

**John Deere 7X20 (Large Frame)
SmarTrax™ Installation Manual**

P/N 016-5034-005 Rev A 04/16

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Chapter 1	<i>Important Safety Information</i>	1
	Hydraulic Safety	2
	Electrical Safety	2
Chapter 2	<i>Introduction</i>	3
	Updates	3
	Preparing for Installation	4
	Recommendations	4
	Point of Reference	4
	Kit Contents	4
Chapter 3	<i>Hydraulic System Installation</i>	9
	Install Fittings in the SmarTrax Valve	10
	Mount the SmarTrax Valve	11
	Install the Left and Right Steering Hoses	12
	Install the Tank Hose	13
	Install the Load Sense Hose	14
	Install the Pressure Hose	15
	Hydraulic Diagram	17
Chapter 4	<i>Wheel Angle Sensor Installation</i>	19
	Assemble the Wheel Angle Sensor (WAS)	19
	Mount the WAS	20
Chapter 5	<i>Cab Component Installation</i>	25
	Install the SmarTrax Node	25
	Mount the SmarTrax Node	25
	Node Mounting Locations	26
	Install the Foot Switch	27
	Install the Node Harness	27
	Install the Valve Harness	28
	Install the Chassis Cable - SmarTrax-Only Systems (If Applicable)	30
	Connect SmarTrax to an Existing Chassis Cable (If Applicable)	30
	System Diagrams	31
Chapter 6	<i>Startup Procedures</i>	35
	Verify the SmarTrax System Installation	35
	Calibrate the SmarTrax System	36

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**

Hydraulic Safety

- Raven Industries recommends that appropriate protective equipment be worn at all times when working on the hydraulic system.
- Never attempt to open or work on a hydraulic system with the equipment running. Care should always be taken when opening a system that has been previously pressurized.
- When disconnecting the hydraulic hoses or purging is required, be aware that the hydraulic fluid may be extremely hot and under high pressure. Caution must be exercised.
- Any work performed on the hydraulic system must be done in accordance with the machine manufacturer's approved maintenance instructions.
- When installing SmarTrax hydraulics or performing diagnostics, maintenance, or routine service, ensure that precautions are taken to prevent any foreign material or contaminants from being introduced into the machine's hydraulic system. Objects or materials that are able to bypass the machine's hydraulic filtration system will reduce performance and possibly damage the SmarTrax valve.

Electrical Safety

- 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.

CHAPTER

2

Introduction

Congratulations on your purchase of the Steering Ready 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: John Deere

MODEL: 7X20 Series (Large Frame)

FIGURE 1. John Deere 7720



Updates

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

<http://www.ravenhelp.com>

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:

- 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 valve 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.

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.

TABLE 1. SmarTrax Installation Kit (P/N 117-5034-005)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 7X20 Series (Large Frame) SmarTrax Installation	016-5034-005	1
	Valve - SmarTrax Hydraulic	334-0003-088	1

TABLE 1. SmarTrax Installation Kit (P/N 117-5034-005)

Picture	Item Description	Part Number	Qty.
	Bracket - Hydraulic Valve Mounting	107-0171-907	1
	Bracket - Node Mounting	107-0171-947	1
	Bracket - WAS Rod Mounting	107-0172-030	1
	Bracket - WAS Frame Mounting	107-0172-041	1
	Sensor - 250 mm Non-Contact Linear Wheel Angle	063-0181-017	1
	Cable - SmarTrax Valve Harness	115-4001-093	1
	Mount - M10 Ball Linear Sensor	103-0001-029	1
	Mount - M10 Stud Linear Sensor	103-0001-030	1
	Transducer - 0-3000 PSI Pressure	422-0000-086	1
	Clamp - 1-1/2" Muffler	435-3003-030	1
	Spacer - 3/8" ID x 3/4" OD x 3/4" Steel	107-0172-037	2

TABLE 1. SmarTrax Installation Kit (P/N 117-5034-005)

Picture	Item Description	Part Number	Qty.
	Bolt - 5/16"-18 UNC x 7/8" Hex	311-0052-104	4
	Bolt - M10 x 1.5 x 70 mm Class 8.8 Metric Hex	311-0070-033	1
	Nut - M10 x 1.5 x 5 mm Jam	312-1002-035	2
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-059	2
	Nut - M10 x 1.5 Nylon Insert Lock	312-4000-208	2
	Nut - 3/8"-16 Nylon Insert Lock	312-4001-109	3
	Washer - 5/16" Lock	313-1000-019	4
	Washer - 0.406" ID x 0.812" OD x 0.065" Flat	313-2300-014	4
	Washer - 0.344" ID x 0.688" OD x 0.065" Thick Flat	313-2300-012	2

TABLE 2. Hydraulic Kit (P/N 117-0199-008)

Picture	Item Description	Part Number	Qty.
	Fitting - -4 ORFS M/F 90° Swivel Elbow	333-0012-023	1
	Fitting - -8 ORFS M/M/F Swivel Run Tee Adapter	333-0012-028	3
	Fitting - -6 ORFS M/F 90° Swivel Elbow	333-0012-065	1
	Fitting - -8 ORFS M/F 90° Swivel Elbow	333-0012-067	2
	Fitting - -6 ORFS M/F 45° Elbow	333-0012-090	1
	Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) 90° Elbow	333-0012-165	1
	Fitting - -4 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-195	2
	Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-199	1
	Fitting - -6 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-233	2
	Fitting - M16 x 1.5" (M) to -6 ORFS (M) Straight Adapter	333-0012-339	1
	Hydraulic Hose - -6 ORFS (F) to -6 ORFS (F) 90° - 44"	214-1000-494	1

TABLE 2. Hydraulic Kit (P/N 117-0199-008)

Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - -8 ORFS (F) to -6 ORFS (F) 90° - 96"	214-1000-759	2
	Hydraulic Hose - -6 ORFS (F) to -8 ORFS (F) 90° - 13"	214-1000-786	1
	Hydraulic Hose - -4 ORFS (F) to -6 ORFS (F) 90° - 18"	214-1000-787	1
	Hydraulic Hose - -6 ORFS (M) to -4 ORFS (F) 90° - 18"	214-1000-788	1

TABLE 3. Node Installation Kit (P/N 117-5030-005)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - SmarTrax and SmartSteer Calibration & Operation	016-0171-277	1
	Node - SmarTrax 3D CAN Control	063-0173-228	1
	Harness - SmarTrax Node	115-4001-109	1
	Assembly - SmarTrax Enable Switch	063-0172-470	1

Note: The node installation kit is sold separately.

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.

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 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
<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 in 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. Refer to the figure and table below to install the fittings in the appropriate ports of the SmarTrax valve.

FIGURE 1. Fittings Installed in the SmarTrax Valve



Fitting	Part Number	Port
Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) 90° Elbow	333-0012-165	T
Fitting - -4 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-195	LSPV, LS STEER
Fitting - -4 ORFS M/F 90° Swivel Elbow	333-0012-023	LSPV
Fitting - -6 ORFS (M) to -8 SAE O-Ring (M) Straight Adapter	333-0012-199	P
Fitting - -6 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-233	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 in the right-rear corner of the machine, next to the SCV outlets.

Note: It may be necessary to modify the slow moving vehicle triangle mounting bracket to make room for the SmarTrax valve.

FIGURE 3. Valve Mounted to the Machine



2. Secure the SmarTrax valve (P/N 334-0003-088) to the hydraulic valve mounting plate (P/N 107-0171-907) using four 5/16"-18 x 7/8" hex head bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).
3. Mount the SmarTrax valve and mounting plate to the machine using the machine's existing bolts.

Note: Ensure the valve is mounted in a location where there is no interference between the valve and the 3-point hitch.

Install the Left and Right Steering Hoses

FIGURE 4. Left and Right Steering Hose Location

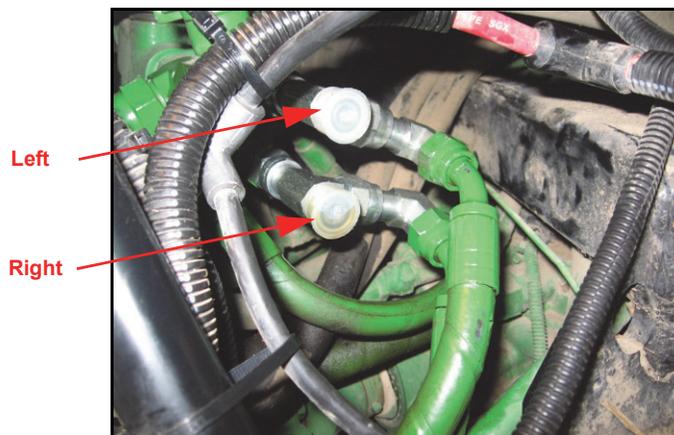


1. Locate the left and right steering hose connections on the steering orbital.

Note: The left and right steering hoses run from the steering cylinder on the left front of the tractor frame to the steering orbital located directly in front of the cab. There is a green plastic shield (not shown in the figure above) that must be removed to access the left and right steering hose connections.

2. Label the machine's left and right steering hoses.
3. Disconnect the steering hoses from the steering orbital.

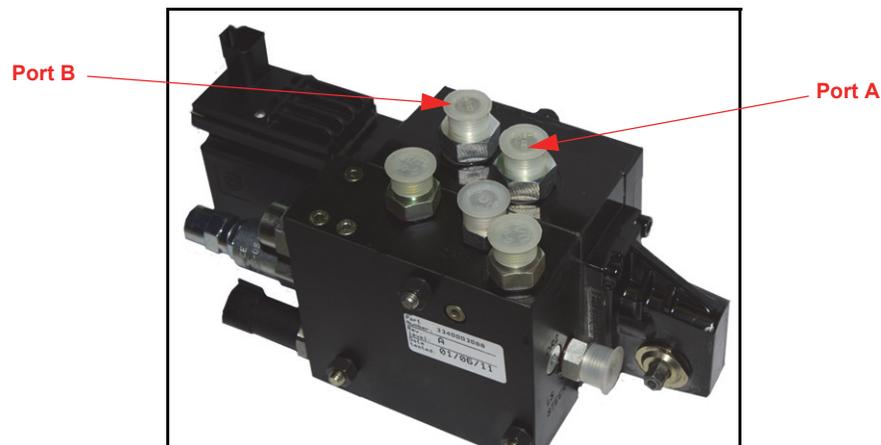
FIGURE 5. Tee Fittings Installed



Note: Due to space restrictions, it best to perform the following steps one at a time, starting at the bottom of the machine and working toward the top.

4. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) in the right steering hose port on the machine's steering orbital.
5. Install a -8 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-067) on the 90° end of the installed tee fitting.
6. Connect the machine's right steering hose to the installed 90° elbow fitting.
7. Install the straight end of the supplied hydraulic hose (P/N 214-1000-759) on the installed tee fitting in the machine's right steering port.

FIGURE 6. Ports A and B of the SmarTrax Valve



8. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port A of the SmarTrax valve.
9. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) in the left steering hose port on the machine's steering orbital.
10. Install a -8 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-067) on the 90° end of the installed tee fitting.
11. Connect the machine's left steering hose to the 90° installed 90° elbow fitting.
12. Install the straight end of the supplied hydraulic hose (P/N 214-1000-759) on the installed tee fitting in the machine's left steering port.
13. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port B of the SmarTrax valve.

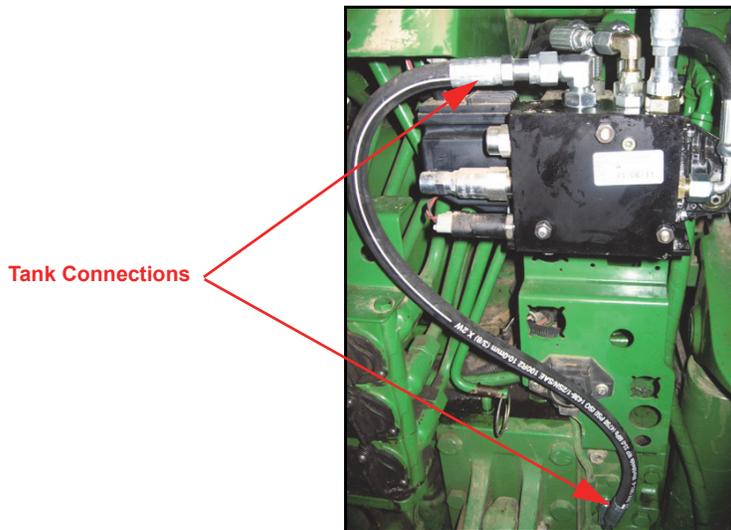
FIGURE 7. Steering Hoses Installed



Install the Tank Hose

1. Remove the plug from the back of the rear differential housing, located behind the hydraulic fill tube.

FIGURE 8. Tank Hose Installed



2. Install the M16 x 1.5" (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-339) in the open port of the rear differential housing.
3. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-494) on the installed adapter fitting.
4. Connect the straight end of the installed hydraulic hose to the fitting installed in Port T of the SmarTrax valve.

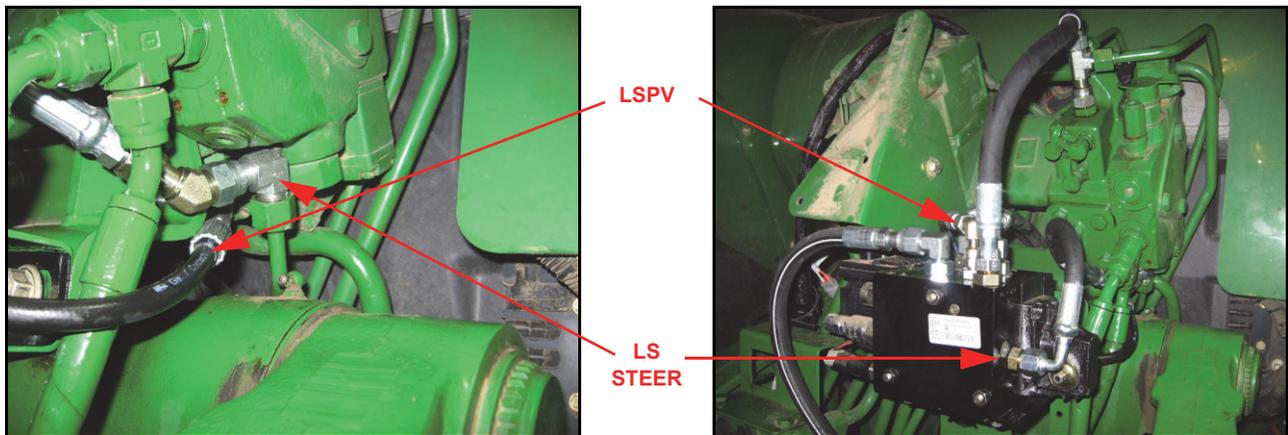
Install the Load Sense Hose

FIGURE 9. Machine's Existing Load Sense Connection



1. Disconnect the existing load sense steel line from the bottom of the machine's hydraulic valve at the rear of the tractor.

FIGURE 10. Load Sense Hoses Installed



2. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-787) on the open load sense port on the machine's hydraulic valve.
3. Connect the straight end of the installed hydraulic hose to the 90° elbow fitting installed in Port LSPV of the SmarTrax valve.
4. Install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the machine's steel load sense line.
5. Install a -6 ORFS M/F 45° elbow fitting (P/N 333-0012-090) on the installed 90° fitting.
6. Install the straight end of the supplied hydraulic hose (P/N 214-1000-788) on the installed 45° elbow fitting.
7. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LS STEER of the SmarTrax valve.

Install the Pressure Hose

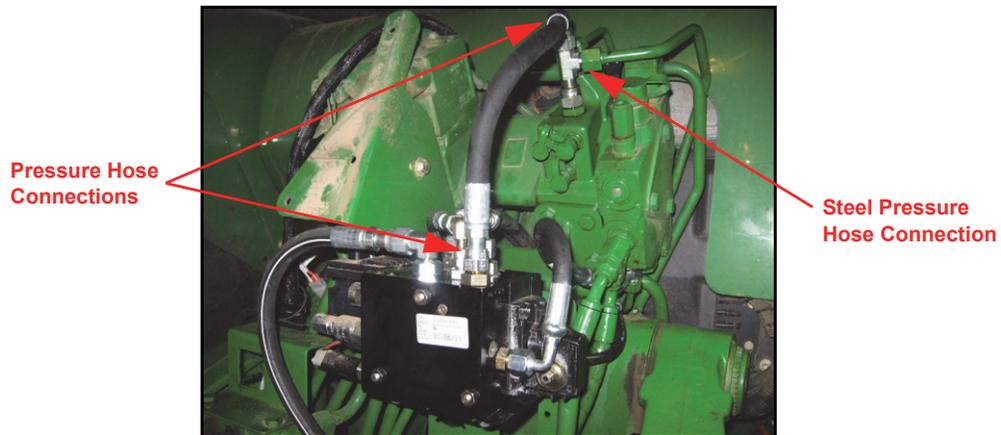
FIGURE 11. Machine's Pressure Connection



1. Disconnect the existing pressure connection from the top of the machine's hydraulic valve and remove the 90° hydraulic fitting.

Note: Keep the fitting for future use in case the SmarTrax system is removed from the machine.

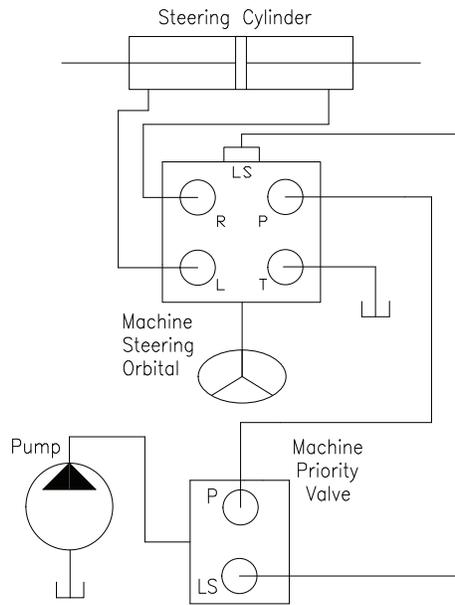
FIGURE 12. Pressure Hose Installed



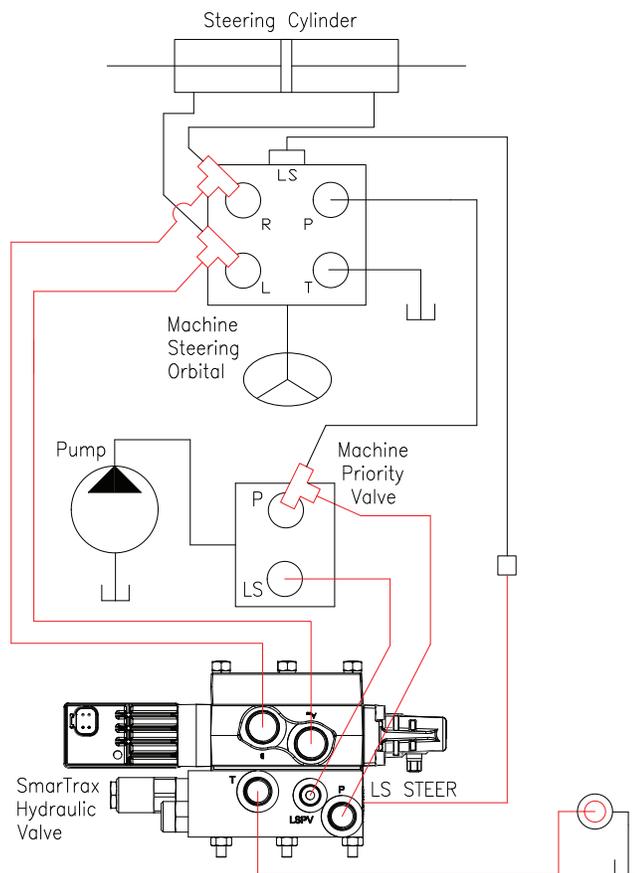
2. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) in the machine's open pressure port.
3. Connect the machine's steel pressure line to the 90° end of the installed tee fitting.
4. Install the 90° end of the supplied hydraulic hose (P/N 214-1000-786) to the straight end of the installed tee fitting.
5. Connect the straight end of the installed hydraulic hose to the fitting installed in Port P of the SmarTrax valve.

Hydraulic Diagram

Before SmarTrax Installation



After SmarTrax Installation



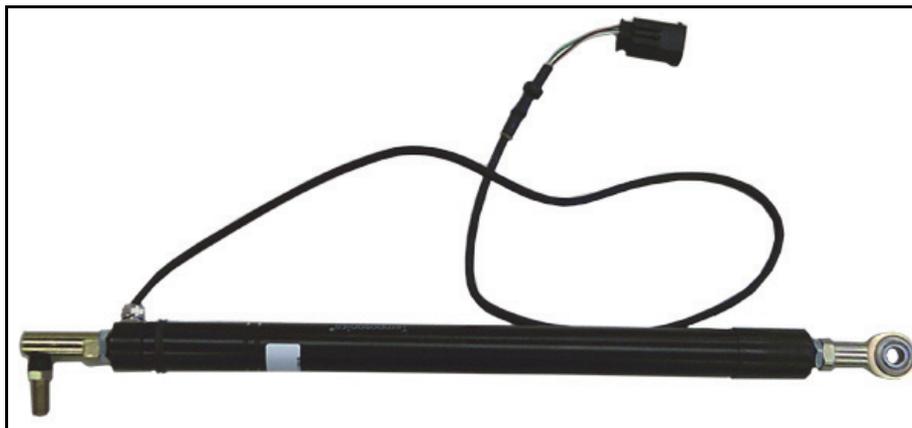
CHAPTER

4

Wheel Angle Sensor Installation

Assemble the Wheel Angle Sensor (WAS)

FIGURE 1. WAS Assembly



1. Install the M10 stud linear sensor mount (P/N 103-0001-030) and M10 jam nut (P/N 312-1002-035) on the base-end (where the cable is connected) of the 250 mm non-contact linear wheel angle sensor (WAS) (P/N 063-0181-017).
2. Install the M10 ball linear sensor mount (P/N 103-0001-029) on the rod-end of the WAS using the remaining M10 jam nut.

Mount the WAS

FIGURE 2. Bolts Removal



1. Turn the machine's wheels to the left to access the right front wheel axle.
2. Remove the two top bolts from the right cylinder end cap.

FIGURE 3. Base Mounting Bracket Installed



3. Align the base mounting bracket (P/N 107-0172-041) over the holes and replace the bolts.

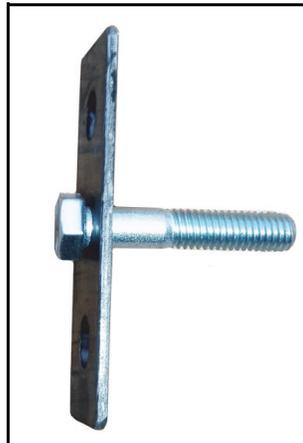
FIGURE 4. Base-End of Sensor Installed on the Machine



4. Install three 0.406" ID x 0.812" OD x 0.065" flat washers (P/N 313-2300-014) on the stud mount of the linear sensor to offset the sensor from the base mounting bracket.
5. Secure the base-end of the WAS (P/N 063-0181-017) to the base mounting bracket using one washer (P/N 313-2300-014) and one M10 x 1.5 nylon insert lock nut (P/N 312-4000-208).

Note: The rod-end of the sensor should point toward the left side of the machine.

FIGURE 5. M10 Bolt Inserted into Rod Mounting Bracket



6. Insert the M10 x 1.5 metric hex bolt (P/N 311-0070-033) into the rod mounting bracket (P/N 107-0172-030).
7. Remove the nuts and clamp from the 1-1/2" muffler clamp (P/N 435-3003-030).

FIGURE 6. Muffler Clamp Installed



8. Install the 1-1/2" muffler clamp U-bolt (P/N 435-3003-030) on the left side between the tie rod and cylinder rod with the legs of the U-bolt pointing to the rear of the machine.
9. Replace the clamp and nuts.

FIGURE 7. Rod Mounting Bracket Installed



10. Install the rod mounting bracket and M10 bolt on the muffler clamp using two 5/16" washers (P/N 313-2300-012) and two 5/16" nylon insert lock nuts (P/N 312-4000-059).

Note: The M10 bolt should be pointing toward the rear of the machine.

FIGURE 8. Spacers Installed on Rod Mounting Bracket

11. Install two 3/8" ID x 3/4" OD x 3/4" long spacers (P/N 107-0172-037) on the M10 bolt.

FIGURE 9. Rod-End of Sensor Installed on Machine

12. Install the rod-end of the WAS to the end of the installed M10 bolt using one M10 x 1.5 nylon insert lock nut (P/N 312-4000-208).

Important: Verify that the WAS cannot be overextended or compressed when the wheels are turned to their extremes. Also verify that the sensor moves freely and is not being damaged within its range of motion.

13. Route the sensor cable toward rod-end of the sensor and to the back of the tractor, following along the left steering cylinder hydraulic hoses.
14. Secure the cable to the sensor body and left steering cylinder hoses using plastic cable ties.

CHAPTER

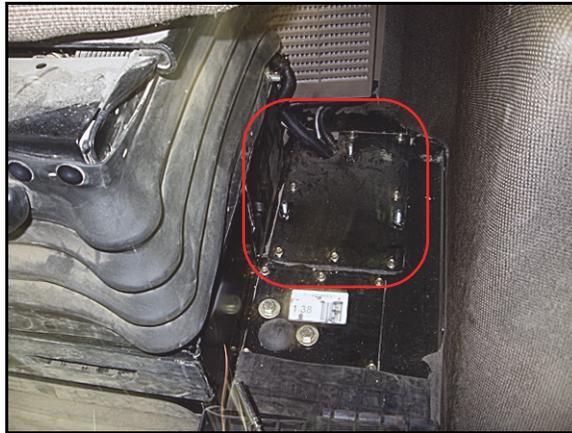
5

Cab Component Installation

Install the SmarTrax Node

Mount the SmarTrax Node

FIGURE 1. Node Mounting Plate Installed



1. Remove the factory-installed access plate on the floor of the cab, to the left side of the operator's seat and under the floor mat.
2. Using the bolts removed in step 1, install the node mounting plate (P/N 107-0171-947) on the floor of the cab.

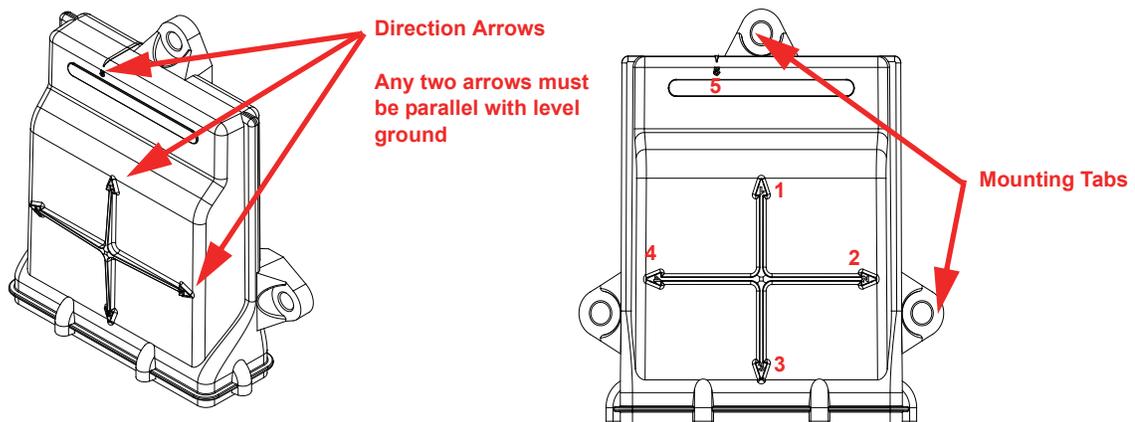
FIGURE 2. Node Installed on Node Mounting Plate



- Secure the SmarTrax node (P/N 063-0173-228) to the node mounting plate using three 3/8"-16 nylon insert lock nuts (P/N 312-4001-109).

Node Mounting Locations

FIGURE 3. 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

FIGURE 4. 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.

Install the Node Harness

FIGURE 5. Node Harness Installed



1. Install the two large, rectangular connectors of the node harness (P/N 115-4001-109) into the correct ports of the node.
2. Tighten the bolts on the harness connectors to secure the connections.
3. Locate the ENABLE connector and connect it to the foot switch cable connector.

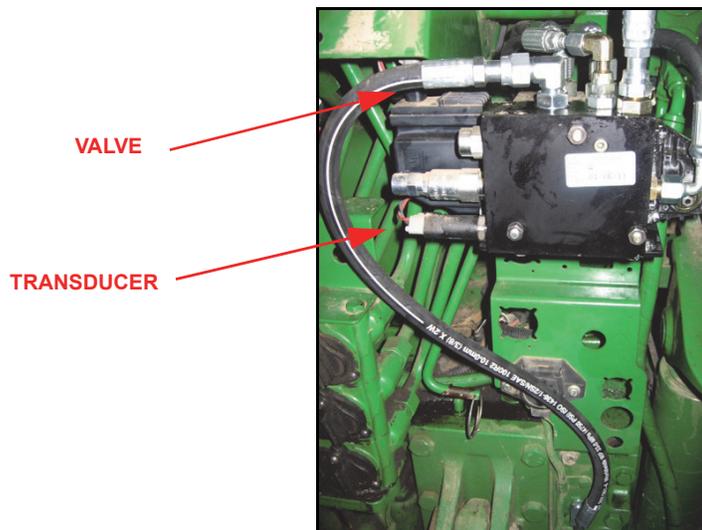
Install the Valve Harness

FIGURE 6. Valve Harness Connected to Node Harness



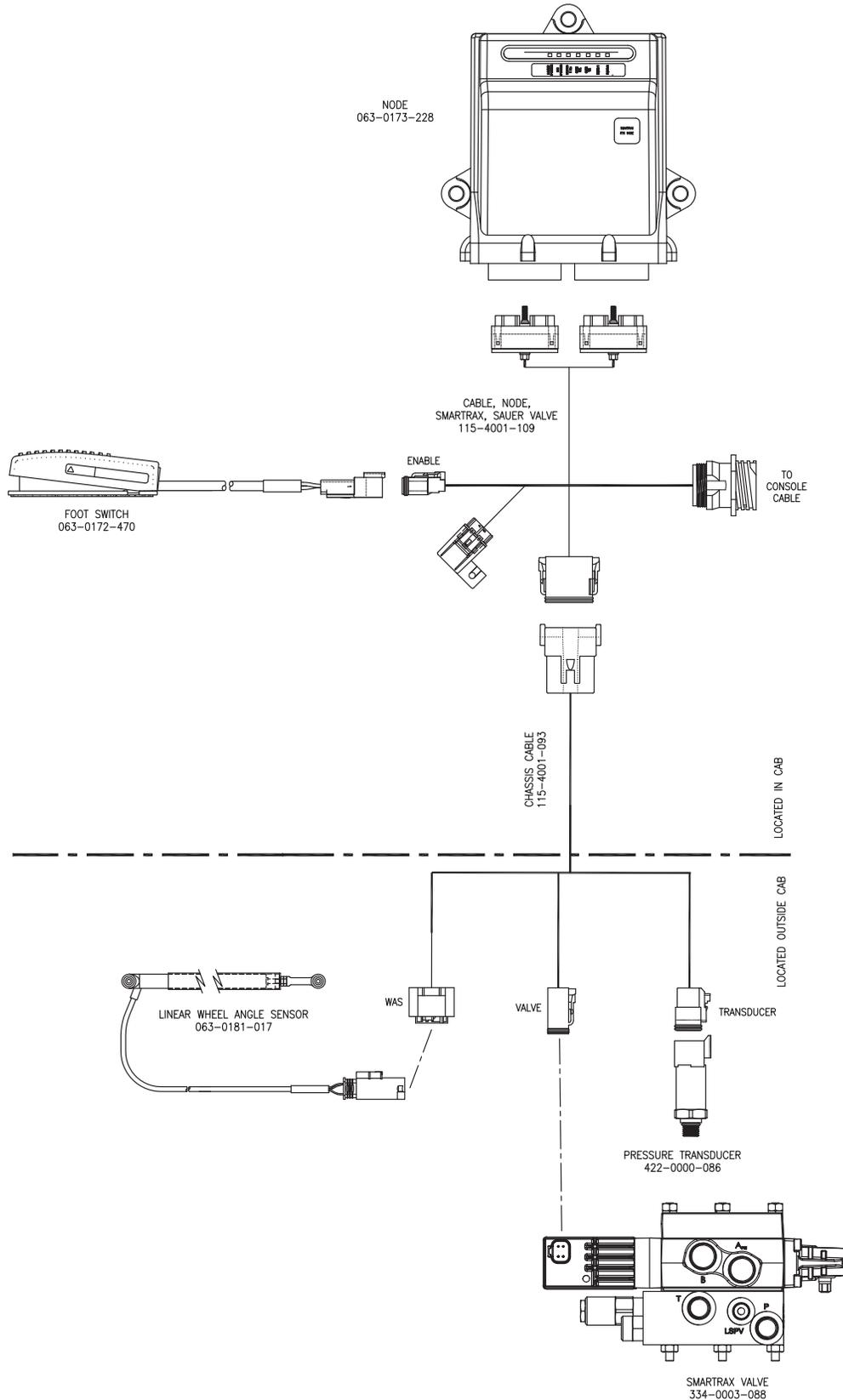
1. Connect the CHASSIS connector of the valve harness (P/N 115-4001-093) to the green mating connector of the node harness (P/N 115-4001-109).
2. Route the valve harness through the bottom of the cab.
3. Connect the WAS connector to the installed WAS (P/N 063-0181-017) cable connector.

FIGURE 7. Valve Harness Connections



4. Connect the TRANSDUCER connector to the pressure transducer (P/N 422-0000-086) installed in Port PS of the SmarTrax valve (P/N 334-0003-088).
5. Connect the VALVE connector on the valve harness to the open 4-pin connector on top of the SmarTrax valve.

FIGURE 8. Wiring Diagram



Install the Chassis Cable - SmarTrax-Only Systems (If Applicable)

If the machine does not contain an existing chassis power system (such as AutoBoom, product control, etc.), it is necessary to install the chassis power cable to operate the SmarTrax system. If a CAN system already exists on the machine, refer to *Connect SmarTrax to an Existing Chassis Cable (If Applicable)* below to connect power to the SmarTrax system.

Note: *The chassis cable is sold separately. Contact your local Raven dealer for ordering information.*

1. Locate the SmarTrax chassis cable (P/N 115-4001-085).
2. Connect the TO SMARTRAX NODE connector from the chassis cable to the round 16-pin connector on the node harness (P/N 115-4001-109).
3. Connect the TO CONSOLE CABLE connector to the Raven console cable.
4. Install a terminator (P/N 063-0172-369) on the CAN cable connector.
5. 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.*

6. Connect the ring terminals to the battery.

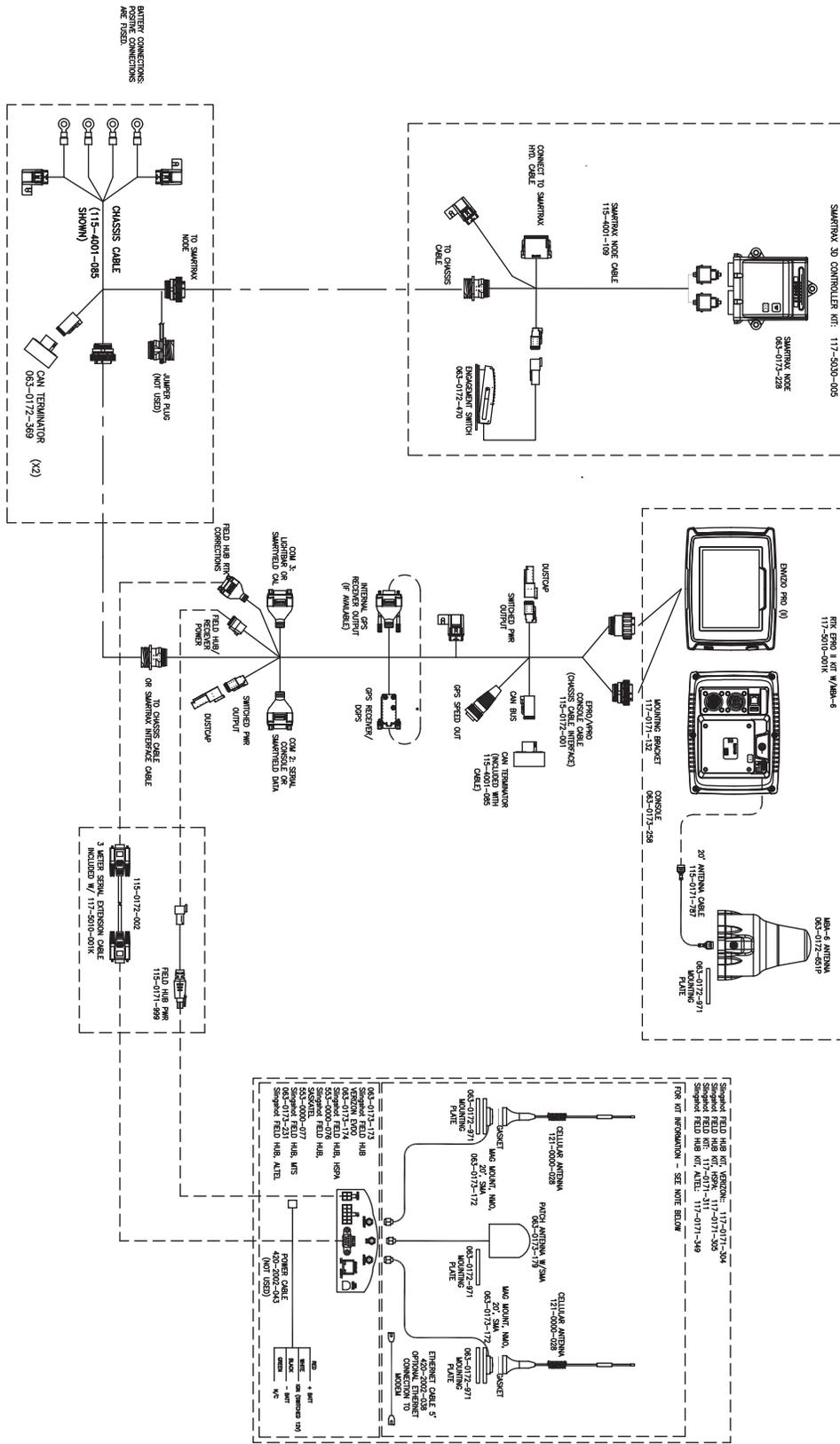
Note: *The positive connectors are fused.*

Connect SmarTrax to an Existing Chassis Cable (If Applicable)

Note: *The SmarTrax interface tee is sold separately. Contact your local Raven dealer for ordering information.*

1. Locate and disconnect the connection between the Raven console cable and chassis cable on the machine's existing CAN system.
2. Install the SmarTrax interface tee cable (P/N 115-4001-070 or 115-4001-071) between the chassis and Raven console harness.
3. Connect the SmarTrax node cable (P/N 115-4001-109) to the remaining SmarTrax interface tee.

FIGURE 10. Envizio Pro II with Slingshot



ENVIZIO PRO II SMARTTRAX W/SLINGSHOT

CHAPTER

6

Startup Procedures



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

C**Cab Component Installation**

- Installing the Chassis Cable - SmarTrax-Only Systems 30
- Installing the Foot Switch 27
- Installing the Node Harness 27
- Installing the SmarTrax Node 25
 - Mounting the SmarTrax Node 25
 - Node Mounting Locations 26
- Installing the Valve Harness 28

H**Hydraulic Installation**

- Hydraulic Diagram 17
- Installing Fittings in the SmarTrax Valve 10
- Installing the Left and Right Steering Hoses 12
- Installing the Load Sense Hose 14
- Installing the Pressure Hoses 15
- Installing the Tank Hose 13
- Mounting the SmarTrax Valve 11

I**Important Safety Information**

- Electrical Safety 2
- Hydraulic Safety 2

Introduction

- Kit Contents 4
- Preparing for Installation 4
 - Point of Reference 4
 - Recommendations 4

K**Kit Contents** 4**S****Startup Procedures**

- Calibrating the SmarTrax System 36
- Verifying the SmarTrax System Installation 35

W**Wheel Angle Sensor**

- Assembling the WAS 19
- Mounting the WAS 20

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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.

How Long is the Coverage Period?

Raven Applied Technology Division products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is nontransferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If your dealer agrees with the warranty claim, the dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

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