INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

Versatile Tractors

- 350-620 4WD AGR
- 450-620 DeltaTrack AGR

NOTE – This kit supports articulated 4WD AutoGuidance Ready (AGR) platforms with serial numbers greater than the following:

- Large frame (including DeltaTrack): 705533
- Small frame: 307823

PTx Trimble

Version 10.00
Revision A
December 2025
P/N 54036-5112-E10

Legal Notices

Agriculture Business Area

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Release Notice

This is the December 2025 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54036-5112-E10. It applies to Version 10.00 and later of the Autopilot automated steering system.

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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:

DANGER! ALERTS YOU TO A SITUATION THAT IS LIKELY TO RESULT IN DEATH OR SERIOUS INJURY.

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

DANGER! 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 THE BOOM TO THE LOWEST POSITION BEFORE YOU BEGIN WORK.

DANGER! 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.

DANGER! 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.

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 – 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.

WARNING – 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.

Cautions

CAUTION – Damage will result to the cable if it is not routed correctly. When routing cables be sure to route them free from areas that may result in damage to the cables including pinching, stretching and rubbing.

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



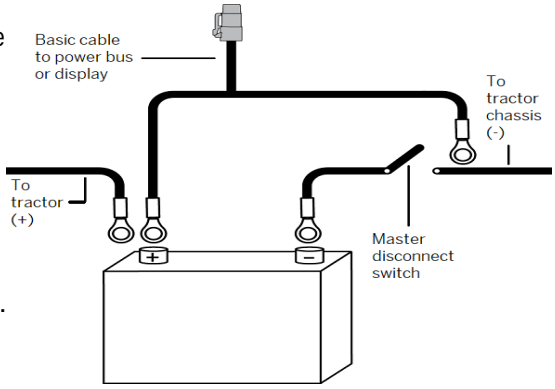
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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

CAUTION – Before you drill any holes, check behind the drilling surface to ensure that you will not damage any hoses, wires, or other equipment. Failure to do so could result in damage to the vehicle.

CAUTION – If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258/92905) is ***not*** directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example.

Attach this terminal side just past the main disconnect so that it is as close as possible to the battery but still gets disconnected when the master disconnect is turned off. Failure to do so can result in damage to the display.



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1

Introduction

- Technical assistance
- Manual system upgrade to the Autopilot system
- Preparing the vehicle for installation

This manual describes how to install the platform specific components of the Trimble® Autopilot™ automated steering system.

For installation of the GFX display and NAV-9xx guidance controller please review the separate display and NAV controller installation guide.

Even if you have used another GNSS (Global Navigation Satellite System), such as the United States' GPS (Global Positioning System), before, spend some time reading this manual to learn about the special features of this product. If you are not familiar with GNSS, go to the Trimble website (trimble.com) for an interactive look at Trimble and GNSS.

Technical assistance

Go to the Ag Resource Center for the latest support information, including:

- support notes detailing support issues
- documentation
- the latest files available for download

If you still cannot find the information that you need, contact your PTx Trimble reseller.

Manual system upgrade to the Autopilot system

Displays

Retain
GFX display: P/N 13x000-01 **NAV-960™ guidance controller: P/N 131800-04** **NAV-900 guidance controller: P/N 108993-05**
GFX display to NAV-xxx comms cable: P/N 110540

Required components

Kits required	Special tools
Platform kit: P/N 54036-5112	Standard hand tools
VDM-912 hydraulic valve driver controller: P/N 55570-100	

Antenna mounting kits

Kits required
NAV-960, Mount, Spar and Quick Release Adapter Plate: P/N 132085
Optional: Bracket, NAV-9xx, Spar Quick Release Adapter: P/N 110308 Bracket, GPS Spar 27.5" - 37.5": P/N 55349

Preparing the vehicle for installation

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 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.

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

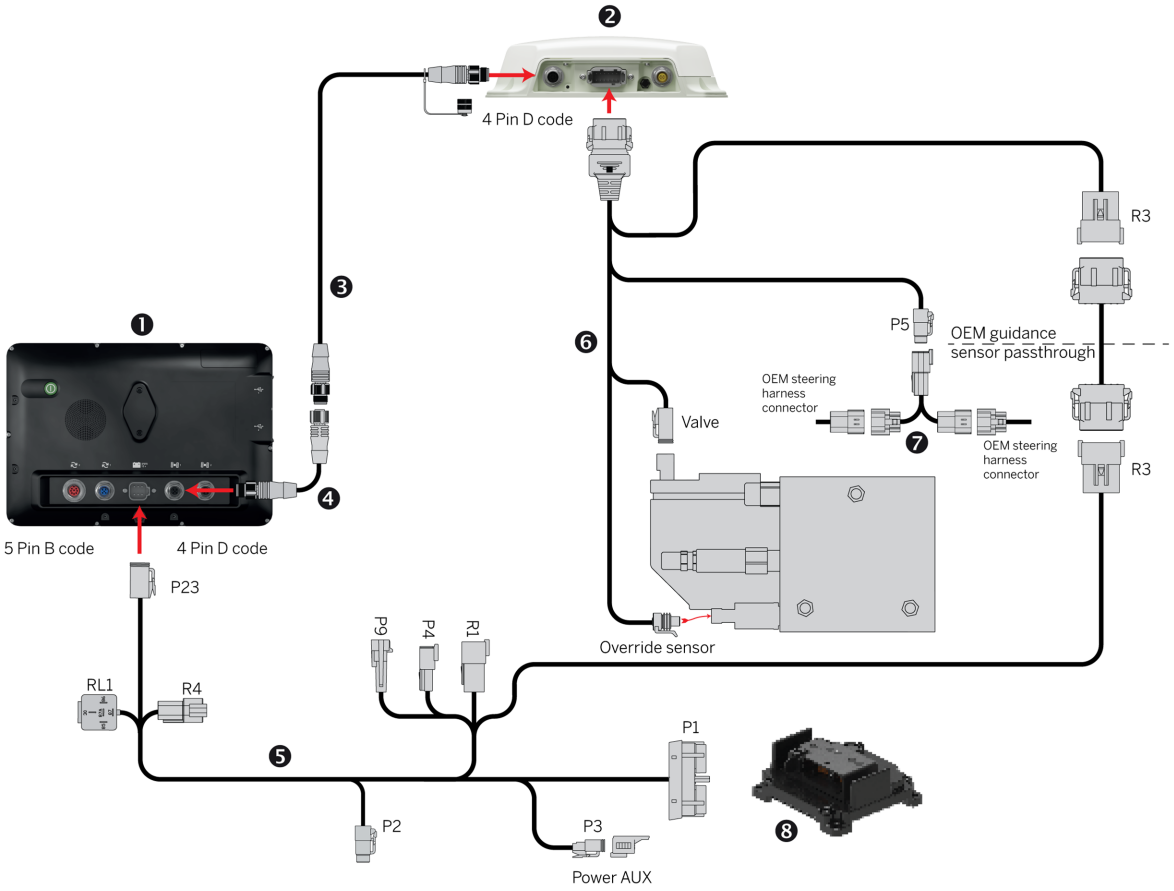
TIP – Read through the steps and make certain you have all the hand tools needed before starting installation.

2

Display Installation

- System components
- GFX series display: Preparation
- GFX series display: Installation
- GFX series display: Installing the power harness

System components



Item	Description	P/N
1	GFX display, with PIQ App	13x000-01
2	NAV-960 guidance controller	131800-04
3	Cable Assy, GFX to NAV, Power/Ethernet (BRR), 5 m	110540
4	Cable Assy, GFX to NAV, Power/Ethernet (BRR) Extension, 2.5 m	112082
5	Cable Assy, Main Autopilot, VDM-912 / GFX In-Cab, Versatile	128865
6	Cable Assy, Main Autopilot, VDM-912/ NAV / GFX External, Versatile	128898
7	Cable Assy, Autopilot, Steering sensor, Versatile MFWD	100544-01
8	VDM-912 hydraulic valve driver controller 55570-100	55570-100

GFX series display: Preparation

The GFX display utilizes the RAM mount system.



Attach the diamond based ram mount to the back of the display using the provided fasteners.





GFX series display: Installation

Step 1

Determine where the display will be located in the vehicle and then attach RAM mount base to the bracket in the cab.



Take the RAM mount arm and connect the display to the base.



Step 2

Connect cable P/N 110551 to the GFX display. Securely zip-tie the excess cabling.



GFX series display: Installing the power harness

Step 1

Connect the P23 on cable P/N 128865 to the middle port of the display.



Step 2

Connect the 4-pin M12 connector to the 4-pin receiver connector. Note the keying and number of pins.





3

VDM-912 Hydraulic Valve Driver Controller Installation

- VDM-912 valve driver controller installation
- External sensor harness
- External valve and sensor cable installation
- Connecting the OEM steering sensor

VDM-912 valve driver controller installation

Step 1

Attach the VDM-912 controller to the VDM-912 adapter plate using the hardware provided.



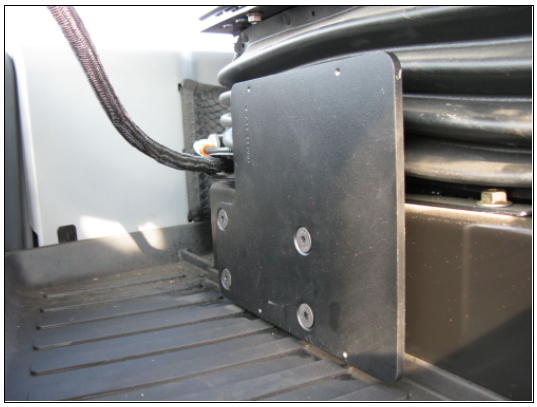
Step 2

Mount the VDM-912 unit to the right-side of the seat base. Four-threaded holes are provided for attaching the mounting bracket.

Step 3

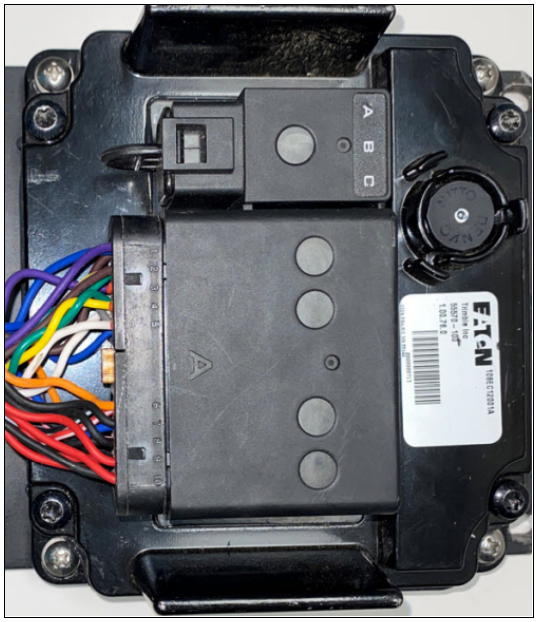
Use the four supplied M10 flat head bolts and four spacers to mount the plate to the seat base. The spacers provide additional clearance for the seat at its lowest adjustment. If the threaded holes are available, tighten the bolts securely.





Step 4

Before you install the controller, attach the P1 connector on the in-cab harness (P/N 128865), to the VDM-912 unit. Use an Allen wrench to secure the connectors to the VDM-912.

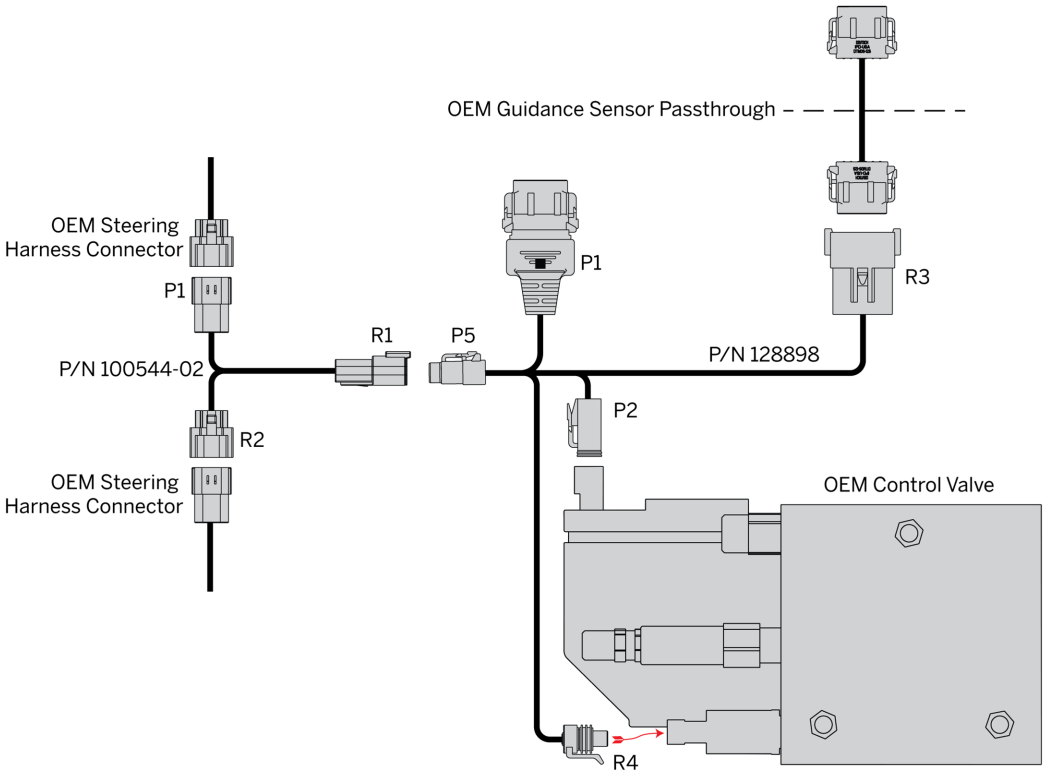


Step 5

Use the four #10 Phillips screws provided in the bolt kit to mount the VDM-912 adapter plate and VDM-912 unit to the bracket.



External sensor harness



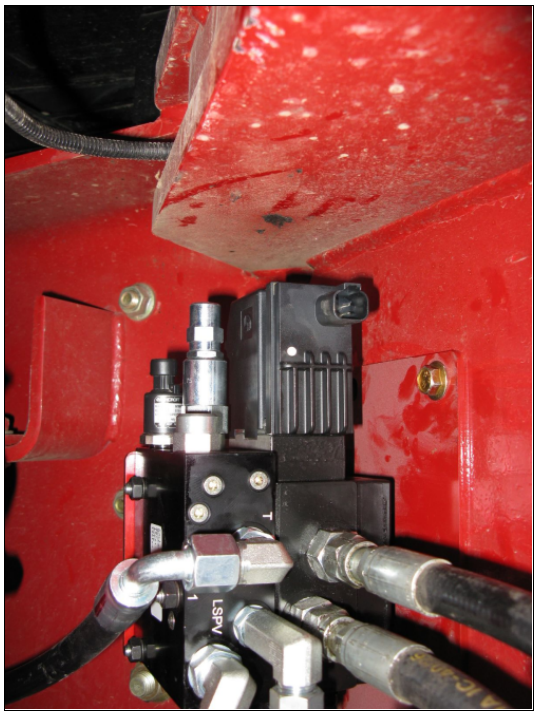
Connector	Description
P1	Connects to the OEM sensor harness at the front axle
P2	Connects to the OEM valve controller
P5	Connects to R1 of cable P/N 100544-02
R1	Connects to P5 of cable P/N 128898
R2	Connects to the OEM sensor harness at the front axle
R3	Connects to the 12-pin OEM sensor bulkhead pass-through
R4	Connects to the manual override transducer

External valve and sensor cable installation

Step 1

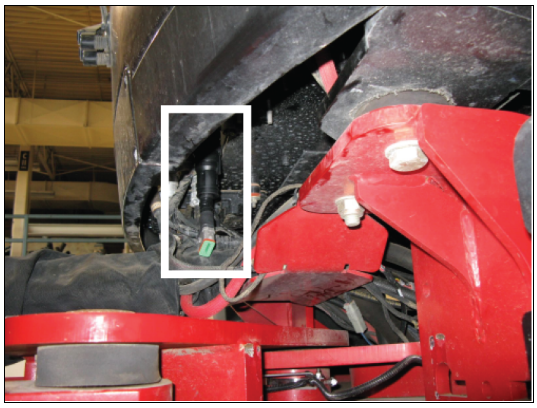
Locate the existing Danfoss steering valve under the cab, in front of the back edge of the fuel tank.





Step 2

Locate the guidance pass-through harness on the rear underside of the cab.



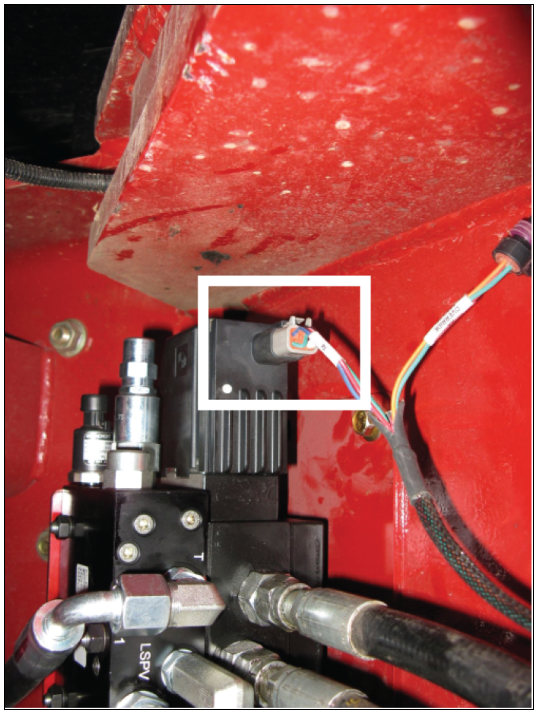
Step 3

Connect the R3 connector of the external cable, P/N 128898 (included), to the 12-pin DEUTSCH connector on the guidance cable harness you located in the previous step.



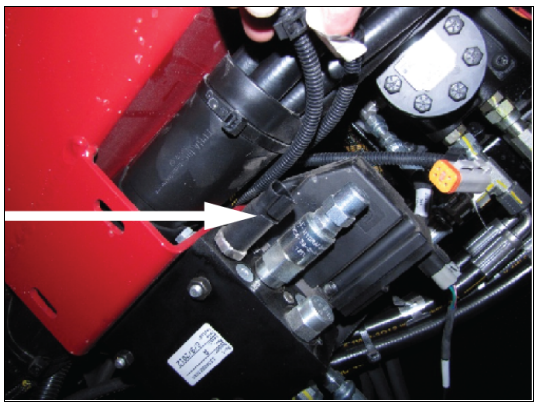
Step 4

Remove the existing valve control cable and connect the connector labeled Valve A/B on the Trimble P/N 128898 harness to the valve controller.



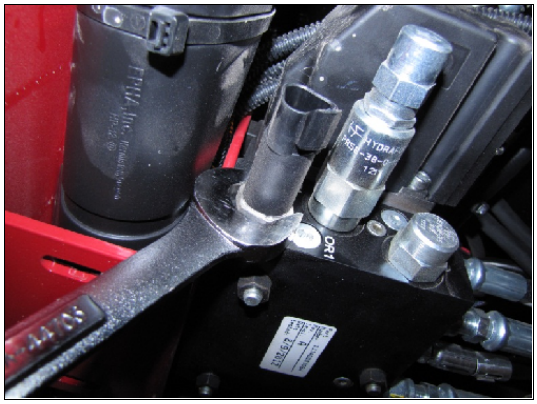
Step 5

Disconnect the existing cabling from the pressure transducer and secure it safely out of the way.



Step 6

Clean the area of any dirt or debris and then remove the pressure transducer from machine's steering valve.



Step 7

Install the Trimble supplied Autopilot manual override pressure transducer into the location where the sensor was removed in previous step.



Step 8

Connect R4 on the P/N 128898 harness to the connector on the manual override transducer.

Verify that the P/N 128898 harness is routed away from any pinch points.

Secure both the P/N 128898 harness and the OEM harness ends to prevent damage to the wires.

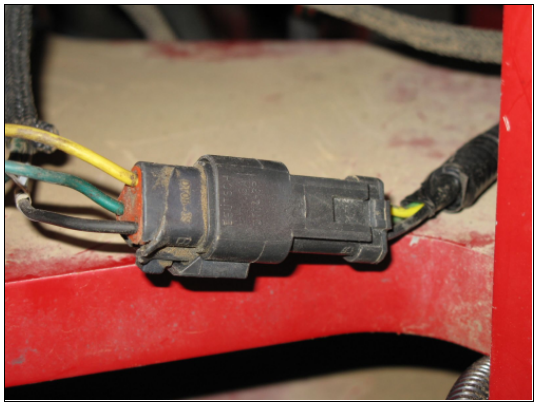


Connecting the OEM steering sensor

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

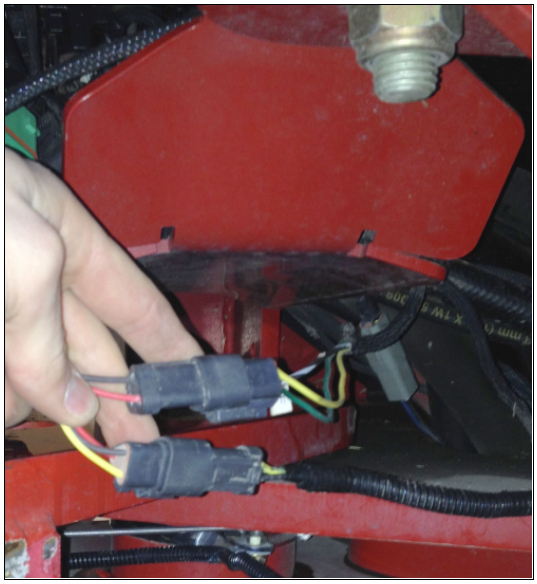
Step 1

Locate the OEM steering sensor harness connection. It is a 3-wire DEUTSCH connector coupling, located just forward of the articulation joint.



Step 2

Separate the connectors and then connect the mating ends of the Trimble P/N 100544-02 sensor cable to the connectors.



Step 3

Route the harness safely to ensure that it is not damaged or caught as the machine articulates.

Connect R1 on the sensor cable to the connector labeled P5 on the P/N 128898 harness.



4

In-Cab Harness Installation

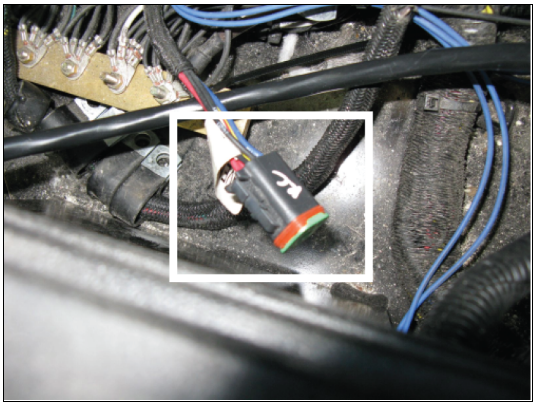
- Connecting the system power
- Connecting the sensor harness

Connecting the system power

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

In the electronics bay behind the seat, locate the 6-pin power connector.



Step 2

Connect the R1 socket on the P/N 128865 harness to the 6-pin power connector.

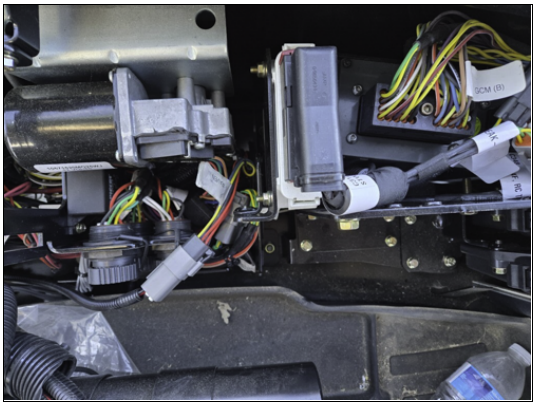


NOTE – Model Year 2025 machines may have the 6-pin connector located differently.

Look for the 6-pin connector placed behind the Gateway Module.



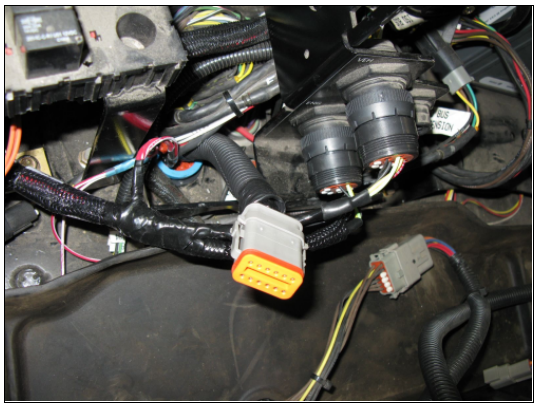
Remove the 6-pin connector from the area around the Gateway Module and connect it to cable P/N 128865.



Connecting the sensor harness

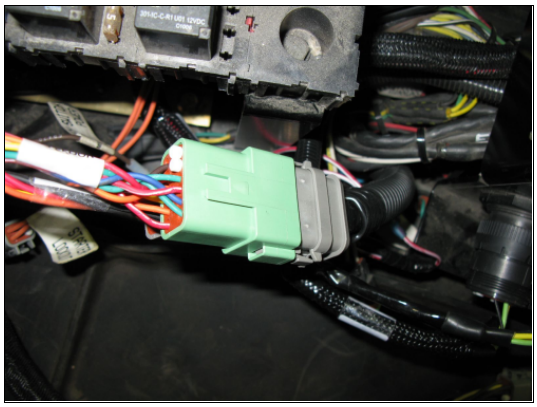
Step 1

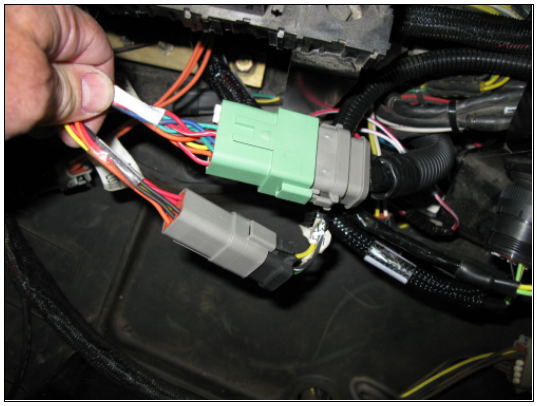
Locate the 12-pin DEUTSCH connector from the in-cab side of the guidance cable pass-through harness.



Step 2

Connect the R3 connector on the P/N 128865 harness to the 12-pin Deutsch connector from the in-cab side of the guidance cable pass-through harness.





5

Installing the NAV-9x0 Controller

- Installing the NAV-960 controller
- Installing the NAV-900 controller

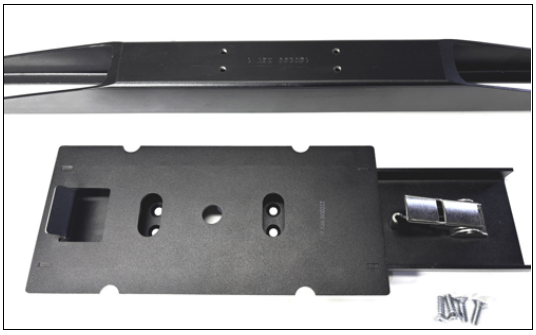
Installing the NAV-960 controller

Using a spar mount and optional quick release bracket

The optional quick release bracket P/N 110308 can be used to attach the NAV-960 to the spar.

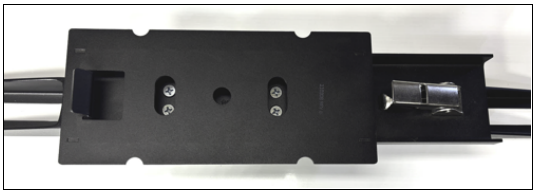
Step 1

Locate the spar bracket (P/N 55349), the spar quick release bracket (P/N 110308), and the supplied 1/4 -20 × 1/2" countersunk bolts.



Step 2

Align the four holes on the base mounting plate with the four holes in the spar. Install the supplied 1/4 -20 × 1/2" countersunk bolts and tighten appropriately.



Step 3

Place the NAV-960 on the three M6 studs in the mounting plate P/N 132085, and install the provided M6 lock washers and nuts.

Tighten the three M6 fasteners to 10 N-m (88.5 lb-in) maximum. Take care not to over-tighten the fasteners as damage may result.



Step 4

Place the NAV-960 and mounting plate on the quick release bracket and secure the latch.



Step 5

Secure the spar with the quick release bracket on the cab roof:

Remove the two bolts (that are at the rear of the cab roof). Use the same bolts to secure the spar bracket to the roof of the cab.

Then secure the NAV-960 controller to the quick release plate.

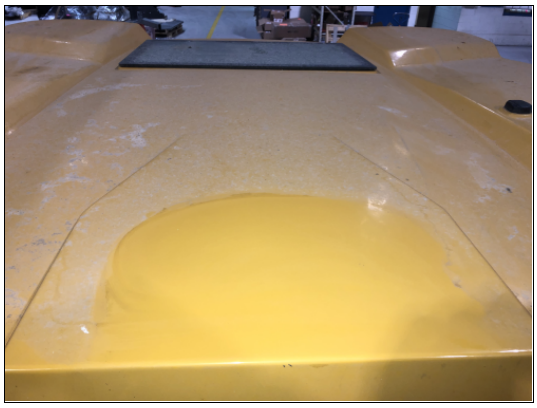


NOTE – Longer bolts may be needed.

Installing the NAV-900 controller

Step 1

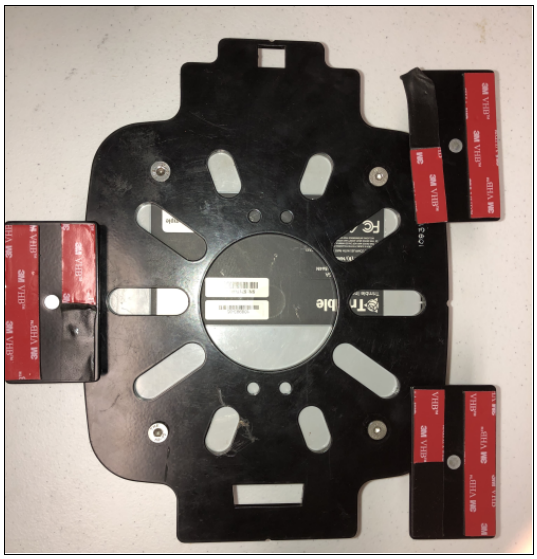
Clean a large area of the cab roof near the front of the cab.



Step 2

Invert the NAV-900 controller and use the four provided countersunk screws to attach the plate to the bottom of the NAV-900 controller.

> **NOTE** – When attaching the NAV-900 unit to the mounting plate, tighten the four M6 fasteners to 5 N-m (3.7 ft-lb). Take care not to over-tighten the bolts as damage may result



Step 3

Attach the three VHB plates to the mounting plate using the hardware provided.



Step 4

Place the NAV-900 controller on the center line of the tractor and at the front of the cab.

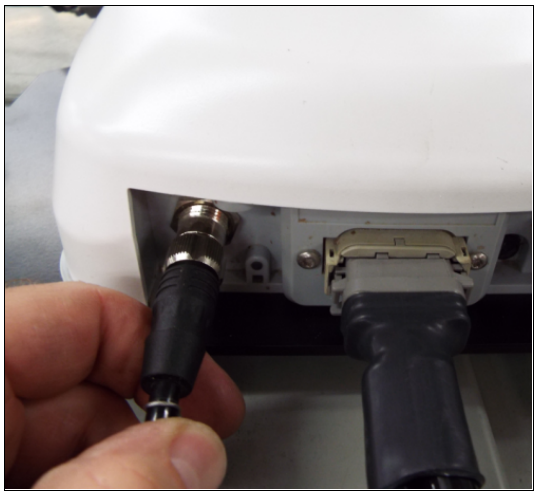


Step 5

Connect the P1 connector from cable P/N 128865 to the NAV-900 controller.

Connect cable P/N 110540 to the NAV-900 controller.

Route the remainder of the cable into the cab through the pass-through on the right lower side of the rear window and then connect it to the display.



6

Final Machine Check

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

To perform the final machine check:

1. Connect the battery.
2. Update the Trimble display and the NAV-9xx controller to the latest firmware from Ag Resource Center.
3. Load the correct configuration file into the Autopilot NAV-9xx controller for the vehicle model being used. Download the latest set of configuration files from Ag Resource Center.
4. Calibrate the Autopilot system using the Trimble display. Depending on your machine type, the following items must be calibrated before you can use the Autopilot system:
   - NAV-9xx mounting orientation
   - Antenna height/Antenna axle offset, and Roll offset
   - Manual override
   - Valve deadzone
   - Autopilot P-gain


PTx
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