INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

Miller Sprayers

- 2018 Miller Front Boom Sprayers

New Holland Guardian Sprayers

- 2018 New Holland Front Boom Sprayers

PTx Trimble

Version 10.00
Revision A
April 2025
P/N 54037-6019-E10

Legal Notices

Agriculture Business Area

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This is the April 2025 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54037-6019-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



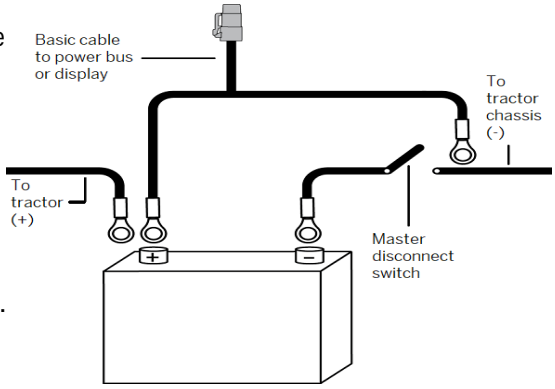
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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.



Contents

Legal Notices **2**

Safety Information **4**

Warnings 4
Cautions 5

Contents **6**

Introduction **7**

Technical assistance 7
Manual system upgrade to the Autopilot system 8
Displays 8
Required components 8
Antenna mounting kits 8
Preparing the vehicle for installation 8

Cable Installation **9**

System components 10
Installing the cables 11
Connecting the cables 15

Final Machine Check **17**

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 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** Power cable GFX display: P/N 110551 Base power cable: P/N 67258 GFX display to NAV-xxx comms cable: P/N 110540

Required components

Kits required	Special tools
Platform kit: P/N 54037-6019	Standard hand tools

Antenna mounting kits

Kits required
P/N 132088 - NAV-960, Mount, CNH Adapter

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.

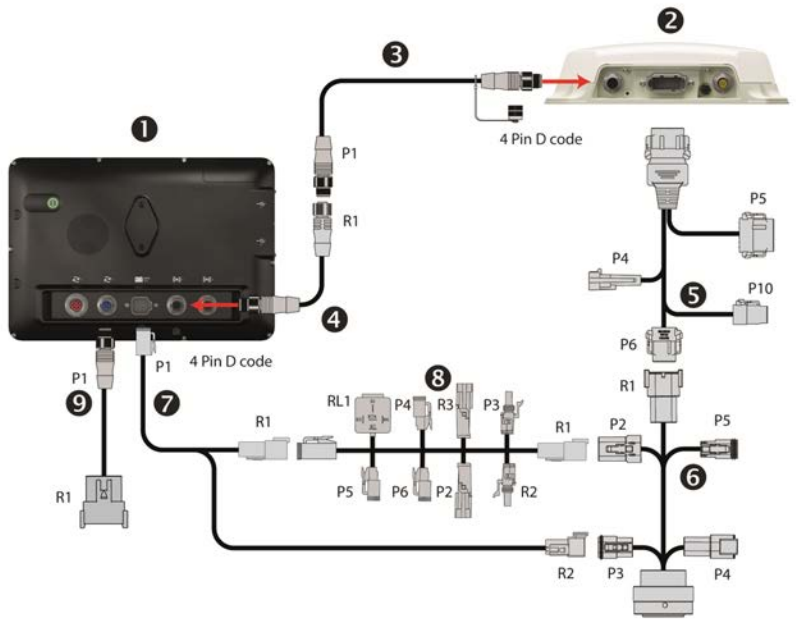
TIP – Read through the steps and make certain you have all the hand tools needed before starting installation.

2

Cable Installation

- System components
- Installing the cables
- Connecting the cables

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, display to NAV, Power/Ethernet (BRR), Extension, 2.5 m. Optional extension for large vehicles.	112082
5	Cable Assy, NAV, CAN ISO to cab Guidance, 4 m	110550
6	Cable Assy, 7310 Nitro, Guidance and OEM Product Control	116692
7	Cable Assy, GFX, Power to display, CAN, 2.5 m	110551
8	Cable Assy, GFX, Power with Relay and Switch (Acc)	67259
9	Cable Assy, GFX, Expansion Port Basic, RS232, Dig I/O, 2.5 m	110545

Installing the cables

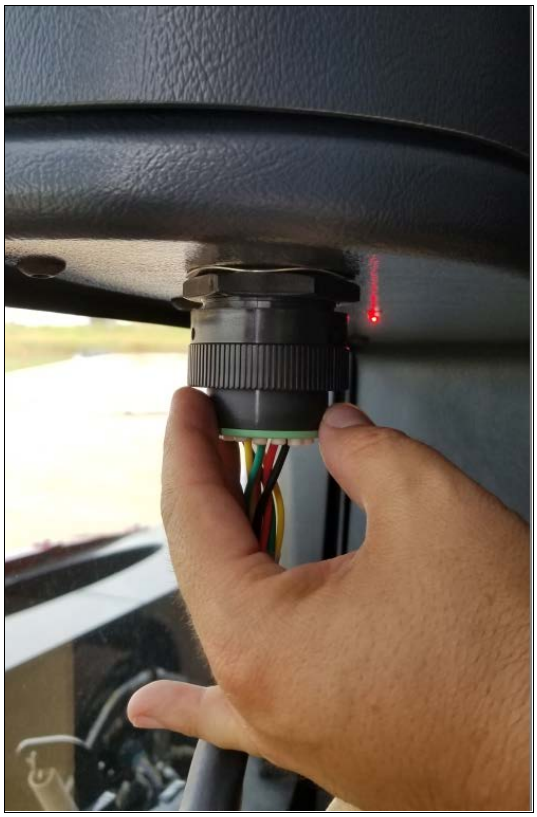
Step 1

Locate the machine's display connector below the cup holders on the right side of the cab.



Step 2

Attach connector P1 from cable P/N 116692 to the machine's display connector as shown.



Step 3

Connect P3 on cable P/N 116692 into R2 on cable P/N 110551 as shown. This allows the Trimble display to operate the machine's integrated ISOBUS product controller.



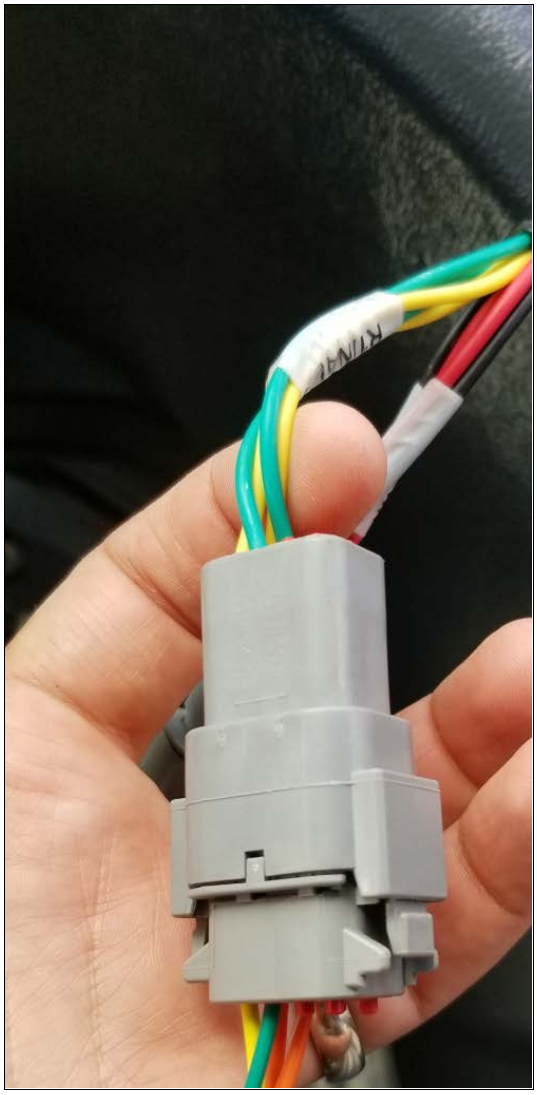
Step 4

Connect P2 on cable P/N 116692 into R1 on cable P/N 110551.



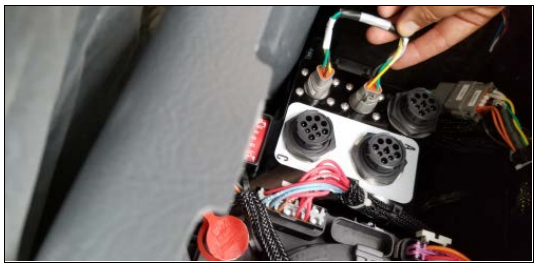
Step 5

Remove **Sub Component B** from cable P/N 116692 so that R1 on cable 116692 can be plugged directly into P6 on cable P/N 110550 as shown.



Step 6

Attach **Sub Component A** from cable P/N 116692 to the two triangular bulkheads, under the extra seat in the cab as shown.



> **NOTE** – P5 on cable P/N 116692 is provided if you need switched power for a modem.

Step 7

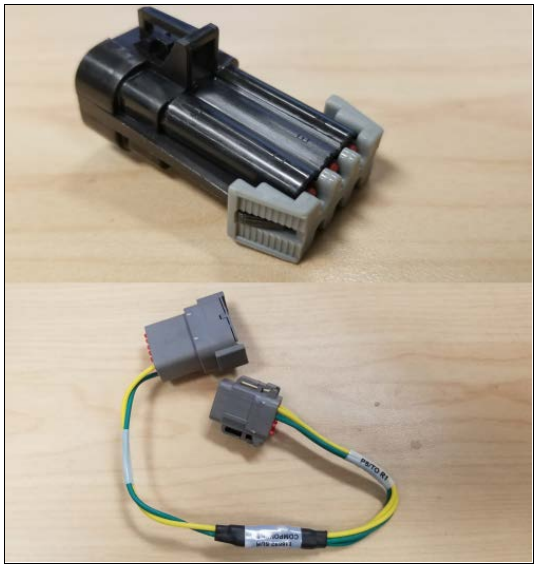
Route the cables going to the navigation controller through the brake pedal mounting plate.



After the cables are routed, ensure that you properly seal the hole to maintain cab pressure, otherwise the cab pressure monitoring system may post alarms.

Step 8

Set aside the dust cap and **Sub Component B** provided with cable P/N 116692. They are used when installing a TMX-2050 display.



Connecting the cables

Step 1

Plug the P1 connector on cable P/N 110550 into the back of the NAV-9xx guidance controller.





Step 2

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-9xx controller.

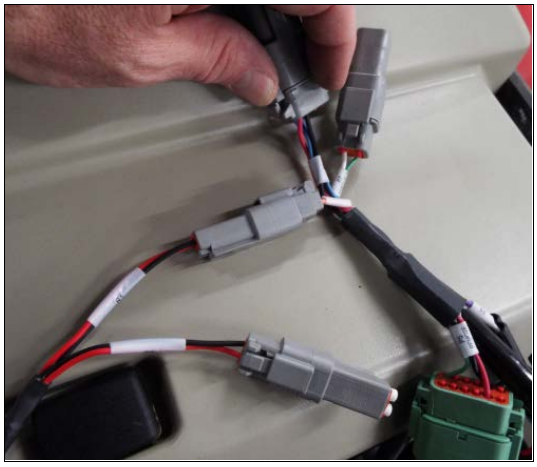


Step 3

Connect the Sonalert to the P/N 110550 cable once it is inside the cab.



Connect the NMEA output and modem power, as needed.



3

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
   - Steering sensor calibration
   - Valve deadzone
   - Autopilot P-gain

Machine Operation:

The Autopilot system is engaged through the button on the armrest. The signal is sent as a CAN message and received by the guidance controller.


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