INSTALLATION INSTRUCTIONS

Hall Effect Steering Sensor Kit

Version 5.00
Revision A
March 2014
Part number 54639-10-E05

Trimble

Legal Notices

Agriculture Business Area

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Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and the receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.
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Meerheide 45
5521 DZ Eersel, NL

Safety Information

Always follow the instructions that accompany a Warning or Caution. The information they provide is intended to minimize the risk of personal injury and/or damage to property. In particular, observe safety instructions that are presented in the following format:

WARNING – This alert warns of a potential hazard, which, if not avoided, can cause severe injury.

CAUTION – This alert warns of a hazard or unsafe practice which, if not avoided, can cause injury or damage.

Note – *An absence of specific alerts does not mean that there are no safety risks involved.*

Warnings

WARNING – When you are working on the vehicle's hydraulic systems, vehicle attachments that are suspended can drop. If you are working around the vehicle, you could suffer serious injury if an attachment dropped on you. To avoid this risk, lower all vehicle attachments to the ground before you begin work.

WARNING – If someone else attempts to drive the vehicle while you are working on or under it, you can suffer serious or fatal injuries. To avoid this possibility, install a lockout box on the battery terminal to prevent the battery from being reconnected, remove the key from the vehicle's ignition switch, and attach a "Do not operate" tag in the cab.

WARNING – Agricultural chemicals can pose serious health risks. If the vehicle has been used to apply agricultural chemicals, steam clean the vehicle to remove any chemical residue from the areas of the vehicle where you will be working.

WARNING – Vehicle cabs can be quite high in the air. To avoid potentially serious injury through falling from this height, always use the steps and handrails, and face the vehicle, when you enter or exit it.

Cautions

CAUTION – When the vehicle has been running, parts of the vehicle, including the engine and exhaust, can become extremely hot and can cause serious burns. To avoid burns, allow hot machine parts to cool before you begin working on them.

CAUTION – The system installation may bring you into contact with chemical substances, such as oil, which can cause poisoning. Wash your hands thoroughly after you finish working on the system.

CAUTION – Battery posts, terminals, and related accessories contain lead and lead compounds, which can cause serious illness. To avoid ingesting lead, wash your hands thoroughly after touching the battery.

CAUTION – Always wear protective equipment appropriate to the job conditions and the nature of the vehicle. This includes wearing protective glasses when you use pressurized air or water, and correct protective welder's clothing when welding. Avoid wearing loose clothing or jewelry that can catch on machine parts or tools.

CAUTION – Parts of the vehicle may be under pressure. To avoid injury from pressurized parts, relieve all pressure in oil, air, and water systems before you disconnect any lines, fittings, or related items. To avoid being sprayed by pressurized liquids, hold a rag over fill caps, breathers, or hose connections when you remove them. Do not use your bare hands to check for hydraulic leaks. Use a board or cardboard instead.

CAUTION – Do not direct pressurized water at:
- electronic or electrical components or connectors
- bearings
- hydraulic seals
- fuel injection pumps
- any other sensitive parts or components



Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

CAUTION – To prevent damage to the system, make sure that no wires or hoses interfere with or catch on any mechanical linkages, or contact any machine parts that get hot.

Introduction

The Hall Effect steering sensor can be used as an alternative to the AutoSense™ steering device in applications where the average operational speed is very low (<0.5 MPH) or in steep ditching/burming operations. This sensor used is similar in appearance to the standard resistor-based sensor used on the Autopilot™ automated steering system prior to the introduction of the AutoSense device. However, it utilizes contactless Hall Effect technology for longer life and enhanced resolution and repeatability.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, contact Trimble technical support:

1. Log into http://agpartners.trimble.com.
2. Click the *Feedback* link at the right of the screen. A form appears.
3. Complete the form and then click **Submit Feedback**.

Preparing the vehicle for installation

Note – *The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.*

1. Park the vehicle on a hard, level surface. Block the front and rear wheels.
2. Align the steering straight ahead. On an articulated vehicle, install the articulation locks.
3. Remove all dirt and debris from the areas of the vehicle where the Autopilot system will be installed.
4. Open all kit boxes and check the contents of the box against the packing list/s. Lay all of the parts out on a clean workbench.

Installing the sensor

Step 1

Identify the wheel to install the steering sensor beside. Turn the wheel in the direction that allows the most room for easy access during installation.



Step 2

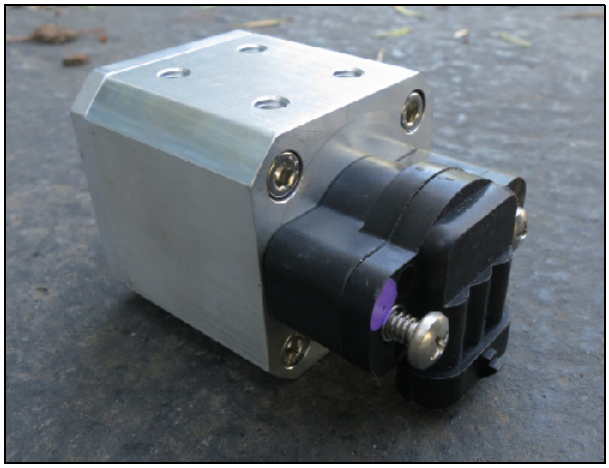
Gather the components and hardware required for installation.



Step 3

Use the two supplied screws for attaching the sensor onto the aluminum bearing block .

Note – *The use of an O-ring is not required, as the sensor is weather sealed.*



Step 4

Attach the steering sensor cable (P/N 95192) to the sensor.



Step 5

Identify a suitable mounting location for the sensor. Use either the supplied hardware, or with steel hose clamps to mount the 90° sensor bracket onto the axle.



Step 6

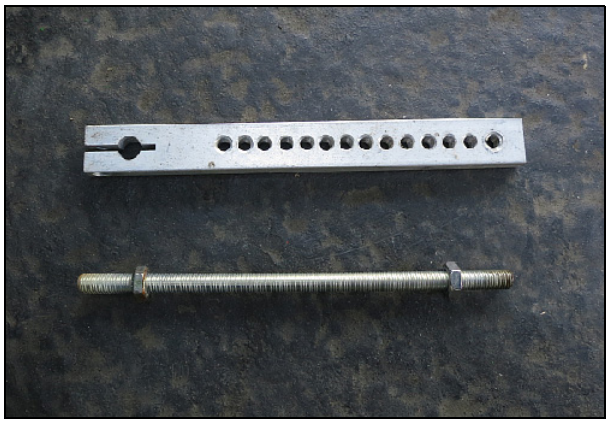
Note – *Make sure to attach the cable with the Weatherpack connector first before this step, as there will be insufficient clearance once the sensor is mounted to the bracket.*

Use the supplied hardware to attach the sensor to the bracket.



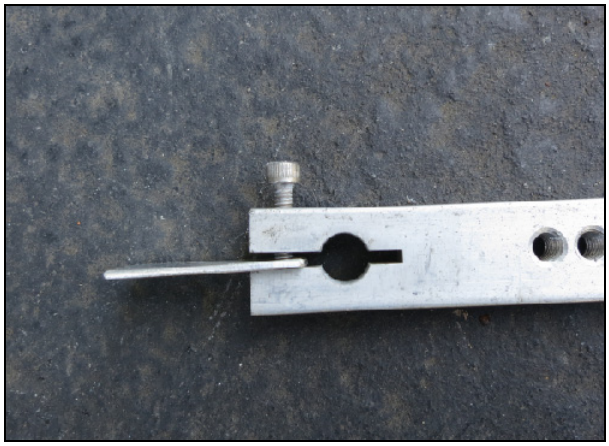
Step 7

Identify the aluminum connecting arm and the all-thread rod, which will form the two-arm linkage for the sensor. Shorten these as necessary to allow for adequate clearance on the machine.



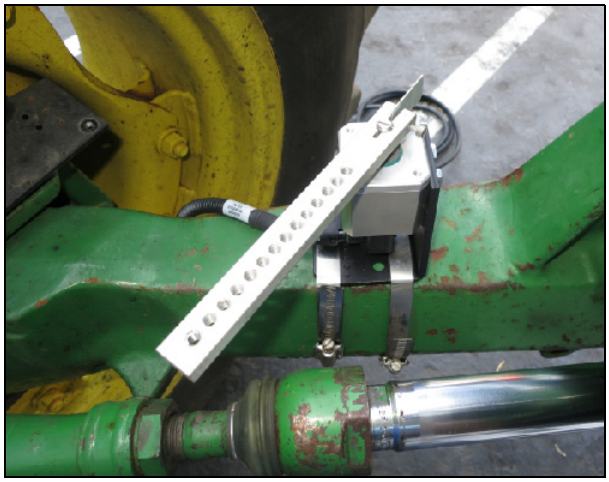
Step 8

Use the supplied socket head cap screw and a small piece of metal scrap (e.g. an extra washer) to spread the tangs on the aluminum connecting arm.



Step 9

With the tangs still spread apart, slide the connecting arm onto the knurled shaft on the sensor bearing block.



Step 10

Use the supplied hose clamps to secure the aluminum right angle tie rod bracket onto the tie rod.



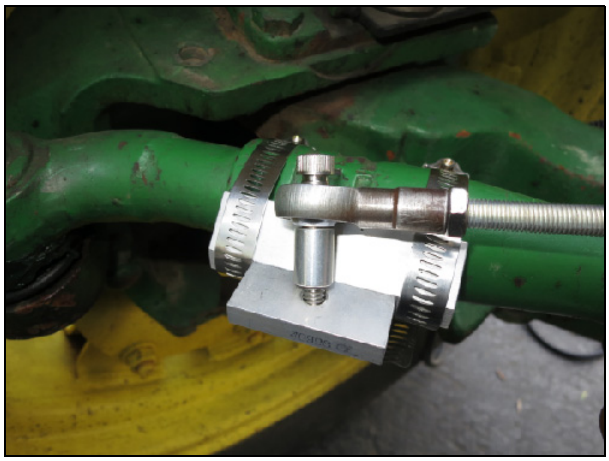
Step 11

Attach the rod ends to the all-thread rod.



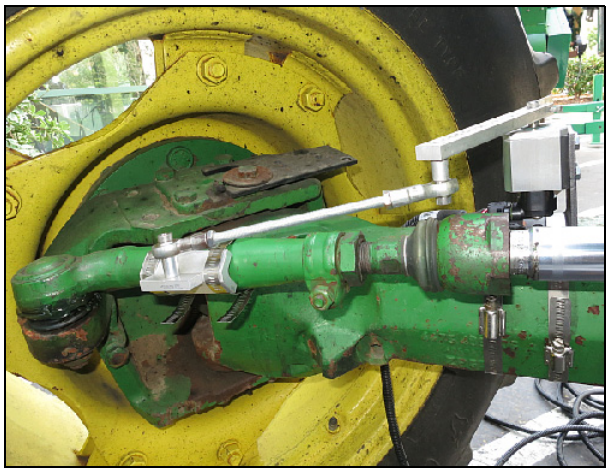
Step 12

Use the supplied shoulder bolt and aluminum spacer to attach one of the rod ends to the tie rod bracket.



Step 13

Use the other supplied shoulder bolt and spacer to attach the other rod end to the aluminum connecting arm.

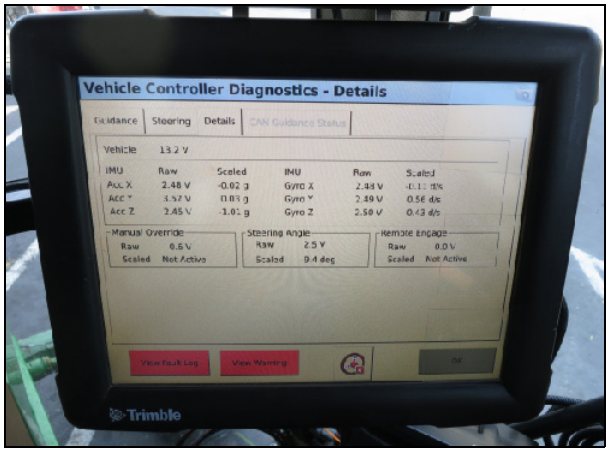


Step 14

Start the tractor and steer the wheels until they are pointing straight ahead. While the tangs of the connecting arm are still spread apart, use a flathead screwdriver to turn the sensor until it is approximately at the center of its travel.

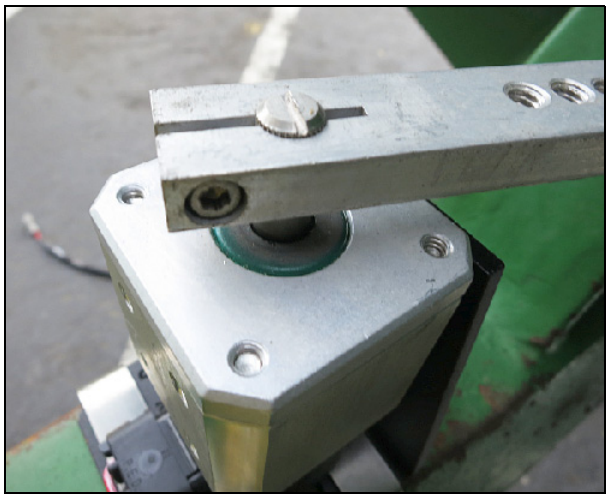


Note – *For the most accurate sensor performance, find the "electrical center" of the sensor by using the Vehicle Controller Diagnostics page on the display (the image on the right shows the FmX© integrated display). The steering angle raw voltage should be 2.5V when the wheels are centered.*



Step 15

Once the sensor is centered, release the tangs on the connecting arm, and then use the same screw to securely tighten the arm to the shaft.



Step 16

Cautiously turn the wheels from full-lock left to full-lock right to make sure that there is adequate clearance throughout the whole range of movement. Once that has been verified, secure the sensor cabling with wire ties.

Make sure that the cable is routed away from any hot surfaces on the vehicle and in a fashion that it will not be caught or snagged.

