INSTALLATION INSTRUCTIONS

Autopilot

automated steering system

CLAAS JAGUAR - ISO Can Ready

- 840, 850, 860, 870, 880
- 930, 940, 950, 960, 970, 980

CLAAS LEXION Combine - ISO CAN Ready

- 660
- 730, 740, 750, 760, 770, 780

CLAAS LEXION Combine - TERRA TRAC

- 7400, 7500
- 8600, 8700, 8800

CLAAS XERION Tractors - ISO CAN Ready

- 4000, 4500, 5000

PTx Trimble

Version 10.00
Revision A
March 2025
P/N 54036-6046-E10

Legal Notices

Agriculture Business Area

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This is the March 2025 release (Revision A) of the *Autopilot Automated Steering System Installation Instructions*, part number 54036-6046-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



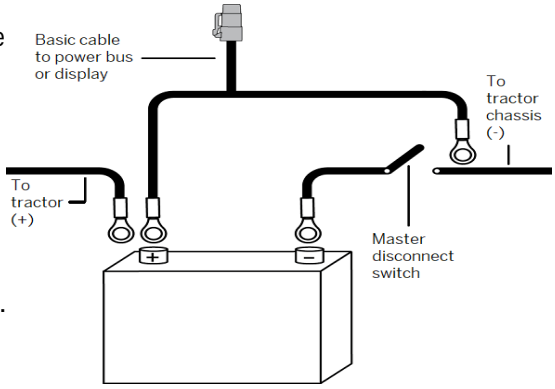
Set the hose pressure as low as practicable, and spray at a 45° to 90° angle. Keep the nozzle of the power washer away from the machine at the distance recommended by the manufacturer.

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 54036-6046	Standard hand tools

Antenna mounting kits

Kits required
P/N 132085: NAV-960, Mount, Spar and Quick Release Adapter Plate P/N 115742: NAV-9xx, Mount, CLAAS Quick Release Adapter P/N 133425: NAV-960 Adapter Plate - MY 2022+ 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.

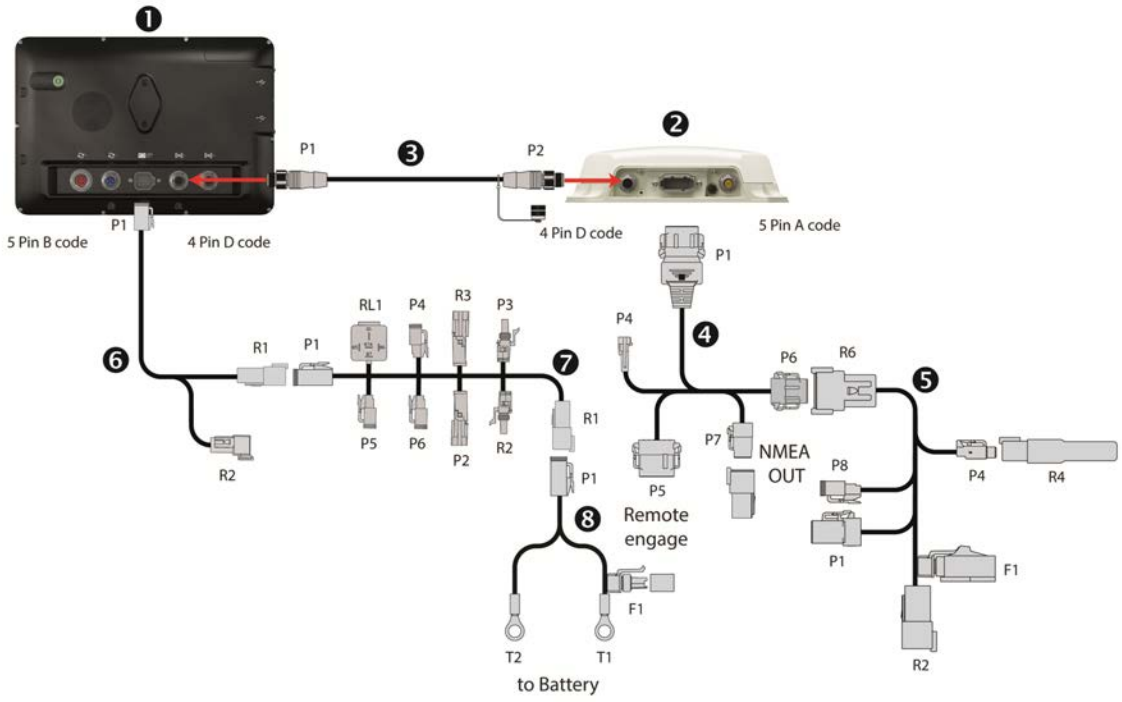
TIP – Read through the steps and make certain you have all the hand tools needed before starting installation.

2

Connecting the NAV-960 controller

- System components
- Installing the NAV-960 guidance receiver using the CLAAS quick release adapter plate
- Installing the NAV-960 guidance controller on MY 2022+ CLAAS LEXION combine
- Connecting the cables
- Connecting the cables – MY 2021 LEXION 8800/8700/8600/7500/7400 TERRA TRAC

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, 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

Installing the NAV-960 guidance receiver using the CLAAS quick release adapter 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 132085.



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 mount, P/N 115742.





CLAAS LEXION 8xxx and 7xxx

Step 4

Using a Torx T-27 tool, remove the 3 screws holding on the front of the roof cap.






USA

NOTE – If the machine has a Telematics antenna or the CLAAS Steering antenna on the center platform of the cab, this must be removed or relocated.



Step 5

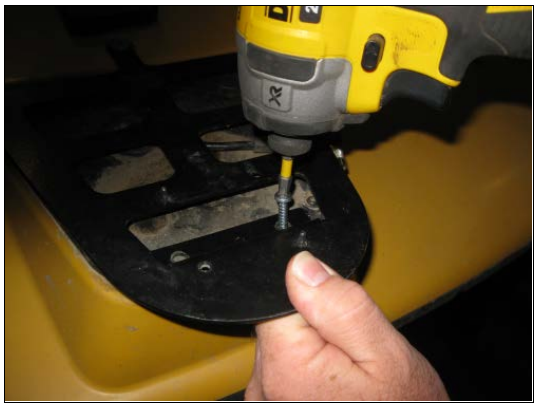
Use the 3 bolts removed from the front cap on the cab to secure the P/N 115742 bracket.





Step 6

Using the provided self-tapping screws, secure the front of the P/N 115742 bracket to the front mounting location on the cab.



Step 7

Lay the base mounting plate onto the quickrelease mount and then secure with the latch on the other side.

NOTE – NAV-900 shown for reference.







Installing the NAV-960 guidance controller on MY 2022+ CLAAS LEXION combine

Step 1

Locate the CLAAS NAV-960 controller and the NAV-960 base plate, P/N 133425. Locate the CLAAS NAV-960 bracket located in the front of the grain tank.



> **NOTE** – If the bracket is not previously installed, a CLAAS NAV-960 Mount Bracket P/N 2669092.3 is required.

Step 2

Secure the NAV-960 controller mounting bracket P/N 133425 to the CLAAS bracket using the four provided M6 bolts in the NAV-960 pack-out.



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.

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-960 controller and the P1 of P/N 110550 to the 12-pin connector on the NAV-960.

NOTE – These connections can be made prior to attaching the controller to the CLAAS mounting bracket.

Route the cables out of the grain tank by following the existing CLAAS cables to the front right of the grain tank.



Connecting the cables

NOTE – NAV-900 shown for reference.

Step 1

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



Ensure the cable is secured. Route it down the side or rear of the cab and locate a pass through.

On LEXION machines this is behind the right side of the cab behind the panel.



On JAGUAR machines this is below the cab in the rear.





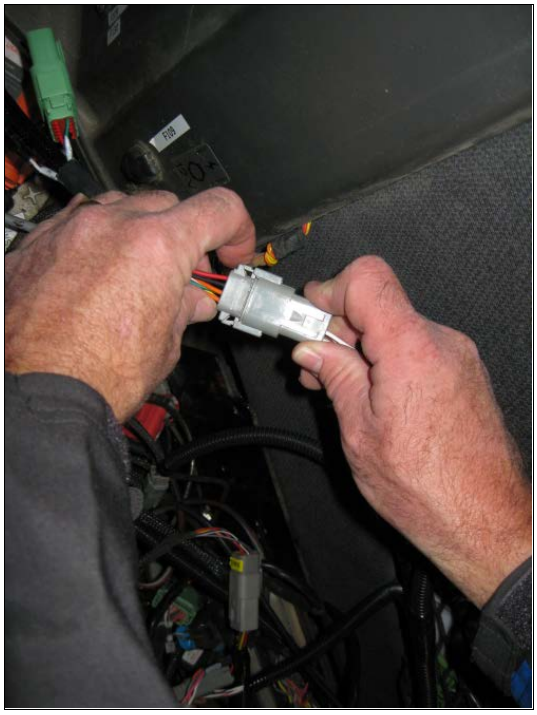
Step 4

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

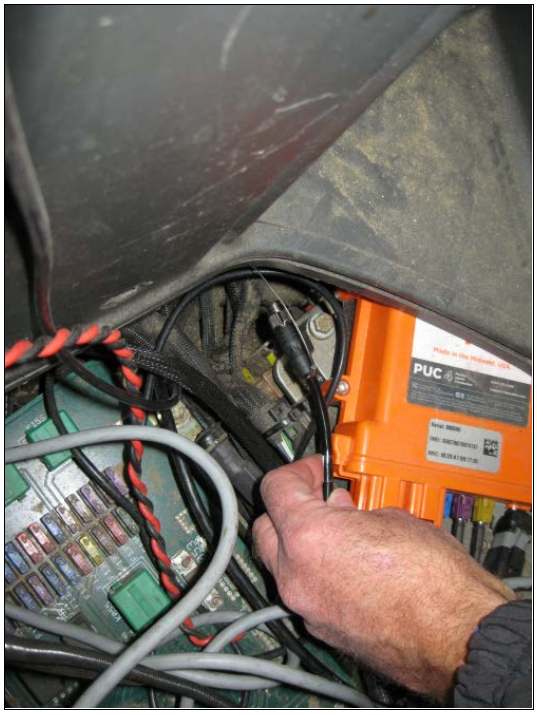


Step 5

Inside the cab, route in and connect the mating connectors of P/N 110550 to 113271.



Route the base communications/power cable P/N 110540 into the cab.



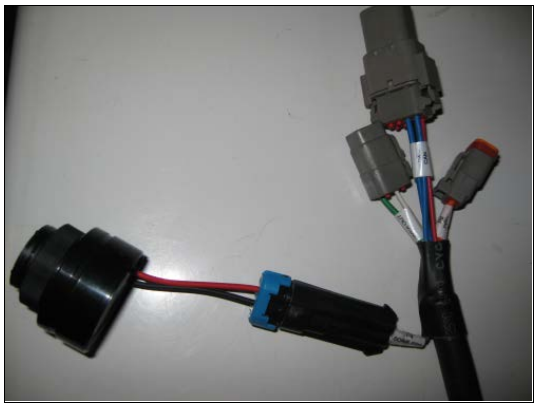
Step 6

Connect the P/N 113271 connector to the 6-pin DTM interface connector behind the seat.

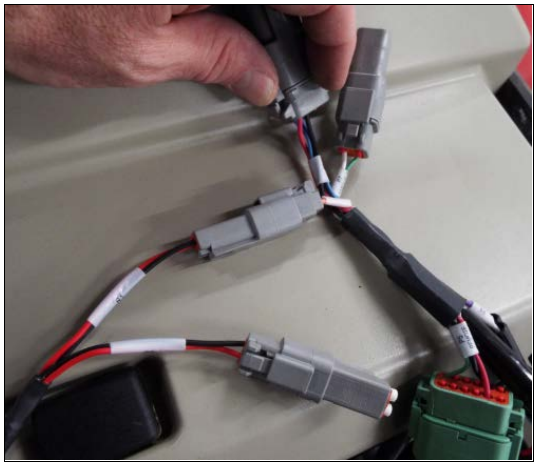


Step 7

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



Connect the NMEA output and modem power, as needed.



Connecting the cables – MY 2021 LEXION 8800/8700/8600/7500/7400 TERRA TRAC

Step 1

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



Ensure the cable is secured. Route it down the side or rear of the cab and locate a pass through.



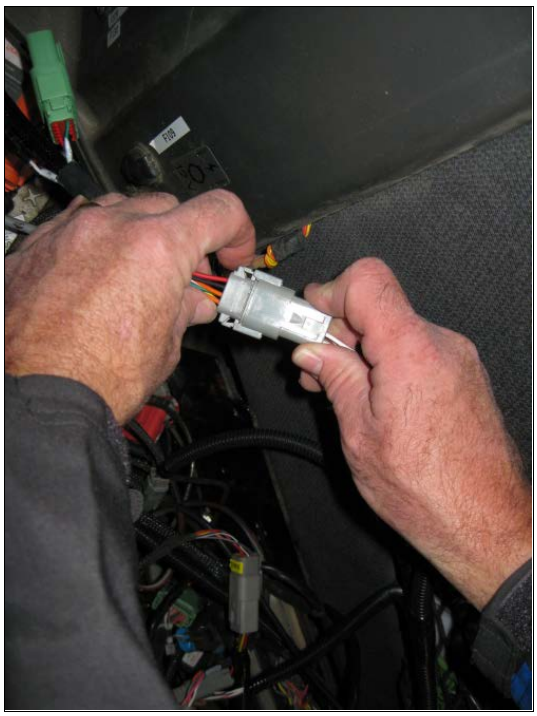
Step 4

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-9x0 controller.

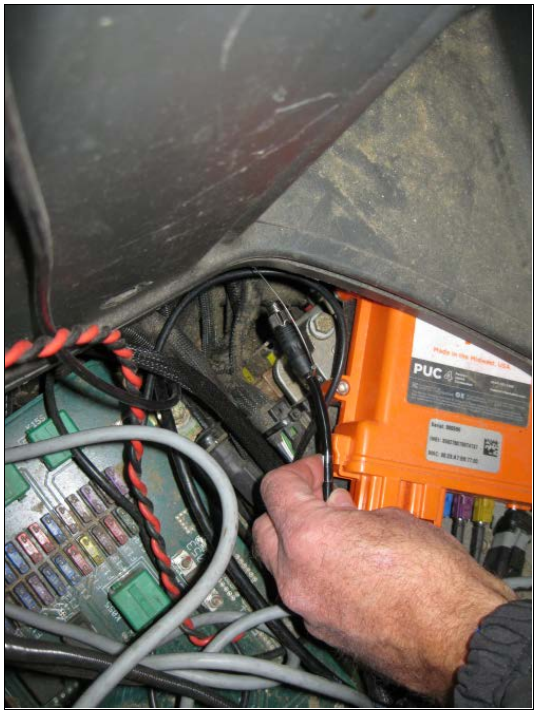


Step 5

Inside the cab, route in and connect the mating connectors of P/N 110550 to 113271.



Route the base communications/power cable P/N 110540 into the cab.



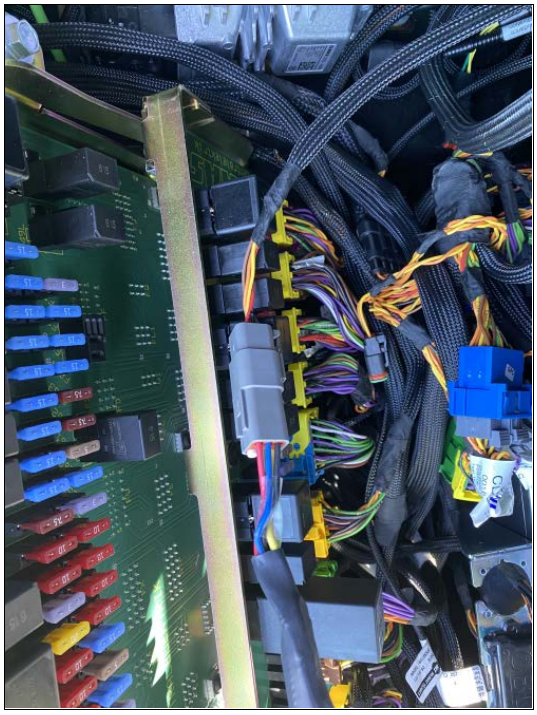
Step 6

The location of the connection is on the floor to right side of the seat, inside an electrical compartment.



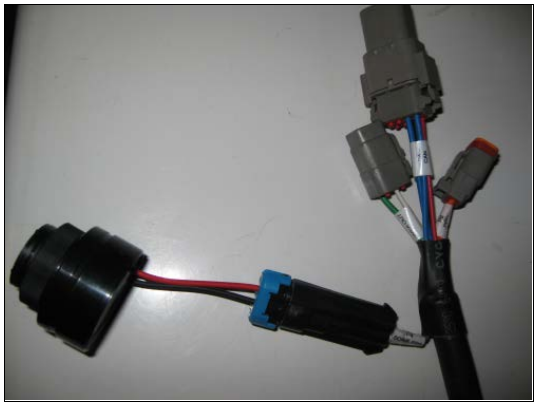
NOTE – The cover behind the seat may also need to be removed to access the 6-pin DTM connector.



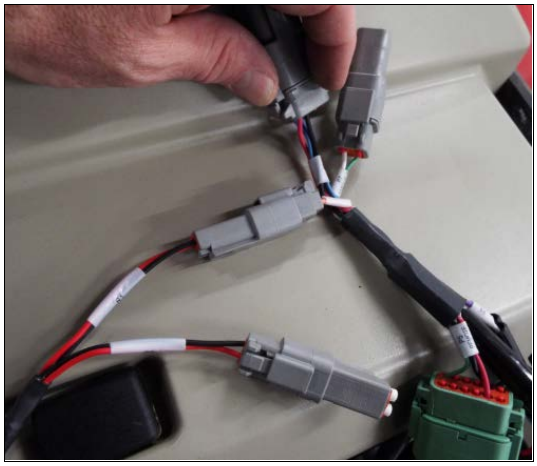


Step 7

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



Connect the NMEA output and modem power, as needed.



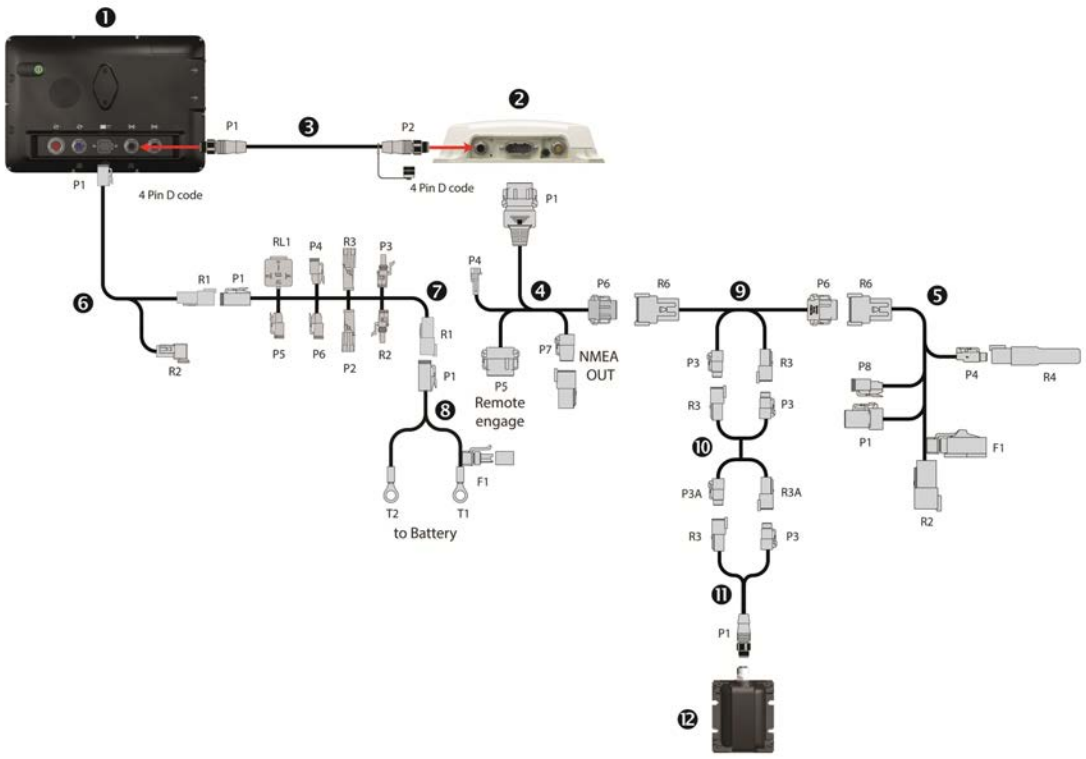
3

Optional IMD-900 as a Secondary IMU – MY 2022+ CLAAS LEXION Combine

- System components
- Installing the IMD-900 steering device

The IMD-900 device may be added to the GFX/NAV-960 guidance system as a secondary Inertial Measurement Unit (IMU). The following steps detail how to connect the IMD-900 to a 2022 or later model CLAAS LEXION combine, if needed.

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, 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
9	Cable Assy, NAV, CAN Guidance, IMD-900, Adapter	113261
10	Cable Assy, IMD-900 CAN Extension, 10 ft	116575
11	Cable Assy, CAN Extension, IMD-900	112759
12	IMD-900 inertial measuring device	

Installing the IMD-900 steering device

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 IMD-900 mounting location below the catwalk on the right side of the cab.



Model year 2022 and newer machines will either have an existing IMD-900 installed or there will be three mounting holes in this location that can be used to mount the IMD-900.





Step 2

Locate the IMD-900 and install it using the three holes provided.

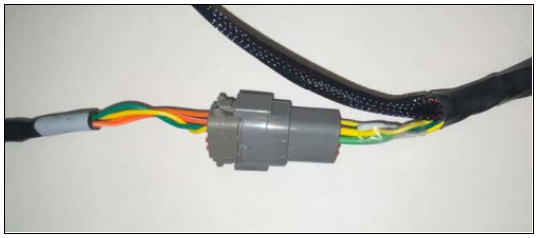


Step 3

Locate cable P/N 113261 and connect R6 to P6 on cable P/N 110550 in the cab.



Connect P6 on cable P/N 113261 to R6 on cable P/N 113271.



Step 4

Locate the IMD-900 CAN extension cable P/N 116575.



Disconnect the P3/R3 connectors on cable P/N 113261.



Connect P3/R3 on cable P/N 113261 to P3/R3 on the CAN extension cable P/N 116575.

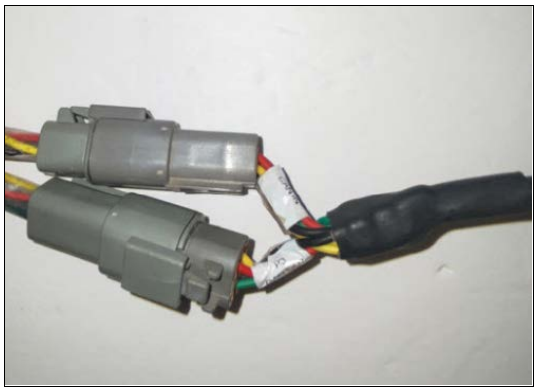


Step 5

Route the CAN extension cable out of the cab and to the IMD-900 mounting location below the catwalk on the right side of the cab.

Locate the IMD-900 cable P/N 112759.

Connect the R3A/P3A on cable P/N 116575 to P3/R3 on cable P/N 112759.



Step 6

Connect P1 on cable P/N 112759 to the IMD-900.



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:
   - 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.
   - NAV-960 mounting orientation
   - 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)
   - Antenna height/Antenna axle offset, and Roll offset
5. For MY 2022 and later CLAAS LEXION and open steering interface systems, set up the CLAAS display, see below.

Setting up the CLAAS display for Trimble Autopilot – MY 2022+ CLAAS LEXION and open steering interface systems

Step 1

Tap the **Steering** button on the right side of the screen.



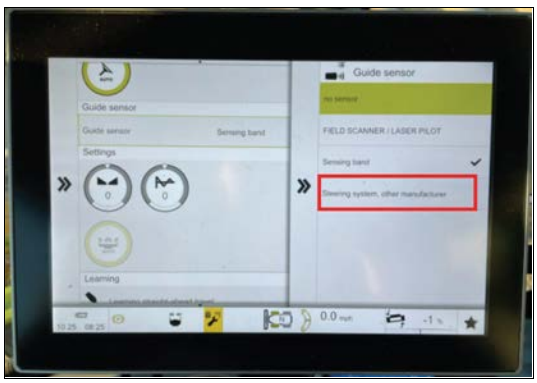
Step 2

Tap **Guide Sensor** to change the selection.



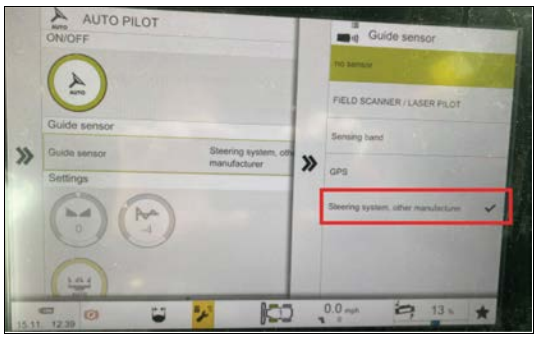
Step 3

Select **Steering system, other manufacturer** to move the check mark to that selection.



Step 4

Verify the check mark is next to the **Steering system, other manufacturer** and then return to the main screen by pressing the double black arrows.




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