Autopilot

AUTOMATED STEERING SYSTEM

INSTALLATION INSTRUCTIONS

Amazone Sprayer

- Pantera 4502
- Pantera 4503
- Pantera 4504

Version 8.00
Revision B
March 2023
P/N 54037-157-E08-B

Trimble Agriculture

Legal Notices

Agriculture Business Area

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Release Notice

This is the March 2023 release (Revision B) of the *Autopilot Automated Steering System Installation Instructions*, part number 54037-157-E08-B. It applies to version 8.00 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:

⚠ **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

⚠ **WARNING –** 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 all vehicle attachments to the ground before you begin work.

⚠ **WARNING –** 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.

⚠ **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 –** 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 – If the machine has a master electrical disconnect, ensure that the display/receiver will be disconnected from the battery when the master disconnect is used. Failure to do so may result in hardware damage and void warranty. Additionally, it is suggested to utilize power terminals located within the cab of the vehicle that ground in the same location as the cab components to avoid ground shifts between the display and any vehicle ECUs.

Cautions

CAUTION – When the vehicle has been running, parts of the vehicle, including the engine and exhaust, can become extremely hot and can cause serious burns. To avoid burns, allow hot machine parts to cool before you begin working on them.

CAUTION – The system installation may bring you into contact with chemical substances, such as oil, which can cause poisoning. Wash your hands thoroughly after you finish working on the system.

CAUTION – Battery posts, terminals, and related accessories contain lead and lead compounds, which can cause serious illness. To avoid ingesting lead, wash your hands thoroughly after touching the battery.

CAUTION – 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.

CAUTION – 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.

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 or hoses interfere with or catch on any mechanical linkages, or contact any machine parts that get hot.

CAUTION – Make sure the vehicle power is off when you are connecting system components.

Contents

Legal Notices 2

Safety Information 3

Warnings 3

Cautions 4

1 Introduction 7

Technical assistance 7

Manual system upgrade to the Autopilot system 8

Display 8

Required components 8

Antenna mounting kits 8

Autopilot hardware organization: As shipped 9

Preparing the vehicle for installation 9

2 CAN Steering Interface and ISOBUS Harness Cable Installation 10

Pantera 4502 models: ISOBUS and CAN steering cable interface components (P/N 92752 and 104492) . 11

Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components for GFX/XCN display and NAV-900 (P/N 120339) 12

Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components (P/N 120339) . . . 13

Installing the Autopilot interface cable 14

Pantera 4502 models 16

Pantera 4503/4504 models 19

Installing the ISOBUS interface cable 23

3 Antenna/Receiver Installation 25

Antenna and receiver installation options 26

Possible mounting methods 26

Attaching the plate with VHB adhesive 26

Installing the NAV-900 guidance receiver using the guidance controller quick adapter plate 28

Installing the NAV-900 guidance receiver using a spar mount 29

Optional: Using the P/N 110308 for quick release mounting of the NAV-900 from the spar 34

NAV-900 guidance receiver: Connecting the cables – both methods 35

NAV-900 guidance receiver: Connecting an external radio (as required) 36

4 Display Installation 38

CFX-750 display: Components 39

CFX-750 display: Preparation 40

CFX-750 display: Installation 41

CFX-750 display: Installing the wiring harness 41

TMX-2050 display: Components 42

TMX-2050 display: Preparation 43

Installing the display and mount 43

TMX-2050 display: Installing the wiring harness 46

TMX-2050 display: AG-25 GNSS antenna 48
CFX-750 and TMX-2050 displays: Installing the GNSS antenna and plate 49
Spar mount method 49
VHB adhesive method 49
CFX-750 and TMX-2050 displays: Installing the RTK radio antenna 53
GFX/XCN display: Components 55
GFX/XCN display: Preparation 56
GFX/XCN display: Installation 57
GFX/XCN display: Installing the wiring harness 59
5 Controller Installation 61
Installing the controller 61
Controller connections 63
6 Final Machine Check 65

1

Introduction

- Technical assistance
- Manual system upgrade to the Autopilot system
- Required components
- Autopilot hardware organization: As shipped
- Preparing the vehicle for installation

This manual describes how to install the Trimble® Autopilot™ automated steering system.

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

If you have a problem and cannot find the information you need in the product documentation, contact Trimble technical support.

Manual system upgrade to the Autopilot system

Display

Retain
CFX-750™ display: P/N 94110-xx Power cable CFX-750 display: P/N 77282 **TMX-2050™/XCN-2050™ display:** P/N 96500-05 Power adaptor cable TMX-2050 display: P/N 95918 **GFX/XCN display:** P/N 13x000-01 Power to GFX/XCN display cable: P/N 110551 Base power cable: P/N 67258 NAV-900 guidance controller: P/N 108993-05 GFX/XCN to NAV-900 comms cable: P/N 110540 Antenna for display: P/N 60600-02 (DGPS) or 77038-00 (OmniSTAR®/RTK) Antenna to receiver cable: P/N 50449

Required components

Kits required	Special tools
Platform kit: P/N 54037-157	Drill $^{5}/_{16}$" drill bit ⅜ – 16 tap 2" hole saw

Antenna mounting kits

Kits required
AG-15 antenna mounting plate: P/N 62034 Bracket, GPS - V-base plate indexing: P/N 62388-02 **NOTE –** For quick release mounting of the NAV-900 to a Spar mount, use P/N 110308: Bracket, NAV-900, Spar Quick Release Adapter

Autopilot hardware organization: As shipped

Hardware	Component	See...
Platform kit: P/N 54037-157 Interface cable: P/N 104492 (included in the platform kit)		Chapter 2
Roof bracket kit: • AG-15 antenna mounting plate: P/N 62034 • Bracket, GPS - V-base plate indexing: P/N 62388-02	Roof brackets	Chapter 3
	Bolt kit, roof bracket	
GNSS receiver	GNSS receiver	Chapter 3
	GNSS antenna	
	GNSS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	CFX-750, GFX/XCN, TMX-2050 display	Chapter 4
	Display cable	
	Mounting bracket	
Common parts	Controller	Chapter 5
	Controller mounting bracket	
	Cable kit: • Main wiring harness • Sonalert alarm	

Preparing the vehicle for installation

NOTE – The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.

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 Autopilot 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.

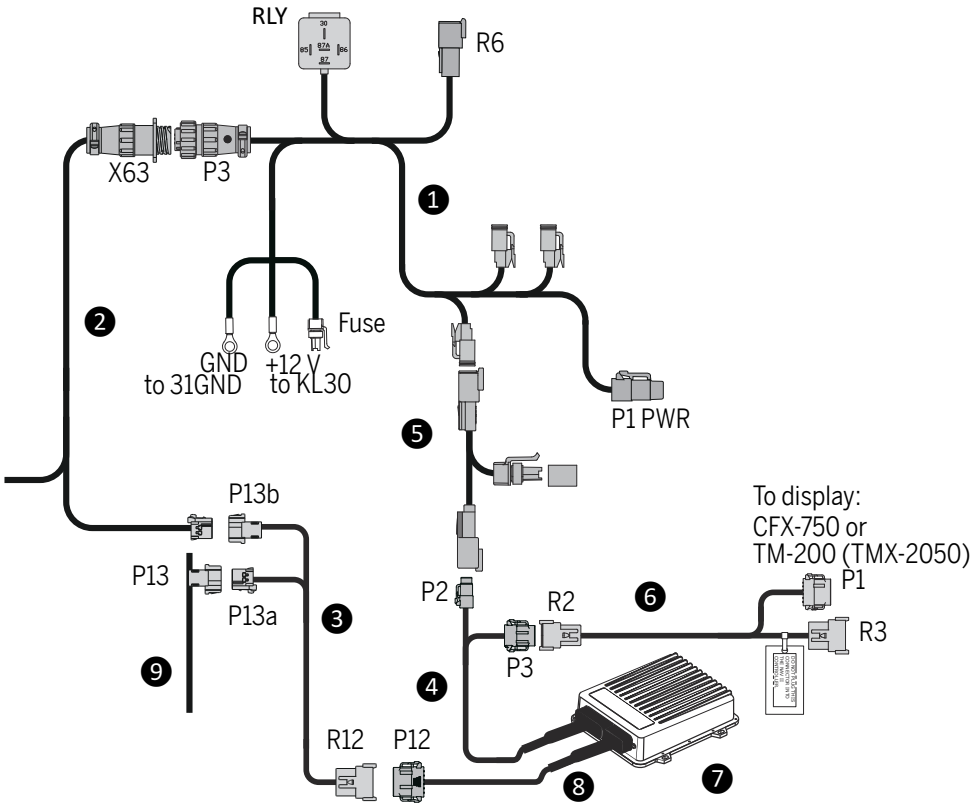
2

CAN Steering Interface and ISOBUS Harness Cable Installation

- Pantera 4502 models: ISOBUS and CAN steering cable interface components (P/N 92752 and 104492)
- Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components for GFX/XCN display and NAV-900 (P/N 120339)
- Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components (P/N 120339)
- Installing the Autopilot interface cable
- Installing the ISOBUS interface cable

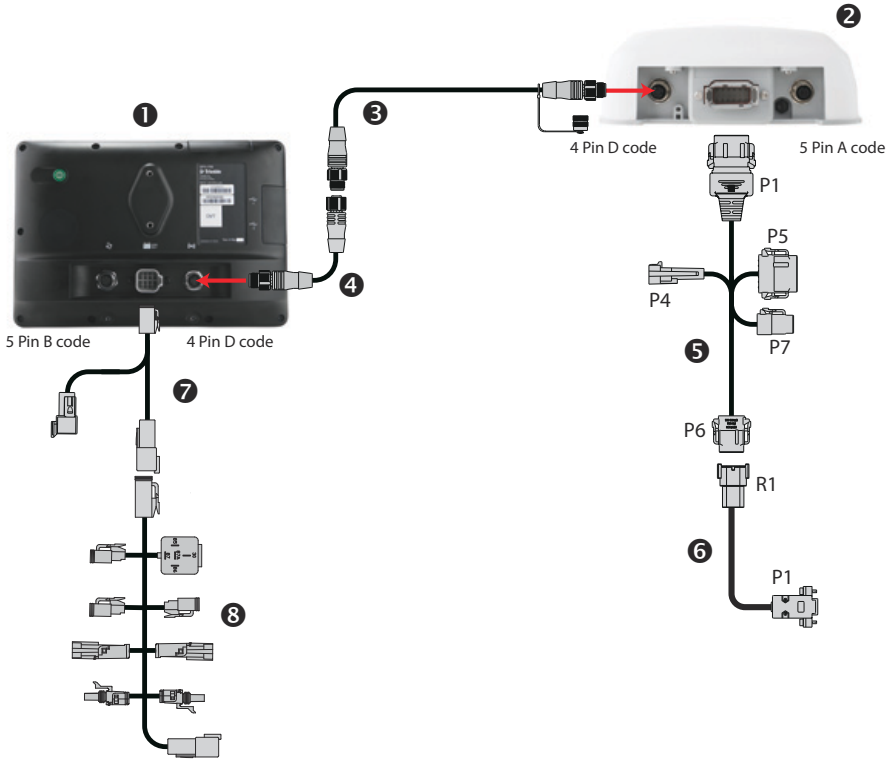
This chapter describes how to install the interface cable and set up the machine correctly so that it can run the Autopilot system.

Pantera 4502 models: ISOBUS and CAN steering cable interface components (P/N 92752 and 104492)



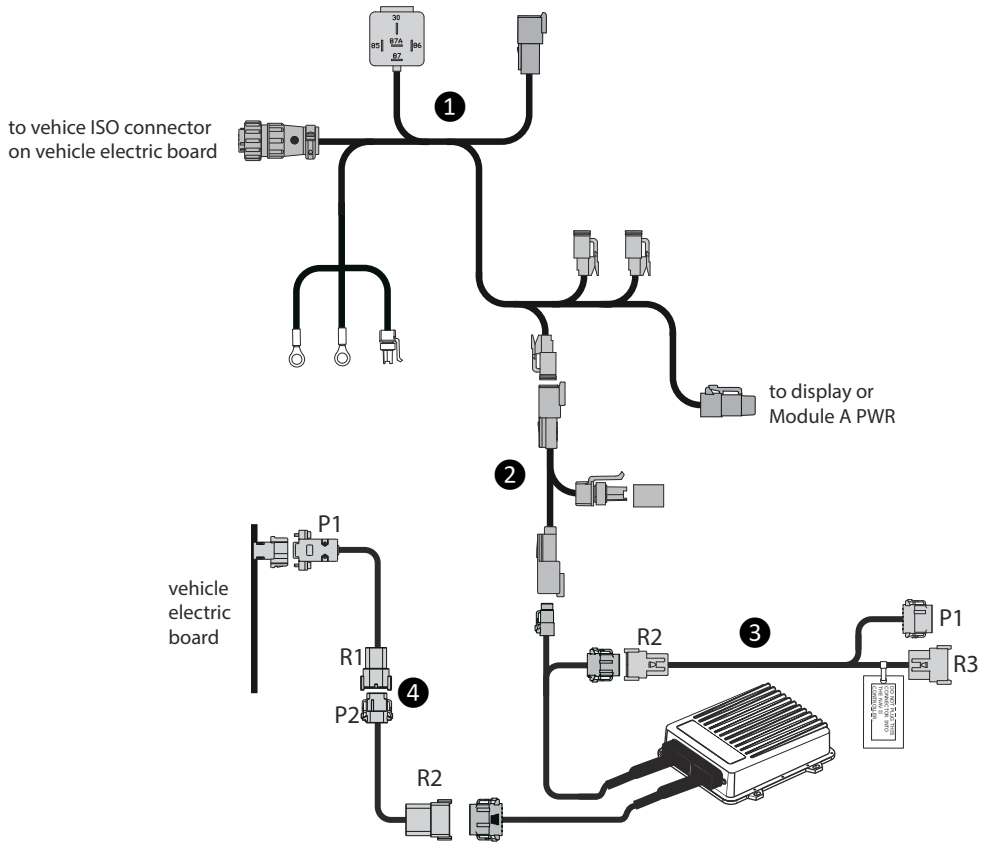
Item	Description	Trimble part number
1	ISOBUS interface in-cab cable	92752
2	Amazone Pantera vehicle harness	
3	Autopilot CAN interface cable, Amazone Pantera	104492
4	Main NavController cable	54601
5	2-pin DTM to 2-pin DT power adaptor	67095
6	Display to NavController cable with port replicator	75741
7	NavController	55566-00
8	Auxiliary NavController Cable	54602
9	Vehicle electric board	

Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components for GFX/XCN display and NAV-900 (P/N 120339)



Item	Description	Trimble P/N
1	GFX/XCN display, with PIQ App	13x000-01
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR), 5m	110540
4	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR) Extension, 2.5m	112082
5	Cable Assy, NAV-900, CAN ISO to cab Guidance, 4 m	110550
6	Cable Assy, NAV-900 in-cab to Pantera	120339
7	Cable Assy, GFX/XCN, Power to display, CAN, 2.5m	110551
8	Cable Assy, GFX/CFX-750™/FM-750™/XCN/FmX®/FM-1000™, Power with Relay and Switch (Acc) – optional	67259

Pantera 4503/4504 models: ISOBUS and CAN steering cable interface components (P/N 120339)



Item	Description	Trimble part number
1	ISOBUS interface in-cab cable	92752
2	2-pin DTM to 2-pin DT power adaptor	67095
3	Display to NavController cable with port replicator	75741
4	Autopilot CAN interface cable, Amazone Pantera	120339

Installing the Autopilot interface cable

Step 1

Before installing the interface cables onto the machine, open the panel on the side of the machine as shown.



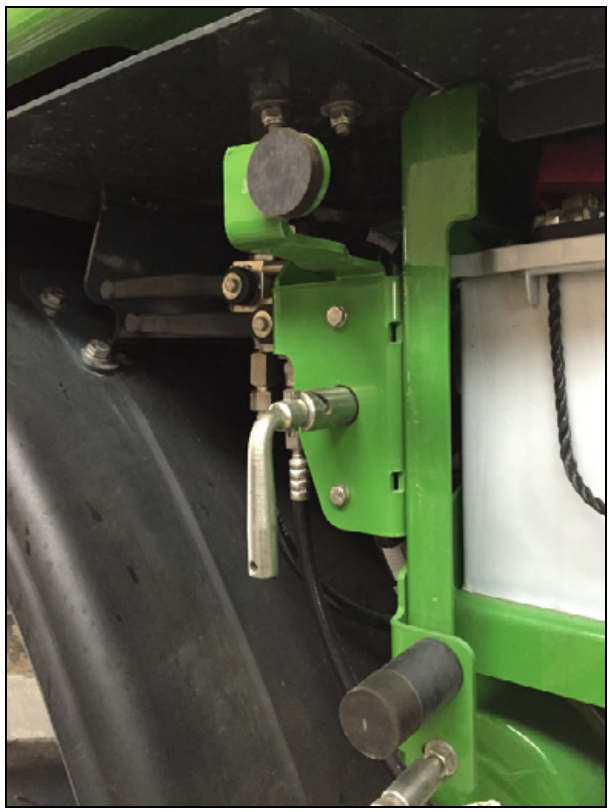
Step 2

Battery disconnect

Tier 3 machines:

The battery disconnect switch is behind the panel.

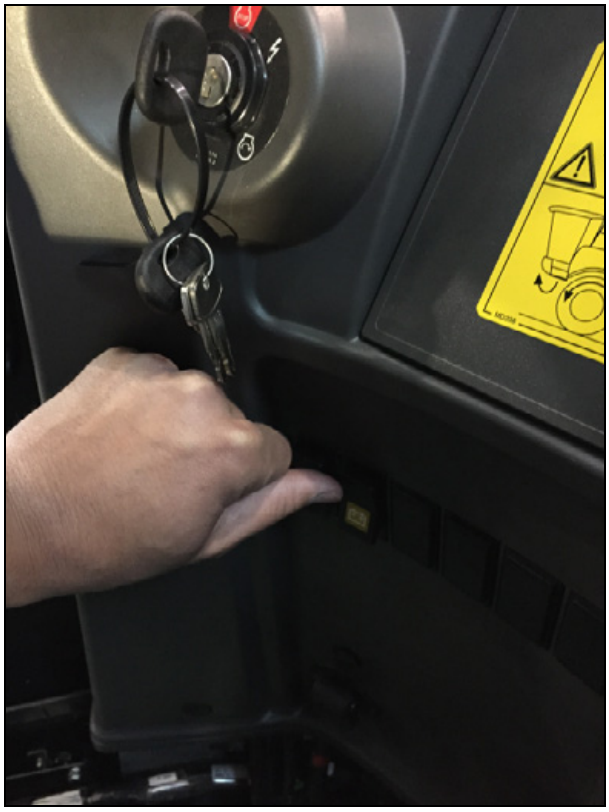
Turn the switch to disconnect the battery from the machine.



Tier 4 machines:

The battery disconnect has moved from a switch behind the panel to a button in the cab. Press/ toggle the disconnect button to disconnect the battery from the machine.





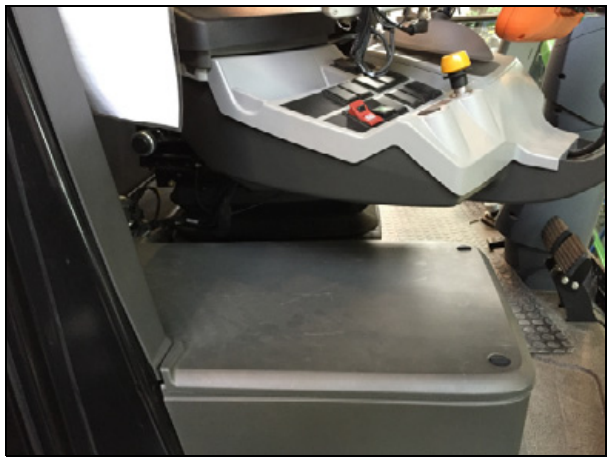
Pantera 4502 models

Use the following steps to connect the Autopilot CAN interface cable P/N 104492 to the Pantera 4502.

Step 1

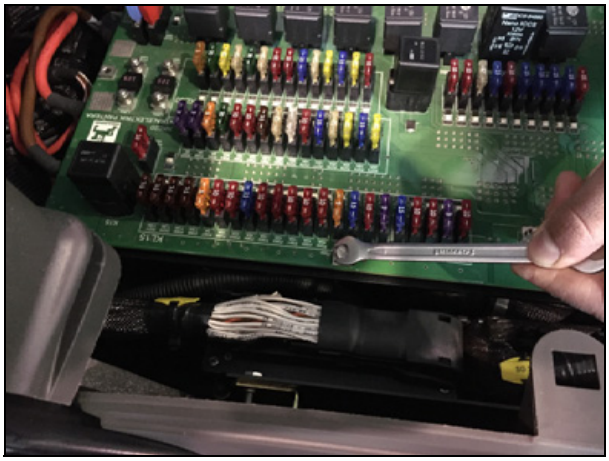
The Autopilot interface cable and power cable will be located under the armrest under the panel shown.

The NavController is also installed in this area, see Chapter 5, Controller Installation.



Step 2

Use an 8 mm wrench to remove the three screws holding down the fuse panel. Do this so that you can access the power connection and the NavController mounting, see Chapter 5, Controller Installation.



Step 3

The Autopilot power connection can be made at this location at the fuse panel.

If the connection is made here:

a. Connect the ground cable on the harness to the post labeled **31GND.**

b. Connect the Autopilot power to the post labeled **KL30.**

NOTE – The +30D post is not constant power.

With the panel in this position, also install the NavController. See Chapter 5, Controller Installation.



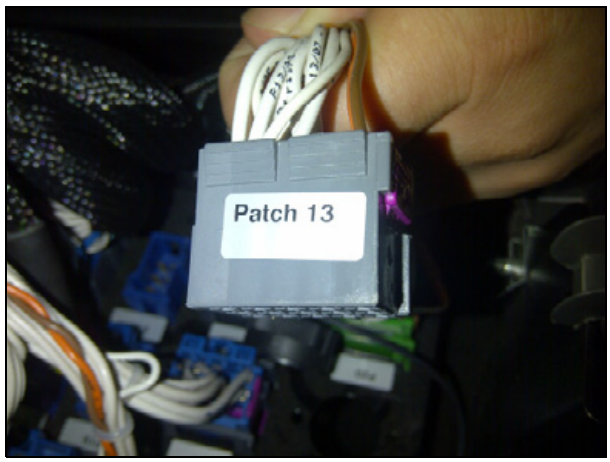
Step 4

To connect the CAN interface cable, locate the connector labeled **P13** and then unplug it.



Step 5

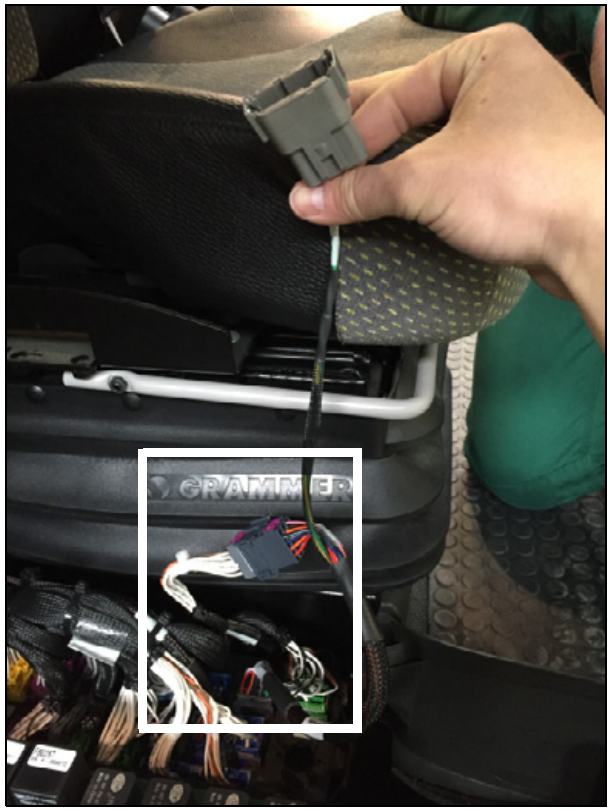
Connect the female end **P13b** of the provided CAN interface cable P/N 104492 to the male end of the P13 connector that you unplugged, and then connect the other end, **P13A**, to the bulkhead P13 connector available on the electronic board.



Step 6

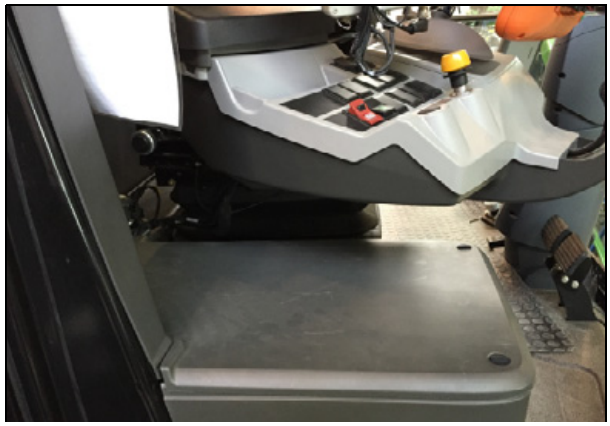
Locate R12 on the CAN interface cable you connected in the previous step, route it to P12 on the NavController harness, P/N 54602, and then connect them.

Once the NavController installation is complete, use the three screws you removed earlier to reinstall the fuse panel.



Step 7

Reinstall the cover as shown.



Pantera 4503/4504 models

Use the following steps to connect the Autopilot CAN interface cable P/N 120339 to the Pantera 4503/4504 models.

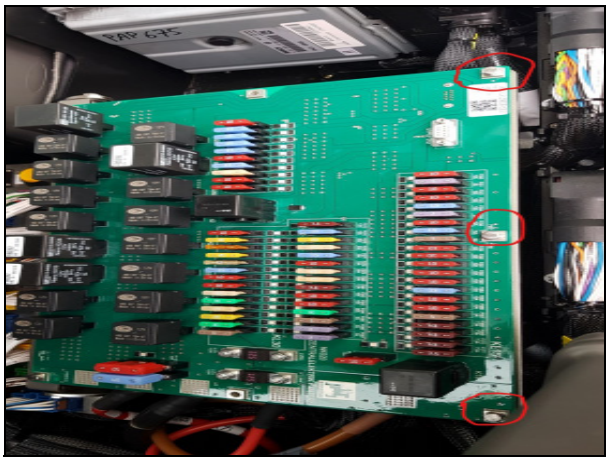
Step 1

Locate cable P/N 120339. Remove the plastic cover below the right armrest to access the fuse panel area.



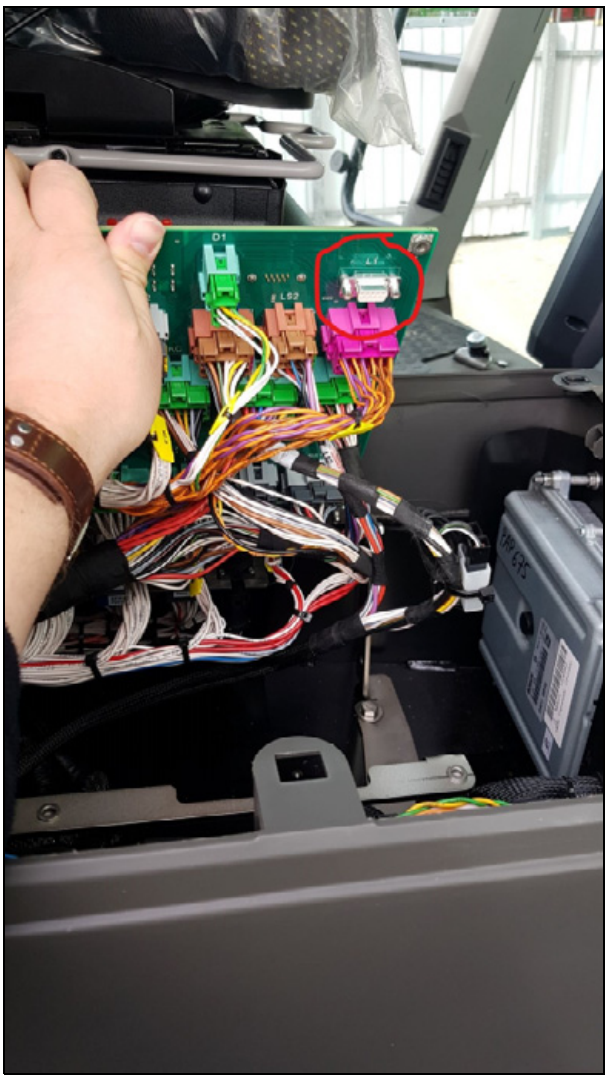
Step 2

Use an 8 mm wrench to remove the three bolts on the right side of the circuit board.



Step 3

Raise the right side of the circuit board to access the DB9 connector.



Step 4

Connect the P1 connector on cable P/N 120339 to the DB9 connector on the circuit board.

Route the rest of the cable towards the NavController and then connect R2 on cable P/N 120339 to P12 on the NavController.

For NAV-900 guidance receiver connection, disconnect the R1 and P2 connectors on cable P/N 120339. Connect R1 on cable P/N 120339 to P6 on cable P/N 110550 from the NAV-900 receiver.



Step 5

The Autopilot power connection can be made at this location at the fuse panel.

If the connection is made here:

a. Connect the ground cable on the harness to the post labeled **31GND.**

b. Connect the Autopilot power to the post labeled **KL30.**

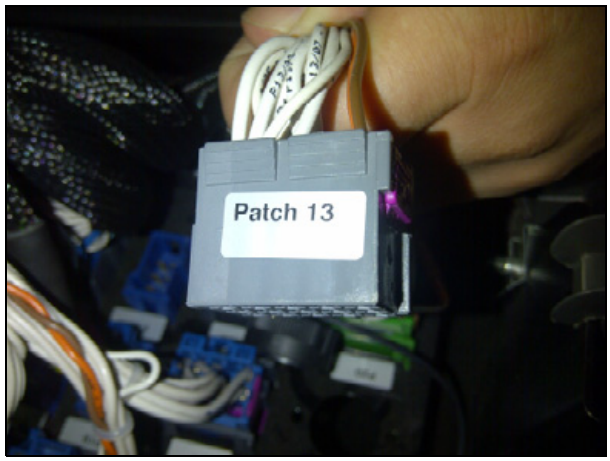
NOTE – The +30D post is not constant power.

With the panel in this position, also install the NavController. See Chapter 5, Controller Installation.



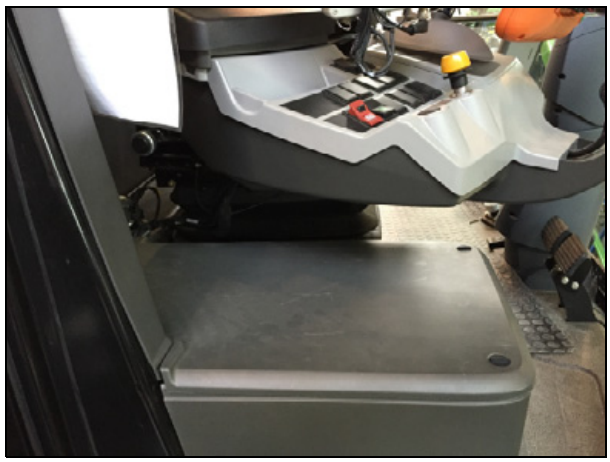
Step 6

Secure the circuit board back in place using the three screws removed in Step 2.



Step 7

Reinstall the cover as shown.



Installing the ISOBUS interface cable

Step 1

Locate the female 9-pin ISOBUS connector labeled **X63.** This is available from the electric compartment area.



Step 2

Locate the 9-pin ISOBUS connector P3 from the provided in-cab ISOBUS interface cable P/N 92752, and plug it into X63.



3

Antenna/Receiver Installation

- Antenna and receiver installation options
- Attaching the plate with VHB adhesive
- Installing the NAV-900 guidance receiver using the guidance controller quick adapter plate
- Installing the NAV-900 guidance receiver using a spar mount
- Optional: Using the P/N 110308 for quick release mounting of the NAV-900 from the spar
- NAV-900 guidance receiver: Connecting the cables – both methods
- NAV-900 guidance receiver: Connecting an external radio (as required)

This chapter describes how to install the required receiver and antenna, and radio module (if used). To install the antenna for the display, see Chapter 4, Display Installation.

Antenna and receiver installation options

There are several options for mounting components (the antenna, radio module, or GNSS receiver) on the cab roof depending on the accuracy required and the antenna type:

- **VHB mount** – Attach a P/N 62034 plate or a V plate directly to the roof with VHB (Very High Bond) adhesive for magnetic mounting. See page 26.
- **Magnetic mounting** – Magnetic mounting for quick release is available for both VHB and spar type mounting.

Possible mounting methods

GNSS receiver	VHB mounted plate	VHB V mounted plate
CFX-750 display TM-200 module	✓	✓

NOTE – For WAAS, EGNOS, OmniSTAR VBS, Beacon, and DGPS applications, place either of the plates in a firm location using the VHB.

Attaching the plate with VHB adhesive

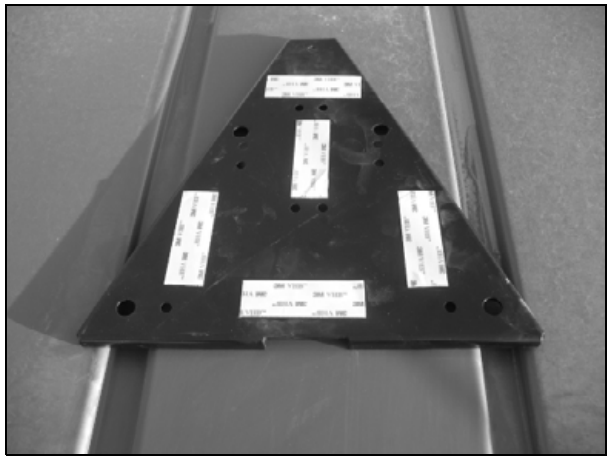
⚠ **WARNING –** To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

Standard P/N 62034 plates are provided in most kits. You can use the VHB mounting method to attach either a P/N 62034 plate or a V plate.

- **RTK, OmniSTAR, DGPS, GLONASS applications** – To use this method for high accuracy, the surface must be rigid and free of "oil panning". For RTK or OmniSTAR HP corrections, the spar method is recommended. The V plate provides repeatable positioning of the antenna.
- **WAAS, EGNOS, OmniSTAR VBS, Beacon applications** – Use a P/N 62034 plate for simplified installation in applications where high accuracy is not critical.

Step 1

Clean the antenna location on the roof of the cab with a light solvent to remove oil and dust. Apply force to the roof to find a firm location.

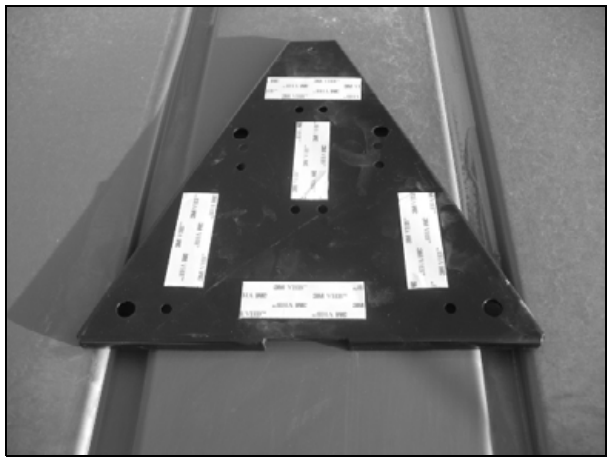


Step 2

V plate only

Remove the backing from one side of the VHB strips provided and then apply the strips to the plate.

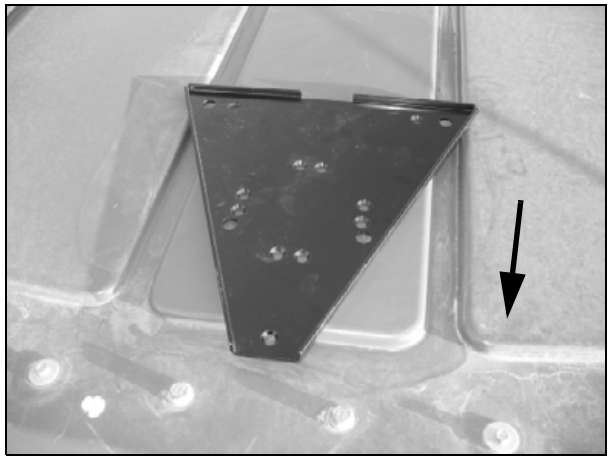
NOTE – The VHB strips are pre-applied to the P/N 62034 plate.



Step 3

Remove the backing from the other side of the VHB strips and then apply the plate to the cab roof. The narrow end of the plate points forward. Ensure that the VHB strips make even contact with the surface. Apply pressure and then leave for approximately 30 minutes to adhere.

NOTE – The arrow points to the front of the vehicle.



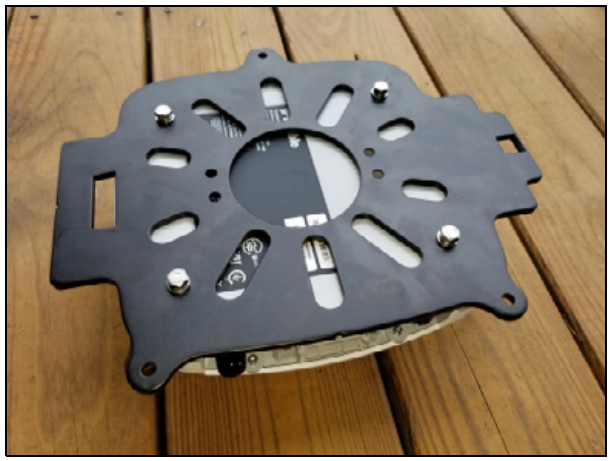
V plate



P/N 62034

Installing the NAV-900 guidance receiver using the guidance controller quick adapter plate

If the machine is equipped with the CNH receiver mount plate, the NAV-900 can optionally be mounted using the quick release adapter plate P/N 111339.







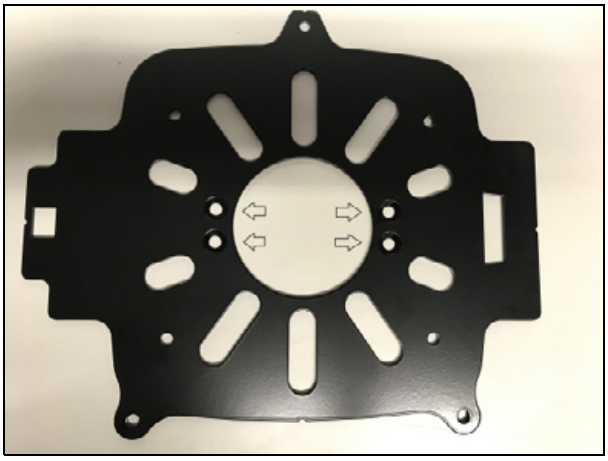
Installing the NAV-900 guidance receiver using a spar mount

For vehicles that do not have factory mounting methods or the factory mounting method is already in use, spar mounts are available to span between rigid bolts on the roof.

Lengths available are:

- P/N 64898: 16.5” – 28.5”
- P/N 55349: 27.5” – 37.5”
- P/N 53676: 36.5” – 46.5”
- P/N 55348: 45” – 55”
- P/N 66774: 54” – 64”

The guidance controller plate has a four-bolt pattern that directly attaches to the spar mounts:



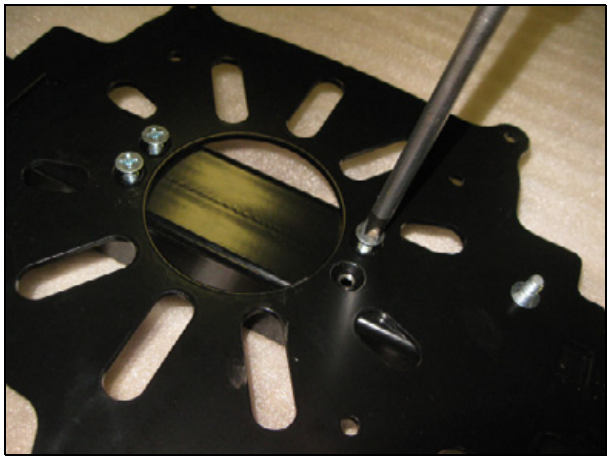
Step 1

Remove the spar from the box and lay out the hardware.



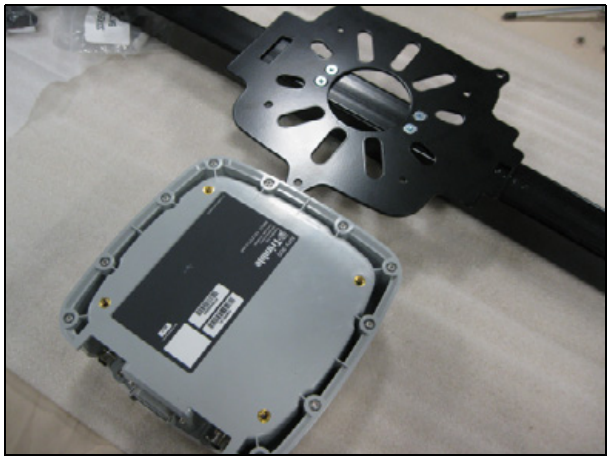
Step 2

Align the four holes on the base mounting plate with the four holes in the spar. Install the supplied ¼-20 × ½" countersunk bolts and tighten appropriately.



Step 3

Lay the guidance controller on its top.



Step 4

Lay the mounting plate with spar attached over on top. Attach the plate to the guidance controller with the four 6 mm bolts and lock washers. Tighten the bolts. Take care not to over-tighten the bolts as damage may result.







Step 5

Loosen and remove the large bolts on the cab that are to be used to fasten down the spar.



Step 6

Place the supplied spacer on the cab mounting point. The thickness of the spacer will vary by kit.



Step 7

Locate the provided longer bolts to be use for securing the spar. Put both the original washer and the larger provided washer on the bolt.



Step 8

Place the spar on the space and insert the bolt.



Step 9

Insert the bolt on the other side of the cab. Center the spar on the cab using a measuring tape. Then tighten the bolts.

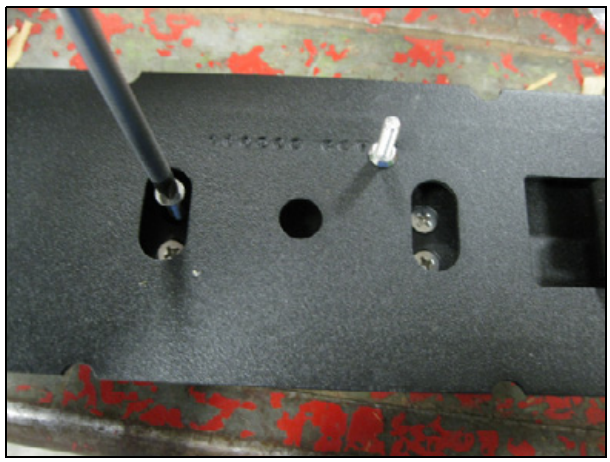




Optional: Using the P/N 110308 for quick release mounting of the NAV-900 from the spar

Step 1

Using the 4 bolts in the GFX/XCN display kit, mount the Quick release bracket to the spar.



Step 2

Attach the NAV-900 base plate to the NAV-900 controller.

Step 3

Slip the slot of the base plate over the tang on the bracket and then use the latch to secure the receiver.





NAV-900 guidance receiver: Connecting the cables – both methods

Step 1

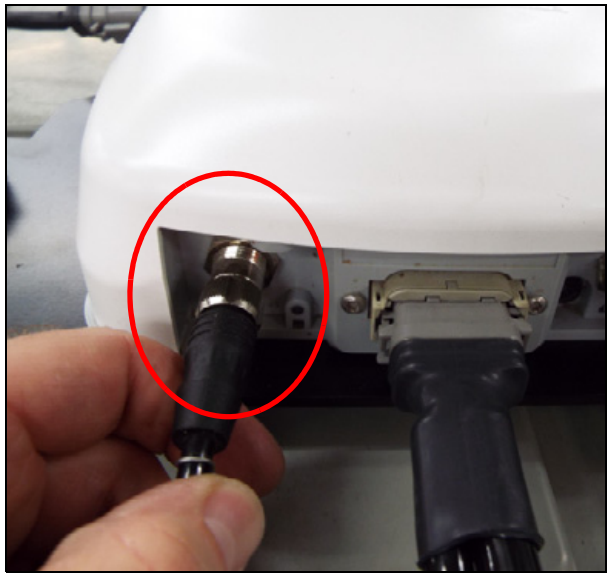
Plug the P1 connector on cable P/N 110550 into the back of the NAV-900 guidance receiver.



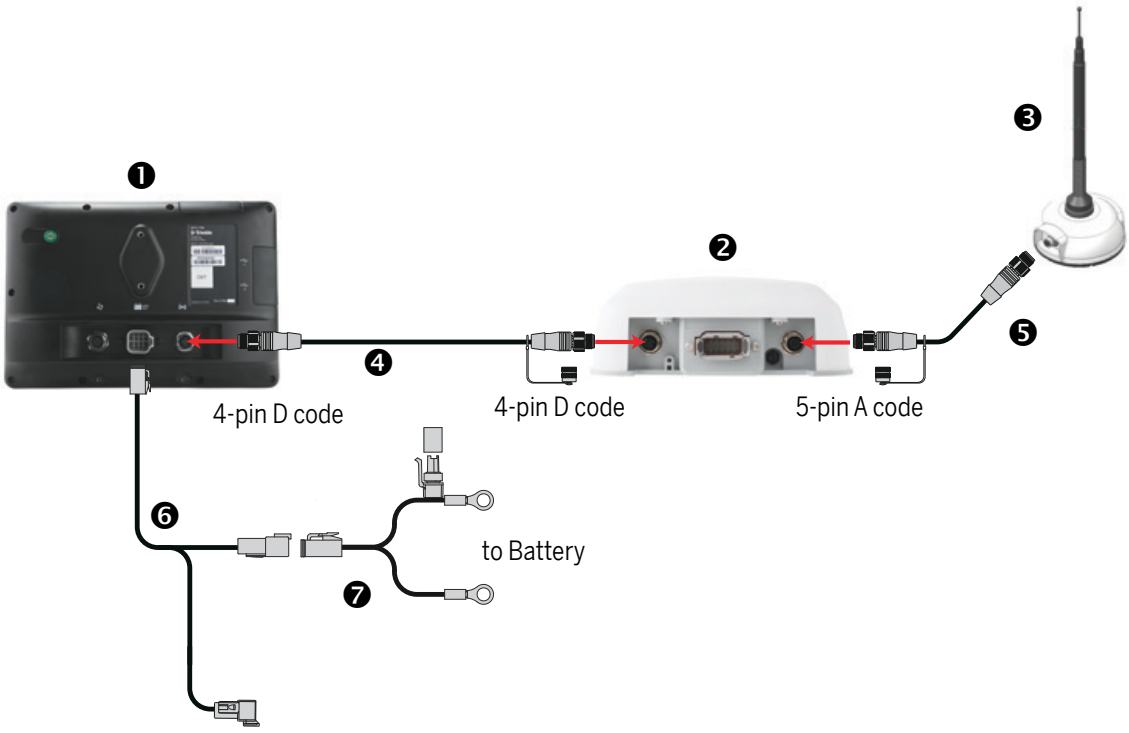


Step 2

Connect P2 of the P/N 110540 cable to the 4-pin M12 connector on the left side of the NAV-900 controller.



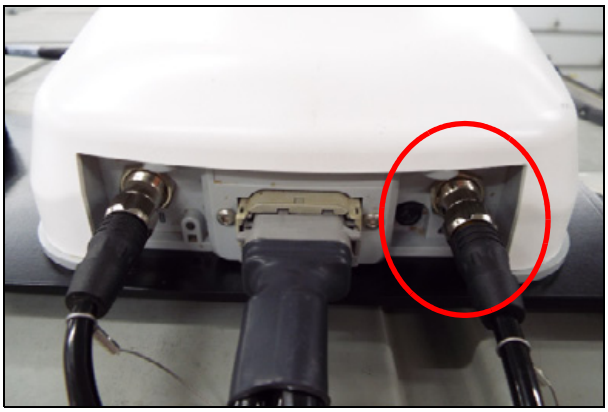
NAV-900 guidance receiver: Connecting an external radio (as required)



Item	Description	Trimble P/N
1	GFX/XCN display, with PIQ App	13x000-01
2	NAV-900 Guidance Controller	108993-05
3	Ag-820 radio kit, 430-450 MHz Ag-820 radio kit, 450-470 MHz Ag-820 radio kit, 900 MHz	123500-44 123500-46 123500-90
4	Cable Assy, NAV-900 to in-cab RTK Radio, DTM06, 4.5 m	110540
5	Cable Assy, NAV-900 to Ag-820	113295
6	Cable Assy, GFX/XCN, Power to display, CAN, 2.5m	110551
7	Cable Assy, GFX/CFX/FM-750/XCN/FMX/FM-1000 Basic Power, 4m	67258

Step 1

Connect the radio interface cable (P/N 113295) to the right 5-pin M12 connector on the NAV-900 controller.



Step 2

Attach the radio to the roof or bracket in a secure fashion.

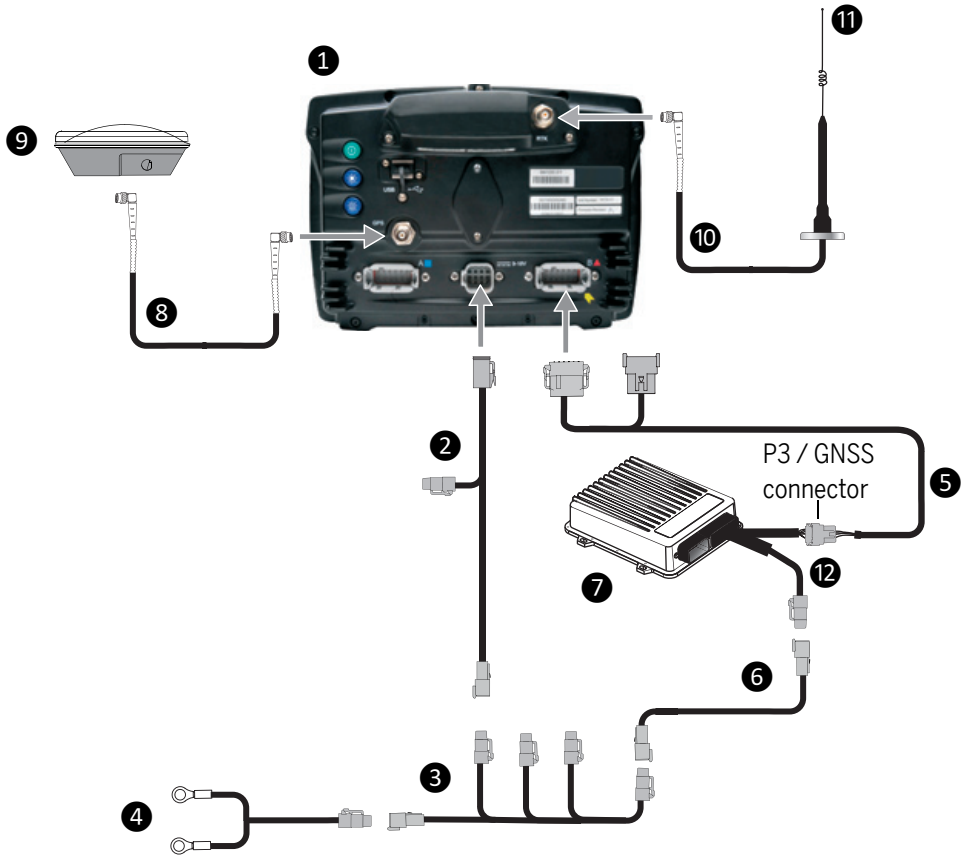


4

Display Installation

- CFX-750 display: Components
- CFX-750 display: Preparation
- CFX-750 display: Installation
- CFX-750 display: Installing the wiring harness
- TMX-2050 display: Components
- TMX-2050 display: Preparation
- TMX-2050 display: Installing the wiring harness
- TMX-2050 display: AG-25 GNSS antenna
- CFX-750 and TMX-2050 displays: Installing the GNSS antenna and plate
- CFX-750 and TMX-2050 displays: Installing the RTK radio antenna
- GFX/XCN display: Components
- GFX/XCN display: Preparation
- GFX/XCN display: Installation
- GFX/XCN display: Installing the wiring harness

CFX-750 display: Components



⚠ **CAUTION –** Connecting the Port Replicator on the CFX-750 display to NavController cable ❺ to the P4 or P12 connector of the NavController harness ⓬ will result in damage to the display, and will void the warranty.

Item	Description	Trimble part number
1	CFX-750 display **NOTE –** RTK password required.	93100-02
2	CFX-750 power cable	66694
3	CFX-750 power cable with relay and switch (power bus)	67259
4	Basic power cable	67258
5	CFX-750 to NavController cable with port replicator	75741
6	2 pin DTM to 2 pin DT power adaptor	67095
7	NavController	55566-00
8	8 m GNSS TNC/TNC RT angle cable	50449
9	AG25 GNSS antenna	77038-00
10	NMO to TNC 20ft antenna cable and base	72122
11	900 MHz radio antenna kit	22882-10
12	Main NavController cable	54601

CFX-750 display: Preparation

Step 1

Locate the CFX-750 display, the RAM mount, and the RAM mount clamp.



Step 2

Use the provided metric hardware to attach the RAM mount to the rear of the display.



Step 3

Attach the RAM mount to the rear of the display.



CFX-750 display: Installation

⚠ **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.

Step 1

Decide where you will mount the display in the vehicle cab and then use the provided bolts to attach the bar mount to the rail.

Attach the free end of the RAM mount to the bar mount and then tighten the clamp on the RAM mount so that the display is secure.

Step 2

Connect the cable to the B port of the CFX-750 display.

To connect power to the CFX-750 display, see Chapter 5, Controller Installation.



CFX-750 display: Installing the wiring harness

Step 1

Locate the cable that connects the CFX-750 display to the NavController.

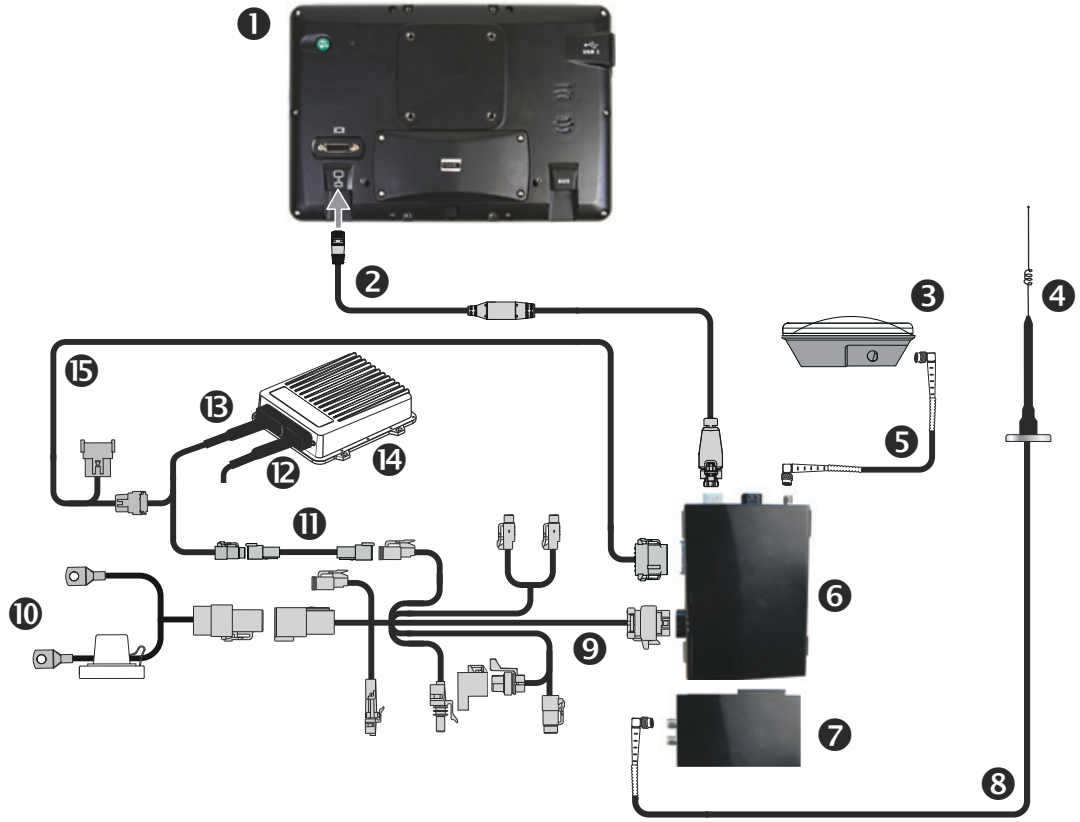
Step 2

Connect the cable to the P3 connector on the NavController main harness and then route the cable from the NavController to the mounting location on the CFX-750 display.



TMX-2050 display: Components

This graphic shows how to connect the TM-200 Module and the Autopilot system for after-market installations.



Item	Description	Trimble part number
1	TMX-2050 display	96700-00
2	TM-200 Module to display cable	93843
3	AG-25 GNSS antenna	77038-00
4	900 MHz radio antenna kit	22882-10
5	8 m GNSS TNC/TNC RT angle cable	50449
6	TM-200 Module	95060-00
7	AG-815 radio	
8	NMO-to-TNC 20 ft antenna cable and base	72122
9	TM-200 Module power and I/O cable	92676
10	Cable, battery	92905
11	2-pin DTM to 2-pin DT power adapter cable	67095
12	Cable, NavController diagnostic	54602
13	Main NavController cable	54601
14	NavController	55566-00
15	TM-200 Module to NavController cable with port replicator	75741

TMX-2050 display: Preparation

The display mount attaches to a rail in the cab of the vehicle. The TMX-2050 display connects to the display mount.

The TM-200 Module connects to the display with a single cable.

Additional components to install depend on your connection and correction services, and the features you are using.

⚠ **CAUTION –** Make sure the vehicle power is off when you are connecting system components.

Installing the display and mount

Use the mounting hardware supplied in the display kit to mount the display in the vehicle cab.

⚠ **CAUTION –** Make sure the vehicle power is off when you are connecting system components.

Before completing installation steps, select a position in the cab where the bar mount (4) can be attached to a rail. Hold the display in the selected location and make sure that it:

- Is easy to see, but does not block the driver's view.
- Is within the driver's reach so that the USB drive is easy to remove and replace.
- Does not interfere with the driver getting in or out of the cab, or any other activities.

.

Item	Description
1	Mounting plate
2	Zirkona mount
3	Tightening arm
4	Bar mount



Step 1

Locate the TMX-2050 display and the Zircona mount and mounting hardware.



Step 2

Use the provided hardware to attach the Zircona mount to the display as shown





Step 3

Decide where you will mount the display in the vehicle cab and then use the provided bolts to attach the rail mount of the Zircona display mount to the rail of the vehicle.



Step 4

The Zircona mount has a tightening arm ❸. Loosen the arm to let the display move on the mount.

Step 5

Adjust the TMX-2050 display until it is positioned where you want it.

Turn the tightening arm clockwise to tighten the Zircona mount and lock the display in the desired position.

Step 6

Connect the display cable to the display.



Step 7

Route the other end of the display cable to the TM-200 Module and then connect it to the TM-200 Module.



TMX-2050 display: Installing the wiring harness

⚠ **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.

Step 1

Connect the P5 and P2 connectors on the harness, P/N 106111, to the TM-200 Module.

Step 2

On the TM-200 Module locate the display connection point.



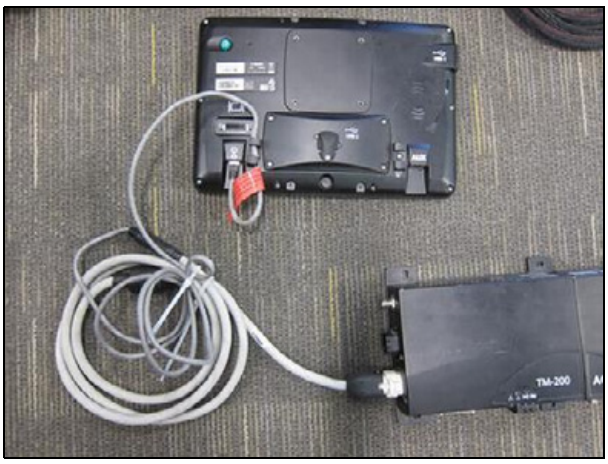
Step 3

Connect the display cable P/N 93843 to the TM-200 Module.



Step 4

Route the cable between the TMX-2050 display and the TM-200 Module.



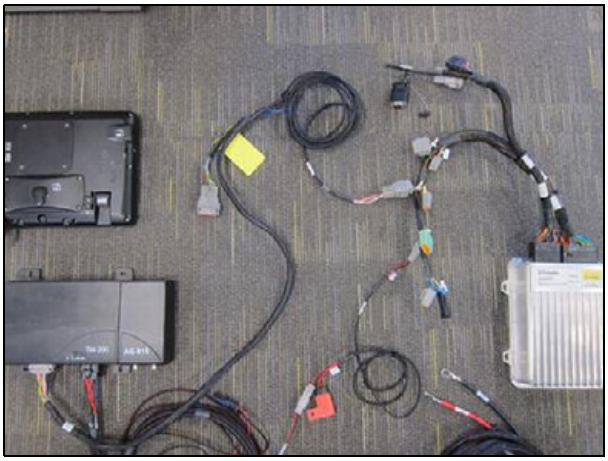
Step 5

Locate the Port labeled **A** on the TM-200 Module and then connect NavController connection cable, P/N 75741.



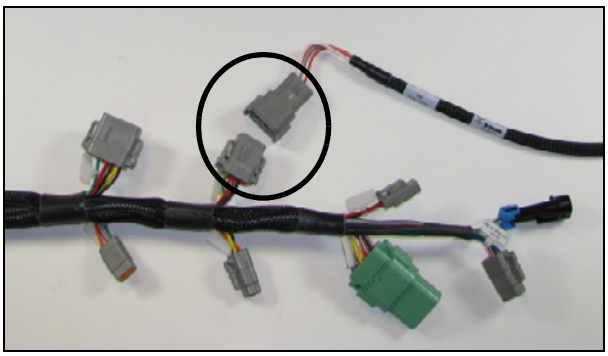
Step 6

Route the other end of the P/N 75741 cable to the plug on the P/N 54601 harness labeled **GPS**.



Step 7

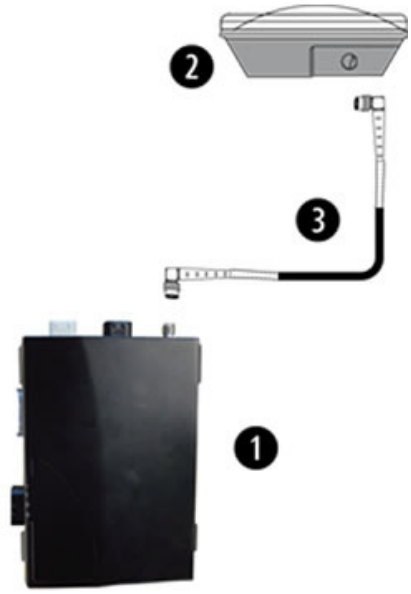
Connect the cable to the P3 connector on the NavController main harness.



TMX-2050 display: AG-25 GNSS antenna

The AG-25 GNSS antenna is required for all correction services. It enables the GNSS receiver in the TM-200 Module to receive GPS / GNSS corrections. The antenna connects to the antenna connector on the TM-200 Module.

⚠ **CAUTION –** Wireless cellular radio and GNSS signals can interfere with each other. For best performance, mount antennas at least 1 meter away from each other.



Item	Description
1	TM-200 Module
2	AG-25 GNSS antenna
3	AG-25 antenna to TM-200 Module cable

The AG-25 GNSS antenna has integrated magnets for easy installation. To attach the antenna to a non-metal surface, use the mounting plate.

NOTE – If you are using the AG-25 GNSS antenna with a steering system, refer to the installation instructions for the steering system to determine the correct location for mounting the antenna.

CFX-750 and TMX-2050 displays: Installing the GNSS antenna and plate

⚠ **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.

NOTE – The V plate antenna bracket is available on the Autopilot price list. See Antenna mounting kits, page 8.

Use one of the following methods:

- Spar mount
- VHB adhesive

Spar mount method

Trimble recommends that you use this method for RTK and OmniSTAR operations. For more information, see Antenna and receiver installation options, page 26.

Use a ⅝" bolt to attach the AG25 antenna to the spar, as shown.

Measure the length between the bolts on the roof of the vehicle and order the appropriate spar:

- Spar 36.5" - 46.5": P/N 53676
- Spar 54" - 64": P/N 66774



VHB adhesive method

Standard 4" x 6" plates are provided in most kits. You can use Very High Bond (VHB) to attach either a 4" x 6" plate or a V plate.

- **GLONASS, RTK, OmniSTAR, DGPS applications** – To use this method for high accuracy, the surface must be rigid and free of “oil panning”. For RTK or OmniSTAR HP corrections, the spar method is recommended. The V plate provides repeatable positioning of the antenna.
- **WAAS, EGNOS, OmniSTAR VBS, Beacon applications** – Use a 4" x 6" plate for simplified installation in applications where high accuracy is not critical.

Step 1

Clean the antenna location on the roof of the cab with a light solvent to remove oil and dust.

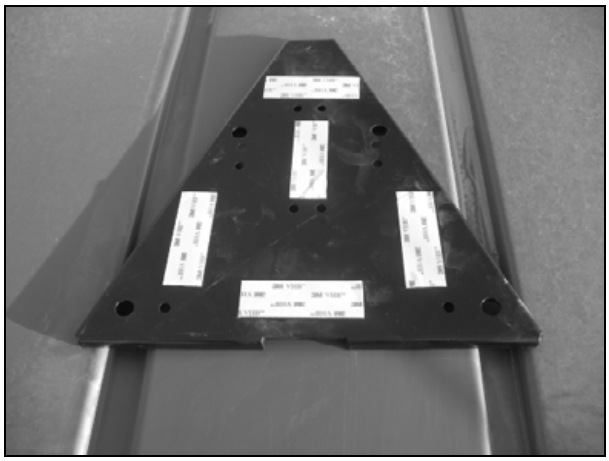


Step 2

V plate only

Remove the backing from one side of the VHB strips provided and then apply the strips to the plate.

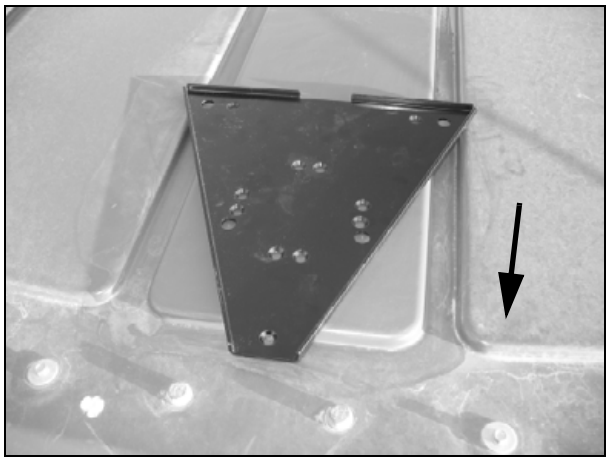
NOTE – The VHB strips are pre-applied to the 4" x 6" plate.



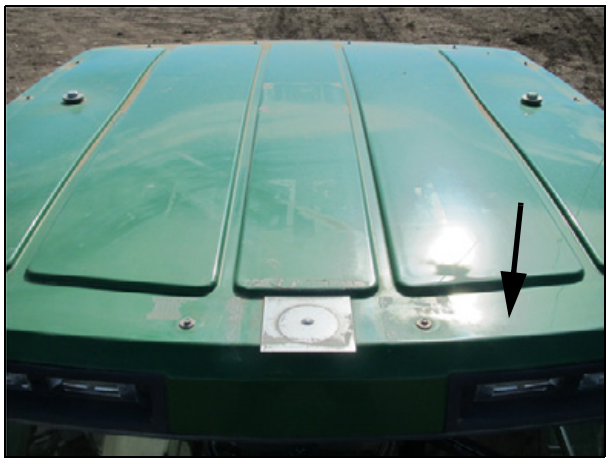
Step 3

Remove the backing from the other side of the VHB strips and then apply the plate to the cab roof. The narrow end points forward. Ensure that the VHB strips make even contact with the surface. Apply pressure and then leave for approximately 30 minutes to adhere.

NOTE – The arrow in this figure points to the front of the vehicle.



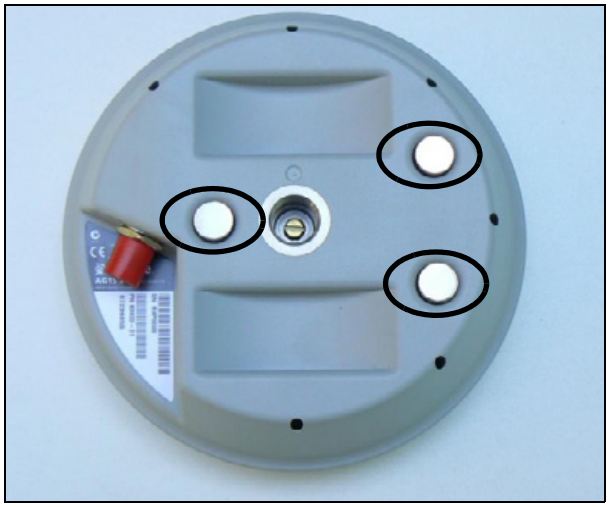
V plate



4" x 6" plate

Step 4

If the antenna has magnets built in, omit this step.



Otherwise, attach the large magnet with a ⅝" stud to the GNSS antenna.



Step 5

GLONASS, RTK, OmniSTAR, DGPS, applications

For repeatable positioning, place the antenna against the lip at the narrow end of the V plate.



WAAS, EGNOS, VBS, Beacon applications

Attach the antenna to the center of the 4" x 6" plate.



Step 6

Both models

Attach the antenna/receiver cable to the antenna and then route the cable into the cab through the rubber grommet at the base of the rear window. Secure the cable along the way.



CFX-750 and TMX-2050 displays: Installing the RTK radio antenna

⚠ **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.

Step 1

Connect the radio antenna to the magnetic antenna base.



Step 2

Attach the magnetic radio antenna base to the rear of the V plate on the roof. If the cable does not reach the V plate, use the 4" x 6" plate with the VHB provided to relocate the antenna.



Step 3

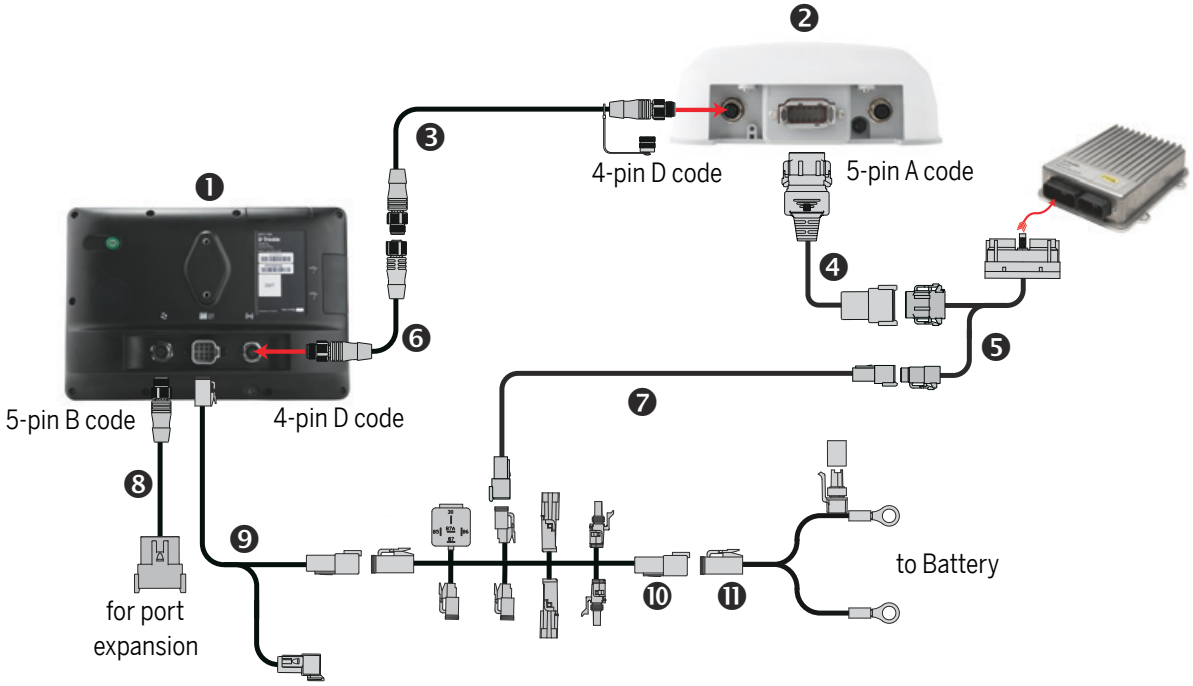
Attach the magnetic radio antenna base to the rear of the V plate on the roof. If the cable does not reach the V plate, use the P/N 62034 plate with the VHB provided to relocate the antenna.



Step 4

Route cable from the vehicle roof into the cab, and connect the radio cable to the display.

GFX/XCN display: Components



Item	Description	Trimble P/N
1	GFX/XCN display, with PIQ App	13x000-01
2	NAV-900 Guidance controller	108993-05
3	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR), 5m	110540
4	Cable Assy, NAV-900 to NavController II/III, Autopilot	110547
5	Cable, NavController II/III, Main	54601
6	Cable Assy, GFX/XCN to NAV-500/900, Power/Ethernet (BRR) Extension, 2.5m	112082
7	Cable Assy, 2 PIN DTM to 2 PIN DT Power Adapter	67095
8	Cable Assy, GFX/XCN, Expansion Port Basic, RS232, Dig I/O, 2.5m	110545
9	Cable Assy, GFX/XCN, Power to display, CAN, 2.5 m	110551
10	Cable Assy, GFX/CFX/FM-750/XCN/FMX/FM-1000 Power with Relay and Switch (Acc)	67259
11	Cable Assy, GFX/CFX/FM-750/XCN/FMX/FM-1000 Basic Power, 4m	67258

GFX/XCN display: Preparation

The GFX/XCN display utilizes the RAM mount system.



Attach the diamond-based ram mount to the back of the display using the provided fasteners.



GFX/XCN display: Installation

Step 1

Use the supplied V bolts or alternate (not supplied) hardware to affix the RAM base mount to the desired location in the cab. Ideally this position should be readily viewable and within easy reach of the operator.



Step 2

Use the supplied RAM clamp to connect the RAM base mount to the RAM ball attached to the display.



Step 3

Position the display as desired and then tighten the clamp.



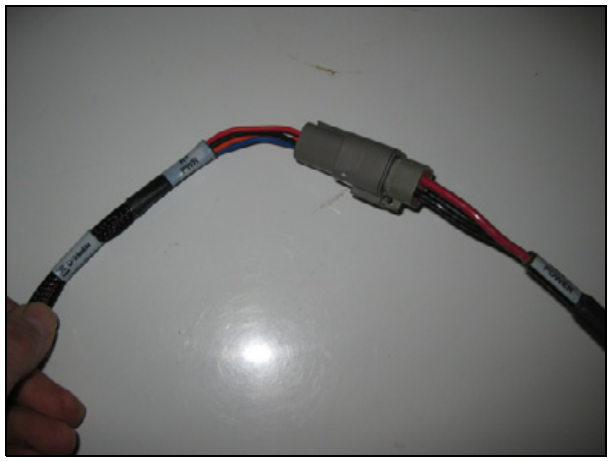
GFX/XCN display: Installing the wiring harness

The GFX/XCN display requires a nominal 12 volt power source. The P/N 67258 cable has ring terminal leads for connecting to a battery or other cable mount point.

⚠ **WARNING –** If the machine has a master electrical disconnect, ensure that the display/receiver will be disconnected from the battery when the master disconnect is used. Failure to do so may result in hardware damage and void warranty. Additionally, it is suggested to utilize power terminals located within the cab of the vehicle that ground in the same location as the cab components to avoid ground shifts between the display and any vehicle ECUs.

Step 1

Connect the other 4-pin Deutsch connector of cable P/N 110551 to the P/N 67258 base power cable.



Step 2

Connect the 6-pin DT power/CAN cable P/N 110551 to the middle port of the display.



Step 3

Connect the 4-pin M12 connector to the 4-pin receiver connector. Note the Keying and number of pins.





5

Controller Installation

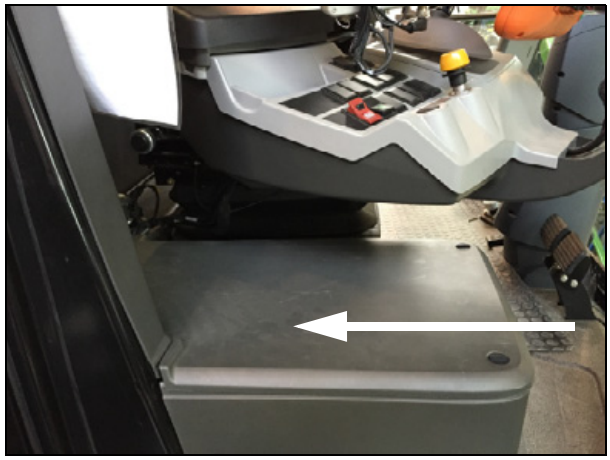
- Installing the controller
- Controller connections

Installing the controller

⚠ **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.

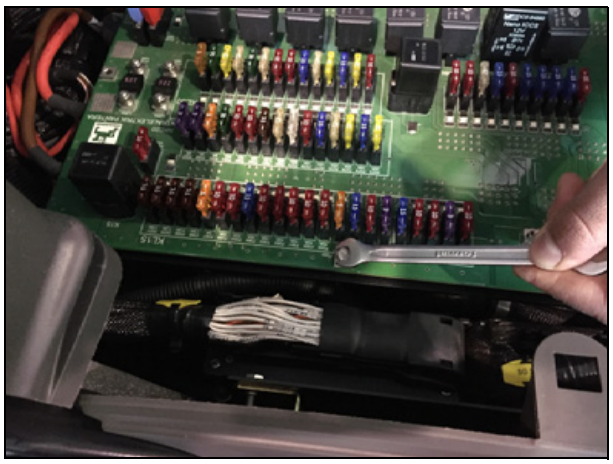
Step 1

The NavController is installed under the fuse panel. To access the fuse panel, remove the cover.



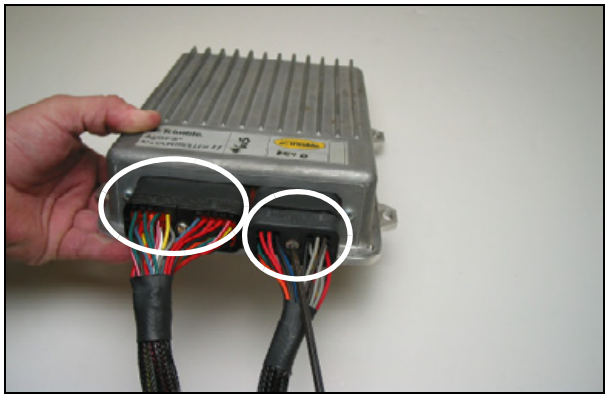
Step 2

Use an 8 mm wrench to remove the three screws holding down the fuse panel. Do this so that you can access the power connection and the NavController mounting, see Chapter 2, CAN Steering Interface and ISOBUS Harness Cable Installation.



Step 3

Before you install the controller, attach the main and auxiliary cable harnesses. Use an Allen wrench to secure the connectors to the controller.



Step 4

The NavController will be installed in the location shown under the fuse panel.

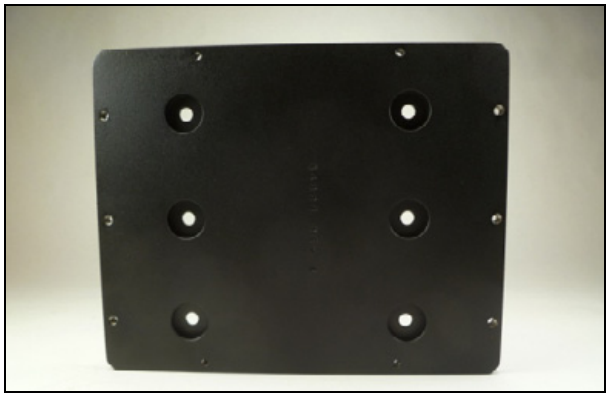


Step 5

> ⚠ **CAUTION –** Take care to not damage anything below the floor panel.

Locate the NavController mounting plate and use it as a template to mark and drill four 5/16" mounting holes.

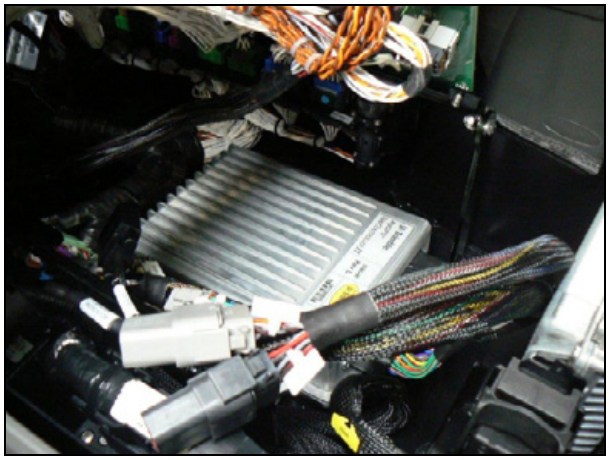
Use the provided ¼" hardware to install the NavController mounting plate to the floor of the machine, under the fuse panel.



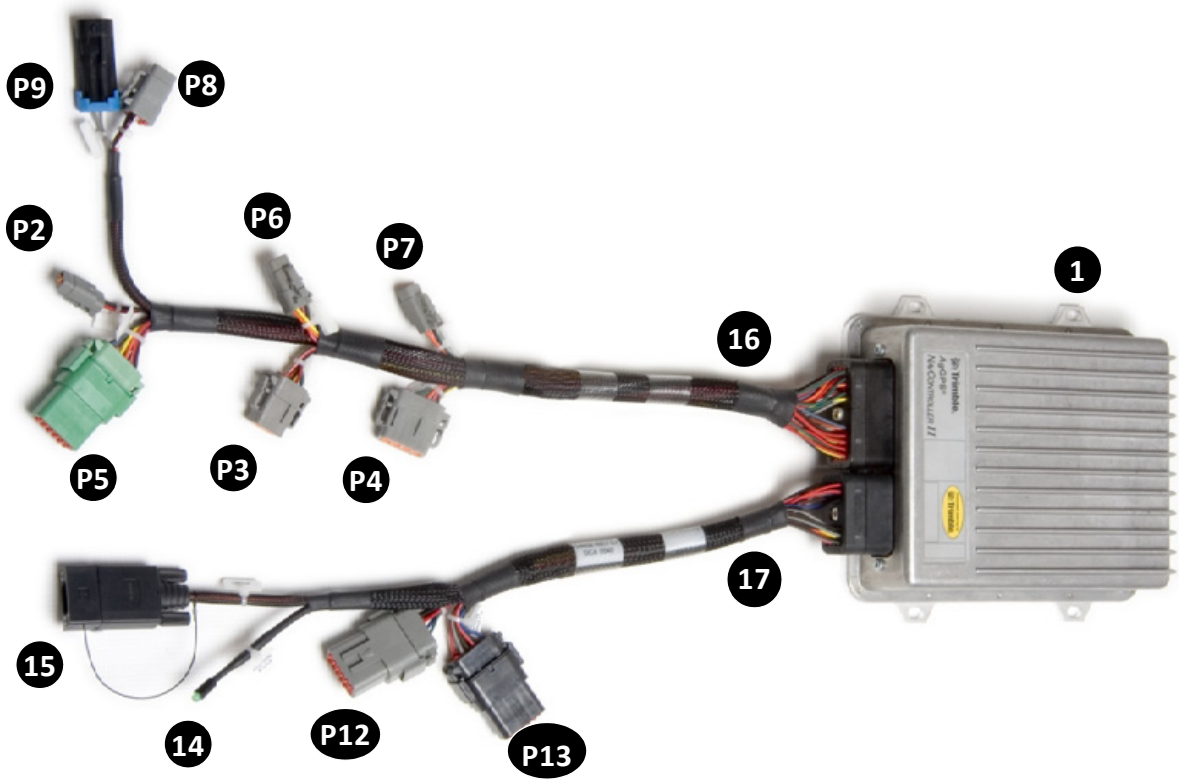
Step 6

Attach the NavController to the mounting plate using the four provided 10-32 screws.

With the NavController installed, reassemble the fuse panel and then replace the fuse panel cover.



Controller connections

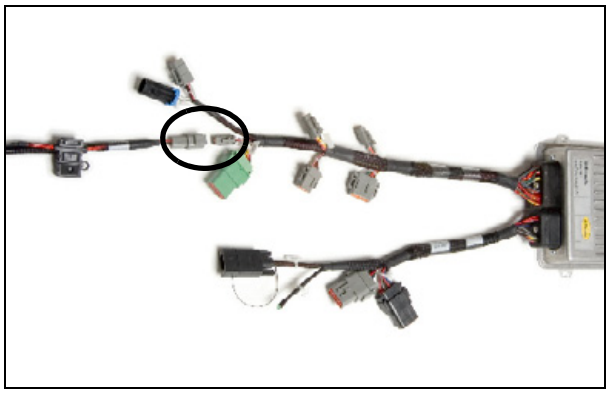


Item	Description	Item	Description
1	NavController	P9	Sonalert connector
P2	Power connector	P12	Lightbar/spare connector
P3	GNSS connector	P13	Spare sensors connector
P4	Display connector	14	Status indicator
P5	Vehicle sensors connector	15	Laptop connector
P6	Steering sensor connector	16	Main harness
P7	Manual override connector	17	Auxiliary harness
P8	Hydraulic valve connector		

Step 1

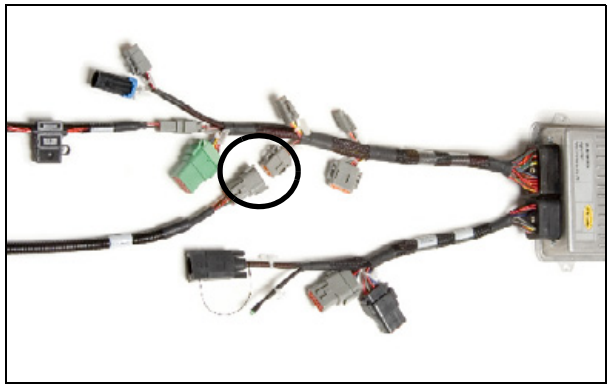
Connect the power cable connection to P2, which is labeled **Power**. P2 is located on the main wiring harness.

NOTE – The power connection supplies power through the controller to all connected devices, including GNSS and displays.



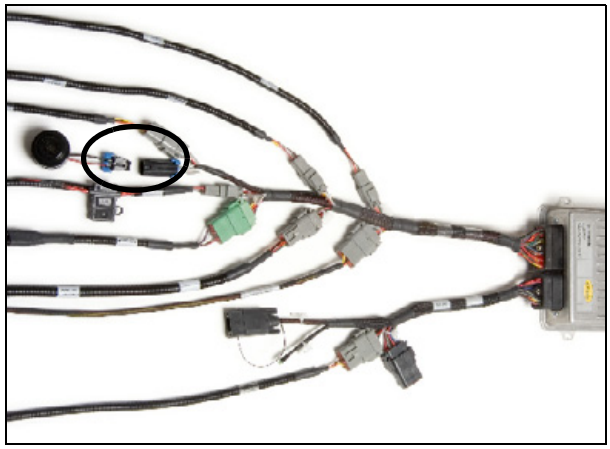
Step 2

Connect the CFX-750 display to P3, which is labeled **GPS**. P3 is located on the main wiring harness.



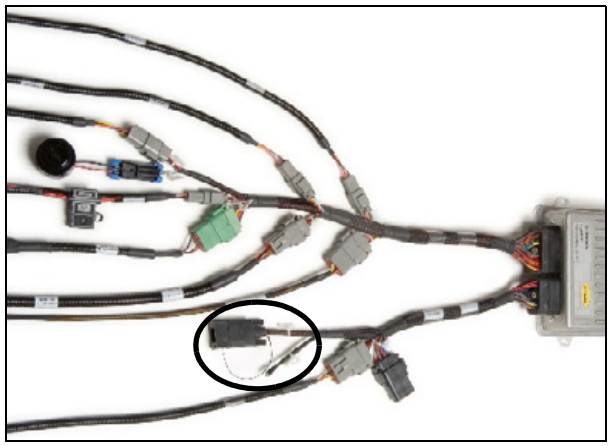
Step 3

Connect the Sonalert P9 to the 2-pin Delphi connector on the main wiring harness. Route the cable so the Sonalert warning device is in a position that is audible to the operator.



Step 4

Route the LED and laptop lead, which is located on the auxiliary wiring harness, to a location that allows the operator to determine the controller status. See controller LED status for status determination. Six flashes per second indicates a correctly functioning controller.



Step 5

Use the provided sleeving to secure the harness cables with tie wraps. Cover and route the cable bundle to avoid damage to connectors and strain on wire connections.

6

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.

To perform the final machine check:

1. Connect the battery.
2. Update the Trimble display and the Autopilot NavController to the latest firmware from agpartners.trimble.com.

   You can use FlashLoader 200 software version 3.19 to update the NavController: Download it from agpartners.trimble.com.
3. Load the correct configuration file into the Autopilot NavController for the vehicle model being used.

   Download the latest set of configuration files from agpartners.trimble.com.

   You can use Autopilot Toolbox II software version 2.92 or later to load the configuration file into the Autopilot controller. You can download the Autopilot Toolbox II software from agpartners.trimble.com.
4. Calibrate the Autopilot system using the Trimble display or Autopilot Toolbox II software version 2.92 or later. Depending on your machine type, the following items must be calibrated before you can use the Autopilot system:
   - NavController mounting orientation
   - Antenna height/Antenna axle offset, and Roll offset

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