CASE IH PATRIOT SAUER VALVE WHEEL ANGLE SENSOR (WAS) INSTALLATION

NOTE: The SmarTrax node must be loaded with software version 6.2.XX or newer. The latest version of software can be found at:

www.ravenhelp.com.

Once the installation is complete and the latest software version is downloaded, a complete system recalibration is required in order to enable the WAS functionality.

KIT CONTENTS

TABLE 1. Wheel Angle Sensor Installation Kit (P/N 117-0192-045)

Picture	Item Description	Part Number	Qty.
Not Pictured	Installation Sheet - Wheel Angle Sensor	016-0191-004	1
	Sensor - 300 mm Non-Contact Linear	416-0001-052	1
	Bracket - Large WAS Rod Mounting Bracket	107-0172-366	1
	Bracket - Small WAS Rod Mounting Bracket	107-0172-030	1
	Cable - Adapter. CASE Sauer to 12 Volt Linear WAS	115-4001-233	1
	Mount - M10 Ball	103-0001-029	2
	Clamp - 1-1/4" ID x 5/16"-18 Thread U-bolt Muffler	435-3003-056	1

TABLE 1. Wheel Angle Sensor Installation Kit (P/N 117-0192-045)

Picture	Item Description	Part Number	Qty.
	Clamp - 3" OD x 3/8"-16 Thread U-Bolt Muffler	435-3003-063	1
	Spacer - 0.406" ID x 0.750" OD x 0.75" Long Steel	107-0172-037	2
	Bolt - M10 x 1.5 x 60 mm Hex	311-0070-025	2
	Nut - M10 x 1.5 x 5 mm Thick Jam	312-1002-035	2
	Nut - 5/16"-18 Nylon Insert Lock	312-4000-059	2
	Nut - 3/8"-16 Nylon Insert Lock	312-4000-061	2
	Nut - M10 x 1.5 Nylon Insert Lock	312-4000-208	2
	Washer - 3/8" Flat	313-2300-043	4
	Washer - Modular Flat	313-2301-005	4

ASSEMBLE THE WHEEL ANGLE SENSOR (WAS)

FIGURE 1. WAS Assembly

Rod-End of Sensor   Base-End of Sensor

1. Install the M10 universal ball mounts (P/N 103-0001-029) and M10 jam nuts (P/N 312-1002-035) on both ends of the linear WAS (P/N 416-0001-052).
2. Leave the nuts and ball mounts loose until the sensor is installed later in the procedure.

INSTALL THE WAS

1. Park the machine on a level surface with the wheels pointing straight ahead.

FIGURE 2. Muffler Clamp Installed on Steering Cylinder

2. Remove the nuts and clamp from the 3" U-bolt muffler clamp (P/N 435-3003-063).
3. Install the U-bolt muffler clamp on the cap-end of the right steering cylinder, positioning the U-bolt so that the threaded ends point straight toward the rear of the machine.
4. Reinstall the clamp and nuts on the U-bolt.
5. Tighten the nuts to secure the U-bolt muffler clamp in place.
6. Install 3/8" flat washers (P/N 313-2300-043) on the ends of the U-bolt clamp.

FIGURE 3. Large WAS Mounting Bracket Installed on Base-End of the Steering Cylinder

Right Frame Rail

Single Hole of Large WAS Mounting Bracket Positioned Toward Top of Rod-End of Steering Cylinder

3/8" Flat Washers (P/N 313-2300-043) and 3/8"-16 Nylon Insert Lock Nuts (P/N 312-4000-061)
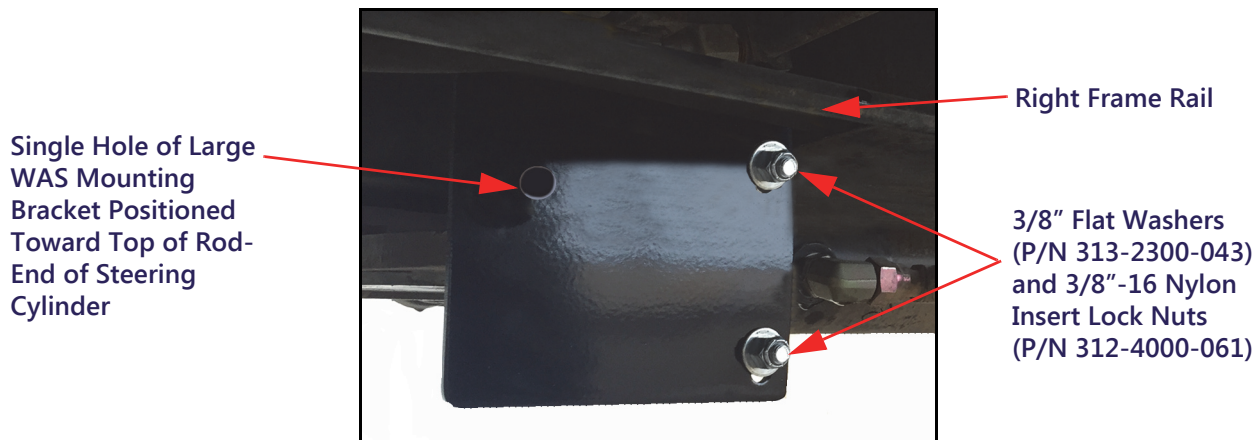
7. Position the large WAS mounting bracket (P/N 107-0172-366) over the U-bolt muffler clamp so that the single hole in the bracket is located to the left of the threaded ends of the U-bolt muffler clamp and up.

8. Secure the WAS mounting bracket on the U-bolt muffler clamp using two 3/8" flat washers (P/N 313-2300-043) and two 3/8"-16 nylon insert lock nuts (P/N 312-4000-061).

9. Verify that the top of the large WAS mounting bracket is mounted low enough to clear the right frame rail, allowing the machine's wheels to be extended without interference.

10. Tighten the nuts to secure the large WAS mounting bracket.

FIGURE 4. Small WAS Mounting Bracket Installed on Rod-End of Steering Cylinder

M10 x 1.5 x 60 Metric Hex Bolt (P/N 312-1002-035)

0.406" ID x 0.750" OD x 0.75" Long Spacer (P/N 107-0172-037)

5/16" Washers (P/N 313-2301-005)

5/16" Flat Washer (P/N 313-2301-005) and 5/16" - 18 Nylon Insert Lock Nuts (P/N 312-4000-059)

Small WAS Mounting Bracket (P/N 312-1002-035)

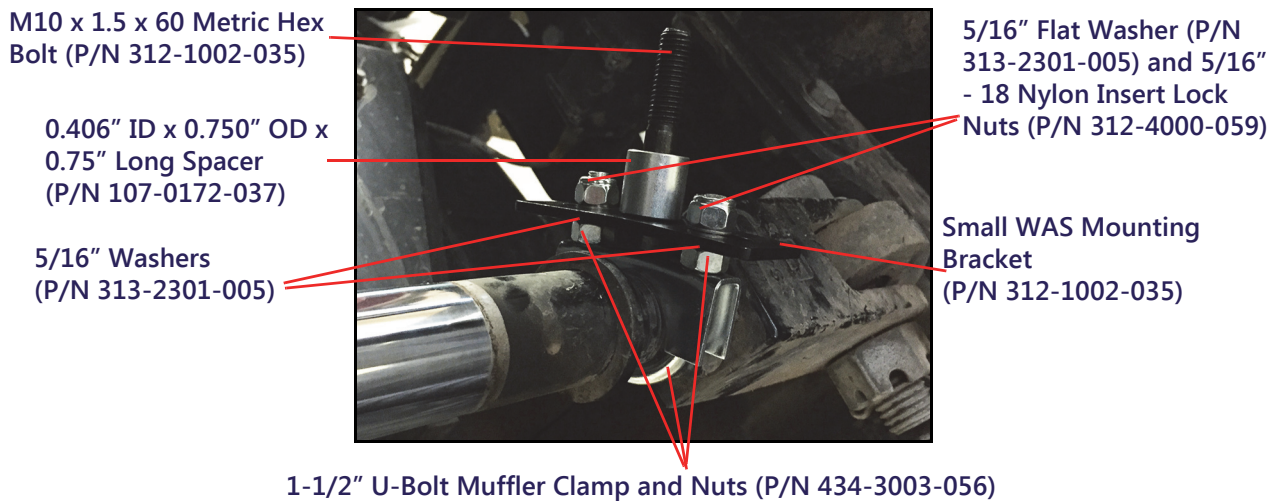**1-1/2" U-Bolt Muffler Clamp and Nuts (P/N 434-3003-056)**

11. Remove the nuts and clamp from the 1-1/2" U-bolt muffler clamp (P/N 435-3003-056).

12. Install the U-bolt muffler clamp on the threaded rod-end of the right steering cylinder adjacent to the existing jam nut, positioning the U-bolt so that the threaded ends point approximately 45° toward the rear of the machine.

13. Reinstall the clamp and nuts on the U-bolt.

14. Tighten the nuts to secure the U-bolt muffler clamp in place.

15. Install 5/16" washers (P/N 313-2301-005) on the ends of the U-bolt clamp.

16. Insert one of the M10 x 1.5 x 60 metric hex bolts (P/N 312-1002-035) through the center hole of the small WAS mounting bracket (P/N 107-0172-030).

17. Install the small WAS mounting bracket on the ends of the U-bolt clamp so that the installed hex bolt points outward.

18. Install one 5/16" flat washer (P/N 313-2301-005) and one 5/16"-18 nylon insert lock nut (P/N 312-4000-059) on the each end of the U-bolt clamp to secure the small WAS mounting bracket.

19. Tighten the nuts to ensure the small WAS mounting bracket is installed securely.

20. Install a 0.406" ID x 0.750" OD x 0.75" long spacer (P/N 107-0172-037) on the end of the protruding hex bolt.

FIGURE 5. Rod-End of WAS Installed on Rod-End of Steering Cylinder

Rod-End of WAS

M10 x 1.5 Lock Nut (P/N 312-4000-208)

M10 Universal Ball Mount (P/N 103-0001-029)
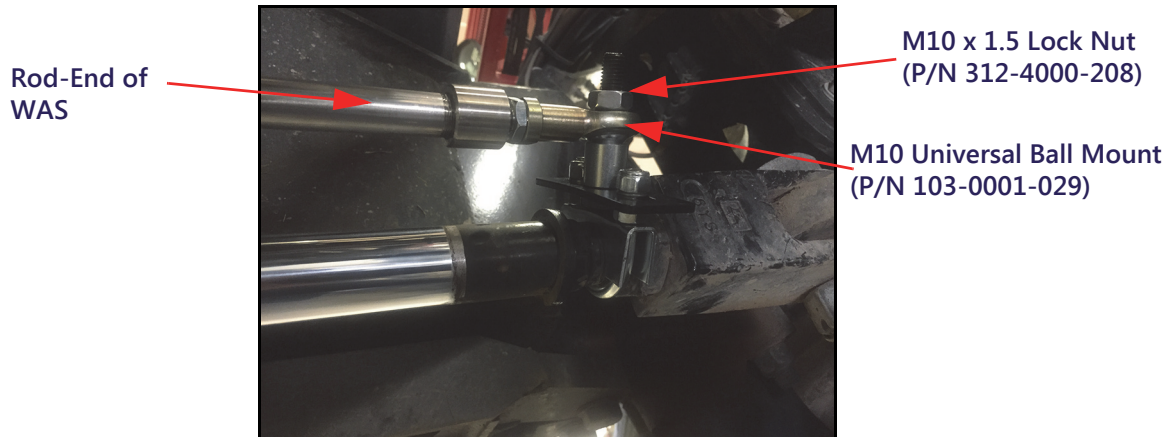
21. Install the ball mount on the rod-end of the WAS assembly on the installed hex bolt and secure it using an M10 x 1.5 lock nut (P/N 312-4000-208).

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

22. Insert an M10 x 1.5 x 60 hex bolt (P/N 311-0070-025) through the back of the remaining hole in the large WAS mounting bracket.

23. Install a 0.406" ID x 0.750" OD x 0.75" long spacer (P/N 107-0172-037) on the protruding end of the installed hex bolt.

24. Install the base-end of the WAS assembly on the hex bolt and secure it using an M10 x 1.5 nylon insert lock nut (P/N 312-4000-208).

25. Orient the WAS so the cable plug is oriented as shown in Figure 6 on page 5.

26. Tighten the M10 universal ball mounts and M10 jam nuts to each other on the WAS assembly to ensure they are installed securely.
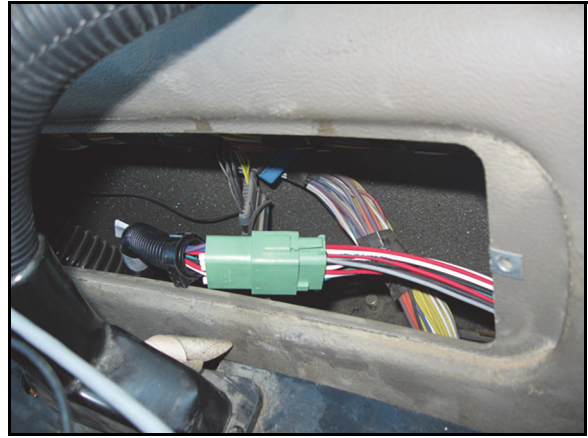
WIRING INSTALLATION

FIGURE 7. **Existing Node and Valve Harness Cable Connection Locations**

3XXX Series Machines

4XXX Series Machines

1. Locate and disconnect the green connections of the node harness (P/N 115-4001-110 or 115-4001-191) and valve harness (P/N 115-4001-111).

NOTE: *The node and valve harness connection locations may vary based on the machine model.*

2. Install the connections of the WAS adapter cable (P/N 115-4001-233) into the mating node and valves harness connectors that were disconnected in step 1.

3. Route the remaining end of the WAS adapter cable from the cab, along the existing valve harness, and toward the installed WAS.

FIGURE 8. **WAS Connection Installed on WAS**

4. Connect the WAS adapter cable to the open connector of the installed WAS.

5. Turn the thumb nut clockwise to tighten the connection.

6. Perform a software update. The latest updates can be found at www.ravenhelp.com.

7. Perform a full calibration of the SmarTrax to enable use of the wheel angle sensor.

NOTE: If desired, refer to the SmarTrax Calibration and Operation Manual (P/N 016-0171-277) for calibration information.