INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

AGCO Challenger tractors (ISO equipped)

- MT 735B / MT 745B / MT 755B / MT 765B
- MT 835B / MT 845B / MT 855B / MT 865B
- MT 755C / MT 765C / MT 835C / MT 845C
- MT 855C / MT 865C / MT 875C
- MT 755D / MT 765D

Fendt tractors

- 1154
- 1159
- 1165

PTx Trimble

Version 10.00
Revision A
February 2025
P/N 54035-6018-E10

Legal Notices

Agriculture Business Area

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This is the February 2025 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54035-6018-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



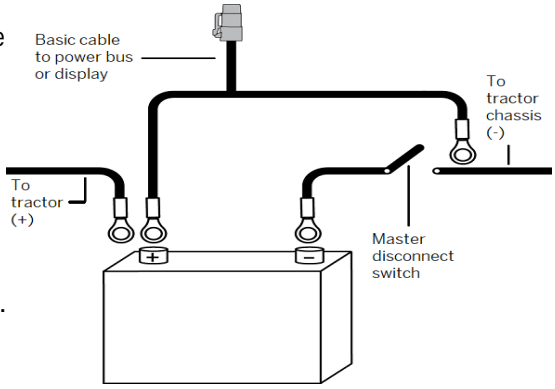
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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 54035-6018	Standard hand tools

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

CAN Interface Cable Installation

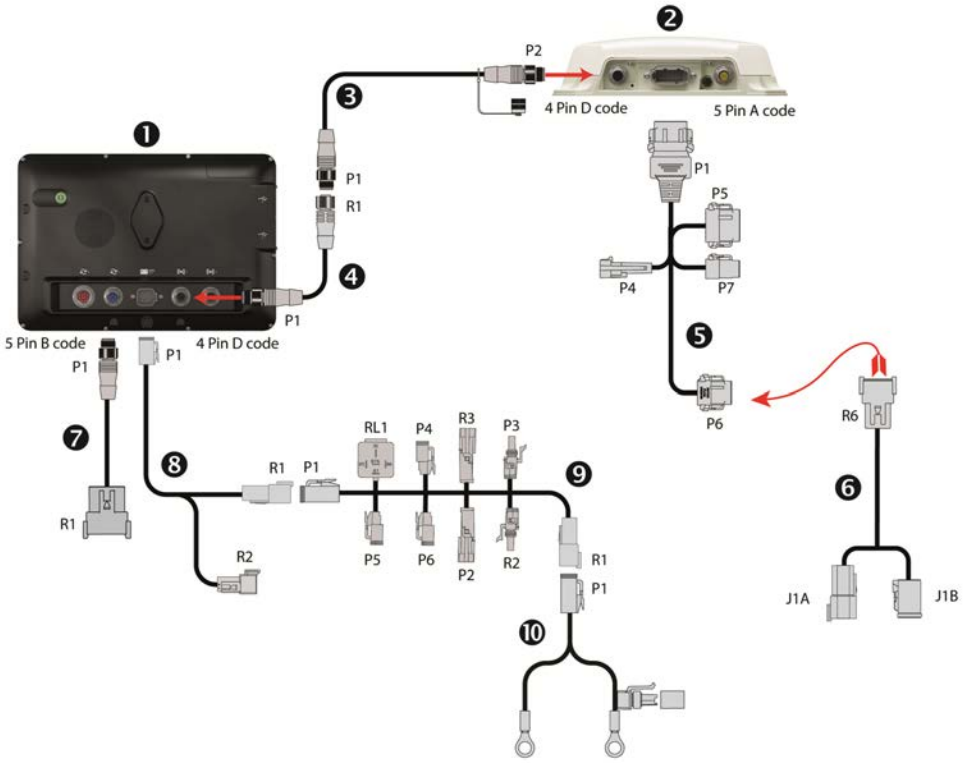
- CAN bus cable components
- System components
- Enabling the ISO11783 class 3 hitch
- Setting up the CAN bus: C Series models
- Installing the CAN bus cable: C Series models

CAN bus cable components



Item	Description
1	To 110550
2	CAN interface cable P/N 116850
3	To machine CAN bus

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 (optional extension for large vehicles)	112082
5	Cable Assy, NAV-9xx, CAN ISO to cab Guidance, 4 m	110550
6	Cable Assy, Autopilot , Challenger MT700/MT800 ABCDE CAN Interface, NAV-9xx	116850
7	Cable Assy, Display, Expansion Port, RS232, Dig I/O, 2.5 m	110545
8	Cable Assy, GFX, Power to display, CAN, 2.5 m	110551
9	Cable Assy, GFX, Power with Relay and Switch (Acc)	67259
10	Cable Assy, GFX, Basic Power, 4 m	67258

Enabling the ISO11783 class 3 hitch

Step 1

Start the tractor and then wait for the **Home** screen to appear on the arm rest controller.



Step 2

Check the version of the operating system software that is on the arm rest controller:

a. Rotate the round selector knob on the upper right corner of the display to highlight the wrench icon.

b. With the icon highlighted, press the round selector knob.



The operating system must be version 2.0.00 or later.

If it is not, contact your Challenger representative to update the software.



Step 3

Return to the **Home** screen: press the **Esc** button in the lower right the display.



Step 4

Rotate the round selector knob on the upper right of the display until the tractor icon is highlighted in yellow and then press the selector knob.



Step 5

Use the round selector knob to highlight the transmission heading (the selected heading is highlighted in black) and then press the selector knob.

If the transmission heading does not appear on the display, but another heading (such as engine) appears, select this heading.



Step 6

Rotate the selector knob to highlight the wrench icon and then press the selector knob.



Step 7

Press the button next to the wrench icon in the upper right corner.



Step 8

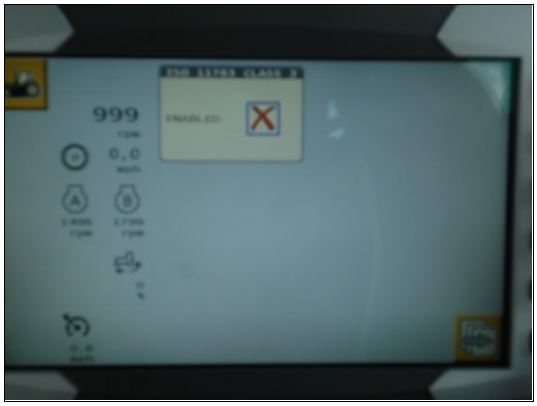
Press the button next to the next page icon in the lower right corner.



Step 9

Check the ISO 11783 Class 3 settings.

If it shows a red X, the ISO is disabled.



To enable the ISO, do the following:

a. Press the selector knob.

b. Rotate the selector knob to highlight the green checkmark.

c. Press the selector knob to enable.

d. The ISO 11783 Class 3 message appears.





To acknowledge that the ISO 11783 Class 3 is enabled, press the button next to the green checkmark on the upper right corner of the display.



Setting up the CAN bus: C Series models

Step 1

Start the tractor.The arm rest controller displays the **Home** screen.

Rotate the selector knob ❶ to highlight the wrench icon ❷, and then press the selector knob inwards.



Step 2

Check that the Operating System is at least 2.0.00 or later.

To update the Operating System version, contact your AGCO dealer.



Installing the CAN bus cable: C Series models

Step 1

Connect the CAN bus using the electrical panel to the right of the driver's seat.



Step 2

Remove the access panel.



Step 3

Locate the CAN bus connection towards the back of the access panel.



> **NOTE** – This is the approximate location. You may have to move wires/cables to locate the connection.

Step 4

Disconnect the CAN bus connector.



Step 5

Install the CAN interface cable (P/N 116850).



Step 6

Connect the 8-pin DT connector (R6) from cable P/N 116850 to the 8-pin DT connector (P6) of cable P/N 110550.



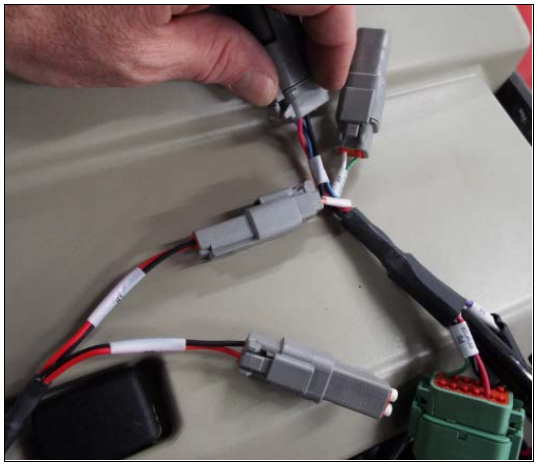
Step 7

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



Step 8

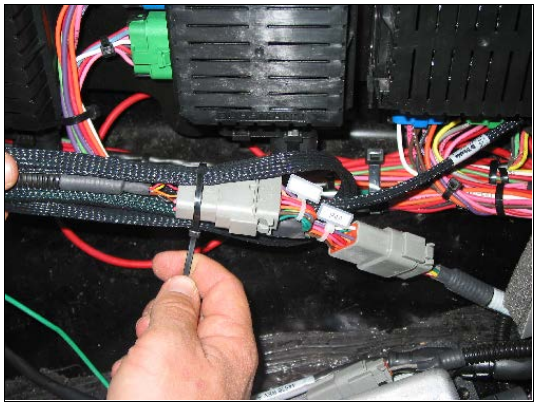
Connect the NMEA output, remote engage, and modem power as needed.



Step 9

Secure all cabling with ties. Minimize any wire strain. Re-install the access panel.

Route the remainder of the P/N 110550 cable to the NAV-960 controller and then connect P1 to the 12-pin connector on the NAV-960.



3

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.

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


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