INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

AXION 800 HEXASHIFT Stage IV
(Starting from serial number A6000100
if equipped with OSI ready)

- 800 / 810 / 830 / 840 / 850

AXION 800 CMATIC Stage IV
(Starting from serial number A6100100
if equipped with OSI ready)

- 810 / 820 (NA) / 830 / 840 (NA) / 850 / 860 (NA) / 870 / 880 (NA)

AXION 900 Stage IV
(Starting from serial number A4400583
if equipped with OSI ready)

- 920 / 930 / 940 / 950 / 960

NOTE – The vehicle must have the proper Open Steering Interface (OSI) license for a Trimble steering system in order to utilize the Guidance Ready functionality of the machine. This license is purchased from the CLAAS dealer.

PTx Trimble

Version 10.00
Revision A
January 2025
P/N 54035-6046-E10

Legal Notices

Agriculture Business Area

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Release Notice

This is the January 2025 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54035-6046-E10. It applies to Version 10.00 and later of the Autopilot automated steering system.

Notice to Our European Union Customers

For product recycling instructions and more information, please go to:
trimble.com/en/our-commitment/responsible-business/corporate-compliance/environmental-compliance.



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



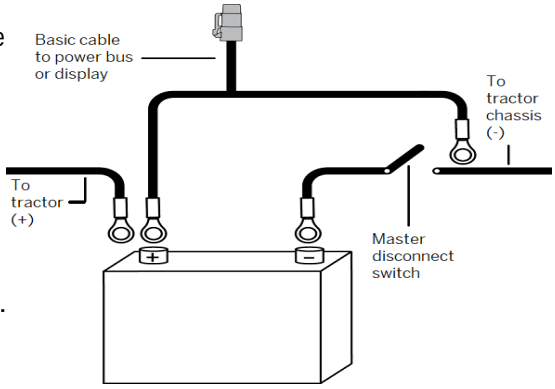
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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 54035-6046	Standard hand tools

Antenna mounting kits

Kits required
P/N 117682, +NAV-9xx, Mount, CLAAS Quick Release Adapter

Optional spar mounts (must measure application for proper part number):

- P/N 64898: Bracket, GPS Spar 16.5"– 28.5"
- P/N 55349: Bracket, GPS Spar 27.5"– 37.5"
- P/N 53676: Bracket, GPS Spar 36.5"– 46.5"
- P/N 55348: Bracket, GPS Spar 45"– 55"
- P/N 66774: Bracket, GPS Spar 54"– 64"

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

Connecting the NAV-960 controller

- Installing the NAV-960 guidance receiver using the CLAAS quick release adapter plate
- GFX series display: Components
- Connecting the cables

Installing the NAV-960 guidance receiver using the CLAAS quick release adapter plate

Attaching the base mounting plate

The guidance controller has a base mounting plate (P/N 132085) for adapting to other mounting fixtures. It is attached using the three M6 studs in the mounting plate and the provided M6 lock washers and nuts.

Step 1

Locate the NAV-960 controller and the NAV-960 base plate, P/N 132065.



Step 2

Place the NAV-960 on the three M6 studs in the mounting plate 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 3

Locate the CLAAS Quick Release Adapter mount, P/N 117682.



Step 4

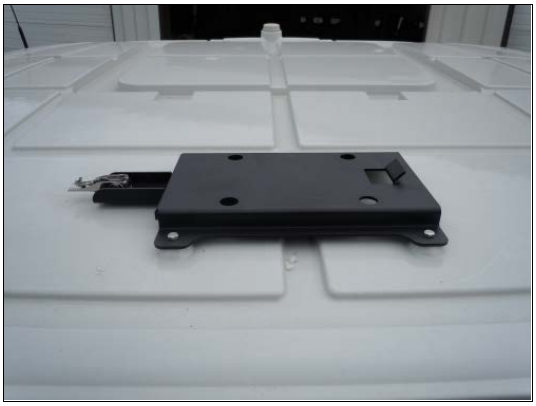
Locate the 4 mounting holes on the top of the cab. Remove the plugs in the mounting holes.



Step 5

Use the 4 bolts provided to affix the quick release adapter mount to the mounting holes.





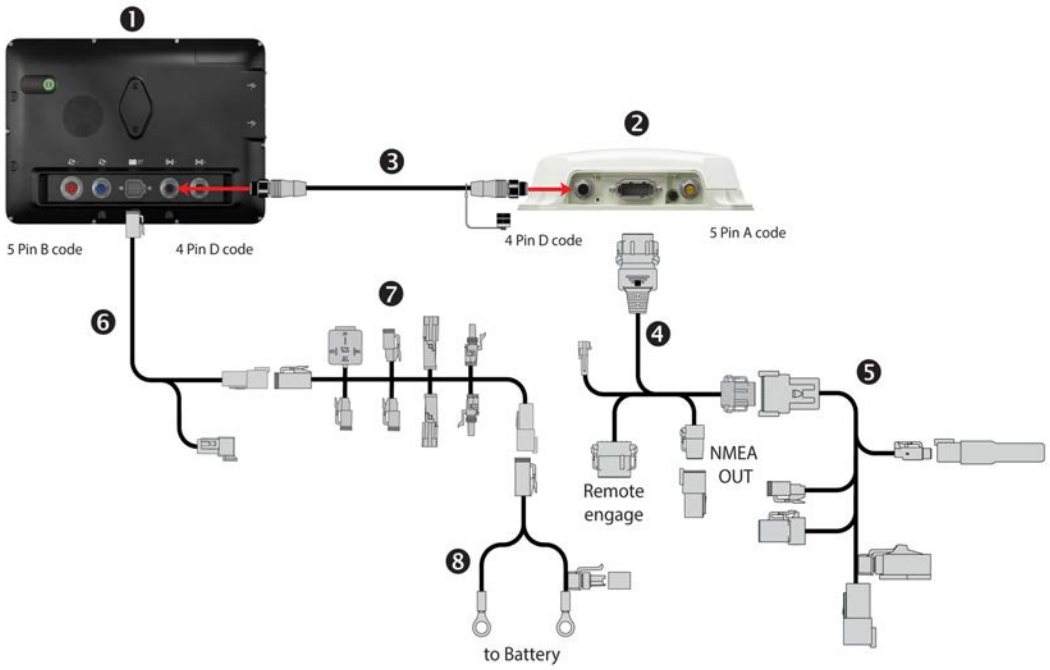
Step 6

Lay the base mounting plate onto the quick release adapter mount tang and then secure with the latch on the other side.





GFX series display: 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, CAN ISO to cab Guidance, 4 m	110550
5	Cable Assy, NAV, CAN Guidance, CLAAS	113271
6	Cable Assy, GFX, Power to display, CAN, 2.5 m	110551
7	Cable Assy, GFX, Power with Relay and Switch (Acc)	67259
8	Cable Assy, GFX, Basic Power, 4 m	67258

Connecting the cables

Step 1

Locate the P/N 110550 cable and the CLAAS P/N 113271 adapter cable.

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Step 2

Plug the P1 connector of cable P/N 110550 into the back of the NAV-9xx guidance receiver. Connect P/N 110540 to the 4-pin M12 connector on the left rear of the NAV-9xx guidance receiver.



Step 3

Route the cables to the back of the cab and into the access holes on the right rear.



Loosen the roof panel and route the P/N 110540 and 110550 cable down the B pillar into the machine.



Locate the Interface cable at the bottom right of the cab.



Plug the interface adapter cable 113271 into this connection, and then connect it to the 110550 cable routed down through the B pillar.



Step 4

With the display power cable routed into the B pillar, route the other end of the P/N 110540 cable out of the top of the B pillar and connect it to the display as well.



Step 5

Route the other end of the P/N 110551 cable down the B pillar and connect it to the P/N 67258 base power cable.



Power connection of the ring terminals can be made in the back of the cable to the power supplied to the fuse board (recommended), or routed down through the knockout hole on the bottom right of the cab towards the battery on the right side of the machine.



If routing the cables to the battery, make sure to leave adequate slack in the power cable to accommodate for the cab suspension movement.

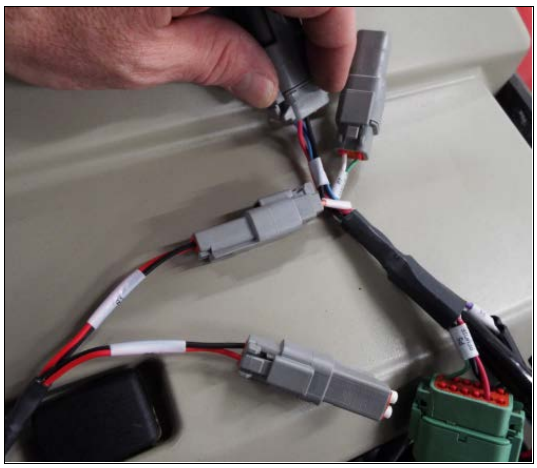


Step 6

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



Connect the NMEA output, if 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. Configure the vehicle using the Trimble display and selecting the correct configuration for the vehicle model being used.
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
   - Make sure the machine has the proper licensing from CLAAS to be steered. This is region and model year dependent. Contact the CLAAS dealer for the specific requirements for the installed on year/model.
   - 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)

NOTE – The Autosteer enable button must be cycled for each power cycle of the machine. Engagement can be performed only from the button on the armrest/handle.


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