
**Case IH Magnum and New Holland
T80X0/T8.XXX Series Tier 4A and
Older - Steering Ready SmarTrax™
Installation Manual**

P/N 016-5032-001 Rev. C

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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: Case IH
MODEL: Magnum

MAKE: New Holland
MODEL: T80X0, T8.XXX

FIGURE 1. New Holland T8.300



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:

- Install the GPS antenna on the front center of the machine's cab.
- 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 system 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.

Updates

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

<http://www.ravenhelp.com>

At Raven Industries, we strive to make your experience with our products as rewarding as possible. One way to improve this experience is to provide us with feedback on this manual.

Your feedback will help shape the future of our product documentation and the overall service we provide. We appreciate the opportunity to see ourselves as our customers see us and are eager to gather ideas on how we have been helping or how we can do better.

To serve you best, please send an email with the following information to

techwriting@ravenind.com

-Case IH Magnum and New Holland T80X0/T8.XXX Series Tier 4A and Older - Steering Ready SmarTrax™ Installation Manual

-P/N 016-5032-001 Rev. C

-Any comments or feedback (include chapter or page numbers if applicable).

-Let us know how long have you been using this or other Raven products.

We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.

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 117-5032-001)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - Case IH Magnum and New Holland T80X0/T8.XXX Series - Steering Ready SmarTrax Installation Manual	016-5032-001	1
Not Pictured	Manual - SmarTrax and SmartSteer Calibration & Operation	016-0171-277	1
	Node - SmarTrax RTK	063-0173-228	1
	Interface - Case IH Box	063-0173-038	1
	Cable - Case SmarTrax	115-4001-068	1
	Assembly - SmarTrax Enable Foot Switch	063-0172-470	1
	Switch - Master	412-2011-104	1

TABLE 2. Node Installation Kit (P/N 117-0197-078)

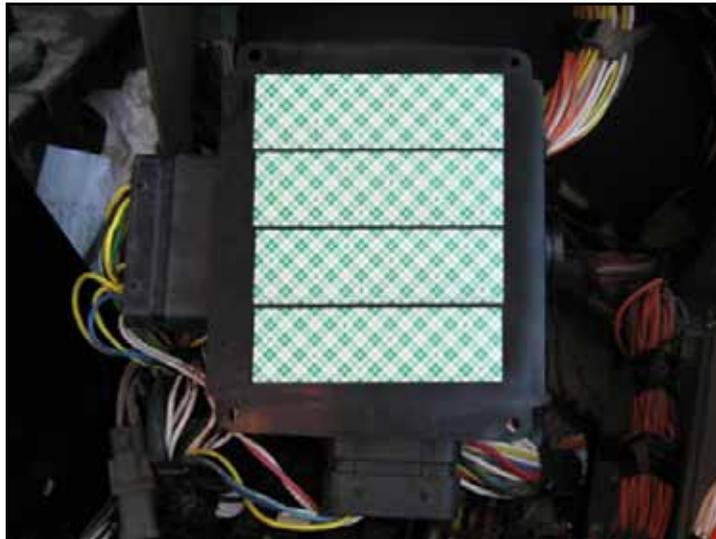
Picture	Item Description	Part Number	Qty.
	Plate - Node Mounting	107-0172-084	1
	Standoff - M6 x 40 mm M/F, 13 mm Hex	305-8000-008	2
	Nut - 3/8"-16 Nylon Insert Lock	312-4000-061	3

Note: The node installation kit is sold separately.

Install the Case IH Interface Box

1. Locate and remove the panel behind the operator's seat to access the existing Case steering control cables.
2. Connect the steering control cables to the Case IH interface box (P/N 063-0173-038).

FIGURE 1. Double-Sided Tape on Case IH Interface Box



3. Place four double-sided tape strips on the bottom of the Case interface box.
4. Connect the round, 37-pin connector from the node harness (P/N 115-4001-068) to the 37-pin port of the Case interface box.

FIGURE 2. Case IH Interface Box Installed



5. Remove the backing from the double-sided tape and adhere the Case interface box to the wall.
6. Pull the node harness out and route it along the wall.

FIGURE 3. Standoffs Installed



7. Reinstall the panel using the supplied standoffs (P/N 305-8000-008) to secure the panel on the top two studs.

Install the SmarTrax Node

FIGURE 4. Node Installed on Mounting Plate



1. Mount the SmarTrax node (P/N 063-0173-228) to the node mounting plate (P/N 107-0172-084) using three 3/8"-16 lock nuts (P/N 312-4000-061).

FIGURE 5. Node Plate Installed on Panel



2. Install the top of the node mounting plate on the installed standoffs and the bottom of the mounting plate on the machine's studs using the machine's nuts that were previously removed.

FIGURE 6. Node Cable Installed on Node



3. Install the two large, rectangular connectors of the node harness into the correct ports of the node, tightening the bolts on the connectors to secure the connections.

Install the Foot Switch

FIGURE 7. 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 (P/N 115-4001-068) and connect it to the foot switch cable connector.

Connect to the Steering Valve

1. Route the LS PWR cable connection outside the cab and toward the steering valve.

FIGURE 8. Valve Connection



2. Disconnect the machine's existing load sense solenoid connection on the steering valve.
3. Connect the LS PWR connection on the load sense solenoid.

Install the Master Switch (If Applicable)

FIGURE 9. Factory Installed Master Switch Options



Note: If the machine is already equipped with a master switch as shown in Figure 9, skip this section.

1. Locate and disconnect the MASTER connection on the node harness (P/N 115-4001-068).
2. Route the MASTER connector to the armrest console.
3. Locate an unused switch port on the armrest console and remove the plug.
4. Route the MASTER connector from the node harness to the open switch port through the bottom of the armrest console.
5. Connect the MASTER connector to the mating connector on the master switch (P/N 412-2011-104).
6. Feed the node harness wires and master switch wires into the armrest console.
7. Press on the switch casing to ensure the switch is securely installed.

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Install the Phoenix 200 Antenna (If Applicable)

FIGURE 10. Case IH/New Holland GPS Wiring



1. Install the Phoenix 200 antenna (P/N 063-0172-719) on the existing mounting plate on the cab roof.

2. Connect the Phoenix 200 to Case harness cable (P/N 115-4001-027) between the antenna and the Port A GPS roof connection.
3. Disconnect the RAVEN GPS connection from the DGPS IN connection on the node harness.
4. Connect the CASE GPS connection and the DGPS IN connection on the node harness together.

Note: *The RAVEN GPS connector is not used in the SmarTrax installation.*

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

Note: *The Raven Cruiser II RTK console with the 115-4001-099 console cable may be plugged directly into the node cable (P/N 115-4001-068). Any other Raven console and console cable combination requires a chassis harness cable connection.*

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 the SmarTrax System 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 on the chassis cable to the round 16-pin connector on the node harness (P/N 115-4001-068).
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 the SmarTrax System to an Existing Chassis Cable (If Applicable)

Note: *The Raven Cruiser II RTK console with the 115-4001-099 console cable may be plugged directly into the node cable (P/N 115-4001-068). Any other Raven console and console cable combination requires a chassis harness cable connection.*

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 harness (P/N 115-4001-068) to the remaining SmarTrax interface tee.

Calibrate the SmarTrax System

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

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