INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

JCB Tractors

- 4160
- 4190
- 4220

PTx Trimble

Version 10.00
Revision A
April 2025
P/N 54035-6051-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 54035-6051-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



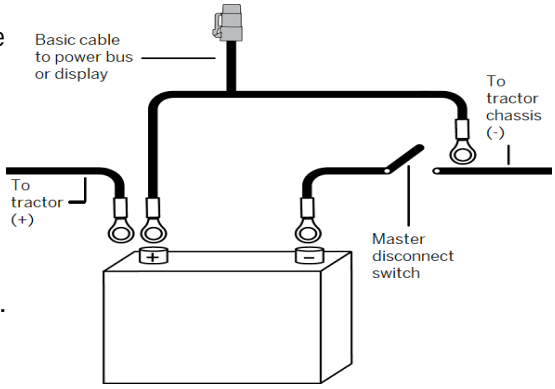
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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 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 54035-6051	Standard hand tools

Antenna mounting kits

Kits required
P/N 132731-00 - Receiver Mounting Kit, Gleaner, Ideal Combines and JCB, CAN NAV-960

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.

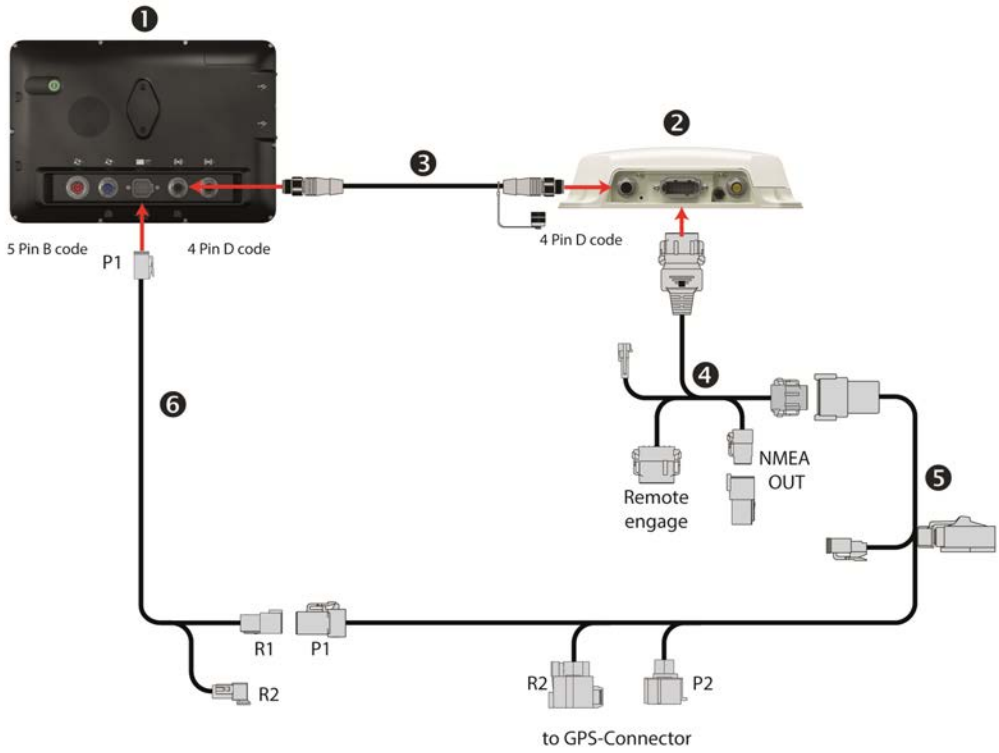
TIP – Read through the steps and make certain you have all the hand tools needed before starting installation.

2

CAN Interface Cable Installation

- System components
- Connecting the CAN interface cable

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, NAV-900, CAN ISO to cab Guidance, 4 m	110550
5	Cable Assy, NAV-900, CAN Guidance, JCB 4000	118293
6	Cable Assy, GFX/XCN, Power to display, CAN, 2.5 m	110551

Connecting the CAN interface cable

Step 1

Locate the P/N 110550 cable and the JCB P/N 18293 adapter cable.



Step 2

Plug the P1 connector into the back of the NAV-960 guidance controller.



Step 3

Route the cable across the top of the cab and down the side.





Step 4

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-960 controller.



Step 5

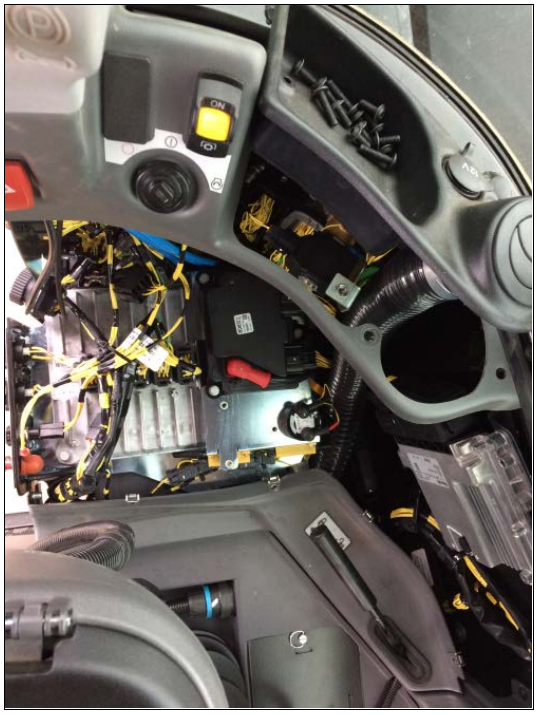
Inside the cab, remove some paneling to get to the connection to install cable P/N 118293.









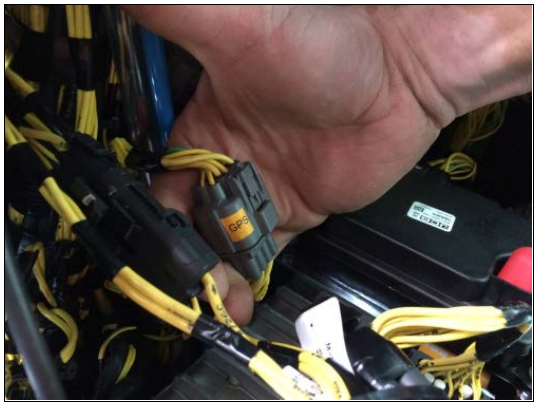


Step 6

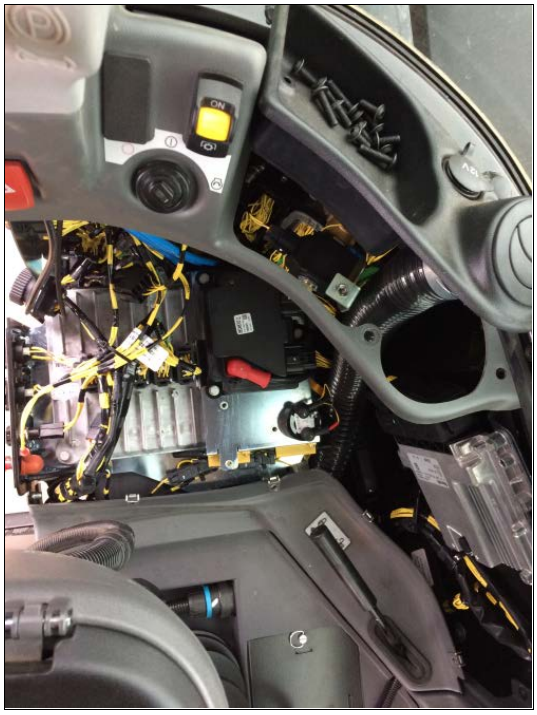
Locate cable P/N 118293 and connect R6 to P6 on cable 110550.

Locate the connection labeled **GPS** underneath the plastic cover.

Disconnect the GPS connector and then connect P2 and R2 on cable P/N 118293 with both already disconnected GPS connectors.

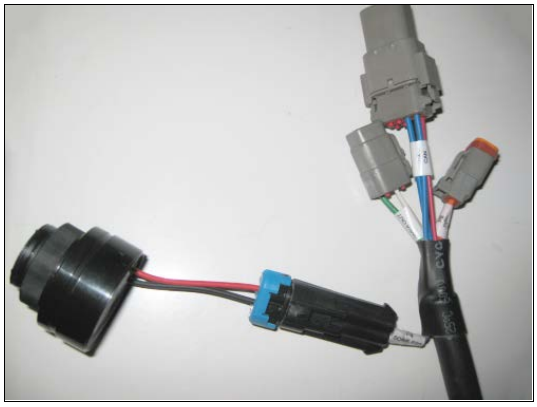


Connect P1 on cable P/N 118293 with plug R1 on cable 110551.

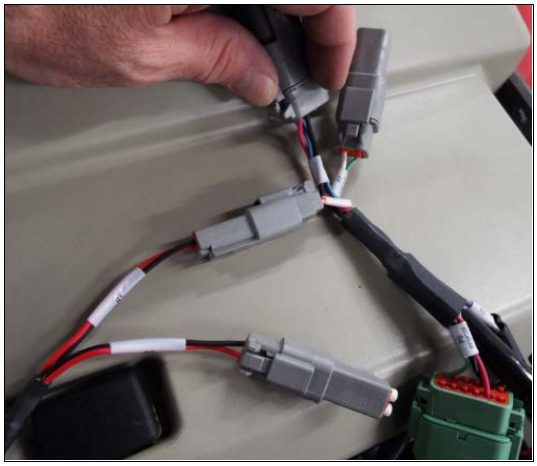


Step 7

Connect the Sonalert to the cable once it is inside the cab.



Connect the NMEA output, if needed.



3

Installing the NAV-960 Controller

Step 1

Locate the NAV-960 adapter plate P/N 133424 and mounting hardware.



Step 2

Attach the adapter plate to the JCB antenna mounting bracket located at the front of the cab.

Use the four provided 1/4-20 x 3/4" screws and associated hardware to secure the adapter plate in place.



Step 3

Locate the NAV-960 mounting bracket P/N 132085 and secure it to the adapter plate using the provided 1/4-20 x 3/8" screws.



Step 4

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.



Optional

Install the quick release bracket (P/N 110308), and the supplied 1/4 -20 × 3/8" countersunk screws to the adapter plate.



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



4

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
   - Valve deadzone (done using the OEM service tool or per tractor operators manual/service manual)
   - Autopilot P-gain (done using the OEM service tool or per tractor operators manual/service manual)


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