

Radar Row Guidance and Air Knife Kit for AGCO/ Fendt RoGator 900 with Factory VSN®

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SAFETY

NOTICE

Follow the operation and safety instructions included with the implement and/or controller and read this manual carefully before installing or operating this Raven system.

- Follow all safety information presented within this manual. Review implement operation with your local dealer.
- Contact a local Raven dealer for assistance with any portion of the installation, service, or operation of Raven equipment.
- Follow all safety labels affixed to system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. Contact a local Raven dealer to obtain replacements for safety labels.

Observe the following safety measures when operating the implement after installing this Raven system:

- Do not operate this Raven system or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Be alert and aware of surroundings and remain in the operator seat at all times when operating this Raven system.
 - Do not operate the implement on any public road with this Raven system enabled.
 - Disable this Raven system before exiting the operator seat.
 - Determine and remain a safe working distance from obstacles and bystanders. The operator is responsible for disabling the system when a safe working distance has diminished.
 - Disable this Raven system prior to starting any maintenance work on the implement or components of this Raven system.
- Do not attempt to modify or lengthen any of the system control cables. Extension cables are available from a local Raven dealer.

DISPLAYS AND CONTROL CONSOLES

- If the display will not be used for an extended period, it is best to remove the display from the machine and store it in a climate controlled environment. This may help to extend the service life of electronic components.
- To prevent theft, secure the display and GPS antenna when leaving the machine unattended.

CAUTION

ELECTRICAL SAFETY

- Always verify that power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the Raven system or other components.
- To prevent personal injury or fire, replace defective or blown fuses with only fuses of the same type and amperage.
- Do not connect the power leads to the battery until all system components are mounted and all electrical connections are completed.
- Always start the machine before initializing this Raven system to prevent power surges or peak voltage.
- To avoid tripping and entanglement hazards, route cables and harnesses away from walkways, steps, grab bars, and other areas used by the operator or service personnel when operating or servicing the equipment.

TOUCH SCREEN

- Only touch the touch-screen with your finger or by using a special touch-screen stylus/pen. Operating the touch-screen with sharp objects may cause permanent damage to the screen.
- Only clean the screen using a damp cloth. Never use caustic or other aggressive substances.

RECOMMENDATIONS AND BEST PRACTICES

AERIALS AND SIGNAL INTERFERENCE

Due to the relatively low broadcast power from satellites, all GNSS receivers and aerials tend to be susceptible to sources of signal noise and interference as compared to terrestrial signals (i.e. radio or cellular).

NOTE: Poor GNSS signal reception may cause other systems which rely on GNSS solutions (e.g. auto-steer systems, rate control systems, etc.) to disengage or may cause undesired operation or results.

The following recommendations are intended to provide an optimal environment for GNSS systems and provide the best up-time results, even as sources of interference may spike throughout the day.

- Mount GNSS antennas with a clear, unobstructed view of the sky.
 - A minimum clearance of 1 m [39 in] is recommended around the GNSS antenna to help avoid common issues with signal interference. Do not mount cellular, radio, or other GNSS antennas within this area.
 - Mount the GNSS antenna to the tallest point of the machine. Avoid mounting the antenna in a location where obstructions (e.g. bins/hoppers, cab roof lines, equipment frame or structural elements, etc.) may rise into the antenna view.

NOTE: The antenna view typically starts 5° to 10° above horizontal from the base of the antenna and extends over the skyward face of the receiver/antenna.

- GNSS is a line-of-sight system. A clear path must exist between the satellite and the GNSS antenna.
 - Obstructions such as buildings, tree branches and limbs, as well as components of the vehicle such as a fiberglass or metal roof, and etc. may cause signal multi-path or completely block the GNSS receiver.

- Electrical and magnetic fields can interfere with GNSS or L-Band signals.
 - Avoid mounting GNSS receivers or antennas near components such as radio or cellular antennas, electrical motors, generators, alternators, strobe lights, radio transmitters, radio or cellular antennas, etc.
 - Over-head power lines, microwave dishes, radar, other active antennas, etc. can interfere with GNSS signal.
- Mount the Field Hub cellular and diversity antennas at least 1 m [39 in] apart. Avoid mounting other cellular, radio, or GNSS aerials within this area.

HOSE ROUTING

The word “hose” is used to describe any flexible, fluid carrying components. Use the following guidelines and recommendations when connecting and routing hoses while installing or maintaining this Raven system:

- Leave protective caps/covers over hose ends until connecting the end into the hydraulic system to help prevent contaminants from entering the system.
- Follow existing hose runs already routed on the implement as much as possible. Proper hose routing should:
 - Secure hoses and prevent hoses from hanging below the implement.
 - Provide sufficient clearance from moving components and operational zones around shafts; universal joints and suspension components; pulleys, gears, belts, and chains; moving linkages, cylinders, articulation joints, etc.
 - Protect hoses from field debris and surrounding hazards (e.g. tree limbs, fence posts, crop stubble, dirt clumps or rocks that may fall or be thrown by the implement).
 - Protect hoses from sharp bends, twisting, or flexing over short distances and normal implement operation.
 - Ensure sufficient length for free movement of the implement during normal operation and prevent pulling, pinching, catching, or rubbing, especially in articulation and pivot points. Clamp hoses securely to force controlled movement of the hose.
 - Avoid abrasive surfaces and sharp edges such as sheared or flame cut corners, fastener threads or cap screw heads, hose clamp ends, etc.
 - Avoid areas where the operator or service personnel might step or use as a grab bar.
- Do not connect, affix, or allow hoses to come into contact with components with high vibration forces, hot surfaces, or components carrying hot fluids beyond the temperature rating of hose components.
 - Hoses should be protected or shielded if routing requires the hose to be exposed to conditions beyond hose component specifications.
- Avoid routing hoses in areas where damage may occur due to build up of material (e.g. dirt, mud, snow, ice, etc.).

HARNESSE ROUTING

The word “harness” is used to describe any electrical cables and leads, both bundled and unbundled. Use the following guidelines and recommendations when connecting and routing harnesses while installing or maintaining this Raven system:

- Leave protective caps/covers over harness connectors until needed to avoid dirt and moisture from contaminating electrical circuits.
- Secure the harness to the frame or solid structural members at least every 12 in [30 cm].
- Follow existing harness runs already routed on the implement as much as possible. Proper harness routing should:
 - Secure harnessing and prevent the harness from hanging below the implement.

- Provide sufficient clearance from moving components and operational zones around shafts; universal joints and suspension components; pulleys, gears, belts, and chains; moving linkages, cylinders, articulation joints, etc.
- Protect harnessing from field debris and surrounding hazards (e.g. tree limbs, fence posts, crop stubble, dirt clumps or rocks that may fall or be thrown by the implement).
- Protect harnessing from sharp bends, twisting, or flexing over short distances and normal implement operation.
- Connectors and splices should not be located at bending points or in harness sections that move.
- Ensure sufficient length for free movement of the implement during normal operation and prevent pulling, pinching, catching, or rubbing, especially in articulation and pivot points. Clamp harnessing securely to force controlled movement of the harness.
- Avoid abrasive surfaces and sharp edges such as sheared or flame cut corners, fastener threads or cap screw heads, hose clamp ends, etc.
- Do not connect, affix, or allow harnessing to come into contact with components with high vibration forces, hot surfaces, or components carrying hot fluids beyond the temperature rating of harness components.
 - Harnessing should be protected or shielded if routing requires the hose to be exposed to conditions beyond harnessing component specifications.
- Avoid routing harnesses in areas where damage may occur due to build up of material (e.g. dirt, mud, snow, ice, etc.).
- Avoid routing harnesses in areas where the operator or service personnel might step or use as a grab bar.

IMPORTANT: Avoid applying direct spray or pressure washing of electrical components and connections. High pressure streams and sprays can penetrate seals, cause corrosion, or otherwise damage electrical components. When performing maintenance:

- Inspect electrical components and connectors for corrosion, damaged pins or housings, etc. Repair or replace components or harnessing as necessary.
- Ensure connectors are kept clean and dry. Apply dielectric grease to the sealing surfaces of all connections exposed to moisture, dirt, debris, and other contaminants. Repair or replace harnessing as necessary.
- Clean electrical components with pressurized air, aerosol electrical cleaning agent, or low pressure rinse.
- Remove visible surface water from electrical components and connections using pressurized air or an aerosol cleaning agent. Allow components to dry thoroughly before reconnecting cables.

The following instructions are designed to assist with the proper installation of the VSN system. Refer to the VSN Calibration & Operation Manual (P/N 016-2020-001) for assistance with calibrating and using the VSN system.

PREPARING FOR INSTALLATION

Before installing the VSN system, park the machine where the ground is level, clean, and dry. Turn off the machine and leave it 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 to complete the installation process.

PREREQUISITES

The following components must be installed with the VSN system.

- VSN version 20.4 or newer
- RS1™
- Viper® 4 with ROS version 3.4 or newer

Follow the installation instructions provided with these components before installing VSN.

RECOMMENDATIONS

Raven Industries recommends the following best practices when installing or operating the VSN system for the first time or at the start of the season:

- Install the VSN unit in the recommended location.
- Use part numbers to help identify parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Clean the sensor eye off at the start of the day and every time the machine is tendered during the day.

POINT OF REFERENCE

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

KIT CONTENTS

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

FIGURE 1. Aftermarket Radar Row Guidance and Air Knife Kit for Factory AGCO/Fendt RoGator VSN (P/N 117-2023-006)

THIS KIT TO CONTAIN THE FOLLOWING ITEMS LISTED BELOW:

I #	QTY	PART #	DESCRIPTION	OEM
	1	053-0159-193	BOX, SHIPPING	
	1	116-0159-879	WELDMENT, FENDT, ROGATOR 900, VSN, RADAR, LEFT	
	1	116-0159-880	WELDMENT, FENDT, ROGATOR 900, VSN, RADAR, RIGHT	
	1	107-4001-082	BRACKET, KZ VALVE, MOUNT	
	1	107-0172-826	BASE BRACKET, EH8	
	1	115-2020-070	CABLE, VSN, AIR KNIFE, AMPSEAL TO 4P RECEPTACLE, 15'	
	1	115-2020-071	CABLE, VSN, AIR KNIFE, VALVE/PRESSURE	
		REMOVE		
	2	063-0174-125	RADAR, MULTI OBJECT DISTANCE SENSOR	
	1	115-2020-072	CABLE, VSN FENDT ROGATOR 900, AIR KNIFE, POWER TEE	
	1	107-4001-083	BRACKET, FENDT, ROGATOR 900, VSN RADAR, SHIELD HOLE	
	65FT	214-0001-075	TUBING, SYNDFLEX, 3270 ECLIPSE, 1/4" I.D.	
	1	053-0159-074	ENVELOPE, PLASTIC	
	8	311-4050-352N	HEX BOLT, ISO 4014, M16-2 X 25MM	
	8	313-6000-025N	WASHER, DIN125, M16	
	8	312-6003-077N	HEX NUT, COUPLING, DIN6334, M16-2, CLASS 8	
	2	311-4050-180N	HEX BOLT, ISO 4014, M8-1.25 X 25MM	
	4	313-6000-013N	WASHER, DIN125, M8	
	2	312-6006-027N	HEX NUT, LOCK, ALL-METAL, ISO 7042, M8-1.25	
	6	311-4050-136N	HEX BOLT, ISO 4014, M6-1 X 20MM	
	12	313-6000-010N	WASHER, DIN125, M6	
	6	312-6006-016N	HEX NUT, LOCK, ALL-METAL, ISO 7042, M6-1	
	5	310-0003-008	SCREW, #6 X 1/2" THREAD FORMING	
	1	053-0159-015	ENVELOPE, PLASTIC	
	2	333-0014-013	THROUGH-WALL FITTING, 1/4" NPT I.D, 3/4"-16 O.D, BRASS	
	2	333-0014-007	NOZZLE, 2MM, MALE THREAD, R1/4	
	2	333-0014-008	PUSH-IN FITTING, 45° ELBOW, 1/4, NPTM X 3/8, NYLON	
	2	333-0014-009	PUSH-IN FITTING, TEE, 3/8, NYLON	
	2	333-0014-010	PUSH-IN FITTING, PLUG, 3/8,NYLON	
	1	333-0014-012	PUSH-IN FITTING, RUN TEE, TUBE TO TUBE, 3/8, NYLON	
	1	333-0014-014	PUSH-IN FITTING, ELBOW, TUBE TO TUBE, 3/8, NYLON	
		REMOVE		
		REMOVE		
		REMOVE		
	1	334-0001-086	VALVE, BALL, 2-WAY, 3/8" PTC, EH8	
	1	216-0001-017	SEALANT, PIPE THREAD, RECTORSEAL TRU-BLU	
	3	117-0171-641	KIT, CABLE TIE,NO DIELECTRIC GREASE	
	1	122-1020-001	TUBE CUTTER, THERMOPLASTICS, 1/8"-1/2"	

UPDATES

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

<http://www.ravenprecision.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

- Radar Row Guidance and Air Knife Kit for AGCO/Fendt RoGator 900 with Factory VSN®
- 016-2023-006
- 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.

RADAR SENSORS

The following sections offer instructions for assembling and installing the radar sensor brackets.

RADAR BRACKET ASSEMBLY

1. Use the provided M6 hardware to mount the radar sensor (P/N 063-0174-125) to the radar mounting bracket (P/N 116-0159-879 and -880). Mount the radar sensor with the connector facing toward the open side of the mounting bracket.

FIGURE 1. Radar Sensor Mounted to Bracket



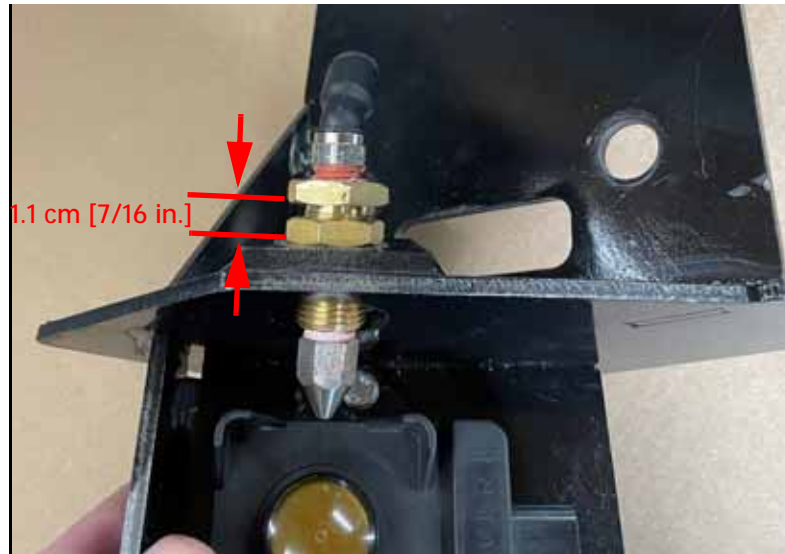
2. Use the supplied pipe thread sealant (P/N 216-0001-017), assemble the supplied air nozzle (P/N 333-0014-007) into the through-wall brass fitting (P/N 333-0014-013).

FIGURE 2. Air Nozzle Assembly



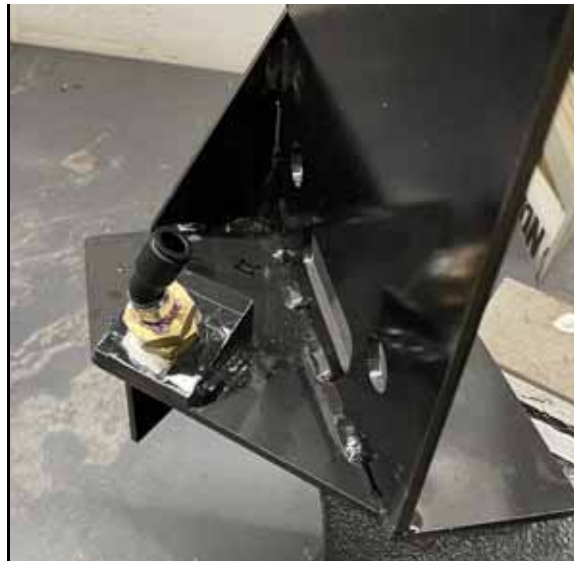
3. Thread the supplied brass jam nut onto the air nozzle assembly and install the air nozzle assembly into the radar bracket with the air nozzle pointing toward the radar lens.
4. Set the depth 1.1 cm [7/16"].

FIGURE 3. Press-Fit Air Connector



5. Use the supplied pipe thread sealant and thread the push-to-connect 45° air fitting (P/N 333-0014-008) into the air nozzle assembly. To protect the air system, it is recommended to point the 45° elbow toward the radar bracket.

FIGURE 4. Press-Fit Air Connector



6. Complete the above steps for the left and right radar sensor brackets.

INSTALL RADAR SENSORS

1. Remove the wheel motor covers on the left and right front wheel legs.

FIGURE 5. Wheel Leg Crop Deflectors

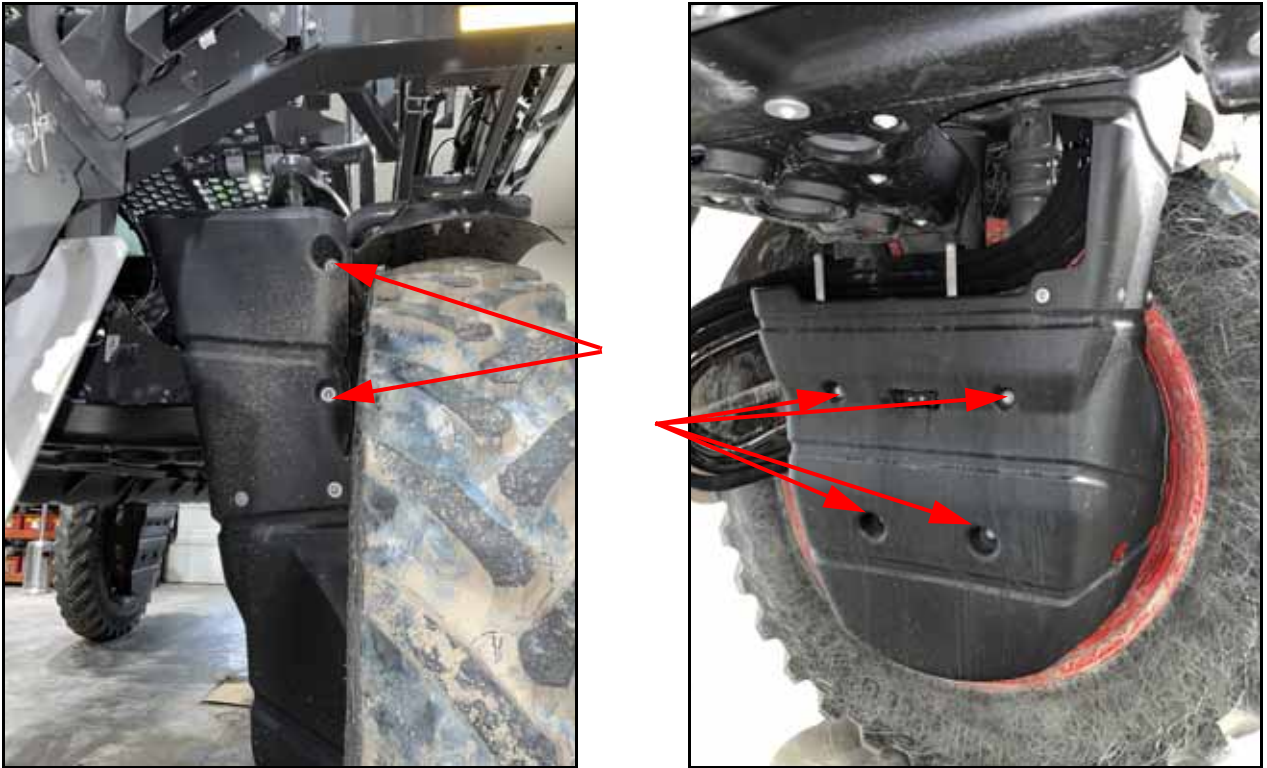


FIGURE 6. Wheel Leg with Crop Deflector Removed



2. Thread the four supplied M16 coupling nuts (P/N 312-6003-077N) onto the ends of the studs at the front of the cast wheel motor housing.
3. Torque each M16 coupling nut to 186 Nm [137 ft-lbs.].

FIGURE 7. Radar Sensor Bracket Mounted



4. Use the supplied M16 bolts (P/N 311-4051-352N) and washers (P/N 313-6000-025N) to secure the radar sensor mounting bracket to the coupling nuts installed onto the cast wheel motor housing. Torque each M16 bolt to 186 Nm [137 ft-lbs.].

NOTE: Confirm that the sensor lens is facing at a 45° angle toward the front and center of the machine.

CONNECT THE RADAR SENSORS

NOTE: AGCO/Fendt RoGator 900 machines with factory fitted VSN come from the factory ready to connect to radar row guidance sensors.

1. Locate the capped 4-pin connector and coiled harness secured to the hub motor.

FIGURE 8. Factory Provisioned Radar Sensor Harness



2. Carefully cut the factory zip tie and route the factory 4-pin connector to the radar sensor connector.
3. Insert the plug into the radar sensor port until the connector clicks.

FIGURE 9. Connect Radar Sensor Harness

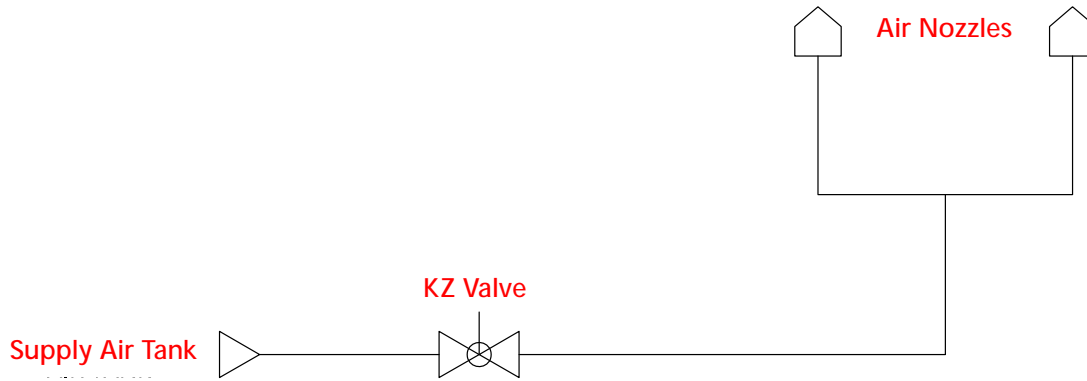


4. Use the supplied zip ties to secure the radar sensor harness to keep the harness away from pinch points and avoid damage to the harness or connectors from crop and crop debris.

AIR SYSTEM

The following sections offer instructions for installing the air system components on the machine and running the air lines from the air tank to the air nozzles mounted on the front wheel legs.

FIGURE 10. Air Knife Air System Diagram for AGCO/Fendt RoGator 900 (P/N 054-2023-006)



PREPARE PNEUMATIC SYSTEM FOR KIT INSTALLATION

	<p>CAUTION</p> <p>Air system under pressure. Always wear proper safety including glasses, hearing protection, and gloves.</p>
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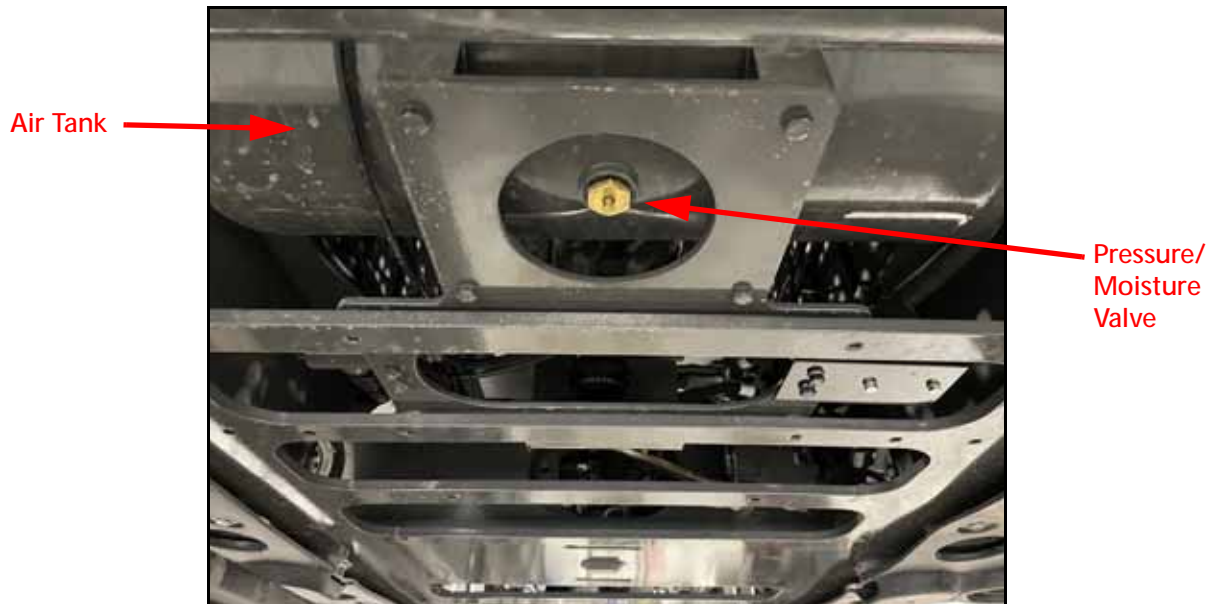
1. Release the air pressure in the air bags by pressing the switch in the cab.

FIGURE 11. Air Bag Switch



2. Locate the air tank between the frame rails at the rear of the machine.

FIGURE 12. Air Tank Location

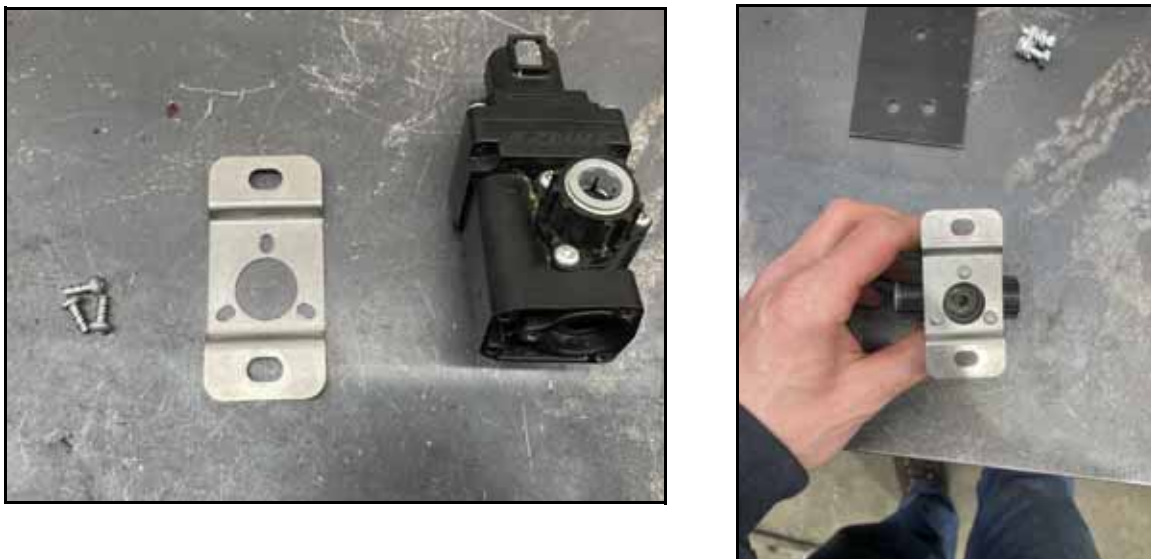


3. Relieve pressure in the factory air system using the pressure/moisture relief valve installed in the bottom of the air tank.

ASSEMBLE AND INSTALL THE AIR VALVE

1. Install the valve base bracket (P/N 107-0172-826) to the air valve (P/N 334-0001-086) using the three screws provided.

FIGURE 13. Assemble the Air Valve Bracket



2. Use the supplied hardware to secure the air valve assembly to the valve bracket (P/N 107-4001-082).

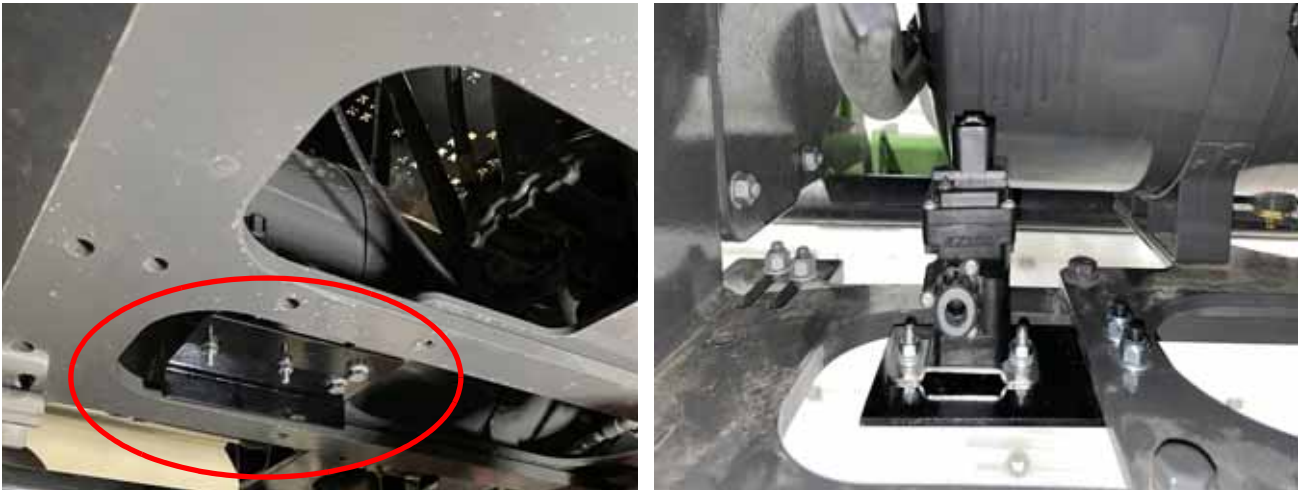
FIGURE 14. Assemble Air Valve and Mounting Brackets



NOTE: The valve does not need to be mounted in a specific orientation.

3. Locate the two pre-drilled holes in the frame in front of the air tank.

FIGURE 15. Install Air Valve



4. Use the provided M8 hardware to mount the valve bracket to the frame of the machine.

CONNECT THE AIR LINES

1. Locate the black, push-fit 90° elbow at the top of the air tank.

FIGURE 16. Factory Air 90° Elbow Fitting



2. Remove the existing air line from the elbow and insert a supplied push-fit run tee fitting (P/N 333-0014-012).

FIGURE 17. Install Run-Tee Fitting



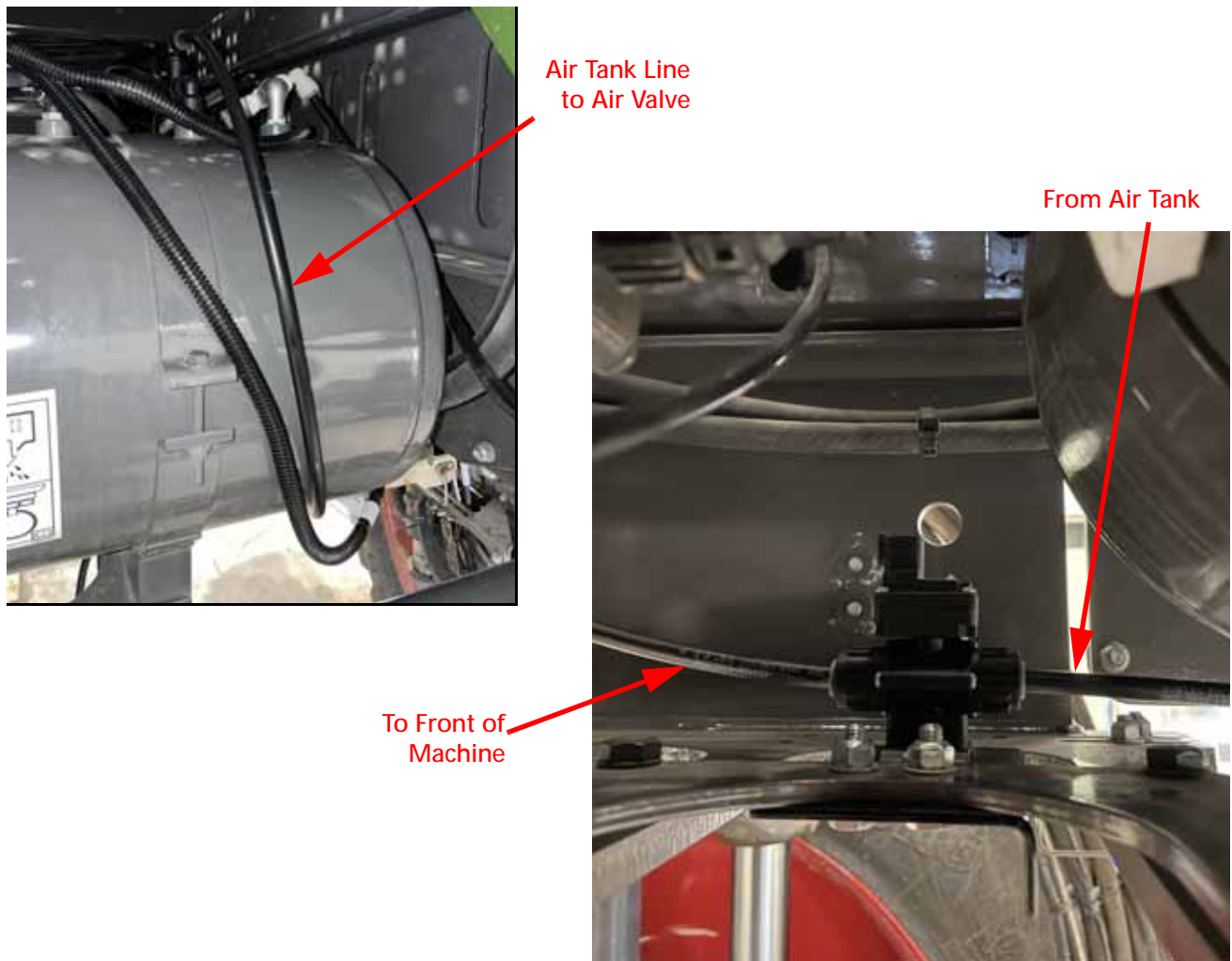
3. Install the existing air line into the through port of the installed run tee fitting.
4. Insert a 90° elbow fitting (P/N 333-0014-014) into the branch of the tee fitting.

FIGURE 18. Air Elbow Fitting



5. Cut a 92 cm [3 ft] section of hose from the supplied air line (P/N 214-0001-075).
6. Insert the cut section of air line into the 90° elbow fitting.
7. Route the air line to the valve mounted next to the air tank and insert it into the rear facing port.

FIGURE 19. Valve Air Line Connections



8. Cut a 4.6 m [15 ft] section of hose from the supplied air line.
9. Insert the air line into the remaining port on the air valve.
10. Route the air line toward the front of the machine following the existing air lines and electrical conduit along the right frame rail.

FIGURE 20. Route Air Line



NOTE: It is recommended to pass the air line through the factory cable and hose management devices. Use the provided zip ties as necessary to secure hoses.

11. Route the air line from the tank to a point between the front wheels, directly in front of the hydrostatic transmission distribution manifold.

FIGURE 21. Air Tee Location



Install Air Tee Fitting



FIGURE 22. Install and Connect Air Tee



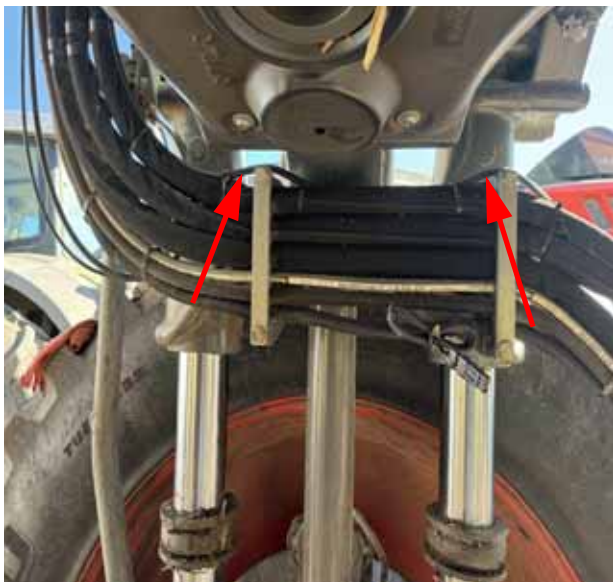
12. Install a air push-fit tee (P/N 333-0014-009) onto the air line routed from the valve at the rear of the machine.
13. Cut two 6.7 m [22 ft] sections of air line from the supplied air line for the left and right wheel hubs.
14. Connect the left and right air lines to the branch fittings of the push-fit tee.
15. Route the left and right branch lines along existing air lines to the installed sensors on the left and right wheel legs.

NOTE: Cut off any excess air line at the radar sensor mount.

FIGURE 23. Route the Air Line on the Front Wheels



FIGURE 24. Air Line on the Front Wheels

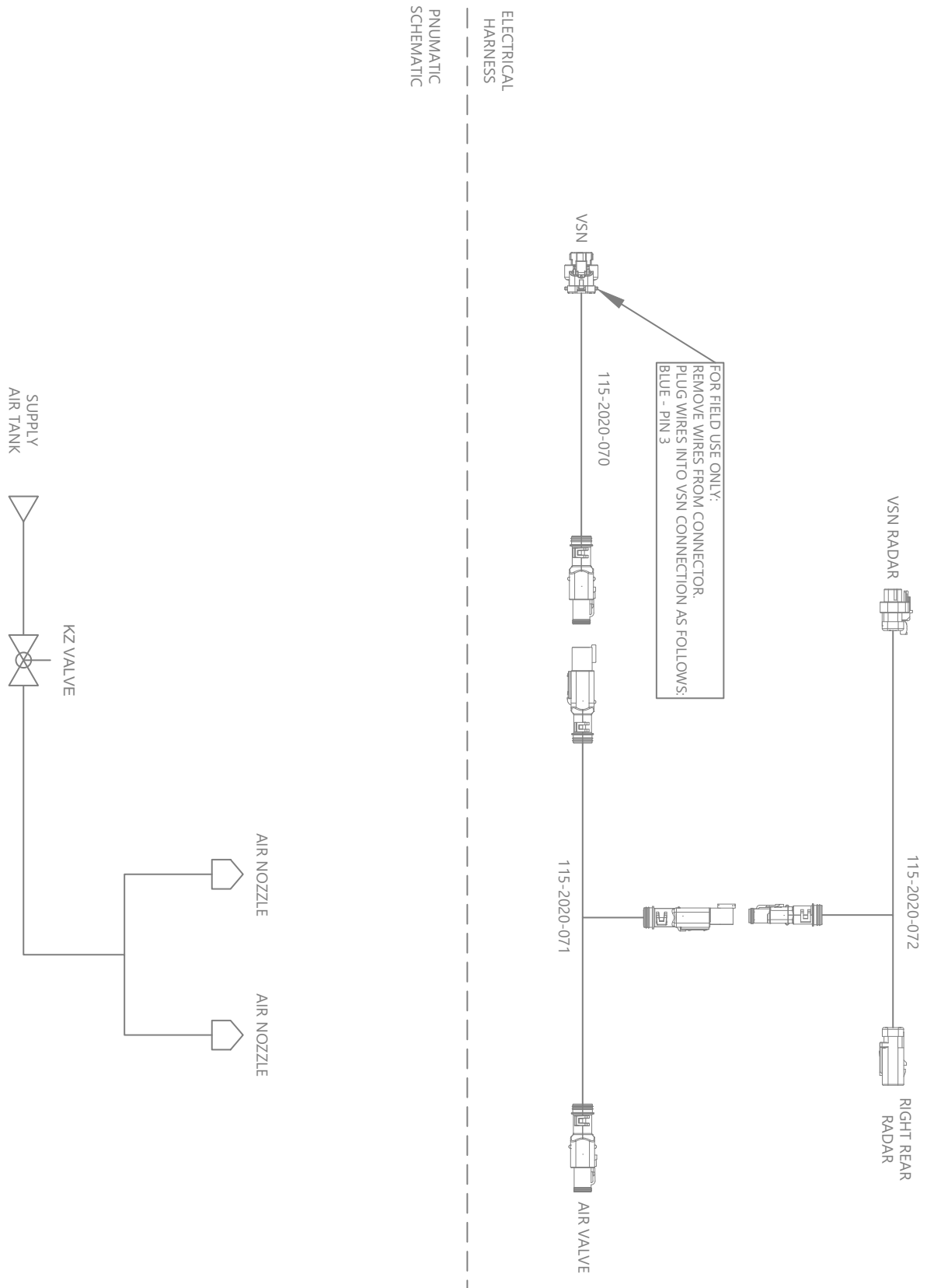


NOTE: Secure the air lines to existing air lines to avoid pinch points and damage to the air system from crop and crop debris.

The RoGator 900 series features adjustable height suspension. Ensure to leave sufficient length for machine clearance adjustment and travel.

CONNECT THE AIR COMPONENTS TO VSN® SYSTEM

FIGURE 25. Air Knife Electrical System Diagram for AGCO/Fendt RoGator 900 (P/N 054-2023-006)



INSTALL THE AIR VALVE HARNESS

16. Route and connect the 4-pin plug to the air valve previously mounted.

FIGURE 26. Valve Air Line Connections



17. Route the harness along the right frame rail following existing air lines and electrical harnesses toward the machine cab.

NOTE: Secure the cable with either existing cable management devices or the provided zip ties as necessary.

INSTALL THE AIR KNIFE POWER TEE HARNESS

1. Locate the 2-pin socket on the valve harness that was previously installed. This socket will be between the rear wheels of the machine.
2. Connect the 2-pin socket on the valve harness to the 2-pin receptacle on the air knife power tee (P/N 115-2020-072).
3. Route the power tee connector to the right rear wheel.

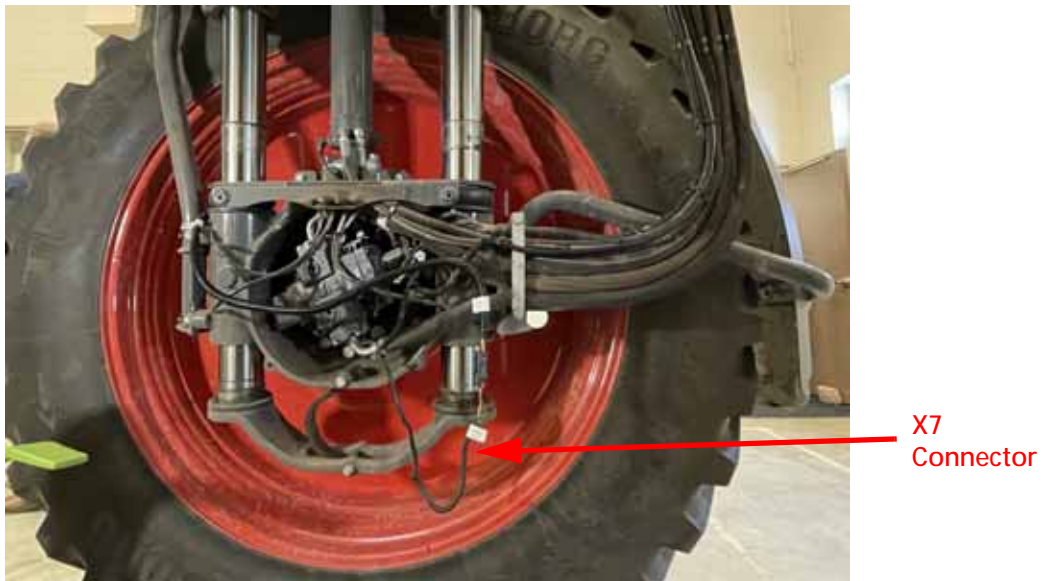
FIGURE 27.



4. Remove the cap from the X7 VSN Sensor connector.
5. Install the cap on the power tee rear radar connector.
6. Connect the X7 VSN Sensor connector to the 4-pin air knife power tee (P/N 115-2020-072).

NOTE: Secure the cable with either existing cable management devices or the provided zip ties as necessary.

FIGURE 28. X7 VSN Sensor



INSTALL THE VSN AMPSEAL HARNESS

1. Route the 2-pin receptacle on the valve harness along the right frame rail toward the machine cab.

NOTE: Secure the cable with either existing cable management devices or the provided zip ties as necessary.

2. Connect the 2-pin plug on the valve harness to the mating connector on the VSN ampseal harness (P/N 115-2020-070).

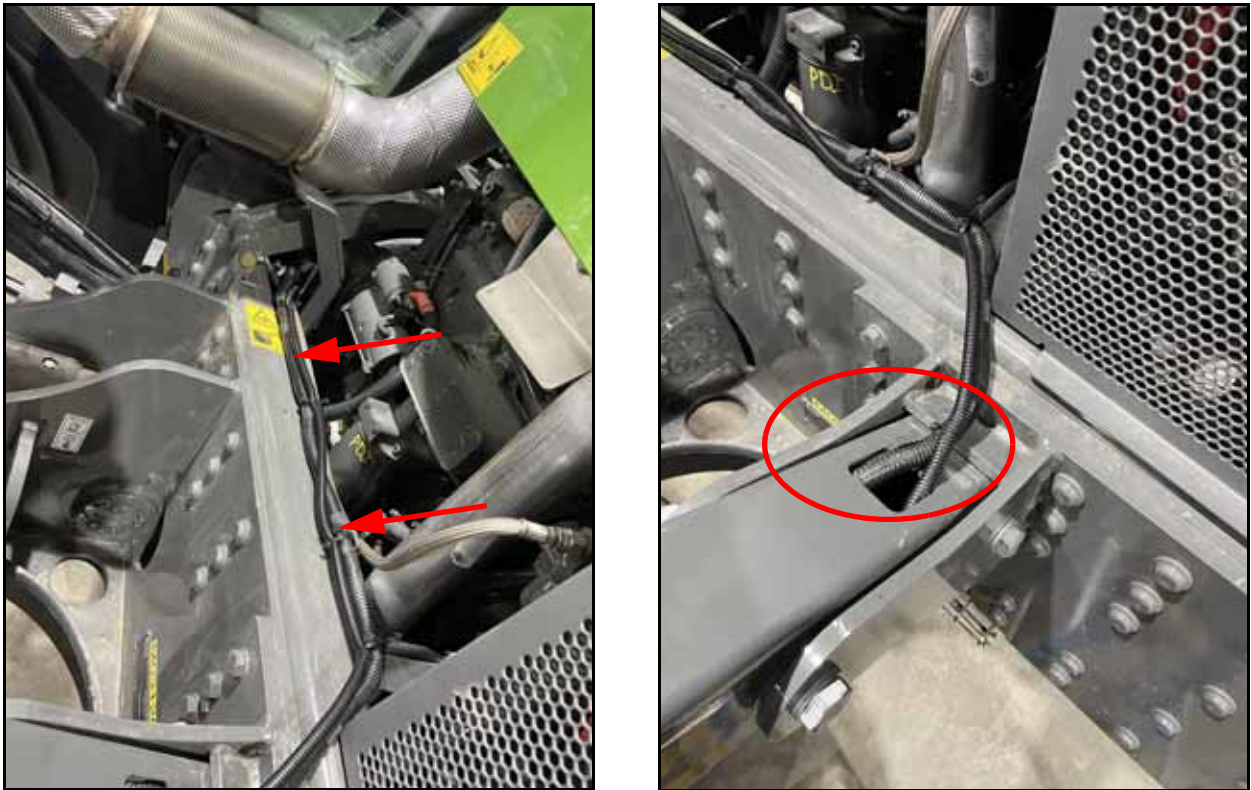
FIGURE 29. Valve Air Line Connections



3. Route the VSN harness to the right side of the engine compartment and to the right, front wheel leg structural frame member.

NOTE: It is recommended to pass the harness and wiring through the factory cable and hose management devices. Use the provided zip ties as necessary to secure harnesses.

FIGURE 30. Air Knife Harness Routing



4. Route the harness through the front right boom support.
5. Pull the harness through the bottom of the front, right boom support at the back of the VSN.

FIGURE 31. Connect to Ports on Rear of VSN



AMPSEAL AND VSN CONNECTOR CONFIGURATION

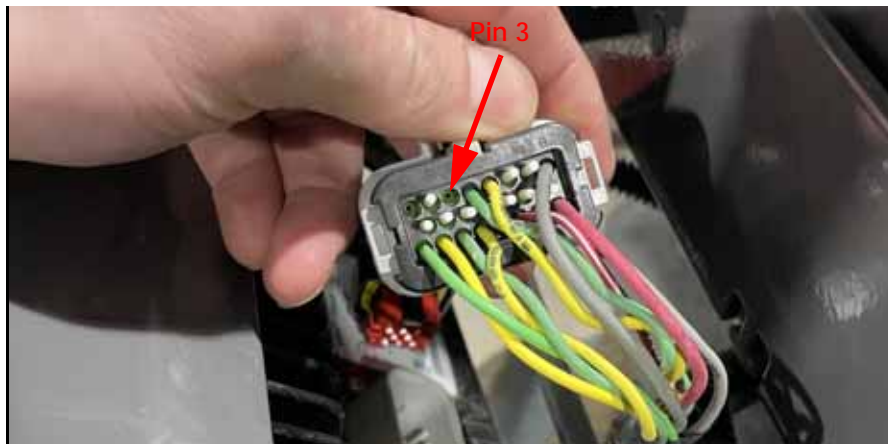
The 8-pin connector on the VSN Ampseal cable is not used for the final connection to the VSN system. This connector must be removed and the pins transferred to the existing VSN connector connected to the back of the VSN.

1. Using a small screwdriver, gently pry up one corner of the red wedge lock to release the lock.

NOTE: The wedge lock is not removed completely from the connector.

2. Use a twisting motion, turn the wires back and forth over a half turn while pulling on the wire until the contact is removed from the housing. Once the blue wire has been removed, the 8-pin connector housing may be discarded.
3. Disconnect the 23-pin connector from the VSN.
4. Remove the rear cable housing from the connector.
5. Locate and remove the contact cap from pin 3 from the rear of the VSN connector.

FIGURE 32. Rear of VSN Connections



6. Use a small screwdriver to gently pry up the red wedge lock of the factory 23-pin VSN plug connector.
7. Insert the contact for the blue wire into the pin 3 location. You should hear and feel a click as the contacts are inserted. A gentle tug on each wire may be used to confirm that the contact is properly seated.
8. Press the red wedge lock back into place to secure the contacts.
9. Reinstall and secure the connector back shell to protect the connector.
10. Connect the factory VSN plug into the VSN.
11. Route the blue wire into the corrugated cable cover.

RADAR SENSOR HOLE

INCREASE THE SIZE OF THE LEFT SIDE RADAR SENSOR HOLE

1. Align the template over the radar sensor hole on the flat part of the crop deflector.

NOTE: The arrow should be pointed towards the top of the crop deflector.

2. Position edge (1) by the tangent edge of the crop deflector.
3. Position edge (2) by the stiffening channel.
4. Center the slot (3) over the lower stiffening channel.
5. Install the template (P/N 107-4001-083) to the left side crop deflector with 5 screws (P/N 310-0003-008).

FIGURE 1. Left Side Crop Deflector



6. Use a cutting tool to increase the size of the hole.

NOTE: A Dremel tool with a roto-zip blade is recommended.

7. Remove the material located within the template hole.

INCREASE THE SIZE OF THE RIGHT SIDE RADAR SENSOR HOLE

1. Align the template over the radar sensor hole on the flat part of the crop deflector.

NOTE: The arrow should be pointed towards the top of the crop deflector.

2. Position edge (1) by the tangent edge of the crop deflector.
3. Position edge (2) by the stiffening channel.
4. Center the slot (3) over the lower stiffening channel.
5. Install the template (P/N 107-4001-083) to the right side crop deflector with 5 screws (P/N 310-0003-008).

FIGURE 2. Right Side Crop Deflector



6. Use a cutting tool to increase the size of the hole.

NOTE: A Dremel tool with a roto-zip blade is recommended.

7. Remove the material located within the template hole.

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 36 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 completed RMA form, Certificate of Decontamination, and retail 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 this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. Standard return freight will be paid, regardless of 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 outside our facility 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, improper installation and maintenance are not covered by this warranty.
- Worn/Chafed hoses and cables.
- Items in contact with fluids and chemicals including seals and O-rings.
- Software downloads and updates.
- Tamper-Evident label broken or customer disassembly.
- Any customer modification to the original product outside normal calibration and adjustments, without written approval.
- Intentional modification to cables.
- Failures due to lack of cleaning or preventive maintenance, and any condition, malfunction or damage not resulting from defects in material or workmanship.
- Items in contact with fluids or chemicals, returned without proper cleaning, decontamination and documentation.

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 <https://portal.ravenprecision.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 completed RMA form, Certificate of Decontamination, and Extended Warranty Registration Number) 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 warranty claim, Raven Industries will (at our discretion) repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. Standard return freight will be paid, regardless of 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 outside our facility 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, improper installation and maintenance are not covered by this warranty.
- Worn/Chafed hoses and cables.
- Items in contact with fluids and chemicals including seals and O-rings.
- Software downloads and updates.
- Tamper-Evident label broken or customer disassembly.
- Any customer modification to the original product outside normal calibration and adjustments, without written approval.
- Intentional modification to cables.
- Failures due to lack of cleaning or preventive maintenance, and any condition, malfunction or damage not resulting from defects in material or workmanship.
- Items in contact with fluids or chemicals, returned without proper cleaning, decontamination and documentation.