

SmartTrax»»»

Straight shot to easy steering



Case IH 2100-2300 Series Combine

Supplement & Installation Manual

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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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

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.

CaseIH 2100-2300 Series Combine SmarTrax Kit Contents

Quantity	Item Description	Part Number
1	SENSOR ASSEMBLY, LINEAR STEERING POSITION	063-0181-001
1	PLATE, MOUNTING, UNIVERSAL HYDRAULIC, PART "B"	107-0171-578
1	CABLE, 20' EXTENSION, STEERING POSITION SENSOR	115-0171-501
1	WELDMENT, BRACKET, UNIVERSAL HYD. MTG., PART "A"	116-0159-527
1	HOSE, HYDRAULIC, 13/16" ORFS (F) TO 9/16" JIC (F), 54" LG	214-1000-378
1	HOSE, HYDRAULIC, 13/16" ORFS (F) TO 9/16" JIC (F), 54" LG	214-1000-379
1	HOSE, HYDRAULIC, 11/16" ORFS (F) TO 9/16" JIC (F), 54" LG	214-1000-380
1	HOSE, HYDRAULIC, 11/16" ORFS (F) TO 9/16" JIC (F), 54" LG	214-1000-381
1	HOSE, HYDRAULIC, 9/16" ORFS (F) TO 9/16" JIC (F), 54" LG	214-1000-382
1	SWITCH, PRESSURE, MICRO, H.D., 15-100 BAR ADJ. W/FTGS.	422-0000-074
2	FITTING, ADAPTER, SWIVEL RUN TEE, 13/16" ORFS	333-0012-028
2	FITTING, ELBOW 90° SWIVEL, 11/16" ORFS	333-0012-065
2	FITTING, ELBOW, 90° SWIVEL, 13/16" ORFS	333-0012-067
2	FITTING, ADAPTER, SWIVEL RUN TEE, 11/16" ORFS	333-0012-069
1	FTG., ADAPTER, STRT., 9/16" ORFS (M)-7/16" SAE O-RING (M)	333-0012-209
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
4	NUT, 3/8"-16	312-1001-037
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
1	VALVE, HYDRAULIC, CLOSED CENTER LS	334-0003-062
1	MANUAL, INSTALLATION	016-0190-068
1	MANUAL, INSTALLATION, SMARTRAX	016-9001-021
1	LABEL, WARNING, DO NOT STEP	041-0159-688
1	LABEL, WARNING, TAMPERING	041-0159-689
1	CABLE, HYDRAULIC SOLENOID / OVERRIDE	115-0171-466

CHAPTER

2

SAFETY

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

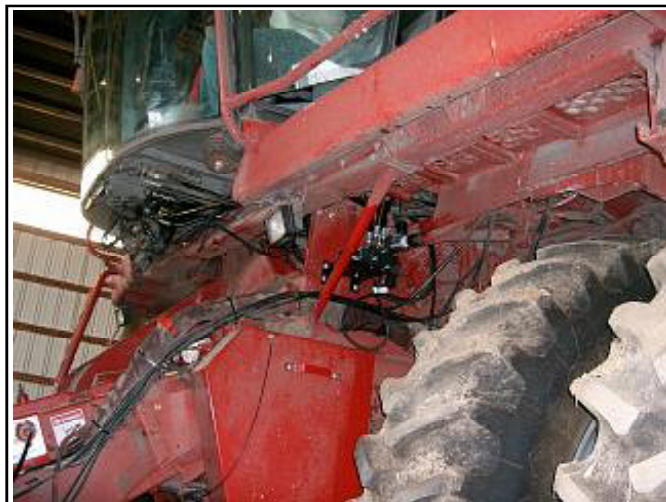
- ◆ **Via email:** fcinfo@ravenind.com

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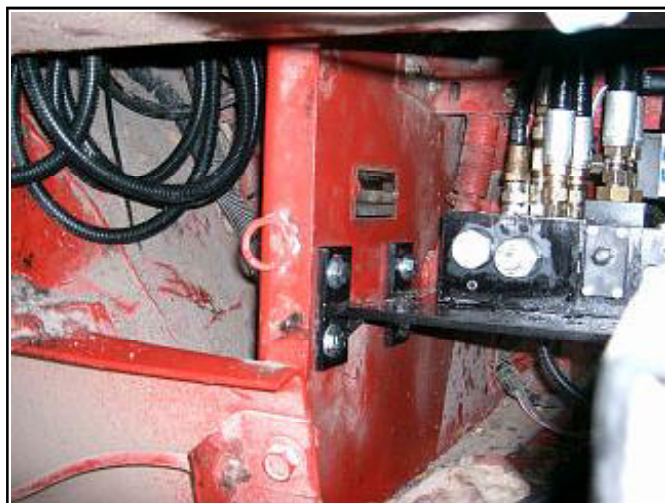
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MOUNTING THE UNIVERSAL BRACKET AND VALVE

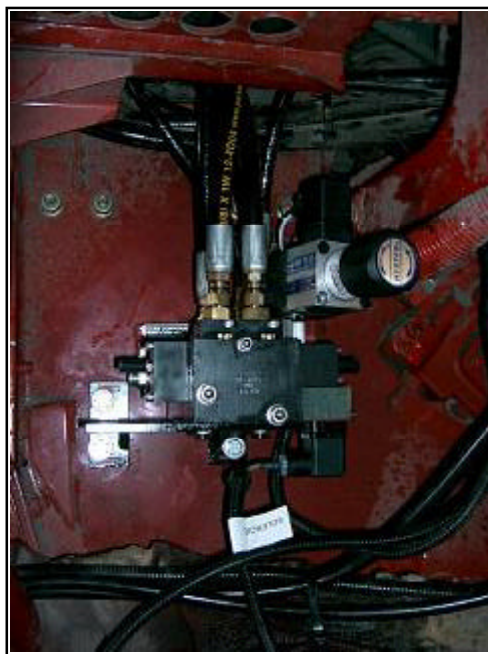
1. Position the bracket on a flat support plate beneath the cab door on the left hand side of the machine.
2. Drill holes in the support plate and attach the universal bracket using the provided mounting bolts.
3. Align the proper holes on the bracket to those matching the holes in the hydraulic valve.
4. Attach the Raven hydraulic valve to the top portion of the bracket using the two metric bolts provided.



Position universal bracket and valve in location shown



Drill holes in support plate and attach hydraulic valve in position shown.



Pressure Switch

1. Connect pressure switch to PS port on steering assist valve.

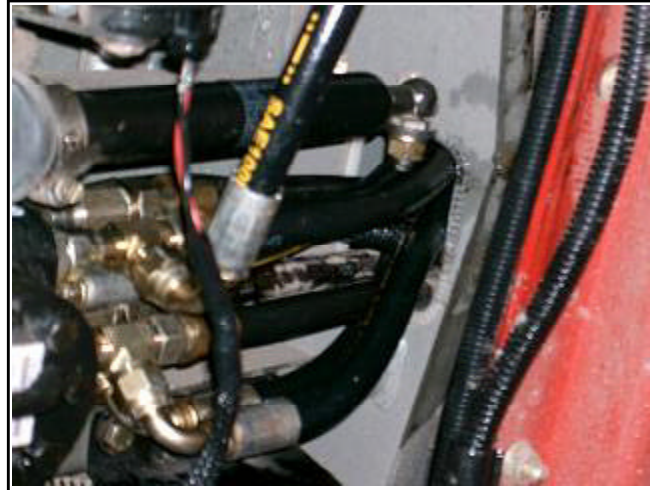
CHAPTER

4

HYDRAULICS



Helpful Hint: Prior to disconnecting hoses, you may wish to trace hoses and label ports on hoses to ensure correct hose gets re-connected to right ports on steering orbital. This model of combine has ports labeled R, P, T, L, and LS stamped onto face of the orbital. Refer to these during installation.



Route new hoses up from the steering assist valve, between cab and support plate, and then forward toward the steering orbital through the existing hole in the cab support. (This will follow existing hose routing to the orbital.)

Installing the Tank Port Hose

1. Remove the existing tank to orbital hose at the orbital and attach a provided 13/16" tee fitting to the orbital.
2. Re-connect hose to the tee fitting.
3. Connect one end of the tank hose to the tee and one end to the "T" port on the steering assist valve.



Helpful Hint: You may wish to install an elbow fitting on the orbital or on the steering assist valve to properly route the hose.

Installing the A-Port to Left Steer Hose

1. Remove the existing left steer hose at the orbital and attach a provided 13/16" tee fitting to the orbital
2. Re-connect hose to the tee fitting.
3. Connect one end of the "A to left steer" hose to the tee and the other end to the "A" port on the steering assist valve.



Helpful Hint: You may wish to install an elbow fitting on the orbital or on the steering assist valve to properly route the hose.

Installing the LS-PV Hose

1. Remove the existing Load sense hose at the orbital.
2. Remove the existing LS-PV port fitting in the Raven steering assist valve and insert the provided 7/16" O-Ring to ORFS fitting into the open port.
3. Connect the open end of the original load sense hose to the LS-PV port on the steering assist valve.

Installing the LS-Steer Hose

1. Attach the proper end of the provided LS-Steer hose to the LS-Steer port on the Raven steering valve.
2. Attach the remaining open end to the load sense port on the steering orbital.

Installing the Pressure Hose

1. Remove the existing pressure to orbital hose at the orbital and attach a provided 11/16" tee fitting to the orbital.
2. Re-connect hose to the tee fitting.
3. Connect one end of the "Pressure" hose to the tee and one end to the "P" port on the steering assist valve.



Helpful Hint: You may wish to install an elbow fitting on the orbital or on the steering assist valve to properly route the hose.

Installing the B-Port to Right Steer Hose

1. Remove the existing right steer hose at the orbital and attach a provided 11/16" tee fitting to the orbital
2. Re-connect hose to the tee fitting.
3. Connect one end of the "B to right steer" hose to the tee and the other end to the "B" port on the steering assist valve.



Helpful Hint: You may wish to install an elbow fitting on the orbital or on the steering assist valve to properly route the hose.

Notes:

CHAPTER

5

STEERING POSITION SENSOR INSTALLATION

Mounting the Steering Position Sensor (SPS)

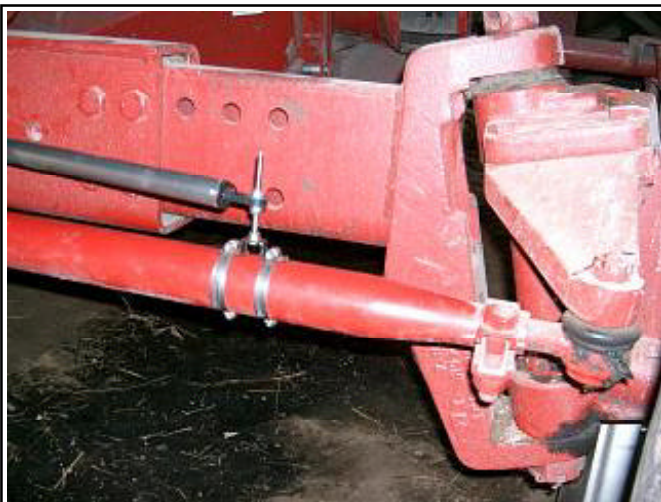
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1. Attach the Steering Position Sensor to the right hand side of the machine, in the approximate position shown.
2. Connect non-wired end of the sensor to the tie rod of the steering linkage.
3. Connect the other end to the adjustable rear axle assembly.



Helpful Hint: You may wish to weld the provided SPS bracket to the axle assembly, or fabricate a new bracket to attach the SPS.



Attach one end of SPS to tie rod



Attach other end to rear axle assembly

CHAPTER

6

START-UP PROCEDURES

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

- ◆ Make sure the Steering Position Sensor rotates freely when turning the wheels.
- ◆ Turn the wheels fully from side to side numerous times to remove air from the hydraulic system.
- ◆ Time the wheels for full left to right and right to left time of approximately 8 - 10 seconds. Refer to the Universal Kit Manual for instructions on this.
- ◆ Adjust the pressure switch to the most responsive setting. Refer to the Universal Kit Manual for instructions on this.

Notes:



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, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.

RAVEN



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