

RAVEN

AutoBoom™ Installation Manual



MS Condor T-1000 with Hystar Valve

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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.

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: MS

MODEL: Condor T-1000 with Hystar Valve

YEAR:

SERIAL NUMBER:

FIGURE 1. MS Condor T-1000 with Hystar Valve



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 (M)



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 117-0232-102)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - MS Condor T-1000 with Hystar Valve AutoBoom Installation Manual	016-0230-102	1
	Valve - UltraGlide AutoBoom	063-0131-126	1
	Plate - Hydraulic Block Mounting	107-0171-802	1
	Sensor - Right Ultrasonic	063-0130-012	1
	Sensor - Left Ultrasonic	063-0130-014	1
	Sensor - Center Ultrasonic	063-0130-018	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-102)

Picture	Item Description	Part Number	Qty.
	Bracket - Center Sensor Mounting	116-0159-684	1
	Cable - Boom Sense Adapter	115-0230-001	1
	Connector - 16-18 Gauge Scoch Lock Parallel Splice	405-2001-079	4
	U-Bolt - 1-9/16" W x 2-1/2" L x 3/8" Thread	107-0171-611	4
	U-Bolt - 2-9/16" W x 3-1/2" L x 3/8" Thread	107-0171-616	4
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 x 1-1/4" UNC Hex	311-0054-106	7
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	23
	Washer - 5/16" Zinc Plated Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-102)

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" SAE O-Ring (M) to 3/4" JIC (M) Straight Adapter	333-0012-093	3
	Fitting - 11/16" Hex to 9/16" O-Ring Plug	333-0012-194	2
	Fitting - 3/8" NPTF (M) to 3/8" NPSM F/F Tee Adapter	333-0012-231	3
	Fitting - 3/8" NPT (M) to 3/8" NPSM (F) Swivel Straight Adapter	333-0012-305	6
	Hydraulic Hose - 3/8" NPT (M) to 3/4" JIC (F) - 60"	214-1000-689	2
	Hydraulic Hose - 3/8" NPT (F) to 3/4" JIC (F) - 48"	214-1000-690	1
	Hydraulic Hose - 3/8" NPT (M) to 3/4" JIC (F) - 48"	214-1000-692	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	016-0130-070	1
	Bracket - 12" S-Type AutoBoom Sensor	063-0131-592	2

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

Picture	Item Description	Part Number	Qty.
	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" Zinc Flat	313-2300-012	4

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

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1
	Cable - Sensor	115-0171-527	2
	Cable - Harness	115-0230-045	1
	Cable - Power/CAN Controller	115-0230-007	1

TABLE 5. Gen II UltraGlide Wiring Kit (P/N 117-5130-003)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - UltraGlide AutoBoom	063-0130-013	1
	Cable - Sensor	115-0171-527	2
	Cable - PowerGlide Plus/UltraGlide with CAN/Power Tee AutoBoom	115-0230-085	1

**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 materials 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**

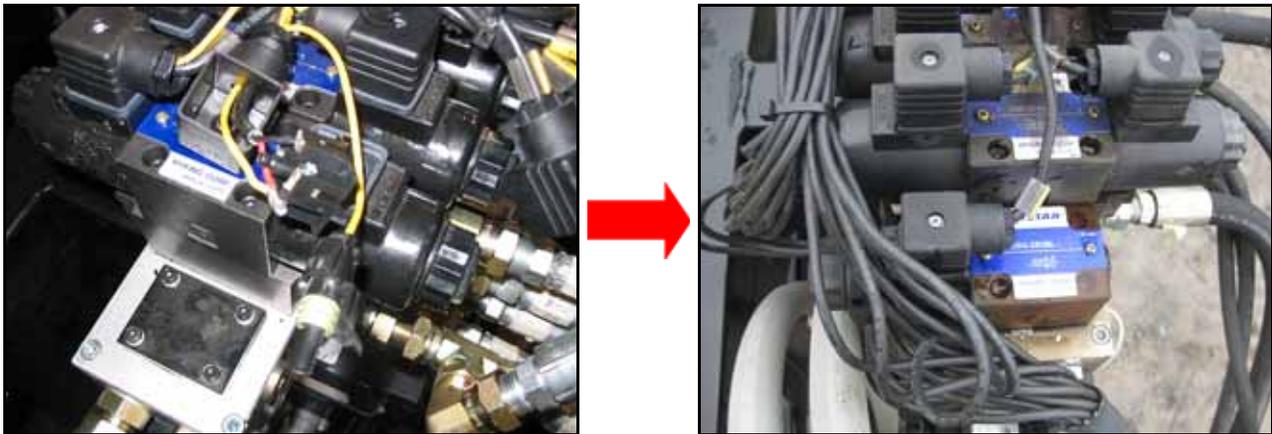
The appearance of the AutoBoom hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.

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

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

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

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



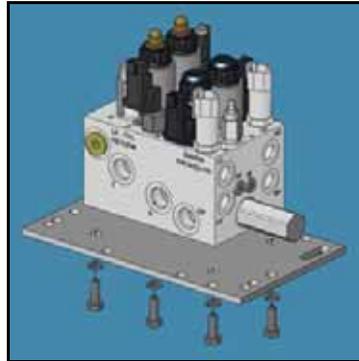
Install the Fittings on the AutoBoom Valve

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

Fitting	Part Number	Port
Fitting - 9/16" JIC (M) to 3/4" SAE O-Ring (M) Straight Adapter	333-0012-046	LC, RC
Fitting - 11/16" Hex to 9/16" O-Ring Plug	333-0012-194	LV, RV
Fitting - 3/4" SAE O-Ring (M) to 3/4" JIC (M) Straight Adapter	333-0012-093	Left T, P, EF

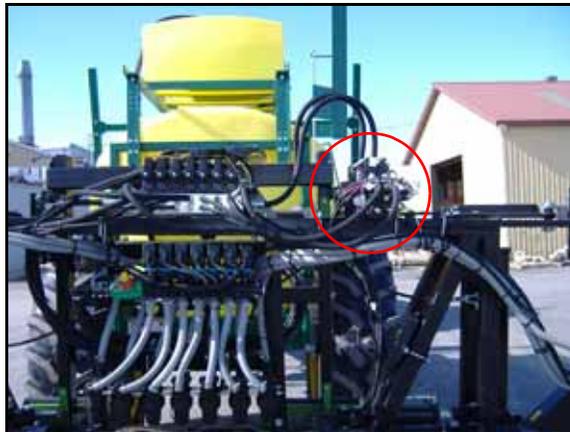
Mount the AutoBoom Valve

FIGURE 2. AutoBoom Valve Mounted to the Mounting Plate



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

FIGURE 3. AutoBoom Valve Mounted to the Machine



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

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.

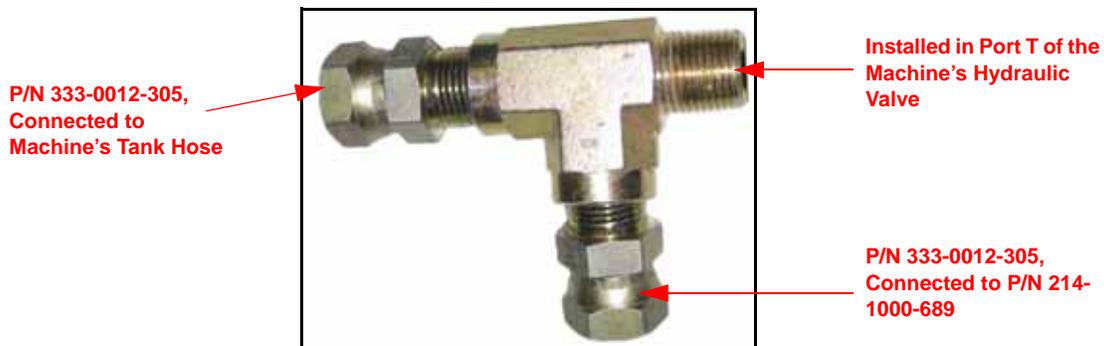
	⚠ CAUTION
	<p>When installing AutoBoom hydraulics or performing diagnostics, maintenance, or routine service, ensure precautions are taken to prevent any foreign material from being introduced into the machine's hydraulic system.</p> <p>Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the AutoBoom hydraulic valve.</p>

FIGURE 4. Pressure and Tank Hoses Installed on the Machine's Valve



1. Locate and disconnect the machine's pressure hose from the machine's hydraulic valve.
2. Install the female pipe end of the supplied hydraulic hose (P/N 214-1000-690) on the end of the machine's pressure hose.
3. Connect the female JIC end of the installed hydraulic hose to the fitting installed in Port P of the AutoBoom valve.
4. Install the 3/8" male end of the supplied hydraulic hose (P/N 214-1000-689) in port P of the machine's hydraulic valve.
5. Connect the other end of the installed hydraulic hose to the fittings installed in Port EF of the AutoBoom valve.

FIGURE 5. Machine's Tank Port Fitting Assembly

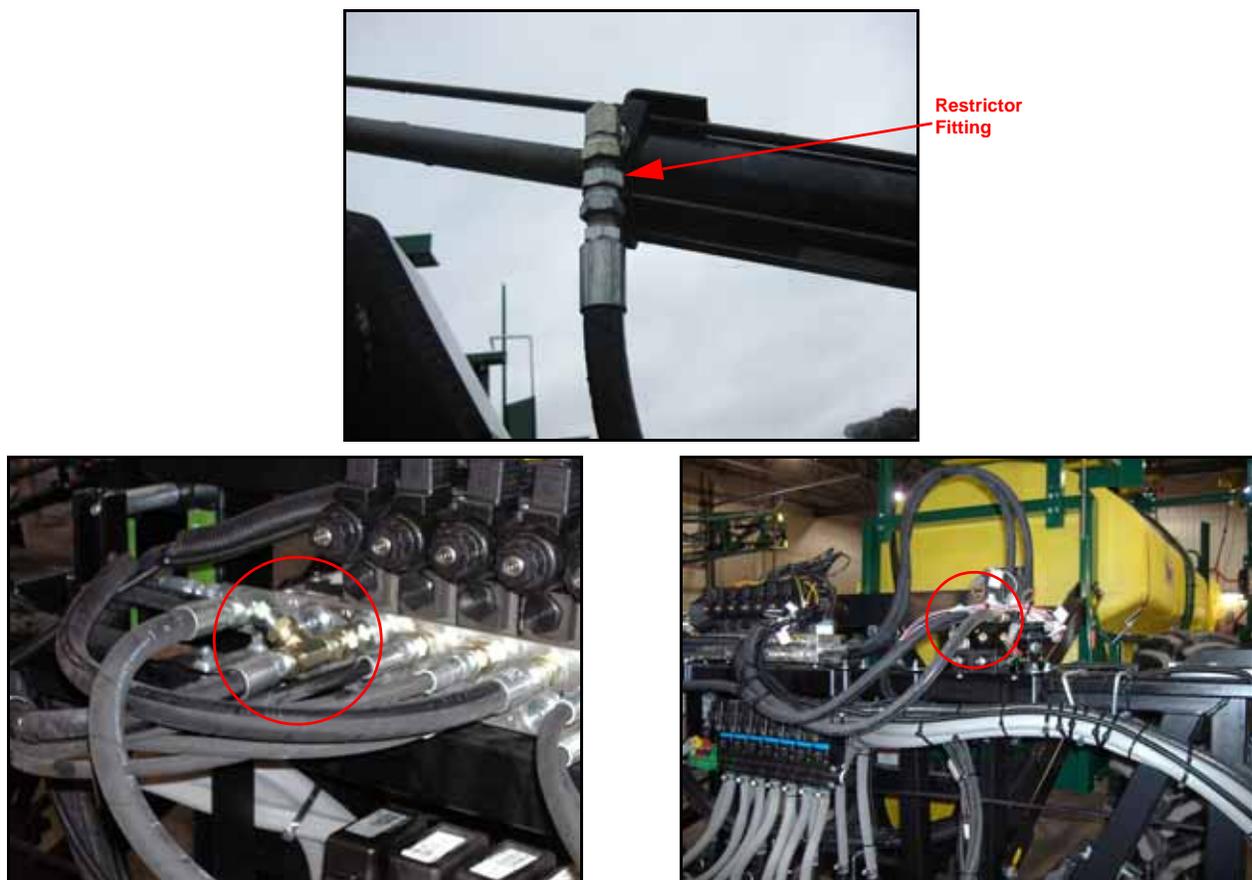


6. Disconnect the machine's tank hose from the machine's hydraulic valve.
7. Install 3/8" NPT (M) to 3/8" NPSM (F) swivel straight adapter fittings (P/N 333-0012-305) on the female ends of a 3/8" NPTF (M) to 3/8" NPSM F/F tee adapter fitting (P/N 333-0012-231).
8. Install the male end of the tee fitting assembly in port T of the machine's hydraulic valve.
9. Connect the machine's tank hose to the fitting installed on the opposite end of the installed tee fitting.
10. Install the male end of the supplied hydraulic hose (P/N 214-1000-689) to the fitting installed on the 90° end of the tee fitting.
11. Connect the other end of the installed hydraulic hose to the fitting installed in Port T of the AutoBoom valve.

Install the Left and Right Cylinder Hoses

Machines Containing Restrictor Fittings in the Tilt Cylinders

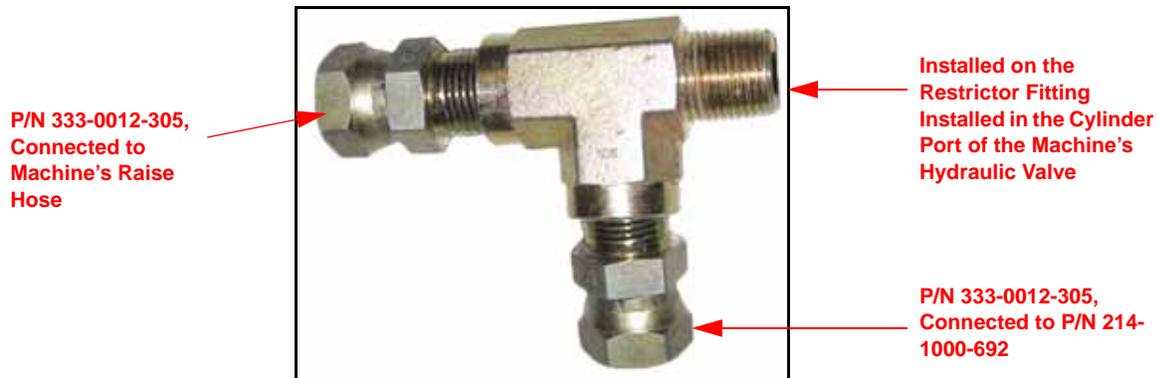
FIGURE 6. Left Cylinder Hose Installed



1. Disconnect the machine's left raise hose from the left tilt cylinder.
2. Remove the restrictor fitting from the machine's left tilt cylinder port.
3. Reconnect the left raise hose to the left tilt cylinder.
4. Trace the left raise hose to the machine's hydraulic valve.

5. Disconnect the left raise hose from the machine's hydraulic valve.
6. Install the restrictor fitting in the open left cylinder port on the machine's hydraulic valve.

FIGURE 7. Cylinder Fitting Assembly



7. Install 3/8" NPT (M) to 3/8" NPSM (F) swivel straight adapter fittings (P/N 333-0012-305) on the female ends of a 3/8" NPTF (M) to 3/8" NPSM F/F tee adapter fitting (P/N 333-0012-231).
8. Install the male end of the tee fitting assembly on the installed restrictor fitting in the left cylinder port of the machine's hydraulic valve.
9. Connect the machine's left raise hose to the fitting installed on the opposite end of the installed tee fitting.
10. Install the male end of the supplied hydraulic hose (P/N 214-1000-692) on the fitting installed on the 90° end of the tee fitting.
11. Connect the other end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
12. Disconnect the machine's right raise hose from the right tilt cylinder.
13. Remove the restrictor fitting from the machine's right tilt cylinder port.
14. Reconnect the right raise hose to the right tilt cylinder.
15. Trace the right raise hose to the machine's hydraulic valve.
16. Disconnect the right raise hose from the machine's hydraulic valve.
17. Install the restrictor fitting in the open right cylinder port on the machine's hydraulic valve.
18. Install 3/8" NPT (M) to 3/8" NPSM (F) swivel straight adapter fittings (P/N 333-0012-305) on the female ends of a 3/8" NPTF (M) to 3/8" NPSM F/F tee adapter fitting (P/N 333-0012-231).
19. Install the male end of the tee fitting assembly on the installed restrictor fitting in the right cylinder port of the machine's hydraulic valve.
20. Connect the machine's right raise hose to the fitting installed on the opposite end of the installed tee fitting.
21. Install the male end of the supplied hydraulic hose (P/N 214-1000-692) on the fitting installed on the 90° end of the tee fitting.
22. Connect the other end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

Machines without Restrictor Fittings Installed

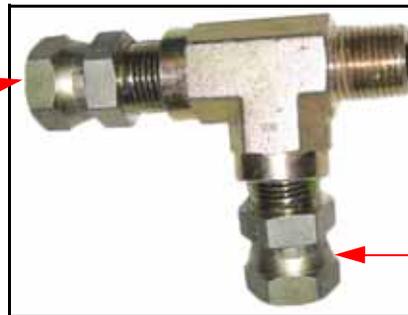
FIGURE 8. Left Cylinder Hose Installed



1. Trace the machine's left raise hose from the left tilt cylinder to the machine's hydraulic valve.
2. Disconnect the left cylinder raise hose from the machine's hydraulic valve.

FIGURE 9. Cylinder Fitting Assembly

P/N 333-0012-305,
Connected to
Machine's Raise
Hose

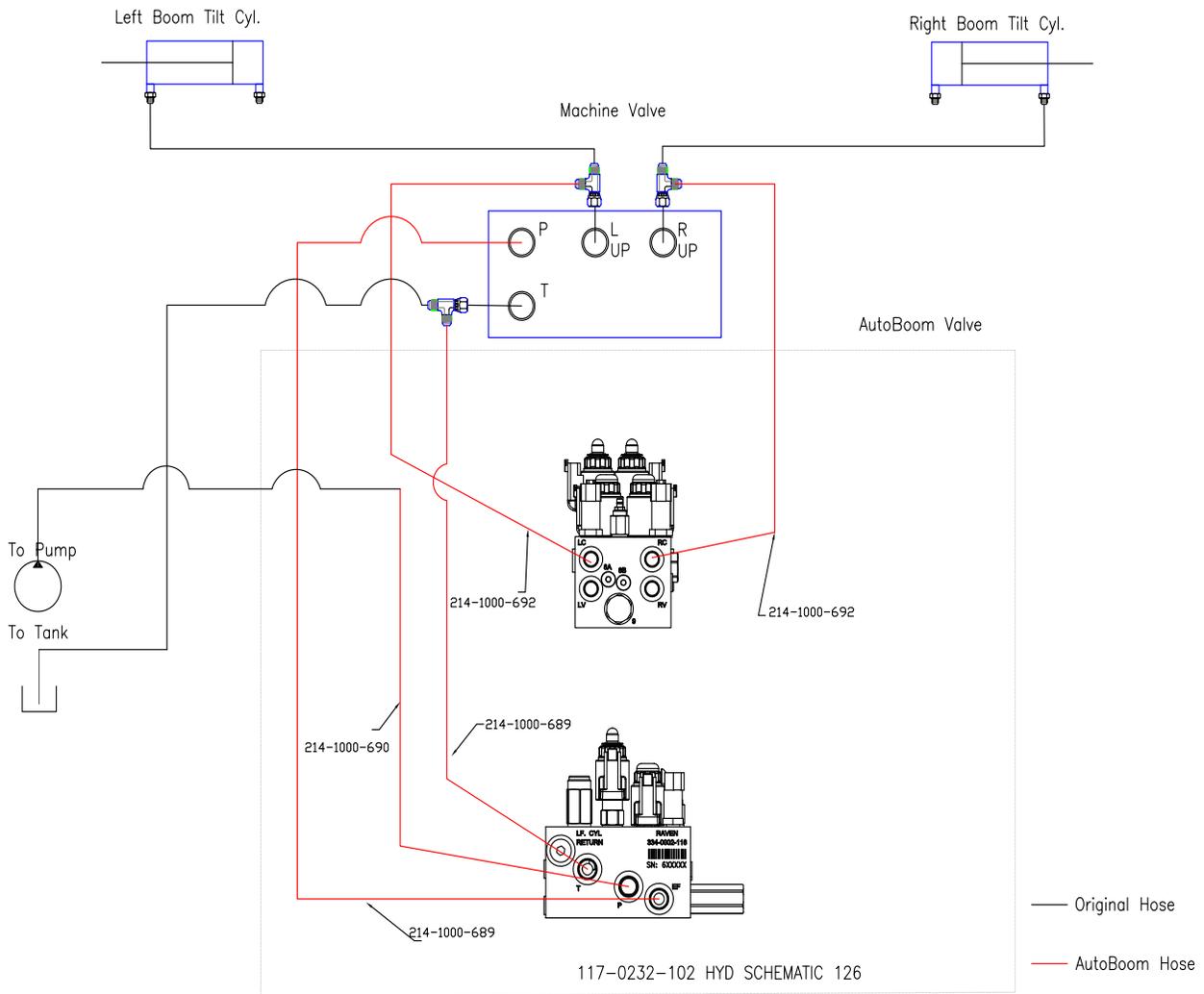


Installed on the
Restrictor Fitting
Installed in the Cylinder
Port of the Machine's
Hydraulic Valve

P/N 333-0012-305,
Connected to P/N 214-
1000-692

3. Install 3/8" NPT (M) to 3/8" NPSM (F) swivel straight adapter fittings (P/N 333-0012-305) on the female ends of a 3/8" NPTF (M) to 3/8" NPSM F/F tee adapter fitting (P/N 333-0012-231).
4. Install the male end of the tee fitting assembly in the left cylinder port of the machine's hydraulic valve.
5. Connect the machine's left raise hose to the fitting installed on the opposite end of the installed tee fitting.
6. Install the male end of the supplied hydraulic hose (P/N 214-1000-692) on the fitting installed on the 90° end of the tee fitting.
7. Connect the other end of the installed hydraulic hose to the fitting installed in Port LC of the AutoBoom valve.
8. Trace the machine's right raise hose from the right tilt cylinder to the machine's hydraulic valve.
9. Disconnect the right cylinder raise hose from the machine's hydraulic valve.
10. Install a 3/8" NPT (M) to 3/8" NPSM (F) swivel straight adapter fittings (P/N 333-0012-305) on the female ends of the other 3/8" NPTF (M) to 3/8" NPSM F/F tee adapter fitting (P/N 333-0012-231).
11. Install the male end of the tee fitting assembly in the right cylinder port of the machine's hydraulic valve.
12. Connect the machine's right raise hose to the fitting installed on the opposite end of the installed tee fitting.
13. Install the male end of the supplied hydraulic hose (P/N 214-1000-692) to the fitting installed on the 90° end of the tee fitting.
14. Connect the other end of the installed hydraulic hose to the fitting installed in Port RC of the AutoBoom valve.

UltraGlide Hydraulic Schematic

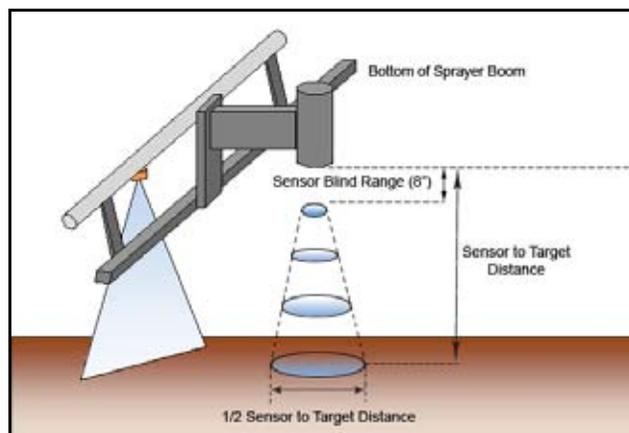


Install the UltraGlide Sensors

Boom Sensor Mounting Locations

Sensor mounting locations may be influenced by the boom configuration. 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 boom, 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



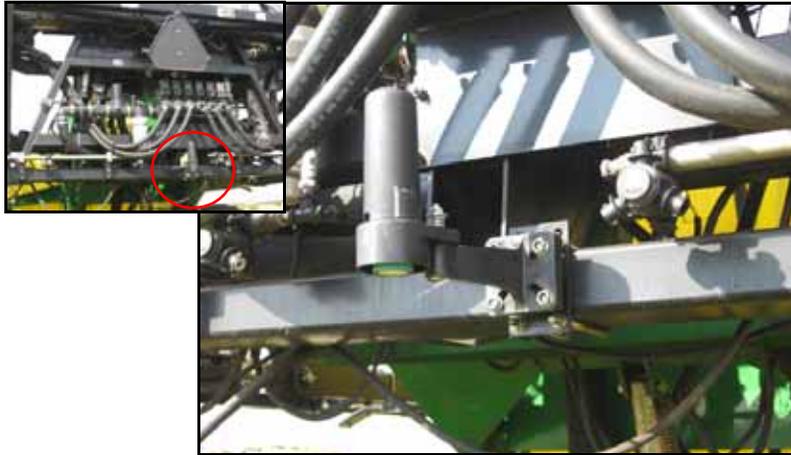
1. Locate the left and right ultrasonic sensors (P/N 063-0130-012 and 063-0130-014) in the AutoBoom installation kit.
2. Remove the sensor from the existing plastic arm.
3. Install the sensors on the 12" S-type sensor arms (P/N 063-0131-592) using the supplied 5/16"-18 x 1-1/4" bolts (P/N 311-0052-106), 5/16"-18 nylon insert lock nuts (P/N 312-4000-059) and 5/16" zinc flat washers (P/N 313-2300-012).
4. 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).
5. Tighten the nuts to ensure the sensor is mounted securely.
6. Repeat the steps above to mount the remaining boom sensor(s).

Install the Center Rack Sensor

FIGURE 3. Center Sensor Mounted to the Bracket



1. Secure the center sensor (P/N 063-0130-018) to the ultrasonic sensor boom mount weldment (P/N 116-0159-684) using four 3/8"-16 UNC x 1-1/4" hex bolts (P/N 311-0054-106) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

FIGURE 4. Center Sensor Mounting Location

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

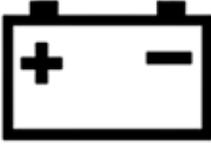
Connect the Sensor Cables

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

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



Wiring Connections

	<p data-bbox="820 760 1117 814">⚠ CAUTION</p> <p data-bbox="685 829 1205 982">Always connect the power cable as the last step in the wiring process and verify that the power leads are connected with the correct polarity. Reversing power leads can cause severe damage to the equipment.</p>
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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 (Example Only)



1. Mount the AutoBoom node (P/N 063-0130-013) to the AutoBoom valve mounting plate using three 3/8"-16 UNC x 1-1/4" hex bolts (P/N 311-0054-106) and three 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

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

2. Insert the large, rectangular node connectors on the harness cable (P/N 115-0230-045 or 115-0230-085) into the correct ports of the AutoBoom valve.
3. Tighten the bolts on the node connectors to secure the connections.

Connect the Harness Cable to the Boom Function Controls

1. Locate the Left Press and Right Press connectors on the harness cable (P/N 115-0230-045 or 115-0230-085).
2. Route the connectors to the AutoBoom valve (P/N 063-0131-126).
3. Connect the Left Press connector to Port G1 on the AutoBoom valve.
4. Connect the Right Press connector to Port G4 on the AutoBoom valve.
5. Locate the Left Solenoid and Right Solenoid connectors on the harness cable.
6. Connect the Left Solenoid connector to Port 4A on the AutoBoom valve.
7. Connect the Right Solenoid connector to Port 4B on the AutoBoom valve.
8. Locate the Left Prop and Right Prop connectors on the harness cable.
9. Connect the Left Prop connector to Port 5A on the AutoBoom valve.
10. Connect the Right Prop connector to Port 13A on the AutoBoom valve.

FIGURE 2. Boom Sense Adapter Cables Installed



Note: *The splice connectors contained in the installation kit may vary slightly from the image above. However, the connections contained in the instructions below remain the same.*

11. Cut the ring terminal ends off the boom sense adapter cable (P/N 115-0230-001)
12. Locate the machine's boom function coils near the machine's hydraulic valve.
13. Locate the left tilt up coil using a test light or multi-meter to detect voltage on the din connector when the left up switch is pressed in the cab.

14. Determine which wire feeding into the coil receives the signal from the switch in the cab by pressing the switch and using a test light or multi-meter to detect +12 volts.
15. Use a 16-18 gauge scotch lock parallel splice connector (P/N 405-2001-079) to connect the left tilt up coil wire to the L Up wire from which the ring terminal was removed on the boom sense adapter cable.
16. Locate the Left Solenoid Sense Up connector on the AutoBoom harness cable.
17. Connect the Left Solenoid Sense Up connector to the other L Up connector on the boom sense adapter cable.
18. Locate the left tilt down coil using a test light or multi-meter to detect voltage on the din connector when the left down switch is pressed in the cab.
19. Determine which wire feeding into the coil receives the signal from the switch in the cab by pressing the switch and using a test light or multi-meter to detect +12 volts.
20. Use a 16-18 gauge scotch lock parallel splice connector (P/N 405-2001-079) to connect the left tilt down coil wire to the L Dn wire from which the ring terminal was removed on the boom sense adapter cable.
21. Locate the Left Solenoid Sense Down connector on the AutoBoom harness cable.
22. Connect the Left Solenoid Sense Down connector to the other L Dn connector on the boom sense adapter cable.
23. Repeat the steps above to connect the right tilt up and down coils to the Right Solenoid Sense Up and Down 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 115-0171-527).
5. Locate the Right Outer Sensor connector on the AutoBoom harness cable.
6. Connect the Right Outer Sensor connector to the installed right sensor cable.
7. If optional inside boom sensors are installed, repeat the steps above to connect the inner sensors.

Connect the Harness Cable to the Implement Extension Tee - Gen II Cable Only

1. Route the harness cable (P/N 115-0230-085) toward the implement extension tee cable.
2. Connect the harness cable to the To Node connector.
3. Remove the terminator from the machine's chassis harness or the standalone console harness.
4. Install the terminator on the remaining open end of the implement extension tee cable.
5. Refer to the wiring schematic (beginning on page 27) appropriate for the machine's configuration to route the implement extension tee cable.
6. Connect the implement extension tee cable to the location determined in the step above.



Connect the Harness Cable to the Controller Cable - Gen I Cable Only

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

Connect the Controller (If Applicable) - Gen I Cable Only

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).

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)

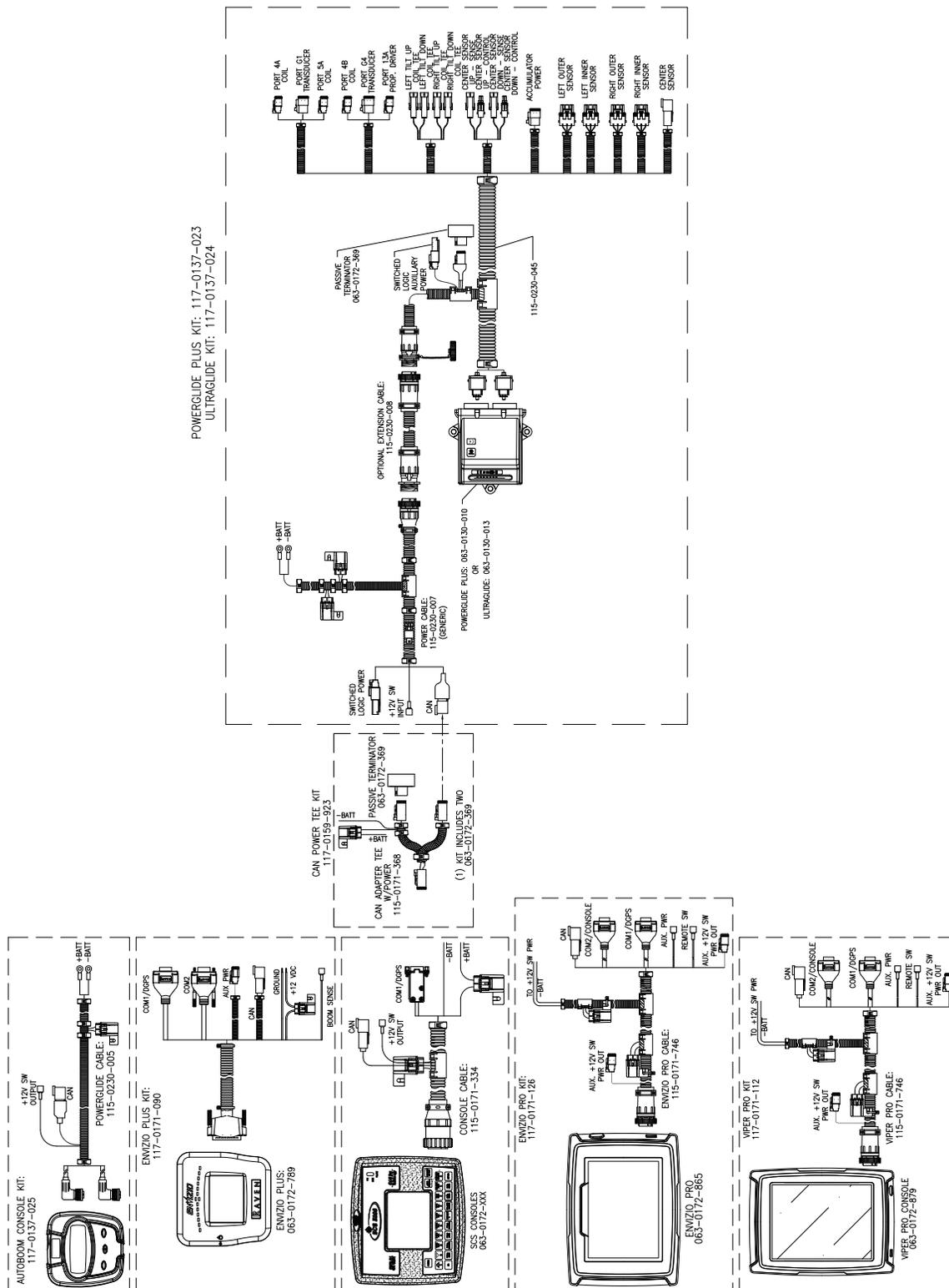
Refer to the Installation & Operation Manual and the appropriate wiring schematic beginning on page 27 for installation and wiring instructions for your specific field computer.

Connect the Power Leads

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

UltraGlide Wiring Schematic

Gen I Cabling



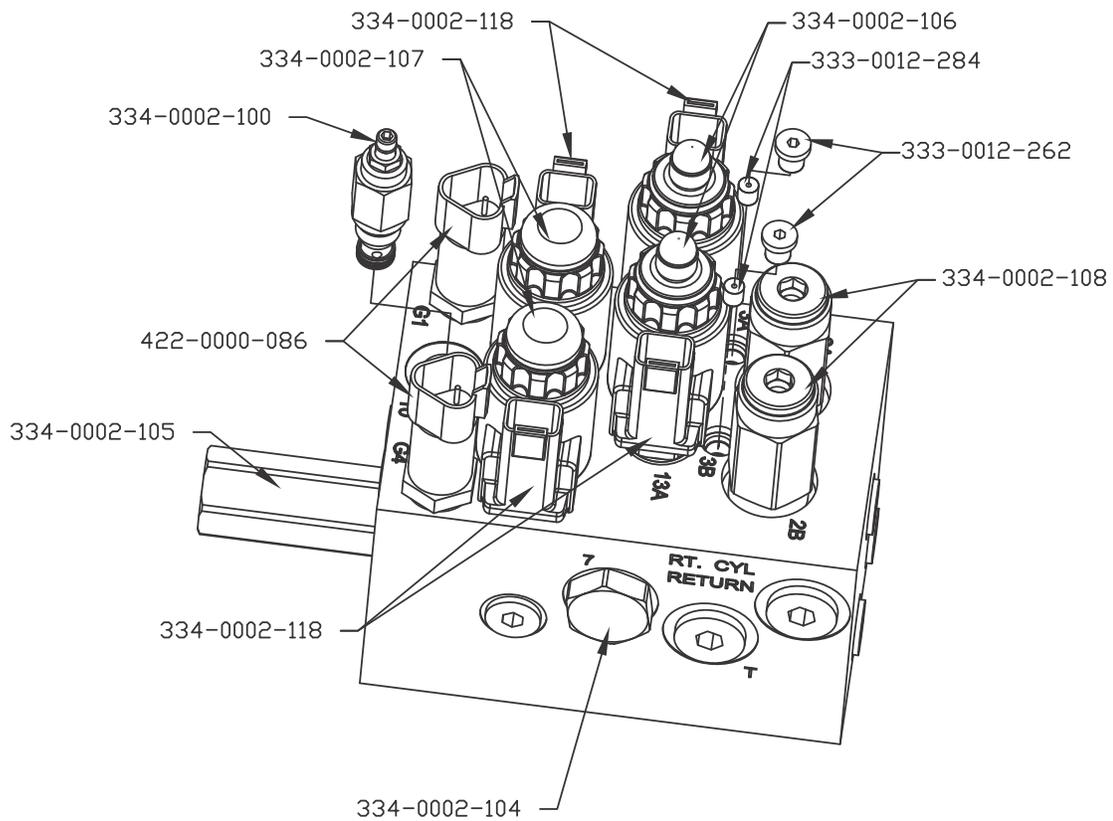
CHAPTER

6

Replacement Parts

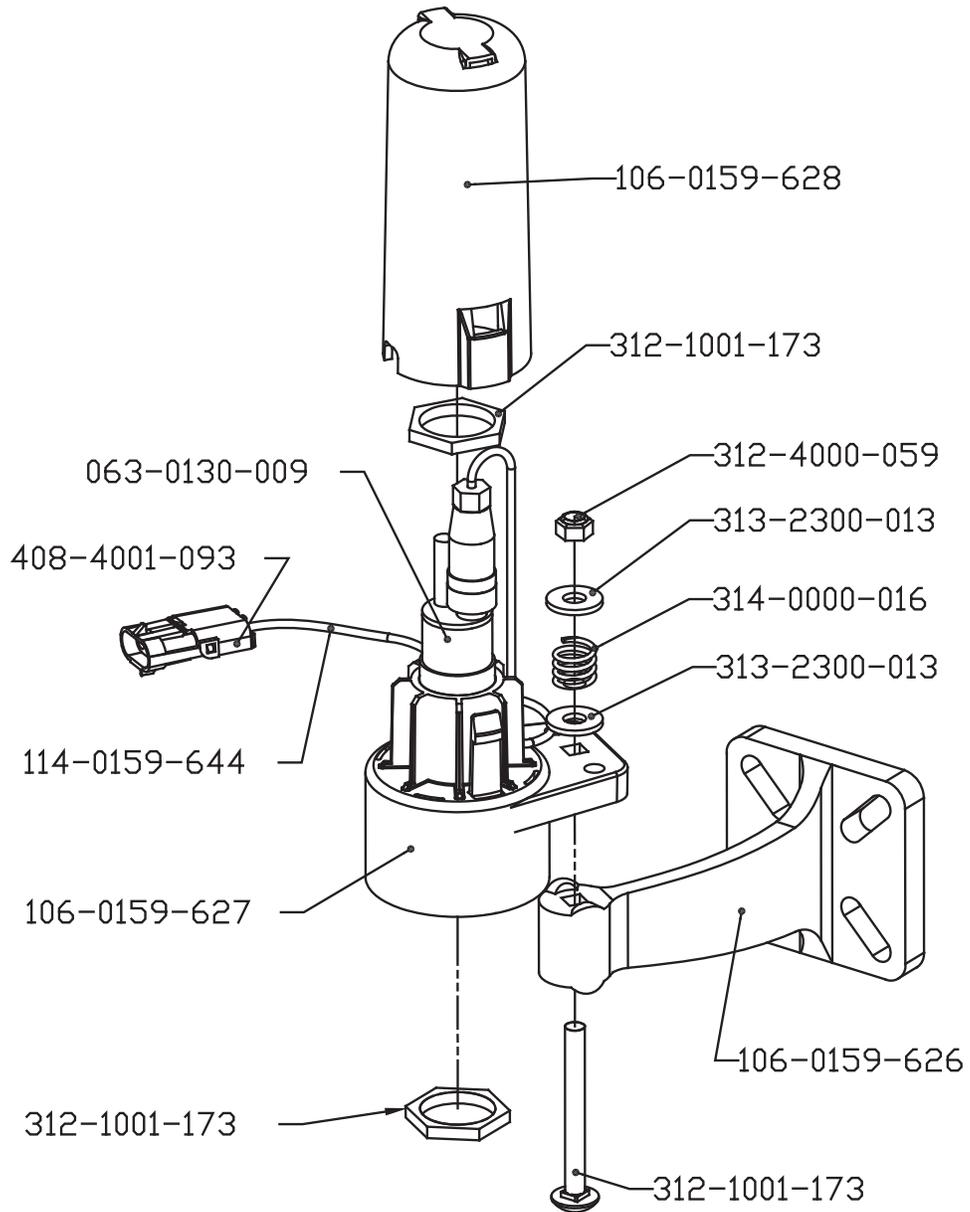
This section contains replacement part diagrams for the UltraGlide system. Please refer to these diagrams when calling to request replacement parts.

Valve



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

Sensors



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Limited Warranty

What Does this Warranty Cover?

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

How Long is the Coverage Period?

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

How Can I Get Service?

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

What Will Raven Industries Do?

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

What is not Covered by this Warranty?

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

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

RAVEN

MS Condor T-1000 with Hystar Valve
AutoBoom™ Installation Manual
(P/N 016-0230-102 Rev B 10/11 E18380)



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