

**Case IH FLX 4300 (2000 & Newer)  
SmarTrax™ Installation Manual**

*P/N 016-0190-018 Rev D 09/15*

## ***Disclaimer***

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

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## 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.



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

# Basic Kit Contents

## CaseIH FLX4300, 2000 & Newer SmarTrax Kit Contents

Quantity	Item Description	Part Number
1	Kit, SPS	016-0181-001
1	Cable, Hydraulic Solenoid/Override	115-0171-466
1	Weldment, Bracket, Hyd. Mounting, FLX 4300	116-0159-516
1	Switch, Pressure, Micro, HD, 15-100 Bar Adj. W/Ftgs	422-0000-074
4	Bolt, 5/16"-18 x 7/8" Hex Head	311-0052-104
2	Bolt, Hex, 1/2"-13 UNC x 1 1/2" SS	311-0058-186
2	Nut, Hex, 1/2"-13 Zinc	312-1001-043
4	Washer, Lock, 5/16"	313-1000-019
1	Valve, Hyd., Closed Center LS W/Relief	334-0003-066
1	Manual, Installation	016-0190-018
1	Manual, Installation, Smartrax	016-9001-021
1	Label, Warning, Do Not Step	041-0159-688
1	Label, Warning, Tampering	041-0159-689
3	Ftg., Elbow, 45° Swivel, -6 JIC M/F	333-0012-027
4	Ftg., Adapter, Swivel Run Tee, -8 ORFS M/M/F	333-0012-028
3	Ftg., Elbow, 90° Swivel, -6 JIC M/F	333-0012-042
4	Hose, Hyd., 8FF90S -6 78" 6JF	214-1000-038
1	Hose, Hyd., 4FM -4 14" 6JF	214-1000-041
1	Hose, Hyd., 4FF -4 82" 6JF	214-1000-042

## 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 manufacturer'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:** [fcdinfo@ravenind.com](mailto:fcdinfo@ravenind.com)

## CHAPTER

# 3

### INSTALLING THE UNIVERSAL MOUNTING BRACKET

1. The mounting location for the supplied mounting bracket is on the left hand side of the machine, located between the left front fender and the hydraulic oil reservoir, underneath the catwalk.

Mounting location  
for steering control  
valve and bracket



**Mounting Location for Hydraulic Valve**

2. Mount the steering manifold to the bracket using the supplied hardware.



Mounting location of the hydraulic bracket

**Hole locations for hydraulic bracket**



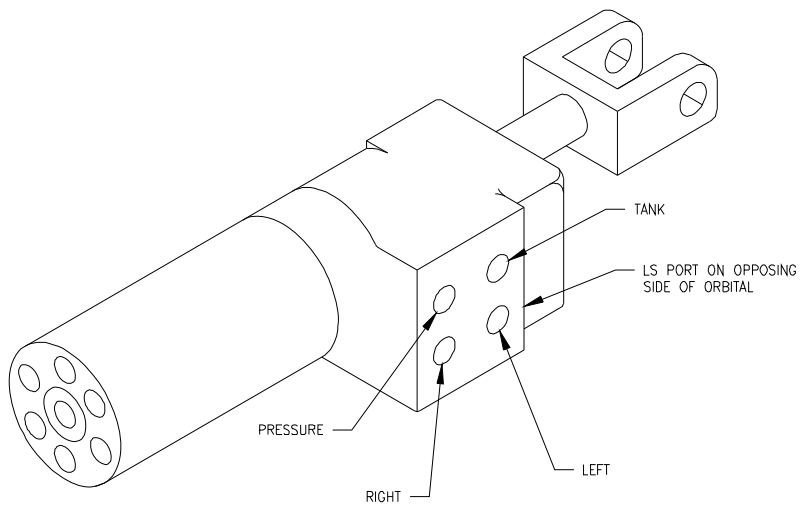
# CHAPTER

# 4

## HYDRAULICS

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CNH FLX4300  
HYDRAULIC ORBITAL SCHEMATIC



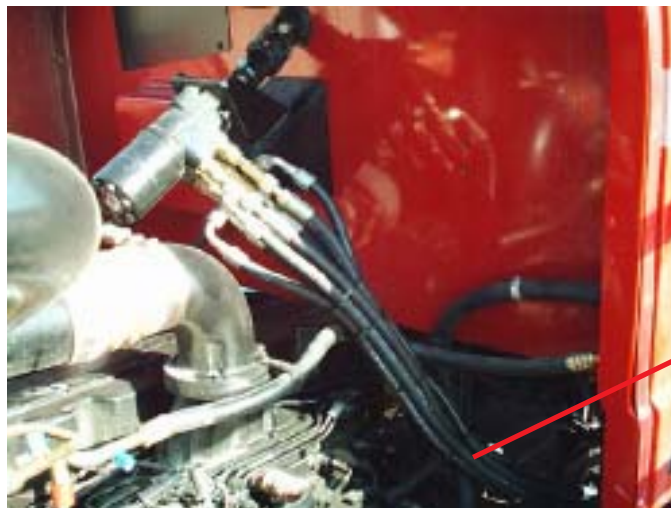
## Connecting and Routing Left, Right, Pressure, and Tank Hoses

1. Begin by labeling existing hoses on orbital left, right, pressure, and tank to avoid mixing up hoses.
2. Remove the L, R, T, and P hoses from the orbital.
3. Install a provided JIC run tee on each of the ports.



**Hose connection to orbital tee fitting**

4. Reconnect original hoses to their respective ports.
5. Attach 90° end of supplied hoses (P/N 214-1000-038) to the P, T, L, & R ports on the steering orbital then route hoses to the Smartrax valve.
6. Connect Left Hose to A port, Right hose to B port, Pressure hose to P port, Tank hose to T port using the supplied 90° and 45° fittings as required.



Hose routing to the steering control valve

**Tee connections and hose routing**

## **Connecting and Routing the LS-PV Hose**

1. Begin by removing the load sense hose from the steering orbital.
2. Once the hose is removed, connect the end of the hose that was just removed from the steering orbital to the supplied LS-PV hose (P/N 214-1000-041).
3. Run the original LS hose with the newly connected LS-PV hose back to the steering control valve and connect the other end of the LS-PV hose to the LS-PV port on the steering control valve.

## Connecting and Routing the LS-Steer Hose

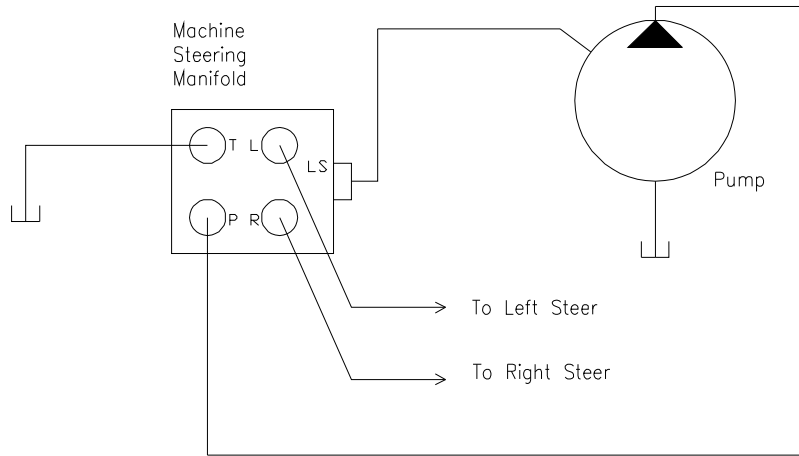
1. Begin by connecting the supplied LS-Steer hose (P/N 214-1000-042) to the load sense port on the machine steering orbital.
2. Once the hose is connected, route the hose back to the steering control valve.
3. Connect the LS-Steer hose to the LS Steer port on the SmarTrax valve.
4. Attach the pressure switch directly to the PS port on the SmarTrax valve.

Connect the supplied LS-STEER line to this point and run this hose to the LS-STEER port on the steering control valve.

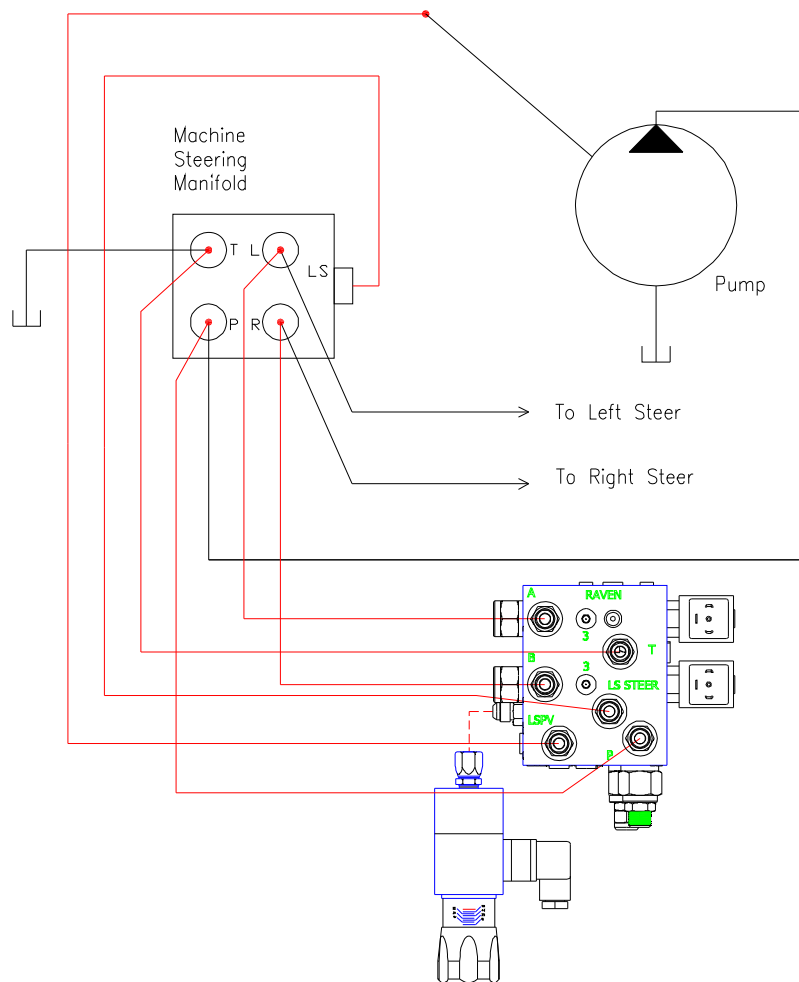


**LS-STEER Line connection point to steering orbital**

Before Smartrax Installation



After Smartrax Installation



**Notes:**

# CHAPTER 5

## STEERING POSITION SENSOR & WIRING HARNES INSTALLATION

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### Installing the Steering Position Sensor (SPS)

Top figure shows the approximate mounting position of the steering position sensor. Attach one end of the steering position sensor to the steering tie-rod using the provided band clamps, screws, and brackets. Find a suitable place on the axle and connect the steering position sensor using the remaining band clamps and bracket.



**Helpful Hint:** It may be necessary to fabricate a new bracket like that shown in the bottom figure to properly position the steering position sensor.



Attach the steering position sensor to the axle, or fabricate a bracket like the one shown and attach it to the axle. Then connect the SPS to that.



## **Cable Connection and Routing**

1. Connect ends of the cable to the valve, pressure switch, and SPS.
2. Secure the cable away from moving parts and heat sources.



## CHAPTER

# 6

## START-UP PROCEDURES

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After installing the SmarTrax on your machine, always follow these start-up procedures.

- ◆ Make sure the Steering Position Sensor does not over-extend or over-compress when turning the wheels.
- ◆ 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 8 seconds. Refer to the Universal Kit Manual for additional instructions on this.

- ◆ Adjust the pressure switch to the most responsive setting. Refer to the Universal Kit Manual for instructions on this.

**Notes:**

**RAVEN**

# **RAVEN INDUSTRIES**

## **Limited Warranty**

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### ***What Does this Warranty Cover?***

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

### ***How Long is the Coverage Period?***

Raven Applied Technology 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?***

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

### ***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 or other special 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.