

Buhler Versatile 350-550, Tier IV (2012 & Newer) SmarTrax™ Installation Manual

Manual No. 016-5031-006 Rev. B 02/17

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CHAPTER

1

IMPORTANT SAFETY INFORMATION

NOTICE

Read this manual and the operation and safety instructions included with your implement and/or controller carefully before installing the SmarTrax™ system.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of your Raven equipment, contact your local Raven dealer for support.
- Follow all safety labels affixed to the SmarTrax system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact your local Raven dealer.

When operating the machine after installing SmarTrax, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate SmarTrax or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times when SmarTrax is engaged.
- Disable SmarTrax when exiting the operator's seat and machine.
- Do not drive the machine with SmarTrax enabled on any public road.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling SmarTrax when the safe working distance has diminished.
- Ensure SmarTrax is disabled prior to starting any maintenance work on SmarTrax or the machine.

WARNING

- When starting the machine for the first time after installing SmarTrax, be sure that all persons stand clear in case a hose has not been properly tightened.
- The machine must remain stationary and switched off during SmarTrax installation or maintenance.

CAUTION

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Ensure that the power cable is the last cable to be connected.

Congratulations on your purchase of the SmarTrax system! This system is designed to provide cutting-edge, hands-free steering of the machine via Global Positioning System (GPS) coordinates.

This manual applies to the following machines:

MAKE: Buhler Versatile 4WD, Tier IV

MODEL: 350, 375, 400 - Serial Number 307001 & Higher

450, 500, 550 - Serial Number 704001 & Higher

YEAR: 2012 & Newer

FIGURE 1. Buhler Versatile 550



PREPARING FOR INSTALLATION

Before installing the SmarTrax 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. Bleed pressure from the hydraulic system by loosening the hydraulic fittings slowly, where applicable.

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

RECOMMENDATIONS

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

- Install the GPS antenna in the recommended location. Refer to the following table for the machine-specific antenna mounting location.

NOTE: If your machine is not listed, install the antenna on the front-center of the cab.

NOTE: The units in the table below are measured in inches. To convert the values to centimeters, multiply the listed value by 2.54.

NOTE: The values in the table below must be converted into feet or meters before being entered into the field computer.

- To convert the values to feet, divide the listed value by 12.
- To convert the values to meters, multiply the listed value by 0.0254.

| Machine Preset | Antenna X Position (left to right) | Antenna Y Position (from the rear wheel axle to the antenna position on the cab in inches) | Antenna Z Position (ground to top of antenna in inches) |
|-------------------|---------------------------------------|---|---|
| Versatile 300-400 | Centered | 128 | 143 |
| Versatile 435-575 | Centered | 135 | 143 |

- Ensure the machine's hydraulic filters have been recently changed and there are no issues with the machine's hydraulic system (e.g., pump issues, faulty hydraulic motors, fine metal deposits in the hydraulic hoses, etc.).
- Ensure the machine's hydraulic system is using fresh oil and debris is flushed from the hydraulic hoses, valves, and filters.

Raven Industries recommends the following best practices when installing the SmarTrax 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.

POINT OF REFERENCE

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

UPDATES

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

<http://www.ravenhelp.com>

At Raven Industries, we strive to make your experience with our products as rewarding as possible. One way to improve this experience is to provide us with feedback on this manual.

Your feedback will help shape the future of our product documentation and the overall service we provide. We appreciate the opportunity to see ourselves as our customers see us and are eager to gather ideas on how we have been helping or how we can do better.

To serve you best, please send an email with the following information to

techwriting@ravenind.com

- Buhler Versatile 350-550, Tier IV (2012 & Newer) SmarTrax™ Installation Manual
- Manual No. 016-5031-006 Rev. B
- Any comments or feedback (include chapter or page numbers if applicable).
- Let us know how long have you been using this or other Raven products.

We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.



KIT CONTENTS

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

NOTE: The SmarTrax node (P/N 063-0173-228) is sold separately. Contact your local Raven dealer for ordering information.

TABLE 1. SmarTrax Installation Kit (P/N 117-5031-006)

| Picture | Item Description | Part Number | Qty. |
|---|---|--------------|------|
| Not Pictured | Manual - SmarTrax and SmartSteer Calibration & Operation | 016-0171-277 | 1 |
| Not Pictured | Manual - Buhler Versatile 350-550, Tier IV (2012 & Newer) SmarTrax Installation | 016-5031-006 | 1 |
|  | Valve - SmarTrax Hydraulic | 334-0003-089 | 1 |
|  | Bracket - Hydraulic Valve Mounting | 107-0172-220 | 1 |

TABLE 1. SmarTrax Installation Kit (P/N 117-5031-006)

| Picture | Item Description | Part Number | Qty. |
|---|--|--------------|------|
|  | Bracket - Node Mounting | 107-0172-221 | 1 |
|  | Cable - Valve Harness | 115-4001-145 | 1 |
|  | Cable - Node Harness | 115-4001-165 | 1 |
|  | Transducer - 0-3000 PSI Pressure | 422-0000-086 | 1 |
|  | Terminator - CAN Passive | 063-0172-369 | 1 |
|  | Terminal - 5/16" Ring | 405-0200-052 | 4 |
|  | Terminal - 3/8" Ring | 405-0200-053 | 4 |
|  | Bolt - 5/16"-18 x 7/8" Hex | 311-0052-104 | 4 |
|  | Bolt - M10 x 1.5 x 25 mm Grade 8.8 Hex | 311-0070-008 | 4 |
|  | Bolt - M6 x 1.0 x 20 mm Grade 8.8 Hex | 311-0070-010 | 3 |
|  | Nut - 3/8"-16 Zinc Flanged Lock | 312-1001-164 | 3 |

TABLE 1. SmarTrax Installation Kit (P/N 117-5031-006)

| Picture | Item Description | Part Number | Qty. |
|---|---------------------------|--------------|------|
|  | Washer - 5/16" Split Lock | 313-1000-019 | 4 |
|  | Washer - 7/16" Flat | 313-2300-015 | 4 |

TABLE 2. Hydraulic Kit (P/N 117-0199-129)

| Picture | Item Description | Part Number | Qty. |
|---|--|--------------|------|
|  | Fitting - -12 ORFS M/M/F Swivel Run Tee Adapter | 333-0012-029 | 3 |
|  | Fitting - -6 ORFS M/M Straight Adapter | 333-0012-033 | 1 |
|  | Fitting - -6 ORFS M/F 90° Swivel Elbow | 333-0012-065 | 1 |
|  | Fitting - -6 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter | 333-0012-084 | 2 |
|  | Fitting - -12 ORFS M/F 90° Swivel Elbow Adapter | 333-0012-097 | 1 |
|  | Fitting - -8 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter | 333-0012-168 | 1 |
|  | Fitting - -8 ORFS (M) to -8 SAE O-Ring (M) 90° Elbow | 333-0012-229 | 2 |
|  | Fitting - -8 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter | 333-0012-304 | 2 |

TABLE 2. Hydraulic Kit (P/N 117-0199-129)

| Picture | Item Description | Part Number | Qty. |
|--|--|--------------|------|
|  | Hydraulic Hose - -6 ORFS (F) to -6 ORFS (F) - 65" | 214-1000-985 | 1 |
|  | Hydraulic Hose - -8 ORFS (F) to -8 ORFS (F) - 65" | 214-1000-986 | 1 |
|  | Hydraulic Hose - -8 ORFS (F) to -12 ORFS (F) - 85" | 214-1000-987 | 1 |
|  | Hydraulic Hose - -8 ORFS (F) to -12 ORFS (F) - 26" | 214-1000-988 | 2 |
|  | Hydraulic Hose - -6 ORFS (F) to -6 ORFS (F) - 70" | 214-1000-989 | 1 |



⚠ WARNING

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

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

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

When disconnecting or purging hydraulic hoses, be aware that the hydraulic fluid within the machine's pressure system may be extremely hot and under high pressure.

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



⚠ CAUTION

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

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



NOTICE

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

INSTALL FITTINGS IN THE SMARTRAX VALVE

Before mounting the SmarTrax valve (P/N 334-0003-089) in 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.

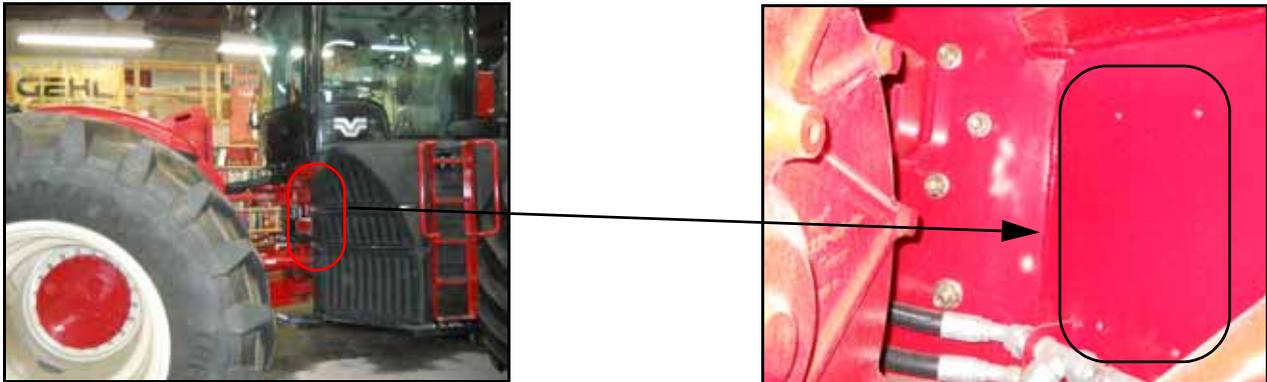
FIGURE 1. Fittings Installed in the SmarTrax Valve



| Fitting | Part Number | Port |
|--|--------------|-------------------|
| Fitting - -6 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter | 333-0012-084 | LSPV, LS STEER |
| Fitting - -6 ORFS M/F 90° Swivel Elbow | 333-0012-065 | LSPV |
| Fitting - -8 ORFS (M) to -8 SAE O-Ring (M) 90° Elbow | 333-0012-229 | P, T |
| Fitting - -8 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter | 333-0012-304 | A, B |
| Transducer - 0-3000 PSI Pressure | 422-0000-086 | PS |

MOUNT THE SMARTRAX VALVE

FIGURE 2. SmarTrax Valve Mounting Location



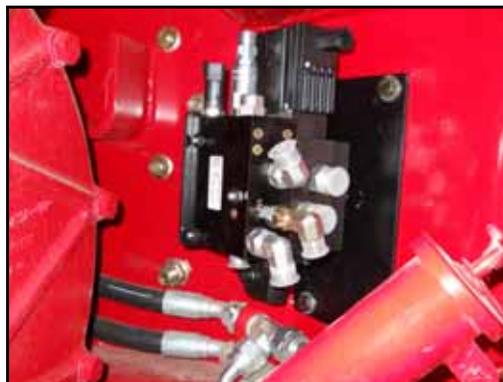
1. Identify the valve mounting location on the inside of the machine's frame, below the right-rear corner of the cab.

FIGURE 3. SmarTrax Valve Installed on Valve Mounting Bracket



2. Install the SmarTrax valve (P/N 334-0003-089) on the valve mounting bracket (P/N 107-0172-220) using four 5/16" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).

FIGURE 4. SmarTrax Valve Mounted to Machine's Frame



3. Secure the valve mounting bracket to the four tapped holes in the machine's frame using four M10 x 1.5 x 25 mm grade 8.8 hex bolts (P/N 311-0070-008) and four 7/16" flat washers (P/N 313-2300-015).

INSTALL THE LEFT AND RIGHT STEERING HOSES

FIGURE 5. Machine's Left and Right Steering Hoses



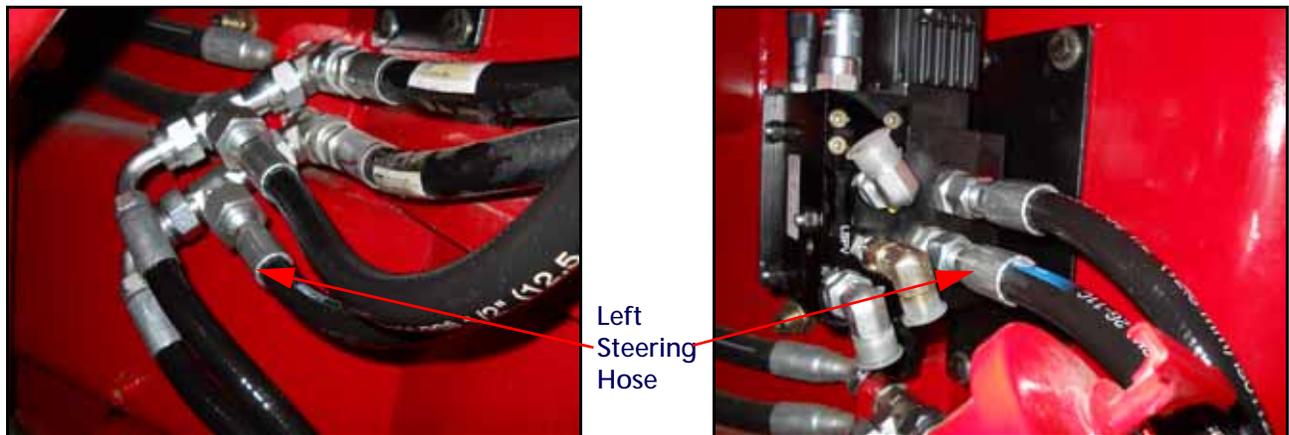
1. Locate the machine's left and right steering hoses on the bulkhead tee fitting directly below the SmarTrax valve (P/N 334-0003-089) mounting location.

FIGURE 6. Steering Hoses Disconnected



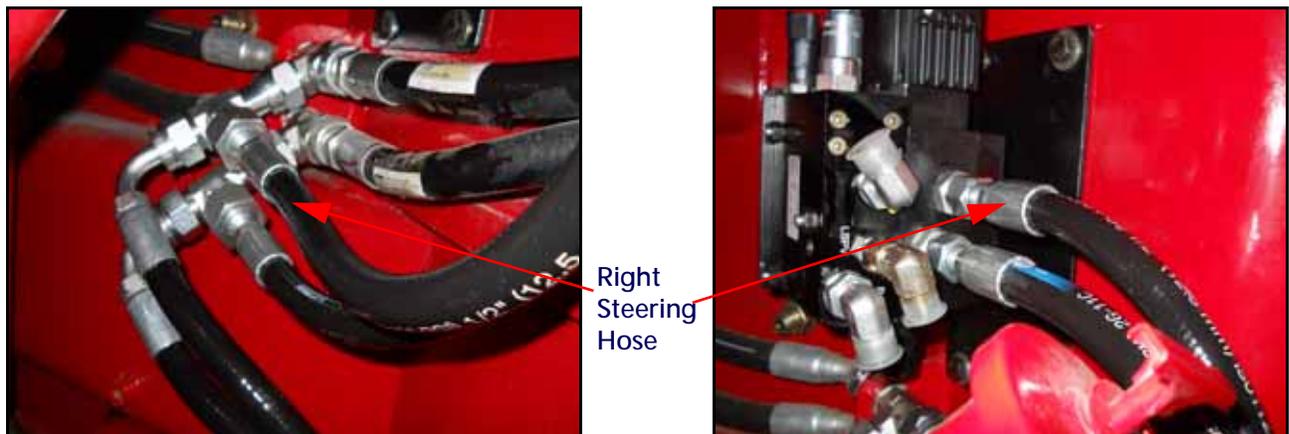
2. Disconnect the machine's left and right steering hoses from the existing tee fittings, labeling them as they are removed to ensure they are reconnected to the correct ports later in the procedure.

FIGURE 7. Left Steering Hose Installed



3. Install -12 ORFS M/M/F swivel run tee adapter fittings (P/N 333-0012-029) on the open branches of the machine's tee fittings.
4. Connect the machine's left steering hose on the opposite end of the installed tee fitting.
5. Install the -12 end of the supplied hydraulic hose (P/N 214-1000-988) on the 90° end of the installed tee fitting.
6. Connect the -8 end of the installed hydraulic hose to the fitting installed in Port A of the SmarTrax valve.

FIGURE 8. Right Steering Hose Installed



7. Connect the machine's right steering hose on the opposite end of the installed tee fitting.
8. Install the -12 end of the supplied hydraulic hose (P/N 214-1000-988) on the 90° end of the installed tee fitting.
9. Connect the -8 end of the installed hydraulic hose to the fitting installed in Port B of the SmarTrax valve.

INSTALL THE PRESSURE HOSE

FIGURE 9. Machine's Hydraulic Valve



1. Locate the machine's hydraulic valve on the frame below the left-rear corner of the cab.

FIGURE 10. TB Port on Machine's Hydraulic Valve



2. Remove the plug in port TB on the bottom of the machine's hydraulic valve.
3. Install a -8 ORFS (M) to -8 SAE O-ring (M) straight adapter fitting (P/N 333-0012-168) in the open TB port.
4. Install one end of the supplied hydraulic hose (P/N 214-1000-986) on the installed adapter fitting.

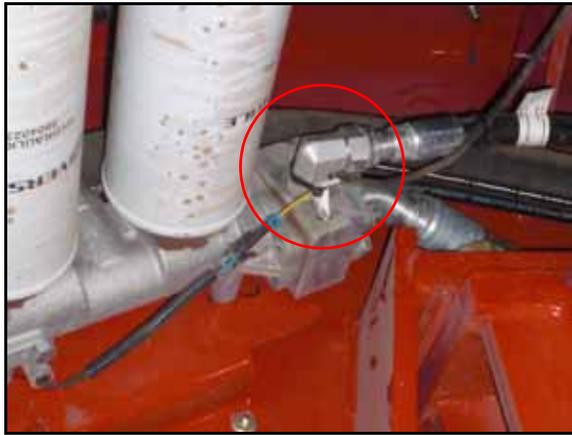
FIGURE 11. Pressure Hose Installed on SmarTrax Valve



5. Connect the other end of the installed hydraulic hose to the fitting installed in Port P of the SmarTrax valve.

INSTALL THE TANK HOSE

FIGURE 12. Machine's Tank Hose



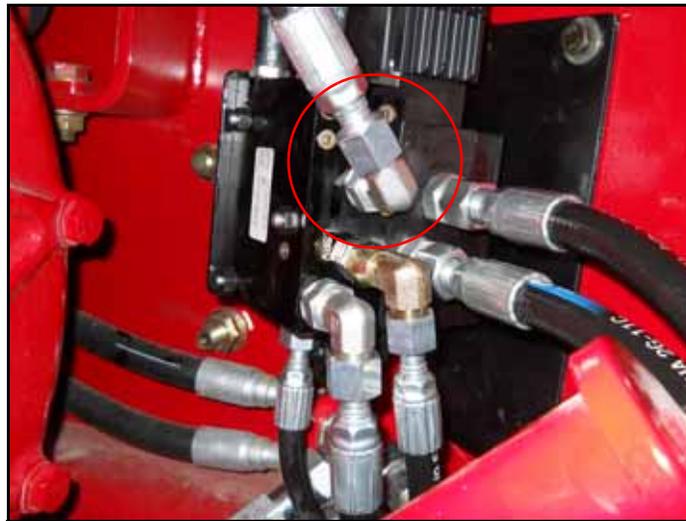
1. Locate the machine's dual filter head on the inside of the frame near the front-right tire.
2. Disconnect the machine's tank hose from the dual filter head.

FIGURE 13. Tank Hose Installed on Dual Filter Head



3. Install a -12 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-029) on the open tank port of the dual filter head.
4. Connect the machine's tank hose to the opposite end of the installed tee fitting.
5. Install a -12 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-097) on the 90° end of the installed tee fitting.
6. Install the -12 end of the supplied hydraulic hose (P/N 214-1000-987) on the installed elbow fitting.

FIGURE 14. Tank Hose Installed on SmarTrax Valve



7. Connect the -8 end of the installed hydraulic hose to the fitting installed in Port T of the SmarTrax valve (P/N 334-0003-089).

INSTALL THE LOAD SENSE HOSES

FIGURE 15. LSS Port on Machine's Hydraulic Valve



1. Disconnect the machine's load sense hose from the LSS port on the machine's hydraulic valve.

FIGURE 16. LS STEER Hose Connected to Machine's Load Sense Hose



2. Install a -6 ORFS M/M straight adapter fitting (P/N 333-0012-033) on the end of the machine's load sense hose.
3. Install one end of the supplied hydraulic hose (P/N 214-1000-989) on the fitting installed on the load sense hose.

FIGURE 17. LS STEER Hose Connected to SmarTrax Valve



4. Connect the other end of the installed hydraulic hose to the fitting installed in Port LS STEER of the SmarTrax valve (P/N 334-0003-089).

FIGURE 18. Load Sense Hose Installed



5. Install one end of the supplied hydraulic hose (P/N 214-1000-985) on the LSS port of the machine's hydraulic valve.

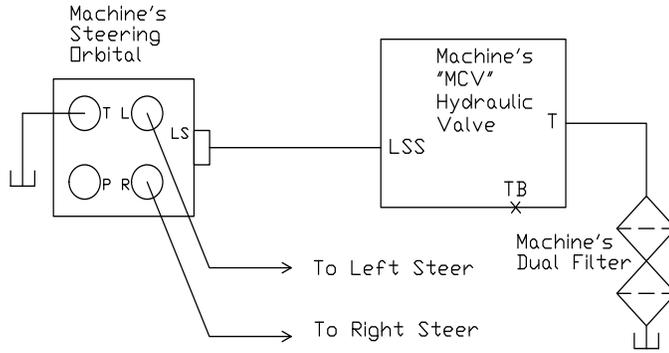
FIGURE 19. LSPV Hose Connected to SmarTrax Valve



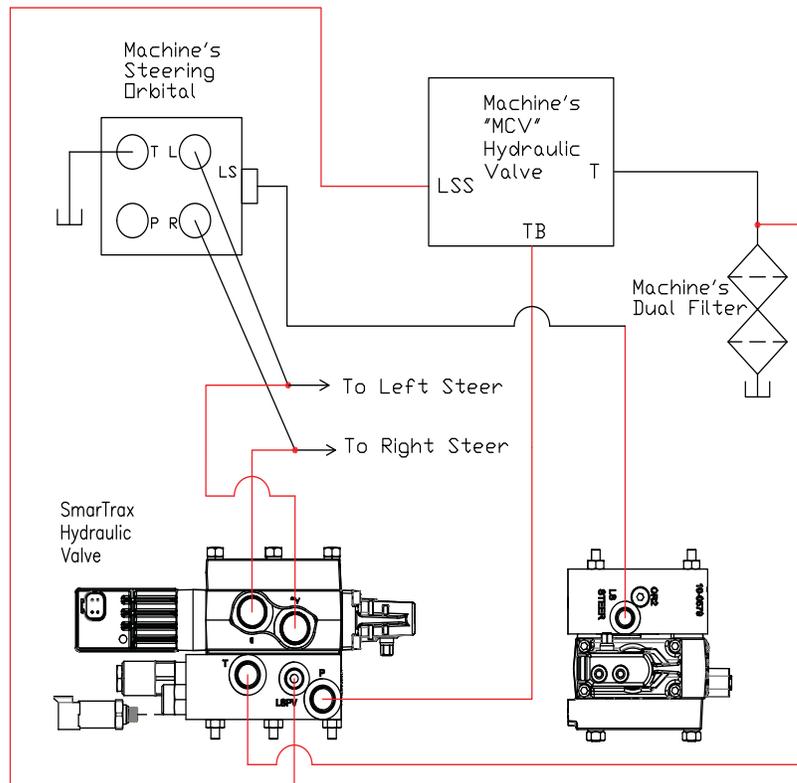
6. Connect the other end of the installed hydraulic hose to the fitting installed in Port LSPV of the SmarTrax valve.

HYDRAULIC DIAGRAM

Before SmarTrax Installation



After SmarTrax Installation



CHAPTER

4

CAB COMPONENT INSTALLATION

INSTALL THE SMARTRAX NODE

NOTE: The SmarTrax node (P/N 063-0173-228) is sold separately. Contact your local Raven dealer for ordering information.

MOUNT THE SMARTRAX NODE

FIGURE 1. SmarTrax Node Installed on Node Mounting Bracket



1. Install the SmarTrax node (P/N 063-0173-228) on the node mounting bracket (P/N 107-0172-221) using three 3/8\"-16 zinc flanged lock nuts (P/N 312-1001-164).

FIGURE 2. SmarTrax Node Mounting Location



2. Remove the compartment cover located behind the operator's seat.

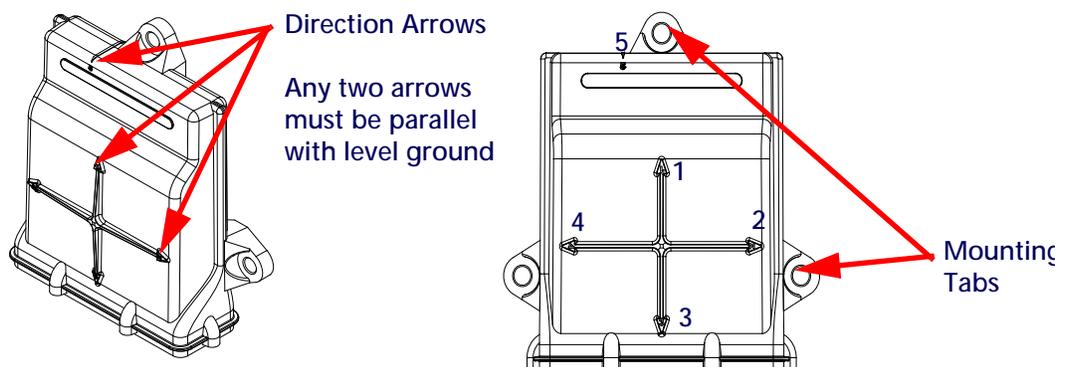
FIGURE 3. SmarTrax Node Installed



3. Secure the node mounting bracket to the machine using the machine's existing tapped holes and three M6 x 1.0 x 20 mm grade 8.8 hex bolts (P/N 311-0070-010).

NODE MOUNTING LOCATIONS

FIGURE 4. Node Mounting



When choosing the location for the SmarTrax node, consider the following points:

- Mount the SmarTrax node inside the machine's cab on a flat, level surface for proper performance and cable connection.
- One of the six numbered direction arrows on the node must be oriented in the direction of forward vehicle travel, one arrow pointing straight up, and two of the arrows parallel to the ground.

NOTE: Make a note of the number of the arrow that is oriented in the direction of forward vehicle travel. This number will be needed during the SmarTrax calibration process.

- The node mounting location must not create tripping hazards.
- Mount the node in a location where it will not be kicked or jarred during normal equipment operation.
- The location must allow cable routing to avoid crimping or damaging the cables or the node connections.
- Securely fasten the node using bolts or screws through at least two of the three mounting holes. When mounted properly, the node should not become loose or rotate.

INSTALL THE FOOT SWITCH - OPTIONAL

NOTE: The foot switch assembly (P/N 063-0172-470) is sold separately. Contact your local Raven dealer for ordering information.

FIGURE 5. Foot Switch Installed



1. Select a suitable location for the foot switch (P/N 063-0172-470) to be installed.

NOTE: The foot switch should be installed in a location where the operator has easy access to it and is able to fully press the pedal.

2. Using the holes in the foot switch as a template, drill holes in the floor of the cab.
3. Secure the foot switch to the floor by installing the supplied screws in each of the mounting holes.
4. Route the foot switch cable toward the node mounting location.

INSTALL THE NODE HARNESS

FIGURE 6. Node Harness Installed on the Node



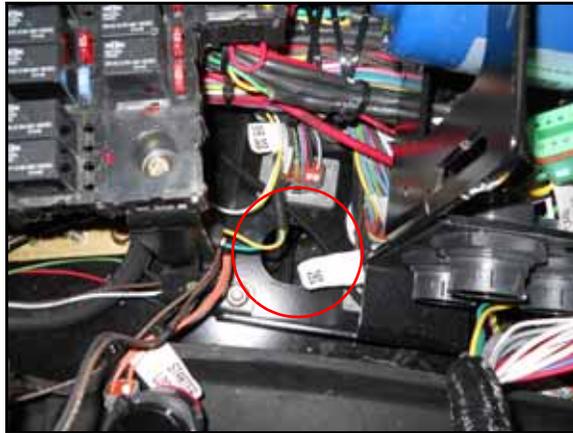
1. Install the two large, rectangular connectors of the node harness (P/N 115-4001-165) into the correct ports of the node, tightening the bolts on the harness connectors to secure the connections.
2. Locate the 2-pin ENABLE connector on the node harness (P/N 115-4001-145) and connect it to the foot switch connector (if applicable).

FIGURE 7. 6-Pin Deutsch Connector on Node Harness



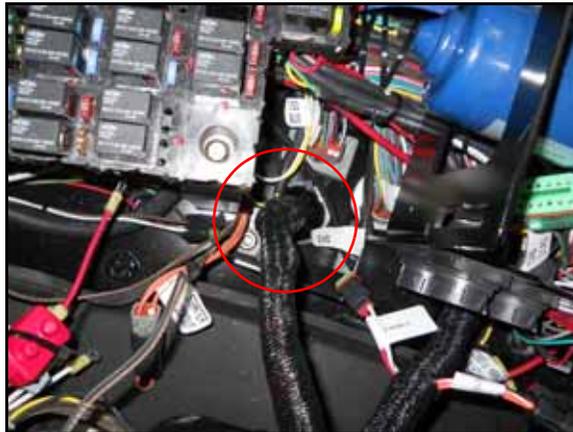
3. Connect the unlabeled 6-pin Deutsch connector to the mating connector on the machine's harness.

FIGURE 8. Grommet in Bottom of Compartment



4. Remove the rubber grommet in the bottom of the compartment.

FIGURE 9. Node Harness Routed to Machine's Bulkhead



5. Route the 21-pin bulkhead connector on the node harness into the hole in the bottom of the compartment.

FIGURE 10. Node Harness Secured to Bulkhead



6. From outside the cab, secure the bulkhead connector to the machine using the lock nut on the connector.

FIGURE 11. Machine's Ground Bar



7. Locate the machine's ground bar on the right side of the compartment.
8. Install the two ground wires on the grounding bar.
9. Locate the fuse panel on the right side of the compartment.
10. Remove the bolt from the machine's power battery cable.
11. Install the two power wires from the node cable on the bolt.

NOTE: It may be necessary to cut the ring terminals from the power wires and crimp new ring terminals (P/N 405-0200-052 or 405-0200-053) on the end.

12. Reinstall the machine's power battery cable on the bolt.
13. Reinstall the bolt in the fuse panel.
14. Loop and tie-off the REMOTE SWITCH cable connection, securing it with plastic cable ties as necessary.

NOTE: The REMOTE SWITCH connector is not used in the SmarTrax system. Ensure the cable is secured away from moving parts and heat sources.

INSTALL THE VALVE HARNESS

FIGURE 12. Valve Harness Secured to Bulkhead



1. Connect the bulkhead connector on the valve harness (P/N 115-4001-145) to the mating connector on the node harness (P/N 115-4001-165) installed on the machine under the cab.
2. Route the valve harness toward the SmarTrax valve (P/N 334-0003-089).

FIGURE 13. TRANSDUCER Connection



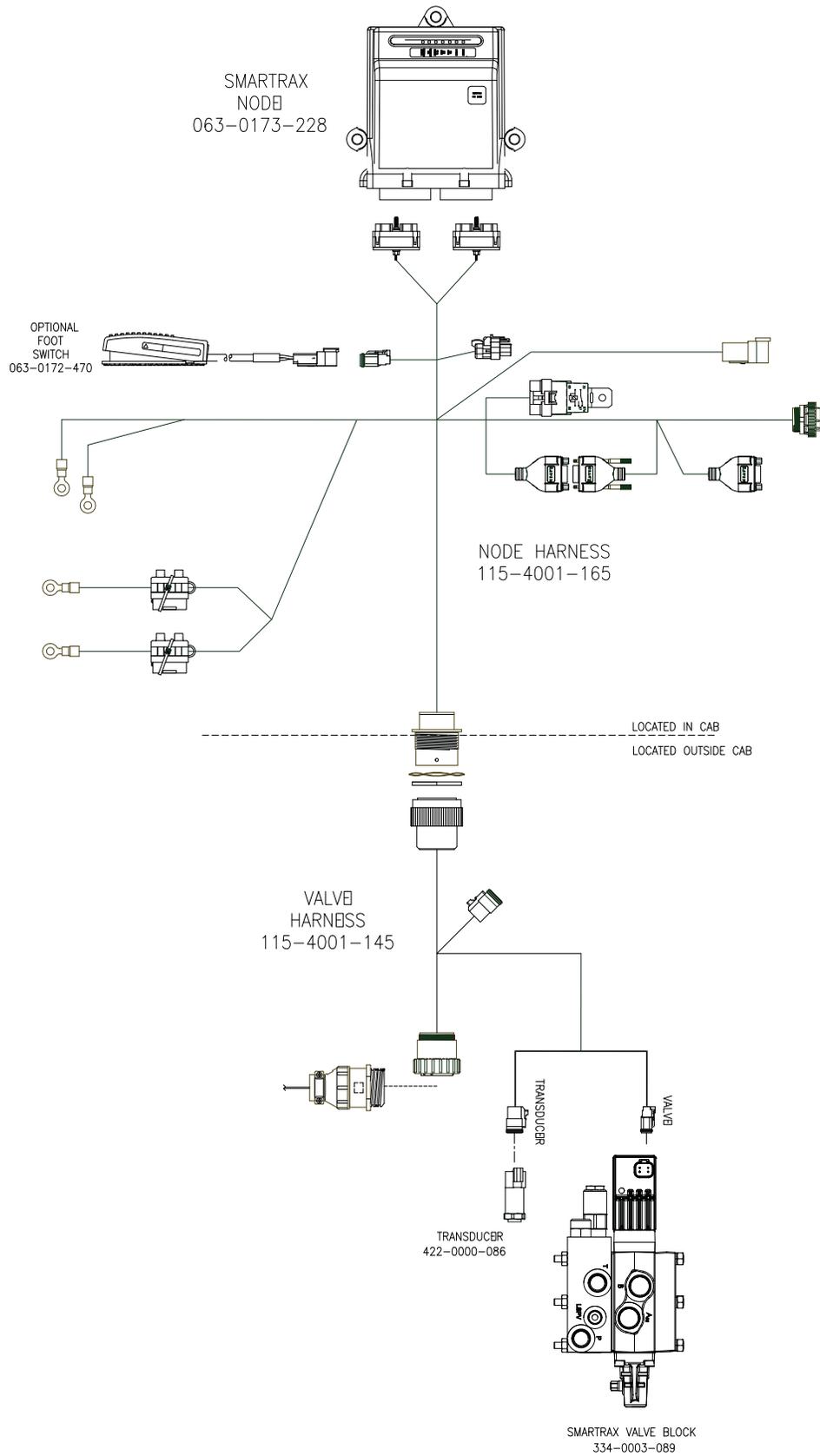
3. Connect the TRANSDUCER connector to the pressure transducer (P/N 422-0000-086) installed in Port PS of the SmarTrax valve.

FIGURE 14. VALVE Connection



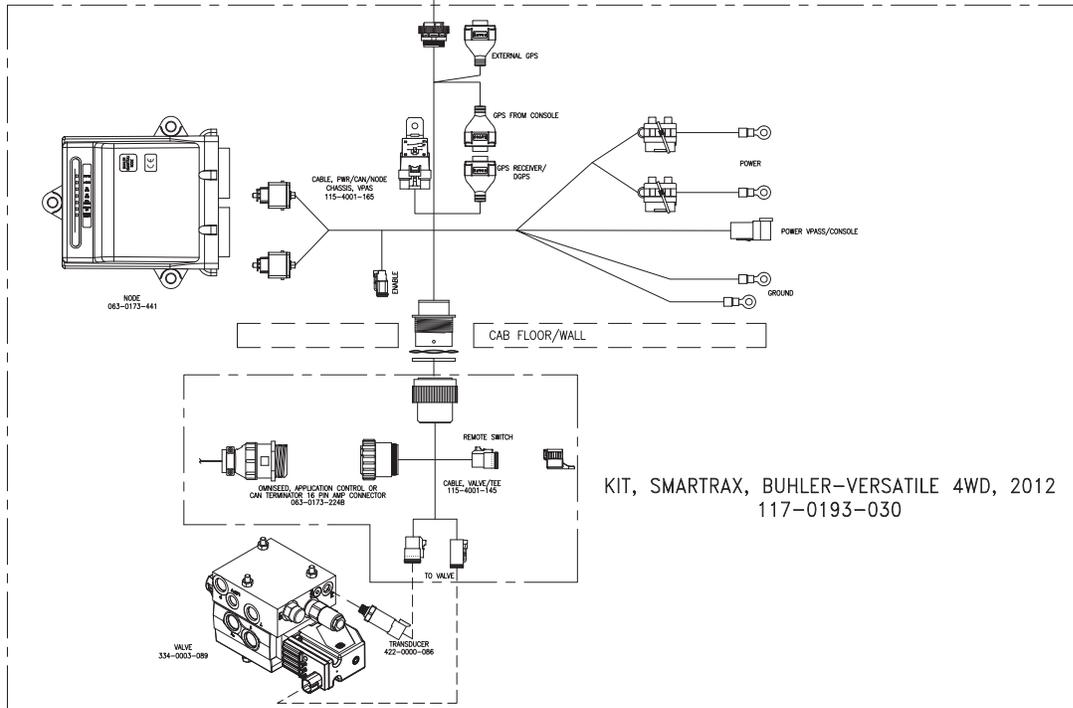
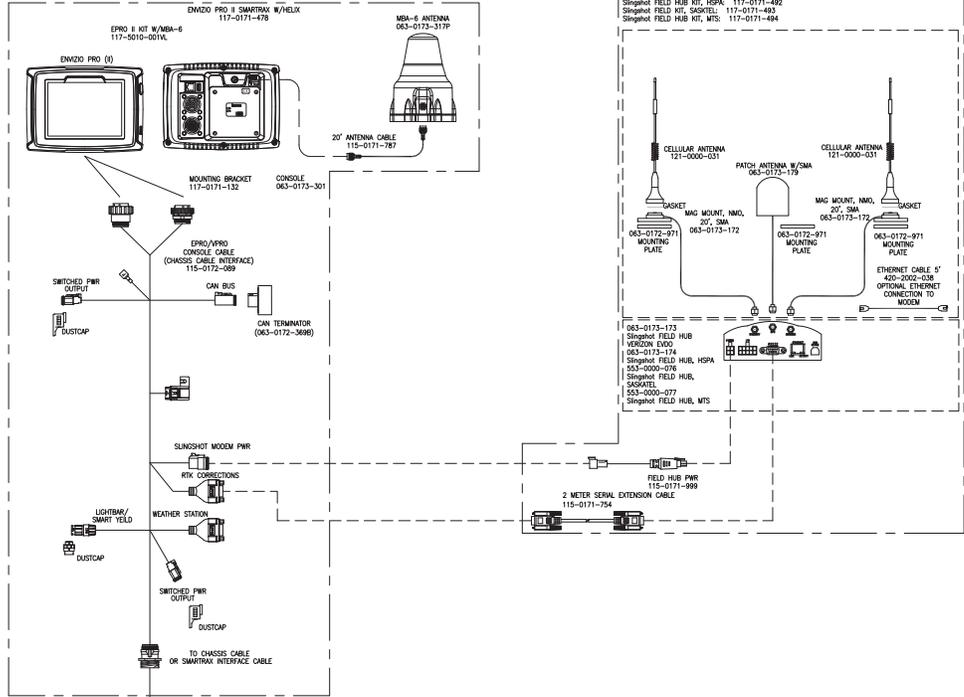
4. Connect the VALVE connector to the open 4-pin Deutsch port in the SmarTrax valve.

FIGURE 15. Valve Harness Wiring Diagram



SYSTEM DIAGRAM

KIT, FACTORY SMARTRAX, BUHLER-VERSATILE 4WD 2012
117-0193-028





WARNING

When starting the machine for the first time after installing SmarTrax, be sure that all persons stand clear in case a hose has not been properly tightened.



WARNING

Do not use hands to check for leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death.

VERIFY THE SMARTRAX SYSTEM INSTALLATION

1. Turn on the machine.
2. Double-check all fittings and hose connections to ensure that:
 - Hoses are not rubbing on or interfering with moving parts.
 - Hydraulic fluid is not leaking for the system.
3. Turn the machine's wheels fully from side to side repeatedly to remove air from the hydraulic system.

NOTE: During the SmarTrax system installation, whenever the hydraulic system is purged for maintenance, or when fittings are loosened or disconnected, air is introduced into the lines of the hydraulic system. If air pockets are present, the wheels may not move consistently when the steering wheel is turned.

4. Continue turning the wheels until they move steadily and smoothly when the steering wheel is turned.
5. Access the System Diagnostic screen by selecting the MACHINE TEST option on the Machine Type screen and turn the wheels using the Raven console.

NOTE: If there are issues with the SmarTrax system, turn off the machine and correct them immediately. For additional assistance, refer to the SmarTrax and SmartSteer Calibration & Operation Manual (P/N 016-0171-277) or contact your local Raven dealer.

CALIBRATE THE SMARTRAX SYSTEM

Refer to the SmarTrax and SmartSteer Calibration & Operation Manual (P/N 016-0171-277) for instructions on calibrating the SmarTrax system, adjusting system settings, and system operation.

C

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RAVEN

Limited Warranty

What Does this Warranty Cover?

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

How Long is the Coverage Period?

Raven Applied Technology products are covered by this warranty for 12 months from the date of retail sale. In no case will the Limited Warranty period exceed 24 months from the date the product was issued by Raven Industries Applied Technology Division. This warranty coverage applies only to the original owner and is non-transferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

What is not Covered by this Warranty?

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

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



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.