INSTALLATION INSTRUCTIONS

Trimble® Autopilot™ Automated Steering System

AGCO WR Swathers

- **Massey Ferguson WR9840**
- **Massey Ferguson WR9860**
- **Massey Ferguson WR9870**

Version 5.00
Revision A
November 2015
Part number 54038-46-E05

Trimble

Legal Notices

Agriculture Business Area

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Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and the receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

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Trimble Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL



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.

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.

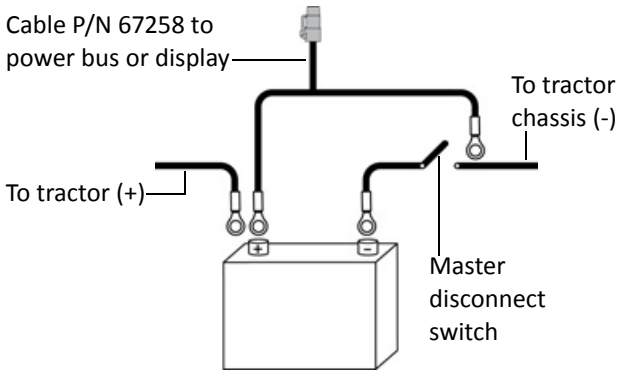
CAUTION – Do not direct pressurized water at:
- Electronic or electrical components or connectors
- Bearings
- Hydraulic seals
- Fuel injection pumps
- Any other sensitive parts or components



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 – If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258) 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 damaging the display.



Contents

Legal Notices . . . 2

Safety Information . . . 3

Warnings . . . 3
Cautions . . . 3

1 Introduction . . . 7

Technical assistance . . . 7
Manual system upgrade to the Autopilot system . . . 8
CFX-750 display and FmX integrated display . . . 8
Required components . . . 8
Antenna mounting kits . . . 8
Accessory kits . . . 8
Autopilot hardware organization: As shipped . . . 9
Preparing the vehicle for installation . . . 9

2 Steering Interface Cable Installation . . . 10

AutoGuide Ready interface cable . . . 11
CAN interface cable for FmX integrated display . . . 11
CAN interface cable for CFX-750 display . . . 13
Installing the AutoGuide Ready cable . . . 15
Activating the system using the in-cab switch . . . 17
Performing the machine valve calibration . . . 18

3 Antenna/Receiver Installation . . . 24

Antenna and receiver installation options . . . 25
Possible mounting methods . . . 25
Attaching the plate with VHB adhesive . . . 26
Installing the antenna mount . . . 28
AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped) components . . . 31
AG-372 receiver with AgGPS 450/900 radio module (if equipped) components . . . 32
Installing the AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped) . . . 33
Removable installation . . . 33
AG-542 GNSS receiver components . . . 38
Installing the AG-542 GNSS receiver . . . 39
Connecting the factory AG-372 antenna receiver using the optional harnesses (P/N 107362) . . . 42
Connecting receivers in the cab . . . 43
Connecting receivers on the roof . . . 44

4 Display Installation . . . 45

CFX-750 display . . . 46
CFX-750 display: Components . . . 46
CFX-750 display: Preparation . . . 47
CFX-750 display: Installation . . . 48
CFX-750 display: Installing the wiring harness . . . 49
FmX integrated display . . . 50
FmX integrated display: ComponentsF . . . 50
FmX integrated display: Preparation . . . 51
FmX integrated display: Installation . . . 52
FmX integrated display: Installing the wiring harness . . . 52
CFX-750 display and FmX integrated display connections . . . 54

Connecting accessory options 54
Installing the GNSS antenna and plate 56
Installing the RTK radio antenna 59

5 Power Harness Installation 61

CFX-750 display components 62
FmX integrated display components 64
Installing the power harness for the display 65
Configuring the power bus options for the display 67
The display power button 67
An external switch 67
Ignition sensing 69

6 Controller Installation 71

Installing the controller 72
Installing the controller on the seat base 72
Installing the controller on the back wall of the machine 75
Controller connections 76
Connecting the cables to the controller 77

7 Final Machine Check 79

CHAPTER 1

Introduction

In this chapter:

- 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 (www.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:

1. Log into http://agpartners.trimble.com.
2. Click the *Feedback* link at the right of the screen. A form appears.
3. Complete the form and then click **Submit Feedback**.

Manual system upgrade to the Autopilot system

CFX-750 display and FmX integrated display

Retain
CFX-750™ display: P/N 94110-xx
Power cable CFX-750 display: P/N 77282
FmX® integrated display: P/N 93100-xx
Power cable FmX display: P/N 66694
Antenna for display: P/N 60600-02 (DGPS) or 77038-00 (OmniSTAR®/RTK)
Antenna to receiver cable: P/N 50449
Basic cable (CFX-750 and FmX displays): P/N 67258

Required components

Kits required	Special tools
Platform kit: P/N 54038-46	Drill $^{5}/_{16}$'' and $^{7}/_{16}$'' drill bits Allen wrench set (metric and SAE) Open ended wrench set (metric and SAE)

Antenna mounting kits

Kits required
Antenna V plate mount and *Ag*GPS® 262/AG-372 receiver magnetic mount: P/N 62388-01 (includes magnets for quick release of the *Ag*GPS 262/AG-372 receiver. See Chapter 3, Antenna/Receiver Installation. For AG-15 / AG- 25 / Zephyr™ models use: • Magnetic GPS antenna bracket: P/N 46706 • Magnetic mount: P/N AG12920-00 • Elevated Roof Mount: 62380-00

Accessory kits

Kits required
Remote engage switch assembly – standard Euro: P/N 57227-10
Remote engage switch assembly – full Euro: P/N 57227-20
Remote engage foot pedal: P/N 57259

Autopilot hardware organization: As shipped

Hardware	Component	See...
Platform kit (P/N 54038-62)	CAN Bus cable	Chapter 2
	Bolt kit controller	Chapter 6
Common parts	Controller	Chapter 6
	Controller mounting bracket	Chapter 6
	Cable kit: • Main wiring harness • Power bus auxiliary wiring harness • Sonalert alarm	Chapter 6
GNSS receiver	GNSS receiver	Chapter 3
	GNSS antenna	
	GNSS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	CFX-750 display	Chapter 4
	FmX integrated display	
	Display cable	
	Mounting bracket	
Roof bracket kit: (P/N 62380-00)	Roof brackets	Chapter 3
	Bolt kit, roof bracket	

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.

CHAPTER 2

Steering Interface Cable Installation

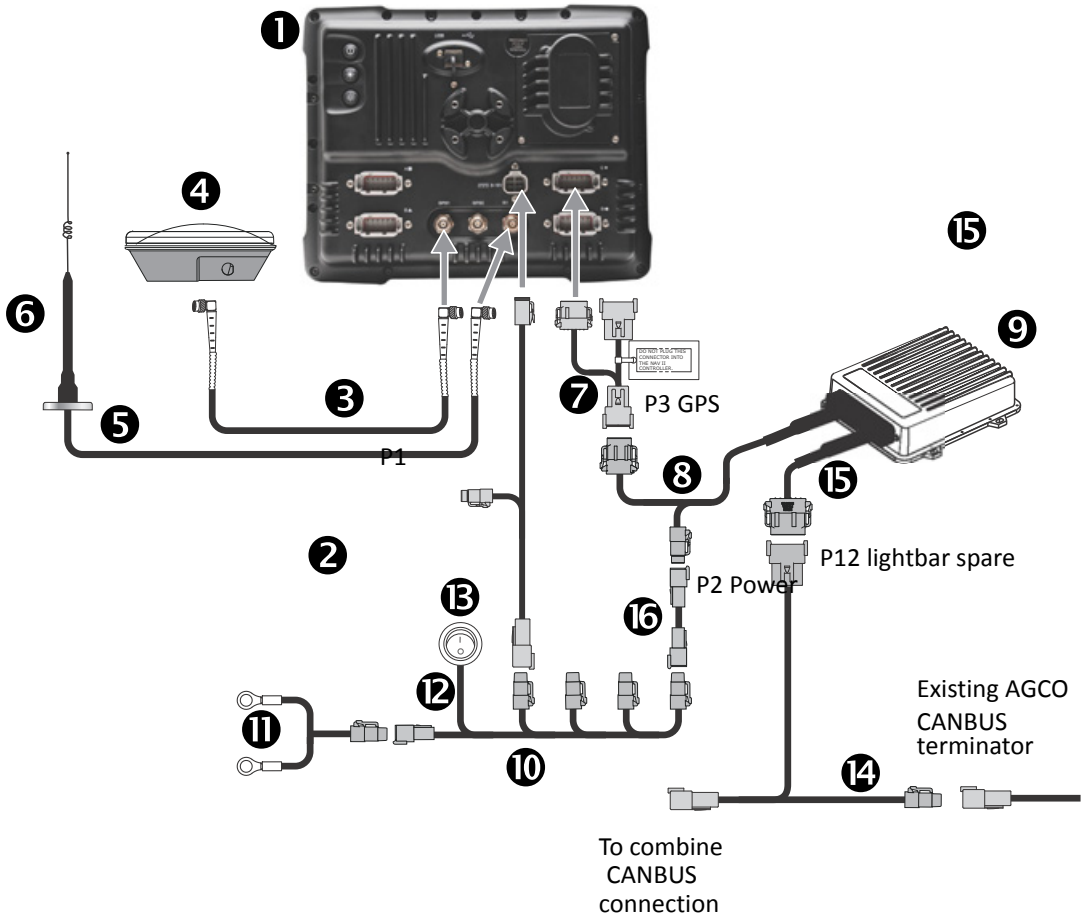
In this chapter:

- AutoGuide Ready interface cable
- Installing the AutoGuide Ready cable
- Activating the system using the in-cab switch
- Performing the machine valve calibration

This chapter describes how to install the CAN interface cable in the vehicle and activate the system.

AutoGuide Ready interface cable

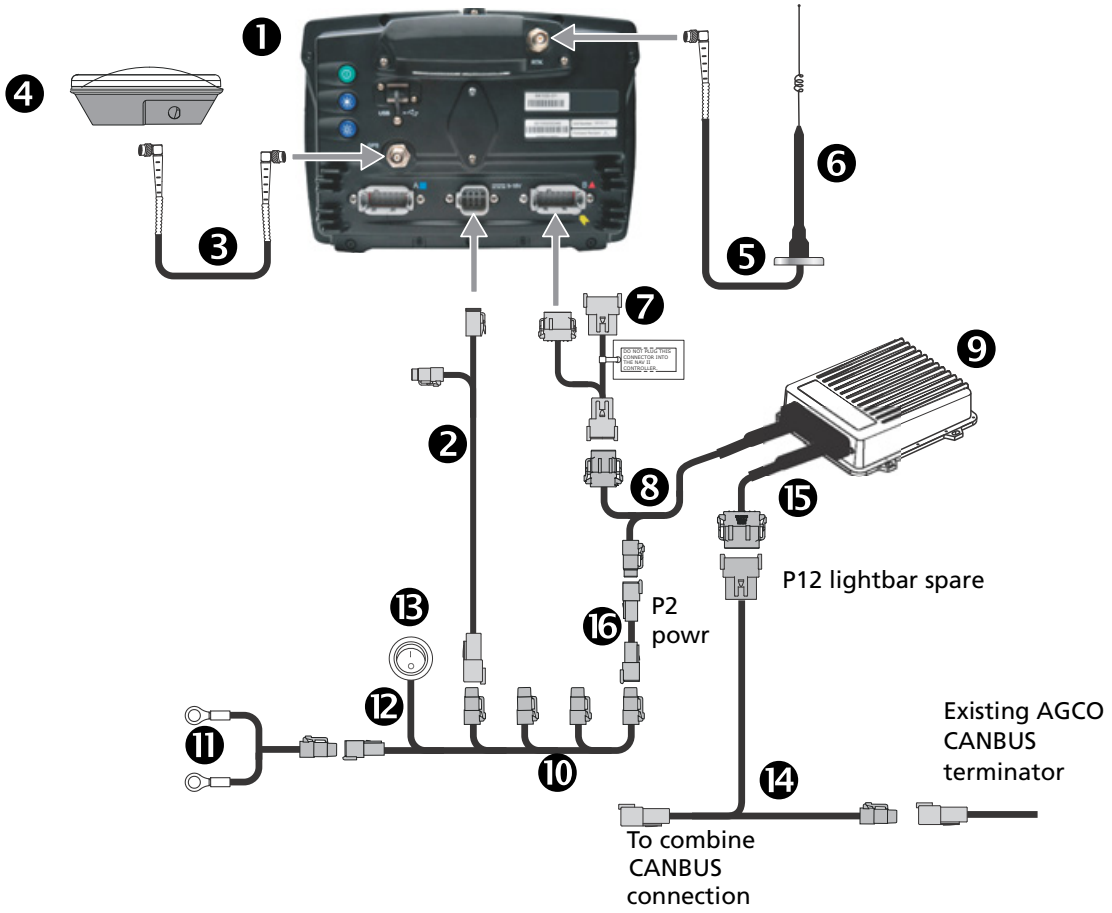
CAN interface cable for FmX integrated display



Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	GPS, 5M, TNC/TNC RT angle cable	75741
❹	GNSS antenna	77038-00
❺	Antenna cable and base	62120
❻	SNB900 radio antenna kit	28822-10
❼	FmX to NavController cable with port replicator ***Note –*** *Do not connect to P4 or P12 on NavController.*	75741
❽	NavController main cable	54601
❾	NavController	55563-00
❿	FmX power cable with relay and switch	67259

Item	Description	Trimble part number
⓫	FmX basic power cable	67258
⓬	Switch cable: Included with P/N 67259	
⓭	Switch - optional: Included with P/N 67259 (illuminated switch sold separately)	
⓮	CAN Interface cable	99324
⓯	NavController auxiliary harness	54602
⓰	2-pin DTM to 2-pin DT power adaptor	67095

CAN interface cable for CFX-750 display

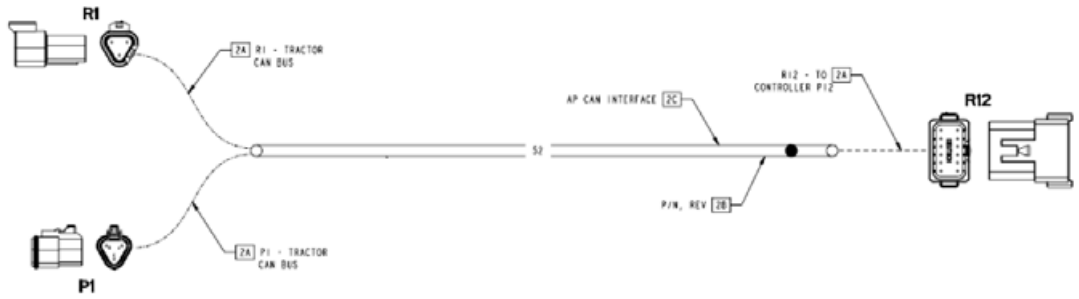


⚠ **CAUTION –** Connecting the Port Replicator on the CFX-750 display to NavController cable ❼ to the P4 or P12 connector of the NavController harness ❽ will result in damage to the CFX-750 display and will void the warranty.

Item	Description	Trimble part number
❶	CFX-750 display ***Note –*** *RTK password required.*	94100-01
❷	CFX-750 power cable	77282
❸	8 m GPS TNC/TNC RT angle cable	50449
❹	AG25 GNSS antenna	77038-00
❺	NMO to TNC 20ft antenna cable and base	62120
❻	900 MHz radio antenna kit	22882-10
❼	CFX-750 to NavController cable with port replicator ***Note –*** *Do not connect to P4 or P12on NavController.*	75741
❽	Main NavController cable	54601
❾	NavController	55563-00

Item	Description	Trimble part number
⑩	CFX power cable with relay and switch (power bus)	67259
⑪	Basic power cable	67258
⑫	Switch cable: Included with P/N 67259	
⑬	Switch - optional: Included with P/N 67259 (illuminated switch sold separately)	
⑭	CAN Interface cable	99324
⑮	NavController auxiliary harness	54602
⑯	2 pin DTM to 2 pin DT power adaptor	67095

Installing the AutoGuide Ready cable



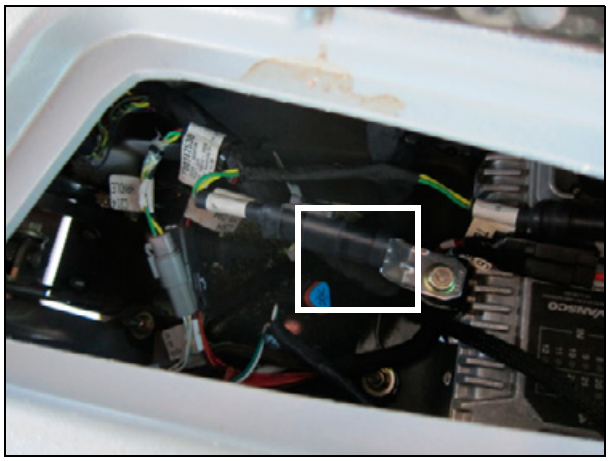
Step 1

The CAN bus interface connector is located underneath the armrest on the right side of the driver's seat.



Step 2

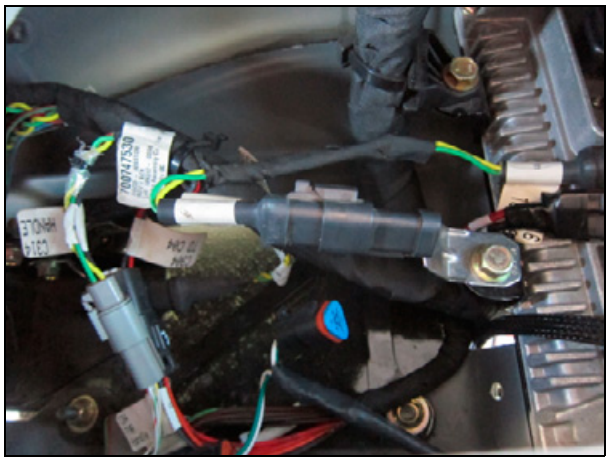
To access the connector, lift up the hinged black armrest and remove the plastic tray to gain access to the wiring harnesses.

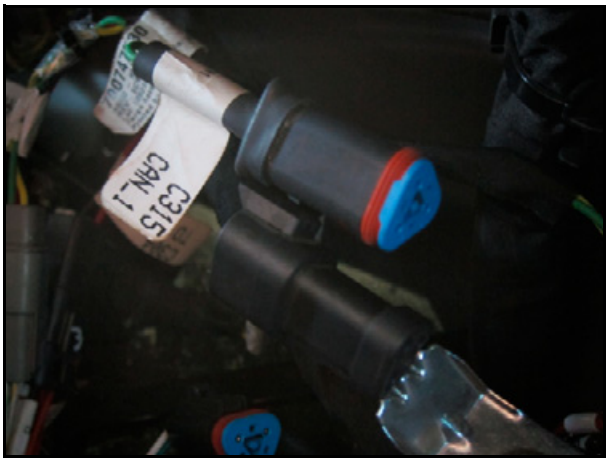


Step 3

The vehicle CAN bus connector is a triangular 3-pin DT plug that is plugged into a 3-pin DT receptacle terminator. The terminator will be secured to the machine with a small sheet metal bracket.

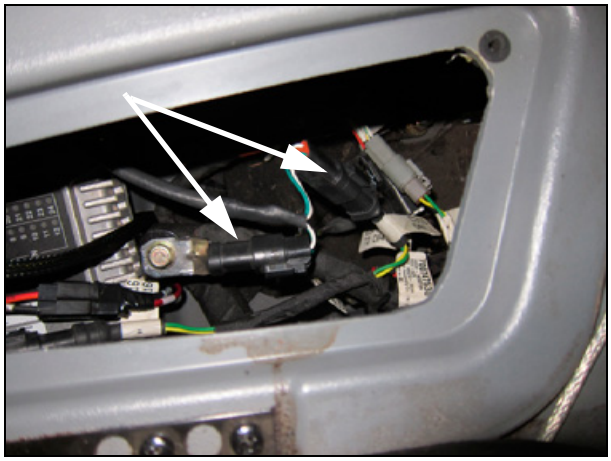
Unplug the vehicle CAN cable from the terminator.





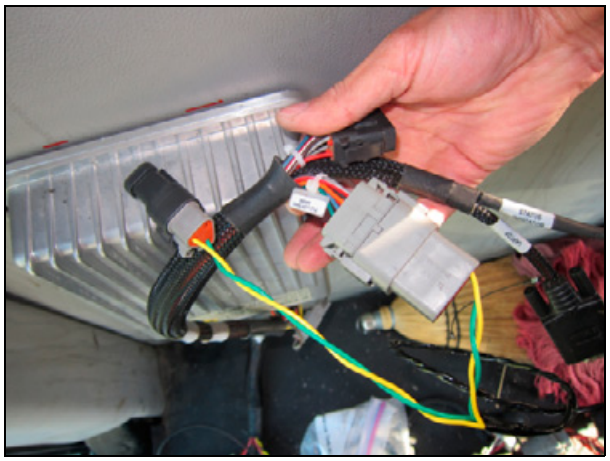
Step 4

Insert the new CAN interface cable (P/N 99324) in between the terminator and the CAN cable.



Step 5

Plug the remaining free connector, a 12-pin DTM receptacle, into the NavController auxiliary harness connector P12.



Activating the system using the in-cab switch

Step 1

To enable the machine's guidance controller, the AutoGuide switch must be in the correct position. The switch is located along the right side of the ceiling. .



Step 2

There are three possible positions for the switch. Move the switch to the top position so that both LEDs on the switch are illuminated.



Performing the machine valve calibration

For optimal performance on the machine, you must calibrate the machine steering system.

This can be done through the display on the machine as follows:

Step 1

⚠ **WARNING –** Before unlocking the hubs make sure that the wheels are chocked so that the machine does not move inadvertently.



Before staring the calibration, unlock the hubs of both front drive wheels on the machine to ensure that the machine does not move through the calibration process.

Step 2

To unlock the hubs, remove the center hub cap.



Once you have removed the cap the unlock pin is visible.



Step 3

To unlock the hubs, push the pin inward and then install the cap you removed in Step 2 so that the cap forces the pin into the hub of the machine. This unlocks the machine hubs.



Step 4

Tighten the bolts to secure the cap and then confirm that the machine hubs are unlocked by attempting to drive the machine.



> **WARNING –** Do not continue the calibration if ***any*** wheel movement is present.

Once the calibration is complete, reverse this procedure to re-engage the machine hubs.

Step 5

With the machine hubs unlocked, you can calibrate the machine valve using the display installed on the machine.

Tap the wrench icon on the left side of the screen.



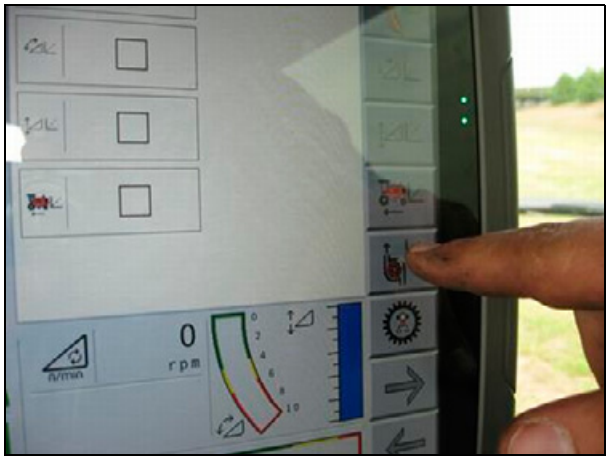
Step 6

Tap the button shown to access the calibration screen.



Step 7

Tap the button shown to access the steering pump calibration screen.



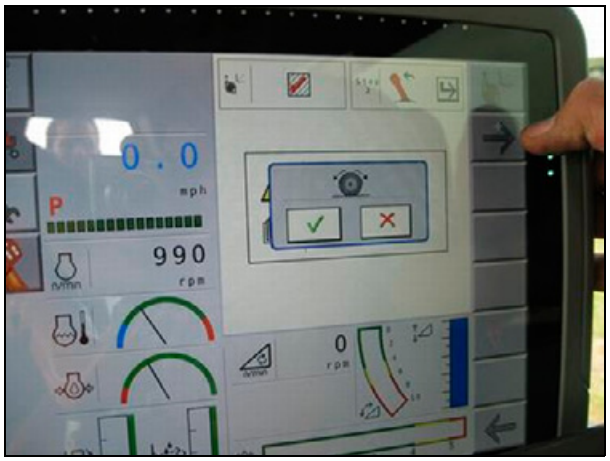
Step 8

Tap the button shown to access the steering pump calibration.



Step 9

Confirm that the wheels are unlocked, tap the check mark on the screen to acknowledge this and then tap the proceed arrow.



Step 10

The machine also requires the following:

- The speed lever set to fully forward (see Step 11).
- The engine RPM set to high idle (see Step 12).
- The parking brake set to *Off* (see Step 13).



Step 11

Set the speed lever to fully forward.



Step 12

Set the engine to high idle.



Step 13

Set the parking brake to off.

> **WARNING –** Make sure that the wheels are chocked so that the machine does not move inadvertently.



Step 14

Once you have completed all the confirmation checks (see Step 11 through Step 13), you can start the calibration.

Tap the check mark button to start the calibration process.



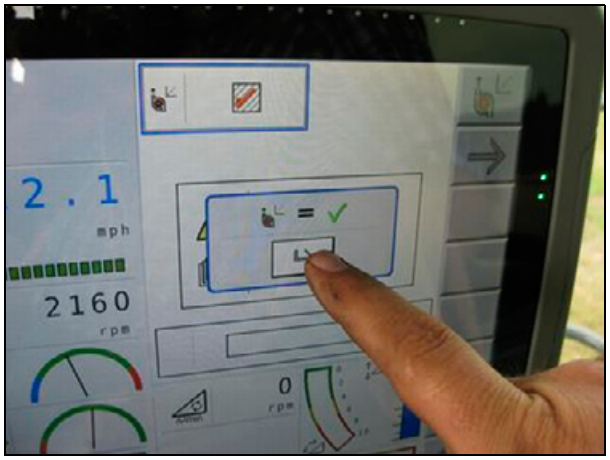
Step 15

Follow the instructions on the screen so that you can abort the process if necessary.



Step 16

Confirm that the calibration has been completed and then return to the main machine screens.



Step 17

With the lever set back to neutral and with the parking brake re-engaged, reactivate the hubs by flipping the cap on both wheels back to the normal position as shown.



CHAPTER 3

Antenna/Receiver Installation

In this chapter:

- Antenna and receiver installation options
- Installing the antenna mount
- AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped) components
- AG-372 receiver with AgGPS 450/900 radio module (if equipped) components
- Installing the AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped)
- AG-542 GNSS receiver components
- Installing the AG-542 GNSS receiver
- Connecting the factory AG-372 antenna receiver using the optional harnesses (P/N 107362)

This chapter describes how to install the required receiver and antenna, and radio module (if used).

To install the antenna for the CFX-750 or FmX 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; FmX integrated display	✓	✓
AG-372 receiver	✗	✓
AG-542 GNSS receiver	✓	✓

Notes:

- *For quick release magnetic mounting with an AG-372 receiver, order the kit listed in Antenna mounting kits, page 8 and bolt the V plate to the spar.*
- *With all other antennas, bolt the V plate to the spar for high accuracy and repeatability.*
- *For WAAS, EGNOS, OmniSTAR VBS, 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.

You can use the VHB mounting method to attach either a P/N 62034 plate or a P/N 62388-02 V plate.

- **RTK, OmniSTAR HP/XP/G2, 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.

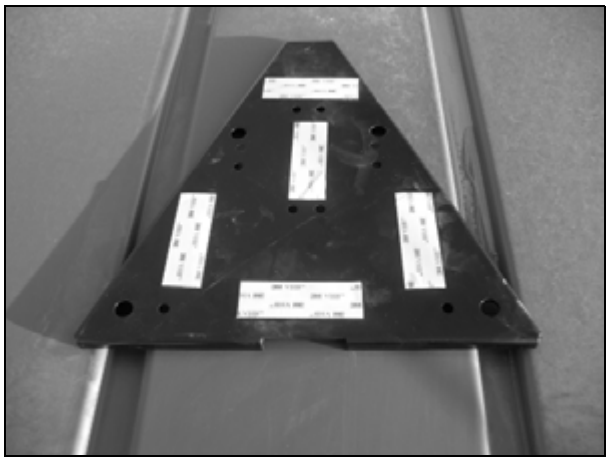


Step 2

V plate only

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

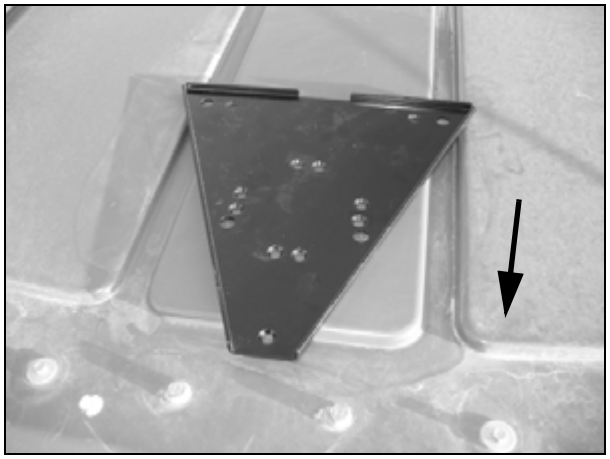
Note – *The VHB strips are pre-applied to the P/N 62034 plate.*



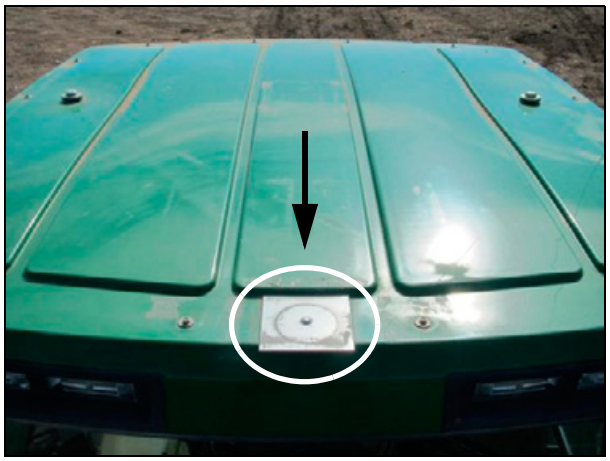
Step 3

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



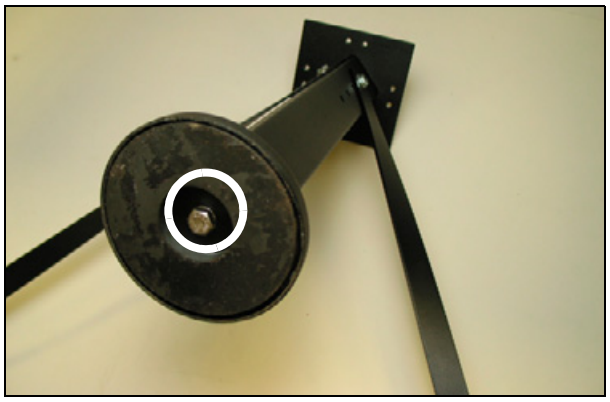
P/N 62034

Installing the antenna mount

Note – *Because elevated grain bin extensions may block satellite signals, Trimble recommends that you do not use low roof mounts for this series of machines.*

Step 1

Attach the 5" round magnet to the 2" square tubing. Use the provided ⅜" screw and washer.



Step 2

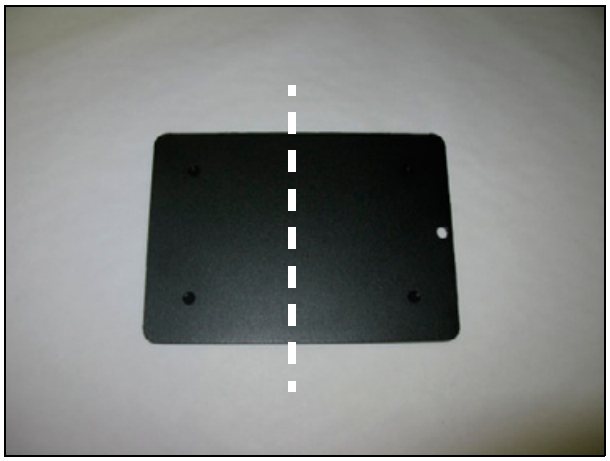
Attach the support braces to the second set of holes with the ¼" hardware provided.





Step 3

Cut one of the supplied mount plates in half to allow the plate to fit between the ribs on the roof.



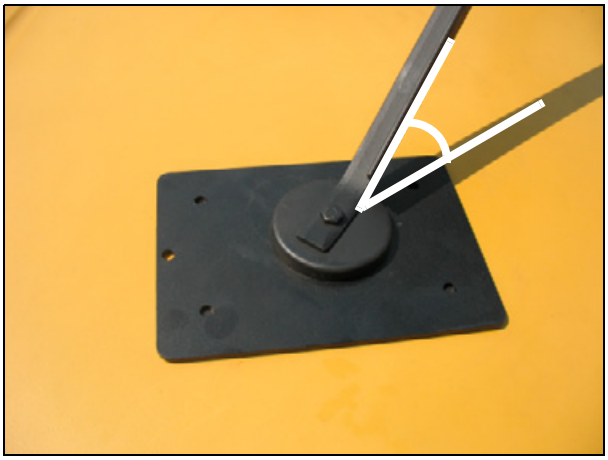
Step 4

Position the bracket and supports on the roof of the cab, placing the 5" magnet mount plate centered on, and in front of the two bolts as shown.



Step 5

Extend the legs to the cab roof and measure the angle of the roof relative to the supports.



Step 6

Approximately 1½" in from the end of the support leg, bend the leg to match the angle of the roof.



Step 7

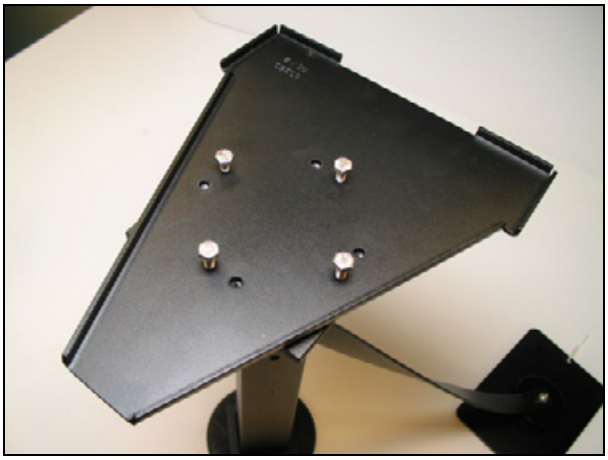
Attach the 3" magnets to the supports. Use the ¼" hardware provided.



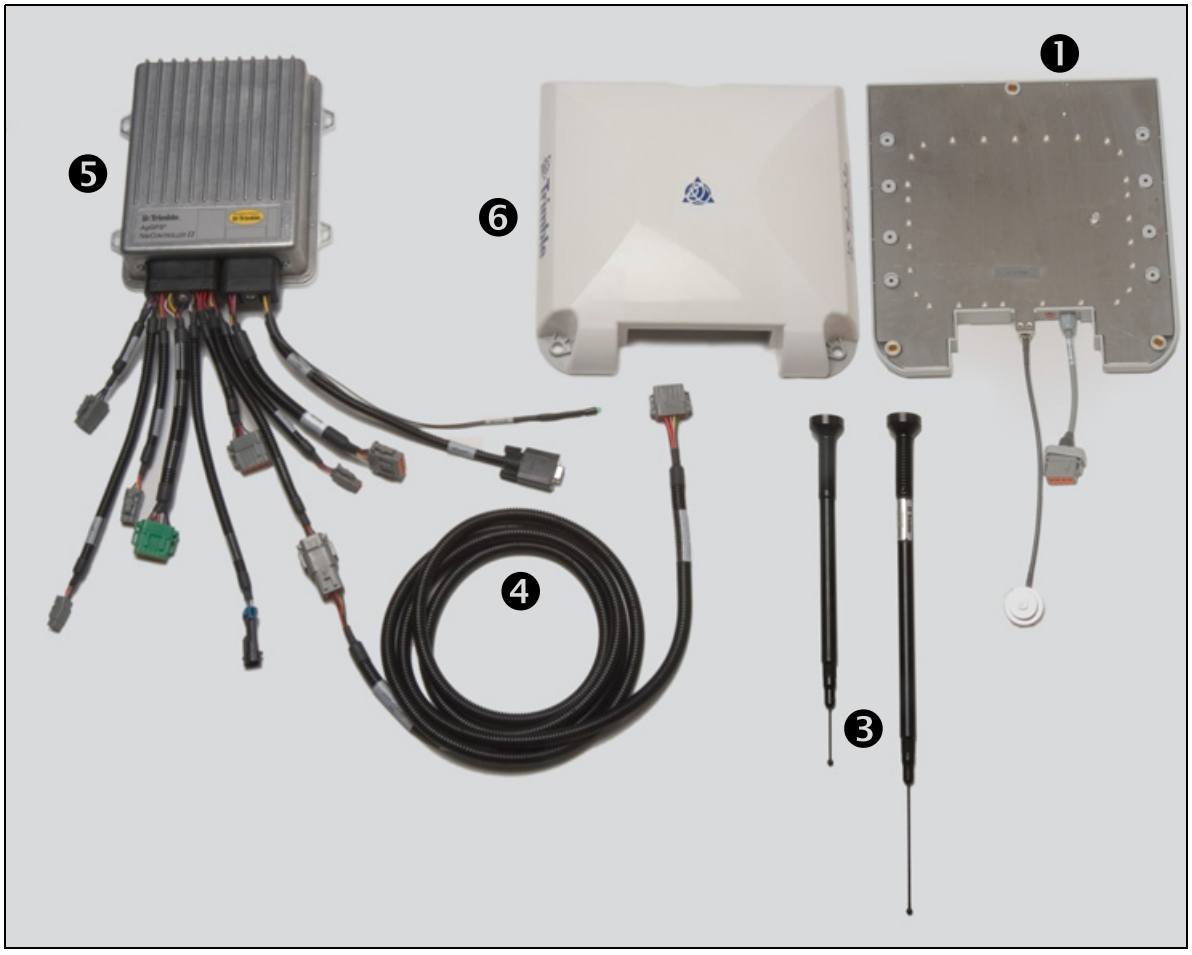
Step 8

Mount the magnet base plate or receiver plate directly to the 2" tubing with the ¼" flathead screws provided.

Note – *The triangle should point forward.*

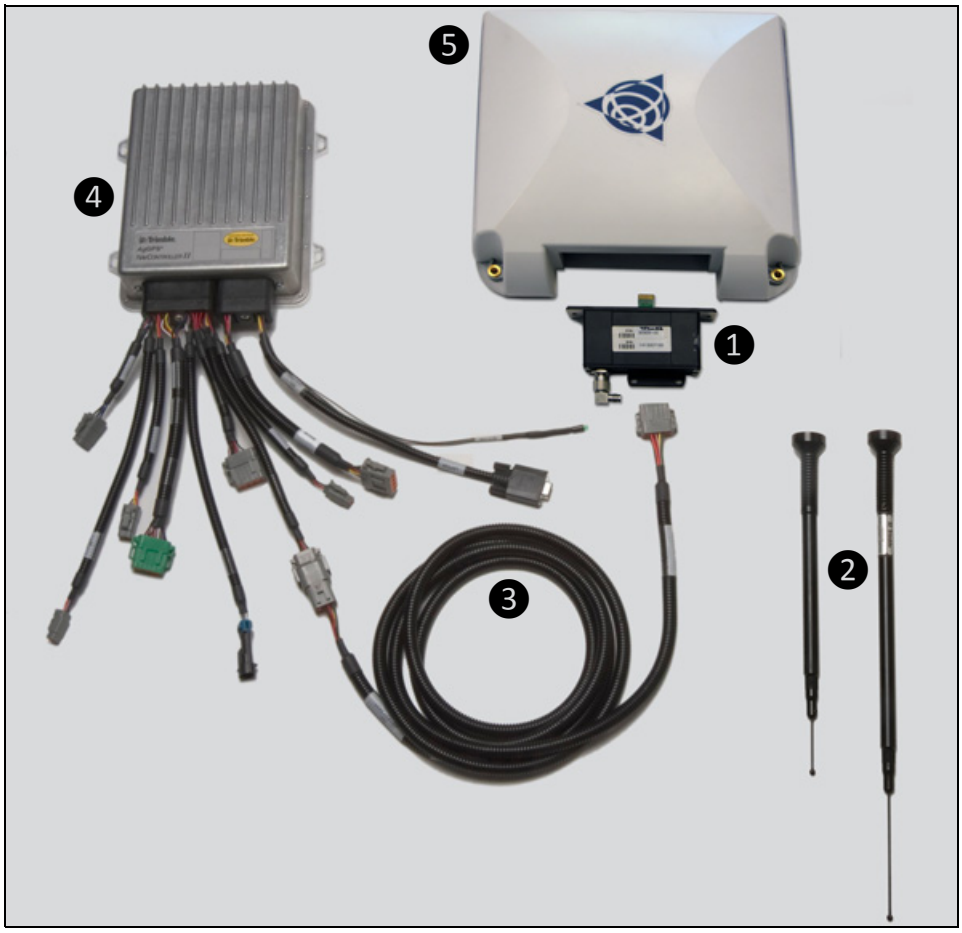


AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped) components



Item	Description	Trimble part number
❶	***Ag***GPS 450 or 900 radio (if equipped)	
❷	Radio antenna cable and magnetic mount	
❸	***Ag***GPS 450 or 900 radio antenna	
❹	Antenna/receiver cable	54608
❺	*Ag*GPS Autopilot controller	
❻	***Ag***GPS 262 antenna/receiver	

AG-372 receiver with *Ag*GPS 450/900 radio module (if equipped) components



Item	Description	Trimble part number
❶	*Ag*GPS 450 or 900 radio (if equipped)	
❷	Radio antenna cable and magnetic mount	
❸	*Ag*GPS 450 or 900 radio antenna	
❹	Antenna/receiver cable	54608
❺	Autopilot controller	

Installing the AG-372 GPS receiver with *Ag*GPS 450/900 radio module (if equipped)

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.

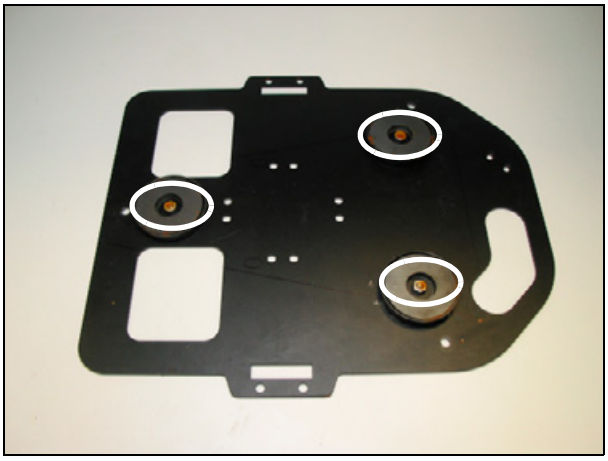
To attach the AG-372 receiver plate to the cab roof, do one of the following:

- For a removable installation, attach a V plate to a spar and then stick the receiver plate to the V plate with magnets.
- For a permanent installation, bolt the receiver plate to a spar.

Removable installation

Step 1

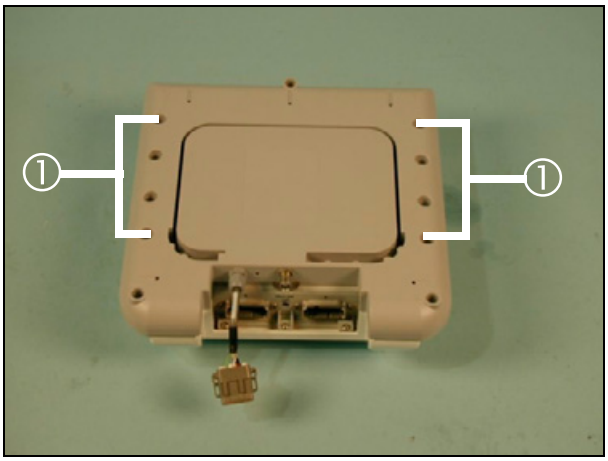
Attach the three provided magnets to the plate with the ¼" flathead screws and hardware provided.



Underside of plate

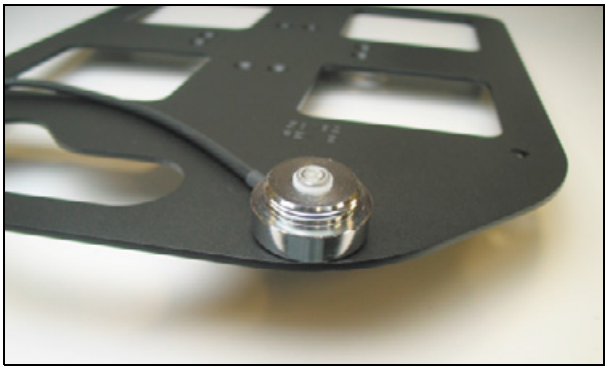
Step 2

Place the radio module on the AG-372 receiver. Secure it with the eight screws in the positions shown ❶.



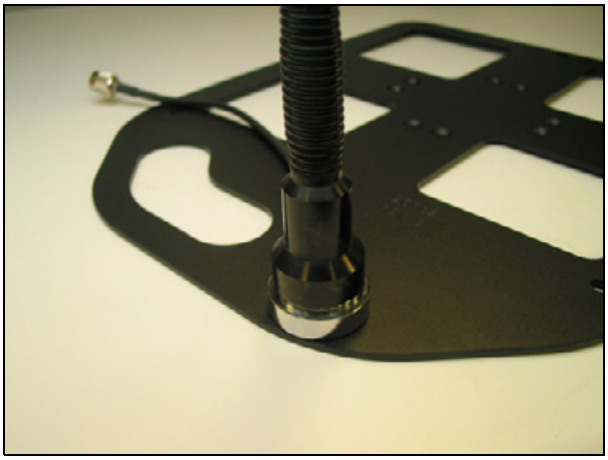
Step 3

Attach the antenna base to the rear of the plate with the two flathead screws provided.



Step 4

Attach the radio antenna to the antenna base.



Step 5

Position the AG-372 receiver and radio on the mounting plate with the connector ports facing the radio antenna. Align the three bolt holes with the receiver, radio, and mounting plate.



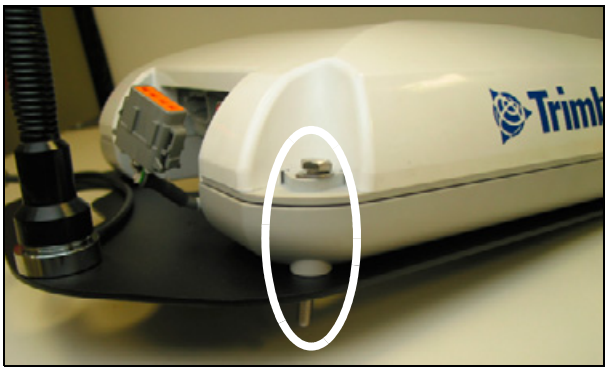
Step 6

Insert the nylon bushings provided.



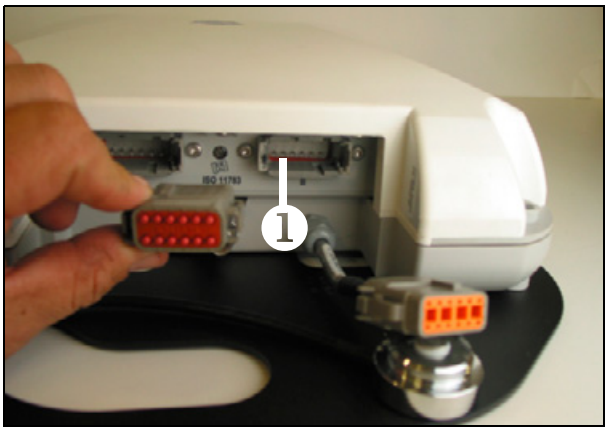
Step 7

Insert the bolts through the receiver, radio, and mounting bracket. Place nuts on the bolt ends and then tighten them.



Step 8

Remove the connector plug from port B ❶.



Step 9

Place the radio module connector into port B of the receiver.



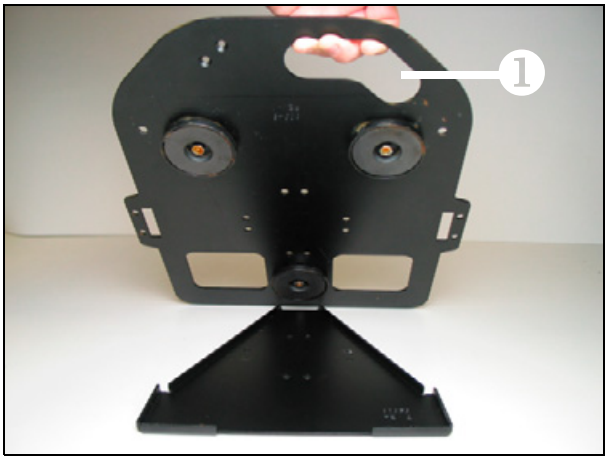
Step 10

Connect the radio antenna to the antenna port.



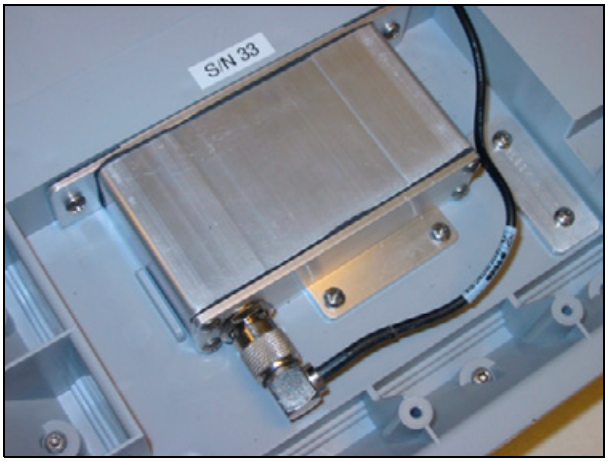
Step 11

Place the receiver on the roof by aligning the magnets with the V plate. Ensure that the handle ❶ is toward the back of the vehicle.



AG-372 receiver only

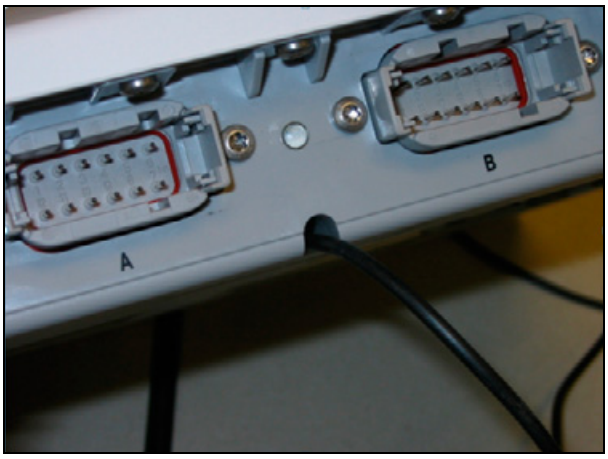
Attach the radio antenna to the internal radio. Route the cable as shown.



Route the cable through the cable pass as shown.



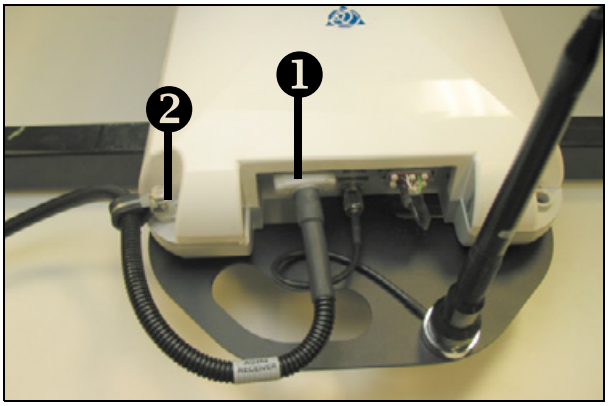
Run the cable out to RTK antenna.



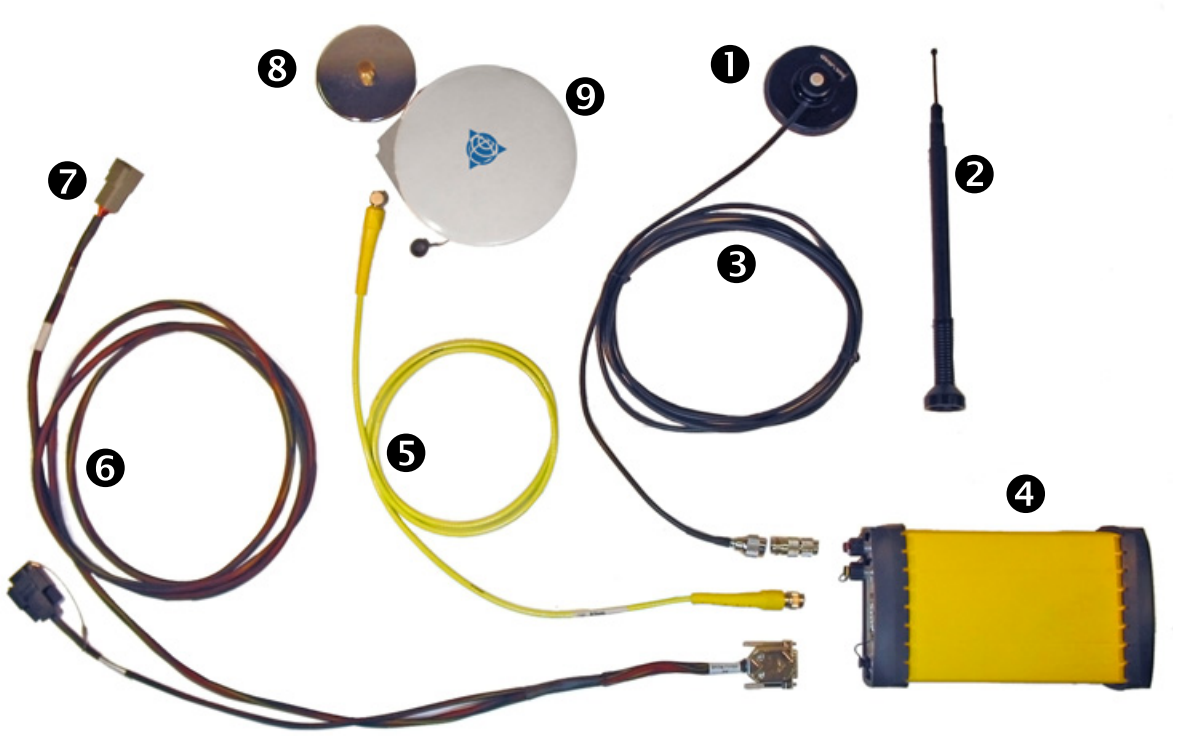
Step 12

Connect the cable from the cab controller into port A ❶ of the AG-372 receiver. Bolt the cable clamp ❷ to the left side of the receiver.

Route the cable into the cab and into the controller.



AG-542 GNSS receiver components



Item	Description	Trimble part number
❶	Radio antenna magnetic base	
❷	Radio antenna	
❸	Radio antenna cable	
❹	AG-542 GNSS receiver	
❺	Antenna cable	
❻	Receiver cable	62037
❼	To controller “P3 GPS”	
❽	Antenna magnetic mount	
❾	AG-542 GNSS antenna	

Installing the AG-542 GNSS receiver

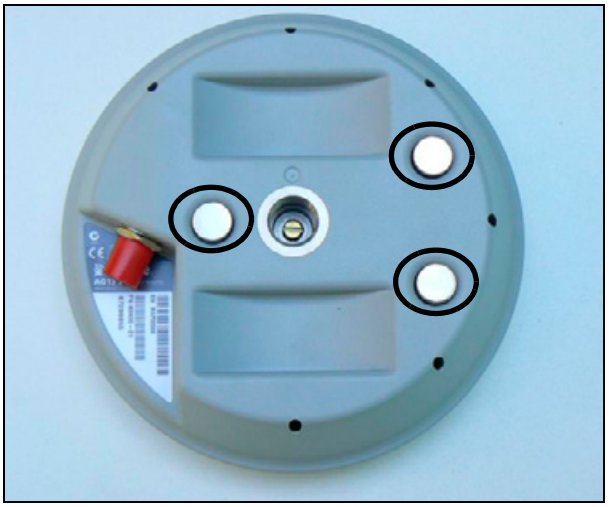
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

Attach the large magnet with a ⅝" stud to the GPS antenna.



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



Step 2

GLONASS, RTK, OmniSTAR HP/XP/G2, DGPS applications

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



Step 3

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.



Step 4

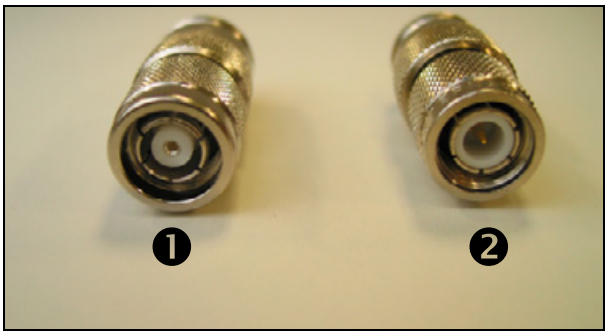
Mount the receiver in a convenient location in the cab. Route the antenna cable to the receiver and then connect it.



Step 5

Identify the correct adaptor for the radio connection:

- ❶ Reverse polarity TNC-to-N for 900 MHz radios
- ❷ Normal polarity TNC-to-N for 400 MHz radios



Step 6

Attach the adaptor to the radio port.



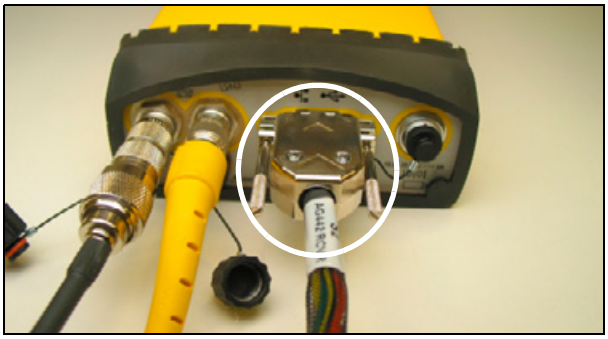
Step 7

Connect the radio antenna cable to the radio port adaptor.



Step 8

Connect the controller cable to the 26-pin connector of the receiver. Controller cable connections will be completed in Chapter 6, Controller Installation.



Step 9

Connect the radio antenna to the magnetic antenna base.



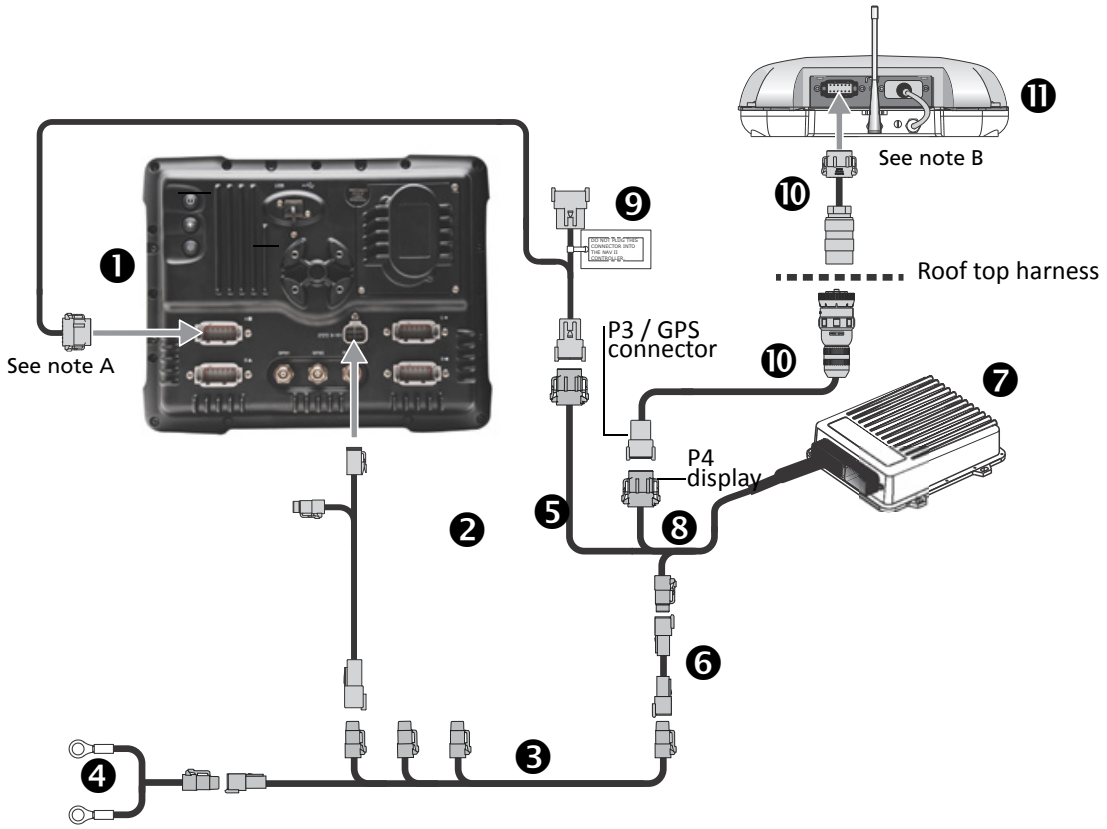
Step 10

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, 5" x 5" plate with the VHB provided to relocate the antenna.



Connecting the factory AG-372 antenna receiver using the optional harnesses (P/N 107362)

This figure shows how to connect the FmX integrated display with the Autopilot system, while using an *Ag*GPS 252 or an *Ag*GPS 262 receiver:



CAUTION – Connecting the Port Replicator on the FmX to NavController cable ❺ to the P4 or P12 connector of the NavController II harness ❿ will result in damage to the FmX integrated display, and will void the warranty.

Note – *Connect to port A or port B.*

Note – *Connect to port "A" only.*

Item	Description	Trimble part number
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	FmX to NavController cable with port replicator	75741
❻	2 pin DTM to 2 pin DT power adaptor	67095

Item	Description	Trimble part number
❼	NavController II	55563-00
❽	Cable assembly, 8-pin to 12-pin adaptor	76442
❾	Cable, *Ag*GPS 252/252 to NavController	54608
❿	Main NavController II cable	54601
⓫	*Ag*GPS 252/262 receiver	55500-xx

Connecting receivers in the cab

For external receivers (for example, the *Ag*GPS 252, *Ag*GPS 262, and AG-372) the following cables may be used to connect the Trimble Autopilot system to the machine's in-roof harness.

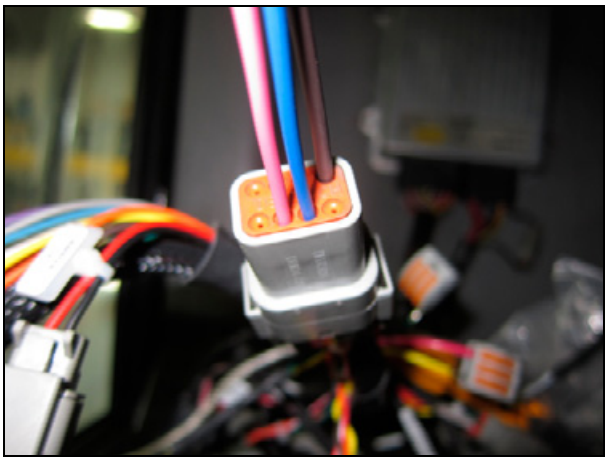
Step 1

Connect the 9 pin ISO-connector on cable P/N 107362 cable to the connector shown on the roof near the right door.



Step 2

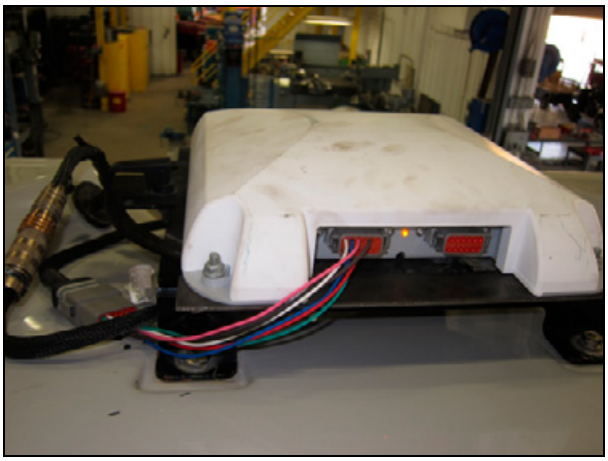
Route the other end of the cable to the plug labeled GPS on the NavController harness and connect it.



Connecting receivers on the roof

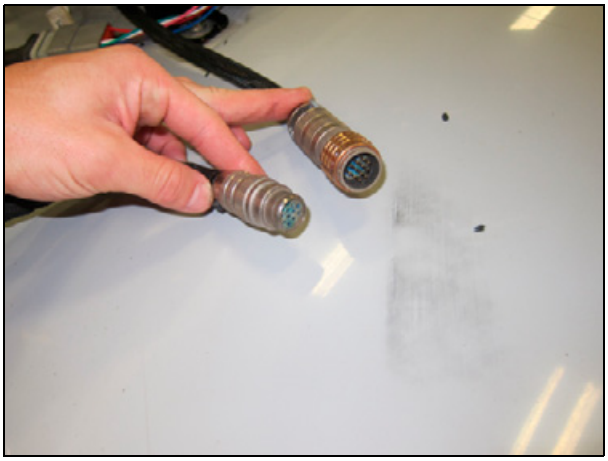
Step 1

On the roof of the machine connect the 12-pin Deutsch connector of cable P/N 107362 to the port shown on the antenna



Step 2

Locate the machine antenna connection and connect the end of cable P/N 107362 to the machine antenna connection as shown.





CHAPTER 4

Display Installation

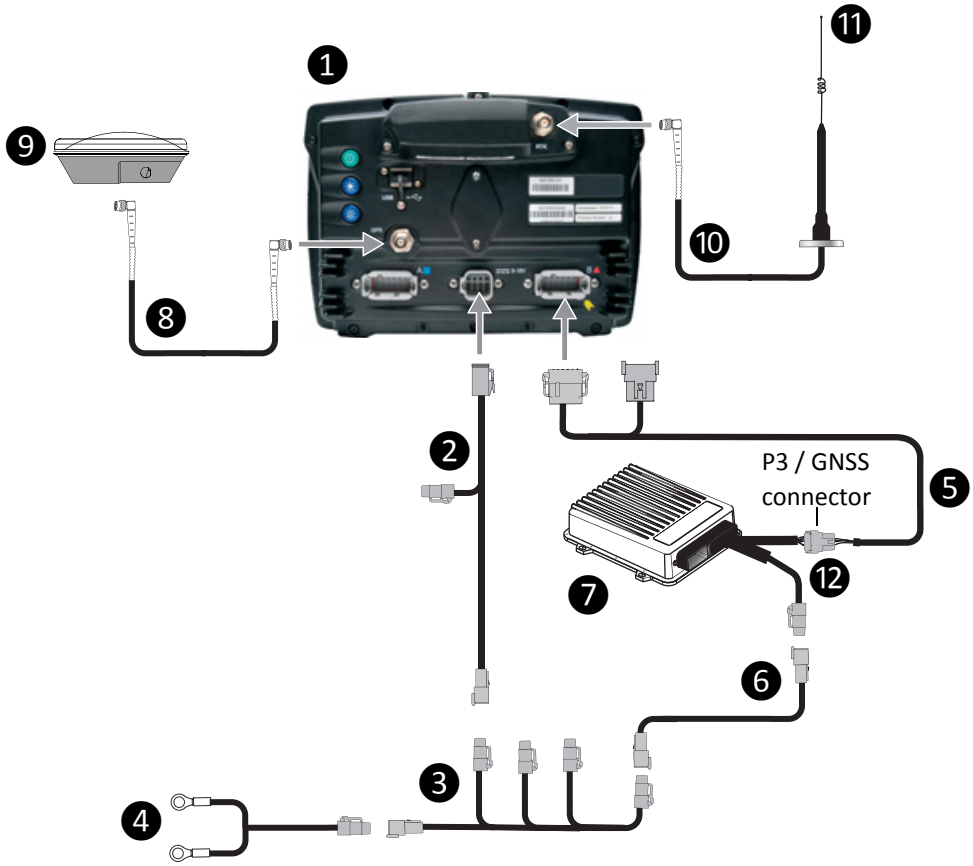
In this chapter:

- CFX-750 display
- FmX integrated display
- CFX-750 display and FmX integrated display connections

This chapter describes how to install and connect the FmX integrated display or the CFX-750 display in the vehicle.

CFX-750 display

CFX-750 display: Components



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

Item	Description	Trimble part number
❶	CFX-750 display ***Note –*** *RTK password required.*	94110-xx
❷	CFX-750 power cable	77282
❸	CFX-750 power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	Display to NavController II cable with port replicator	75741
❻	2-pin DTM to 2-pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GNSS TNC/TNC RT angle cable	50449
❾	AG-25 GNSS antenna	77038-00
❿	NMO-to-TNC 20 ft antenna cable and base	72122

Item	Description	Trimble part number
⓫	900 MHz radio antenna kit	22882-10
⓬	Main NavController II 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.

CFX-750 display: Installing the wiring harness

Step 1

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



Step 2

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

Step 3

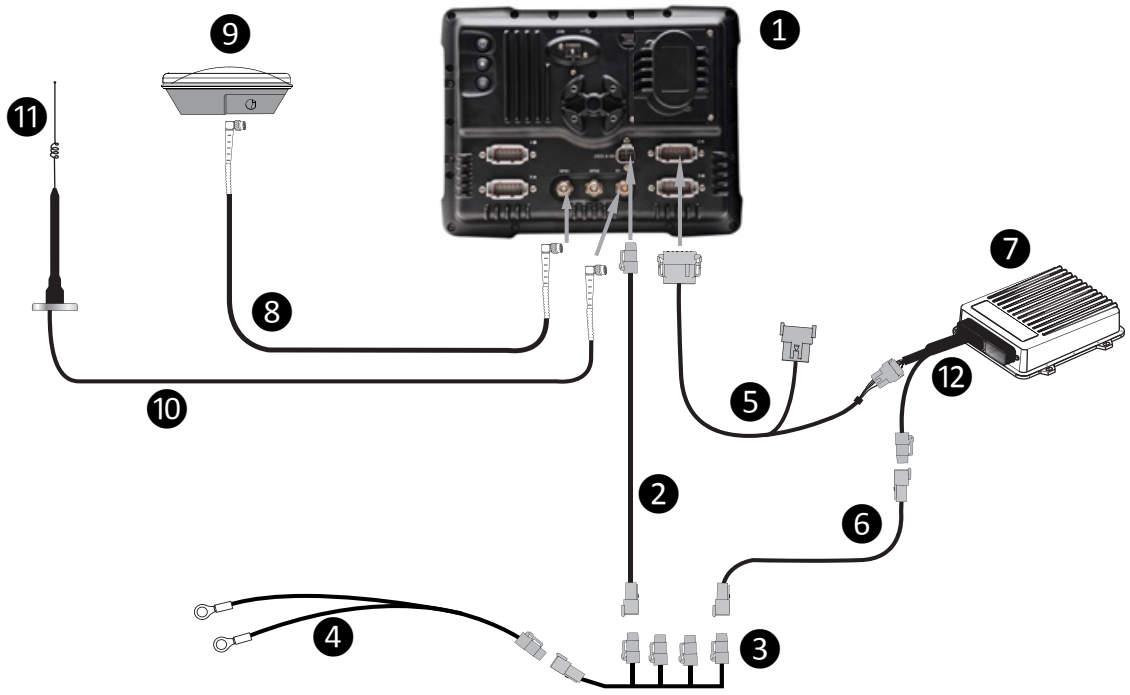
Connect the cable to the B port of the CFX-750 display.



To connect power to the CFX-750 display, see Chapter 6, Controller Installation.

FmX integrated display

FmX integrated display: ComponentsF



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

Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	Display to NavController II cable with port replicator	75741
❻	2-pin DTM to 2-pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GNSS TNC/TNC RT angle cable	50449
❾	AG-25 GNSS antenna	77038-00
❿	NMO-to-TNC 20 ft antenna cable and base	72122
⓫	900 MHz radio antenna kit	22882-10
⓬	Main NavController II cable	54601

FmX integrated display: Preparation

Step 1

Locate the FmX integrated 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.



FmX integrated 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.

FmX integrated display: Installing the wiring harness

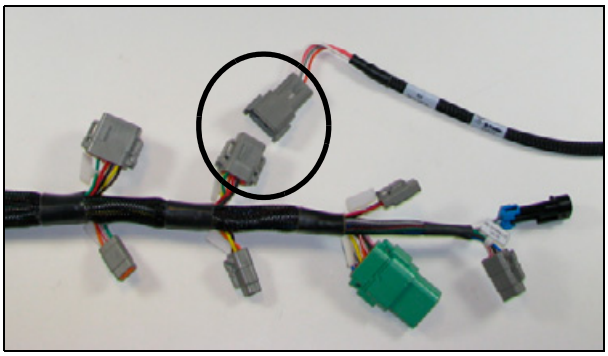
Step 1

Locate the cable that connects the FmX integrated display to the NavController II ❶.



Step 2

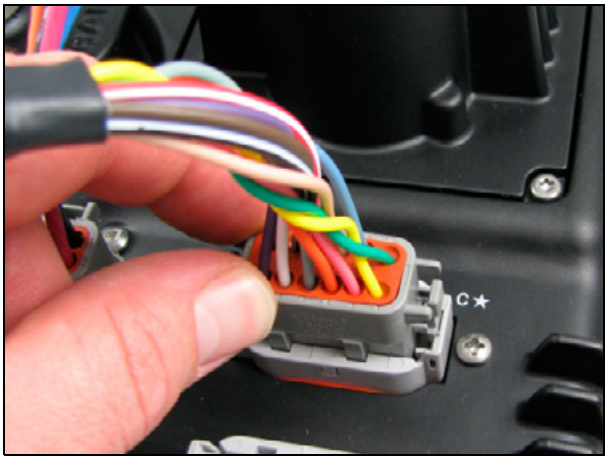
Connect the cable to the P3 connector on the NavController II main harness, and then route the cable from the NavController II to the mounting location on the FmX integrated display.



Step 3

Connect the cable to the C port of the FmX integrated display.

To connect power to the FmX integrated display, see Chapter 6, Controller Installation.



CFX-750 display and FmX integrated display connections

Connecting accessory options

Note – *Unless otherwise stated, "the display" applies to the CFX-750 display or the FmX integrated display.*

AgCam

The AgCam and AgCam cable are accessory items that you can purchase separately from the display. The CFX-750 display allows up to two video inputs; the FmX integrated display allows up to four.

Step 1

Locate the AgCam and AgCam cable.

Step 2

Mount the AgCam in a secure location and then route the cable towards the display.



CFX-750 display



FmX display

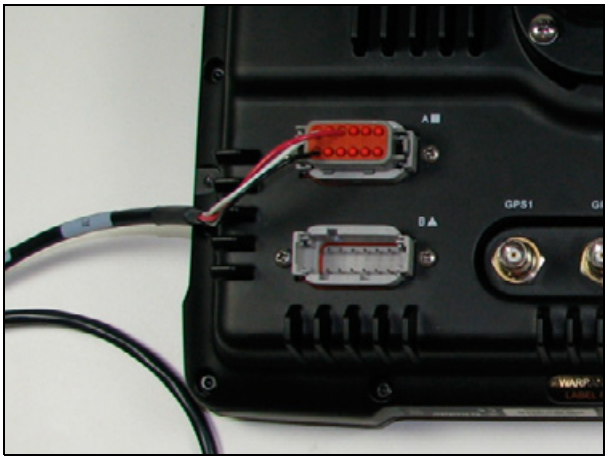
Step 3

Connect the AgCam cable to the display adaptor cable.



Step 4

Connect the display to AgCam adaptor cable to one of the open 12-pin connectors on the back of the display.



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 – *Because elevated grain bin extensions may block satellite signals, Trimble recommends that you use an elevated roof mount. See Chapter 3, Antenna/Receiver Installation.*

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

Use VHB adhesive to mount the antenna.

You can use Very High Bond (VHB) to attach either a P/N 62034, 5" x 5" plate or a P/N 62388-02 V plate.

- **GLONASS, RTK, RTX, OmniSTAR HP/XP/G2, 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, 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.

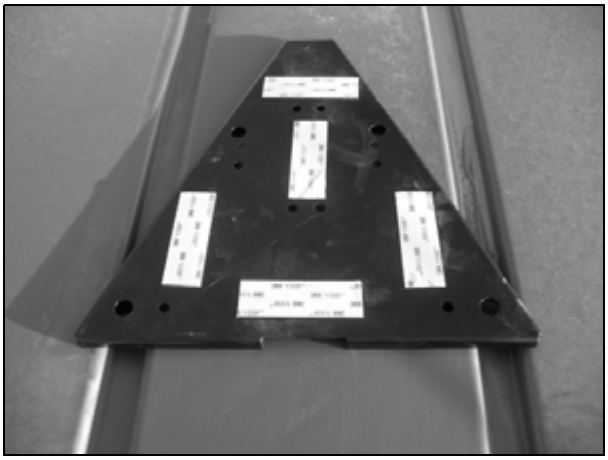


Step 2

V plate only

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

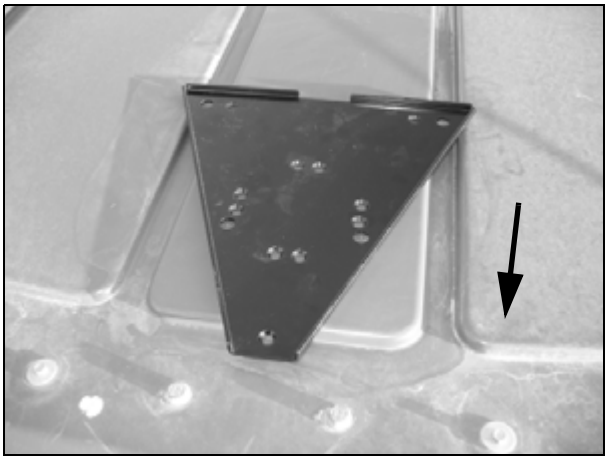
Note – *The VHB strips are pre-applied to the P/N 62034 plate.*



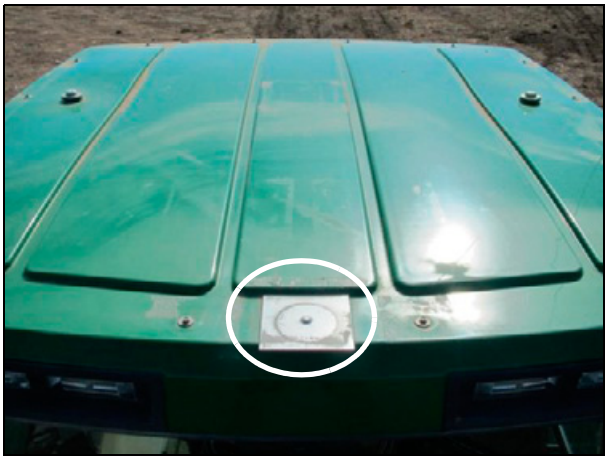
Step 3

Remove the backing from the other side of the VHB strips and then apply the plate to the cab roof. The narrow end 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.*



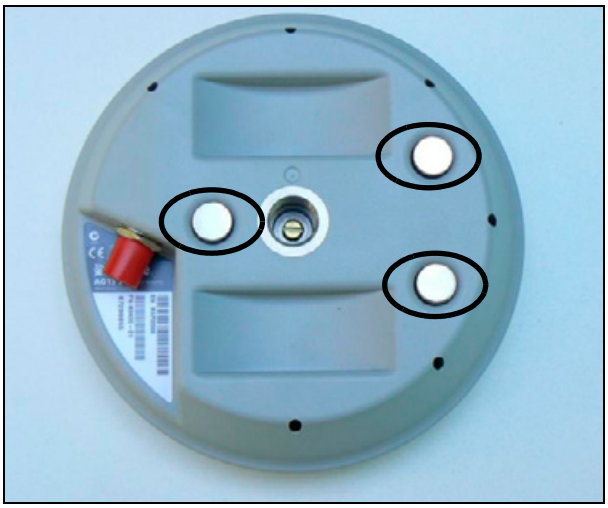
V plate



P/N 62034

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, RTX, OmniSTAR HP/XP/G2, DGPS, applications

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



WAAS, EGNOS, OmniSTAR VBS applications

Attach the antenna to the center of the P/N 62034, 5" x 5" 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.



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 P/N 62034 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.



CHAPTER 5

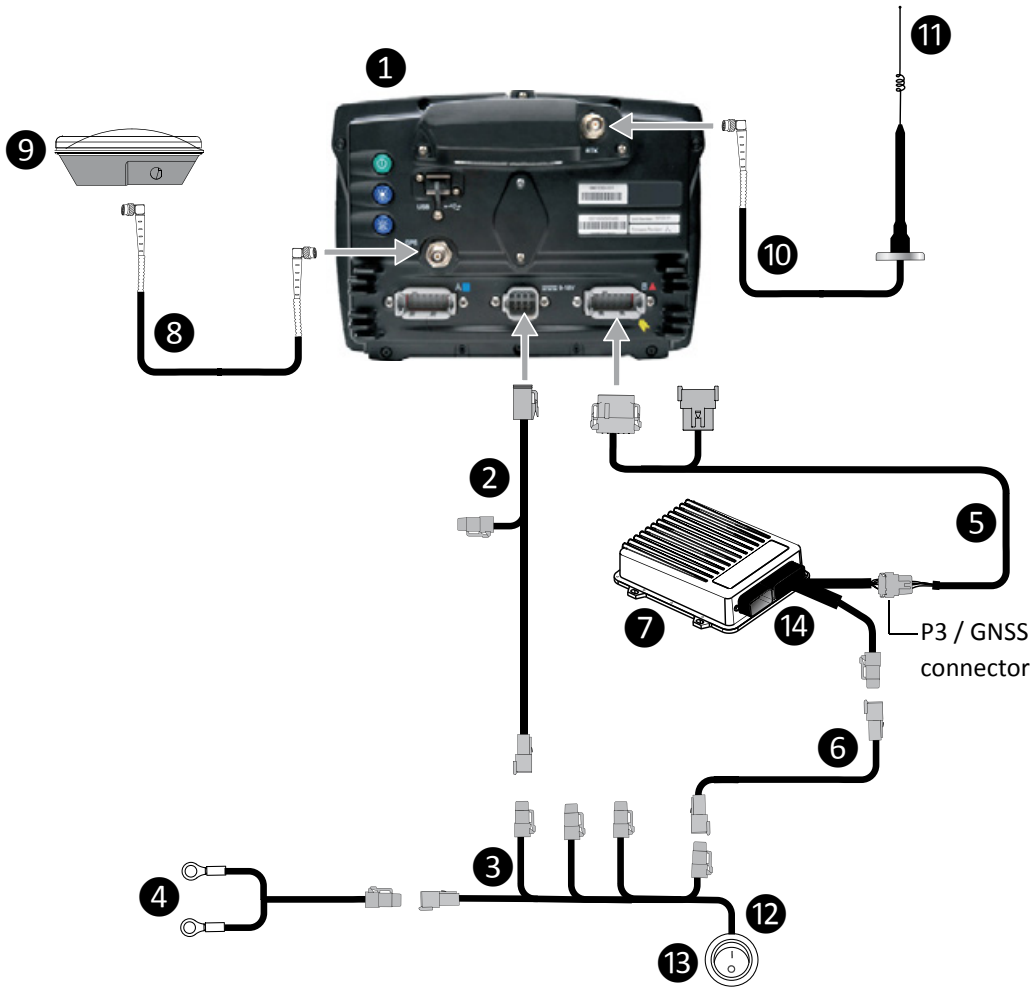
Power Harness Installation

In this chapter:

- CFX-750 display components
- FmX integrated display components
- Installing the power harness for the display
- Configuring the power bus options for the display

This chapter describes how to install the power harness in the vehicle.

CFX-750 display components

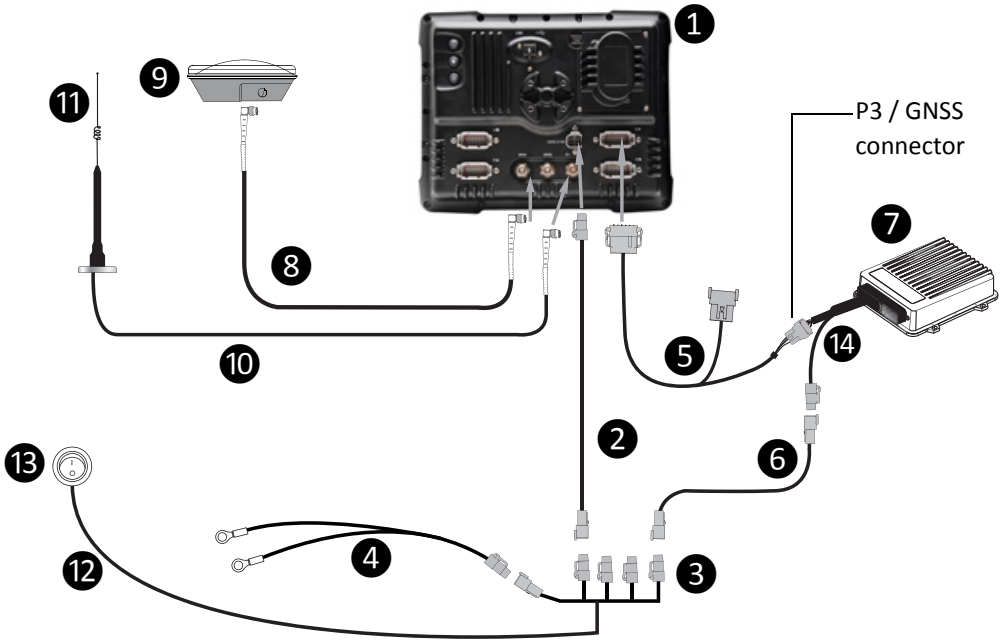


⚠ **CAUTION –** Connecting the Port Replicator on the Display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓮ will result in damage to the display, and will void the warranty.

Item	Description	Trimble part number
❶	CFX-750 display ***Note –*** *RTK password required.*	94110-xx
❷	CFX-750 power cable	77282
❸	CFX-750 power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	Display to NavController II cable with port replicator	75741
❻	2-pin DTM to 2-pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GNSS TNC/TNC RT angle cable	50449
❾	AG-25 GNSS antenna	77038-00

Item	Description	Trimble part number
⑩	NMO-to -NC 20 ft antenna cable and base	72122
⑪	900 MHz radio antenna kit	22882-10
⑫	External switch cable included with kit	Part of P/N 67259
⑬	External switch included with kit	Part of P/N 67259
⑭	Main NavController II cable	54601

FmX integrated display components



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

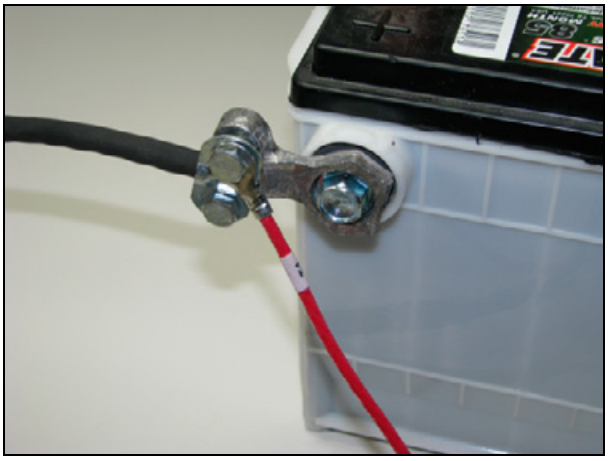
Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	Display to NavController II cable with port replicator	75741
❻	2-pin DTM to 2-pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GNSS TNC/TNC RT angle cable	50449
❾	AG-25 GNSS antenna	77038-00
❿	NMO-to-TNC 20 ft antenna cable and base	72122
⓫	900 MHz radio antenna kit	22882-10
⓬	External switch cable included with kit	Part of P/N 67259
⓭	Switch	67095
⓮	NavController II harness	54601

Installing the power harness for the display

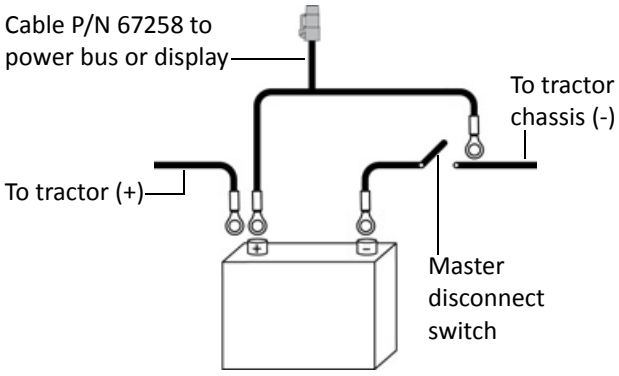
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

Step 1

Connect the basic power cable to the vehicle battery and then route the cable into the cab.

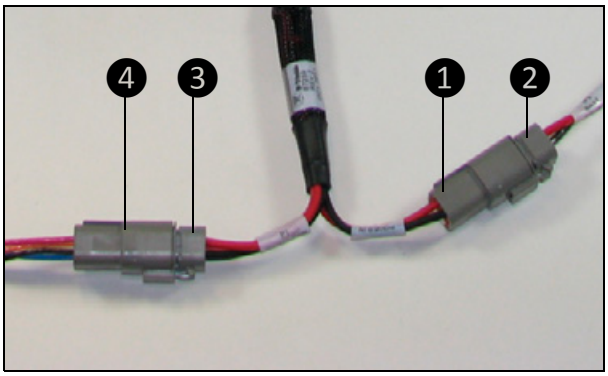


CAUTION – If the vehicle has a master electrical disconnect, make sure the basic power cable (P/N 67258) is ***not*** directly attached to the battery terminal that is disconnected by the master switch - the negative pole in this example.
Attach this terminal side just past the main disconnect so that 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 damaging the display.



Step 2

Locate and connect the 4-pin Deutsch DTP receptacle on the power bus ❶ to the 4-pin Deutsch DTP plug ❷ on the basic power cable and then remove the protective cap from the 4-pin Deutsch DTP plug ❸ on the power bus and connect the plug to the 4-pin Deutsch DTP receptacle ❹ on the display power adaptor.

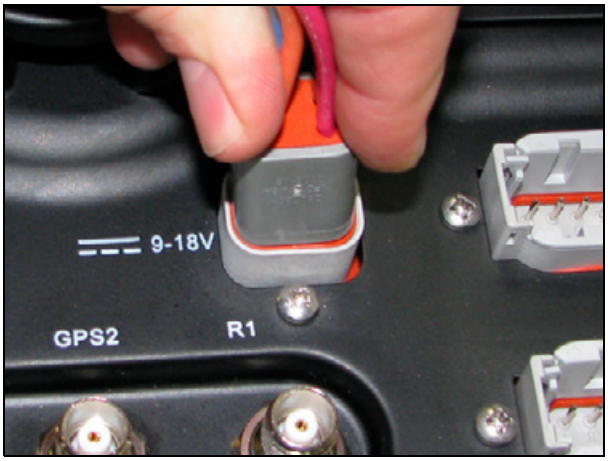


Step 3

Route the display power adaptor to the display mounting location and then connect it to the display.



CFX-750 display



FmX display

Configuring the power bus options for the display

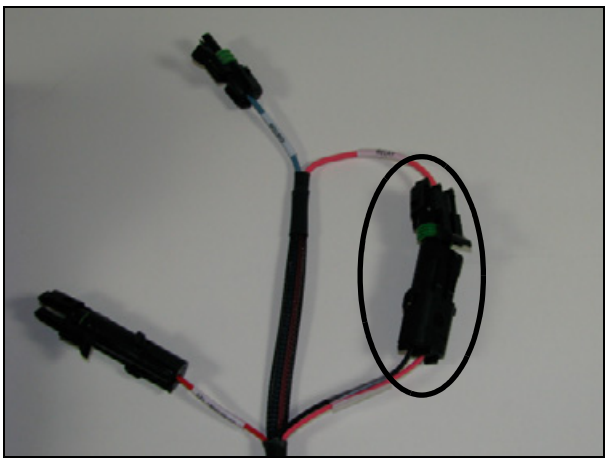
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information.

When you use the power bus cable, use one of the following methods to turn on the Autopilot system:

- The display power button
- An external switch
- Ignition sensing

The display power button

Connect the 2-pin connectors labeled **R2** and **P2** on the power bus.



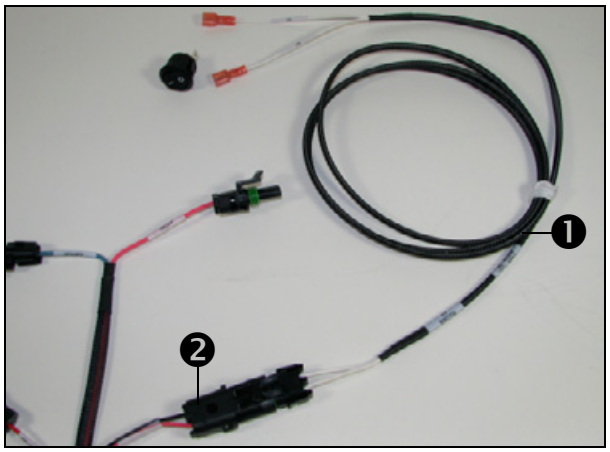
An external switch

Standard switch option

Step 1

Connect the cable labeled **R7** switch ❶ (included with the power bus) to connector labeled **P2** on the power bus ❷ and then route the cable labeled **R7** to a switch location.

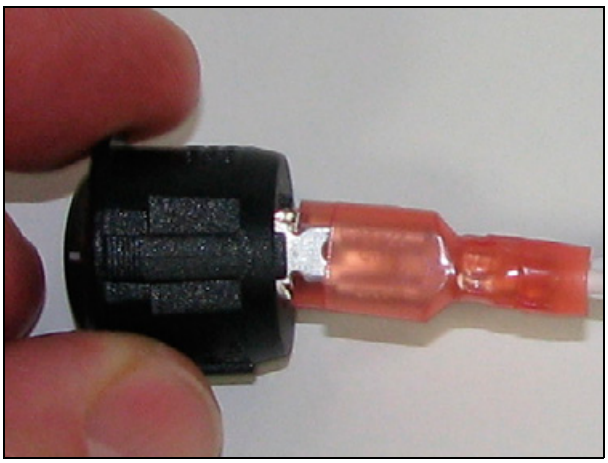
Note – *To install the switch provided, drill a ¾" hole.*



Step 2

Connect the cable labeled **R7** to the switch pins.

Note – *Polarity is not important.*

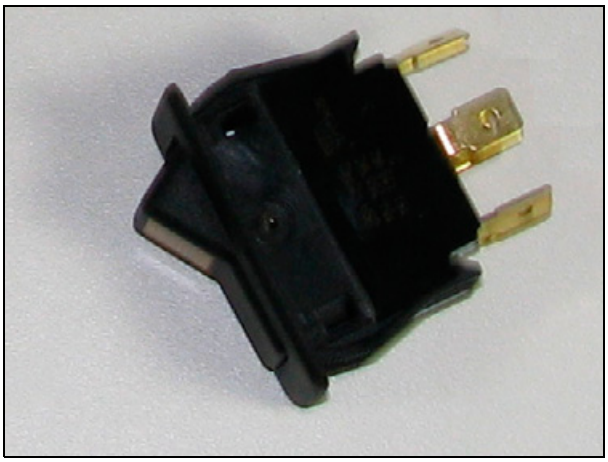


Illuminated full or standard Euro switch option

Step 1

Find an available knockout location on the vehicle console.

Note – *An alternative location is required for the switch provided.*

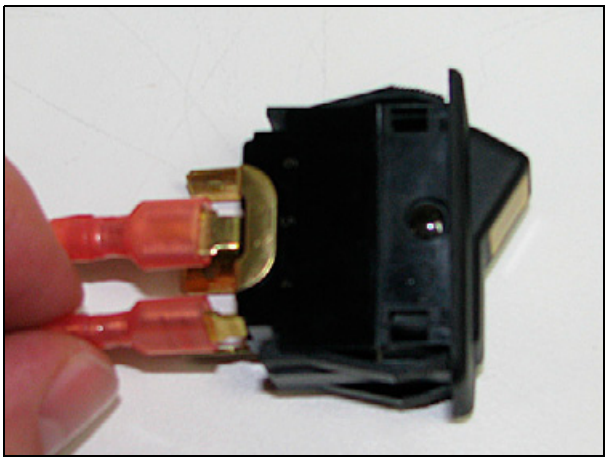


Step 2

Route the cable labeled **R7** to the switch location and then connect the cable to the illuminated switch.

Connect the wire labeled **S1** to pin 5 on the switch and then connect the wire labeled **S2** to pin 4 on the switch.

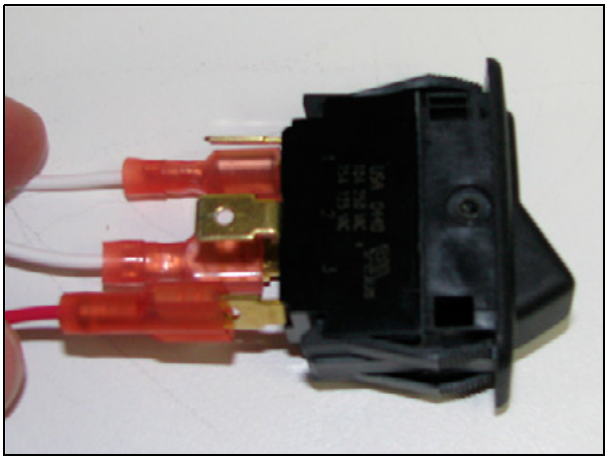
Note – *Polarity **is** important.*



Step 3

Connect a separate wire to pin 3 on the switch using a spade connector. Route the wire and then connect it to the vehicle switched power.

Note – *This additional wire is required to allow the switch to illuminate.*

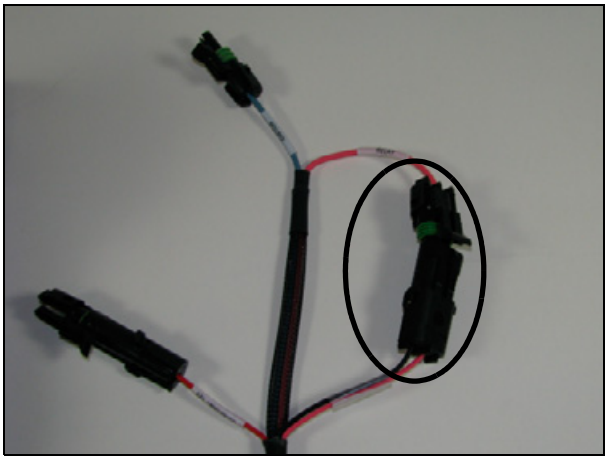


Ignition sensing

Note – *For more information on how to use the ignition sensing option, see the FmX Integrated Display User Guide.*

Step 1

Connect the 2-pin connectors labeled **R2** and **P2** on the power bus.

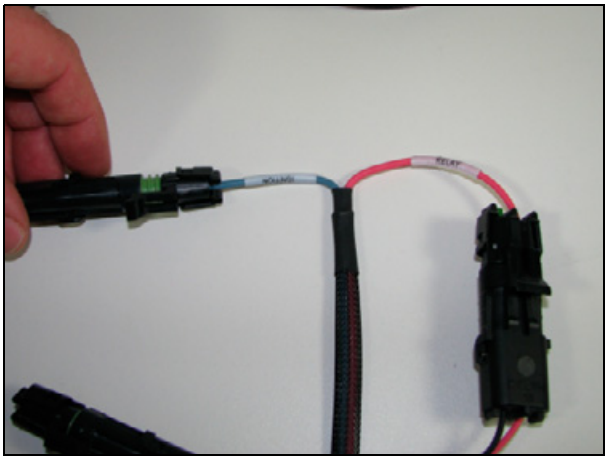


Step 2

Connect the cable labeled **R8 Ignition** (included with the power bus) to connector **P3 Ignition** on the power bus.

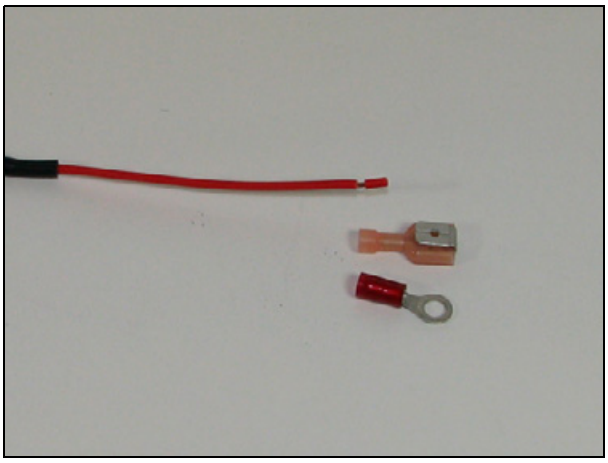
Step 3

Route the cable to the vehicle's ignition.



Step 4

Connect the red ignition sense wire to the vehicle ignition using the spade or ring terminal provided.



CHAPTER 6

Controller Installation

In this chapter:

- Installing the controller
- Controller connections
- Connecting the cables to the controller

This chapter describes how to install the controller unit.

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.

One of two controller mounting options may be used to attach the NavController to the machine:

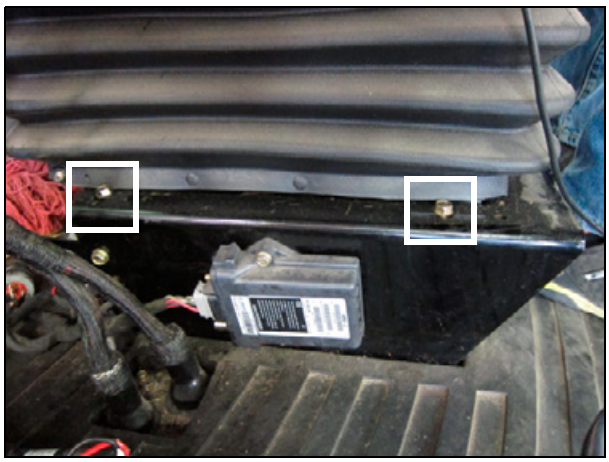
- Installing the controller on the seat base, page 72

  If this option is used, the TM-200 Module (included in the TMX-2050™ display kit) may be mounted to the controller mounting plate.
- Installing the controller on the back wall of the machine, page 75

Installing the controller on the seat base

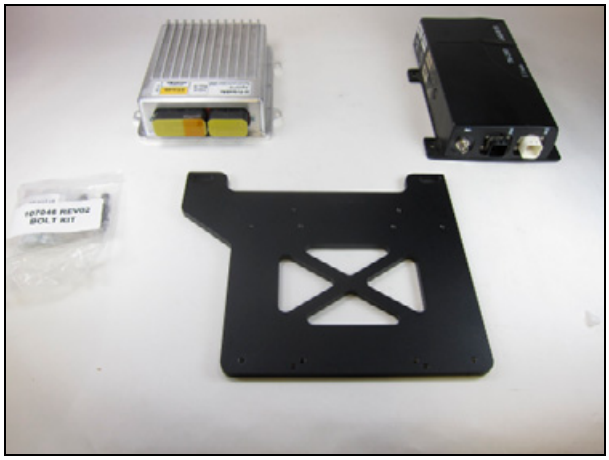
Step 1

On the right side of the seat locate and then remove the two bolts holding the seat to the seat base.



Step 2

Locate the controller mounting bracket and attach the bracket to the machine using the provided 5⁄16" screws.



Step 3

Use the provided 10-32 hardware to attach the NavController to the controller mounting plate. The controller mounting plate can be attached to either side of mounting plate—determine which is the best location for your install.

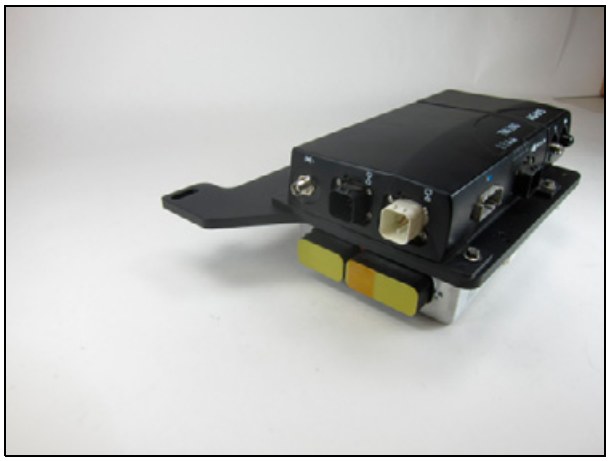


Step 4

If equipped, use the provided 12-24 screws to attach the TM-200 Module to the controller mounting plate. A forward and rearward mounting option is available.

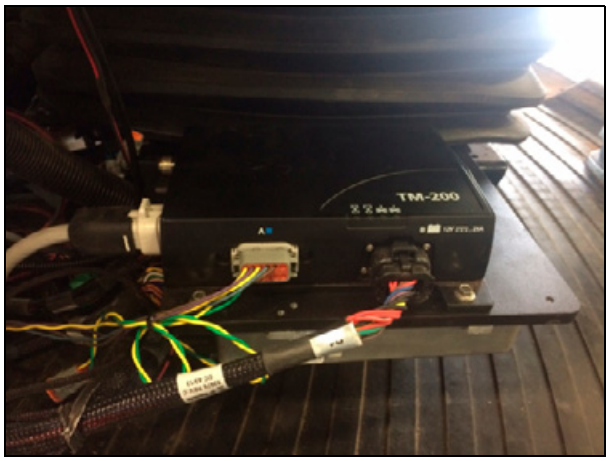
The NavController will be installed to the other side of the mounting plate.





Step 5

Use the new longer bolts provided with the controller mounting kit to attach the controller mounting plate to the machine's seat base.





Installing the controller on the back wall of the machine

Step 1

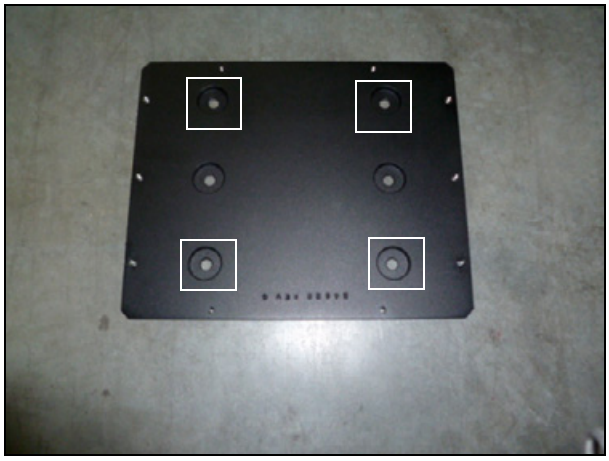
The NavController can be installed on the back wall of the machine in the location shown.



Step 2

Use the controller mounting plate as a template to mark and then drill four 5⁄16" mounting holes to mount the controller mounting plate to the wall of the machine.

Using the provided ¼" hardware and standoffs to attach the controller mounting plate to the machine.

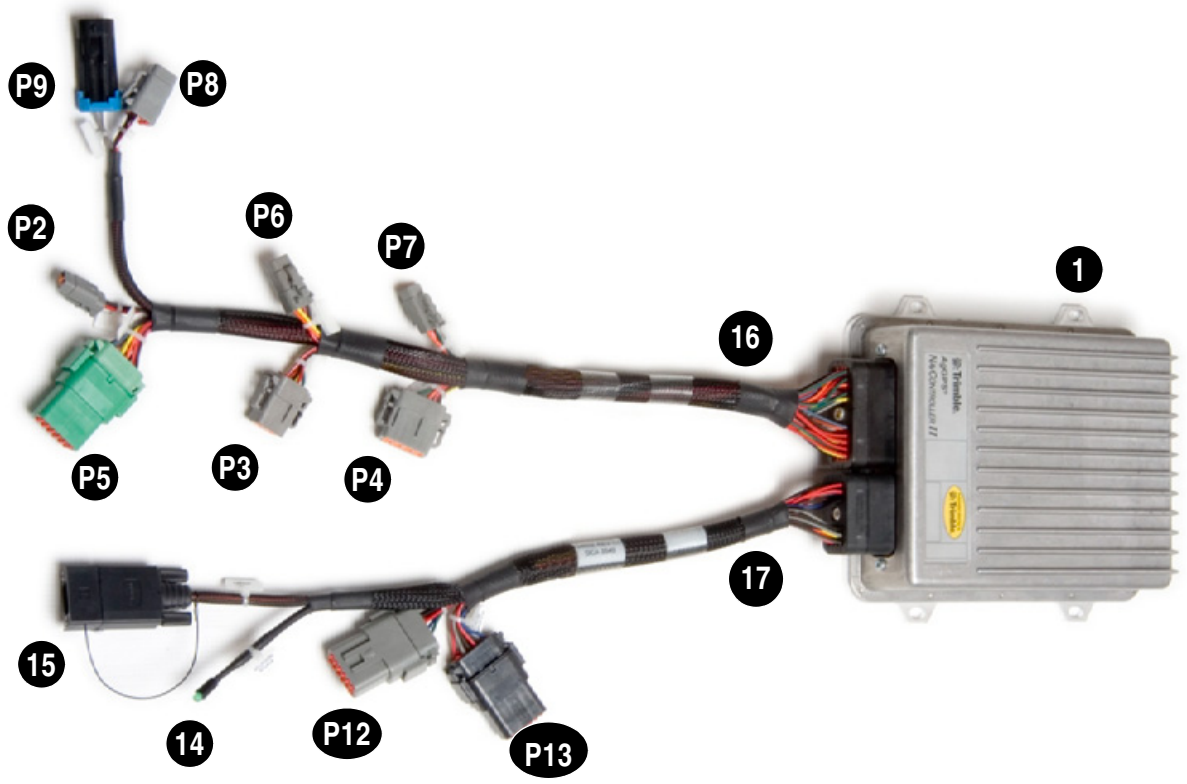


Step 3

Use the provided 10-32 mounting screws to attach the NavController to the controller mounting plate.



Controller connections



Item	Description
1	NavController II
P2	Power connector
P3	GNSS connector
P4	Display connector
P5	Vehicle sensors connector
P6	Steering sensor connector
P7	Manual override connector
P8	Hydraulic valve connector

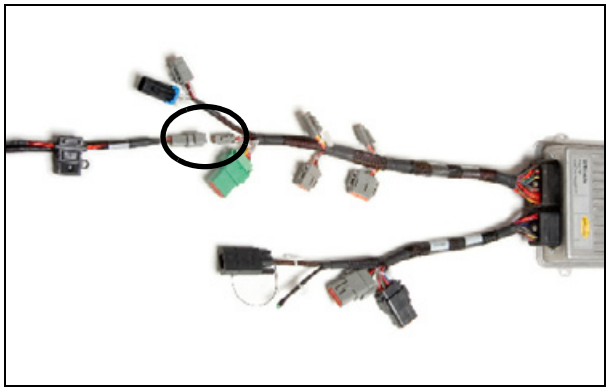
Item	Description
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector
16	Main harness
17	Auxiliary harness

Connecting the cables to the controller

Step 1

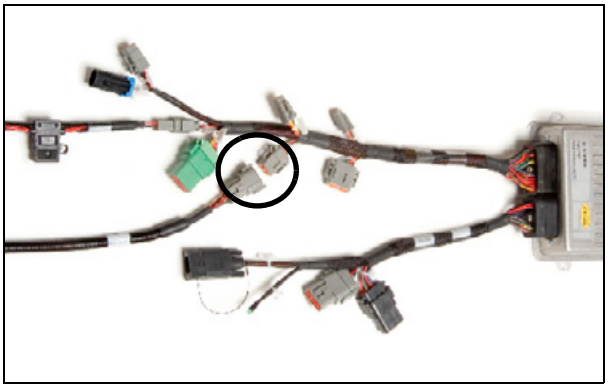
Connect the power cable connection to P2, which is labeled **Power**. P2 is located on the main wiring harness.

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



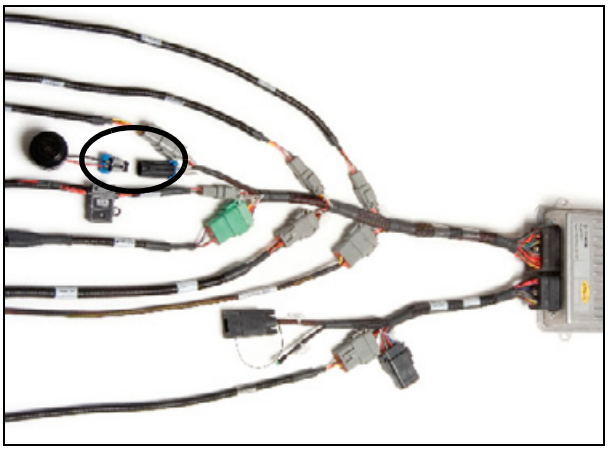
Step 2

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



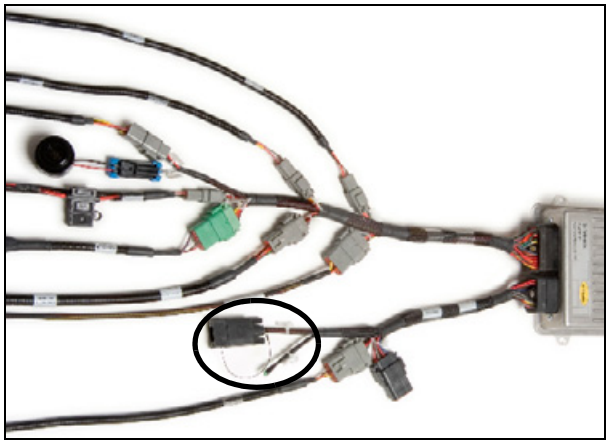
Step 3

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.

CHAPTER 7

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. Start the machine and check for hydraulic leaks. Correct as needed.
3. Update the Trimble display and the Autopilot NavController to the latest firmware from http://agpartners.trimble.com.

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

   Download the latest set of configuration files from http://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 http://agpartners.trimble.com.
5. 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