

R A V E N

SmarTrax™ Installation Manual



CAT Lexion 500 Series Combines
SV

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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: CAT

MODEL: Lexion 500 Series

FIGURE 1. CAT Lexion 590 R



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.

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 in the recommended location. Refer to the following table for the machine-specific antenna mounting location.

Machine Preset	Antenna X Position (left to right)	Antenna Y Position (fore/aft offset)	Antenna Z Position (ground to bottom of antenna)
CAT-Lexion 500 Series	Centered	19 ft. 4 in./5.892 m	12 ft. 3 in./3.733 m

- 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

- CAT Lexion 500 Series Combine SmarTrax™ Installation Manual*
- Manual No. 016-5030-027 Rev. A*
- 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 117-5030-027)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - CAT Lexion 500 Series SV SmarTrax Installation	016-5030-027	1
	Valve - SmarTrax Hydraulic	334-0003-090	1
	Bracket - WAS Mounting	107-0172-030	1
	Bracket - Node Mounting	107-0172-055	1
	Bracket - Field Computer Angle Mounting	107-0172-298	1
	Bracket - Hydraulic Valve Mounting	107-0172-299	1
	Bracket - Wheel Angle Sensor Mounting	107-0172-300	1
	Cable - Valve Harness	115-4001-154	1
	Assembly - 250 mm 3-Pin Linear Wheel Angle	063-0181-021	1

TABLE 1. SmarTrax Installation Kit (P/N 117-5030-027)

Picture	Item Description	Part Number	Qty.
	Transducer - 0-3000 PSI Pressure	422-0000-086	1
	Mount - M10 Ball Linear Sensor	103-0001-029	1
	Clamp - 1-1/2" U-Bolt Muffler	435-3003-030	1
	Clamp - 3" U-Bolt Muffler	435-3003-063	1
	Bolt - 5/16"-18 x 3/4" Hex	311-0052-103	8
	Bolt - M8 x 1.25 x 15 mm Hex	311-0070-015	2
	Bolt - M10 x 1.5 x 60 mm Hex	311-0070-025	1
	Spacer - 0.406" ID x 0.750" OD x 1" Long	107-0172-038	1
	Nut - 3/8"-16 Flanged Lock	312-1001-164	3
	Nut - M10 x 1.5 Pitch Jam	312-1002-035	3
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-059	8

TABLE 1. SmarTrax Installation Kit (P/N 117-5030-027)

Picture	Item Description	Part Number	Qty.
	Nut - M10 x 1.5 Pitch Nylon Insert Lock	312-4000-208	1
	Washer - 5/16" Split Lock	313-1000-019	4
	Washer - 0.344" ID x 0.688" OD x 0.065" Thick	313-2300-012	6
	Washer - M8	313-2300-121	2
	Tape - 3.5" Double-Sided	332-0000-019	6

TABLE 2. Hydraulic Installation Kit (P/N 117-0199-140)

Picture	Item Description	Part Number	Qty.
	Fitting - -8 JIC (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-056	3
	Fitting - -6 JIC (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-106	2
	Fitting - 22 mm M/M/F Swivel Run Tee Adapter	333-0012-361	1
	Fitting - M22 x 1.5 M/M 90° Elbow	333-0012-391	1
	Fitting - 18 mm M/M/F Swivel Run Tee Adapter	333-0012-392	2

TABLE 2. Hydraulic Installation Kit (P/N 117-0199-140)

Picture	Item Description	Part Number	Qty.
	Hydraulic Hose - -6 ORFS (F) 90° to M18 (F) - 200"	214-1001-048	2
	Hydraulic Hose - -8 ORFS (F) 90° to M18 (F) - 200"	214-1001-049	3

Note: The SmarTrax node installation kit (P/N 117-5030-005) is sold separately.

TABLE 3. Node Installation Kit (P/N 117-5030-005)

Picture	Item Description	Part Number	Qty.
Not Pictured	Manual - SmarTrax and SmartSteer Calibration & Operation	016-0171-277	1
	Node - SmarTrax CAN Control	063-0173-228	1
	Assembly - SmarTrax Enable Foot Switch	063-0172-470	1
	Cable - SmarTrax Node Harness	115-4001-109	1

CHAPTER

3

Hydraulic System Installation



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.

Never work on a hot machine. Always allow it to cool before performing diagnostics, maintenance, or routine service.

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 damage the SmarTrax hydraulic valve.

	NOTICE
<p>The appearance of the SmarTrax hydraulic valve may vary slightly from the images contained in this manual. However, the fittings, hose connections, and cable connections remain the same.</p>	

Install Fittings in the SmarTrax Valve

Before mounting the SmarTrax valve (P/N 334-0003-090) 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 - -6 JIC (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-106	A, B
Fitting - -8 JIC (M) to -10 SAE O-Ring (M) Straight Adapter	333-0012-056	P, T, EF
Transducer - 0-3000 PSI Pressure	422-0000-086	PS

Mount the SmarTrax Valve

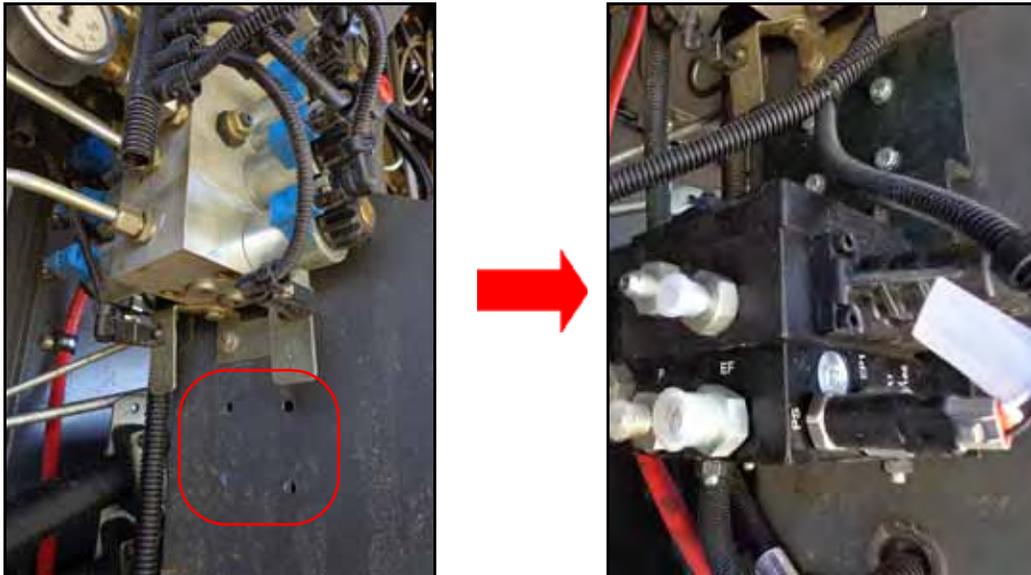
FIGURE 2. Valve Mounting Location



Valve Mounting Location
Under Side Panel

1. Identify the SmarTrax valve (P/N 334-0003-090) mounting location under the left side panel.
2. Secure the valve to the valve mounting bracket (P/N 107-0172-299) using four 5/16"-18 UNC x 3/4" hex bolts (P/N 311-0052-103) and four 5/16" lock washers (P/N 313-1000-019).

FIGURE 3. Valve Mounting Location

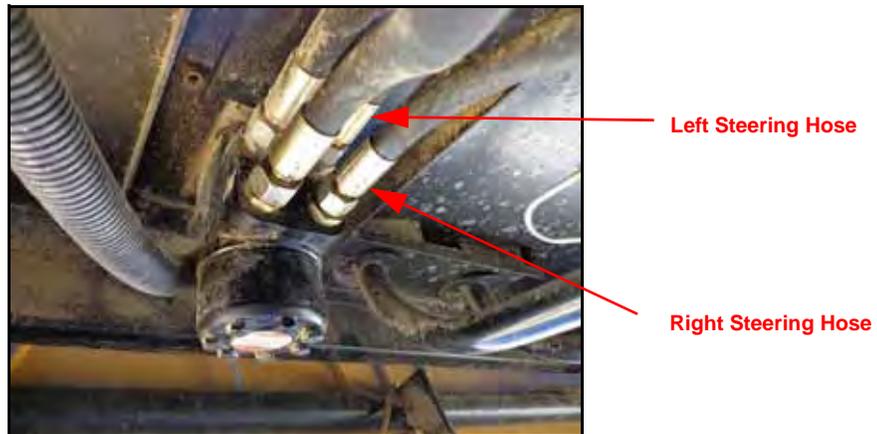


3. Align the valve mounting bracket with the four holes in the machine's shroud (located under the machine's hydraulic valve) and secure it using four 5/16"-18 UNC x 3/4" hex bolts (P/N 311-0052-103), four 0.344" ID x 0.688" OD x 0.065" thick flat washers (P/N 313-2300-012), and four 5/16"-18 nylon insert lock nuts (P/N 312-4000-059).

Note: If there are no existing bolts holes on the machine's shroud, use the valve mounting bracket as a template to drill holes in the desired mounting location.

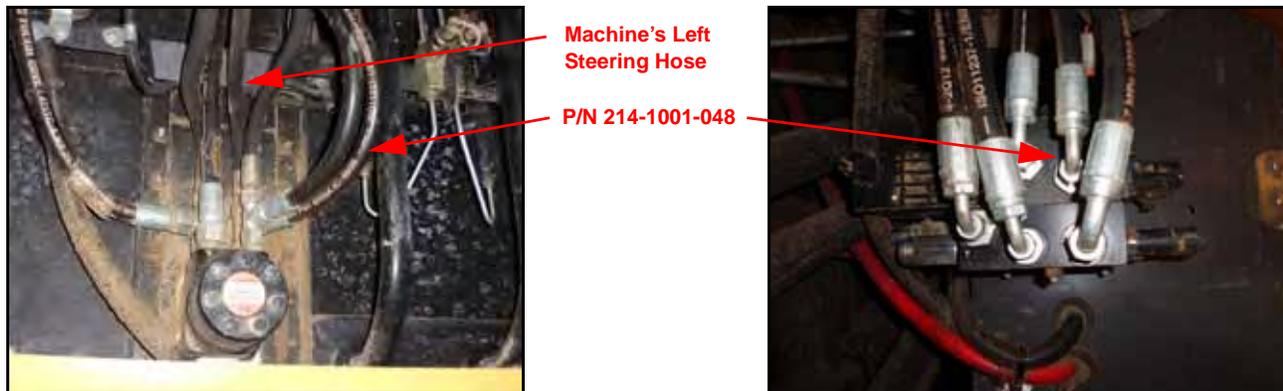
Install the Left and Right Steering Hoses

FIGURE 4. Machine's Left and Right Steering Hoses



1. Locate the machine's left and right steering hoses on the steering orbital.

FIGURE 5. Left Steering Hose Installed



2. Disconnect the left steering hose from the steering orbital.
3. Install an 18 mm M/M/F swivel run tee adapter fitting (P/N 333-0012-392) on the existing fitting in the left steering port.
4. Connect the machine's left steering hose to the opposite end of the installed tee fitting.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1001-048) on the 90° end of the installed tee fitting.
6. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port A of the SmarTrax valve (P/N 334-0003-090).

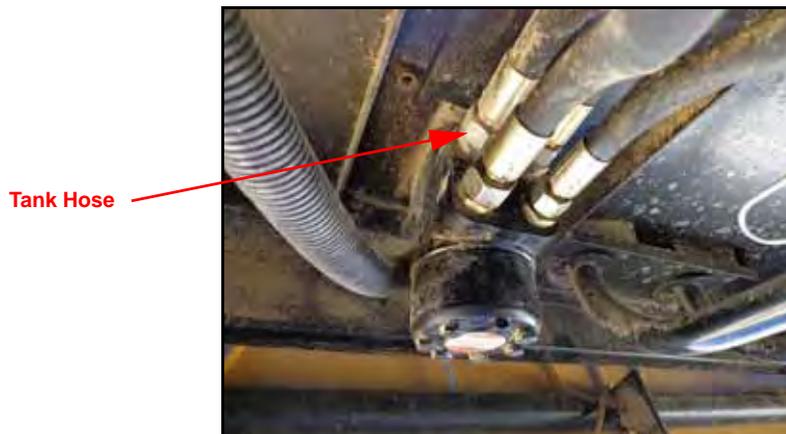
FIGURE 6. Right Steering Hose Installed



7. Disconnect the right steering hose from the steering orbital.
8. Install an 18 mm M/M/F swivel run tee adapter fitting (P/N 333-0012-392) on the existing fitting in the right steering port of the steering orbital.
9. Connect the machine's right steering hose to the opposite end of the installed tee fitting.
10. Install the straight end of the supplied hydraulic hose (P/N 214-1001-048) on the 90° end of the installed tee fitting.
11. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port B of the SmarTrax valve.

Install the Tank Hose

FIGURE 7. Machine's Tank Hose



1. Locate the machine's tank hose on the steering orbital.

FIGURE 8. Tank Hose Installed on the Steering Orbital



2. Disconnect the tank hose from the steering orbital.
3. Install a 22 mm M/M/F swivel run tee adapter fitting (P/N 333-0012-361) on the existing fitting in the tank port.
4. Connect the machine's tank hose to the opposite end of the installed tee fitting.
5. Install the straight end of the supplied hydraulic hose (P/N 214-1001-049) on the 90° end of the installed tee fitting.

FIGURE 9. Tank Hose Installed on SmarTrax Valve



6. Connect the 90° end of the installed hydraulic hose to the fitting installed in Port T of the SmarTrax valve (P/N 334-0003-090).

Install the Pressure Hose

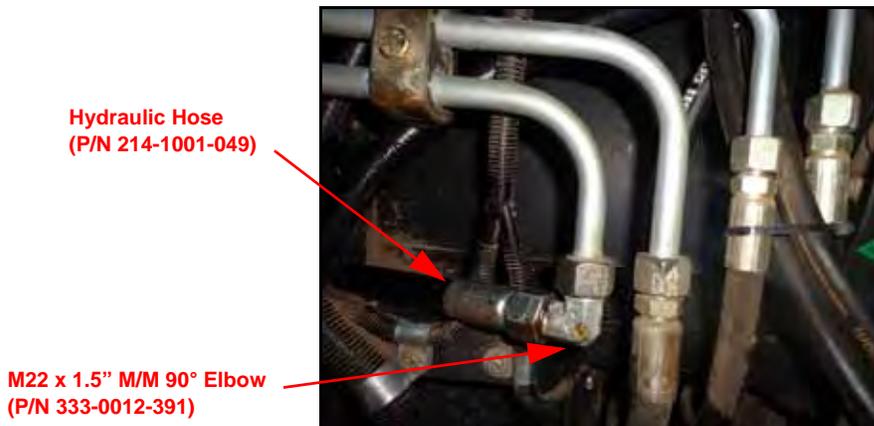
Important: Use extreme caution to prevent the steel pressure line from being crimped, bent, or damaged in any way.

FIGURE 10. Machine's Pressure Hose



1. Locate and disconnect the short section of hydraulic hose located between the pressure port of the steering orbital and the steel pressure line.

FIGURE 11. Pressure Hose Installed on Steel Line



2. Install an M22 x 1.5" M/M 90° elbow fitting (P/N 333-0012-391) on the end of the steel pressure line.
3. Install the straight end of the supplied hydraulic hose (P/N 214-1001-049) on the end of the installed elbow fitting.

FIGURE 12. Pressure Hose Installed on SmarTrax Valve



4. Install the 90° end of the installed hydraulic hose on the fitting installed in Port P of the SmarTrax valve (P/N 334-0003-090).

FIGURE 13. Pressure Hose Installed on Steering Orbital



Hydraulic Hose
(P/N 214-1001-049)

5. Install the straight end of the supplied hydraulic hose (P/N 214-1001-049) on the open pressure port of the steering orbital.

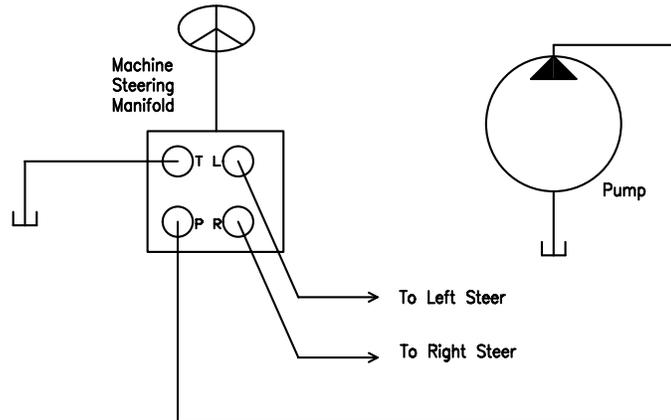
FIGURE 14. Pressure Hose Installed on SmarTrax Valve



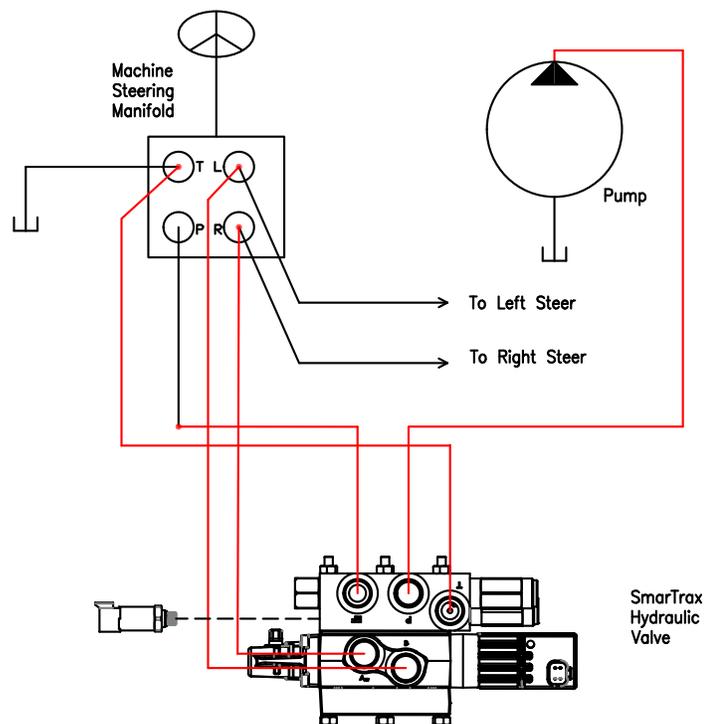
6. Install the 90° end of the installed hydraulic hose on the fitting installed in Port EF of the SmarTrax valve.

Hydraulic Diagram

Before SmarTrax Installation



After SmarTrax Installation



Assemble the Wheel Angle Sensor (WAS)

FIGURE 1. WAS Assembly



1. Install one M10 jam nut (P/N 312-1001-035) and M10 ball linear sensor mount (P/N 103-0001-029) on the rod-end (the end without the cable connection) of the 250 mm non-contact wheel angle sensor (WAS) (P/N 063-0181-021).
2. Tighten the nut to ensure the ball mount is securely installed.

Mount the WAS

Important: *When installed, 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. The position of the U-bolt muffler clamps installed around the body of the cylinder may have to be adjusted to prevent damage to the WAS.*

1. Turn the machine's rear wheels fully to the right to access the left side of the rear axle.

FIGURE 2. Rod-End WAS Mounting Hardware Assembled



2. Insert the M10 x 1.5 pitch x 60 mm bolt (P/N 311-0070-025) through the center hole in the WAS rod mounting bracket (P/N 107-0172-030).
3. Install a 0.406" ID x 0.75" OD x 1" spacer (P/N 107-0172-038) on the end of the installed M10 bolt.
4. Insert the end of the M10 bolt through the hole in the M10 linear ball sensor mount (P/N 103-0001-029) installed on the rod-end of the WAS.
5. Secure the WAS mounting bracket to the WAS using one M10 x 1.5 nylon insert lock nut (P/N 312-4000-208).

FIGURE 3. Small Muffler Clamp Installed



6. Remove the nuts and clamp from the 1-1/2" muffler clamp (P/N 435-3003-030) and install the U-bolt around the end of the steering cylinder shaft with the U-bolt ends pointing up.
7. Install the clamp on the ends of the U-bolt and secure it using the clamp's two nuts.

FIGURE 4. Rod Mounting Bracket Installed



8. Insert the legs of the installed U-bolt muffler clamp through the holes in the rod-end WAS mounting assembly and secure the bracket using two 5/16"-18 nylon insert lock nuts (P/N 312-4000-059).

FIGURE 5. Large Muffler Clamp Installed



9. Remove the nuts and clamp from the 3" muffler clamp (P/N 435-3003-063) and install the U-bolt around the base-end of the steering cylinder shaft with the U-bolt ends pointing up.
10. Install the clamp on the ends of the U-bolt and secure it using the clamp's two nuts.

FIGURE 6. WAS Installed on Base-End of the Steering Cylinder

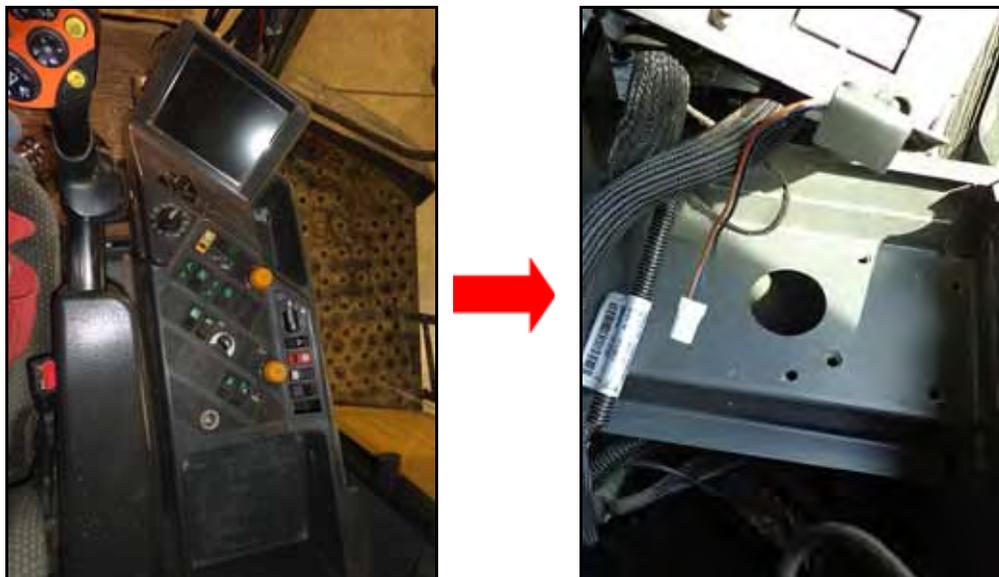


11. Insert the legs of the installed U-bolt muffler clamp through the holes in the base-end WAS mounting bracket (P/N 107-0172-300) so that the flange of the bracket is toward the end of the steering cylinder and secure the bracket using 0.344" x 0.688" OD x 0.065" flat washers (P/N 313-2300-012) and two 5/16"-18 nylon insert lock nuts (P/N 312-4000-059).
12. Insert the stud on the base-end of the WAS (the end with the cable connection) through the hole in the base-end WAS mounting bracket and secure it using two M10 x 1.5 jam nuts (P/N 312-1002-035) (installed on top of the other).
13. Tighten all nuts used to install the WAS.
14. Route the cable from the base-end of the WAS along the machine's frame, routing it so that the is not near moving parts or heat sources. Secure with plastic cable ties as necessary.

Install the SmarTrax Node

Mount the SmarTrax Node

FIGURE 1. Machine's Console Removed



1. Remove the cover from the console to the right of the operator's seat.
2. Clear any grease or debris from the exposed shelf.

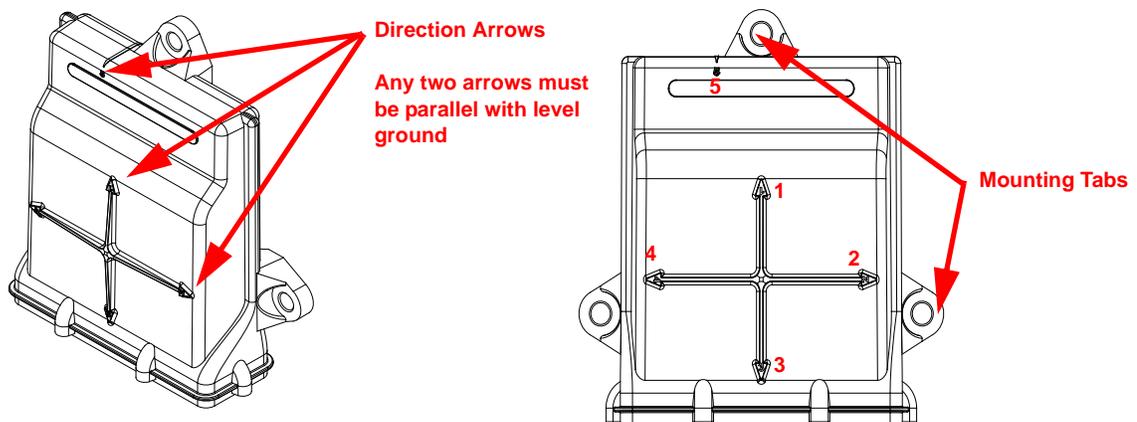
FIGURE 2. SmarTrax Node Installed



3. Mount the SmarTrax node (P/N 063-0173-228) on the node mounting bracket (P/N 107-0172-055) using three 3/8"-16 lock nuts (P/N 312-1001-164).
4. Place five double-sided tape trips (P/N 332-0000-019) on the bottom of the node mounting bracket.
5. Remove the backing from the double-sided tape and adhere the node mounting bracket to the console shelf so that the node connectors point to the rear of the machine.

Node Mounting Locations

FIGURE 3. Node Mounting



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

- Mount the SmarTrax node inside the machine's cab on a flat, level surface for proper performance and cable connection.

- 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.

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 (P/N 115-4001-109) and connect it to the foot switch cable connector.

Install the Valve Harness

1. Plug the CHASSIS connector of the valve harness (P/N 115-4001-154) into the mating 12-pin connector of the node harness (P/N 115-4001-109).
2. Route the valve harness outside the cab through the access holes in the bottom of the console shelf.
3. Route the valve harness toward the valve mounting location.

FIGURE 5. Valve Harness Connections



4. Connect the PSI connector to the pressure transducer (P/N 422-0000-086) installed in Port PS of the SmarTrax valve (P/N 334-0003-090).
5. Connect the VALVE connector to the open PVE port of the SmarTrax valve.
6. Locate the WAS connector and route the cable toward the left rear axle, securing it away from moving parts and heat sources with plastic cable ties as necessary.
7. Connect the WAS connector to the installed WAS (P/N 063-0181-020).

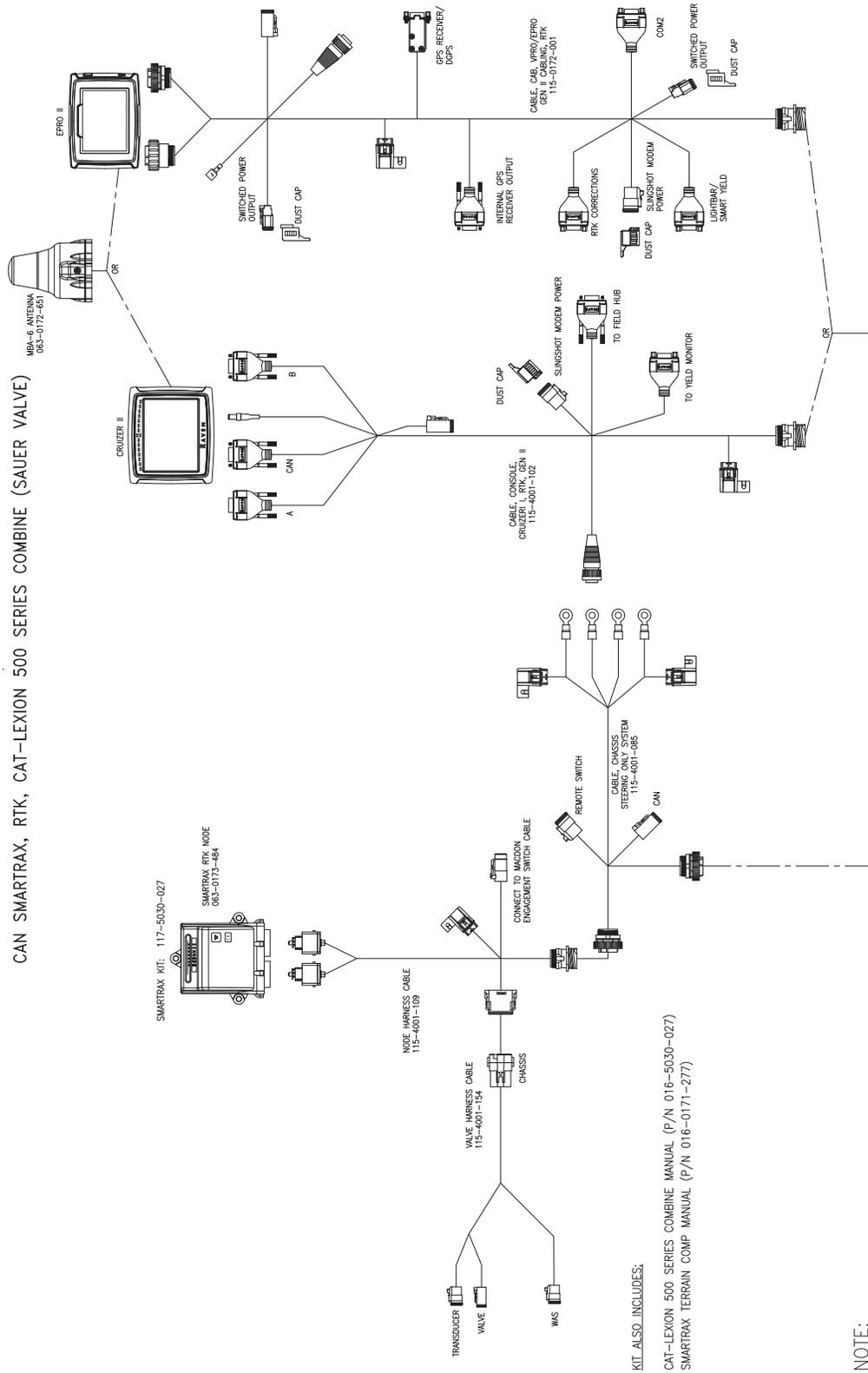
Install the Field Computer Mounting Bracket

FIGURE 6. Console Mounting Bracket Installed



1. Locate the threaded holes in the front-right corner cab post.
2. Secure the field computer mounting bracket (P/N 107-0172-298) to the post using two M8 x 1.25 x 15 mm hex bolts (P/N 311-0070-015) and two M8 washers (P/N 313-2300-121).

FIGURE 7. Valve Harness Wiring Diagram



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

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 SmarTrax 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 or 115-4001-131).
2. Connect the TO SMARTRAX NODE connector from the chassis cable to the round 16-pin connector on the node harness (P/N 115-4001-161).
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 SmarTrax to an Existing Chassis Cable (If Applicable)

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 cable (P/N 115-4001-161) to the remaining SmarTrax interface tee.

Complete the SmarTrax System Installation

1. Verify all hydraulic connections at the steering orbital and the SmarTrax Valve (P/N 334-0003-090) are securely tightened.
2. Double-check all electrical connections on the SmarTrax valve.
3. Reinstall the machine's shroud.

**⚠ 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.

Verify the SmarTrax System Installation

1. Turn on the machine.
2. Double-check all fittings and hose connections to ensure that:
 - Hoses are not rubbing on or interfering with moving parts.
 - Hydraulic fluid is not leaking from the system.
3. Turn the machine's wheels fully from side to side repeatedly to remove air from the hydraulic system.

Note: *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. If air pockets are present, the wheels may not move consistently when the steering wheel is turned.*

4. Continue turning the wheels until they move steadily and smoothly when the steering wheel is turned.

5. Access the System Diagnostic screen by selecting the MACHINE TEST option on the Machine Type screen and turn the wheels using the Raven console.

Note: *If there are issues with the SmarTrax system, turn off the machine and correct them immediately. For additional assistance, refer to the SmarTrax and SmartSteer Calibration & Operation Manual (P/N 016-0171-277) or contact your local Raven dealer.*

6. Set the GPS Source to Internal via SmarTrax.

Note: *For more information on changing the GPS setting refer to the SmarTrax and SmartSteer Calibration & Operation Manual.*

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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RAVEN

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

How Long is the Coverage Period?

Raven Applied Technology products are covered by this warranty for 12 months from the date of retail sale. In no case will the Limited Warranty period exceed 24 months from the date the product was issued by Raven Industries Applied Technology Division. This warranty coverage applies only to the original owner and is non-transferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

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, labor, or other 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.



Extended Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

Do I Need to Register My Product to Qualify for the Extended Warranty?

Yes. Products/systems must be registered within 30 days of retail sale to receive coverage under the Extended Warranty. If the component does not have a serial tag, the kit it came in must be registered instead.

Where Can I Register My Product for the Extended Warranty?

To register, go online to www.ravenhelp.com and select Product Registration.

How Long is the Extended Warranty Coverage Period?

Raven Applied Technology products that have been registered online are covered for an additional 12 months beyond the Limited Warranty for a total coverage period of 24 months from the date of retail sale. In no case will the Extended Warranty period exceed 36 months from the date the product was issued by Raven Industries Applied Technology Division. This Extended Warranty coverage applies only to the original owner and is non-transferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries. In addition, the words "Extended Warranty" must appear on the box and all documentation if the failure is between 12 and 24 months from the retail sale.

What Will Raven Industries Do?

Upon confirmation of the product's registration for the Extended Warranty and the claim itself, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

What is Not Covered by the Extended 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, labor, or other damages. Cables, hoses, software enhancements, and remanufactured items are not covered by this Extended Warranty. 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.

RAVEN

CAT Lexion 500 Series Combines - SV
SmarTrax™ Installation Manual
(P/N 016-5030-027 Rev A 03/15 E24793)



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