel.
5. Secure the wheel mounting bracket (P/N 116-0159-707) to the front of the right boom using four 1-5/16” W x 2” L x 3/8” thread U-bolts (P/N 107-0171-612) and eight 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the right wheel axle into the right wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so), and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket by installing two 1/2”-13 x 1-1/2” SS hex bolts (P/N 311-0058-186) and two 1/2” zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

Install the PowerGlide Plus Wiring

Wiring Connections



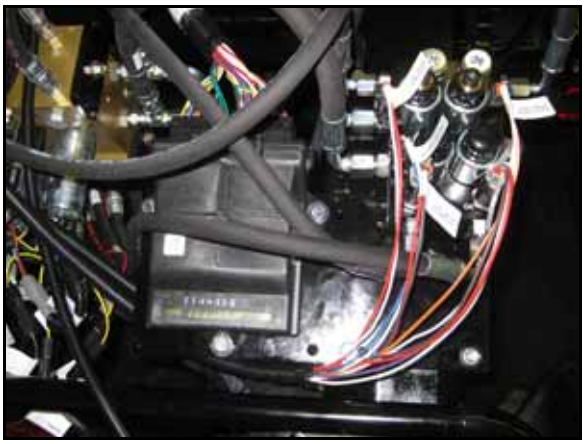
⚠ CAUTION

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.

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

Install the AutoBoom Node

FIGURE 15. AutoBoom Node Installed



1. Mount the AutoBoom node (P/N 063-0130-010) to the valve mounting plate using three 3/8”-16 x 1-1/4” zinc hex bolts (P/N 311-0054-106) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: *Position the node so that the cable connections face the front of the machine.*

2. Insert the large, rectangular node connectors on the harness cable (P/N 115-0230-033) 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 AutoBoom harness cable (P/N 115-0230-033).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-124).
3. Connect the LEFT PRESS connector to Port G1 on the AutoBoom valve.
4. Connect the RIGHT PRESS connector to Port G4 on the AutoBoom valve.
5. Locate the LEFT SOLENOID and RIGHT SOLENOID connectors on the harness cable.
6. Connect the LEFT SOLENOID connector to Port 4A on the AutoBoom valve.
7. Connect the RIGHT SOLENOID connector to Port 4B on the AutoBoom valve.
8. Locate the LEFT PROP and RIGHT PROP connectors on the harness cable.
9. Connect the LEFT PROP connector to Port 5A on the AutoBoom valve.
10. Connect the RIGHT PROP connector to Port 13A on the AutoBoom valve.

FIGURE 16. **Machine's Boom Function Controls**

Note: *The S1 coil is located furthest from the machine's hydraulic valve, and the S2 coil is located closest to the machine's hydraulic valve.*

11. Locate the machine's boom function coils near the machine's hydraulic valve.
12. Disconnect the connector from the machine's left tilt up coil (S1-2 on port SV3).
13. Install a boom sense adapter cable (P/N 115-0171-546) between the coil and the machine's coil connector.
14. Connect boom sense adapter cables between the left tilt down (S2-12 on port SV3), right tilt up (S1-13 on port SV7), and right tilt down coils (S2-3 on port SV7) and the coil connectors.
15. On the harness cable, locate the LEFT SOLENOID SENSE connectors. Isolate the connector labeled Up and connect it to the left tilt up coil via the installed boom sense adapter cable.
16. Connect the down LEFT SOLENOID SENSE connector to the left tilt down coil via the installed boom sense adapter cable.
17. Connect the RIGHT SOLENOID SENSE connectors to the machine's right tilt up and right tilt down coils via the installed boom sense adapter cables.

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-033) toward the machine's cab.

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

2. Connect the harness cable to the controller cable (P/N 115-0230-007).
3. Tighten the connector screw cap to secure the connection.

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 063-0130-021).

Connect the Field Computer (If Applicable)

Refer to the Installation & Operation Manual and the specific wiring schematic beginning on page 26 for the installation and wiring instructions for the specific field computer being used.

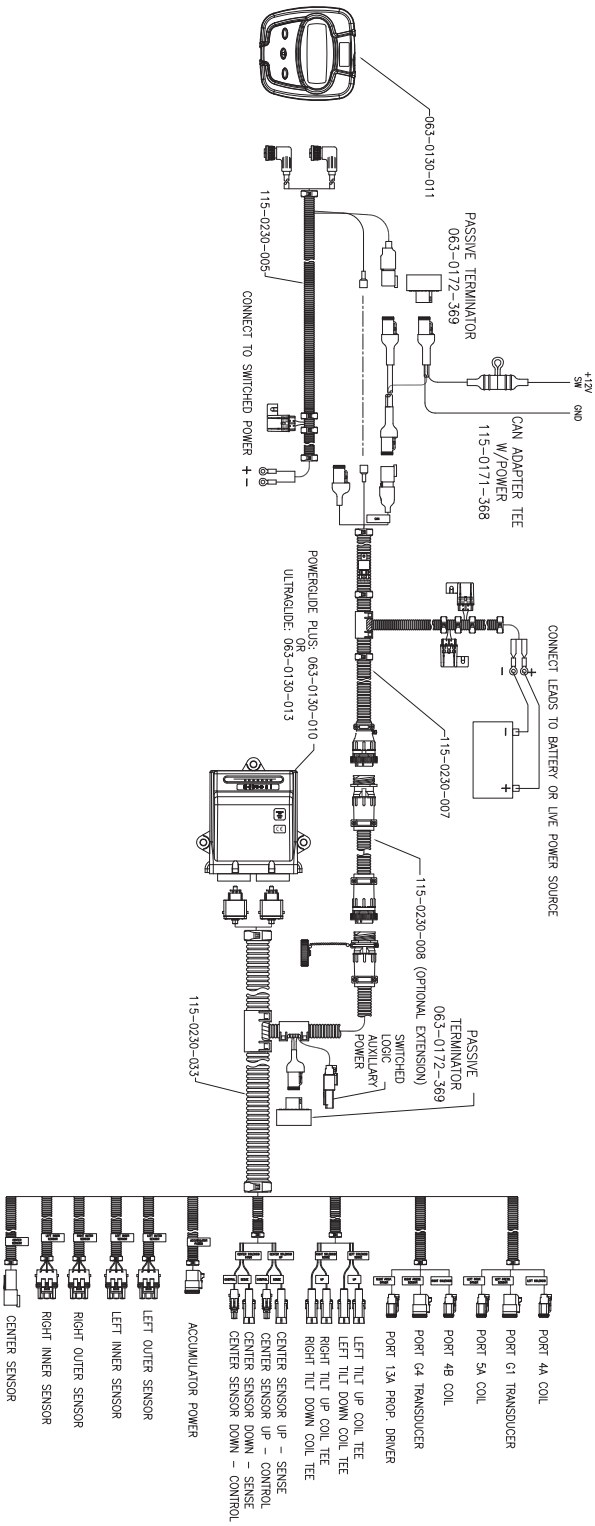
Connect the Power Leads

FIGURE 17. Power Connections

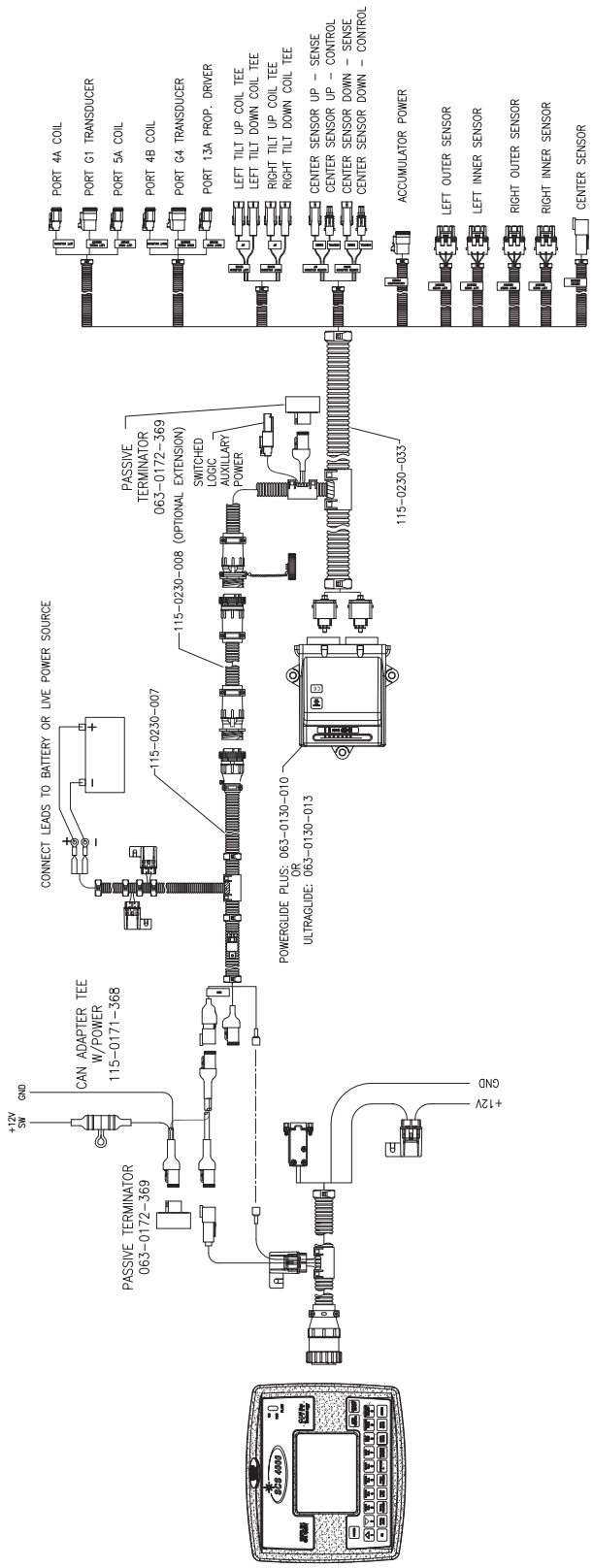
1. Locate the power cable branch that has the power and ground leads at one end and route it into the battery box.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the ground lead on the negative battery terminal and reinstall the machine's battery connector.
5. Locate the single wire on the CANbus/relay branch of the cable and add an 18" extension and ring terminal to the end of the wire.
6. Connect the ring terminal to the source of switched power, located behind the access panel at the right-rear corner of the cab.

PowerGlide Plus Wiring Schematics

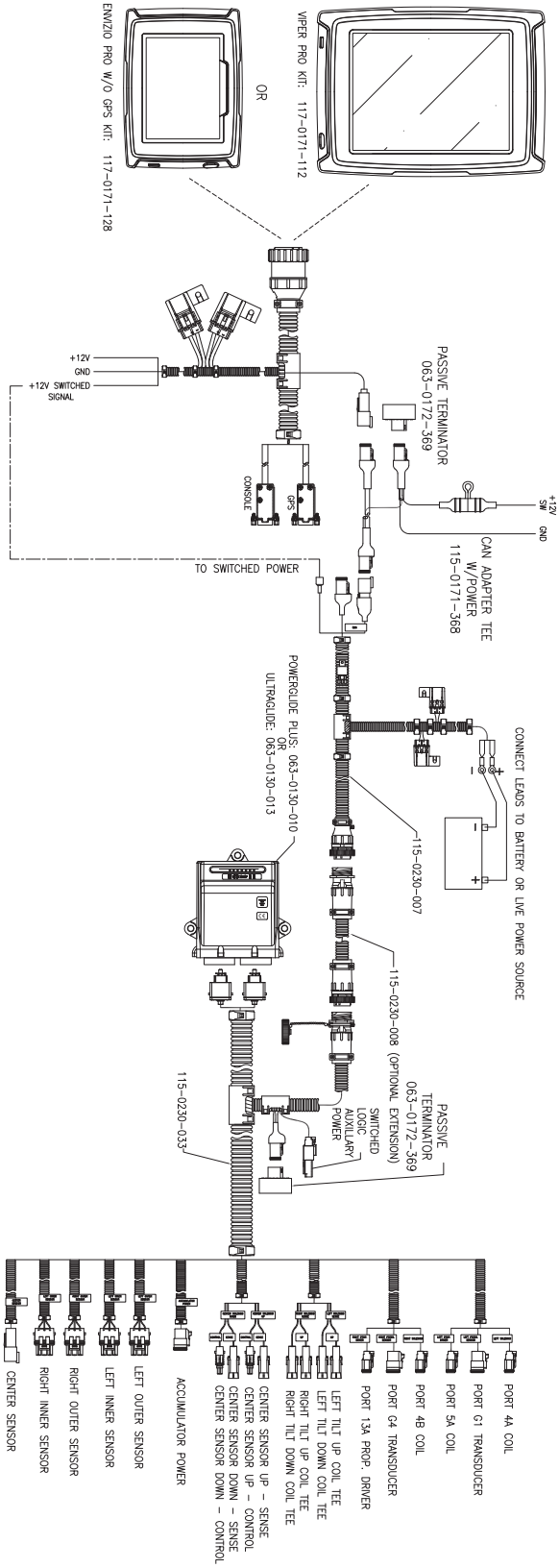
AutoBoom Controller



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 117-0232-097)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CAN AutoBoom Calibration & Operation	016-0130-062	1
Not Pictured	Manual - Versatile SX275 AutoBoom Installation	016-0230-097	1
	Valve - PowerGlide Plus AutoBoom	063-0131-124	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-097)

Picture	Item Description	Part Number	Qty.
	Sensor - Center Ultrasonic	063-0130-018	1
	Node - UltraGlide AutoBoom	063-0130-038	1
	Cable - Boom Sense Adapter Cable	115-0171-546	4
	Cable - Power/CAN Controller	115-0230-007	1
	Cable - Harness	115-0230-033	1
	Cable - Center Rack Control Boom Sense	115-0230-039	2
	Cable - 60’ Ultrasonic Sensor Extension	115-0230-051	2
	U-Bolt - 4” W x 5” L x 3/8” Thread	107-0171-606	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	4
	Bolt - 5/16”-18 x 7/8” Hex	311-0052-104	4

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-097)

Picture	Item Description	Part Number	Qty.
	Bolt - 3/8”-16 x 1-1/4” Hex	311-0054-106	3
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	19
	Washer - 5/16” Zinc Plated	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-097)

Picture	Item Description	Part Number	Qty.
	Fitting - 3/4” JIC M/M/F Swivel Run Tee Adapter	333-0012-039	2
	Fitting - 9/16” JIC M/M/F Swivel Run Tee Adapter	333-0012-043	4
	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	2
	Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	2
	Fitting - 9/16” SAE O-Ring Internal Hex Plug	333-0012-104	2
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 26”	214-1000-623	2

TABLE 2. Hydraulic Kit (P/N 117-0134-097)

Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 45”	214-1000-624	1
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 32”	214-1000-625	1
	Hydraulic Hose - 3/4” JIC (F) 45° to 3/4” JIC (F) - 22”	214-1000-655	2

TABLE 3. Optional Weel Kit (P/N 117-0133-097)

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	116-0159-707	2
	Bracket - Hub Retainer	107-0171-617	2
	Wheel	322-0131-008	2
	U-Bolt - 1-5/16” W x 2” L x 3/8” Thread	107-0171-612	8
	Bolt - 1/2”-13 x 1-1/2” SS Hex	311-0058-186	4

TABLE 3. Optional Weel Kit (P/N 117-0133-097)

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 UltraGlide Hydraulic System

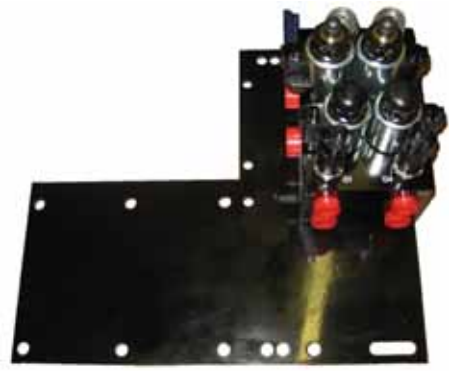
Install Fittings on the AutoBoom Valve

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

Fitting	Part Number	Port
Fitting - 9/16” JIC (M) to 9/16” SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	P, T
Fitting - 9/16” SAE O-Ring Internal Hex Plug	333-0012-104	LV, RV
Fitting - 9/16” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-046	LF CYL RTN, RT CYL RTN

Mount the AutoBoom Valve

FIGURE 1. AutoBoom Valve Mounted on the Valve Mounting Plate



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

FIGURE 2. AutoBoom Valve Mounted on the Sprayer

2. Secure the mounting plate to the machine’s center rack top-right parallel link 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 Hoses

⚠ WARNING

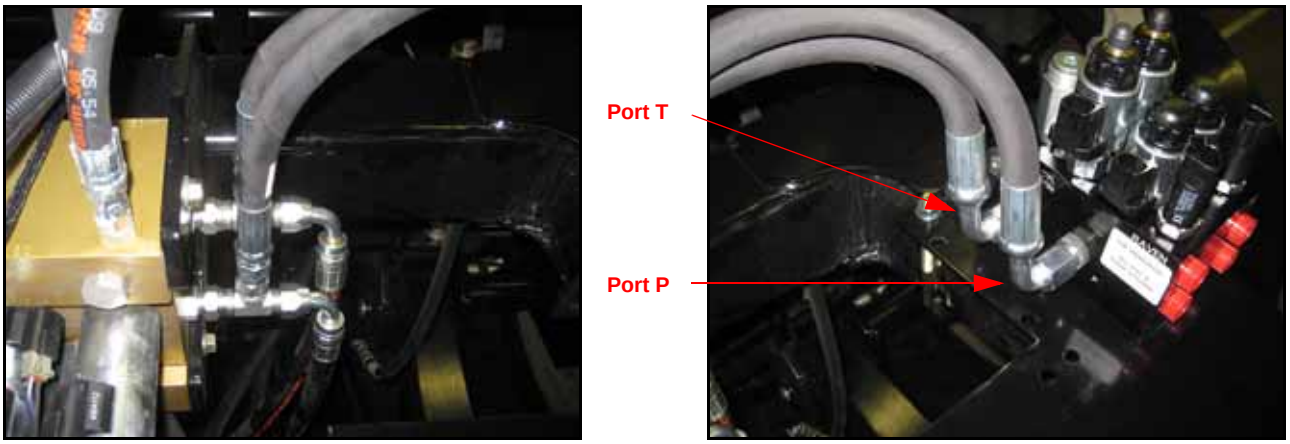
Hydraulics are under pressure. Care should always be taken with a system that has been pressurized. When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine’s system may be extremely hot and under high pressure.

⚠ CAUTION

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

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

FIGURE 3. Pressure and Tank Hoses Installed

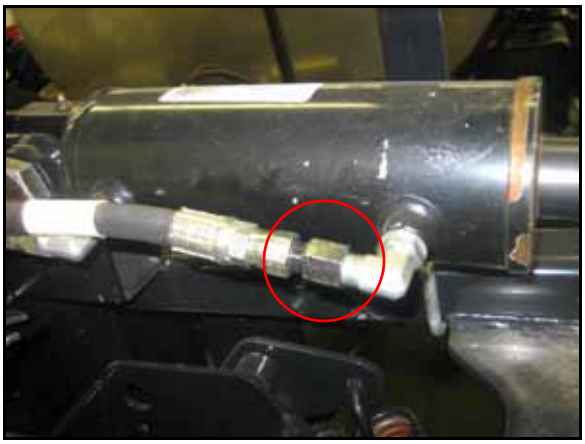


1. Disconnect the pressure hose from the pressure port (P) of the machine's hydraulic valve.
2. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) in the pressure port of the machine's hydraulic valve.
3. Attach the machine's pressure hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-655) on the 90° end of the installed tee fitting.
5. Connect the 45° end of the installed hydraulic hose to Port P of the AutoBoom valve.
6. Disconnect the tank hose from the tank port of the machine's hydraulic valve.
7. Install a 3/4" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-039) in the tank port of the machine's hydraulic valve.
8. Attach the machine's tank hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-655) on the 90° end of the installed tee fitting.
10. Connect the 45° end of the installed hydraulic hose to Port T of the AutoBoom valve.

Install the Left and Right Cylinder Up Hoses

Note: *The left cylinder up hose is located in port C6 in machines with 90 - 100 ft. booms and in port C10 in machines with 120 ft. booms. The right cylinder up hose is located in port C15 in machines with 90 - 100 ft. booms and in port C17 in machines with 120 ft. booms.*

FIGURE 4. Machine's Cylinder Orifice Fitting

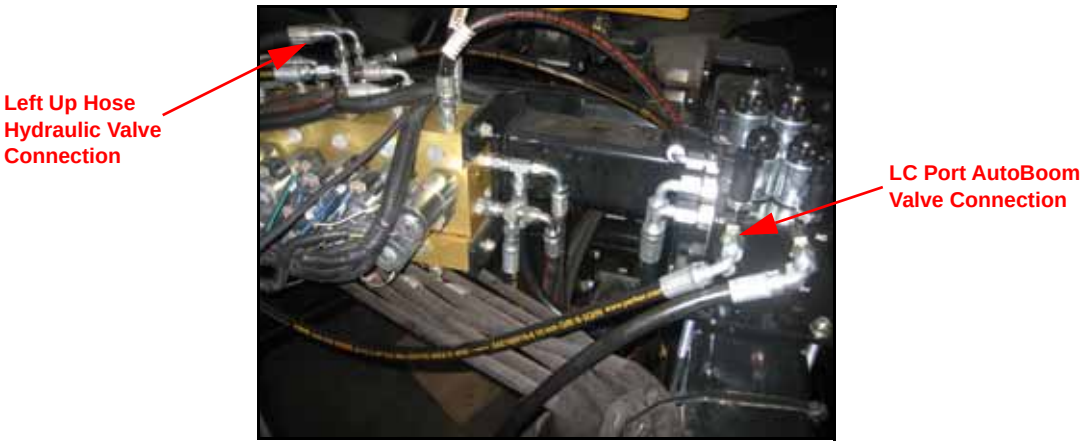


1. Disconnect the machine's cylinder up hoses from the base-end of the machine's tilt cylinders.
2. Remove the orifice fittings installed between the existing elbow fittings and the cylinder up hoses.

Note: *Keep the orifice fittings for future use.*

3. Reattach the cylinder up hoses to the base-end of the machine's tilt cylinders.

FIGURE 5. Left Cylinder Up Hoses Installed



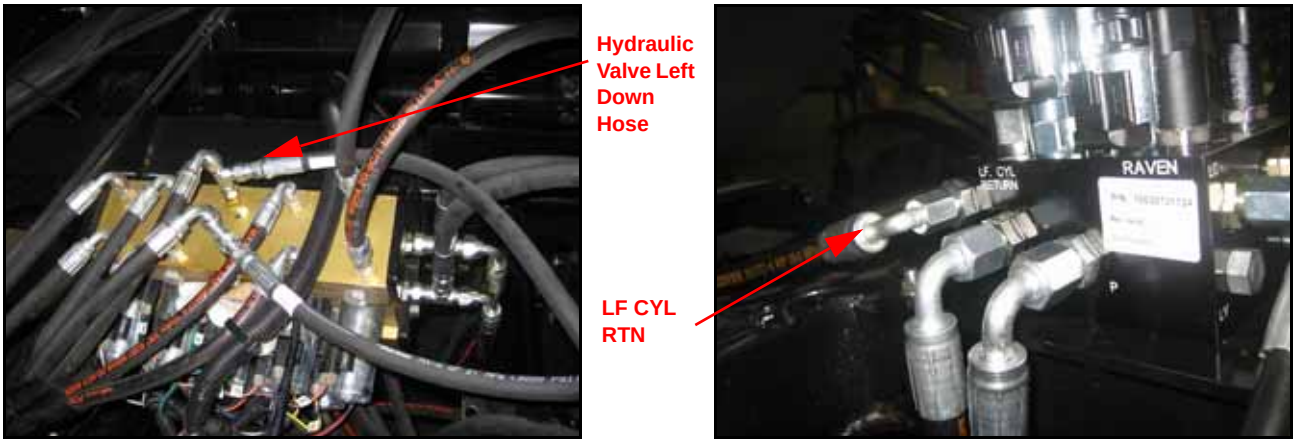
4. Disconnect the machine's left cylinder up hose from port C6 or C10 of the machine's hydraulic valve.
5. Install the machine's orifice fitting removed in step 2 above into the open port.
6. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in port C6 or C10 of the hydraulic valve.
7. Connect the machine's left cylinder up hose to the opposite end of the installed tee fitting.
8. Install the straight end of the supplied hydraulic hose (P/N 214-1000-623) on the 90° end of the installed tee fitting.

9. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
10. Disconnect the machine's right cylinder up hose from port C15 or C17 of the machine's hydraulic valve.
11. Install the machine's orifice fitting removed in step 2 above into the open port.
12. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in port C15 or C17 of the machine's hydraulic valve.
13. Connect the machine's right cylinder up hose to the opposite end of the installed tee fitting.
14. Install the straight end of the supplied hydraulic hose (P/N 214-1000-625) on the 90° end of the installed tee fitting.
15. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

Install the Left and Right Cylinder Down Hoses

Note: *The left cylinder down hose is located in port C5 in machines with 90 - 100 ft. booms and in port C9 in machines with 120 ft. booms. The right cylinder down hose is located in port C16 in machines with 90 - 100 ft. booms and in port C18 in machines with 120 ft. booms.*

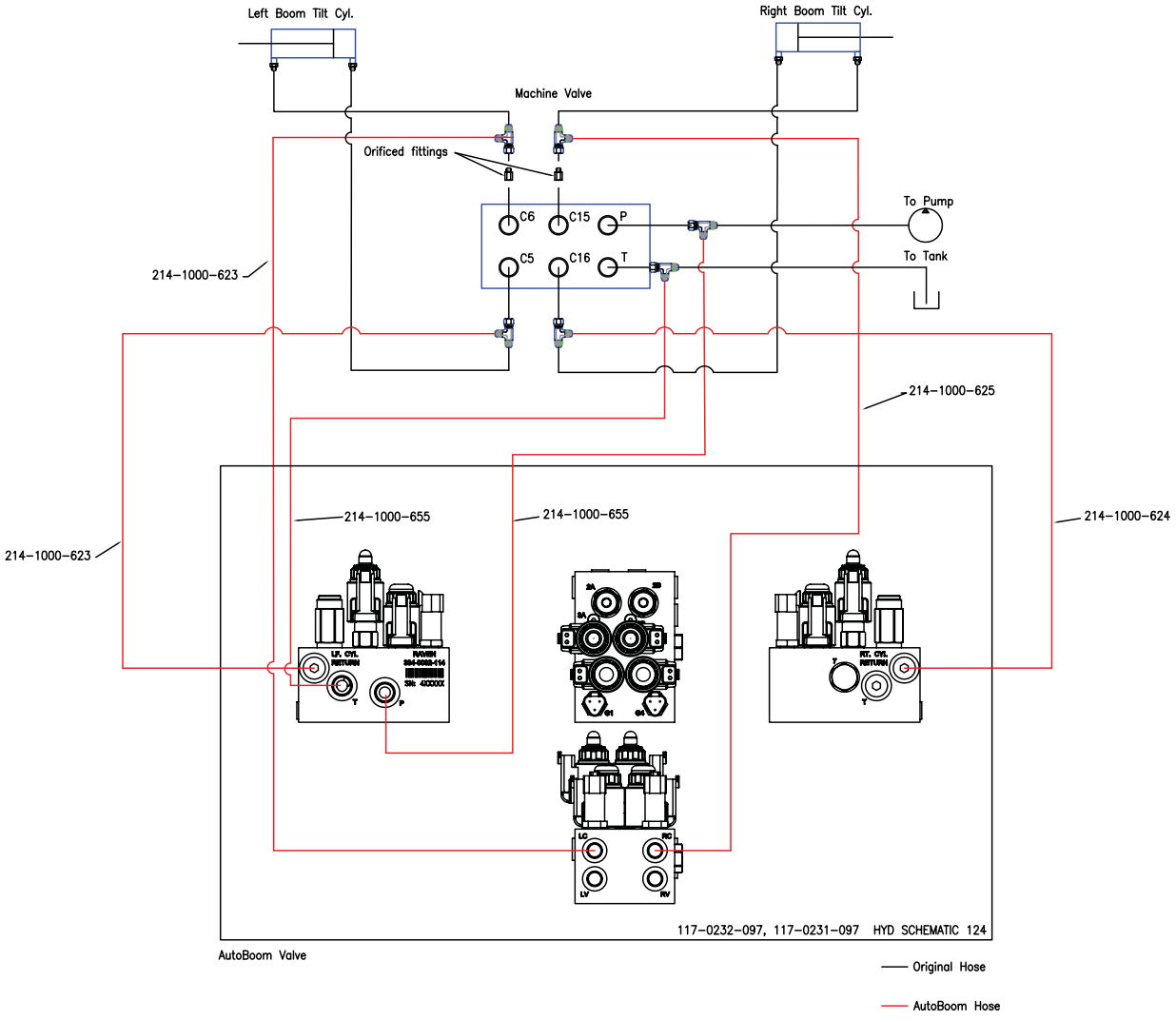
FIGURE 6. Left Cylinder Down Hoses Installed



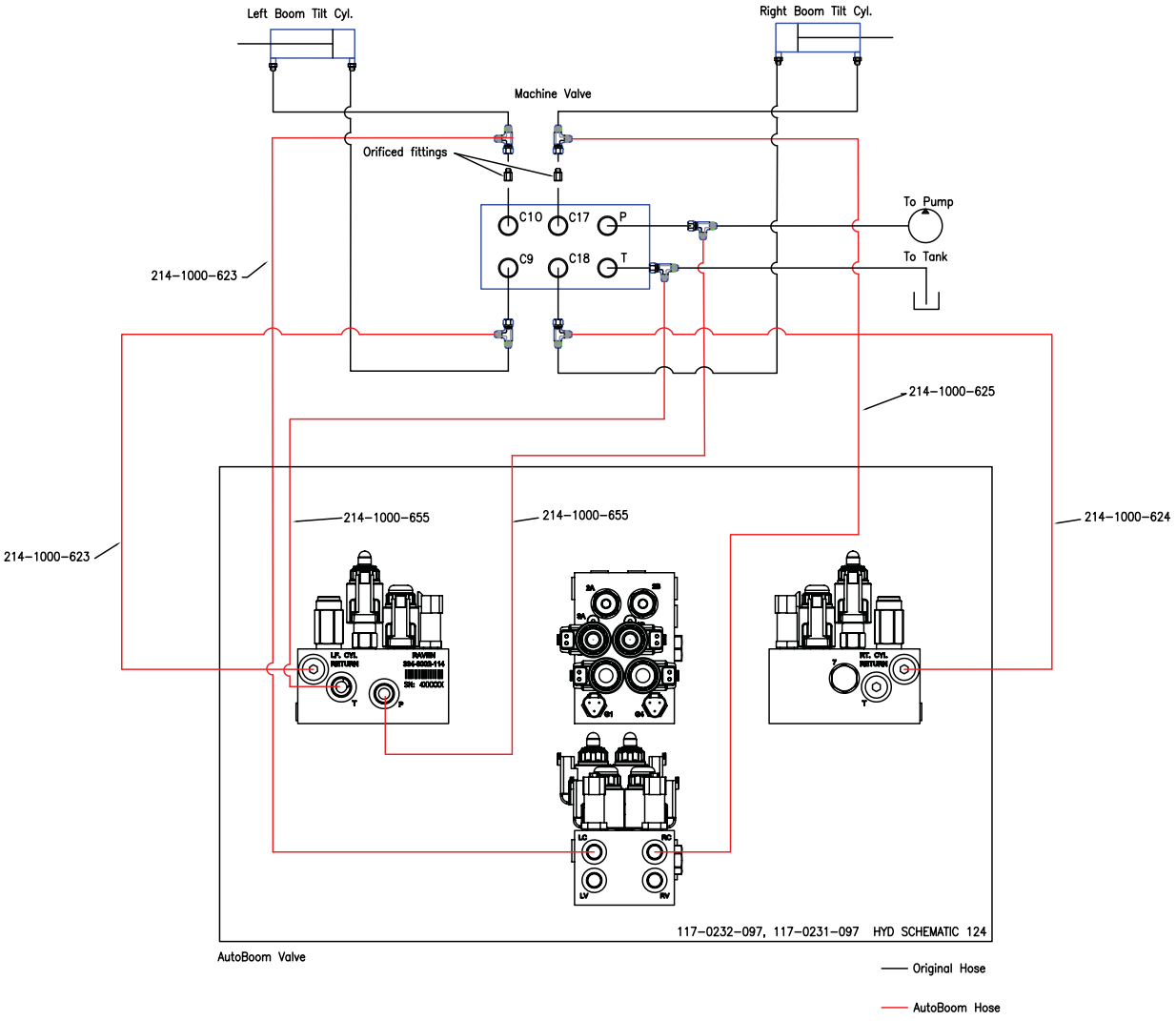
1. Remove the left tilt cylinder down hose from port C5 or C9 of the machine's hydraulic valve.
2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the left cylinder down port of the machine's hydraulic valve.
3. Connect the machine's left cylinder down hose to the opposite end of the installed tee fitting.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-623) on the 90° end of the installed tee fitting in port C5 or C9.
5. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port LF CYL RTN of the AutoBoom valve.
6. Remove the right tilt cylinder down hose from port C16 or C18 of the machine's hydraulic valve.
7. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the right cylinder down port of the machine's hydraulic valve.
8. Connect the machine's right cylinder down hose to the opposite end of the installed tee fitting.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-624) on the 90° end of the installed tee fitting in port C16 or C18.
10. Connect the 90° end of the installed hydraulic hose to the installed fitting in Port RT CYL RTN of the AutoBoom valve.

Hydraulic Schematic

90’ - 100’ Booms



120' Booms


Left Boom Tilt Cyl.
Right Boom Tilt Cyl.
Machine Valve
Orificed fittings
C10
C17
P
C9
C18
T
To Pump
To Tank
214-1000-623
214-1000-625
214-1000-655
214-1000-655
214-1000-624
214-1000-623
117-0232-097, 117-0231-097 HYD SCHEMATIC 124
AutoBoom Valve
Original Hose
AutoBoom Hose

Install the UltraGlide Sensors

Boom Sensor Mounting Locations

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

Mount the Boom Sensors

WARNING

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

FIGURE 7. Mounted Left Boom Sensor

Outer Boom Sensor Mounting Location

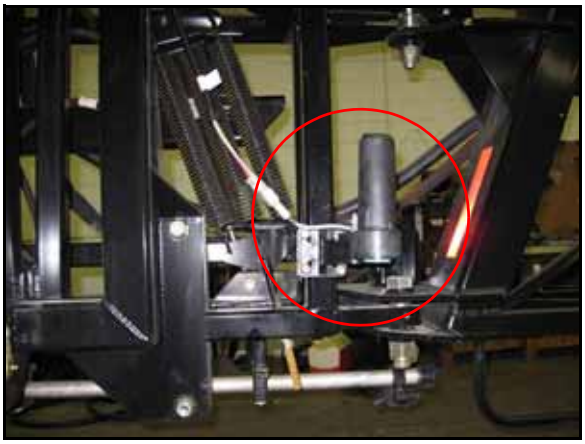
Inside Boom Sensor Mounting Location (Optional)

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 install the remaining boom sensor(s).

Note: *When installing optional inside boom sensors, install the sensors in the location shown in the figure above to ensure the sensor clears the cab when the booms are folded.*

Mount the Center Rack Sensor

FIGURE 8. Mounted Center Sensor



1. Mount the center sensor (P/N 063-0130-018) to the left side of the machine's center rack vertical support tube using two 2-1/16" W x 3" L x 3/8" thread U-bolts (P/N 107-0171-609) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Tighten the nuts to ensure the sensor is mounted securely.

Connect the Sensor Cables

1. Connect the left sensor cable (P/N 115-0230-051) to the connector on the left sensor.
2. Route the left sensor cable toward the Autoboom valve.
3. Loop and tie-off any excess cable, allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the remaining sensor cable(s).

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

Remove the Boom Stops

1. Rack the machine's booms.

FIGURE 9. Machine's Boom Stops

2. Remove the boom stops that limit travel between the left and right booms and the center rack.

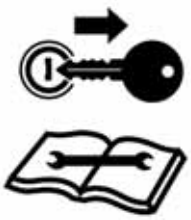
Note: *Keep the boom stops for future use.*

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 wheels.

Mount the Gauge Wheels



WARNING

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

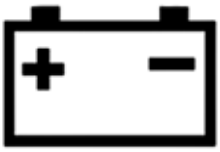
Note: *The appearance of the wheel axles may vary.*

FIGURE 10. **Gauge Wheel Installed**

1. Remove the nuts from the right wheel axle (P/N 063-0130-585).
2. Place the wheel (P/N 322-0131-003) on the right wheel axle.
3. Align and place the hub retainer bracket (P/N 107-0171-617) over the wheel.
4. Reinstall the lug nuts on the wheel axle to secure the wheel.
5. Secure the wheel mounting bracket (P/N 116-0159-707) to the front of the right boom using four 1-5/16” W x 2” L x 3/8” thread U-bolts (P/N 107-0171-612) and eight 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
6. Insert the right wheel axle into the right wheel mounting bracket, positioning it so that the bottom of the wheel touches the ground (or nearly so), and the wheel faces away from the machine.
7. Secure the gauge wheel assembly in the wheel mounting bracket by installing two 1/2”-13 x 1-1/2” SS hex bolts (P/N 311-0058-186) and two 1/2” zinc hex nuts (P/N 312-1001-043).
8. Repeat the steps above to install the left wheel.

Install the UltraGlide Wiring

Wiring Connections



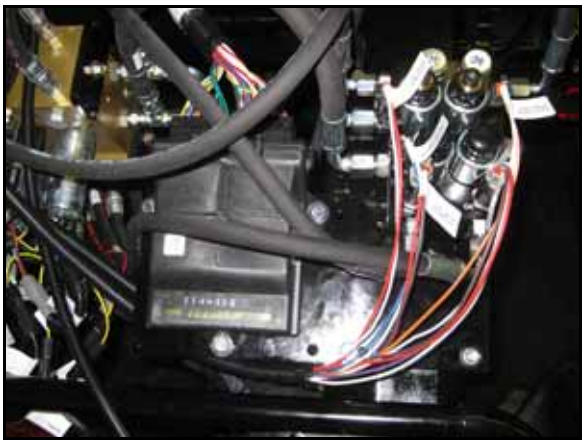
⚠ CAUTION

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.

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 11. **AutoBoom Node Installed**



1. Mount the AutoBoom node (P/N 063-0130-038) to the valve mounting plate using three 3/8”-16 x 1-1/4” zinc hex bolts (P/N 311-0054-106) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

Note: *Position the node so that the cable connections face the front of the machine.*

2. Insert the large, rectangular node connectors on the harness cable (P/N 115-0230-033) into the correct ports of the AutoBoom node.
3. Tighten the bolts on the node connectors to secure the connections.

Connect the Harness to the Boom Function Controls

1. Locate the LEFT PRESS and RIGHT PRESS connectors on the AutoBoom harness cable (P/N 115-0230-033).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-124).
3. Connect the LEFT PRESS connector to Port G1 on the AutoBoom valve.
4. Connect the RIGHT PRESS connector to Port G4 on the AutoBoom valve.
5. Locate the LEFT SOLENOID and RIGHT SOLENOID connectors on the harness cable.
6. Connect the LEFT SOLENOID connector to Port 4A on the AutoBoom valve.
7. Connect the RIGHT SOLENOID connector to Port 4B on the AutoBoom valve.
8. Locate the LEFT PROP and RIGHT PROP connectors on the harness cable.
9. Connect the LEFT PROP connector to Port 5A on the AutoBoom valve.
10. Connect the RIGHT PROP connector to Port 13A on the AutoBoom valve.

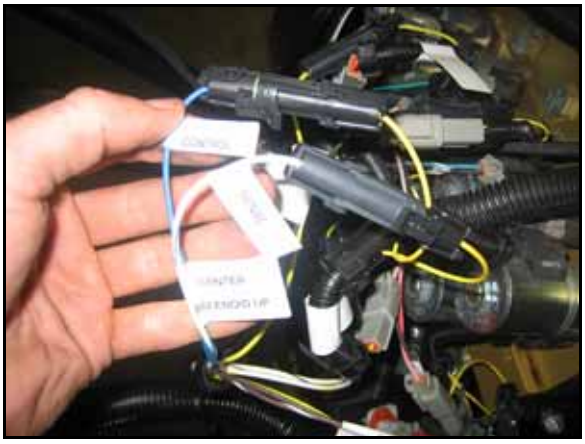
FIGURE 12. Machine's Boom Function Controls

Note: *The S1 coil is located furthest from the machine's hydraulic valve, and the S2 coil is located closest to the machine's hydraulic valve.*

11. Locate the machine's boom function coils near the machine's hydraulic valve.
12. Disconnect the connector from the machine's left tilt up coil (S1-2 on port SV3).
13. Install a boom sense adapter cable (P/N 115-0171-546) between the coil and the machine's coil connector.
14. Connect boom sense adapter cables between the left tilt down (S2-12 on port SV3), right tilt up (S1-13 on port SV7), and right tilt down coils (S2-3 on port SV7) and the coil connectors.
15. On the harness cable, locate the LEFT SOLENOID SENSE connectors. Isolate the connector labeled Up and connect it to the left tilt up coil via the installed boom sense adapter cable.
16. Connect the down LEFT SOLENOID SENSE connector to the left tilt down coil via the installed boom sense adapter cable.
17. Connect the RIGHT SOLENOID SENSE connectors to the machine's right tilt up and right tilt down coils via the installed boom sense adapter cables.

Install the Center Rack Control

FIGURE 13. Center Rack Control Cabling



1. Locate the center up coil on the machine's hydraulic valve.
2. Unplug the coil connector from the center up coil (S1-11 on port SV1).

3. Install a center rack control boom sense adapter cable (P/N 115-0230-039) on the machine's up coil.
4. Connect the coil connector to the installed boom sense adapter cable.
5. Connect the connectors on the installed boom sense adapter cable to the CENTER UP harness connectors on the AutoBoom harness cable (P/N 115-0230-033).
6. Locate the center down coil on the machine's hydraulic valve.
7. Unplug the coil connector from the center down coil (S2-1 on port SV1).
8. Install a center rack control boom sense adapter cable (P/N 115-0230-039) on the machine's down coil.
9. Connect the coil connector to the installed boom sense adapter cable.
10. Connect the connectors on the installed boom sense adapter cable to the CENTER DOWN harness connectors on the AutoBoom harness 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 115-0230-051).
5. Locate the RIGHT OUTER SENSOR connector on the AutoBoom harness cable.
6. Connect the RIGHT OUTER SENSOR connector to the installed right sensor cable.
7. If optional inside boom sensors are installed, repeat the steps above to connect the sensors.

Connect the Harness Cable to the Controller Cable

1. Route the harness cable (P/N 115-0230-033) toward the machine's cab.

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

2. Connect the harness cable to the controller cable (P/N 115-0230-007).
3. Tighten the connector screw cap to secure the connection.

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 063-0130-021).

Connect the Field Computer (If Applicable)

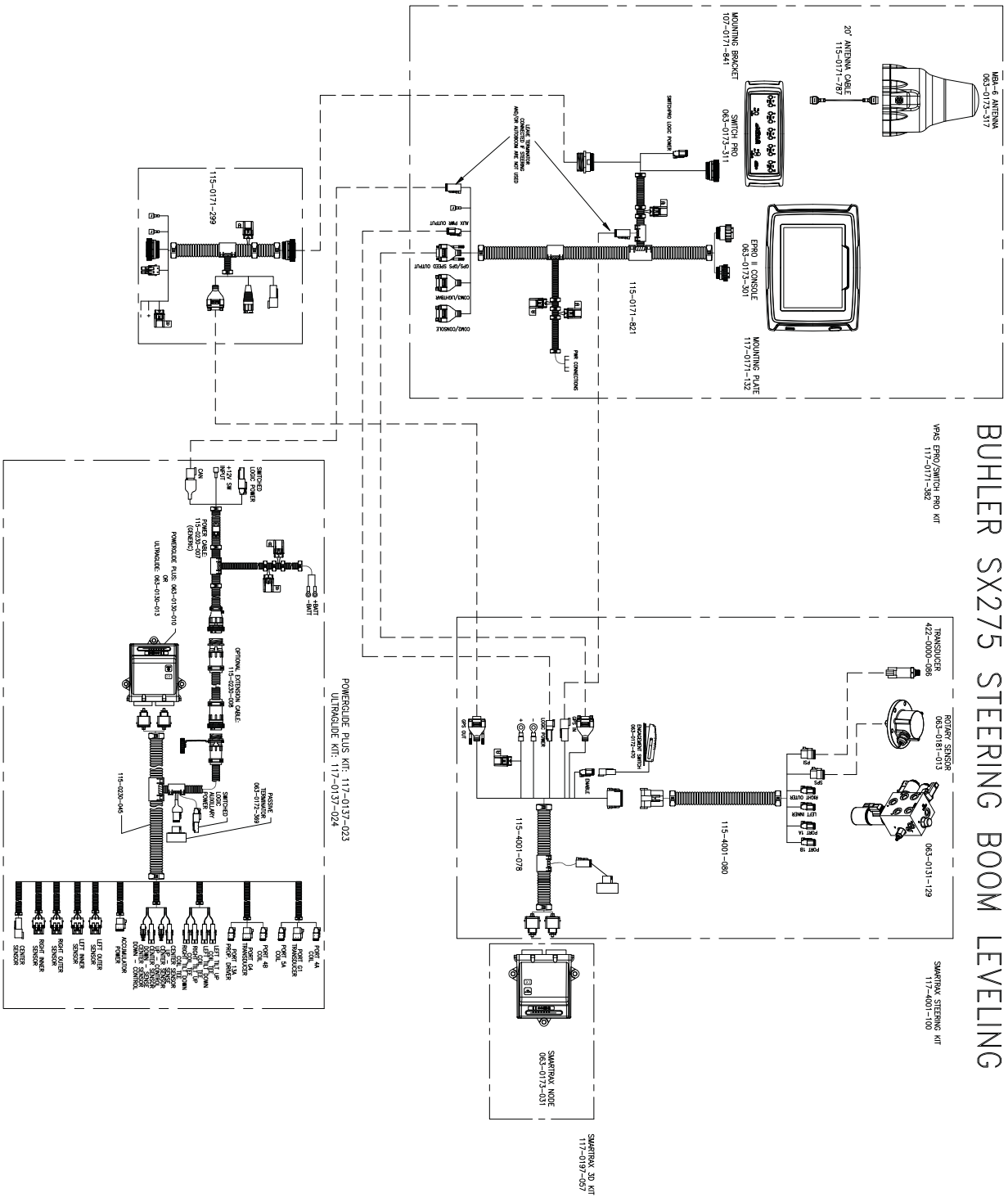
Refer to the Installation & Operation Manual and the specific wiring schematic beginning on page 48 for installation and wiring instructions for the specific field computer being used.

Connect the Power Leads

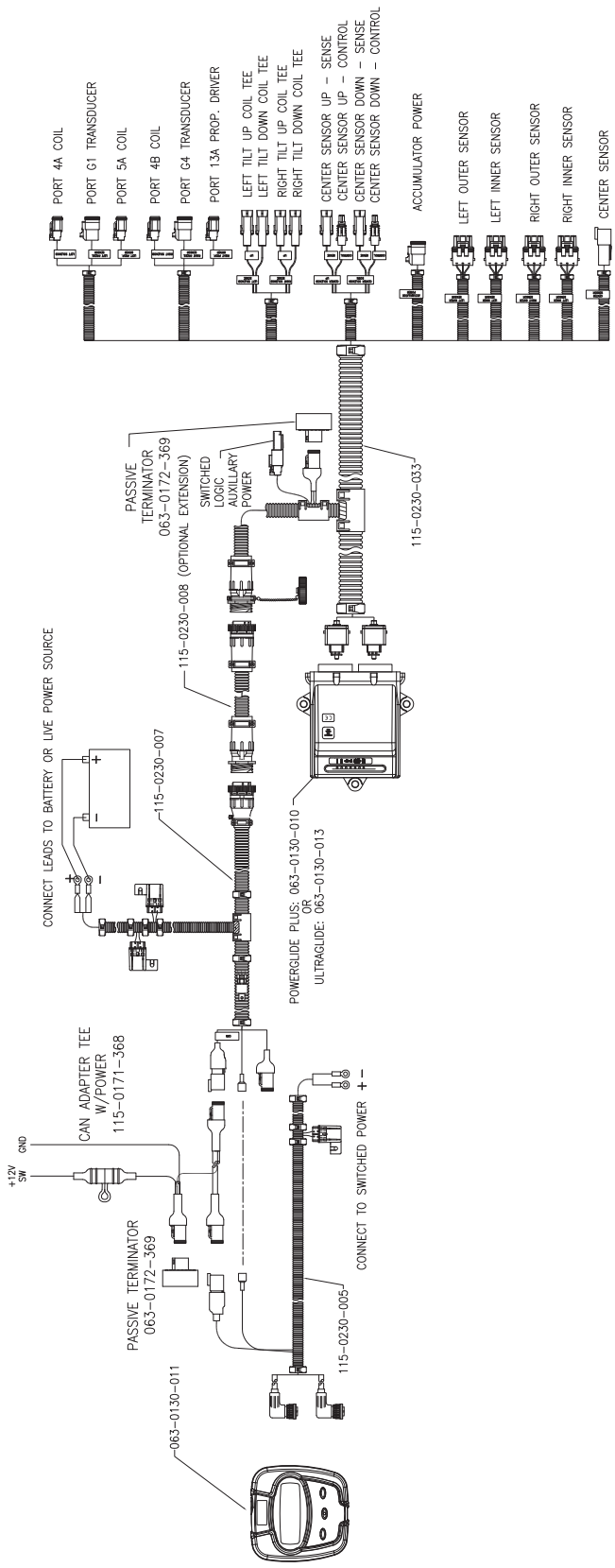
FIGURE 14. Power Connections

1. Locate the power cable branch that has the power and ground leads at one end and route it into the battery box.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the ground lead on the negative battery terminal and reinstall the machine's battery connector.
5. Locate the single wire on the CANbus/relay branch of the cable and add an 18" extension and ring terminal to the end of the wire.
6. Connect the ring terminal to the source of switched power, located behind the access panel at the right-rear corner of the cab.

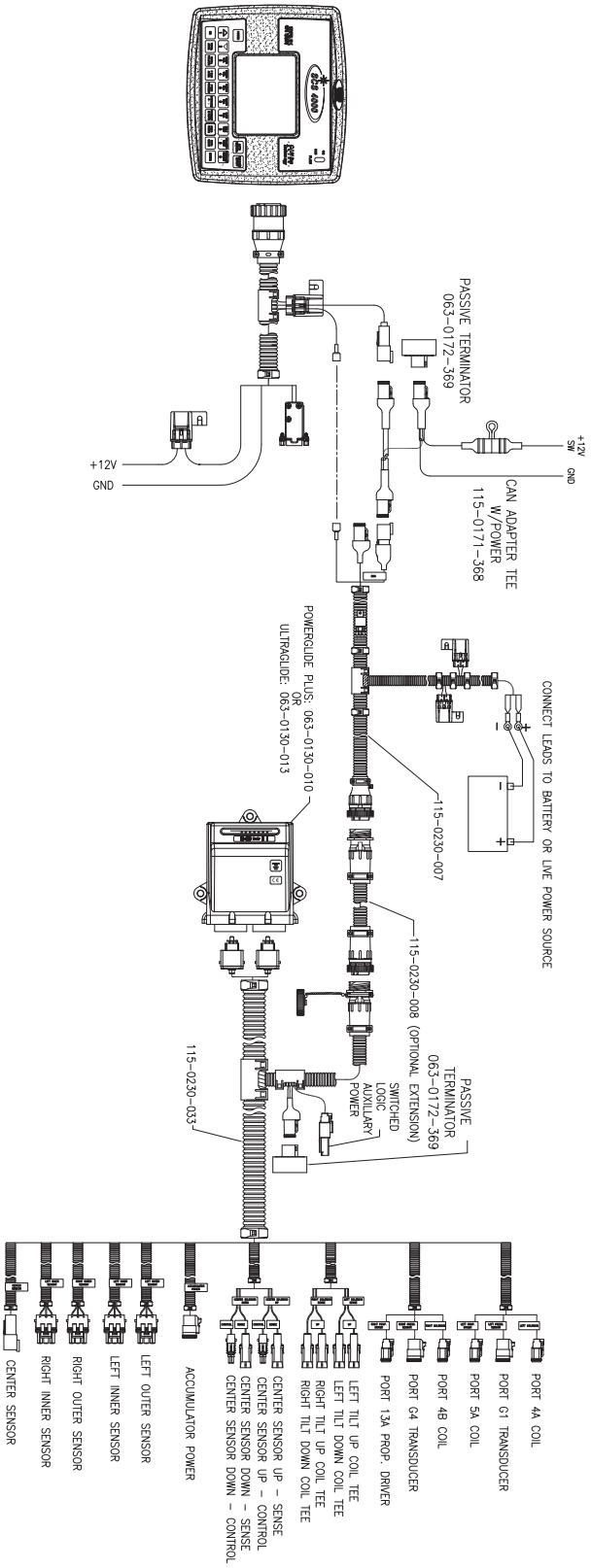
UltraGlide Wiring Schematics



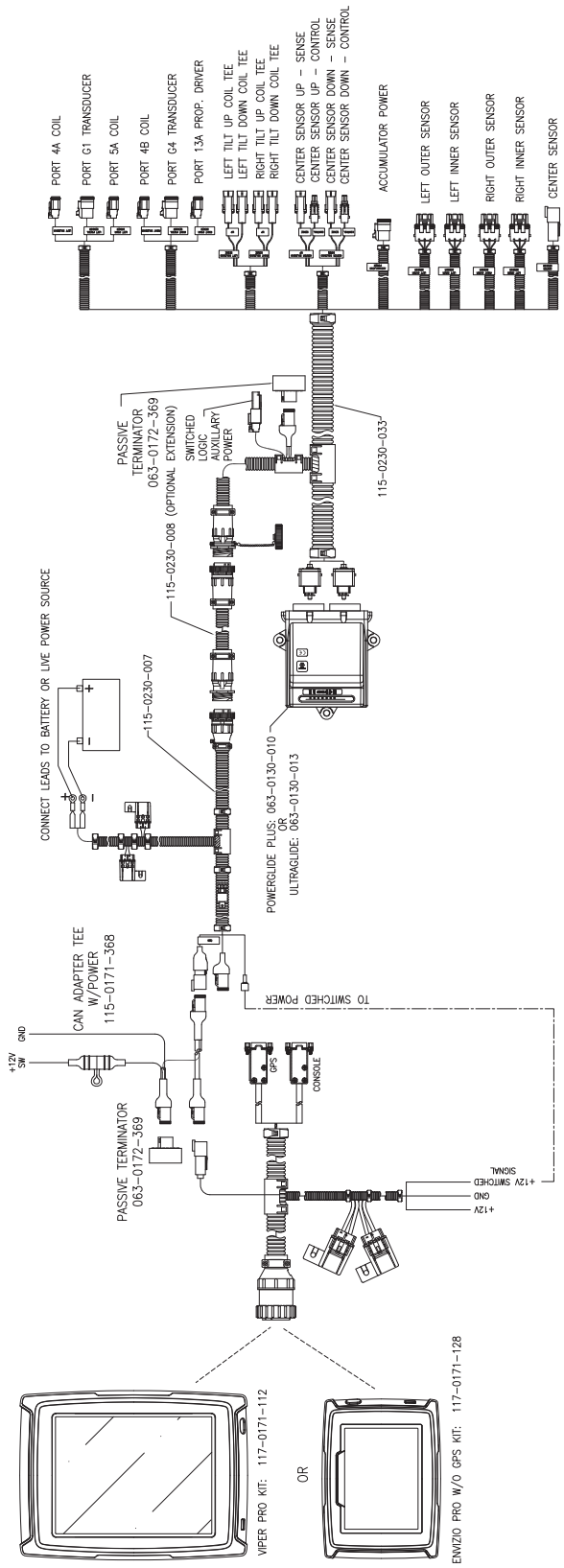
AutoBoom Controller



SCS 4000/5000



Viper Pro & Envizio Pro



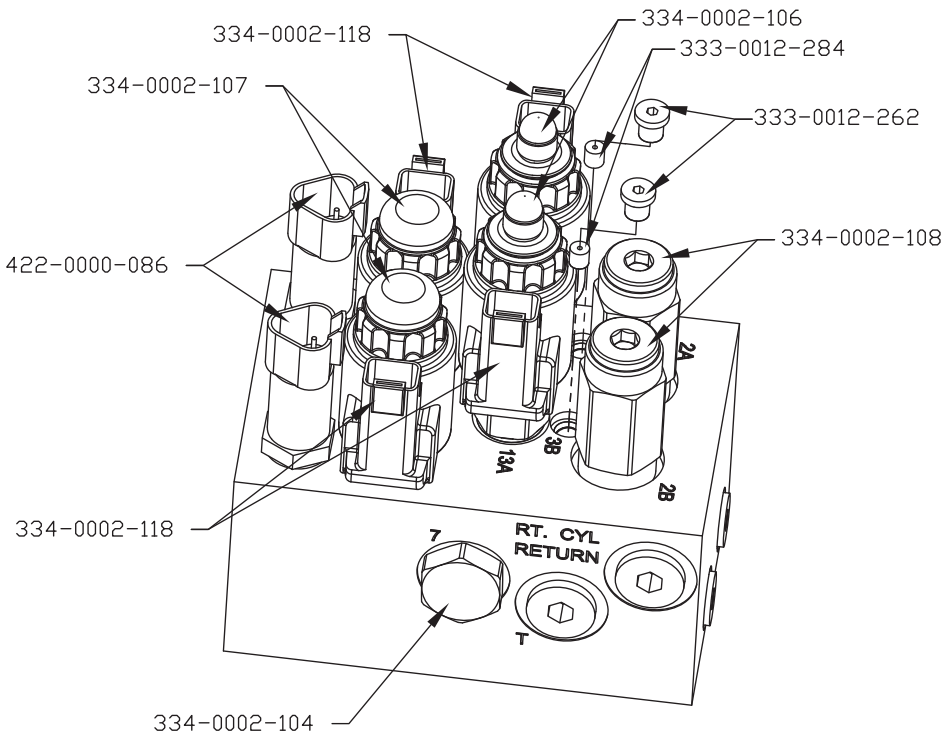
CHAPTER

5

Replacement Parts

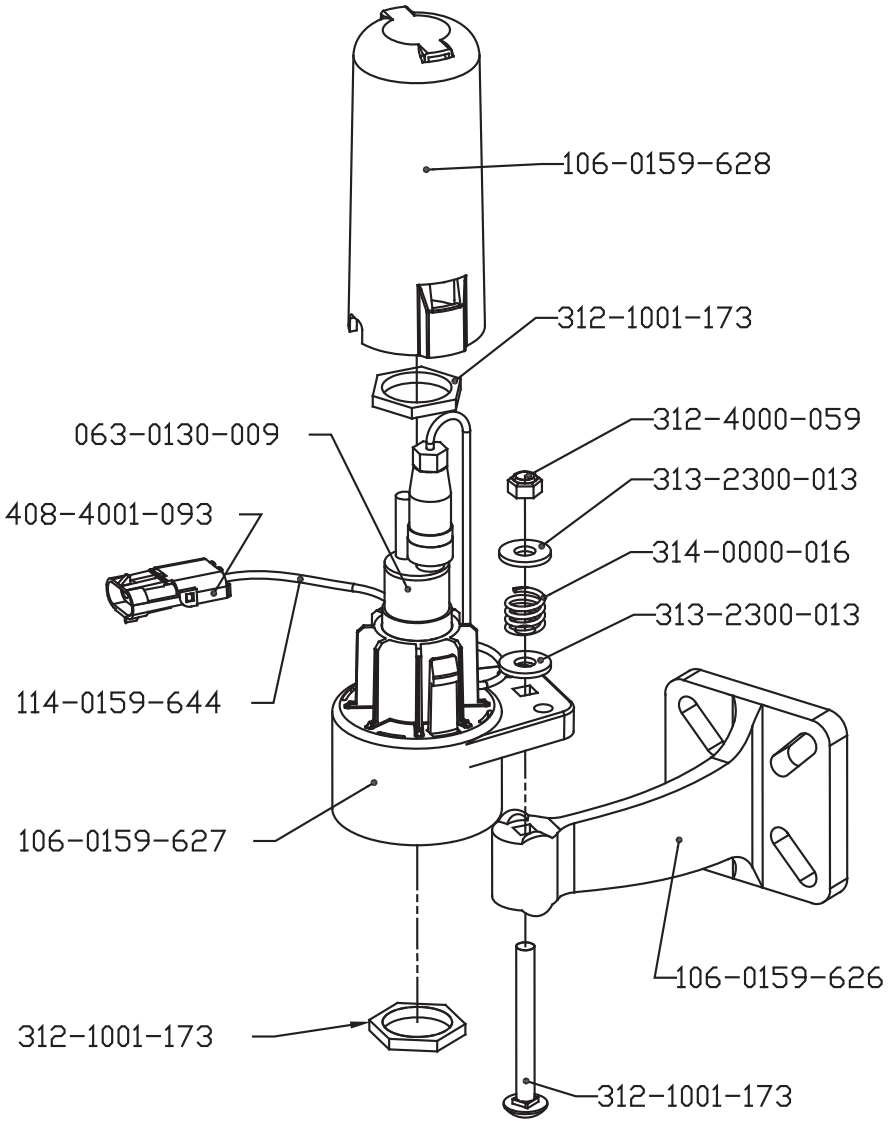
This section contains replacement part diagrams for the PowerGlide Plus and UltraGlide system. Please refer to these diagrams when calling to request replacement parts.

Valve



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

Sensors


106-0159-628
312-1001-173
063-0130-009
312-4000-059
313-2300-013
408-4001-093
314-0000-016
313-2300-013
114-0159-644
106-0159-627
106-0159-626
312-1001-173
312-1001-173

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RAVEN

Limited Warranty

What Does this Warranty Cover?

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

How Long is the Coverage Period?

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

How Can I Get Service?

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

What Will Raven Industries Do?

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

What is not Covered by this Warranty?

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

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

016-0171-537 Rev. A, E19889

RAVEN

Extended Warranty

What Does this Warranty Cover?

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

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

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

Where Can I Register My Product for the Extended Warranty?

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

How Long is the Extended Warranty Coverage Period?

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

How Can I Get Service?

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

What Will Raven Industries Do?

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

What is Not Covered by the Extended Warranty?

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

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