

# ***SmarTrax***

*Straight shot to easy steering*



## Supplement & Installation Manual

**John Deere 4920**

### **DISCLAIMER**

While every effort has been made to ensure the accuracy of this document, Raven Industries assumes no responsibility for omissions and errors. Neither is any liability assumed for damages resulting from the use of information contained herein.

Raven Industries shall not be held responsible or liable for the effects of atmospheric conditions and sunspot activity on the performance of our products.

Raven Industries cannot guarantee the accuracy, integrity, continuity, or availability of the GPS signal from the US Department of Defense/NAVSTAR GPS satellites, the OmniSTAR correction service or the WAAS correction service.

Raven Industries accepts no responsibility for the use of the signal for other than the stated purpose. Raven Industries shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss or impairment of data arising out of the use or inability to use the Smartrax or any of its components.

## CHAPTER

# 1

## INTRODUCTION

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



## Basic Kit Contents

Below you will see the kit contents that you should have received with this SmarTrax Kit.

### John Deere 4920 Series SmarTrax Kit Contents

Quantity	Item Description	Part Number
1	SENSOR, YAW	063-0172-684
1	PLATE, MOUNTING, UNIVERSAL HYDRAULIC, PART "B"	107-0171-578
1	CABLE, HYDRAULIC SOLENOID / OVERRIDE	115-0171-775
1	WELDMENT, BRACKET, UNIVERSAL HYD. MTG., PART "A"	116-0159-527
1	KIT, HYD., SMARTRAX JD 4920	117-0194-061
1	SWITCH, PRESSURE, MICRO, H.D., 15-100 BAR ADJ. W/FTGS.	422-0000-074
4	BOLT, 5/16"-18 x 7/8" HEX HEAD	311-0052-104
4	BOLT, HEX, 3/8"-16 UNC x 1/2"	311-0054-105
2	BOLT, 5/8	311-0060-093
4	NUT, 3/8"-16	312-1001-037
2	NUT, 5/8"	312-1001-049
4	WASHER, LOCK, 5/16"	313-1000-019
4	WASHER, LOCK, SPLIT, 3/8"	313-1000-022
4	WASHER, FLAT, 3/8"	313-2300-013
2	WASHER	313-2300-044
1	VALVE, HYDRAULIC, CLOSED CENTER LS W/RELIEF	334-0003-066
1	MANUAL, INSTALLATION	016-0190-061
1	MANUAL, INSTALLATION, SMARTRAX	016-9001-021
3	FTG, ELBOW, 45° SWIVEL, -6 JIC M/F	333-0012-027
3	FTG, ELBOW, 90° SWIVEL, -6 JIC M/F	333-0012-042
4	FTG, ADAPTER, SWIVEL RUN TEE, -6 ORFS M/M/F	333-0012-069
2	HOSE, HYD., -6 ORFS (F) 90° to -6 JIC(F), 44"	214-1000-342
1	HOSE, HYD., -6 ORFS (M) to -6 JIC (F), 13"	214-1000-344
2	HOSE, HYD., -6 JIF (F) to -6 ORFS (F), 44"	214-1000-346
1	HOSE, HYD., -6 JIC (F) to -6 ORFS (F), 40"	214-1000-347

## CHAPTER

## 2

SAFETY

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## Hydraulic Safety Requirements



**Important:** Hydraulics are under pressure. Never attempt to open or work on a hydraulic system with the equipment running. Care should always be taken when first opening a system that was previously pressurized.

When disconnecting the hydraulic hoses or when purging is required, be aware that the hydraulic oil within the machine system may be extremely hot and under high pressure. Caution must be exercised. Any work carried out on the hydraulic system must be performed in accordance with the machine manufacturers's approved maintenance instructions. Raven Industries recommends that appropriate protective equipment be worn when working on the hydraulic system. Objects or materials that are able to bypass the machine's hydraulic filtration system will adversely reduce performance and possibly damage the hydraulic valves.

## Electrical Safety Requirements

Do not reverse the power leads. Doing so will cause severe damage to the equipment. Always check to make sure that the power leads are connected to the right polarity as marked. Ensure that the power cable is the last cable to be connected.

## **Contacting Raven Industries**

We welcome your feedback about this manual. If you have any comments or suggestions for improvement, please let us know by contacting our Customer Support Center by any of the following methods:

- **Via phone:** 1-800-243-5435
- **Via mail:**  
Raven Industries  
Flow Control Division  
205 E. 6th St.  
Sioux Falls, SD 57104
- **Via email:** [fcinfo@ravenind.com](mailto:fcinfo@ravenind.com)

## CHAPTER

# 3

## MOUNTING THE UNIVERSAL BRACKET AND VALVE

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1. Mount the universal bracket to the left side of the frame rail, as shown in picture.
2. Align the flat mounting bracket with the two large holes in the lower portion of the frame rail. Use the supplied 5/8" bolts to fasten the bracket to the machine.
3. Using the supplied 3/8" bolts, attach the 'T' shaped mounting bracket to the flat mounting bracket.
4. Using the supplied bolts, attach the hydraulic valve to the front side of the 'T' shaped bracket.



**Notes:**



## CHAPTER

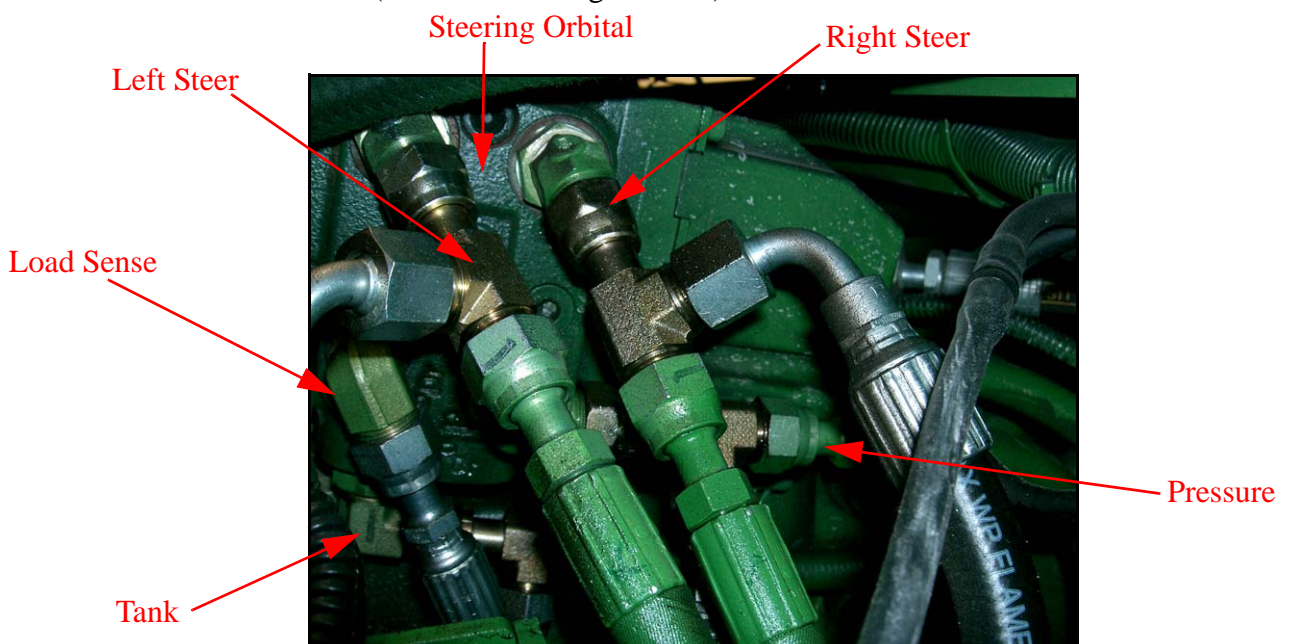
## 4

## HYDRAULICS

## Routing the Hydraulic Hoses

### Installing Pressure, Tank, and Steering Hoses

1. Access to the steering orbital is located below the front left corner of the cab.
2. Disconnect the pressure, the tank, and the left and right hoses from the steering orbital. Install tee fittings onto ports and then reconnect the original hoses.
3. Attach supplied tank hose (P/N 214-1000-346) to the tank port and then to the 'T' port on the SmarTrax Valve.
4. Attach the supplied pressure hose (P/N 214-1000-346) to the pressure port and then to the 'P' port on the SmarTrax Valve.
5. Attach the supplied left and right hoses (P/N 214-1000-342) to the left and right ports and then to the 'A' and 'B' ports on the SmarTrax Valve (left to 'A' and right to 'B').



### Connecting Load Sense- Priority and Steer Hoses

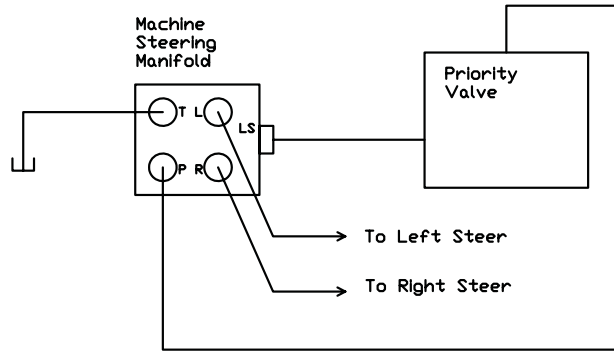
1. Disconnect the original load sense hose from the steering orbital.
2. Connect the 'LSPV' hose (P/N 214-1000-344) to the disconnected load sense hose. Connect the other end of the hose to the "LSPV" port on the SmarTrax Valve.
3. Install the 'LS' steer hose (P/N 214-1000-347), by connecting one end to the open load sense port on the steering orbital and the other end to the 'LS' steer port on the SmarTrax Valve.



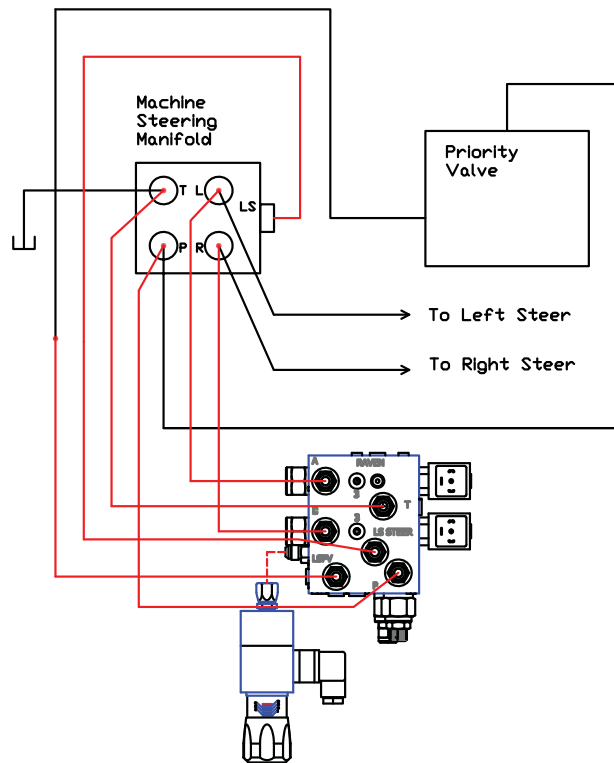
**Note:** Use the provided 90° elbows, as needed, to route hoses from the SmarTrax Valve.

4. Connect the pressure switch directly to the 'PS' port on the SmarTrax Valve.

Before Smartrax Installation



After Smartrax Installation



**Notes:**

## CHAPTER

## 5

**SENSOR MOUNTING**

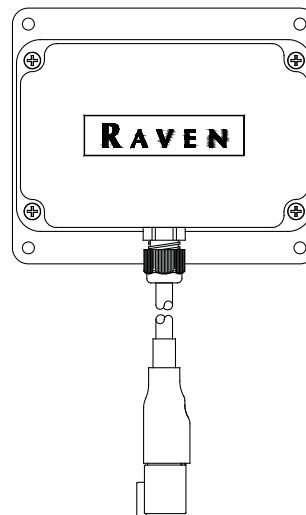
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**Yaw Sensor  
Installation**

## Mounting the Yaw Sensor

Installing the Raven Yaw Sensor is quick and easy. Raven recommends that you keep the following points in mind while installing the sensor:

- The sensor is not weatherproof. Mount the sensor inside of the machine's cab or drivers compartment.
- Mount the sensor to a flat surface parallel to the ground with the Raven logo facing up. The floor of the cab is generally ideal.
- Once mounted, the sensor should remain fixed in relation to the vehicle. The sensor should not become loose or rotate due to machine vibration or movement.
- The sensor should also be mounted in a location where it will not be kicked or jarred during normal equipment operation.
- The cable does not need to be oriented in any way to the direction of travel of the vehicle. Mount the sensor to with the cable routed to avoid tripping hazards or damaging the cable or yaw sensor.



## **Installation**

- Mount the Yaw Sensor to the floor inside of the vehicle's cab using the double sided tape on the sensor or steel bolts or screws through the mounting plate. See the Mounting the Yaw Sensor section on the previous page for mounting location considerations.
- Connect the supplied sensor cable to the Yaw Sensor and to the Yaw Sensor connector on the SmarTrax Interface cable.

## CHAPTER

# 6

## START-UP PROCEDURES

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Prior to using the SmarTrax system:

- Turn the wheels fully from side to side numerous times to remove air from the hydraulic system.



**Important:** Time the wheels for a full left to right and right to left time of approximately 6 seconds. Refer to the Universal Kit Manual for additional instructions.

- Adjust the Pressure Switch to the most responsive setting. Refer to the Universal Kit Manual for instructions.

**Notes:**



A decorative border resembling a spiral notebook, with a series of overlapping loops forming a frame around the text.

# **RAVEN INDUSTRIES**

## **LIMITED WARRANTY**

### **WHAT IS COVERED?**

This warranty covers all defects in workmanship or materials in your Raven Flow Control Product under normal use, maintenance, and service.

### **HOW LONG IS THE COVERAGE PERIOD?**

This warranty coverage runs for 12 months from the purchase date of your Raven Flow Control Product. This warranty coverage applies only to the original owner and is not transferrable.

### **HOW CAN YOU GET SERVICE?**

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

### **WHAT WILL RAVEN INDUSTRIES DO?**

When our inspection proves the warranty claim, we will, at our option, repair or replace the defective part and pay for return freight.

### **WHAT DOES THIS WARRANTY NOT COVER?**

Raven Industries will not assume any expense or liability for repairs made outside our plant without written consent. We are not responsible for damage to any associated equipment or product and will not be liable for loss of profit or other special damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person is authorized to assume for us any liability. Damages caused by normal wear and tear, mis-use, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.



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