

**AutoBoom® XRT
Installation Manual for
John Deere R4030, R4038,
R4044, and R4045**

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Chapter 1	Important Safety Information.....	1
	Instructions for Hose Routing	2
	Instructions for Wire Routing	3
Chapter 2	Introduction.....	5
	Introduction	5
	Preparing for Installation	6
	Recommendations	6
	Tools Needed	6
	Point of Reference	6
	Installation Overview	7
	Hydraulic Fittings	7
	Updates	8
	Kit Contents	9
Chapter 3	Hydraulic System Installation.....	11
	Prepare the AutoBoom XRT Valve	12
	Remove the Orifice Fittings (For Machines with AutoBoom Already Installed)	12
	Install Fittings in the AutoBoom Valve	14
	Mount the AutoBoom XRT Valve	15
	Mount the AutoBoom Valve	15
	Install the Pressure and Tank Hoses	16
	Install the Left and Right Cylinder Hoses	19
	Install the Left and Right Down Hoses	21
	Install the Load Sense Hose	24
	Hydraulic Diagram	26
Chapter 4	Sensor Installation.....	27
	Mount the Boom Sensors	27
	Boom Sensor Mounting Locations	27
	Mount the Boom Sensors	27
Chapter 5	Wiring Installation.....	31
	AutoBoom (ABM) Node Installation	31
	REM Node Mounting	32
	Connect the REM Harness	33
	Connect the Harness Cable to the Load Sense Jam Valve	39
	Valve Tee Cable	39
	Radar Sensor Cable	40
	Electrical Diagrams	41
Appendix A	Kits Lists.....	43
	AutoBoom XRT Kits	43
	Kits for 90'-100' Booms	44
	Kits for 120' Booms	50

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 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 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 installation, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate 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 the system engaged.
- Disable the system 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

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

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

The AutoBoom XRT system is designed to provide automated boom height adjustment for agricultural equipment.

This manual applies to the following machines:

MAKE: John Deere
MODEL: R4030, R4038, R4044, and R4045
YEAR: 2014-2019

FIGURE 1. John Deere 4030



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 before installing or operating the AutoBoom XRT system for the first time, at the start of the season, or when moving the AutoBoom XRT system to another machine:

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

Raven Industries recommends the following when installing the AutoBoom XRT 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 XRT system:

- Standard-sized wrenches
- Cable ties
- Set of tools

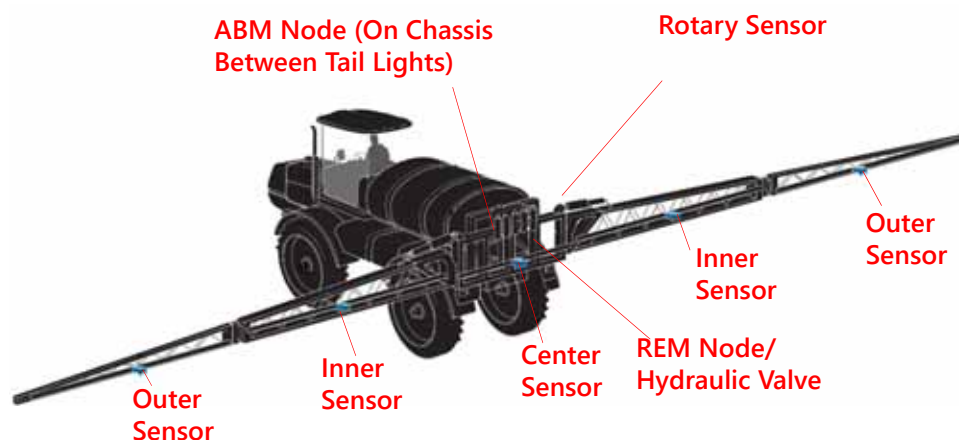
POINT OF REFERENCE

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

INSTALLATION OVERVIEW

The image below shows approximate installation locations for the sensor and nodes. Depending on machine configuration and desired performance some of the sensors and dampers may not be installed.

FIGURE 2. Example Component Locations



For additional information on the component installation, refer to the:

- REM node installation instructions in "REM Node Mounting" on page 32.
- ABM node installation instructions in "AutoBoom (ABM) Node Installation" on page 31.
- outer sensor installation information in "Mount the Boom Sensors" on page 27.
- inner sensor installation information in "Mount the Boom Sensors" on page 27.
- center sensor installation instructions in "Mount the Boom Sensors" on page 27.

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 Fittings



ORFS Fittings



JIC Fitting



UPDATES

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

<https://ravenprecision.com>

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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

- AutoBoom® XRT Installation Manual for John Deere R4030, R4038, R4044, and R4045
- 016-0238-001 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.

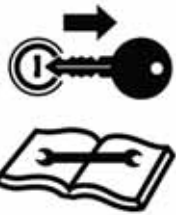
KIT CONTENTS

This section contains a list of kits available depending on machine features. For a full list of kit contents, refer to the specific kits numbers listed in "Kits Lists" on page 43.

TABLE 1. John Deere XRT Kits

Model Year	Model	Boom Length	Exact Apply Installed	AutoBoom Hydraulic Valve Installed	Kit Number
2014-2019	R4030 R4038 R4044 R4045	90'-100'	No	No	117-0238-040
			No	Yes	117-0238-041
			Yes	No	117-0238-042
			Yes	Yes	117-0238-043
		120'	No	No	117-0238-044
			No	Yes	117-0238-045
			Yes	No	117-0238-046
			Yes	Yes	117-0238-047





⚠ WARNING

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



⚠ CAUTION

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

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



NOTICE

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

PREPARE THE AUTOBOOM XRT VALVE

REMOVE THE ORIFICE FITTINGS (FOR MACHINES WITH AUTOBOOM ALREADY INSTALLED)

Before populating the hydraulic fittings on the AutoBoom valve, it is necessary to remove orifice fittings from the valve in the UltraGlide system. Failure to remove these fittings from the valve will restrict the down speed of the booms when the system is enabled.

1. Locate Ports 3A and 3B on the AutoBoom valve.

FIGURE 1. Port 3A and 3B Location



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

FIGURE 2. Coil Removed from the AutoBoom Valve



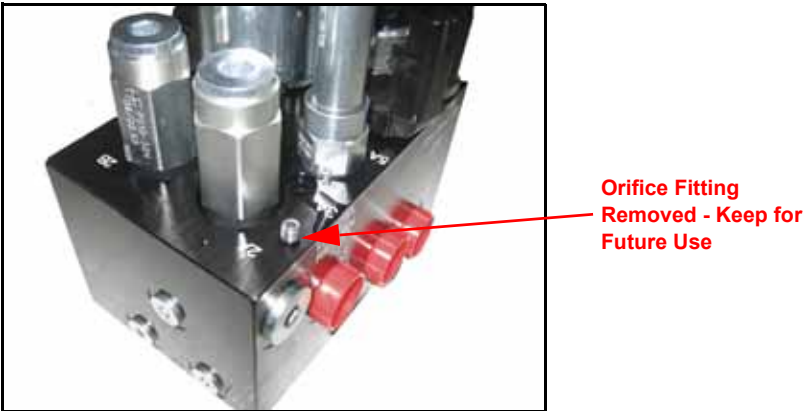
3. Use an Allen wrench to remove the plugs from Ports 3A and 3B.

FIGURE 3. Port Plugs Removed from the AutoBoom Valve



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

FIGURE 4. Orifice Fitting Removed from the AutoBoom Valve



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

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

FIGURE 5. Port Plug Reinstalled on the AutoBoom Valve



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

FIGURE 6. Coil Reinstalled on the AutoBoom Valve



INSTALL FITTINGS IN THE AUTOBOOM VALVE

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

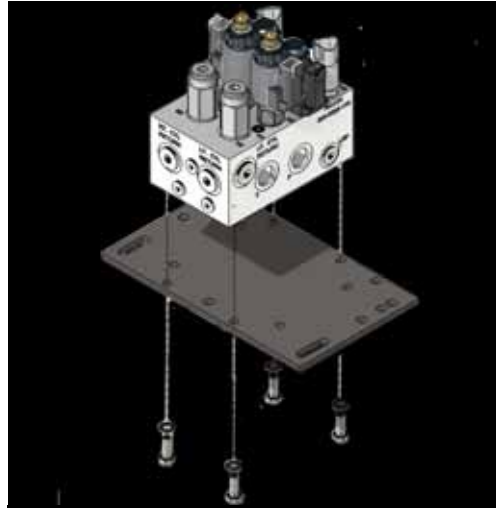
TABLE 1. Populating Fittings in the AutoBoom Valve

Fitting	Part Number	Port
Fitting - -6 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-084	LC, RC, LSP
Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-199	LF CYL RTN, RT CYL RTN
Fitting - -6 ORFS M/F 90° Swivel Elbow	333-0012-065	LF CYL RTN, RT CYL RTN
Fitting - -8 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-168	Left T, P
Fitting - -8 ORFS M/F 90° Swivel Elbow	333-0012-067	Left T, P
Fitting - -6 SAE O-Ring (M) Plug	333-0012-194	LV, RV

MOUNT THE AUTOBOOM XRT VALVE

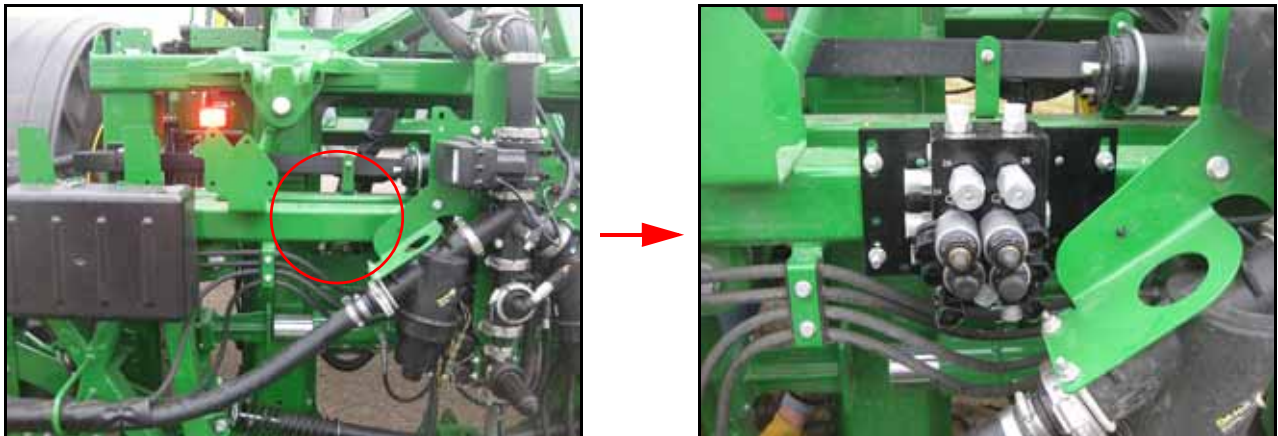
MOUNT THE AUTOBOOM VALVE

FIGURE 7. AutoBoom Valve Secured to the Mounting Bracket



1. Secure the AutoBoom valve (P/N 334-0235-002) to the mounting bracket (P/N 107-0171-619) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).

FIGURE 8. AutoBoom Valve Mounted to the Center Rack



2. Secure the valve mounting bracket to the center rack tube (to the left of the center of the machine) using two 3-1/16" W x 5" L x 3/8" thread U-bolts (P/N 107-0171-607) and four 3/8"-16 zinc flanged lock nuts (P/N 312-4000-252).

INSTALL THE PRESSURE AND TANK HOSES

FIGURE 9. Proportional Valve Location



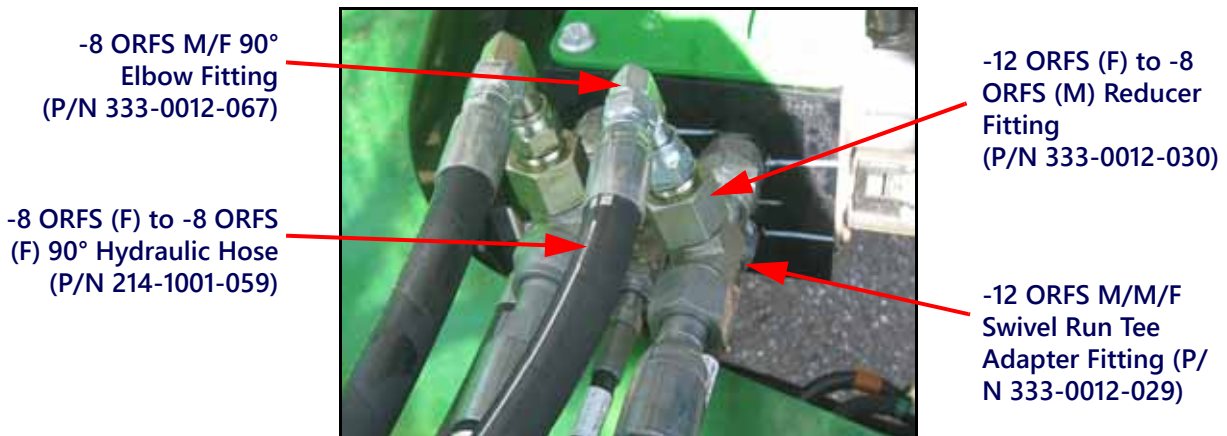
1. Locate the proportional valve behind the spray tank on the main frame at the rear of the machine.

FIGURE 10. BM Hose Connection



2. Disconnect the hose installed in port BM of the proportional valve.

FIGURE 11. Pressure Hose Installed on Proportional Valve



3. Install a -12 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-029) in the open port of the proportional valve.
4. Connect the existing pressure hose to the opposite end of the installed tee fitting.
5. Install a -12 ORFS (F) to -8 ORFS (M) reducer fitting (P/N 333-0012-030) on the 90° end of the installed tee fitting.
6. Install a -8 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-067) on the installed reducer fitting.
7. Install the straight end of the supplied hydraulic hose (P/N 214-1001-059) on the installed elbow fitting.

FIGURE 12. Pressure Hose Installed on AutoBoom Valve



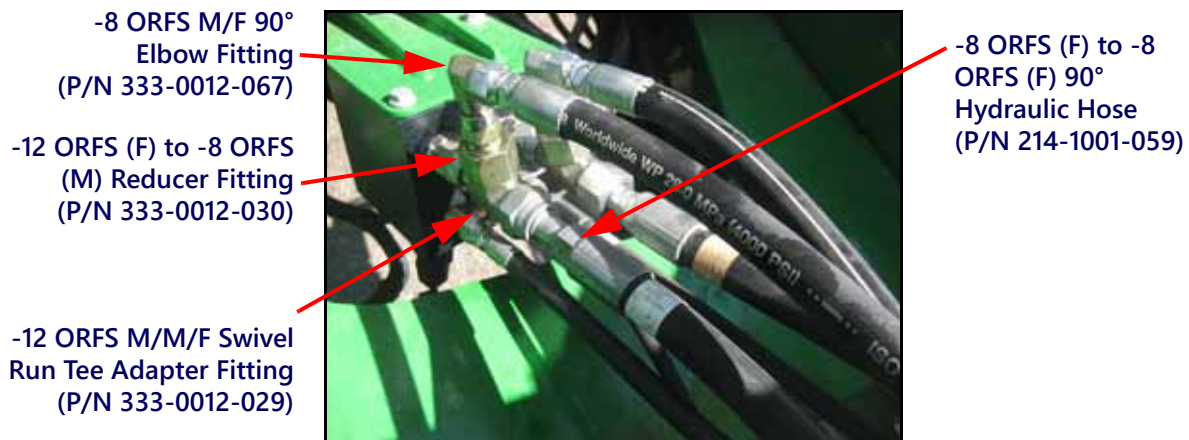
8. Connect the 90° end of the installed hydraulic hose on the fitting installed in Port P of the AutoBoom valve (P/N 063-0131-125).

FIGURE 13. BMT Hose Connection



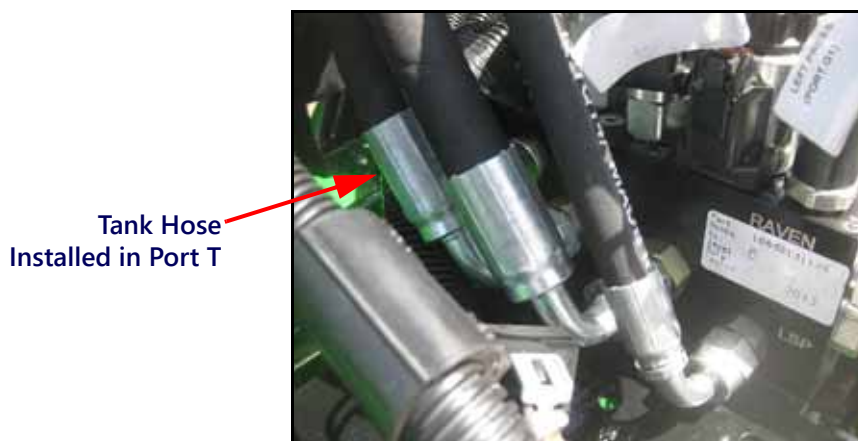
9. Disconnect the hose installed in port BMT of the proportional valve.

FIGURE 14. Tank Hose Installed on Proportional Valve



10. Install a -12 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-029) in the open port of the proportional valve.
11. Connect the existing tank hose to the opposite end of the installed tee fitting.
12. Install a -12 ORFS (F) to -8 ORFS (M) reducer fitting (P/N 333-0012-030) on the 90° end of the installed tee fitting.
13. Install a -8 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-067) on the installed reducer fitting.
14. Install the straight end of the supplied hydraulic hose (P/N 214-1001-059) on the installed elbow fitting.

FIGURE 15. Tank Hose Installed on AutoBoom Valve



15. 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 16. Existing Machine Cylinder Hoses



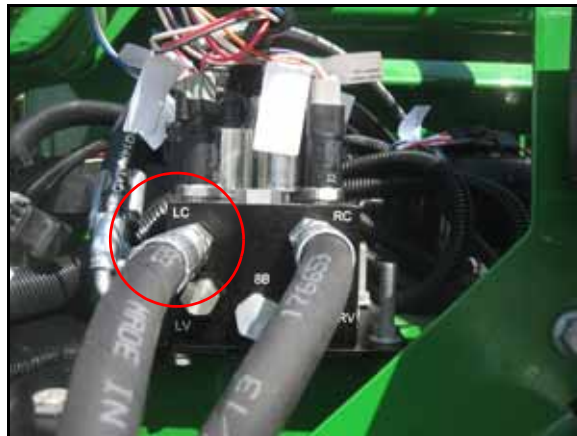
1. Locate and disconnect the existing raise hose from the rod-end of the left tilt cylinder.

FIGURE 17. Raise Hose Installed on Left Tilt Cylinder



2. Install a -6 ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the open port on the rod-end of the tilt cylinder.
3. Install the existing left raise hose on the opposite end of the installed tee fitting.
4. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-060) on the 90° end of the installed tee fitting.

FIGURE 18. Left Raise Hose Installed on AutoBoom Valve



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

FIGURE 19. Existing Cylinder Hoses



6. Locate and disconnect the existing raise hose from the rod-end of the right tilt cylinder.

FIGURE 20. Raise Hose Installed on Right Tilt Cylinder



7. Install a -6 ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the open port on the rod-end of the tilt cylinder.
8. Install the existing right raise hose on the opposite end of the installed tee fitting.
9. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-061) on the 90° end of the installed tee fitting.

FIGURE 21. Right Raise Hose Installed on AutoBoom Valve



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

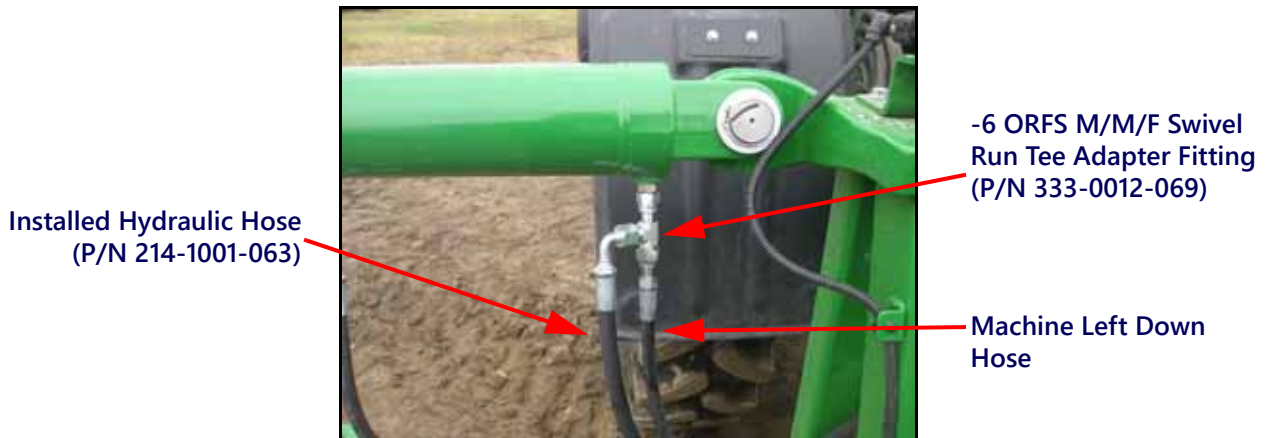
INSTALL THE LEFT AND RIGHT DOWN HOSES

FIGURE 22. Existing Cylinder Hoses



1. Locate and disconnect the machine down hose from the base-end of the left tilt cylinder.

FIGURE 23. Down Hose Installed on Left Tilt Cylinder



2. Install a -6 ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the open port on the base-end of the tilt cylinder.
3. Install the existing left down hose on the opposite end of the installed tee fitting.
4. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-063) on the 90° end of the installed tee fitting.

FIGURE 24. Left Down Hose Installed on AutoBoom Valve



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

FIGURE 25. Existing Machine Cylinder Hoses



6. Locate and disconnect the existing down hose from the base-end of the right tilt cylinder.

FIGURE 26. Down Hose Installed on Right Tilt Cylinder



- 7. Install a -6 ORFS M/M/F swivel run tee fitting (P/N 333-0012-069) in the open port on the base-end of the tilt cylinder.
- 8. Install the existing right down hose on the opposite end of the installed tee fitting.
- 9. Install the 90° end of the supplied hydraulic hose (P/N 214-1001-060) on the 90° end of the installed tee fitting.

FIGURE 27. Right Down Hose Installed on AutoBoom Valve



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

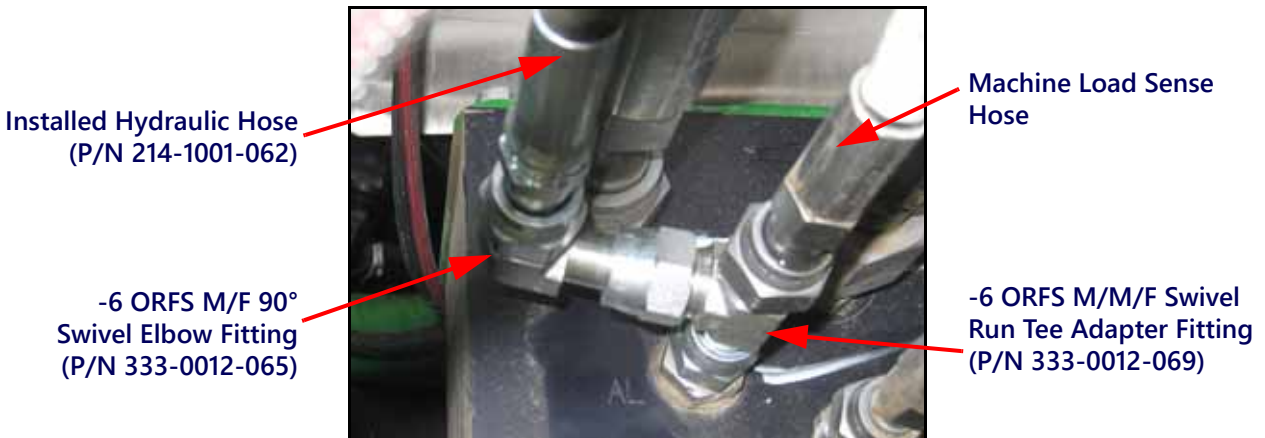
INSTALL THE LOAD SENSE HOSE

FIGURE 28. AL Hose Connection



1. Disconnect the hose installed in port AL of the machine proportional valve.

FIGURE 29. Load Sense Hose Installed on Existing Proportional Valve



2. Install a -6 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-069) in the open port of the machine proportional valve.
3. Install the existing load sense hose on the opposite end of the installed tee fitting.
4. Install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the 90° end of the installed tee fitting.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1001-062) on the installed elbow fitting.

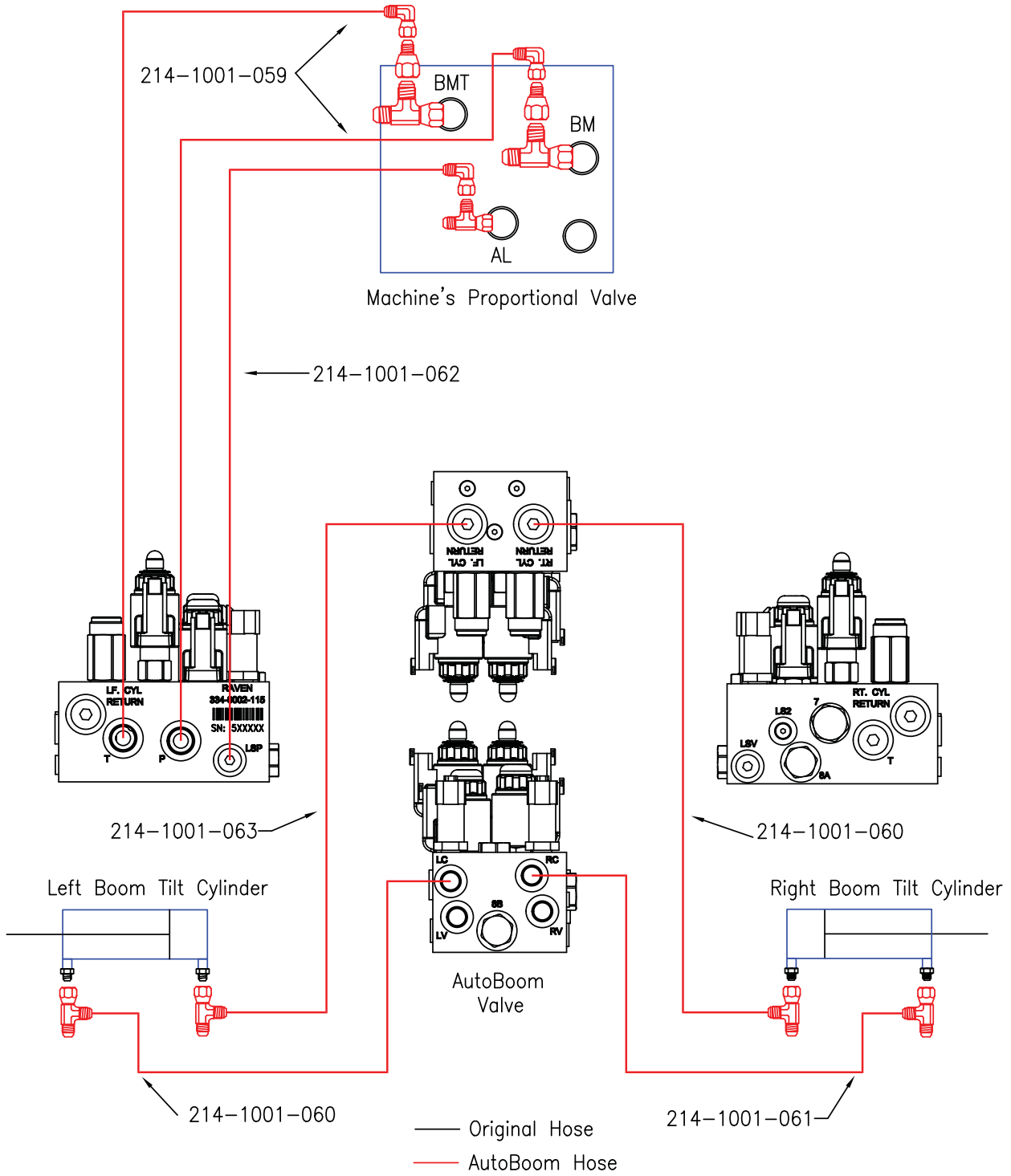
FIGURE 30. Load Sense Hose Installed on AutoBoom Valve



6. 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

FIGURE 31. AutoBoom XRT Hydraulic Diagram for John Deere R Series Machines

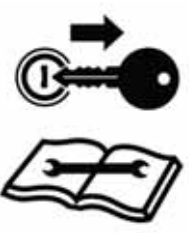


MOUNT THE BOOM SENSORS

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 return to the sensor could occur. To ensure optimal operation of the AutoBoom XRT system and to protect the sprayer boom, the sensor should be mounted behind the boom structure (if possible), above the lowest hanging part of the boom.

MOUNT THE BOOM SENSORS



⚠ **WARNING**

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

- The table below provides the approximate mounting locations for various boom widths. The information on this table is for reference only. If there is interference or other issues with these mounting locations, mount the sensors as close to these locations as possible.

TABLE 1. Sensor Mounting Location

Boom Width	Inner Sensor Mounting Distance from Boom Pivot Point	Outer Sensor Mounting Distance from Boom Pivot Point
90'	298"	473"
100'	298"	493"
120'	376"	612"

NOTE: The numbers in the table above are the approximate distance. As a rule, the sensor should be mounted half way between two spray tips to minimize potential drift interference.

- Install the radar sensors (P/N 063-0173-962) on the sensor mounting brackets using two 1/4"-20 x 5/8" Phillips pan head bolts (P/N 311-0050-255) and two 1/4"-20 nylon locking nuts per sensor (P/N 312-4000-164).

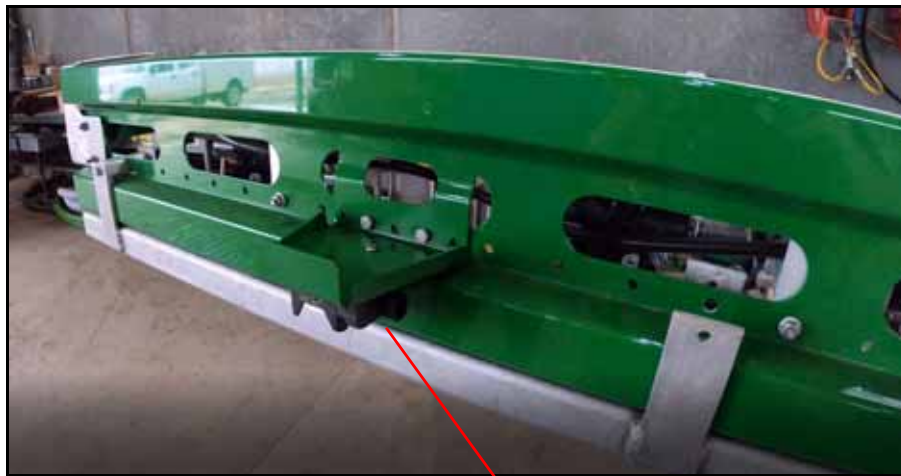
NOTE: Install two of the sensors in one orientation and three in the other orientation on the bracket so, when installed, the sensor connection is facing towards the center of the machine.

FIGURE 1. Sensor Installed on Mounting Bracket



3. Mount the boom sensor assemblies on the front of the outer boom sections using and 5/16" hex head bolts (P/N 311-0052-081) and 5/16" nuts (P/N 312-4000-251). Mount so that the electrical connector is pointed toward the center of the machine.

FIGURE 2. Boom Sensor Installed



Sensor Mounted Near End of Boom

4. Mount the inner boom sensor assemblies to existing sensor mounting plate near the end of the inner boom section using 3/8"-16 x 1.25" bolts (P/N 311-0054-081) and 3/8"-16 flanged lock nuts (P/N 312-4000-252). Mount so that the electrical connector is pointed toward the center of the machine.

FIGURE 3. Inner Boom Sensor Installed (120' Boom Shown)



5. Mount the center sensor assembly to the existing sensor mounting plate on the front, left side of the center rack using 3/8"-16 x 1.25" bolts (P/N 311-0054-081) and 3/8"-16 flanged lock nuts (P/N 312-4000-252).

FIGURE 4. Center Sensor Installed



AUTOBOOM (ABM) NODE INSTALLATION

1. Locate the cross member on the main chassis between the center rack arms.
2. Using the two provided or 1/4" x 3" bolts (P/N 311-0050-238) and 1/4"-20 lock nuts (P/N 312-4000-164), secure the AutoBoom node to the machine frame.

FIGURE 1. Installed AutoBoom XRT Node



NOTE: Position the node so the connections are facing down.

REM NODE MOUNTING

1. Use the provided hardware to mount the REM node to the REM mounting plate.

FIGURE 2. REM Node Mounted to Plate



2. Locate the slot and hole in the area of the top, right corner of the center rack.

FIGURE 3. REM Node Mounted to Plate



FIGURE 4. REM Node Mounted to Plate



3. Mount the assembled REM mounting plate using three 1/2-13 X 1-1/2" bolts (P/N 311-0058-097), six 1/2" flat washers (P/N 313-2300-319), and three 1/2" nylon locking nuts (P/N 312-4000-065).

NOTE: Position the node so the connections are facing down.

CONNECT THE REM HARNESS

NOTE: While making the following connections, be aware of the cable routing and avoid possible cable pinch points and other issues.

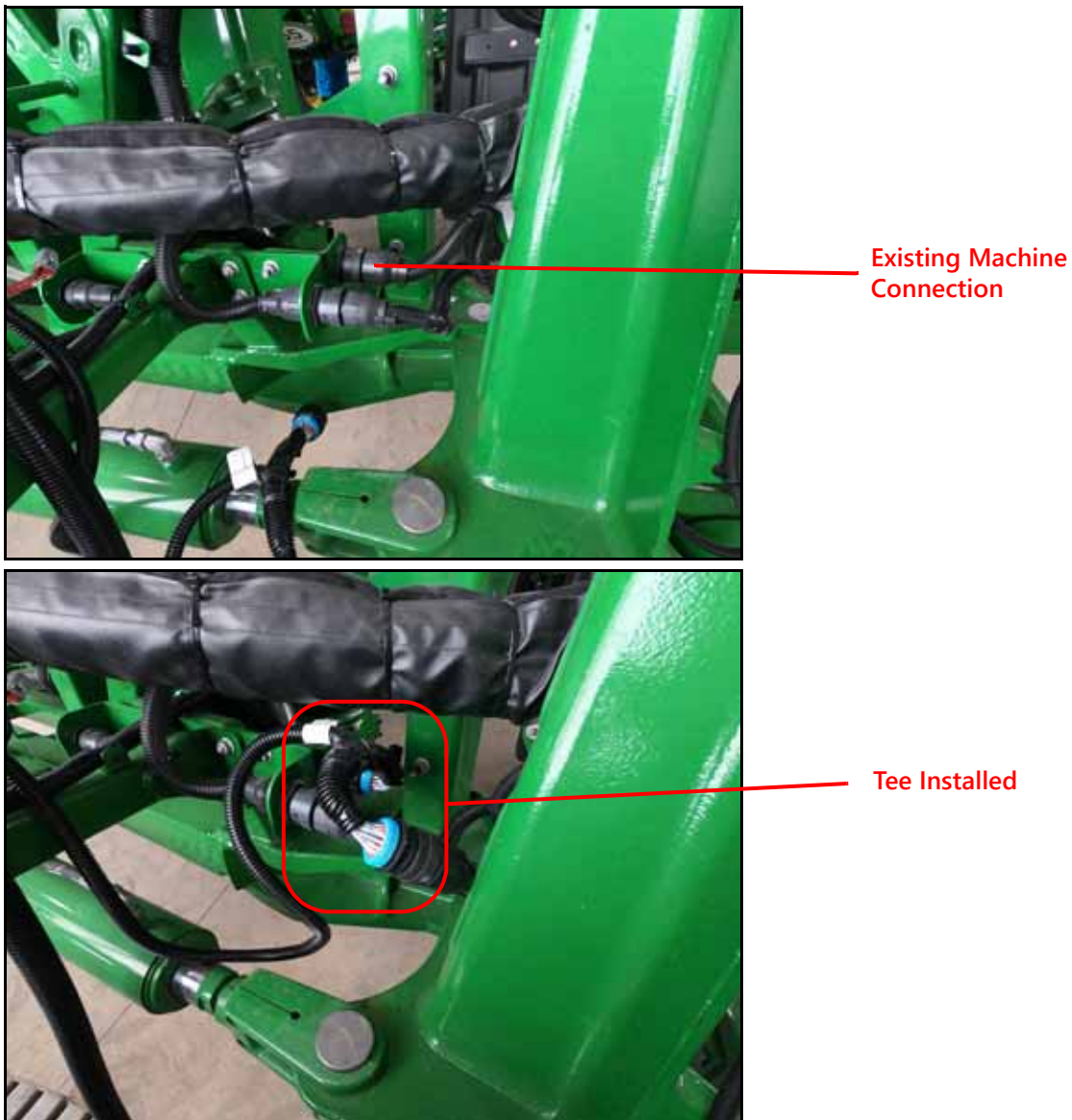
1. Plug gray 23 pin plug on the XRT cable (P/N 115-0235-116 or 115-0235-119) to the mating connector on the bottom of the REM node.
2. Plug black 23 pin plug on the XRT cable to the mating connector on the bottom of the REM node.
3. Plug black 35 pin plug on the XRT cable to the mating connector on the bottom of the REM node.

FIGURE 5. REM Cable Connected to Node



4. Route the bulkhead tee labeled Left Boom up and across the top of the center rack. Connect the bulkhead tee between the machine harness at the left boom shoulder.
5. Connect the bulkhead tee labeled Right Boom between the machine harness at the right boom shoulder.

FIGURE 6. Right Shoulder Bulkhead Tee



6. Connect the Position Sensor Tee Cable (P/N 115-0235-129) to the machine center rack rotation sensor located on the upper, right corner of the center rack.
7. Connect the other end of the cable to the connector labeled 'Center Rack Angular Position' on the REM cable.

FIGURE 7. Center Rack Rotation Sensor



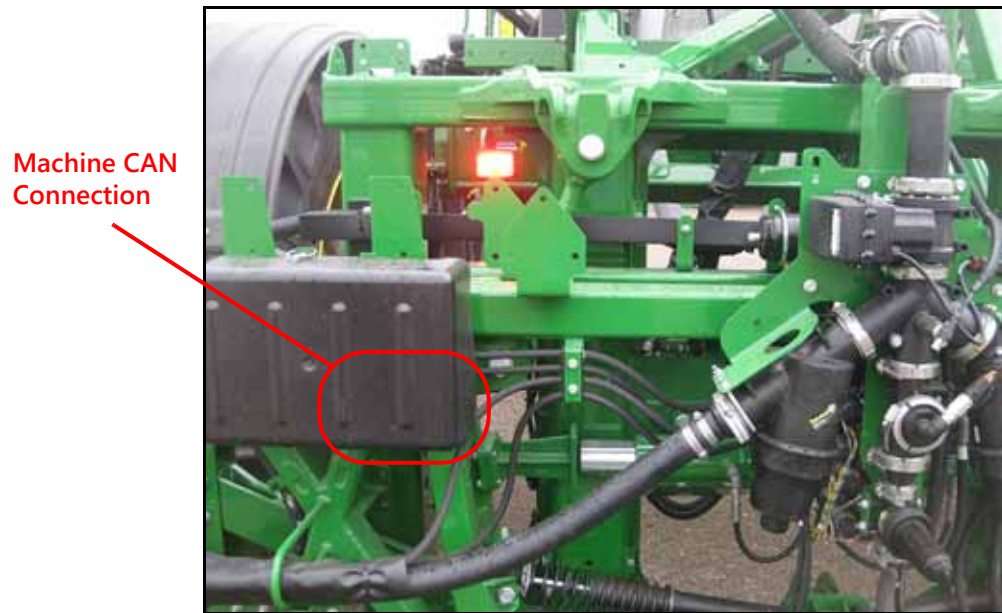
8. Connect the RIGHT SOLENOID plug on the XRT cable to port 4B on the AutoBoom XRT valve.
9. Connect the LEFT SOLENOID plug on the XRT cable to port 4A on the AutoBoom XRT valve.
10. Connect the LEFT PROP plug on the XRT cable to port 5A on the AutoBoom XRT valve.
11. Connect the RIGHT PROP plug on the XRT cable to port 13A on the AutoBoom XRT valve.

FIGURE 8. Electrical Connections on AutoBoom Valve



12. Locate and remove the cover near the top, left corner of the center rack.
13. Locate the CAN terminator under the cover located in the upper, left corner of the center rack.

FIGURE 9. CAN Connections



14. Connect the machine CAN connector to one side of the CAN tee on the XRT Cable.
15. Reconnect the machine CAN terminator to the other end of the CAN tee.
16. Reinstall the cover over the electrical connections.
17. Locate the machine harness cable bulkhead behind the left rear axle.
18. Disconnect the machine cable from the left bulkhead connector.

NOTE: If equipped with Exact Apply, disconnect the upper, left bulkhead connector.

FIGURE 10. AutoBoom Harness Cable Installed



19. Attach the appropriate ends of the AutoBoom Tee cable (P/N 115-0235-115) to the machine cable and the bulkhead connector.
20. Locate the machine CAN connection near the ECU cover in front of the left rear axle.
21. Connect machines CAN connector to one side of the CAN tee on the XRT Tee cable.

FIGURE 11. Tee Connection



22. Reconnect the machine harness to other end of the CAN tee.
23. Route 12-pin DTM plug connector across the frame and plug into the ABM node.

FIGURE 12. ABM Node Connection



24. Route connector labeled CENTER RACK along boom arms to the top of the center rack. Follow existing cable runs already on the machine.
25. Connect to REM cable marked Center Rack.

CONNECT THE HARNESS CABLE TO THE LOAD SENSE JAM VALVE

FIGURE 13. Load Sense Jam Valve



1. Locate the load sense jam valve on the combo valve.
2. Route the 2-pin connector tee in the 115-0235-115 cable to the load sense jam valve.
3. Disconnect the coil connector from the load sense jam valve.
4. Install the 2-pin connectors between the coil and its connector.

VALVE TEE CABLE

1. Locate bulkhead below machine valve in front of the strainers on the center rack.

FIGURE 14. Bulkhead Connections for the Machine Valve



2. Connect Valve Tee Cable (P/N 115-0235-117) to the machine bulkhead.
3. Reconnect machine cable to Valve Tee Cable.
4. Connect 18-Pin plug to the connector labeled VALVE HARNESS CONNECTOR on the REM Cable.
5. Plug Load Resistor (P/N 115-0235-118) to 8-pin connector on Valve Tee Cable.

RADAR SENSOR CABLE

Center radar cabling

1. Locate the existing 4-pin deutsch connector located near the center sensor mounting.
2. Install 6" RADAR adapter cable (p/n 115-0235-120) between the 4-pin connector and radar.

INNER RADAR SENSOR CABLING (90-100')

1. Locate the existing 4-pin deutsch connector located near the inner sensor mounting location.
2. Install 6" RADAR adapter cable (p/n 115-0235-120) between the 4-pin connector and radar.

INNER RADAR SENSOR CABLING (120')

1. Locate the existing 4-pin deutsch connector located approximately 5 feet towards the center of the machine, from the inner sensor location.
2. Install 72" radar adapter cable (P/N 114-0235-140) between the 4-pin connector and radar.

OUTER RADAR SENSOR CABLING (NON-EXACT APPLY)

1. Locate the existing 8-pin connector located before the breakaway on the boom.
2. Install 16' RADAR adapter cable (p/n 115-0235-127) between the 8-pin connector and radar.

OUTER RADAR SENSOR CABLING (EXACT-APPLY)

1. Locate the existing 4-pin deutsch connector located approximately midway on the breakaway of the boom.
2. Install 72" radar adapter cable (P/N 114-0235-128) between the 4-pin connector and radar.
3. Remove the 2-pin terminator connected to the plug with one yellow and one green wire, from the machines harness. Relocate terminator to the dust capped plug on the end of cable and place dust cap where terminator was removed.

ELECTRICAL DIAGRAMS

FIGURE 15. AutoBoom XRT System Diagram for John Deere R Series (P/N 054-0238-040)

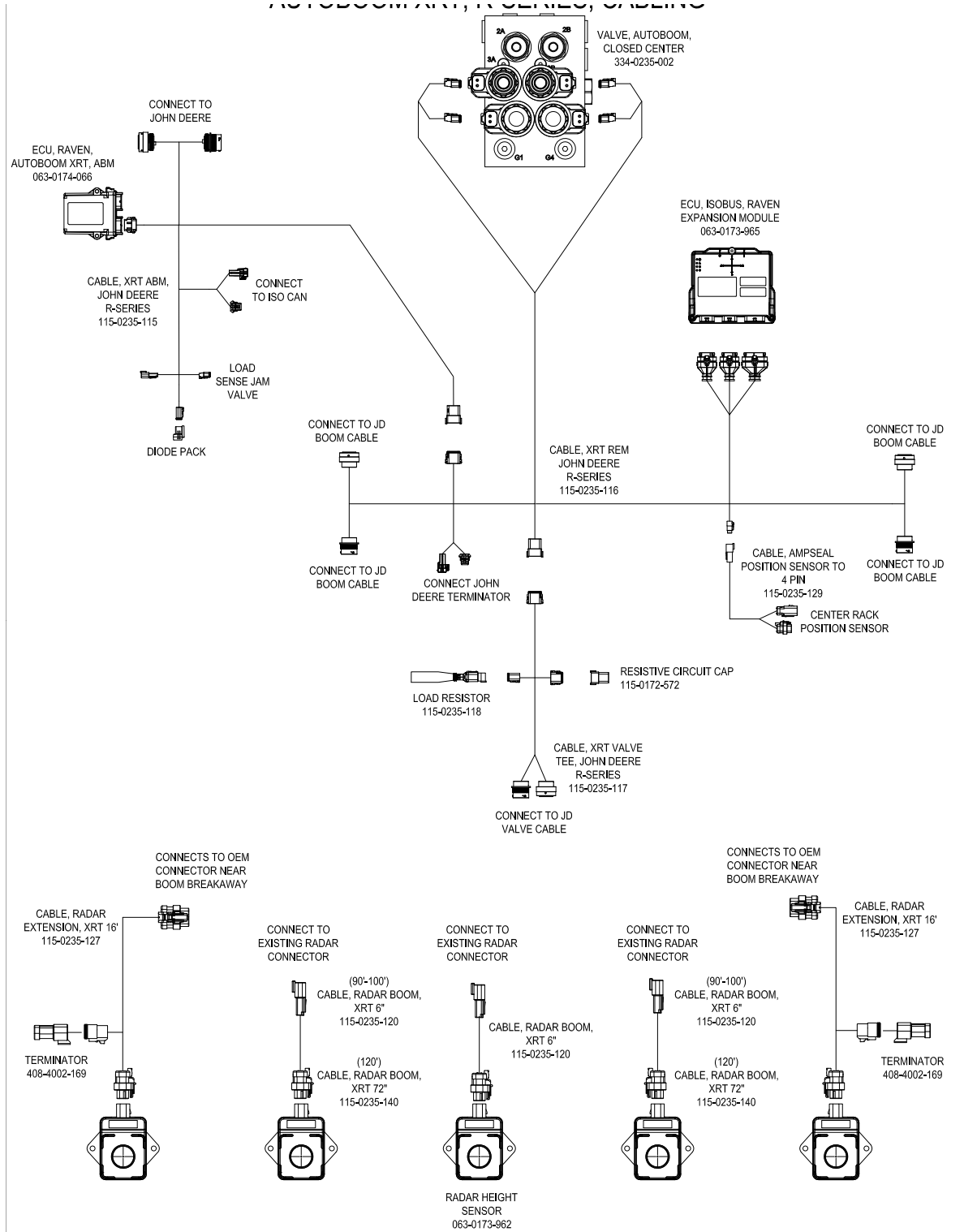
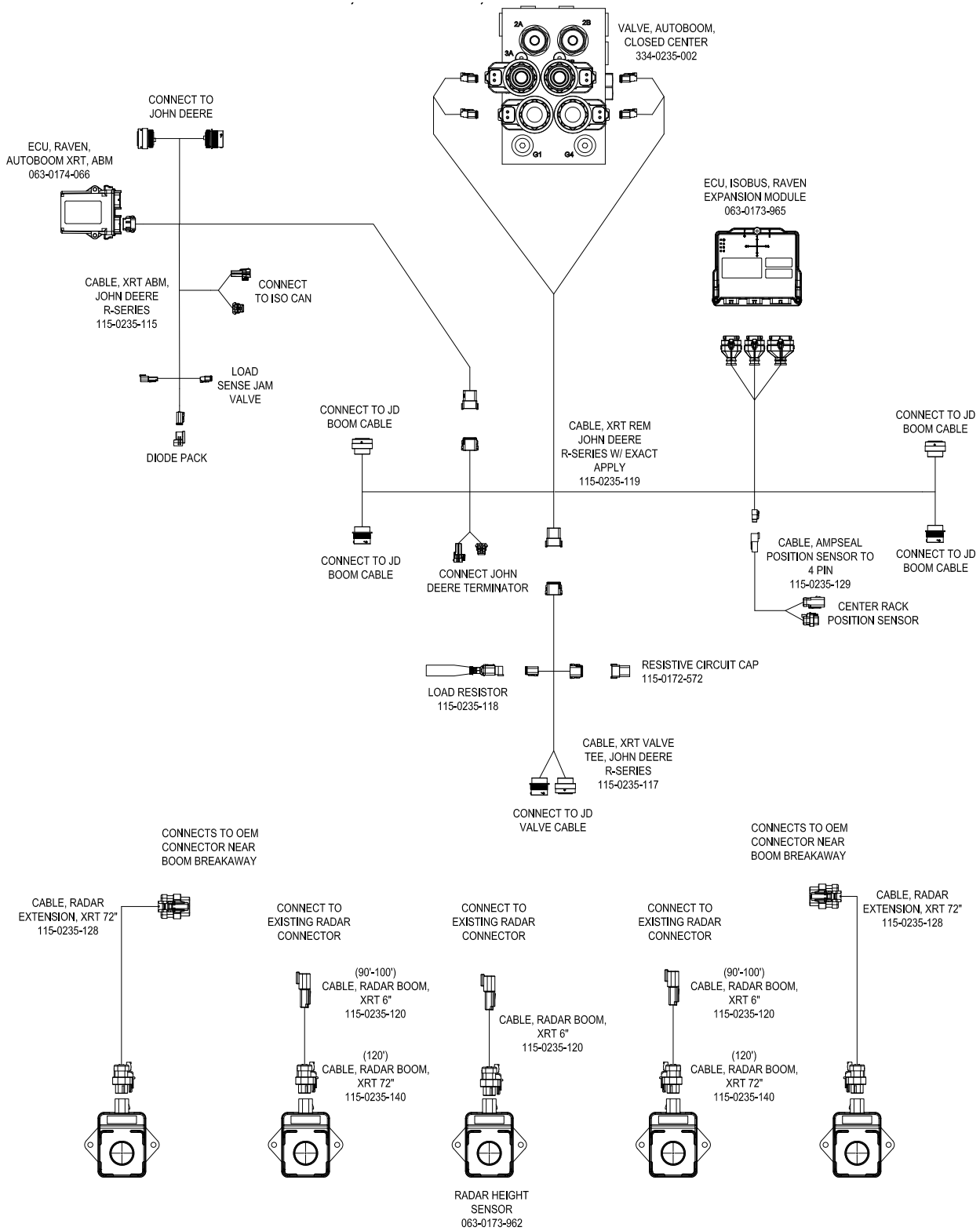


FIGURE 16. AutoBoom XRT System Diagram for John Deere R Series with Exact Apply (P/N 054-0238-042)



A**AUTOBOOM XRT KITS**

The following kits are included in this appendix:

TABLE 1. AutoBoom XRT Installation Kits for John Deere R-Series Equipment

Kit Description	Kit Number
90'-100' Steel Boom	117-0238-040
90'-100' Steel Boom, No Hydraulics	117-0238-041
90'-100' Steel Boom, ExactApply	117-0238-042
90'-100' Steel Boom, ExactApply No Hydraulics	117-0238-043
120' Steel Boom	117-0238-044
120' Steel Boom, No Hydraulics	117-0238-045
120' Steel Boom, ExactApply	117-0238-046
120' Steel Boom, ExactApply, No Hydraulics	117-0238-047

KITS FOR 90'-100' BOOMS

FIGURE 1. AutoBoom XRT Kit for John Deere R-Series (90'-100' Steel Boom) (P/N 117-0238-040 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0171-619	PLATE, MOUNTING HYDRAULIC BLOCK, AUTOBOOM
3	1	107-0235-027	BRACKET, JOHN DEERE, REM
4	1	115-0235-116	CABLE, XRT REM, JD R-SERIES
5	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
6	1	115-0235-118	CABLE, XRT LOAD RESISTOR
7	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
8	1	117-0134-120	KIT, HYDRAULIC, AUTOBOOM, JOHN DEERE R-SERIES
9	1	334-0235-002	VALVE, HYDRAULIC, CLOSED CENTER, AUTOBOOM XRT
10	1	053-0159-015	ENVELOPE, PLASTIC
11	2	107-0171-607	U-BOLT, 3-1/16"W X 5"L X 3/8" THREAD
12	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
13	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
14	3	311-0052-104	BOLT, 5/16-18 X 7/8" GRADE 8
15	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
16	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
17	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
18	4	312-4000-252	NUT, FLANGE, TOP LOCK, 3/8
19	3	313-1000-019	WASHER, 5/16" SPLIT LOCK
20	6	313-2300-319	WASHER, FLAT, 1/2"
21	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
22	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
23	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
24	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
25	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
26	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
27	1	117-0238-001	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, BOOM, JD R-SERIES

NOTE: Refer to Figure 5, "AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom) (P/N 117-0238-001 Rev. B)," on page 48 and Figure 7, "AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)," on page 49.

FIGURE 2. AutoBoom XRT Kit for John Deere R-Series (90'-100' Steel Boom, No Hydraulics) (P/N 117-0238-041 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0235-027	BRACKET, JOHN DEERE, REM
3	1	115-0235-116	CABLE, XRT REM, JD R-SERIES
4	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
5	1	115-0235-118	CABLE, XRT LOAD RESISTOR
6	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
7	1	053-0159-015	ENVELOPE, PLASTIC
8	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
9	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
10	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
11	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
12	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
13	6	313-2300-319	WASHER, FLAT, 1/2"
14	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
15	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
16	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
17	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
18	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
19	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
20	1	117-0238-001	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, BOOM, JD R-SERIES

NOTE: Refer to Figure 5, "AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom) (P/N 117-0238-001 Rev. B)," on page 48.

FIGURE 3. AutoBoom XRT Kit for John Deere R-Series (90'-100' Steel Boom, w/Exact Apply) (P/N 117-0238-042 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0171-619	PLATE, MOUNTING HYDRAULIC BLOCK, AUTOBOOM
3	1	107-0235-027	BRACKET, JOHN DEERE, REM
4	1	115-0235-119	CABLE, XRT REM, JD R-SERIES, WITH EXACT APPLY
5	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
6	1	115-0235-118	CABLE, XRT LOAD RESISTOR
7	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
8	1	117-0134-120	KIT, HYDRAULIC, AUTOBOOM, JOHN DEERE R-SERIES
9	1	334-0235-002	VALVE, HYDRAULIC, CLOSED CENTER, AUTOBOOM XRT
10	1	053-0159-015	ENVELOPE, PLASTIC
11	2	107-0171-607	U-BOLT, 3-1/16"W X 5"L X 3/8" THREAD
12	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
13	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
14	3	311-0052-104	BOLT, 5/16-18 X 7/8" GRADE 8
15	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
16	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
17	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
18	4	312-4000-252	NUT, FLANGE, TOP LOCK, 3/8
19	3	313-1000-019	WASHER, 5/16" SPLIT LOCK
20	6	313-2300-319	WASHER, FLAT, 1/2"
21	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
22	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
23	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
24	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
25	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
26	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
27	1	117-0238-002	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, BOOM, JD R-SERIES, WITH EXACT APPLY

NOTE: Refer to Figure 6, "AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom, w/Exact Apply) (P/N 117-0238-002 Rev. B)," on page 48 and Figure 7, "AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)," on page 49.

FIGURE 4. AutoBoom XRT Kit for John Deere R-Series (90'-100' Steel Boom, w/Exact Apply, No Hydraulics) (P/N 117-0238-043 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0235-027	BRACKET, JOHN DEERE, REM
3	1	115-0235-119	CABLE, XRT REM, JD R-SERIES, WITH EXACT APPLY
4	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
5	1	115-0235-118	CABLE, XRT LOAD RESISTOR
6	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
7	1	053-0159-015	ENVELOPE, PLASTIC
8	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
9	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
10	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
11	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
12	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
13	6	313-2300-319	WASHER, FLAT, 1/2"
14	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
15	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
16	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
17	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
18	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
19	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
20	1	117-0238-002	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, BOOM, JD R-SERIES, WITH EXACT APPLY

NOTE: Refer to Figure 6, "AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom, w/Exact Apply) (P/N 117-0238-002 Rev. B)," on page 48.

FIGURE 5. AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom) (P/N 117-0238-001 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-079	BOX, SHIPPING
2	5	063-0173-962	SENSOR, BOOM HEIGHT, RADAR, BAUMER
3	2	107-0235-017	BRACKET, END RADAR, JOHN DEERE
4	2	107-0235-018	BRACKET, MID RADAR, JOHN DEERE
5	1	107-0235-019	BRACKET, CENTER RADAR, JOHN DEERE
6	3	115-0235-120	CABLE, 6", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
7	2	115-0235-127	CABLE, XRT RADAR EXTENSION, 16', JD R-SERIES
8	1	053-0159-015	ENVELOPE, PLASTIC
9	10	311-0050-255	BOLT, 1/4-20 UNC x 0.63 LG, PHILLIPS PAN HEAD
10	6	311-0054-081	BOLT, HEX HEAD, 3/8-16 UNC-2A X 1 1/4
11	10	312-4000-164	NUT, 1/4-20 UNC, NYLON LOCKING, STAINLESS
12	6	312-4000-252	NUT, FLANGED LOCK, 3/8-16 UNC
13	4	311-0052-081	BOLT, HEX HEAD, 5/16-18 UNC-2A X 1 1/4
14	4	312-4000-251	NUT, FLANGED LOCK, 5/16-18 UNC

FIGURE 6. AutoBoom XRT Boom Kit for John Deere R-Series (90'-100' Steel Boom, w/Exact Apply) (P/N 117-0238-002 Rev. B)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-079	BOX, SHIPPING
2	5	063-0173-962	SENSOR, BOOM HEIGHT, RADAR, BAUMER
3	2	107-0235-017	BRACKET, END RADAR, JOHN DEERE
4	2	107-0235-018	BRACKET, MID RADAR, JOHN DEERE
5	1	107-0235-019	BRACKET, CENTER RADAR, JOHN DEERE
6	3	115-0235-120	CABLE, 6", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
7	2	115-0235-128	CABLE, XRT RADAR EXTENSION, 6', JD R-SERIES
8	1	053-0159-015	ENVELOPE, PLASTIC
9	10	311-0050-255	BOLT, 1/4-20 UNC x 0.63 LG, PHILLIPS PAN HEAD
10	6	311-0054-081	BOLT, HEX HEAD, 3/8-16 UNC-2A X 1 1/4
11	10	312-4000-164	NUT, 1/4-20 UNC, NYLON LOCKING, STAINLESS
12	6	312-4000-252	NUT, FLANGED LOCK, 3/8-16 UNC
13	4	311-0052-081	BOLT, HEX HEAD, 5/16-18 UNC-2A X 1 1/4
14	4	312-4000-251	NUT, FLANGED LOCK, 5/16-18 UNC

FIGURE 7. AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

PART #	QTY	DESCRIPTION			
333-0012-029	2	FTG., SWIVEL RUN TEE, -12 ORFS M/M/F			
333-0012-030	2	FTG., REDUCER, -12 ORFS (F) TO -8 ORFS (M)			
333-0012-065	3	FTG., ELBOW, 90 SWIVWL, - 6 ORFS M/F			
333-0012-067	2	FTG., ELBOW, SWIVEL, -8 ORFS M/F			
333-0012-069	5	FTG., SWIVEL RUN TEE, -6 ORFS M/M/F			
333-0012-084	3	FTG., ADAPTER, STRT, -6 ORFS (M) TO -6 SAE O-RING (M)			
333-0012-168	2	FTG., ADAPTER, STRT, -8 ORFS (M) TO -8 SAE O-RING (M)			
333-0012-194	2	FTG., PLUG, 9/16"-18 (-6) (M), SAE O-RING			
333-0012-199	2	FTG.,ADAPTER STRT., -6 ORFS (M) TO -8 SAE O-RING (M)			
			HOSE	OVERALL LENGTH	
		END 1	SIZE	(INCHES)	END 2
214-1001-059	2	8FF	8	142	8FF90S
214-1001-060	2	6FF	6	96	6FF90S
214-1001-061	1	6FF	6	120	6FF90S
214-1001-062	1	6FF90S	4	142	6FF
214-1001-063	1	6FF	6	72	6FF90S

KITS FOR 120' BOOMS

FIGURE 8. AutoBoom XRT Kit for John Deere R-Series (120' Steel Boom) (P/N 117-0238-044 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0171-619	PLATE, MOUNTING HYDRAULIC BLOCK, AUTOBOOM
3	1	107-0235-027	BRACKET, JOHN DEERE, REM
4	1	115-0235-116	CABLE, XRT REM, JD R-SERIES
5	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
6	1	115-0235-118	CABLE, XRT LOAD RESISTOR
7	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
8	1	117-0134-120	KIT, HYDRAULIC, AUTOBOOM, JOHN DEERE R-SERIES
9	1	334-0235-002	VALVE, HYDRAULIC, CLOSED CENTER, AUTOBOOM XRT
10	1	053-0159-015	ENVELOPE, PLASTIC
11	2	107-0171-607	U-BOLT, 3-1/16"W X 5"L X 3/8" THREAD
12	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
13	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
14	3	311-0052-104	BOLT, 5/16-18 X 7/8" GRADE 8
15	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
16	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
17	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
18	4	312-4000-252	NUT, FLANGE, TOP LOCK, 3/8
19	3	313-1000-019	WASHER, 5/16" SPLIT LOCK
20	6	313-2300-319	WASHER, FLAT, 1/2"
21	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
22	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
23	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
24	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
25	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
26	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
27	1	117-0238-003	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, 120' BOOM, JD R-SERIES

NOTE: Refer to Figure 12, "AutoBoom XRT Boom Kit for John Deere R-Series (120' Boom) (P/N 117-0238-003 Rev. A)," on page 54 and Figure 14, "AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)," on page 55.

FIGURE 9. AutoBoom XRT Kit for John Deere R-Series (120' Steel Boom, No Hydraulics) (P/N 117-0238-045 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0235-027	BRACKET, JOHN DEERE, REM
3	1	115-0235-116	CABLE, XRT REM, JD R-SERIES
4	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
5	1	115-0235-118	CABLE, XRT LOAD RESISTOR
6	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
7	1	053-0159-015	ENVELOPE, PLASTIC
8	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
9	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS ST
10	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
11	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
12	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
13	6	313-2300-319	WASHER, FLAT, 1/2"
14	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
15	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
16	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
17	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
18	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
19	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
20	1	117-0238-003	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, 120' BOOM, JD R-SERIES

NOTE: Refer to Figure 12, "AutoBoom XRT Boom Kit for John Deere R-Series (120' Boom) (P/N 117-0238-003 Rev. A)," on page 54.

FIGURE 10. AutoBoom XRT Kit for John Deere R-Series (120' Steel Boom, w/ExactApply) (P/N 117-0238-046 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0171-619	PLATE, MOUNTING HYDRAULIC BLOCK, AUTOBOOM
3	1	107-0235-027	BRACKET, JOHN DEERE, REM
4	1	115-0235-119	CABLE, XRT REM, JD R-SERIES, WITH EXACT APPLY
5	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
6	1	115-0235-118	CABLE, XRT LOAD RESISTOR
7	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
8	1	117-0134-120	KIT, HYDRAULIC, AUTOBOOM, JOHN DEERE R-SERIES
9	1	334-0235-002	VALVE, HYDRAULIC, CLOSED CENTER, AUTOBOOM XRT
10	1	053-0159-015	ENVELOPE, PLASTIC
11	2	107-0171-607	U-BOLT, 3-1/16"W X 5"L X 3/8" THREAD
12	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
13	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS ST
14	3	311-0052-104	BOLT, 5/16-18 X 7/8" GRADE 8
15	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
16	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
17	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
18	4	312-4000-252	NUT, FLANGE, TOP LOCK, 3/8
19	3	313-1000-019	WASHER, 5/16" SPLIT LOCK
20	6	313-2300-319	WASHER, FLAT, 1/2"
21	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
22	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
23	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
24	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
25	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
26	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLCL
27	1	117-0238-004	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, 120' BOOM, JD R-SERIES W/ EXACT APP

NOTE: Refer to Figure 13, "AutoBoom XRT Boom Kit for John Deere R-Series (120' Booms, w/Exact Apply) (P/N 117-0238-004 Rev. A)," on page 54 and Figure 14, "AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)," on page 55.

**FIGURE 11. AutoBoom XRT Kit for John Deere R-Series (120' Steel Boom, w/ExactApply, No Hydraulics)
(P/N 117-0238-047 Rev. A)**

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 3)
2	1	107-0235-027	BRACKET, JOHN DEERE, REM
3	1	115-0235-119	CABLE, XRT REM, JD R-SERIES, WITH EXACT APPLY
4	1	115-0235-117	CABLE, XRT VALVE TEE, JD R-SERIES
5	1	115-0235-118	CABLE, XRT LOAD RESISTOR
6	1	115-0235-129	CABLE, POSITION SENSOR TEE, 6 PIN AMPSEAL, JD-R SERIES
7	1	053-0159-015	ENVELOPE, PLASTIC
8	1	311-0050-236	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 2-1/2" LONG, STAINLESS
9	4	311-0050-238	BOLT, MACHINE, HEX HEAD, 1/4"-20 X 3" LONG, STAINLESS S
10	3	311-0058-097	BOLT, 1/2-13 X 1 1/2" GRADE 5
11	3	312-4000-065	NUT, NYLON LOCKING, 1/2"
12	5	312-4000-164	NUT, 1/4"-20, NYLON LOCKING, SS
13	6	313-2300-319	WASHER, FLAT, 1/2"
14	5	313-2301-810	WASHER, FLAT, 1/4", NARROW
15	1	053-0159-079	BOX, SHIPPING (LABELED BOX 2 OF 3)
16	1	016-0171-649	SHEET, WARRANTY/HELP (016-0238-001)
17	1	063-0173-965	ECU, ISOBUS, REM, RAVEN
18	1	115-0235-115	CABLE, XRT AUTOBOOM TEE, JD R-SERIES
19	1	063-0174-066	ECU, RAVEN, AUTOBOOM XRT, ABM, WITH AUTOBOOM UNLC
20	1	117-0238-004	(LABELED BOX 3 OF 3) KIT, AUTOBOOM XRT, 120' BOOM, JD R-SERIES, W/ EXACT AP

NOTE: Refer to Figure 13, "AutoBoom XRT Boom Kit for John Deere R-Series (120' Booms, w/Exact Apply) (P/N 117-0238-004 Rev. A)," on page 54.

FIGURE 12. AutoBoom XRT Boom Kit for John Deere R-Series (120' Boom) (P/N 117-0238-003 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-079	BOX, SHIPPING
2	5	063-0173-962	SENSOR, BOOM HEIGHT, RADAR, BAUMER
3	2	107-0235-017	BRACKET, END RADAR, JOHN DEERE
4	2	107-0235-018	BRACKET, MID RADAR, JOHN DEERE
5	1	107-0235-019	BRACKET, CENTER RADAR, JOHN DEERE
6	1	115-0235-120	CABLE, 6", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
7	2	115-0235-127	CABLE, XRT RADAR EXTENSION, 16', JD R-SERIES
8	2	115-0235-140	CABLE, 70", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
9	1	053-0159-015	ENVELOPE, PLASTIC
10	10	311-0050-255	BOLT, 1/4-20 UNC x 0.63 LG, PHILLIPS PAN HEAD
11	10	311-0054-081	BOLT, HEX HEAD, 3/8-16 UNC-2A X 1 1/4
12	10	312-4000-164	NUT, 1/4-20 UNC, NYLON LOCKING, STAINLESS
13	10	312-4000-252	NUT, FLANGED LOCK, 3/8-16 UNC

FIGURE 13. AutoBoom XRT Boom Kit for John Deere R-Series (120' Booms, w/Exact Apply) (P/N 117-0238-004 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

ITEM #	QTY	PART #	DESCRIPTION
1	1	053-0159-079	BOX, SHIPPING
2	5	063-0173-962	SENSOR, BOOM HEIGHT, RADAR, BAUMER
3	2	107-0235-017	BRACKET, END RADAR, JOHN DEERE
4	2	107-0235-018	BRACKET, MID RADAR, JOHN DEERE
5	1	107-0235-019	BRACKET, CENTER RADAR, JOHN DEERE
6	1	115-0235-120	CABLE, 6", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
7	2	115-0235-128	CABLE, XRT RADAR EXTENSION, 6', JD R-SERIES
8	2	115-0235-140	CABLE, 70", ADAPTER, 4 PIN DT TO 4 PIN AMPSEAL
9	1	053-0159-015	ENVELOPE, PLASTIC
10	10	311-0050-255	BOLT, 1/4-20 UNC x 0.63 LG, PHILLIPS PAN HEAD
11	10	311-0054-081	BOLT, HEX HEAD, 3/8-16 UNC-2A X 1 1/4
12	10	312-4000-164	NUT, 1/4-20 UNC, NYLON LOCKING, STAINLESS
13	10	312-4000-252	NUT, FLANGED LOCK, 3/8-16 UNC

FIGURE 14. AutoBoom XRT Hydraulic Kit for John Deere R Series (P/N 117-0134-120 Rev. A)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

PART #	QTY	DESCRIPTION			
333-0012-029	2	FTG., SWIVEL RUN TEE, -12 ORFS M/M/F			
333-0012-030	2	FTG., REDUCER, -12 ORFS (F) TO -8 ORFS (M)			
333-0012-065	3	FTG., ELBOW, 90 SWIVWL, - 6 ORFS M/F			
333-0012-067	2	FTG., ELBOW, SWIVEL, -8 ORFS M/F			
333-0012-069	5	FTG., SWIVEL RUN TEE, -6 ORFS M/M/F			
333-0012-084	3	FTG., ADAPTER, STRT, -6 ORFS (M) TO -6 SAE O-RING (M)			
333-0012-168	2	FTG., ADAPTER, STRT, -8 ORFS (M) TO -8 SAE O-RING (M)			
333-0012-194	2	FTG., PLUG, 9/16"-18 (-6) (M), SAE O-RING			
333-0012-199	2	FTG.,ADAPTER STRT., -6 ORFS (M) TO -8 SAE O-RING (M)			
			HOSE	OVERALL LENGTH	
		END 1	SIZE	(INCHES)	END 2
214-1001-059	2	8FF	8	142	8FF90S
214-1001-060	2	6FF	6	96	6FF90S
214-1001-061	1	6FF	6	120	6FF90S
214-1001-062	1	6FF90S	4	142	6FF
214-1001-063	1	6FF	6	72	6FF90S

A

AutoBoom ABM Node Installation 31

E

Electrical Diagrams 41

H

Hydraulic Safety 2

Hydraulic System 11

Hydraulic Diagram 26

Installing Fittings on the AutoBoom XRT Valve 12

Installing Pressure and Tank Hoses 16

Installing the Left and Right Cylinder Hoses 19

Installing the Load Sense Hose 24

Mounting the AutoBoom Valve 15

Mounting the AutoBoom XRT Valve 15

I

Important Safety Information

Hydraulic Safety 2

Install

Hydraulic System

Installing Left and Right Down Hoses 21

Introduction

Hydraulic

Fittings 7

Kit Contents 9

Preparing or Installation 6

Point of Reference 6

Recommendations 6

Tools Needed 6

Updates 8

K

Kit Contents 9

P

Preparing for Installation 6

S

Sensor Installation 27

Mounting the Boom Sensors 27

Boom Sensor Mounting Locations 27

Mount the Boom Sensors 27

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 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.