

SmarTrax, Case Trident 5550, Non-Steer Ready Installation Manual

P/N 016-5032-045 Rev. A 04/17

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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

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.

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

CHAPTER

INTRODUCTION

2

This manual applies to the following machines:

MAKE: Case IH

MODEL: Trident 5550, Non-Steer Ready

FIGURE 1. Case IH Patriot 5550



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.

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.

Machine Preset	Antenna X Position (left to right)	Antenna Y Position (fore/aft offset)	Antenna Z Position (ground to bottom of antenna)
Case IH Trident	Centered	14 ft. 4 in/4.369 m	12 ft.4 in/3.759 m

- 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.

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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

- SmarTrax, Case Trident 5550, Non-Steer Ready Installation Manual
- P/N 016-5032-045 Rev. A
- Any comments or feedback (include chapter or page numbers if applicable).
- Let us know how long have you been using this or other Raven products.

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

Thank you for your time.

KIT CONTENTS

This section contains a list of the components that are included in the 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. Case IH Trident 5550 SmarTrax Installation Kit (P/N 117-5032-045)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - SmarTrax and SmartSteer Calibration & Operation	016-0171-277	1
Not Pictured	Manual - Case IH Trident SmarTrax Installation	016-5032-045	1
	Valve - SmarTrax Hydraulic	334-0003-088	1
	Switch - Flow	334-0003-085	1
	Bracket, Mounting, SmarTrax Valve	107-0172-534	1
	Cable - Node	115-4001-110	1
	Cable Adapter, CAN 32XX/33XX Patriot Sprayer with ISO	115-4001-254	1
	Assembly - SmarTrax Enable Switch	063-0172-470	1
	Cable, Valve	115-4001-111	1

TABLE 2. Hydraulic Installation Kit (P/N 117-0199-156)

Picture	Item Description	Part Number	Qty.
	Fitting: -8 ORFS M/M/F Swivel Run Tee Adapter	333-0012-028	4
	Fitting: -4 SAE O-Ring Plug	333-0012-051	1
	Fitting: -6 ORFS M/M/F Swivel Run Tee Adapter	333-0012-069	3
	Fitting: -6 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-084	6
	Fitting: -6 SAE O-Ring Plug	333-0012-104	2
	Fitting: -6 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-199	2
	Fitting: -6 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-233	2
	Fitting, Elbow, 90° Swivel, -8 ORFS M/F	333-0012-067	1
	Fitting, Elbow, 90° Swivel, -6 ORFS M/F	333-0012-065	5
	Hydraulic Hose: -6 ORFS (F) 90° to - 8 ORFS (F) - 64"	214-1001-171	1
	Hydraulic Hose: -6 ORFS (F) to -8 ORFS (F) - 84"	214-1000-630	2

TABLE 2. Hydraulic Installation Kit (P/N 117-0199-156)

Picture	Item Description	Part Number	Qty.
	Hydraulic Hose: -6 ORFS (F) 90° to -8 ORFS (F) - 98"	214-1001-172	1
	Hydraulic Hose: -8 ORFS (F) 90° to -6 ORFS (F) - 98"	214-1001-173	1
	Hydraulic Hose: -8 ORFS (F) 90° to -6 ORFS (F) - 84"	214-1001-174	1

TABLE 3. Node Mounting Kit (P/N 117-0197-078)

Picture	Item Description	Part Number	Qty.
	Plate - SmarTrax Node Mounting	107-0172-084	1
	Standoff - M6 x 40mm M/F x 13 mm Hex	305-8000-008	2
	Nut, Nylon Lock, 3/8" - 16 UNC	312-4000-061	3

CHAPTER

3

HYDRAULIC SYSTEM INSTALLATION



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.

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

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 cause damage to the SmarTrax hydraulic valve.

	NOTICE
<p>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.</p>	

INSTALL FITTINGS ON THE SMARTRAX VALVE

Before mounting the SmarTrax valve (P/N 334-0003-088) 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.

FIGURE 1. Fittings Installed on the SmarTrax Valve



Fitting	Part Number	Port
Fitting - -6 SAE O-Ring Plug	333-0012-104	LSPV, LS STEER
Fitting - -4 SAE O-Ring Plug	333-0012-051	PS
Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-199	P, T
Fitting - -6 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-233	A, B
Fitting, Elbow, 90° Swivel, -8 ORFS M/F	333-0012-067	As Needed
Fitting, Elbow, 90° Swivel, -6 ORFS M/F	333-0012-065	P

INSTALL FITTINGS ON THE FLOW SWITCH

FIGURE 2. Fittings Installed on the Flow Switch



1. Install a -6 ORFS (M) to -6 SAE O-ring (M) straight adapter fitting (P/N 333-0012-084) in Ports A2 and B2 of the flow switch (P/N 334-003-085).
2. Install the pressure transducers in Ports A1 and B1 of the flow switch.

MOUNT THE SMARTRAX VALVE

FIGURE 3. Mounting Location



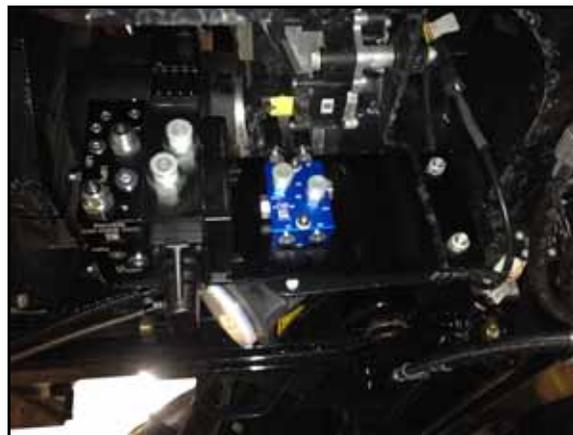
1. Remove the bolts used to secure the machine's radar bracket (beneath the cab).

FIGURE 4. SmarTrax Valve Installed on Mounting Plate



2. Mount the SmarTrax valve (P/N 334-0003-088) to the hydraulic valve mounting bracket (P/N 107-0172-534) using four 5/16" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).
3. Mount the flow switch (P/N 334-0003-085) to the valve mounting bracket using two 1/4"-20 x 2" screws (P/N 311-0050-109), two 1/4" flat washers (P/N 313-2300-009), two 1/4" split lock washers (P/N 313-1000-016), and two 1/4"-20 hex nuts (P/N 312-1001-074).

FIGURE 5. SmarTrax Valve Mounted on the Machine



4. Mount the hydraulic valve mounting bracket to the machine's radar bracket using the bolts removed in step 1.

NOTE: If needed, the bolts attaching the radar to the bracket may be removed and flipped to make room for the valve bracket.

INSTALL THE PRESSURE HOSE

1. Locate the machine's steel pressure line.

NOTE: The pressure line runs on the inside of the frame from the rear of the machine. The line bends 45° just before the hydraulic hose connection. Trace it to the P port on the steering orbital if necessary.

2. Disconnect the machine's pressure hose from the steel pressure line.

FIGURE 6. Pressure Hose Installed



3. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) on the block above the rear of the front axle.
4. Connect the machine's pressure hose to the opposite end of the installed tee fitting.
5. Install the supplied hydraulic hose (P/N 214-1000-630) on the 90° end of the installed tee fitting.
6. Connect the straight end of the installed hydraulic hose to the 90° fitting (333-0012-065) on Port P of the SmarTrax valve.

INSTALL THE TANK HOSE

1. Locate the machine's tank line.

NOTE: The pressure and tank line connect to a block above the front axle on the rear side.

2. Disconnect the machine's tank hose from the block.

FIGURE 7. Tank Hose Installed



3. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) on the machine's hydraulic block.
4. Connect the machine's tank hose to the opposite end of the installed tee fitting.
5. Install the -8 end of the supplied hydraulic hose (P/N 214-1000-630) on the 90° end of the installed tee fitting.
6. Connect the other end of the installed hydraulic hose to Port T of the SmarTrax valve.

7. Remove the existing overflow hose and replace it with the new overflow hose (P/N 214-1001-171).

INSTALL THE LEFT AND RIGHT STEERING HOSES

1. Locate and disconnect the machine's left steering hose from the left steering cylinder.

NOTE: The left steering hose is connected to the fitting located closest to the center of the machine.

2. Route and connect the left steering hose to the Port A2 of the installed flow switch (P/N 334-0003-214).
3. Install the 90° Swivel Elbow (P/N 333-0012-067) to the hose coming from the machine.

FIGURE 8. Installed Left Steering Hose



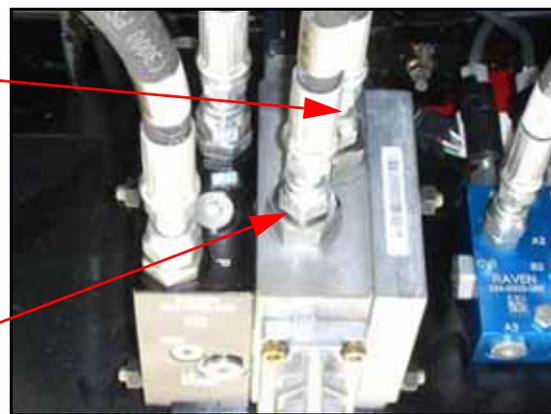
4. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) on the hydraulic block.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1000-173) on the opposite end of the installed tee fitting.
6. Connect the other end of the installed hydraulic hose to the fitting installed in Port B3 (P/N 333-0012-067) of the installed flow switch.
7. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-172) on the 90° end of the installed tee fitting.
8. Connect the straight end of the installed hydraulic hose to Port A of the SmarTrax valve.

FIGURE 9. Installed Right Steering Hose



Right
Steering
Hose

Left
Steering
Hose

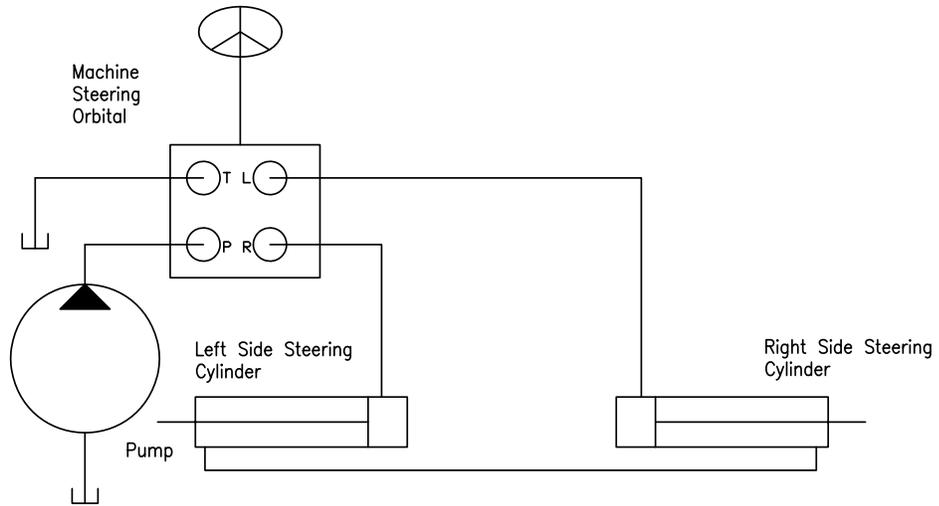


9. Locate and disconnect the machine's right steering hose from the right steering cylinder.

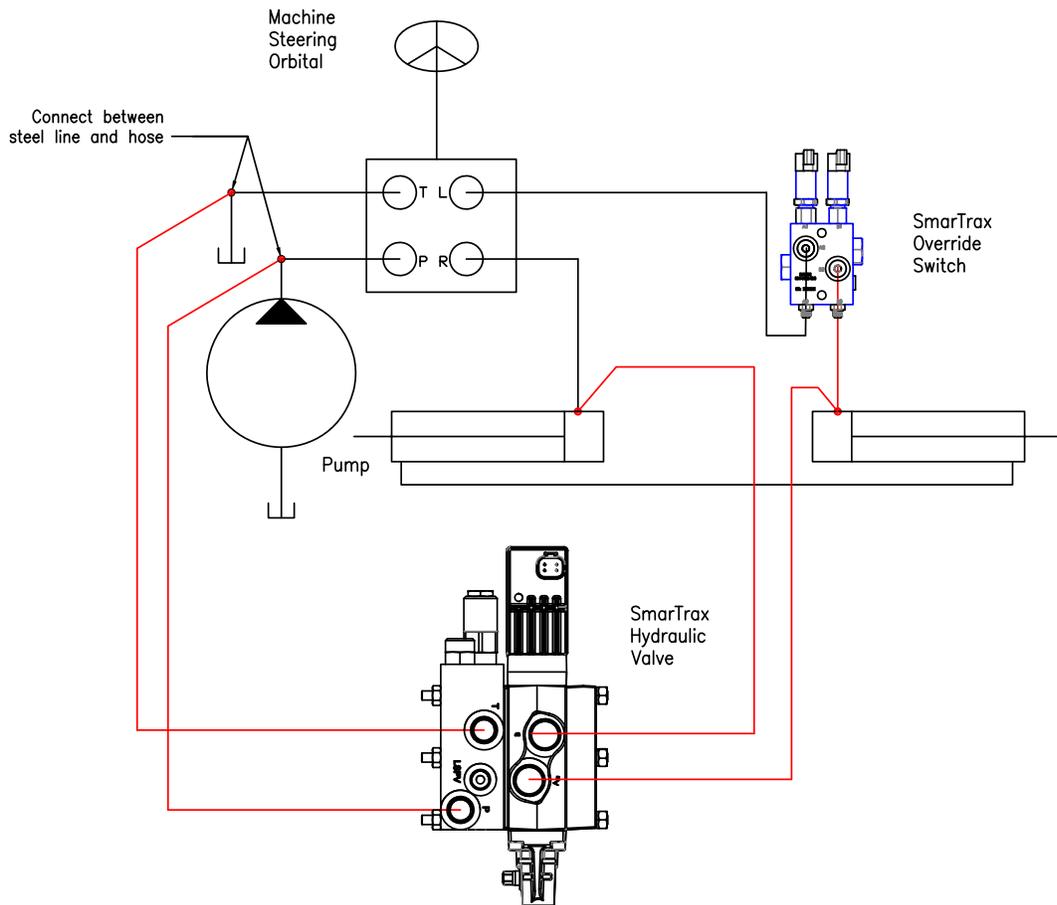
10. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) in the open steering cylinder port.
11. Connect the machine's right steering hose to the opposite end of the installed tee fitting.
12. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-174) on the 90° end of the installed tee fitting.
13. Connect the straight end of the installed hydraulic hose to Port B of the SmarTrax valve (P/N 334-0003-088).

HYDRAULIC SYSTEM DIAGRAM

Before SmarTrax Installation



After SmarTrax Installation



CHAPTER

4

CAB COMPONENT INSTALLATION

INSTALL THE SMARTRAX NODE

MOUNT THE SMARTRAX NODE

FIGURE 1. Node Mounted to the Mounting Plate



1. Mount the SmarTrax node (P/N 063-0173-228) to the node mounting plate (P/N 107-0172-084) using three 3/8" - 16 UNC nylon insert lock nuts (P/N 312-4000-061).

FIGURE 2. Standoffs Installed on Mounting Plate



2. Remove the nuts from the machine's mounting plate.

NOTE: The machine's mounting plate is located behind the operator's seat.

3. Screw the M6 x 40 mm M/F to 13mm hex standoffs (P/N 305-8000-008) onto the top two studs of the machine's mounting plate.

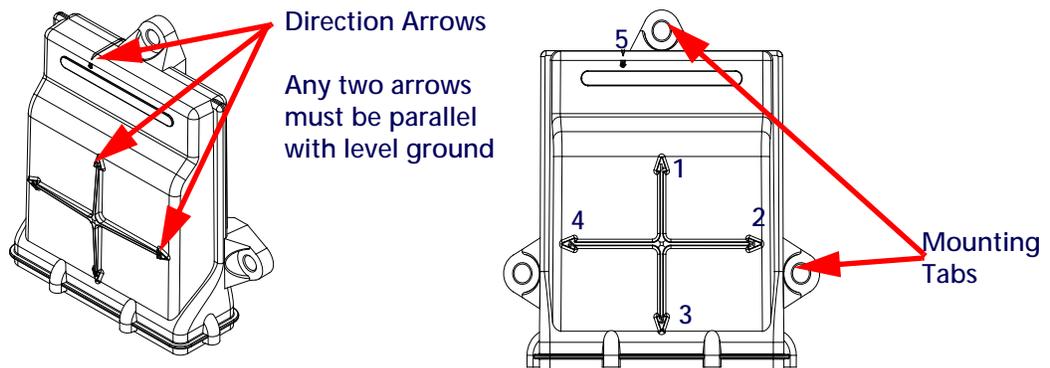
FIGURE 3. Node Installed



4. Mount the node mounting plate on the installed standoffs and secure with the machine's existing nuts that were previously removed.

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 NODE HARNESS

FIGURE 5. Node Cable Installed on Node



1. Install the two large, rectangular connectors of the node cable (P/N 115-4001-110) into the correct ports of the node, tightening the bolts on the harness connectors to secure the connections.
2. Connect the CAN connector to the CAN Adapter Cable (P/N 115-4001-254).
3. Locate the machine's existing CAN system at the back of the cab near the node mounting location. Identify the 6-Pin Deutsch DTM connector labeled X-7F.

FIGURE 6. CAN Connector Installed on Machine's CAN System



4. Connect the CAN adapter cable to the machine's X-7F connector.
5. Verify the CAN terminator provided with the CAN adapter cable is installed on the remaining open end of the CAN adapter cable.

6. Connect the round 3-pin power connector of the node cable into the convenience power port on the right-hand instrument panel.
7. Connect the DGPS connector to the GPS receiver.

FIGURE 7. DGPS OUT Connector Routed Under Operator's Seat



8. Route the DGPS OUT connector out the right corner of the operator's seat base and under the right arm rest.

FIGURE 8. Console Cable DGPS Connector



9. Connect the DGPS OUT connector to the Field computer cable's DGPS connection.

INSTALL THE VALVE HARNESS

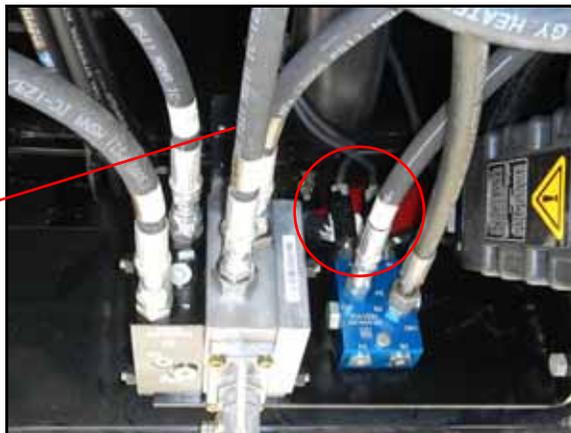
FIGURE 9. Valve Cable Routed Through Access Point



1. Route the valve cable through the right-rear corner cable access grommet under the window.
2. Connect the rectangular 12-pin connector on the valve harness (P/N 115-4001-111) into the mating connection on the node harness (P/N 115-4001-110).

FIGURE 10. Valve Harness Connected to Flow Switch

Valve Connector



3. Plug the PS1 and PS2 connectors from the valve cable into the pressure transducers installed on the flow switch (P/N 334-0003-085).

NOTE: These connections can be plugged into either transducer.

4. Plug the VALVE connector from the valve cable into the open port at the end of the SmarTrax valve (P/N 334-0003-088).

INSTALL THE FOOT SWITCH

FIGURE 11. Foot Switch Installed

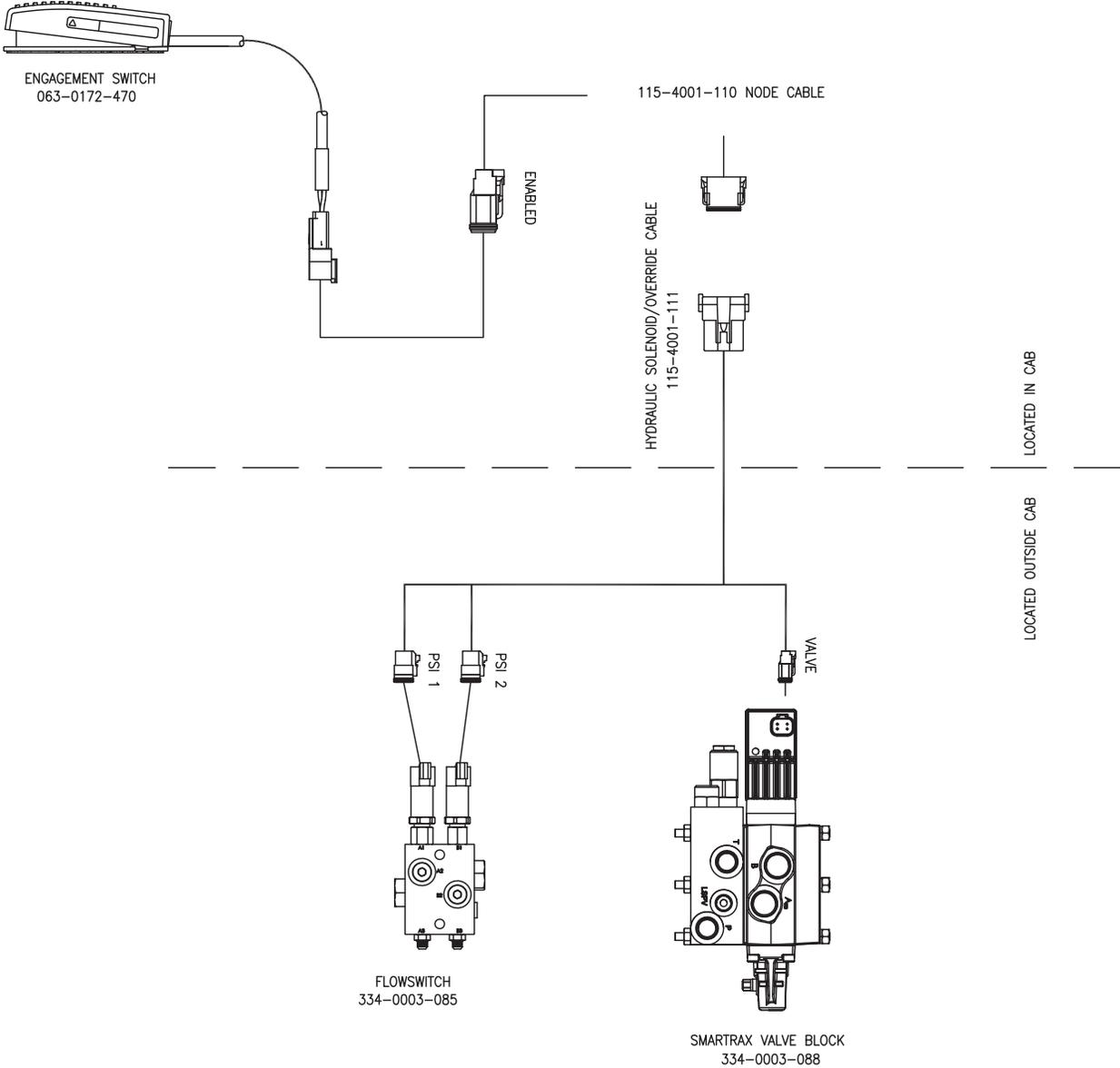


1. Select a suitable location for the foot switch (P/N 063-0172-470) to be installed.

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. Locate the ENABLE connector on the node harness and connect it to the foot switch cable connector behind the operator's seat.

SYSTEM DIAGRAMS





	<p>⚠ WARNING</p> <p>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.</p>
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	<p>⚠ WARNING</p> <p>Do not use hands to check for leaks. Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death.</p>
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REMOVE AIR FROM THE HYDRAULIC SYSTEM

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. To remove air from the hydraulic system and to ensure proper operation of the SmarTrax system:

1. Turn the machine's wheels fully from side to side repeatedly.

NOTE: If air pockets are present, the wheels may not move consistently when the steering wheel is turned.

2. Continue turning the wheels until they move steadily and smoothly when the steering wheel is turned.

VERIFY THE HYDRAULIC SYSTEM INSTALLATION

1. Turn on the machine.
2. Double-check all fitting and hose connections to ensure that:
 - Hoses are not rubbing on or interfering with moving parts.

- Hydraulic fluid is not leaking from the system.

NOTE: If there are issues with the SmarTrax system, turn off the machine and correct them immediately. For additional assistance, contact your local Raven dealer.

CALIBRATE THE SMARTRAX SYSTEM

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

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- Verifying the Hydraulic System Installation 29

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.