

# Jan AutoBoom® Installation Manual

*P/N 016-0230-132 Rev. A*

*12/16*

*E28273*

## ***Disclaimer***

---

While every effort has been made to ensure the accuracy of this document, Raven Industries assumes no responsibility for omissions and errors. Nor is any liability assumed for damages resulting from the use of information contained herein.

Raven Industries shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss, or impairment of data arising out of the use, or inability to use, this system or any of its components. Raven Industries shall not be held responsible for any modifications or repairs made outside our facilities, nor damages resulting from inadequate maintenance of this system.

As with all wireless and satellite signals, several factors may affect the availability and accuracy of wireless and satellite navigation and correction services (e.g. GPS, GNSS, SBAS, etc.). Therefore, Raven Industries cannot guarantee the accuracy, integrity, continuity, or availability of these services and cannot guarantee the ability to use Raven systems, or products used as components of systems, which rely upon the reception of these signals or availability of these services. Raven Industries accepts no responsibility for the use of any of these signals or services for other than the stated purpose.

<b>Chapter 1</b>	<b>Important Safety Information</b>	<b>1</b>
Hydraulic		2
General		2
Instructions for Hose Routing		2
Electrical		3
General		3
Instructions for Wire Routing		3
<b>Chapter 2</b>	<b>Introduction</b>	<b>5</b>
Introduction		5
Preparing for Installation		5
Recommendations		5
Tools Needed		6
Point of Reference		6
Hydraulic Fittings		6
Updates		6
Kit Contents		7
<b>Chapter 3</b>	<b>Hydraulic System Installation</b>	<b>13</b>
Install Fittings in the AutoBoom Valve		14
Prepare the Flow Control Valve for Installation		14
Mount the AutoBoom Valve		15
Install the Pressure and Tank Hoses		16
Install the Pressure Hoses		16
Install the Tank Hoses		16
Install the Left and Right Cylinder Hoses		17
Install the Left Cylinder Hoses		17
Install the Right Cylinder Hoses		17
Hydraulic Diagram		18
<b>Chapter 4</b>	<b>Sensor Installation</b>	<b>19</b>
Boom Sensor Mounting Locations		19
Mount the Boom Sensors		20
Outer Boom Sensors		20
Inner Boom Sensors - Optional		20
Mount the Center Sensor		21
Connect the Sensor Cables		21
<b>Chapter 5</b>	<b>Wiring Installation</b>	<b>23</b>
Wiring Connections		23
Install the AutoBoom Node		23
Connect the AutoBoom Harness to the Boom Function Controls		24
Connect the Harness to the AutoBoom Valve Boom Function Controls		24
Connect the Harness to the Machine's Boom Function Controls		24
Install the Center Rack Control		25

**Table of Contents**

---

Connect the Harness Cable to the Sensors ..... 25

Connect the Harness Cable to the Chassis Cable - Gen III Cable Only ..... 26

Connect the Harness Cable to the Implement Extension Tee - Gen II Cable Only ..... 26

Connect the Harness Cable to the Power Cable - Gen I Cable Only ..... 26

Connect the Power (If Applicable) - Gen I Cable Only ..... 26

Connect the Field Computer (If Applicable) ..... 26

Connect the Power Leads ..... 27

Wiring Diagrams ..... 28

    Gen I Cabling ..... 28

    Gen II Cabling ..... 29

    Gen III Cabling ..... 30

**Chapter 6      Replacement Parts..... 31**

    Valve ..... 31

    Sensors ..... 32

---

# 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 or a safe working distance away from the booms 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

### GENERAL

- 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.

### INSTRUCTIONS FOR HOSE ROUTING

The word "hose" is used to mean all flexible fluid carrying components. Follow existing hoses as much as possible and use these guidelines:

Hoses should not contact or be attached to:

- Components with high vibration forces
- Components carrying hot fluids beyond component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps

Routing should not allow hoses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of hose components
- Hoses should be protected or shielded if it needs to route near hot temperatures beyond hose component specifications

Hoses should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems

- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For hose sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp hoses securely to force controlled movement to occur in the desired hose section
- Avoid sharp twisting or flexing of hoses in short distances

Protect hoses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures
- High pressure wash

## ELECTRICAL

### GENERAL

- 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.
- A minimum of 12 VDC is required for system operation with a maximum of 15 VDC.

### INSTRUCTIONS FOR WIRE ROUTING

The word "harness" is used to mean all electrical leads and cables, bundled and unbundled. When installing harness, secure it at least every 30 cm (12in) to the frame. Follow existing harness as much as possible and use these guidelines:

Harness should not contact or be attached to:

- Lines and hoses with high vibration forces or pressure spikes
- Lines and hoses carrying hot fluids beyond harness component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps
- Wire exiting conduit without protection, either ends or side of conduit
- Hose and tube fittings

Routing should not allow harnesses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of harness components
- Wiring should be protected or shielded if it needs to route near hot temperatures beyond harness component specifications

Harnessing should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For harness sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp harnesses securely to force controlled movement to occur in the desired harness section
- Avoid sharp twisting or flexing of harnesses in short distances
- Connectors and splices should not be located in harness sections that move

Protect harnesses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures

### **IMPORTANT:**

- Avoid directly spraying electrical components and connections with high pressure water. High pressure water sprays can penetrate seals and cause electrical components to corrode or otherwise become damaged. When performing maintenance:
- Inspect all electrical components and connections for damage or corrosion. Repair or replace components, connections, or cable as necessary.
- Ensure connections are clean, dry, and not damaged. Repair or replace components, connections, or cable as necessary.
- Clean components or connections using low pressure water, pressurized air, or an aerosol electrical component cleaning agent.
- Remove visible surface water from components, connections, or seals using pressurized air or an aerosol electrical component cleaning agent. allow components to dry completely before reconnecting cables.



### 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.

MAKE: Jan

MODEL: Power Jet

FIGURE 1. Jan Power Jet

---



### 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](mailto:techwriting@ravenind.com)

- Jan AutoBoom® Installation Manual
- P/N 016-0230-132 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 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 local Raven dealer.

**TABLE 1. UltraGlide Installation Kit (P/N 117-0232-132)**




Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Jan AutoBoom Installation	016-0230-132	1
	Valve - UltraGlide AutoBoom	063-0131-126	1
	Valve - Flow Control	334-0003-100	1
	Bracket - Hydraulic Valve Mounting	107-0172-516	1

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-132)












Picture	Item Description	Part Number	Qty.
	Bracket - Node Mounting	107-0172-517	1
	Sensor - Center Ultrasonic	063-0130-026	3
	Cable - Amp Superseal Boom Sense Adapter	115-0230-155	5
	Cable - Amp Superseal Center Rack Control Adapter	115-0230-156	2
	Cable - Amp Superseal Load Sense Extension	115-0230-157	1
	Spacer - 0.406" ID x 0.750" OD x 0.75" Long Steel	107-0172-037	4
	U-Bolt - 2-9/16" W x 3-1/2" L x 3/8" Thread	107-0171-616	4
	U-Bolt - 3-9/16" W x 4" L x 3/8" Thread	107-0171-793	1
	U-Bolt - 2-1/4" W x 4" L x 3/8" Thread	107-0172-308	2
	Bolt - 1/4"-20 x 2-3/4" Hex	311-0050-112	2
	Bolt - 5/16"-18 x 7/8" Hex	311-0052-104	4

TABLE 1. UltraGlide Installation Kit (P/N 117-0232-132)





Picture	Item Description	Part Number	Qty.
	Bolt - 5/16"-18 x 1-1/4" Hex	311-0052-106	3
	Bolt - 3/8"-16 UNC x 1" Hex	311-0054-105	5
	Nut - 3/8"-16 Zinc Flanged Lock	312-1001-164	17
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-057	2
	Washer - 5/16" Split Lock	313-1000-019	4

TABLE 2. Hydraulic Kit (P/N 117-0134-132)






Picture	Item Description	Part Number	Qty.
	Fitting - -6 JIC M/M/F Swivel Run Tee Adapter	333-0012-043	5
	Fitting - -6 JIC (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-045	4
	Fitting - -6 JIC (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-046	3
	Fitting - 9/16" SAE O-Ring (M) to 11/16" Hex Plug	333-0012-194	2
	Hydraulic Hose - -6 JIC (F) 90° to -6 JIC (F) - 24"	214-1001-158	2

TABLE 2. Hydraulic Kit (P/N 117-0134-132)



Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - -6 JIC (F) to -6 JIC (F) - 24"	214-1001-159	2
	Hydraulic Hose - -6 JIC (F) 90° to -6 JIC (F) - 36"	214-1001-160	2

TABLE 3. Ultrasonic Sensor Bracket Installation Kit (P/N 117-0131-087)



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	3
	Nut - 1/4"-20 Nylon Insert Lock	312-4000-057	6
	Washer - 1/4" Steel Flat	313-2300-010	6

TABLE 4. 90' & Smaller Boom Gen I UltraGlide Controller Kit (P/N 117-0137-047)



Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - AutoBoom UltraGlide	063-0130-013	1
	Cable - 40' Ultrasonic Sensor Extension	115-0171-602	2

TABLE 4. 90' &amp; Smaller Boom Gen I UltraGlide Controller Kit (P/N 117-0137-047)



Picture	Item Description	Part Number	Qty.
	Cable - 16' Power/CAN Controller	115-0230-007	1
	Cable - AutoBoom Harness	115-0230-045	1

TABLE 5. 90' &amp; Smaller Boom Gen II UltraGlide Controller Kit (P/N 117-5130-002)




Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - AutoBoom Calibration & Operation	016-0130-062	1
	Node - AutoBoom UltraGlide	063-0130-013	1
	Cable - 40' Ultrasonic Sensor Extension	115-0171-602	2
	Cable - AutoBoom Harness	115-0230-085	1

TABLE 6. 90' &amp; Smaller Boom Gen III UltraGlide Controller Kit (P/N 117-6130-009)




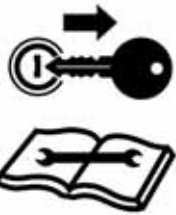
Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - ISO AutoBoom Calibration & Operation	016-0130-078	1
	Node - AutoBoom UltraGlide	063-0130-016	1

TABLE 6. 90' & Smaller Boom Gen III UltraGlide Controller Kit (P/N 117-6130-009)

Picture	Item Description	Part Number	Qty.
	Cable - 50' Ultrasonic Sensor Extension	115-0230-050	2
	Cable - AutoBoom Harness	115-7301-001	1





**⚠ WARNING**

The machine must remain stationary and switched off, with the booms folded and in the transport position, during installation or maintenance.

Bleed pressure from the hydraulic system by operating the boom tilt functions while the key is on, but the machine's engine is off.



**⚠ 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 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.

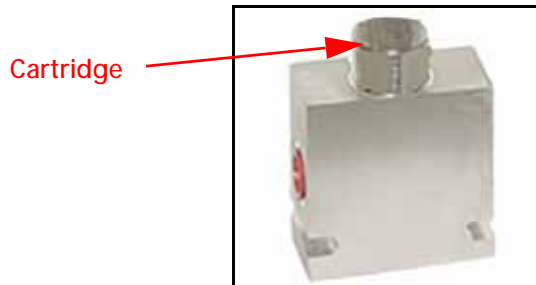
## INSTALL FITTINGS IN THE AUTOBOOM VALVE

Before mounting the AutoBoom valve (P/N 063-0131-126) 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 into the appropriate ports of the AutoBoom valve.

Fitting	Part Number	Port
Fitting - -6 JIC (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-045	LC, RC
Fitting - -6 JIC (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-046	P, T, EF
Fitting - -6 SAE O-Ring (M) Plug	333-0012-194	LV, RV

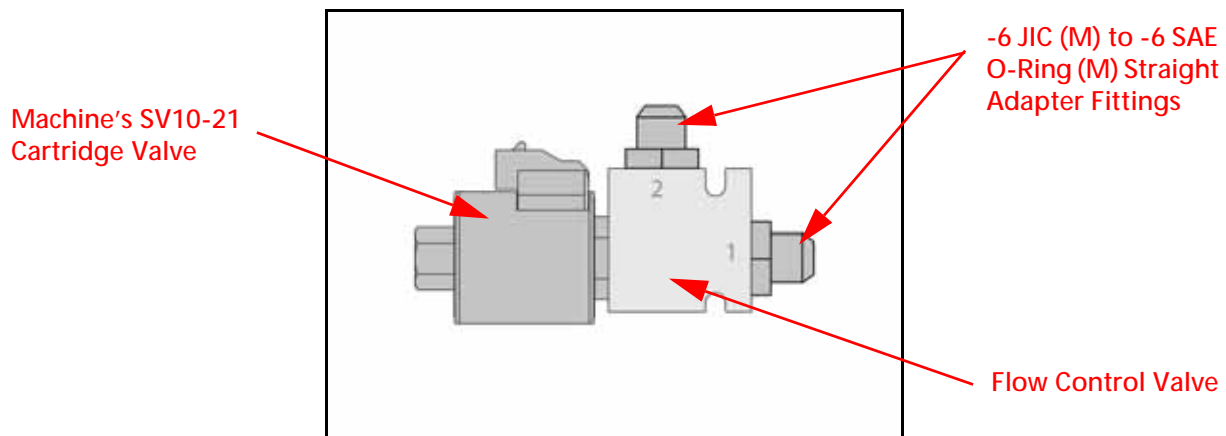
## PREPARE THE FLOW CONTROL VALVE FOR INSTALLATION

FIGURE 1. Flow Control Valve Cartridge



1. Remove the cartridge from the flow control valve (P/N 334-0003-100).
2. Disconnect the connector connected to the SV10-21 cartridge valve in port SV2 of the machine's hydraulic valve located under the cab.
3. Remove the SV10-21 cartridge valve from port SV2 of the machine's hydraulic valve.

FIGURE 2. Flow Control Valve Assembly



4. Install the machine's SV10-21 cartridge valve in the port of the flow control valve from which the cartridge was removed.
5. Install the cartridge that was removed from the flow control valve in step 1 into port SV2 of the machine's hydraulic valve.
6. Install 6 JIC (M) to -6 SAE O-ring (M) straight adapter fittings (P/N 333-0012-045) in Ports 1 and 2 of the flow control valve.

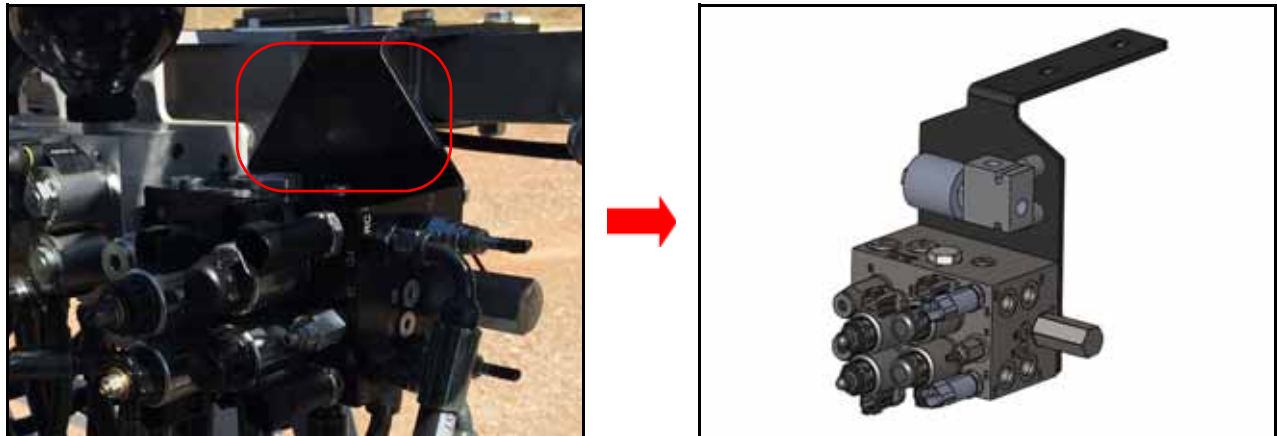
## MOUNT THE AUTOBOOM VALVE

FIGURE 3. AutoBoom Valve Installed on Valve Mounting Bracket



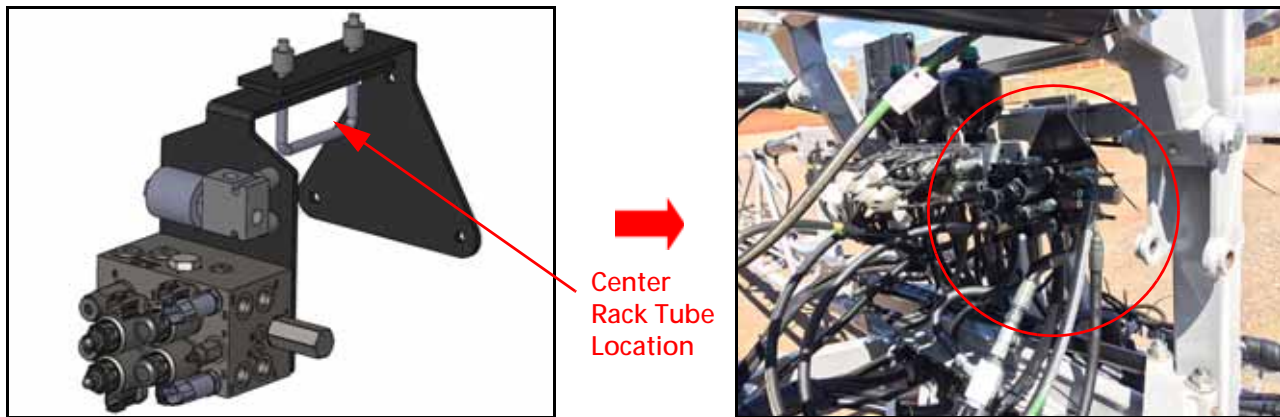
1. Install the AutoBoom valve (P/N 063-0131-126) on the valve mounting bracket (P/N 107-0172-516) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" split lock washers (P/N 313-1000-019).

FIGURE 4. Flow Control Valve Mounting Location



2. Install the flow control valve assembly on the valve mounting bracket using two 1/4"-20 x 2-3/4" hex bolts (P/N 311-0050-112), two 0.406" ID x 0.750" OD x 0.75" steel spacers (P/N 107-0172-037), and two 1/4"-20 nylon insert lock nuts (P/N 312-4000-057).

FIGURE 5. Valve Mounting Bracket Installed on the Machine



3. Orient the brackets so that the valve bracket is located on the inside of the center rack and the node bracket is located on the outside of the center rack.
4. Position the brackets so that the legs of the brackets are over the top of the center rack tube.
5. Secure the valve mounting bracket and the node mounting bracket (P/N 107-0172-517) to the machine's center rack tube using one 3-9/16" W x 4" L x 3/8" thread U-bolt (P/N 107-0171-793), two 0.406" ID x 0.750" OD x 0.75" steel spacers (P/N 107-0172-037), and two 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).

## INSTALL THE PRESSURE AND TANK HOSES

### INSTALL THE PRESSURE HOSES

1. Install a -6 JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the Port EF of the AutoBoom valve (P/N 063-0131-126).
2. Disconnect the machine's pressure hose from the machine's boom function valve.
3. Connect the machine's pressure hose to the fitting installed in Port P of the AutoBoom valve (P/N 063-0131-126).
4. Install the 90° end of the supplied hydraulic hose on (P/N 214-1001-158) on the fitting installed in Port 2 of the flow control valve (P/N 334-0003-100).
5. Connect the straight end of the installed hydraulic hose to the 90° end of the tee fitting installed in Port EF of the AutoBoom valve.
6. Install one end of the supplied hydraulic hose (P/N 214-1001-159) in port P of the machine's boom function valve.
7. Connect the other end of the installed hydraulic hose to the remaining end of the tee fitting installed in Port EF of the AutoBoom valve.

### INSTALL THE TANK HOSES

1. Install a -6 JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the Port T of the AutoBoom valve (P/N 063-0131-126).
2. Disconnect the machine's tank hose from the machine's boom function valve.
3. Install a -6 JIC M/M/F swivel run tee fitting in the open tank port.
4. Connect the machine's tank hose to the opposite end of the installed tee fitting.
5. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-158) on the 90° end of the installed tee fitting.

6. Connect the other end of the installed hydraulic hose to the straight end of the tee fitting installed in Port T of the AutoBoom valve.
7. Install one end of the supplied hydraulic hose (P/N 214-1001-159) on the fitting installed in Port 1 of the flow control valve assembly.
8. Connect the other end of the installed hydraulic hose to the 90° end of the tee fitting installed in Port T of the AutoBoom valve.

---

## INSTALL THE LEFT AND RIGHT CYLINDER HOSES

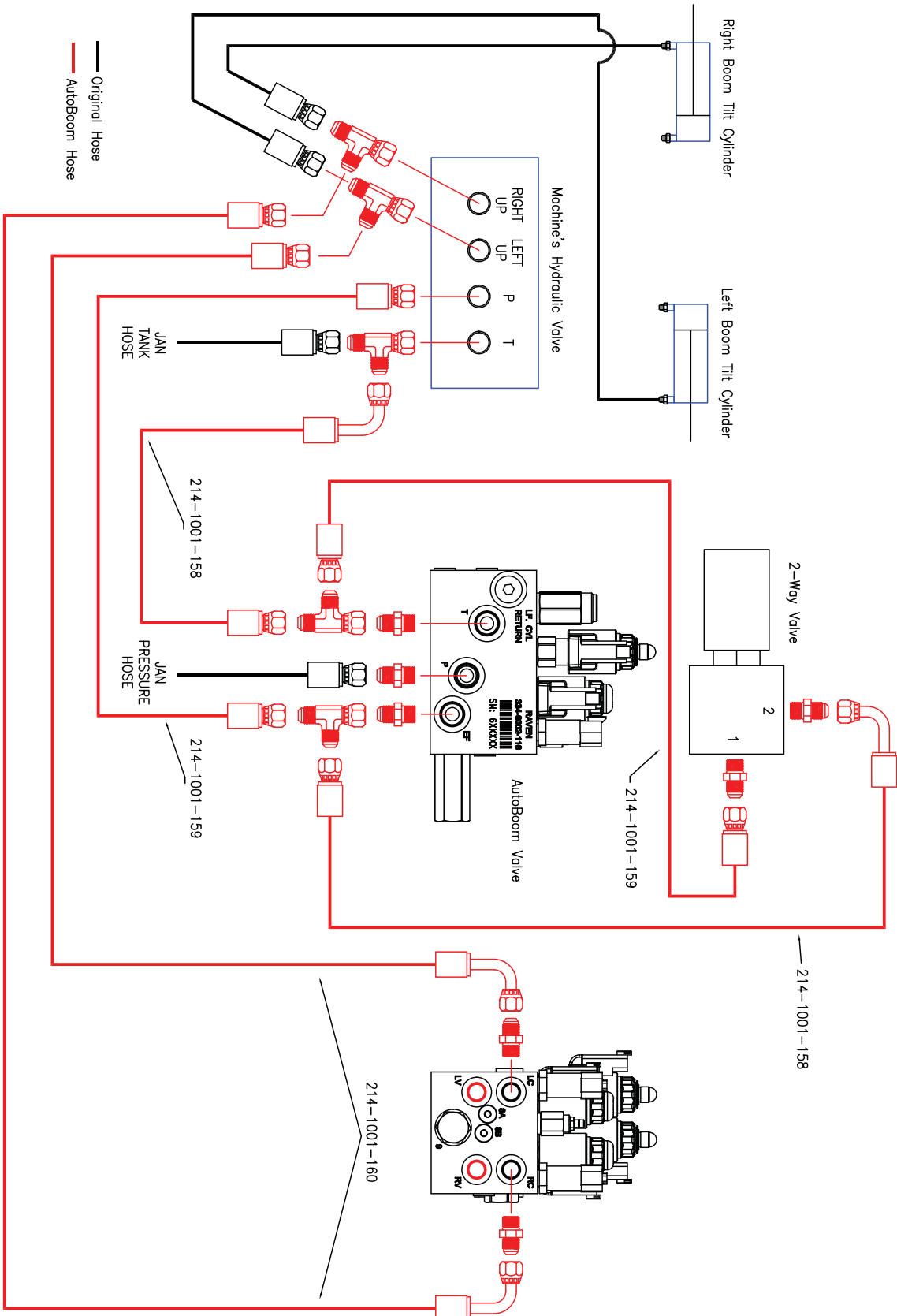
### INSTALL THE LEFT CYLINDER HOSES

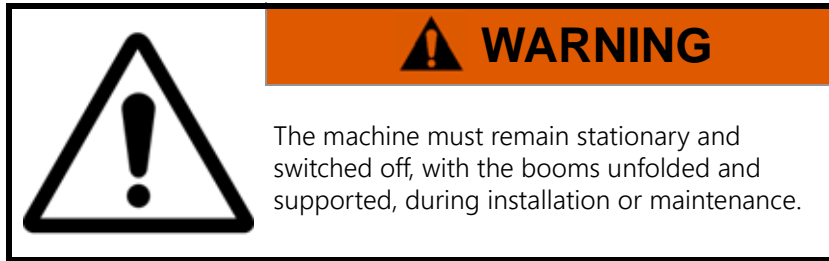
1. Disconnect the left cylinder up hose from the machine's hydraulic valve.
2. Install a -6 JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open left cylinder up port.
3. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-160) on the fitting installed in Port LC of the AutoBoom valve.
4. Connect the straight end of the installed hydraulic hose to the 90° end of the tee fitting installed in the open left cylinder up port.
5. Install the machine's left cylinder up hose on the remaining end of the tee fitting.

### INSTALL THE RIGHT CYLINDER HOSES

1. Disconnect the right cylinder up hose from the machine's hydraulic valve.
2. Install a -6 JIC M/M/F swivel run tee adapter fitting (P/N 333-0012-043) in the open right cylinder up port.
3. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-160) on the fitting installed in Port RC of the AutoBoom valve.
4. Connect the straight end of the installed hydraulic hose to the 90° end of the tee fitting installed in the open right cylinder up port.
5. Install the machine's right cylinder up hose on the remaining end of the tee fitting.

# HYDRAULIC DIAGRAM

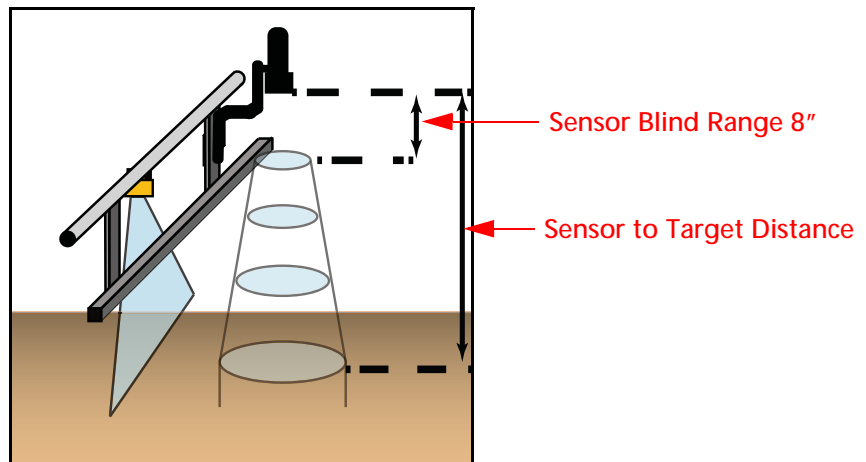




---

### BOOM SENSOR MOUNTING LOCATIONS

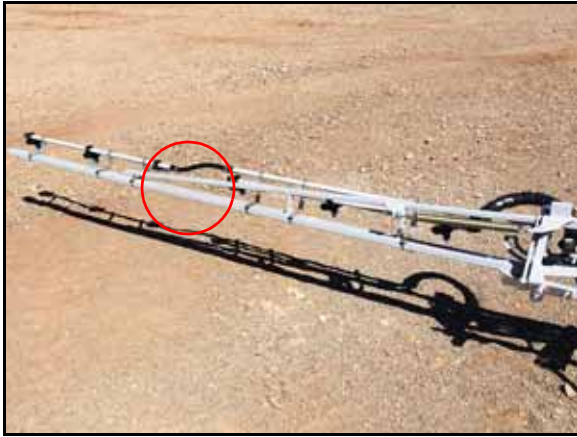
FIGURE 1. Illustration of Sensor's Blind Range



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 XT system and to protect the sprayer boom, the sensor should be mounted on the front side of the boom, 8 - 10" above the lowest hanging part of the boom.

FIGURE 2. Boom Sensor Mounting Locations

Outer Boom Sensor Mounting



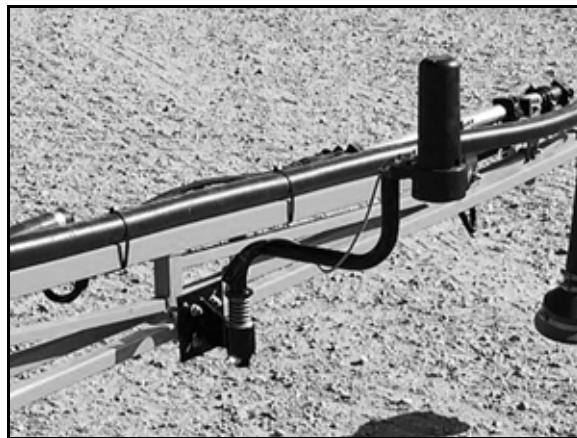
Inner Boom Sensor Mounting (Optional)



## MOUNT THE BOOM SENSORS

### OUTER BOOM SENSORS

FIGURE 3. Outer Boom Sensors



1. Install two of the ultrasonic sensors (P/N 063-0130-026) on the 12" S-type sensor arms (P/N 063-0131-592) using two 1/2"-20 nylon insert lock nuts (P/N 312-4000-057) and two 1/4" flat washers (P/N 313-2300-010) per sensor.
2. Mount the outer boom sensors in the middle of the front break-away booms 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) per sensor.
3. Tighten all nuts to ensure the sensors are mounted securely.

### INNER BOOM SENSORS - OPTIONAL

**NOTE:** The inner boom sensor installation kit (P/N 117-0137-079) is sold separately. Contact your local Raven dealer for ordering information.



FIGURE 4. Inner Boom Sensors



1. Mount the left ultrasonic sensor (P/N 063-0130-014) to the front of the left boom, just outside the fold joint 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. Mount the right ultrasonic sensor (P/N 063-0130-012) to the front of the right boom, just outside the fold joint using two 1-9/16" W x 2-1/2" L w 3/8" thread U-bolts (P/N 107-0171-611) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
3. Verify that the left ultrasonic sensor clears the hand rail when the boom is folded.
4. Tighten all nuts to ensure the sensors are mounted securely.

## MOUNT THE CENTER SENSOR

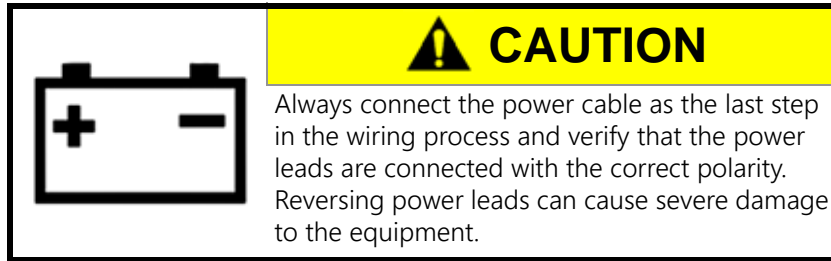
1. Install the remaining ultrasonic sensor (P/N 063-0130-026) on the remaining 12" S-type sensor arm (P/N 063-0131-592) using two 1/2"-20 nylon insert lock nuts (P/N 312-4000-057) and two 1/4" flat washers (P/N 313-2300-010).
2. Mount the ultrasonic sensor assembly to the front-left side of the center rack using two 2-1/4" W x 4" L x 3/8" thread U-bolts (P/N 107-0172-308) and four 3/8"-16 zinc flanged lock nuts (P/N 312-1001-164).
3. Tighten all nuts to ensure the sensor is mounted securely.

## CONNECT THE SENSOR CABLES

1. Connect the 50' sensor extension cable (P/N 115-230-050) to the connectors on the left and right sensors.
2. Route the sensor extension cable to the AutoBoom valve.
3. Loop and tie-off any excess cable, while allowing enough cable for boom folding and extension.
4. Repeat the steps above to connect the 40' sensor extension cables (P/N 115-0230-602) to inner boom sensors, if applicable.

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



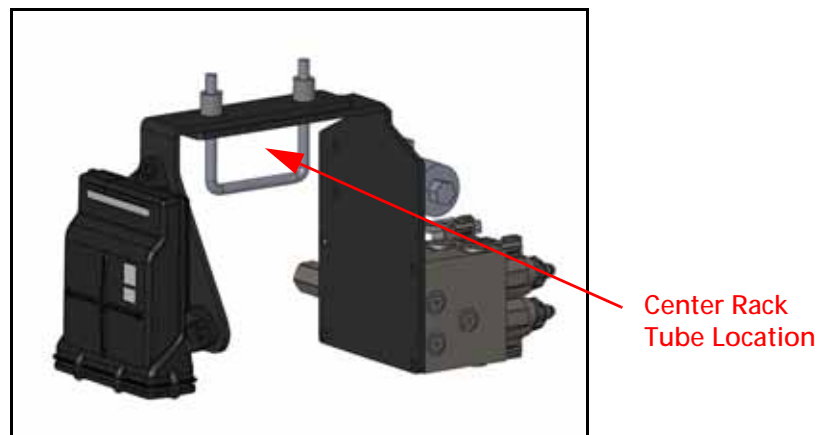


## WIRING CONNECTIONS

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. Node Installed on Mounting Bracket



1. Install the AutoBoom node (P/N 063-0130-013 or 063-0130-016) on the node mounting bracket (P/N 107-0172-517) using three 3/8"16 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).
2. Insert the large, rectangular connectors of the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-7301-001) into the correct ports of the node, tightening the bolts to secure the connections.

## CONNECT THE AUTOBOOM HARNESS TO THE BOOM FUNCTION CONTROLS

### CONNECT THE HARNESS TO THE AUTOBOOM VALVE BOOM FUNCTION CONTROLS

FIGURE 2. AutoBoom Valve Boom Function Controls



1. Connect the LEFT PRESS connector of the AutoBoom harness (P/N 115-0230-045, 115-0230-085, or 115-7301-001) to Port G1 of the AutoBoom valve (P/N 063-0131-126).
2. Connect the RIGHT PRESS connector to Port G4 of the AutoBoom valve.
3. Connect the LEFT SOLENOID connector to Port 4A of the AutoBoom valve.
4. Connect the RIGHT SOLENOID connector to Port 4B of the AutoBoom valve.
5. Connect the LEFT PROP connector to Port 5A of the AutoBoom valve.
6. Connect the RIGHT PROP connector to Port 13A of the AutoBoom valve.

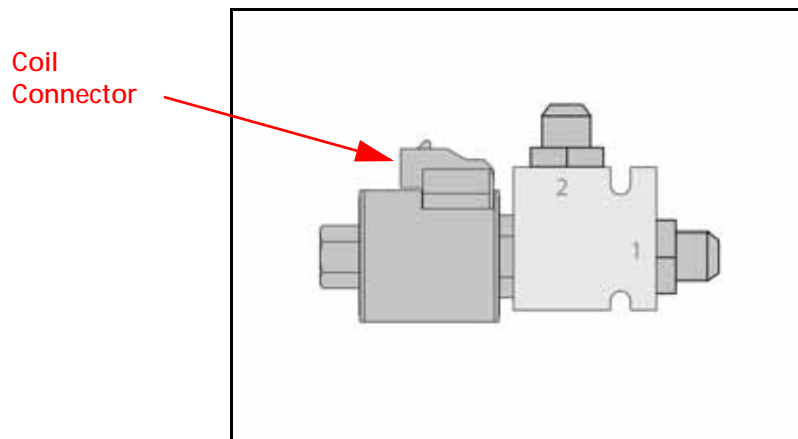
### CONNECT THE HARNESS TO THE MACHINE'S BOOM FUNCTION CONTROLS

1. Locate the machine's boom function controls on the machine's hydraulic valve.
2. Disconnect the connector from the machine's left up coil.
3. Install a boom sense adapter cable (P/N 115-0230-155) between the coil and the machine's connector.
4. Connect the LEFT SOLENOID SENSE UP connector on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-7301-001) to the remaining connector on the installed boom sense adapter cable.
5. Disconnect the connector from the machine's left down coil.
6. Install a boom sense adapter cable (P/N 115-0230-155) between the coil and the machine's connector.
7. Connect the remaining LEFT SOLENOID SENSE connector of the AutoBoom harness cable to the remaining connector on the installed boom sense adapter cable.
8. Disconnect the connector from the machine's right up coil.
9. Install a boom sense adapter cable (P/N 115-0230-155) between the coil and the machine's connector.
10. Connect the RIGHT SOLENOID SENSE UP connector on the AutoBoom harness cable to the remaining connector on the installed boom sense adapter cable.
11. Disconnect the connector from the machine's right down coil.
12. Install a boom sense adapter cable (P/N 115-0230-155) between the coil and the machine's connector.
13. Connect the remaining RIGHT SOLENOID SENSE connector of the AutoBoom harness cable to the remaining connector on the installed boom sense adapter cable.

## INSTALL THE CENTER RACK CONTROL

1. Disconnect the connector from the machine's center up coil.
2. Install a center rack control adapter cable (P/N 115-0230-156) between the coil and the machine's connector.
3. Connect the single pin connectors of the installed adapter cables into the mating CENTER SOLENOID UP SENSE and CONTROL connectors of the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-72301-001).
4. Disconnect the connector from the machine's center down coil.
5. Install a center rack control adapter cable (P/N 115-0230-156) between the coil and the machine's connector.
6. Connect the single pin connectors of the installed adapter cables into the mating CENTER SOLENOID DOWN SENSE and CONTROL connectors of the AutoBoom harness cable.

FIGURE 3. Flow Control Valve Assembly



7. Install a boom sense adapter cable (P/N 115-0230-155) on the coil of the flow control valve assembly.
8. Connect the mating end of the load sense extension cable (P/N 115-01230-157) on the end of the installed boom sense adapter cable.
9. Route the load sense extension cable toward the machine's priority valve.
10. Connect the load sense extension cable to the machine's cable connector that was removed from the SV10-21 cartridge during the flow control valve assembly installation. Refer to step 2 on page 14 for further information.
11. Connect the single pin connector of the installed boom sense adapter cable into the OPEN CENTER VALVE connector of the AutoBoom harness cable.

## CONNECT THE HARNESS CABLE TO THE SENSORS

1. Locate the CENTER SENSOR connector on the AutoBoom harness cable (P/N 115-0230-045, 115-0230-085, or 115-7301-001).
2. Connect the CENTER SENSOR connector to the installed center sensor (P/N 063-0130-026).
3. Connect the LEFT OUTER SENSOR connector of the AutoBoom harness cable on the installed left outer sensor extension cable (P/N 115-0230-050).
4. Connect the RIGHT OUTER SENSOR connector of the AutoBoom harness on the installed right outer sensor cable.
5. If optional inner boom sensors are installed, repeat the steps above to connect the inner sensors to the inner boom sensor extension cables (P/N 115-0171-602).

## CONNECT THE HARNESS CABLE TO THE CHASSIS CABLE - GEN III CABLE ONLY

1. Route the harness cable (P/N 115-7301-001) toward the implement's chassis cable.
2. Remove the terminator from the implement's chassis cable.
3. Connect the AutoBoom harness to the implement's chassis cable.
4. Install the terminator that was removed in step 2 on the AutoBoom harness.

## 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 28) 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 POWER 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 power cable (P/N 115-0230-007).
3. Tighten the connector screw cap to secure the connection.

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

## CONNECT THE POWER (IF APPLICABLE) - GEN I CABLE ONLY

1. Route the power cable (P/N 115-0230-005) into the right side of the machine's cab.
2. Locate the two controller connectors and connect them to the AutoBoom console (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 28 for installation and wiring instructions for your specific field computer.

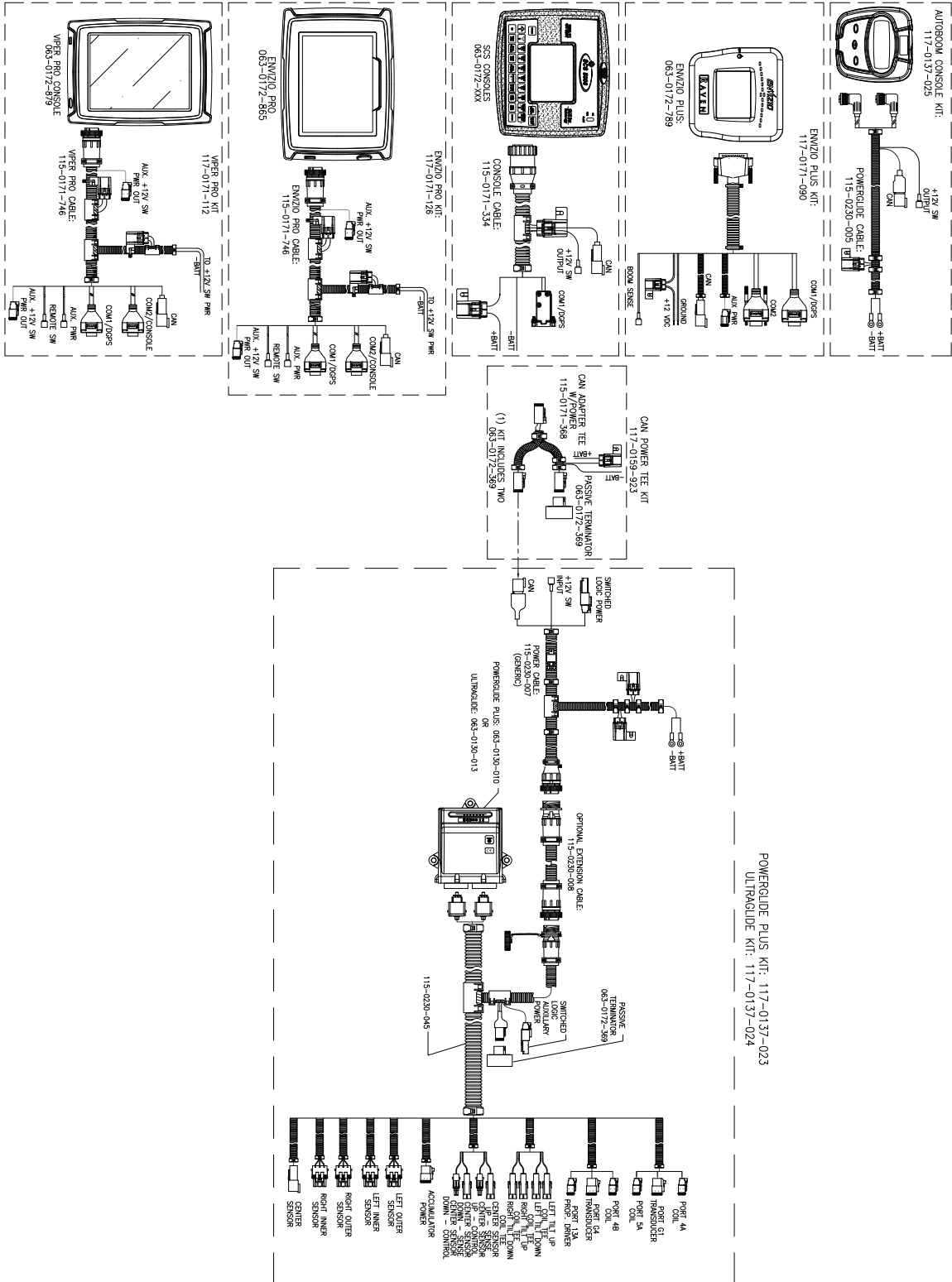
---

## CONNECT THE POWER LEADS

1. Locate the power cable leads.
2. Disconnect the machine's connectors from the battery terminals.
3. Install the positive power lead on the positive battery terminal and reinstall the machine's battery connector.
4. Install the negative power lead on the negative battery terminal and reinstall the machine's battery connector.

WIRING DIAGRAMS

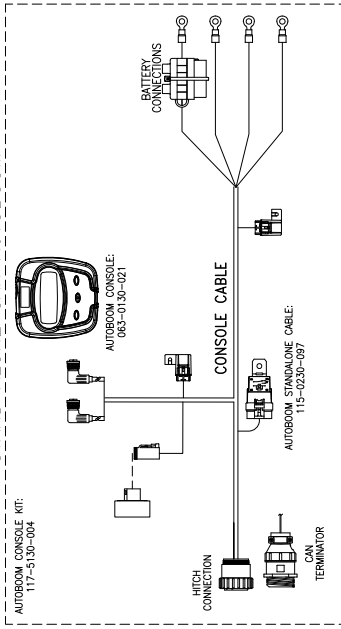
GEN I CABLING



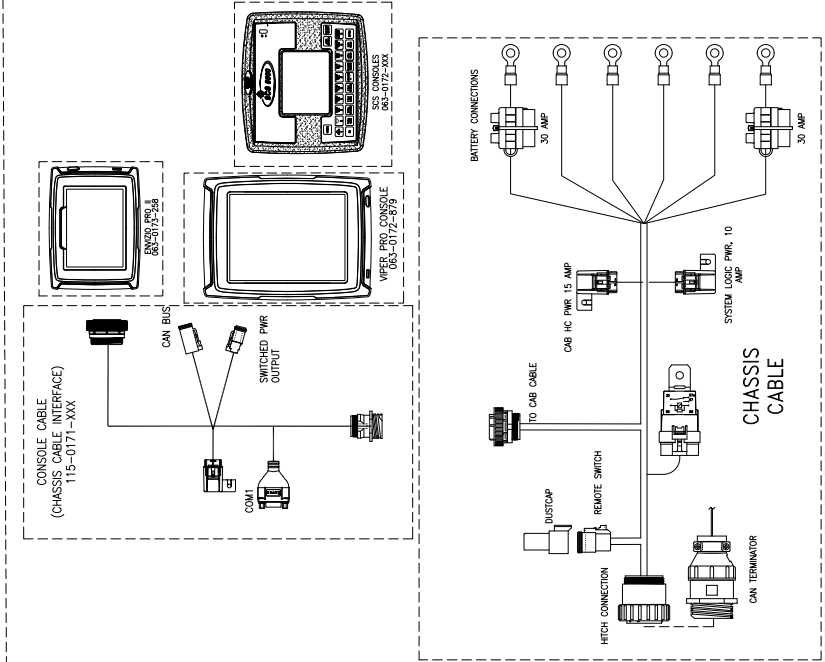


GEN II CABLING

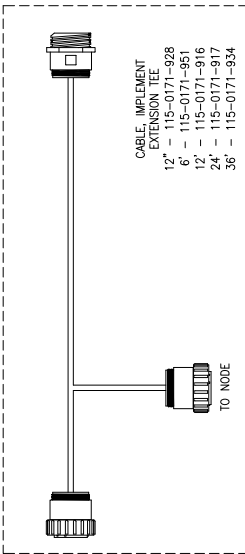
STAND ALONE CAN AUTOBOOM



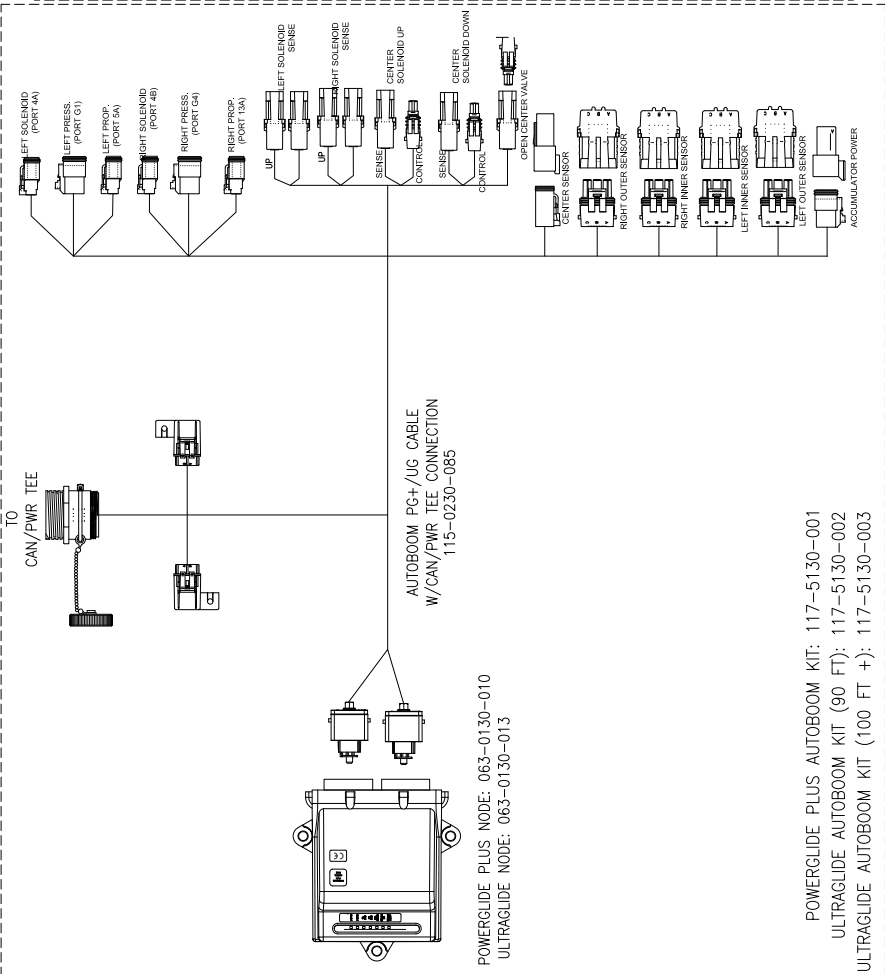
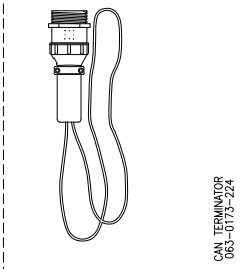
CHASSIS CABLE SYSTEM CAN AUTOBOOM



\*ORDER SEPARATELY. CABLE SHOULD REACH FROM BATTERY AUTOBOOM NODE TO 3' AFT. FRONT OF HITCH ON BUILD TYPE SPRAYERS. OR TO NEXT NODE. CABLE ON SPRAYER.\*



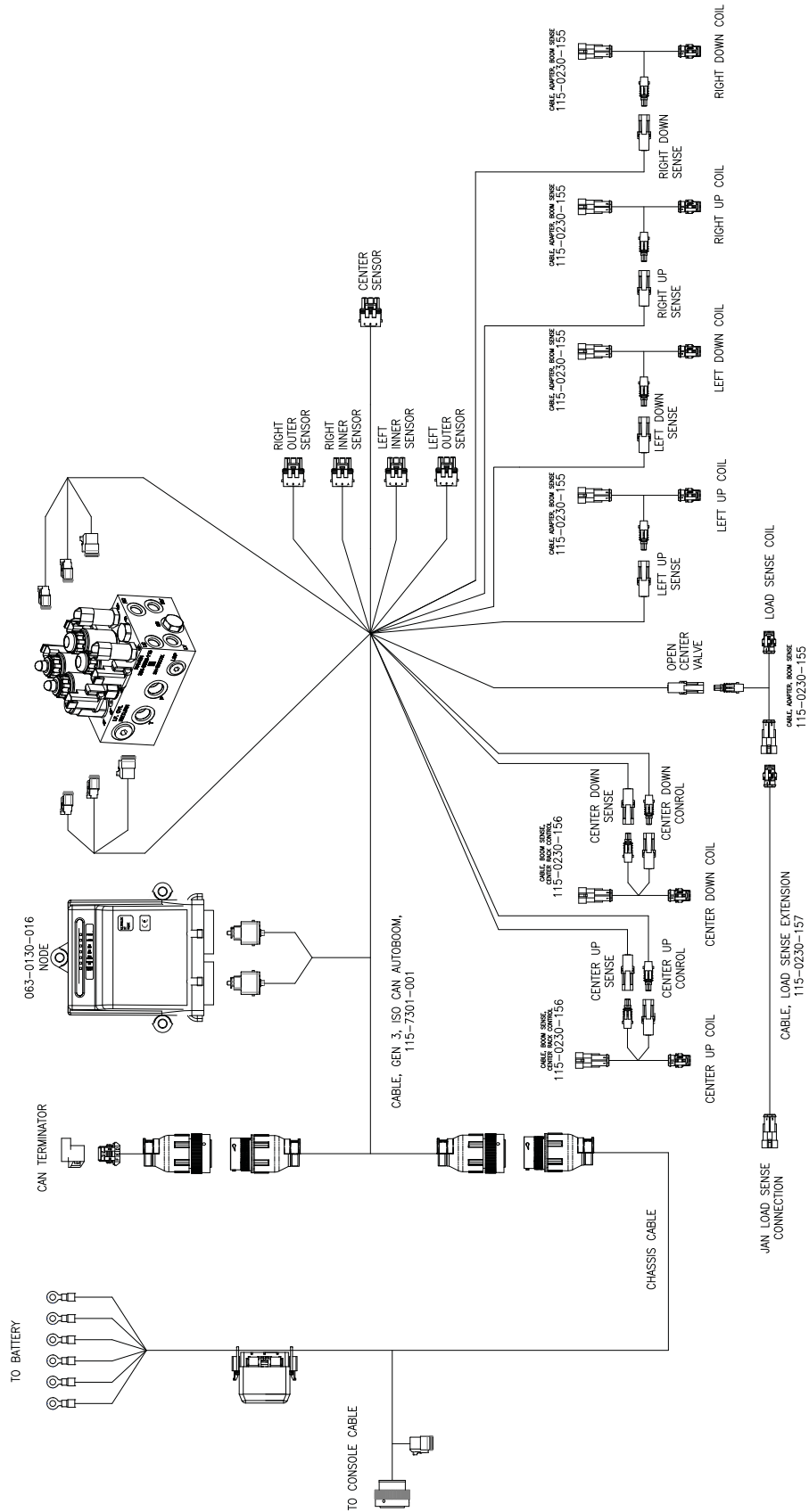
\*ORDER SEPARATELY IF NOT ORDERING AUTOBOOM CONSOLE KIT, OR IF CAN TERMINATOR NOT BEING MOVED FROM PRODUCT CONTROL NODE OR CHASSIS HARNESS.\*



POWERGLIDE PLUS AUTOBOOM KIT: 117-5130-001  
ULTRAGLIDE AUTOBOOM KIT (90 FT): 117-5130-002  
ULTRAGLIDE AUTOBOOM KIT (100 FT +): 117-5130-003



GEN III CABLING



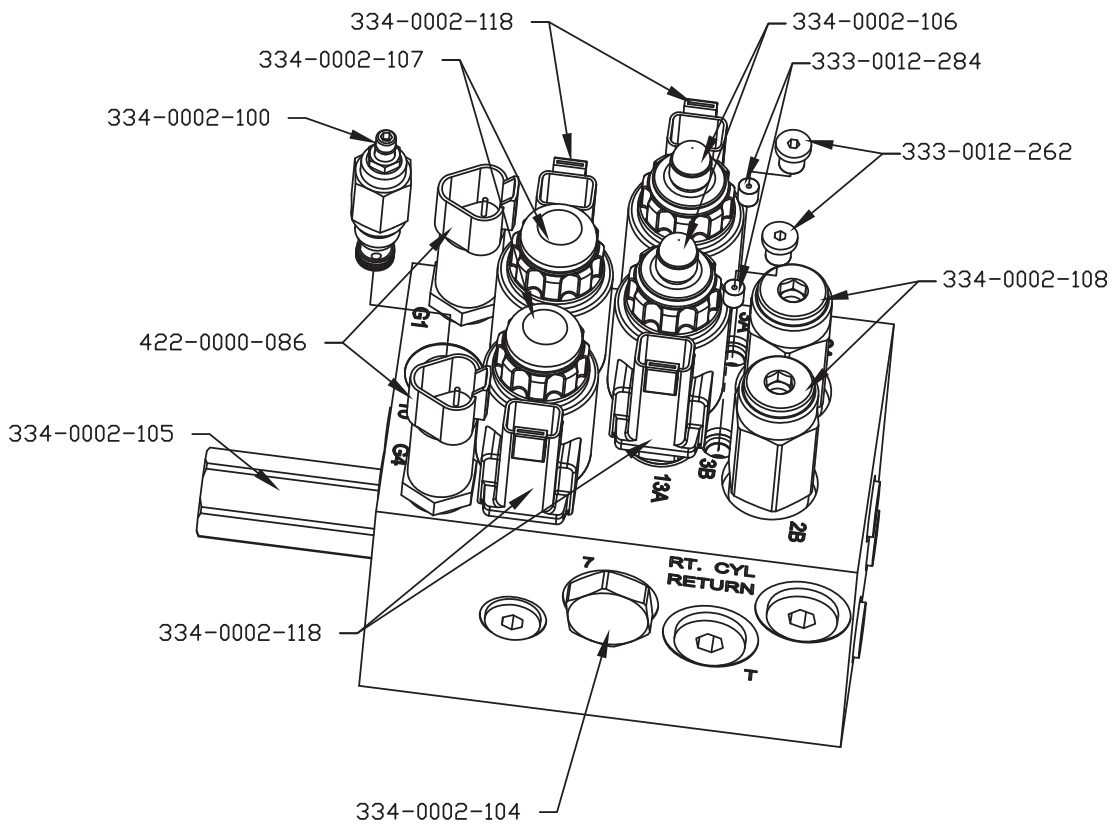
# CHAPTER

# REPLACEMENT PARTS

## 6

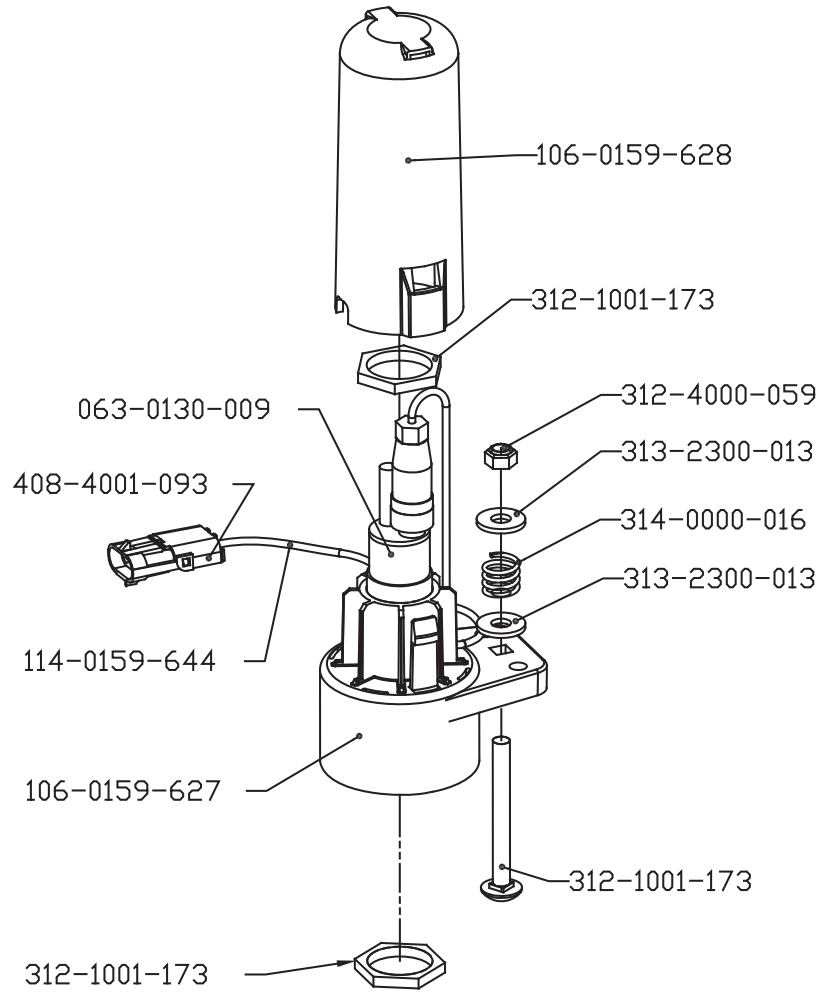
This section contains replacement part diagrams and listings for the AutoBoom system. Please refer to these diagrams when calling to request replacement parts.

### VALVE



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

SENSORS



## E

Electrical Safety 3

## H

Hydraulic Safety 2

Hydraulic System Installation 13

Hydraulic Diagram 18

Installing Fittings in the AutoBoom Valve 14

Intsalling the Left and Right Cylinder Hoses 17

Installing the Left Cylinder Hoses 17

Intalling the Right Cylinder Hoses 17

Intsalling the Pressure and Tank Hoses 16

Installing the Pressure Hoses 16

Installing the Tank Hoses 16

Mounting the AutoBoom Valve 15

Preparing the Flow Control Valve for Installation 14

## I

Important Safety Information

Electrical Safety 3

General 3

Instructions for Wire Routing 3

Hydraulic Safety 2

General 2

Instructions for Hose Routing 2

Introduction

Hydraulic

Fittings 6

Kit Contents 7

Preparing or Installation 5

Point of Reference 6

Recommendations 5

Tools Needed 6

Updates 6

## K

Kit Contents 7

## P

Preparing for Installation 5

## R

Replacement Parts 31

Sensors 32

Valve 31

## S

Sensor Installation 19

Boom Sensor Mounting Locations 19

Connecting the Sensor Cables 21

Mounting the Boom Sensors 20

Mounting the Center Sensor 21

## W

Wirng Installation 23

Connecting the AutoBoom Harness to the Boom  
Function Controls 24

Connecting the Harness to the AutoBoom Valve  
Boom Function Controls 24

Connecting the Harness to the Machine's Boom  
Function Controls 24

Connecting the AutoBoom Harness to the Chassis  
Cable - Gen II Cable Only 26

Connecting the AutoBoom Harness to the  
Implement Extension Tee - Gen II Cable Only 26

Connecting the AutoBoom Harness to the Power  
Cable - Gen I Cable Only 26

Connecting the AutoBoom Harness to the  
Sensors 25

Connecting the Field Computer 26

Connecting the Power Cable (If Applicable) - Gen I  
Cable Only 26

Connecting the Power Leads 27

Installing the AutoBoom Node 23

Installing the Center Rack Control 25

Wiring Connections 23

Wiring Diagrams 28

Gen I Cabling 28

Gen II Cabling 29

Gen III Cabling 30



# 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.**



## 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](http://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.**