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SmarTrax™ Installation Manual



**John Deere 8x20 Series
without Independent Link Suspension**

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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**

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 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: John Deere

MODEL: 8x20 without Independent Link Suspension

FIGURE 1. John Deere 8x20



Important: *The machine must be equipped with the John Deere Power Beyond coupler kit before installation of the SmarTrax kit is performed. If the machine is not equipped with this kit, contact your local John Deere dealer for ordering and installation information before attempting to install SmarTrax. The SmarTrax system WILL NOT WORK without the John Deere Power Beyond coupler kit.*

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. Bleed pressure from the hydraulic system and leave the machine turned off for the duration of the installation process.

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

Recommendations

Raven Industries recommends the following 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.

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.

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. John Deere 8x20 SmarTrax Installation Kit (P/N 117-5034-007)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - John Deere 8x20 SmarTrax Installation	016-4001-007	1
	Valve - SmarTrax Hydraulic	334-0003-088	1

TABLE 1. John Deere 8x20 SmarTrax Installation Kit (P/N 117-5034-007)

Picture	Item Description	Part Number	Qty.
	Bracket - Node Mounting	107-0171-947	1
	Bracket - WAS Base	107-0172-051	1
	Bracket - Hydraulic Valve Mounting	107-0172-060	1
	Bracket - WAS Rod	107-0172-061	1
	Cable - John Deere 8000 Series Chassis	115-4001-122	1
	Sensor - 250 mm Non-Contact Linear Wheel Angle	063-0181-017	1
	Cartridge - .08 Ball Shuttle Hydraulic	334-0002-109	1
	Transducer - 0-3000 PSI Pressure	422-0000-086	1
	Mount - M10 Ball Linear Sensor	103-0001-029	1
	Mount - M10 Stud Linear Sensor	103-0001-030	1
	Spacer - 3/8" ID x 3/4" OD x 1" Long Plastic	107-0172-038	1

TABLE 1. John Deere 8x20 SmarTrax Installation Kit (P/N 117-5034-007)

Picture	Item Description	Part Number	Qty.
	Bolt - 5/16"-18 UNC x 7/8" Hex	311-0052-104	4
	Bolt - 3/8"-16 UNC x 1-1/2"	311-0054-107	4
	Bolt - M10 x 1.5" x 70 mm Class 8.8 Metric Hex	311-0070-033	3
	Nut - M10 x 1.5 Pitch x 5 mm Thick Jam	312-1002-035	2
	Nut - 3/8"-16 Nylon Insert Lock	312-4000-061	7
	Nut - M10 x 1.5 Nylon Insert Lock	312-4000-208	4
	Washer - 5/16" Lock	313-1000-019	4
	Washer - .406" ID x .812" OD x .065" Thick	313-2300-014	14

TABLE 2. Hydraulic Kit (P/N 117-0199-007)

Picture	Item Description	Part Number	Qty.
	Fitting - -8 ORFS M/M/F Swivel Run Tee Adapter	333-0012-028	2
	Fitting - -6 ORFS M/M Straight Adapter	333-0012-033	1

TABLE 2. Hydraulic Kit (P/N 117-0199-007)

Picture	Item Description	Part Number	Qty.
	Fitting - -4 SAE O-Ring (M) Plug	333-0012-051	1
	Fitting - -6 ORFS M/F 90° Swivel Elbow	333-0012-065	4
	Fitting - -8 ORFS M/F 90° Swivel Elbow	333-0012-067	1
	Fitting - -6 ORFS M/M/F Swivel Run Tee Adapter	333-0012-069	2
	Fitting - M14 x 1.5 (M) to -6 ORFS (M) Straight Adapter	333-0012-077	3
	Fitting - -8 ORFS M/F 45° Swivel Elbow	333-0012-102	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	2
	Fitting - -6 ORFS (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-233	2
	Fitting - -4 SAE O-Ring (F) to Female Diagnostic Coupler Hydraulic	333-0012-336	1
	Fitting - -4 ORB M/F Adjustable Elbow	333-0012-337	1

TABLE 2. Hydraulic Kit (P/N 117-0199-007)

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 -6 ORFS (F) 90° - 24"	214-1000-779	1
	Hydraulic Hose - -6 ORFS (F) to -6 ORFS (F) 90° - 18"	214-1000-834	1
	Hydraulic Hose - -6 ORFS (F) to -4 ORFS (F) 90° - 24"	214-1000-835	2

TABLE 3. Node Kit (P/N 117-5030-005) - SmarTrax-Only Systems

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

CHAPTER

3

Hydraulic Installation

Important: *The machine must be equipped with the John Deere Power Beyond coupler kit before installation of the SmarTrax kit is performed. If the machine is not equipped with this kit, contact your local John Deere dealer for ordering and installation information before attempting to install SmarTrax. The SmarTrax system WILL NOT WORK without the John Deere Power Beyond coupler kit.*



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.

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.

FIGURE 1. Fittings Installed in the SmarTrax Valve



Fitting	Part Number	Port
Fitting - -4 SAE O-Ring (M) Plug	333-0012-051	PS
Fitting - -4 ORFS (M) to -6 SAE O-Ring (M) Straight Adapter	333-0012-195	LSPV, LS STEER
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
Cartridge - -08 Ball Shuttle Hydraulic	334-0002-109	EP1

1. Refer to the table and above to install the fittings in the appropriate ports of the SmarTrax valve.
2. Remove the existing cartridge from Port EP of the SmarTrax valve and replace it with the -08 ball shuttle hydraulic cartridge (P/N 334-0002-109).

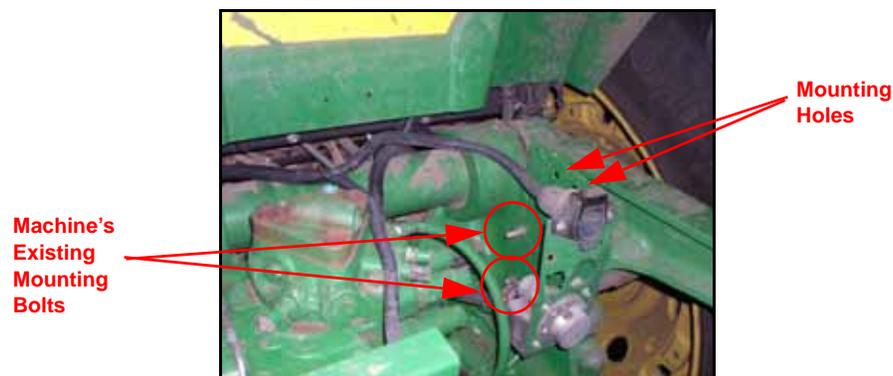
Mount the SmarTrax Valve

FIGURE 2. SmarTrax Valve Mounting Location



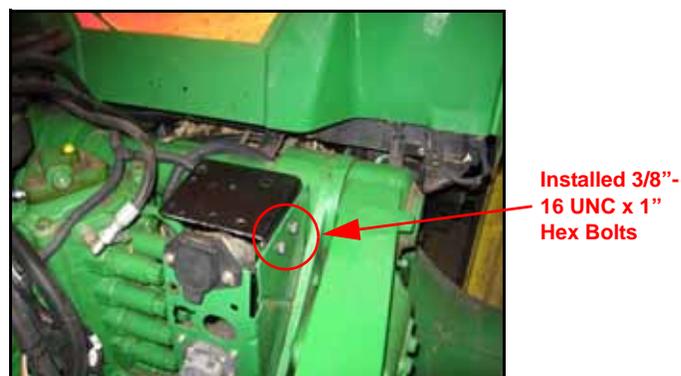
- Identify the valve mounting location on the right-rear corner of the machine.

FIGURE 3. Machine's Existing Mounting Bolts



- Remove the nuts from the machine's existing mounting bolts.
- Mount the SmarTrax valve mounting plate (P/N 107-0172-060) to the machine's existing mounting bolts and secure it by reinstalling the machine's nuts on the existing mounting bolts.

FIGURE 4. Valve Mounting Plate Installed



- Install two 3/8"-16 UNC x 1-1/2" hex bolts (P/N 311-0054-107) and two 3/8"-16 nylon insert lock nuts (P/N 312-4000-061) in the mounting holes shown in the figure above.

7. Install the SmarTrax valve (P/N 334-0003-088) on the hydraulic valve mounting plate (P/N 107-0172-060) using four 5/16"-18 x 7/8" hex bolts (P/N 311-0052-104) and four 5/16" lock washers (P/N 313-1000-019).

Install the Pressure Transducer

FIGURE 5. Shield Covering the Steering Control Unit (SCU)



1. Remove the shield covering the steering control unit on the left side of the machine.

FIGURE 6. DR Port Hydraulic Fitting Assembly

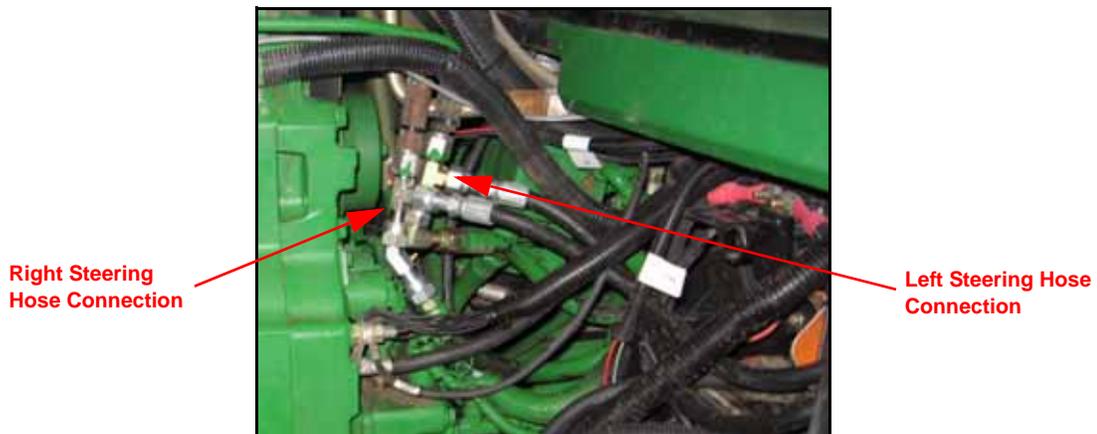


2. Install the -4 ORB M/F adjustable 90° elbow fitting (P/N 333-0012-337) on the -4 SAE O-ring (F) to female diagnostic coupler hydraulic fitting (P/N 333-0012-336).
3. Install the 0-3000 psi pressure transducer (P/N 422-0000-086) on the installed adjustable 90° elbow fitting.
4. Remove the cap from the DR port of the John Deere steering block and install the hydraulic fitting assembly.

Note: The DR port is located directly behind the left and right steering connections on the machine.

Install the Left and Right Steering Hoses

FIGURE 7. Left and Right Steering Hose Connections on the SCU

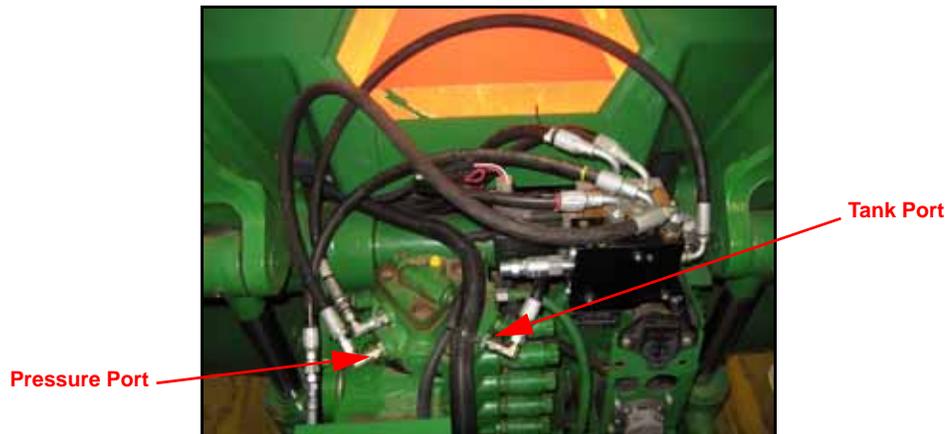


1. Locate the machine's left and right steering hoses on the SCU.
2. Disconnect the left steering hose from the steel line.
3. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) on the end of the steel line.
4. Install a -8 ORFS M/F 90° elbow fitting (P/N 333-0012-067) on the opposite end of the installed tee fitting.
5. Connect the machine's left steering hose to the installed 90° elbow fitting.
6. Install the straight end of the supplied hydraulic hose (P/N 214-1000-759) to the 90° end of the installed tee fitting.
7. Route the installed hydraulic hose under the left side of the cab behind the fender well.
8. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port A of the SmarTrax valve.
9. Disconnect the right steering hose from the steel line.
10. Install a -8 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-028) on the end of the steel line.
11. Install a -8 ORFS M/F 45° elbow fitting (P/N 333-0012-102) on the opposite end of the installed tee fitting.
12. Connect the machine's right steering hose to the installed 45° elbow fitting.
13. Install the straight end of the supplied hydraulic hose (P/N 214-1000-759) to the 90° end of the installed tee fitting.
14. Route the installed hydraulic hose under the left side of the cab behind the fender well.
15. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port B of the SmarTrax valve.
16. Reinstall the SCU shield.

Install the Pressure and Tank Hoses

Deluxe Top End Cover

FIGURE 8. Pressure and Tank Hoses Installed



Note: The machine's hydraulic valve may look slightly different than pictured above.

1. Locate the pressure and tank ports on the machine's hydraulic valve.
2. Remove the existing plug from the pressure port.
3. Install a M14 x 1.5 (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-077) in the machine's pressure port.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-779) on the installed fitting.

Note: Depending on the machine's configuration, it may be necessary to install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the installed adapter fitting to achieve the connection.

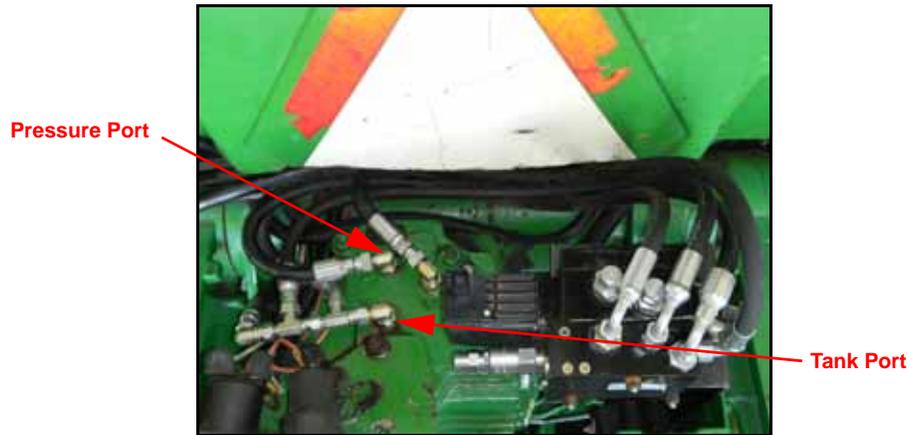
5. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port P of the SmarTrax valve.
6. Remove the existing plug from the tank port.
7. Install a M14 x 1.5 (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-077) in the machine's tank port.
8. Install the straight end of the supplied hydraulic hose (P/N 214-1000-834) on the installed fitting.

Note: Depending on the machine's configuration, it may be necessary to install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the installed adapter fitting to achieve the connection.

9. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the SmarTrax valve.

Standard Top End Cover

FIGURE 9. Pressure and Tank Hoses Installed



Note: The machine's hydraulic valve may look slightly different than pictured above.

1. Locate the pressure and tank ports on the machine's hydraulic valve.
2. Remove the existing plug from the pressure port.
3. Install a M14 x 1.5 (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-077) in the machine's pressure port.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-779) on the installed fitting.

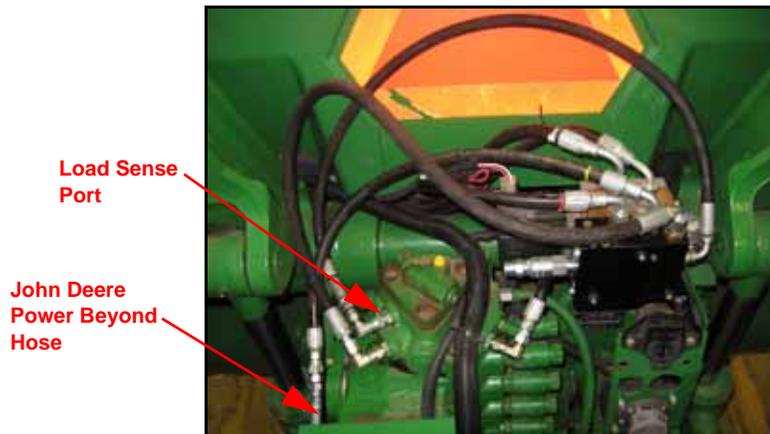
Note: Depending on the machine's configuration, it may be necessary to install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the installed adapter fitting to achieve the connection.

5. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port P of the SmarTrax valve.
6. Remove the machine's existing tank hose from the hydraulic valve.
7. Remove the John Deere Power Beyond plate orifice from the tank port of the machine's hydraulic valve.
8. Install a M14 x 1.5 (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-077) in the machine's tank port.
9. Install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the installed adapter fitting.
10. Install a -6 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-069) on the installed elbow fitting.
11. Install the straight end of the supplied hydraulic hose (P/N 214-1000-834) on 90° end of the installed tee fitting.
12. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the SmarTrax valve.

Install the Load Sense Hose

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FIGURE 10. Load Sense Hoses Installed



Note: The machine's hydraulic valve may look slightly different than pictured above.

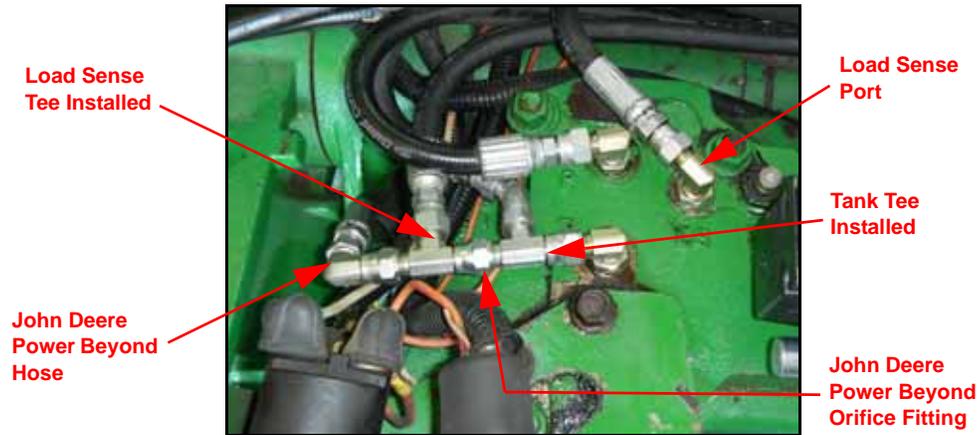
1. Locate the machine's Power Beyond hose that runs from the top of the machine's hydraulic valve down to the Power Beyond quick coupler.
2. Disconnect the Power Beyond hose from the machine's LS port.
3. Install a -6 ORFS (M) to -6 ORFS (M) straight adapter fitting (P/N 333-0012-033) on the end of the machine's Power Beyond hose.
4. Install the straight end of the supplied hydraulic hose (P/N 214-1000-835) on the installed fitting.
5. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LSPV of the SmarTrax valve.
6. Install a M14 x 1.5 to -6 ORFS (M) straight adapter fitting (P/N 333-0012-077) in the machine's open LS port.
7. Install the straight end of the supplied hydraulic hose (P/N 214-1000-835) on the installed fitting.

Note: It may be necessary to install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the installed adapter fitting to achieve the connection.

8. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LS STEER of the SmarTrax valve.

Standard Top End Cover

FIGURE 11. Load Sense Hoses Installed



1. Install the John Deere Power Beyond plate orifice fitting in the female end of a -6 ORFS M/M/F swivel run tee adapter fitting (P/N 333-0012-069).
2. Install the end of the tee fitting containing the orifice on the male end of the installed tank tee fitting.
3. Install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) on the straight end of the installed tee fitting.
4. Trace the Power Beyond hose from the Power Beyond quick coupler to the LS port of the machine's hydraulic valve.
5. Disconnect the Power Beyond hose from the LS port.
6. Remove the existing tee adapter fitting in the LS port.

Important: Do not remove the Power Beyond straight adapter fitting, the spacer, or the shuttle from the LS port of the machine's hydraulic valve. These fittings are needed for the SmarTrax load sense hose installation.

7. Connect the Power Beyond hose to the elbow fitting installed in step 3.
8. Install the straight end of the supplied hydraulic hose (P/N 214-1000-835) to the 90° end of the installed tee fitting.
9. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port LSPV of the SmarTrax valve.
10. Install the straight end of the supplied hydraulic hose (P/N 214-1000-835) on the machine's existing Power Beyond fittings in the LS port.

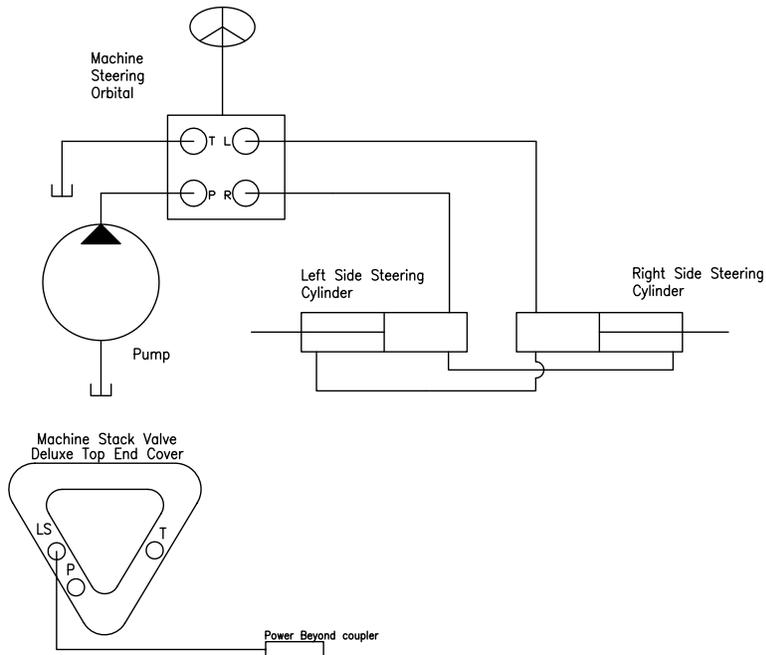
Note: It may be necessary to install a -6 ORFS M/F 90° swivel elbow fitting (P/N 333-0012-065) to achieve the connection.

11. Install the 90° end of the installed hydraulic hose to the fitting installed in Port LS STEER of the SmarTrax valve.

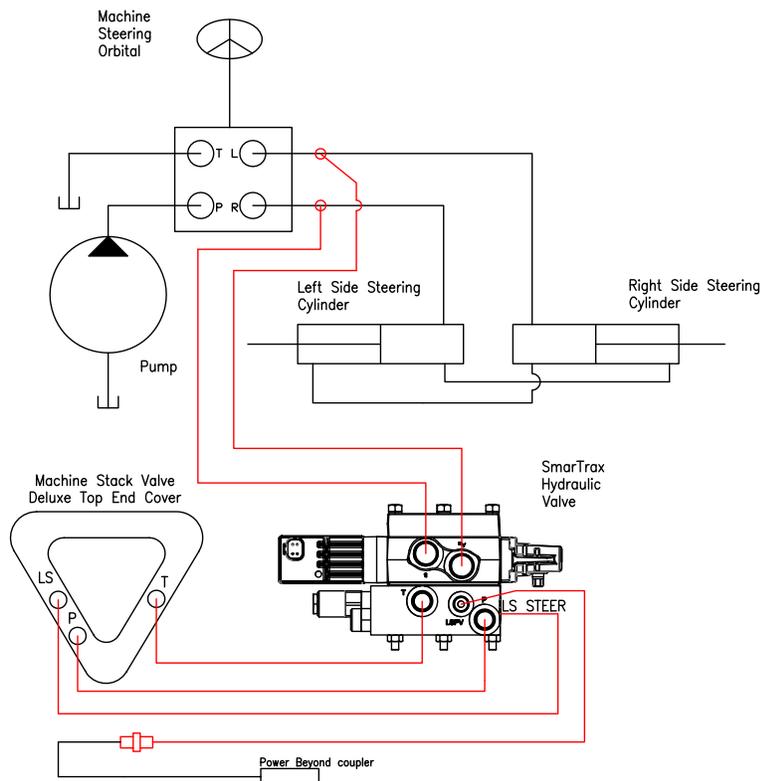
Hydraulic Schematic

Deluxe Top End Cover

Before SmarTrax Installation

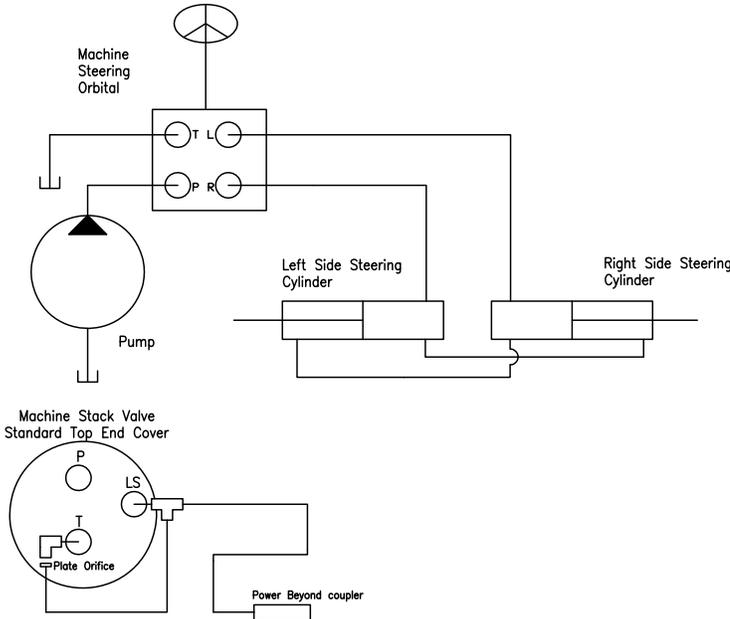


After SmarTrax Installation

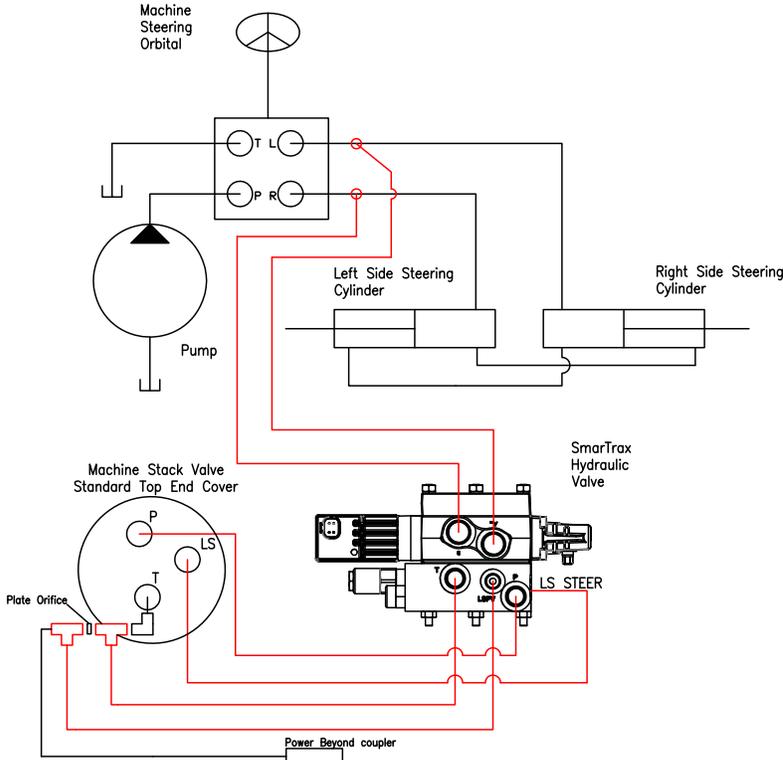


Standard Top End Cover

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 312-1001-035) on the base-end (where the cable connects) 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. WAS Mounted to the Machine



1. Turn the machine's front wheels to the right to access the right front axle.

FIGURE 3. Base-End of Sensor Installed on Machine



2. Remove a differential housing bolt on the front-right side of the machine's axle.
3. Align the base mounting bracket (P/N 107-0172-051) over the hole and replace the housing bolt.
4. Secure the base-end of the WAS (P/N 063-0181-017) to the base mounting bracket using one M10 x 1.5" nylon insert lock nut (P/N 312-4000-208) and one washer (P/N 313-2300-014).
5. Remove two of the machine's fender mounting bolts.
6. Install the rod mounting bracket (P/N 107-0172-061) under the steering arm using two M10 x 1.5" x 70 mm class 8.8 metric hex bolts (P/N 311-0070-033), four washers (P/N 313-2300-014) and two M10 x 1.5" nylon insert lock nuts (P/N 312-4000-208).

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



7. Mount the rod-end of the WAS to the rod mounting bracket using a 3/8" ID x 3/4" OD x 1" L plastic spacer (P/N 107-0172-038), one M10 x 1.5" x 70 mm class 8.8 metric hex bolt (P/N 311-0070-033) and 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.

8. Route the cable from the base-end of the WAS along the tractor frame, routing it so that it is not near moving parts or heat sources. Secure with plastic cable ties as necessary.

CHAPTER

5

*Cab Component
Installation*

*Install the Power Connection - SmarTrax-
Only Systems*

For SmarTrax-only systems (no other Raven CAN node is present), the SmarTrax power cable (P/N 115-4001-085) must be installed. Refer to the CAN node wiring diagram on page 31 for information on selecting the power source.

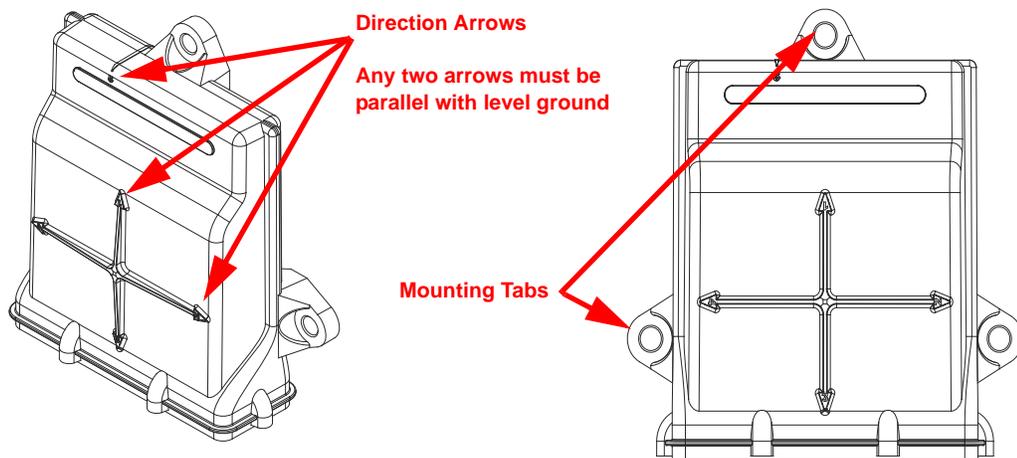
If additional CAN systems are present, refer to wiring diagram 054-5000-001 located on the Raven website:

www.ravenhelp.com

Install the SmarTrax Node

Node Mounting Locations

FIGURE 1. Node Mounting



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

- The node is not weatherproof. Mount the SmarTrax node inside the machine's cab on a flat, level surface.
- 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.

Mount the SmarTrax Node

FIGURE 2. Machine's Existing Access Plate



1. Remove the factory-installed access plate on the floor of the cab (to the left side of the seat, 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 3. Node Installed on Node Mounting Plate



3. Secure the SmarTrax node (P/N 063-0173-228) to the node mounting plate using three 3/8"-16 nyloc nuts (P/N 312-4000-061).

Install the Node Harness

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. Connect the node harness to the installed power cable (P/N 115-4001-085), if applicable.

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.
4. Locate the ENABLE connector on the node harness and connect it to the foot switch cable connector.

Install the Valve Harness

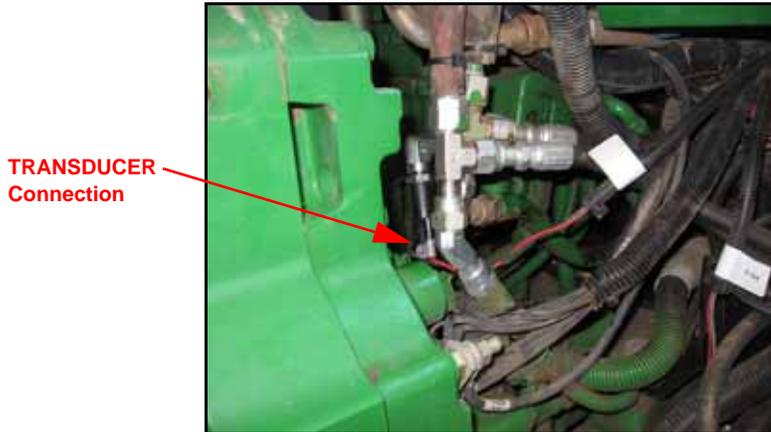
1. Locate the valve harness (P/N 115-4001-122).
2. Route the 12-pin connector toward the node harness (P/N 115-4001-109).
3. Plug the 12-pin connector of the valve harness into the mating connector of the node harness.
4. Route the valve harness through the bottom of the cab.

FIGURE 5. WAS Harness Connection



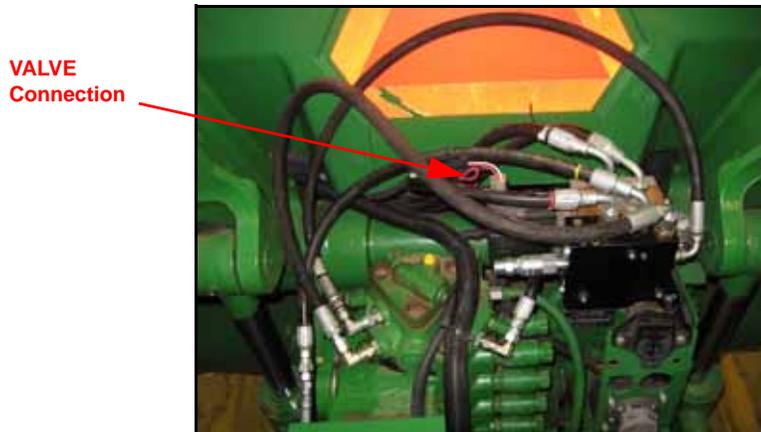
5. Connect the WAS harness connection to the connector on the installed WAS.

FIGURE 6. Pressure Transducer Harness Connection



6. Connect the TRANSDUCER connector to the open transducer port on the end of the machine's SCU.

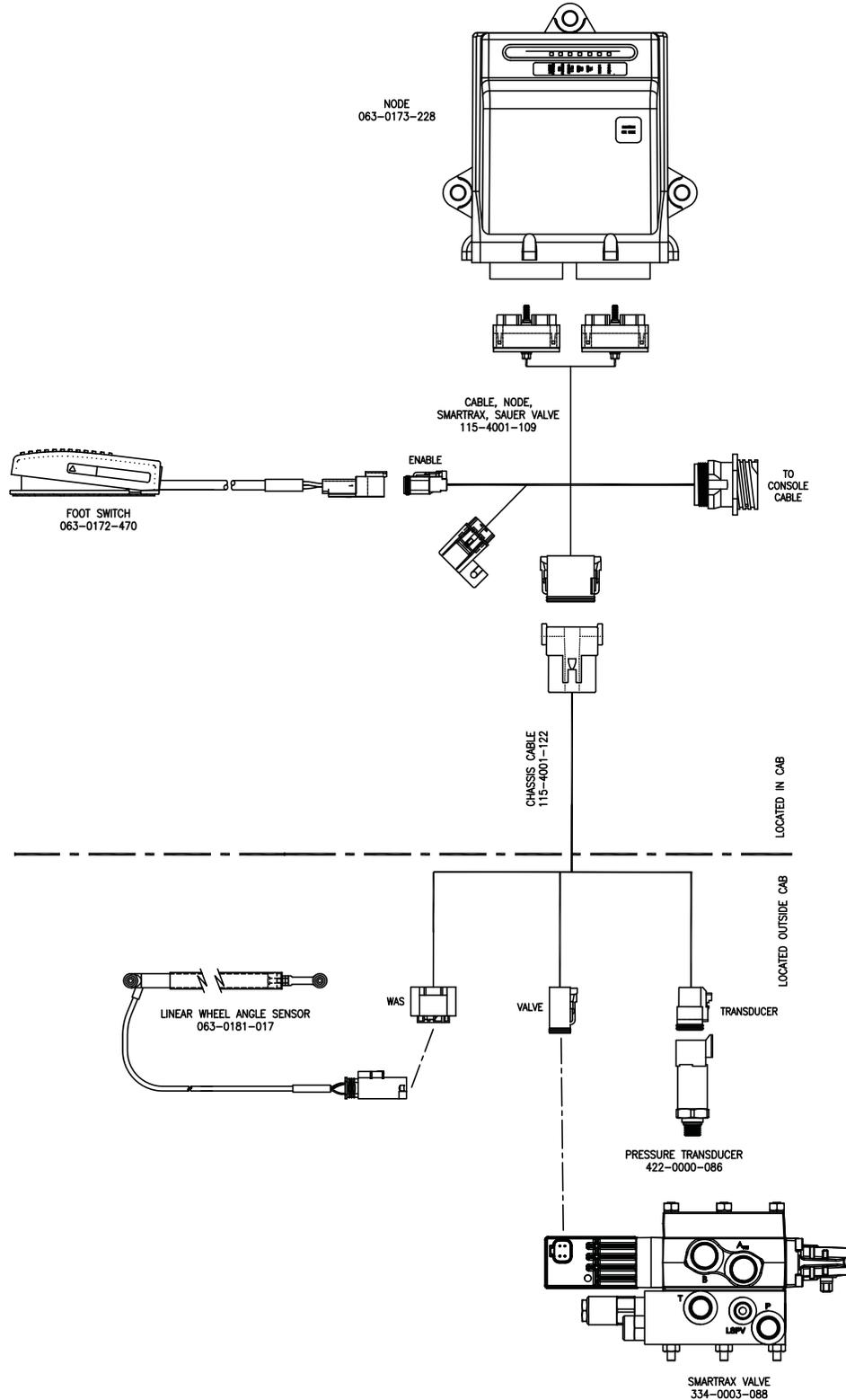
FIGURE 7. Valve Harness Connections



7. Connect the VALVE connector on the valve harness to the open 4-pin connector on top of the SmarTrax valve.

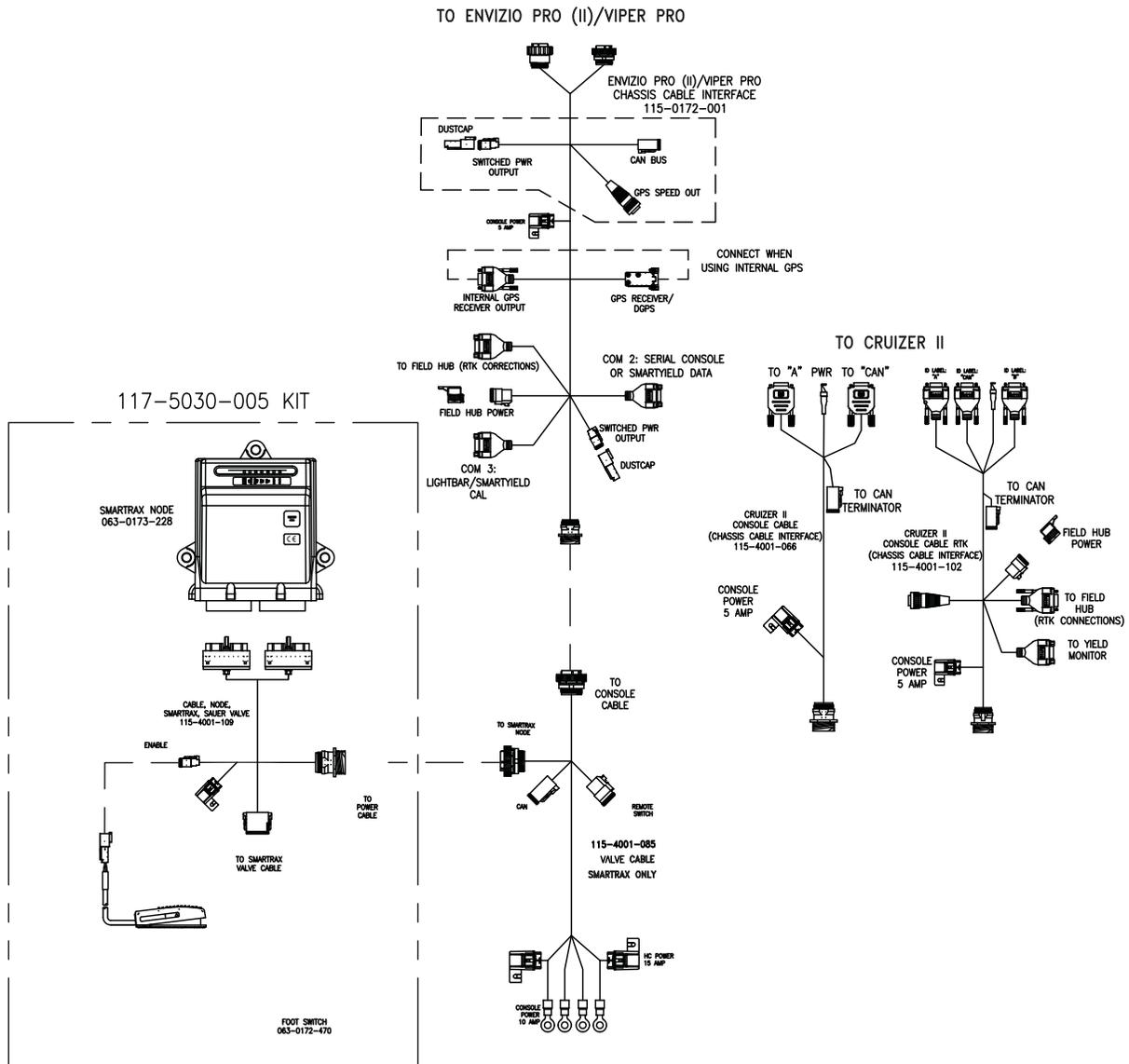
System Diagrams

SmarTrax-Only Systems



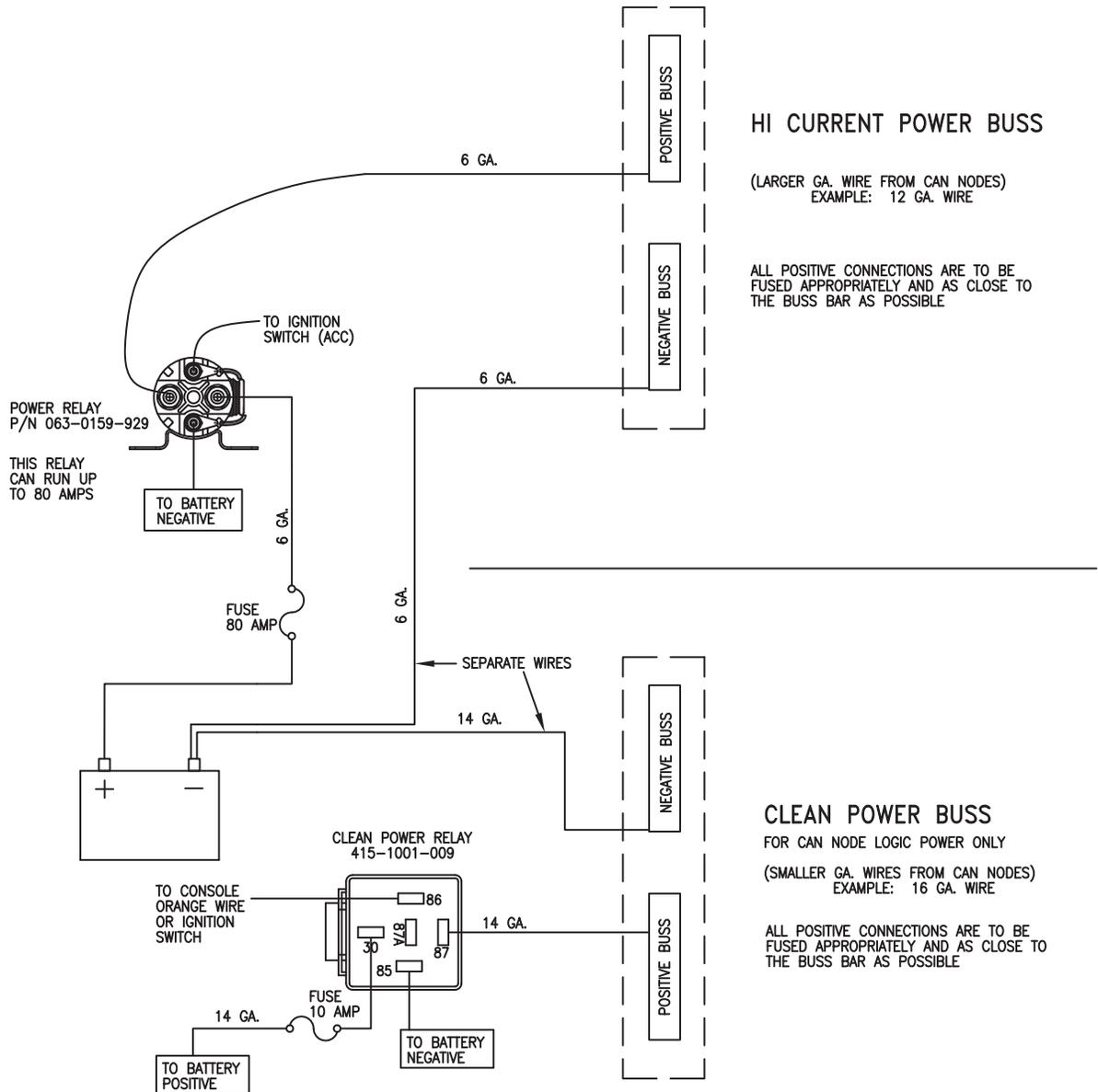
Multiple CAN Systems

GEN II SMARTRAX SYSTEM CABLING CONNECTIONS



Node Wiring Diagram

CAN NODE WIRING



**⚠ 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.

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 & SmartSteer 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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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.

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R A V E N

John Deere 8x20 Series
w/o Independent Link Suspension
SmarTrax™ Installation Manual
(P/N 016-4001-007 Rev A 08/11 E18043)

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