Hagie STS, Model Year 2007-2013 AutoBoom™ Installation Manual

Manual No. 016-0230-116 Rev. A 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 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, 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 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

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: Hagie
MODEL: STS
YEAR: 2007-2013

FIGURE 1. Hagie STS

Preparing for Installation

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

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

Recommendations

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

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

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

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

Tools Needed

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

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

Point of Reference

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

Hydraulic Fittings

This manual may reference the following types of hydraulic fittings:

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

SAE O-ring fitting

ORFS fitting

JIC fitting

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

-Hagie STS, Model Year 2007-2013 AutoBoom™ Installation Manual
-Manual No. 016-0230-116 Rev. A
-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.

Kit Contents

This section contains a list of the components that are included in the UltraGlide XT kit. Before beginning the AutoBoom installation, compare the items in the kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. AutoBoom Installation Kit (P/N 117-0232-116)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
Not Pictured	Manual - Hagie STS, Model Year 2007-2013 AutoBoom Installation	016-0230-116	1
	Valve - AutoBoom Hydraulic	063-0131-125	1

TABLE 1. AutoBoom Installation Kit (P/N 117-0232-116)

Picture	Item Description	Part Number	Qty.
	Bracket - Node Mounting	107-0171-619	1
	Bracket - Hydraulic Valve Mounting	107-0172-231	1
	Bracket - Boom Mount Weldment	116-0159-617	2
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Center Ultrasonic	063-0130-018	1
	Node - AutoBoom	063-0130-013	1
	Cable - Hagie Serial Inverter Boom Sense Interface	063-0173-536	1
	Cable - 70’ Sensor Extension	115-0171-527	2
	Cable - Power/CAN	115-0230-107	1
	Cable - AutoBoom Harness	115-0230-108	1

TABLE 1. AutoBoom Installation Kit (P/N 117-0232-116)

Picture	Item Description	Part Number	Qty.
	U-Bolt - 4” W x 5” L x 3/8” Thread	107-0171-606	2
	U-Bolt - 1-1/8” W x 2” L x 3/8” Thread	107-0171-613	2
	Clamp - 2” x 5/16” Thread U-Bolt Muffler	435-3003-059	2
	Bolt - 5/16”-18 x 7/8” Hex	311-0052-104	4
	Bolt - 3/8”-16 x 1” Hex	311-0054-105	6
	Bolt - 3/8”-16 UNC x 1-1/4” Hex	311-0054-106	12
	Nut - 3/8”-16 Zinc Flanged Lock	312-1001-164	26
	Washer - 5/16” Split Lock	313-1000-019	4
	Washer - 3/8” Flat	313-2300-013	16

TABLE 2. Hydraulic Installation Kit (P/N 117-0134-083)

Picture	Item Description	Part Number	Qty.
	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	4
	Fitting - 9/16” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-046	2
	Fitting - 3/4” JIC (M) to 7/8” SAE O-Ring (M) Straight Adapter	333-0012-056	1
	Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	3
	Fitting - 11/16” Hex to 9/16” SAE O-Ring Plug	333-0012-194	2
	Hydraulic Hose - 3/4” JIC (F) 90° to 3/4” JIC (F) - 24”	214-1000-999	2
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 24”	214-1001-001	1
	Hydraulic Hose - 9/16” JIC (F) 90° to 9/16” JIC (F) - 30”	214-1001-003	2
	Hydraulic Hose - 3/4” JIC (F) to 9/16” JIC (F) - 22”	214-1000-004	2

TABLE 3. Ultrasonic Sensor Bracket Installation Kit (P/N 117-0131-082)

Picture	Item Description	Part Number	Qty.
Not Pictured	Sheet - AutoBoom Sensor Extension Installation	016-0130-070	1
	Bracket - 12” S-Type AutoBoom Sensor	063-0131-592	2
	Bolt - 5/16”-18 x 1-1/4” Hex	311-0052-106	2
	Nut - 5/16”-18 Nylon Insert Lock	312-4000-059	2
	Washer - 5/16” Flat	313-2300-012	4

CHAPTER

3

Hydraulic System Installation

⚠ WARNING

Hydraulics are under pressure. Care should always be taken with a system that has been pressurized.

Before beginning the AutoBoom hydraulic installation, turn off the machine and relieve pressure by turning the steering wheel left and right.

Never work on a hot machine. Always allow it to cool before performing diagnostics, maintenance, or routine service.

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.

Tampering with hydraulic valves may cause serious injury or death, and will void the warranty.

⚠ 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 damage the AutoBoom hydraulic valve.

NOTICE

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

Install Fittings in the AutoBoom Valve

Before mounting the AutoBoom valve (P/N 063-0131-125) 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, LSP
Fitting - 9/16” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-046	LF CYL RTN, RT CYL RTN
Fitting - 3/4” JIC (M) to 3/4” SAE O-Ring (M) Straight Adapter	333-0012-093	P, T
Fitting - 11/16” Hex to 9/16” SAE O-Ring Plug	333-0012-194	LV, RV

Mount the AutoBoom Valve

FIGURE 1. AutoBoom Valve Installed on Mounting Bracket

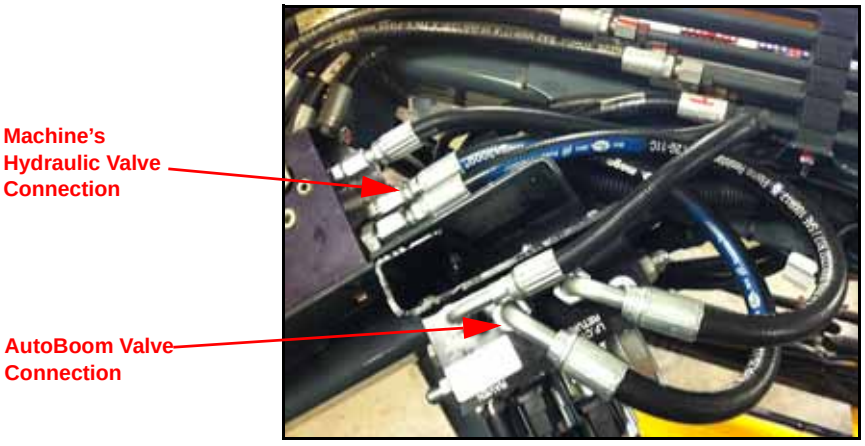
1. Secure the AutoBoom valve (P/N 063-0131-125) to the valve mounting bracket (P/N 107-0172-231) using four 5/16” hex bolts (P/N 311-0052-104) and four 5/16” split lock washers (P/N 311-1000-019).

FIGURE 2. AutoBoom Valve Mounted on the Machine

2. Align the valve mounting bracket with the holes in the angled cross rail on the machine’s center rack, positioning it so that the bend in the bracket is located on the left.
3. Secure the mounting bracket to the cross rail using three 3/8”-16 x 1” hex bolts (P/N 311-0054-105) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

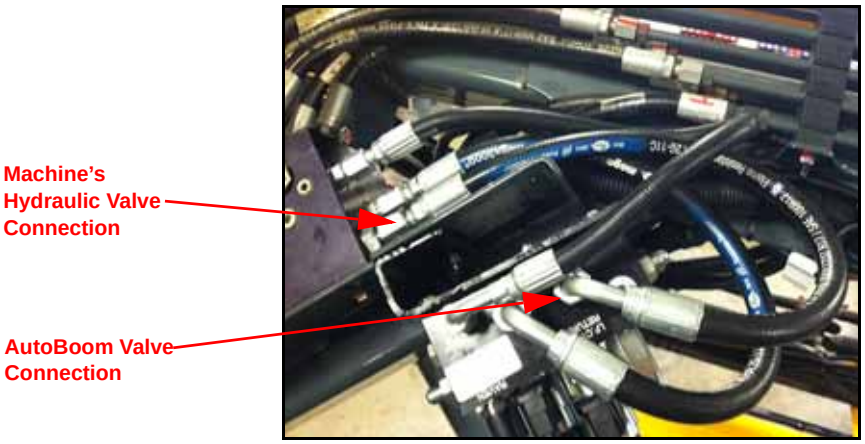
Install the Pressure and Tank Hoses

FIGURE 3. Pressure Hose Installed



1. Locate the auxiliary pressure port on the machine's hydraulic valve.
2. Remove the plug from the auxiliary pressure port.
3. Install a 3/4" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-093) in the pressure port of the machine's hydraulic valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-999) on the installed adapter fitting.
5. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port P of the AutoBoom valve (P/N 063-0131-125).

FIGURE 4. Tank Hose Installed



6. Locate the auxiliary tank port on the machine's hydraulic valve.
7. Remove the plug from the auxiliary tank port.
8. Install a 3/4" JIC (M) to 7/8" SAE O-ring (M) straight adapter fitting (P/N 333-0012-056) in the tank port of the machine's hydraulic valve.
9. Install the straight end of the supplied hydraulic hose (P/N 214-1000-999) on the installed adapter fitting.
10. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

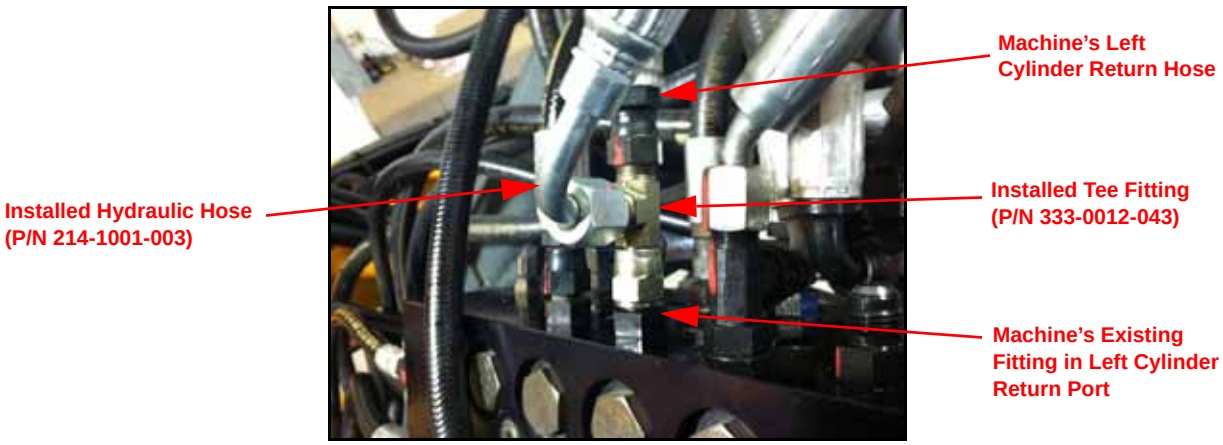
FIGURE 5. Left Cylinder Hose Installed Machine's Hydraulic Valve

1. Disconnect the left cylinder up hose from the left cylinder up port on the machine's hydraulic valve.
2. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) on the existing fitting in the left cylinder up port.
3. Connect the machine's left cylinder up hose to the opposite end of the installed tee fitting.
4. Install the one end of the supplied hydraulic hose (P/N 214-1001-004) to the 90° end of the installed tee fitting.

FIGURE 6. Left Cylinder Hose Installed on AutoBoom Valve

5. Connect the other end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve (P/N 063-0131-125).

FIGURE 7. **Tee Fitting Installed in Machine's Left Cylinder Return Port**

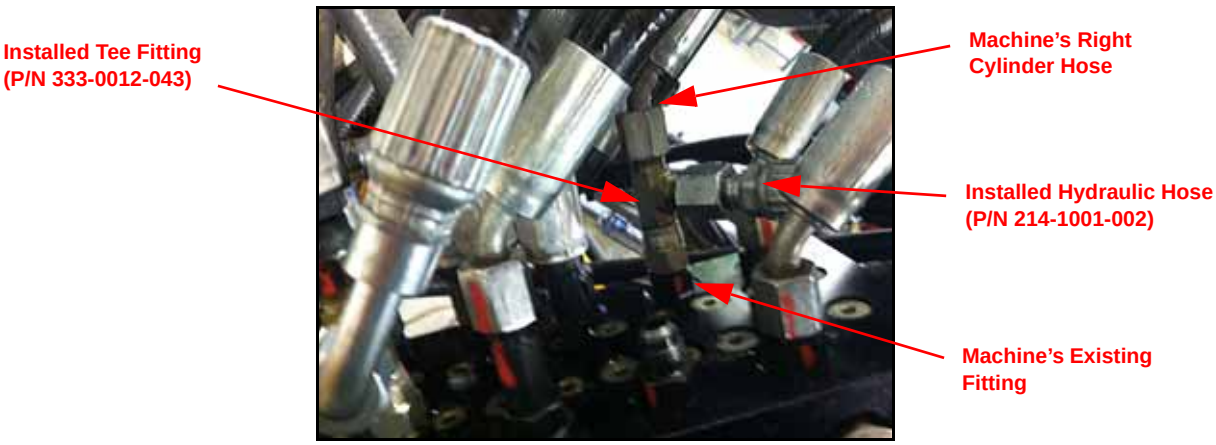


6. Locate and disconnect the machine's left cylinder return hose from the machine's hydraulic valve.
7. Install a 9/16" JIC M/M/F swivel run tee fitting (P/N 333-0012-043) on the existing fitting in the machine's left cylinder return port.
8. Connect the machine's left cylinder return hose to the opposite end of the installed tee fitting.
9. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-003) on the 90° end of the installed tee fitting.

FIGURE 8. **Left Cylinder Return Hose Installed on AutoBoom Valve**

10. Connect the straight end of the installed hydraulic hose to the fitting installed in Port LF CYL RTN of the AutoBoom valve.

FIGURE 9. **Right Cylinder Hose Installed on Cylinder**

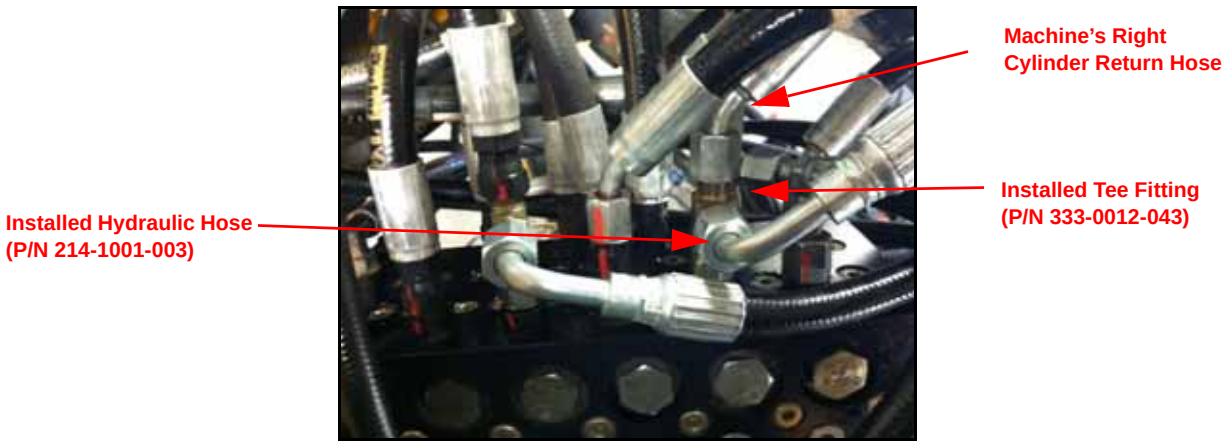


11. Disconnect the right cylinder up hose from the right cylinder up port on the machine's hydraulic valve.
12. Install a 9/16" JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) on the existing fitting in the right cylinder up port.
13. Connect the machine's right cylinder up hose to the opposite end of the installed tee fitting.
14. Install the one end of the supplied hydraulic hose (P/N 214-1001-004) to the 90° end of the installed tee fitting.

FIGURE 10. **Right Cylinder Hose Installed on AutoBoom Valve**

15. Connect the other end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

FIGURE 11. **Tee Fitting Installed in Machine's Right Cylinder Return Port**



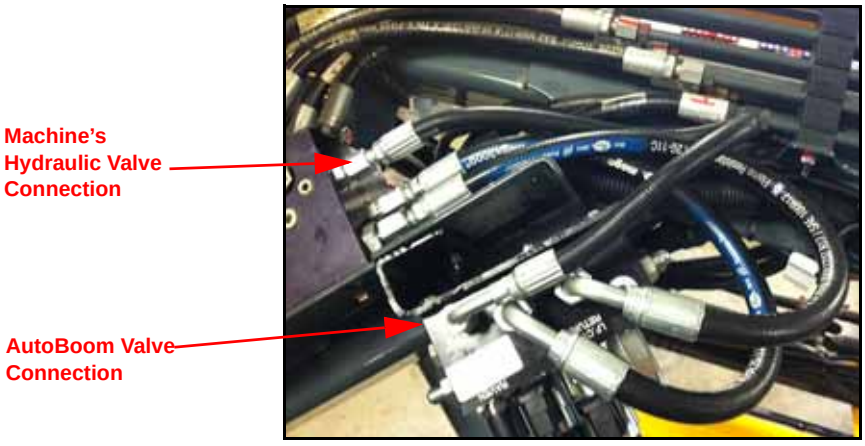
16. Locate and disconnect the machine's right cylinder return hose from the machine's hydraulic valve.
17. Install a 9/16" JIC M/M/F swivel run tee fitting (P/N 333-0012-043) on the existing fitting in the machine's right cylinder return port.
18. Connect the machine's right cylinder return hose to the opposite end of the installed tee fitting.
19. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-003) on the 90° end of the installed tee fitting.

FIGURE 12. **Right Cylinder Return Hose Installed on AutoBoom Valve**

20. Connect the straight end of the installed hydraulic hose to the fitting installed in Port RT CYL RTN of the AutoBoom valve.

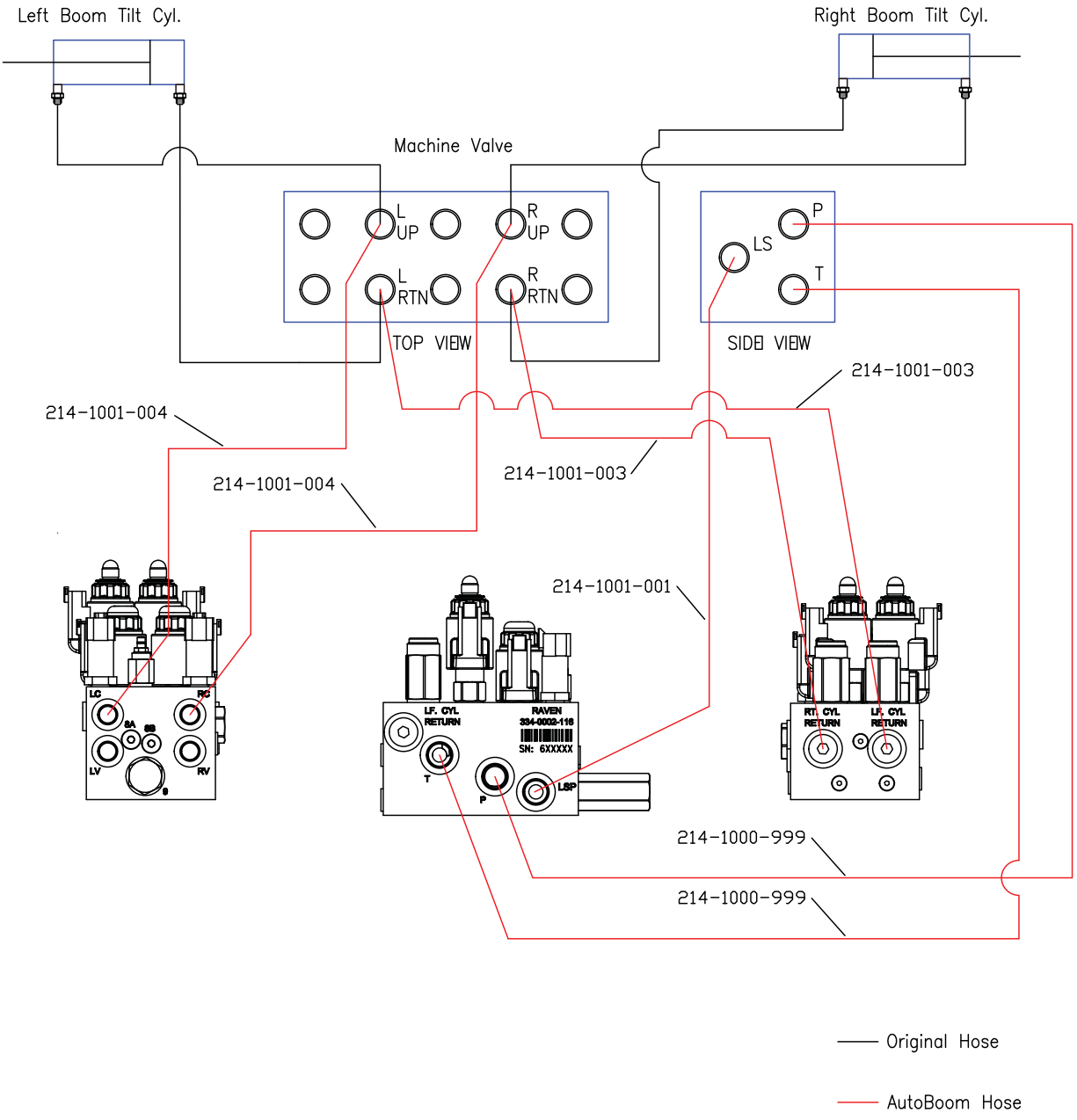
Install the Load Sense Hose

FIGURE 13. Load Sense Hose Installed



1. Locate the auxiliary load sense port on the machine's hydraulic valve.
2. Remove the plug from the auxiliary load sense port.
3. Install a 3/4" JIC (M) to 3/4" SAE O-ring (M) straight adapter fitting (P/N 333-0012-045) in the load sense port of the machine's hydraulic valve.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1001-001) on the installed adapter fitting.
5. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LSP of the AutoBoom valve (P/N 063-0131-125).

Hydraulic Diagram



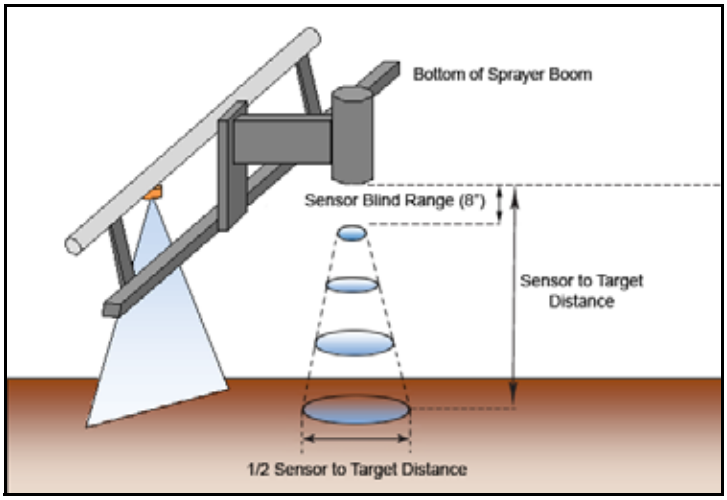
CHAPTER 4

Sensor Installation

Boom Sensor Mounting Locations

Sensor mounting locations may be influenced by the boom configuration. If an object enters the sensor's blind range unexpectedly, a false echo return to the sensor could occur, causing the boom to drop and the sensor or boom to be damaged. To ensure optimal operation of the UltraGlide system and to protect the sprayer booms, the sensors should be mounted on the front side of the boom, 8 - 10" above the lowest hanging part of the boom.

FIGURE 1. Illustration of Sensor's Blind Range



Mount the Boom Sensors

WARNING

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

FIGURE 2. **Mounted Boom Sensor**

1. Locate the left and right ultrasonic sensors (P/N 063-0130-012 and 063-0130-014) in the AutoBoom installation kit.
2. Remove the sensors from the plastic arms.
3. Install the sensors on the 12” S-type sensor arms (P/N 063-0130-592) using two 5/16”-18 x 1-1/4” bolts (P/N 311-0052-106), four 5/16” flat washers (P/N 313-2300-012), and two 5/16”-18 nylon insert lock nuts (P/N 312-4000-059).
4. Locate the two holes drilled in the flat area on the front side of the booms, next to the boom breakaways.

Note: *If the holes are not present, use the boom mount weldment bracket (P/N 116-0159-617) as a guide to drill two 3/8” holes in each boom in the area shown in the figure above.*

5. Install the boom mount weldment bracket (P/N 116-0159-617) the front of the left boom using two 3/8”-16 UNC x 1-1/4” zinc plated hex bolts (P/N 311-0054-106) and two 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).
6. Mount the left sensor to the on the installed weldment bracket using four 3/8”-16 UNC x 1-1/4 hex bolts (P/N 311-0054-106) and four 3/8” zinc flanged lock nuts (P/N 312-1001-164).
7. Tighten the nuts to ensure the sensor is mounted securely.
8. Repeat steps 5 - 7 above to mount the remaining boom sensor(s).

Mount the Center Rack Sensor

Square Tube Center Rack

FIGURE 3. Center Sensor Installed

1. Mount the center sensor (P/N 063-0130-018) to the machine's center rack using two 1-1/8" W x 2" L x 3/8" thread U-bolts (P/N 107-0171-613) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
2. Tighten the nuts to ensure the sensor is mounted securely.

Round Tube Center Rack

FIGURE 4. Center Sensor Installed

1. Remove the nuts and clamp from the 2" muffler clamps (P/N 435-3003-059) and install the U-bolts around the center rack tube.
2. Install the clamp on the ends of the U-bolts.
3. Align and place the center sensor (P/N 063-0130-018) over the ends of the U-bolts.
4. Reinstall the nuts on the ends of the U-bolts.

Connect the Sensor Cables

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

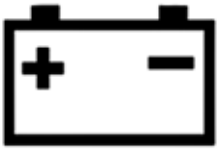
Note: *The sensor cables will be connected to the AutoBoom system in the wiring phase of installation.*

CHAPTER

5

Wiring Installation

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 1. AutoBoom Node Installed

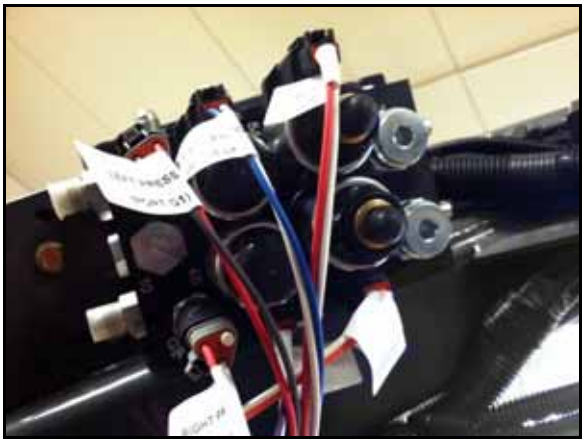
1. Secure the AutoBoom node (P/N 063-0130-013) to the node mounting bracket (P/N 107-0171-619) using three 3/8”-16 x 1-1/4” zinc hex bolts (P/N 311-0054-105) and three 3/8”-16 zinc flanged lock nuts (P/N 312-1001-164).

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

2. Insert the large, rectangular node connectors into the correct ports of the AutoBoom node.
3. Tighten the bolts on the node connectors to secure the connections.
4. Secure the mounting bracket to the cross rail 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).

Connect the Harness Cable to the Boom Function Controls

FIGURE 2. AutoBoom Valve Connections



1. Locate the LEFT PRESS and RIGHT PRESS connectors on the AutoBoom harness cable (P/N 115-0230-108).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-125).
3. Connect the LEFT PRESS (PORT G1) connector to Port G1 of the AutoBoom valve.
4. Connect the RIGHT PRESS (PORT G4) connector to Port G4 of the AutoBoom valve.
5. Locate the LEFT SOLENOID and RIGHT SOLENOID connectors on the harness cable.
6. Connect the LEFT SOLENOID (PORT LF) connector to Port 4A of the AutoBoom valve.
7. Connect the RIGHT SOLENOID (PORT RT) connector to Port 4B of the AutoBoom valve.
8. Locate the LEFT PROP and RIGHT PROP connectors on the harness cable.
9. Connect the LEFT PROP (PORT 5A) connector to Port 5A of the AutoBoom valve.
10. Connect the RIGHT PROP (PORT 13A) connector to Port 13A of the AutoBoom valve.

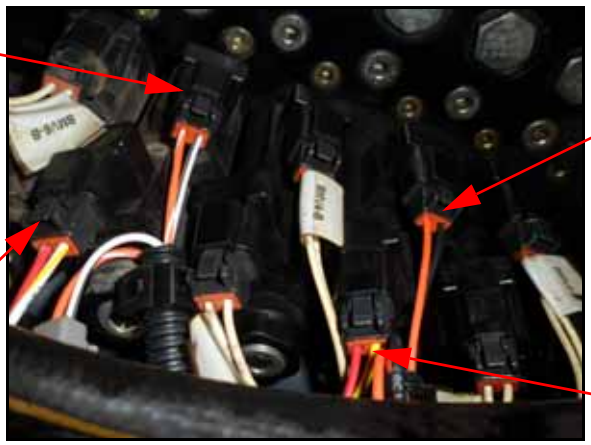
FIGURE 3. **Serial Inverter Interface Installed on AutoBoom Harness**

11. Locate the 4-pin connector on the AutoBoom harness cable.
12. Install the serial inverter boom sense interface cable (P/N 063-0173-536) on the 4-pin harness cable connection.
13. Route the serial inverter boom sense interface cable toward the AutoBoom valve.

FIGURE 4. **Machine's Boom Function Controls**

14. Locate the machine's boom function coils under the machine's hydraulic valve.

FIGURE 5. **Serial Inverter Interface Connected to Boom Function Controls**



15. Locate and disconnect the machine's cable labeled BMV3-R on the machine's left tilt up coil.
16. Connect the cable to the male LEFT SOLENOID SENSE UP connector on the serial inverter boom sense interface cable (P/N 063-0173-536).
17. Connect the female LEFT SOLENOID SENSE UP connector to the machine's left tilt up coil.
18. Locate and disconnect the machine's cable labeled BMV3-B on the machine's left tilt down coil.
19. Connect the cable to the male LEFT SOLENOID SENSE DOWN connector on the serial inverter boom sense interface cable.
20. Connect the female LEFT SOLENOID SENSE DOWN connector to the machine's left tilt down coil.
21. Locate and disconnect the machine's cable labeled BMV5-R on the machine's right tilt up coil.
22. Connect the cable to the male RIGHT SOLENOID SENSE UP connector on the serial inverter boom sense interface cable.
23. Connect the female RIGHT SOLENOID SENSE UP connector to the machine's right tilt up coil.
24. Locate and disconnect the machine's cable labeled BMV5-B on the machine's right tilt down coil.
25. Connect the cable to the male RIGHT SOLENOID SENSE DOWN connector on the serial inverter boom sense interface cable.
26. Connect the female RIGHT SOLENOID SENSE DOWN connector to the machine's right tilt down coil.

Connect the Harness Cable to the Sensors

FIGURE 6. Harness Cable Connected to Sensor

1. Locate the CENTER SENSOR connector on the AutoBoom harness cable (P/N 115-0230-108).
2. Connect the CENTER SENSOR connector to the installed center sensor (P/N 063-0130-018).
3. Locate the LEFT SENSOR (OUTER) connector on the AutoBoom harness cable.
4. Connect the LEFT SENSOR (OUTER) connector to the installed left sensor cable (P/N 115-0171-527).
5. Locate the RIGHT SENSOR (OUTER) connector on the AutoBoom harness cable.
6. Connect the RIGHT SENSOR (OUTER) 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 AutoBoom harness cable (P/N 115-0230-108) toward the machine's cab.

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

2. Connect the harness cable to the controller cable (P/N 115-0230-107).
3. Tighten the connector screw cap to secure the connection.
4. Install a terminator (P/N 063-0172-369) on the remaining 4-pin connector of the AutoBoom harness cable.

Connect the Controller (If Applicable)

1. Route the controller cable (P/N 115-0230-107) into the right side of the machine's cab.
2. Locate the controller connector and connect it to the AutoBoom controller (P/N 063-0130-021).

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

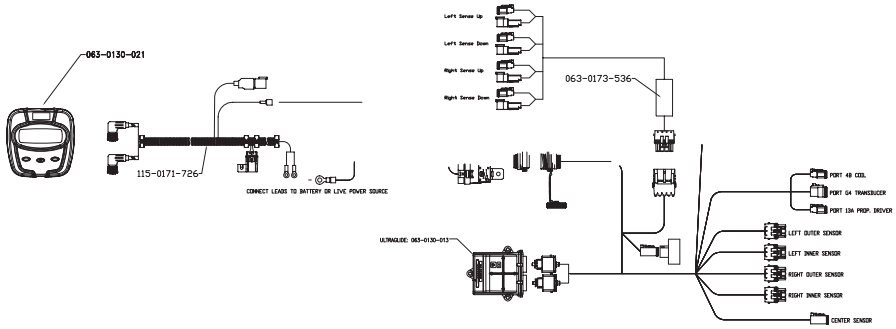
Connect the Field Computer (If Applicable)

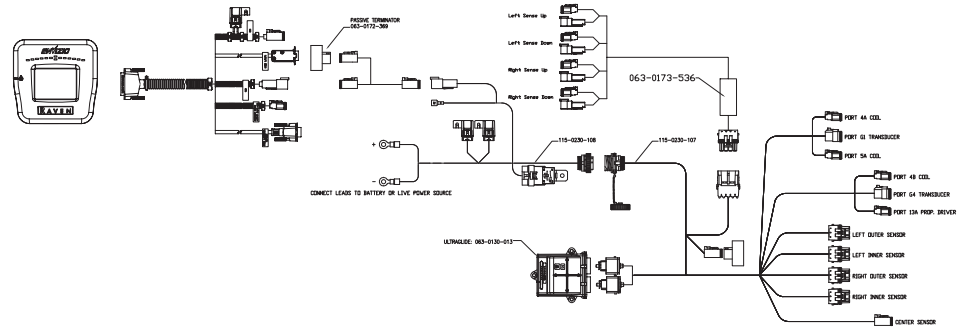
1. Connect the CAN connector on the controller cable (P/N 115-0230-107) to the mating connection on the field computer.
2. Refer to the Installation & Operation Manual and the appropriate wiring schematic beginning on page 31 for installation and wiring instructions for the specific field computer being used.

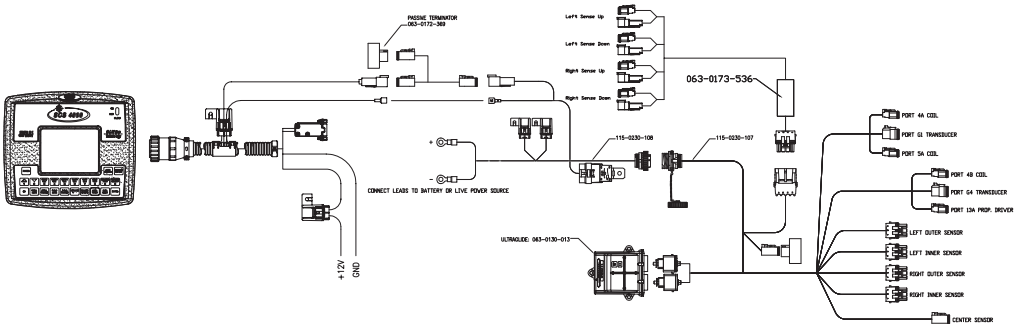
Connect the Power Leads

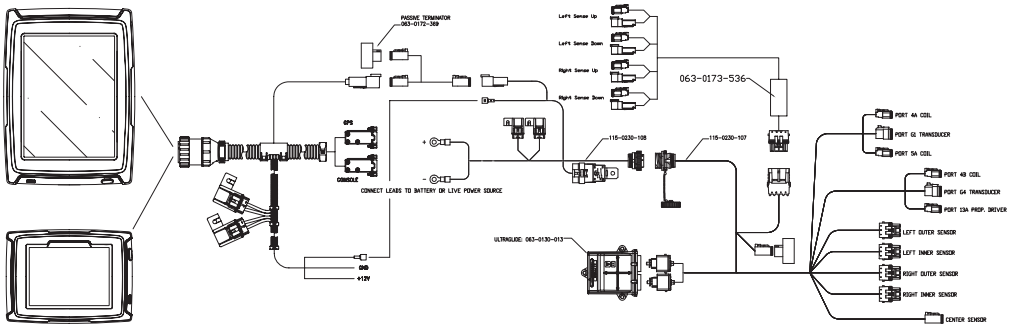
1. Locate the power and ground leads on the power cable (P/N 115-0230-107).
2. Disconnect the machine's connectors from the battery terminals.
3. Install the BATT + power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the BATT - power lead on the negative battery terminal and reinstall the machine's battery connector.
5. Route the spade terminal into the cab and connect it to a source of switched power.

Wiring Diagrams









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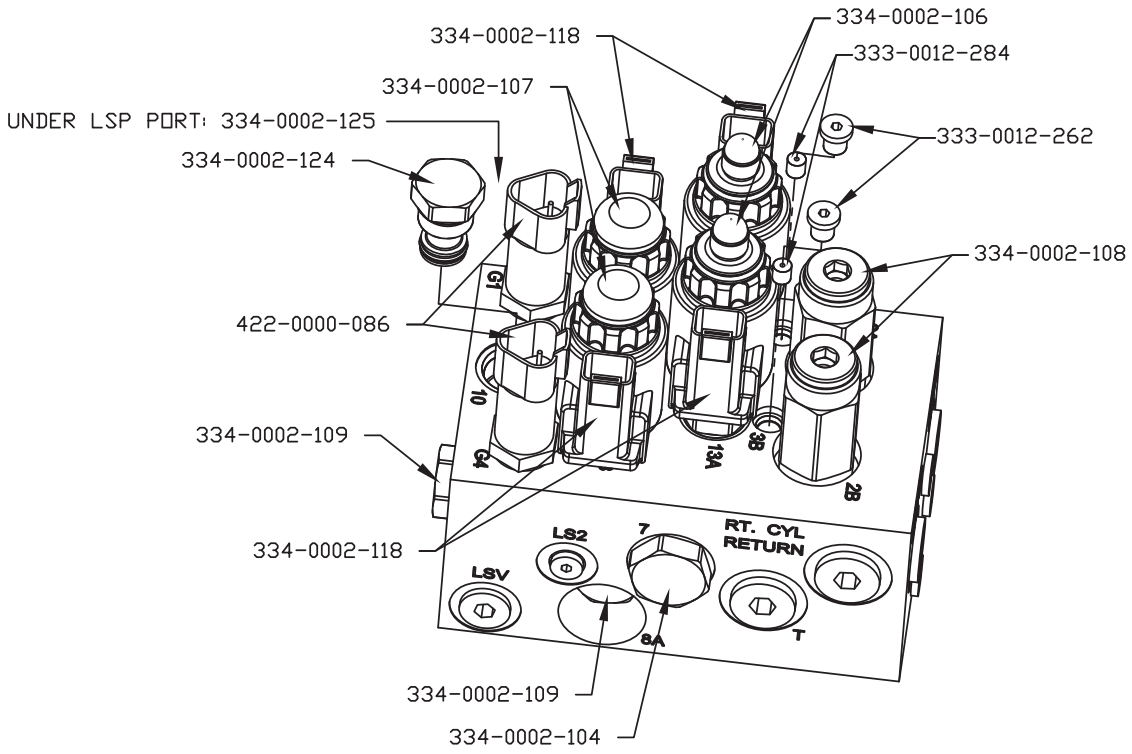
CHAPTER

6

Replacement Parts

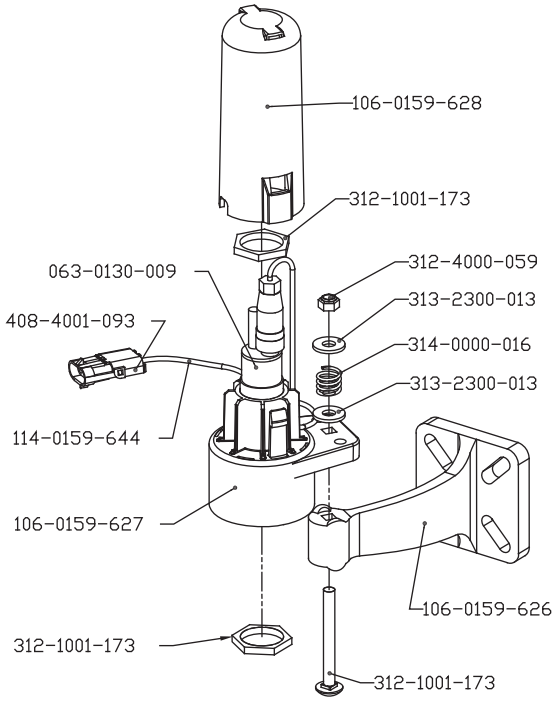
This section contains replacement part diagrams for the AutoBoom system. Please refer to these diagrams when calling to request replacement parts.

Valve

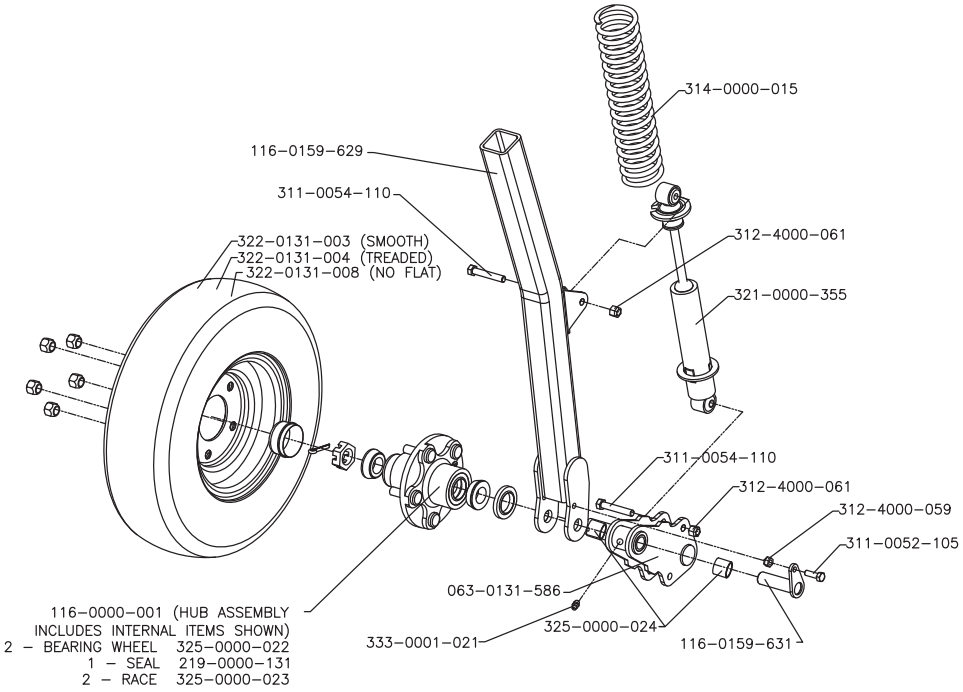


063-0131-125
VALVE, HYDRAULIC POWERGLIDE
PLUS/ULTRAGLIDE, DYNAMIC LS, AUTOBOOM

Sensors



Wheels



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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.