

# INSTALLATION INSTRUCTIONS

## Autopilot™ Automated Steering System

- AGCO  
Auto-Guide Ready**
  - **DT 180A / 200A / 220A / 240A**
  - **DT 205B / 225B / 250B / 275B**
  - **RT 110A / 120A / 140A / 155A / 165A / 180A**
- Challenger  
Auto-Guide Ready**
  - **MT 525B / 535B / 545B / 555B / 565B / 575B**
  - **MT 515D / 525D / 535D / 545D / 555D / 565D / 575D / 585D**
  - **MT 635B / 645B / 655B / 665B**
  - **MT 645C / 655C / 665C / 675C**
- Massey Ferguson  
Auto-Guide Ready**
  - **MF 6465 / 6475 / 6480 / 6485 / 6490 / 6495 / 6497 / 6499**
  - **MF 7465 / 7475 / 7480 / 7485 / 7490 / 7495 / 7600**
  - **MF 8450 / 8460 / 8470 / 8480 / 8650 / 8660 / 8670 / 8680**

Version 5.00  
Revision A  
September 2012  
Part Number 54035-62-E05



## Agriculture Business Area

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### Notices

Class B Statement – Notice to Users. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 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.

### Notice to Our European Union Customers

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Or **Mail a request for recycling instructions to:**

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.

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**CAUTION** – This alert warns of a hazard or unsafe practice which, if not avoided, can cause injury or damage.

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**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.

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**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.

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**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.

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## 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.

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**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.

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**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.

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**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.

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**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.

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**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.

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**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.

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# Introduction

## In this chapter:

- Technical assistance
- Manual system upgrade to Autopilot
- 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](http://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. Go to the Trimble website ([www.trimble.com](http://www.trimble.com)).
2. Click the **Support & Training** link at the top of the screen, select *Support* and then select *Support A–Z list of products*.
3. Scroll to the bottom of the list.
4. Click the *submit an inquiry* link. A form appears.
5. Complete the form and then click **Send**.

## Manual system upgrade to Autopilot

### CFX-750 display and FmX integrated display

Retain	Remove
<p><b>CFX-750™ display: P/N 94000-xx</b> Power cable CFX-750 display: P/N 77282</p> <p><b>FmX® integrated display: P/N 93100-xx</b> 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 (both displays): P/N 67258</p>	

### EZ-Guide 500 system

Retain	Remove
<p><b>EZ-Guide® 500 lightbar: 66100-xx</b> Antenna for EZ-Guide 500 lightbar: P/N 60600-xx (DGPS) or P/N 57200-00 (OmniStar/RTK) Antenna to receiver cable: P/N 50449 Power cable: P/N 62817 <i>Optional.</i> Remote keypad</p>	<p>Power connection cable: P/N 62818</p>

## Required components

Kits required	Special tools
Platform kit: 54035-62	$\frac{5}{16}$ " drill bit and drill Right angle drill or drill attachment T-30 Torx bit

## Antenna mounting kits

Antenna options
Antenna spar mount: P/N 53676 (for use with existing bolts in roof) Antenna V Base Plate: P/N 62388-02 (for use with existing mounting plates on roof) Antenna V plate mount and AgGPS 262 receiver magnetic mount: P/N 62388-01 (includes magnets for quick release of the AgGPS 262 receiver (for use with AgGPS 262 receivers)

## Accessory kits

Accessory options
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 54035-62	CAN Bus connections	<a href="#">Chapter 2</a>
	Power switch	<a href="#">Chapter 2</a>
	Bolt kit controller	<a href="#">Chapter 2</a>
Common parts	Controller	<a href="#">Chapter 5</a>
	Controller mounting bracket	<a href="#">Chapter 1</a>
	Cable kit: <ul style="list-style-type: none"> <li>• Main wiring harness</li> <li>• Power bus auxiliary wiring harness</li> <li>• Sonalert alarm</li> </ul>	<a href="#">Chapter 5</a>
GNSS receiver	GNSS receiver	<a href="#">Chapter 3</a>
	GNSS antenna	
	GNSS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	CFX-750 display	<a href="#">Chapter 4</a>
	FmX integrated display	
	EZ-Guide 500 lightbar	
	Display cable	
	Mounting bracket	
Roof bracket kit: (P/N 53676)	Roof brackets	<a href="#">Chapter 3</a>
	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.

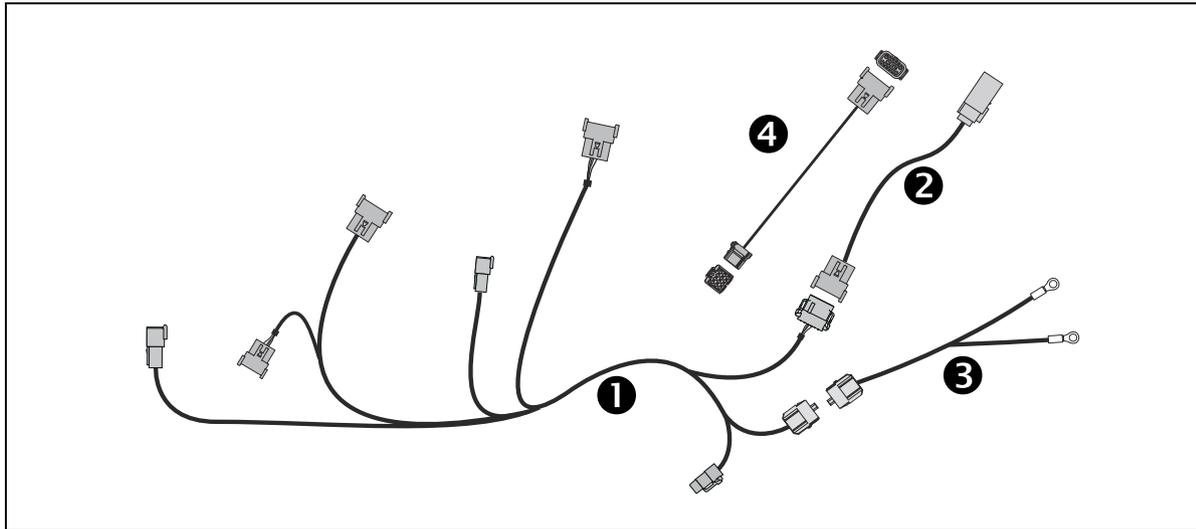
# CAN Bus Installation

## In this chapter:

- CAN Bus cable
- Installing the vehicle interface cable for the EZ-Guide 500 system
- Installing the vehicle interface cable for the FmX integrated display
- Calibration and set up
- Installing the CAN Bus cable
- Alternative installation for 5xxD and MF 7600 series machines

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

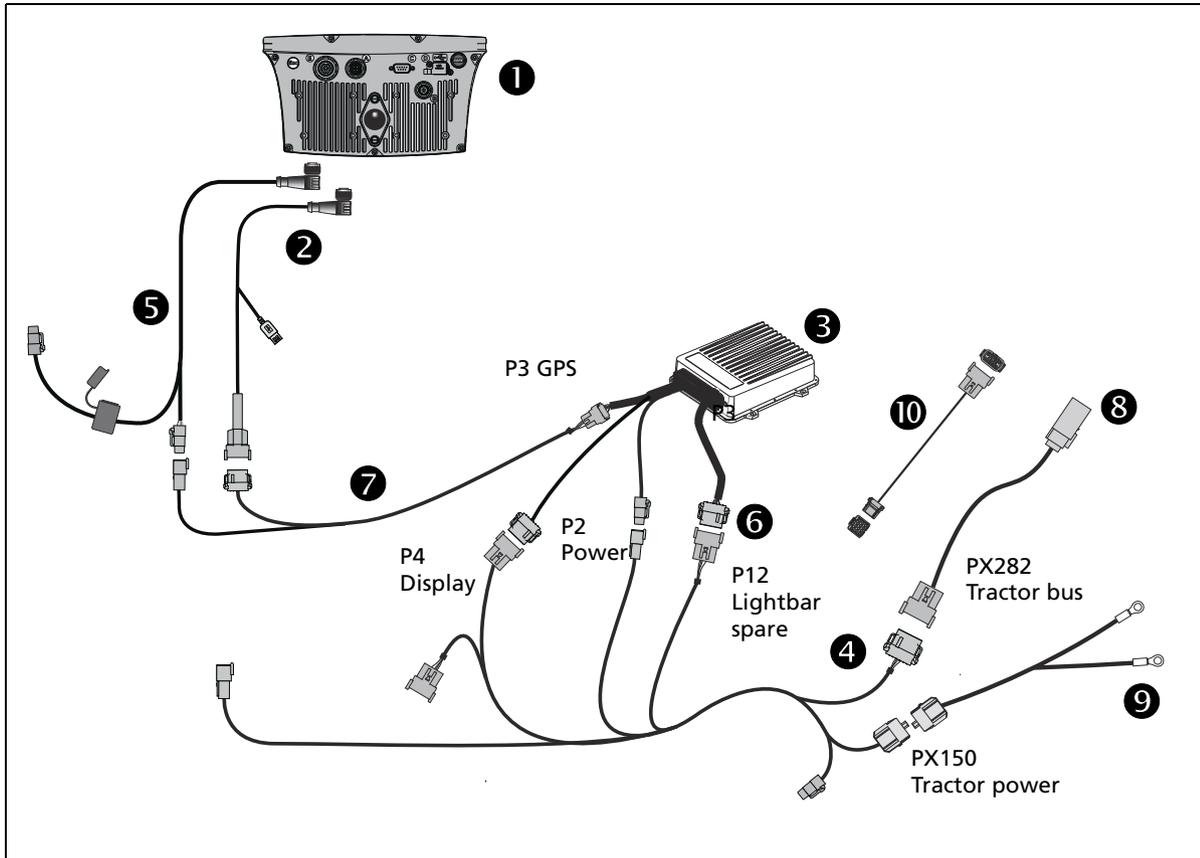
## CAN Bus cable



The diagram shows the cables that together comprise Trimble P/N 77648, which is used in the following cabling diagrams.

Item	Description	Trimble part number
❶	Autopilot to AGCO cable	77644 (included with 77648)
❷	CAN adaptor for early Autoguide models	77647 (included with 77648)
❸	Power adaptor for early Autoguide models	77646 (included with 77648)
❹	CAN adaptor cable for MT 500D//MF 7600 models	90242

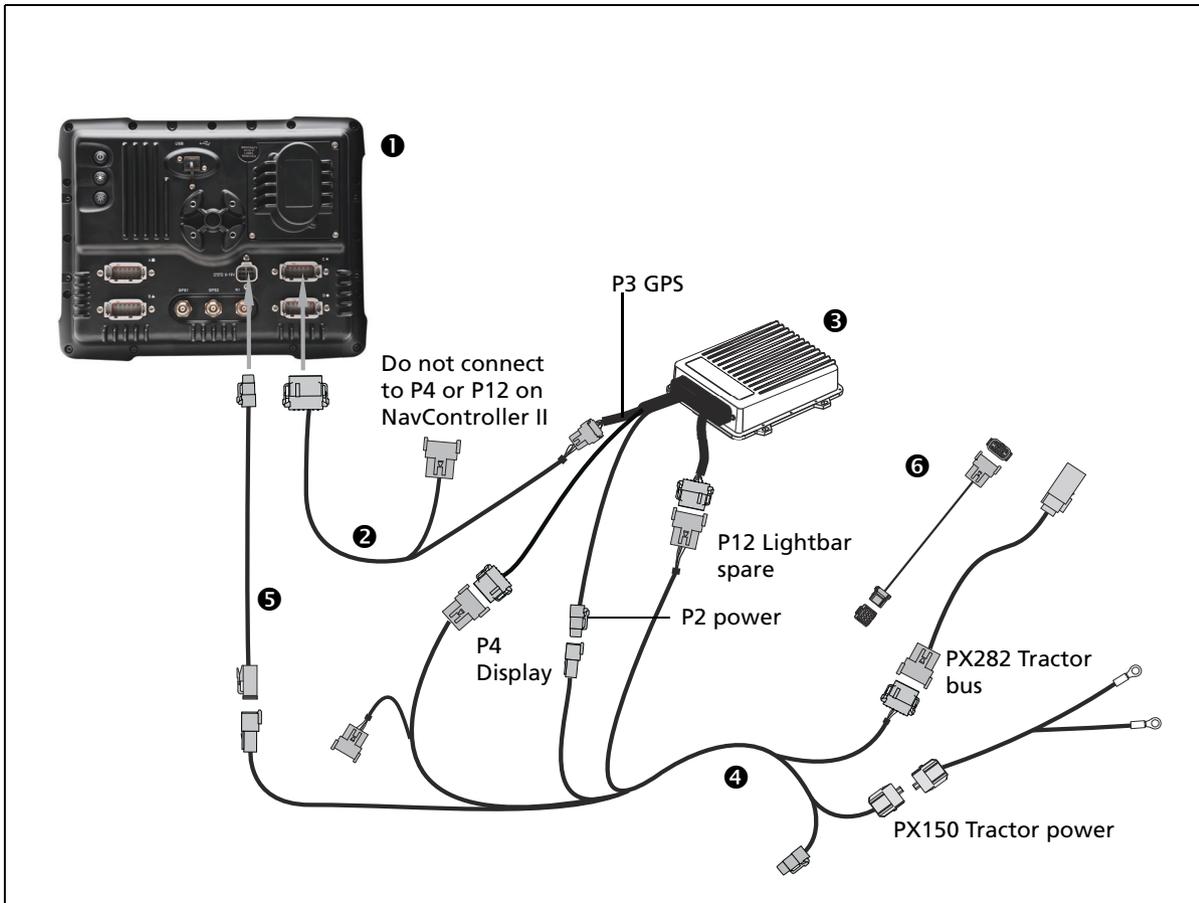
## Installing the vehicle interface cable for the EZ-Guide 500 system



Item	Description	Trimble part number
①	EZ-Guide 500	66100-xx
②	19-pin port expander	62609
③	NavController II	55563-00
④	Autopilot-to-tractor CAN and power connector cable assembly	77648
⑤	Power/CAN right angle 5-pin connector cable	62817
⑥	Auxiliary NavController II cable	54602
⑦	EZ-Guide 500-to-Autopilot cable	62754
⑧	CAN adaptor for early Autoguide models	77647 (included with 77648)
⑨	Power adaptor for early Autoguide models	77646 (included with 77648)
⑩	CAN adaptor cable for MT 500D//MF 7600 models	90242

*Note – Part numbers are for reference only.*

## Installing the vehicle interface cable for the FmX integrated display



Item	Description	Trimble part number
1	FmX integrated display	93100-01
2	FmX/FM1000 to NavController II with port replicator cable	75741
3	NavController II	55563-00
4	AGCO CAN and power interface cable assembly	77648
5	FmX power cable	66694
6	CAN adaptor cable for MT 500D//MF 7600 models	90242

*Note – Part numbers are for reference only.*

## Calibration and set up

The tractor valve is calibrated in the factory. If there is no response from the valve, the factory service tool may be required to update the software and calibrate. The local manufacturer' dealership can complete the following actions:

1. Using the electronic service tool, update the valve firmware and vehicle file. Minimum firmware version for the PVED-CL valve is 1.35.

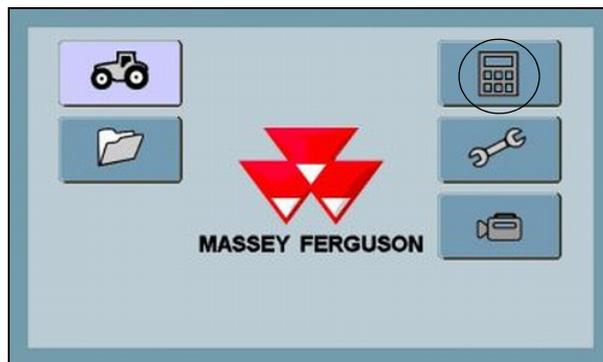
The firmware contains the valve firmware (minimum 1.35) and a configuration file that is tractor model dependant. Note that the valve is on the tractor engine bus.

2. After a firmware upgrade, the dead zone and the steering angle sensor settings will be reset to default. These two settings must be recalibrated with the service tool by the AGCO dealer.

### Setting the remote engage option in the vehicle

#### Step 1

Press the calculator. Highlight one of the eight memory cards. Highlight one and press select. Return to the home page.



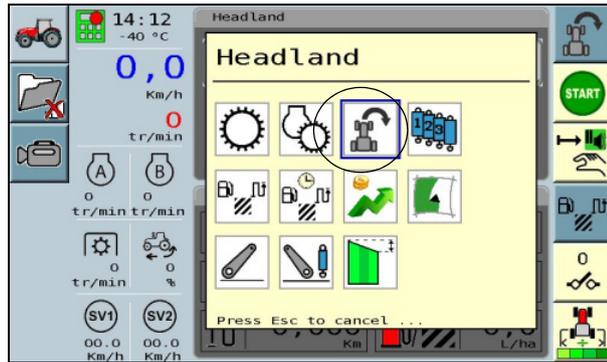
#### Step 1

Select the Tractor icon.



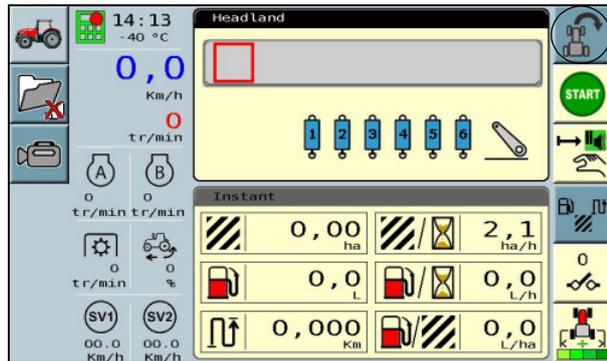
### Step 2

Select the Headland menu then select the Tractor icon.



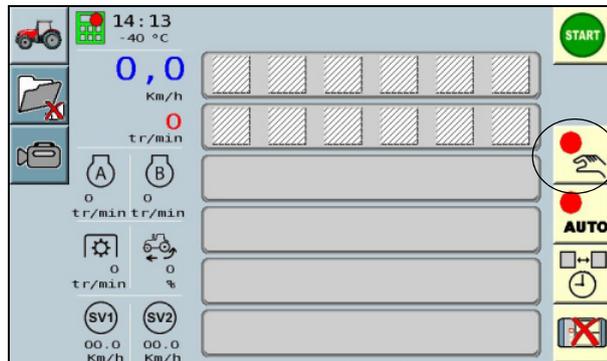
### Step 3

Turn to Edit mode by pressing the Tractor icon.



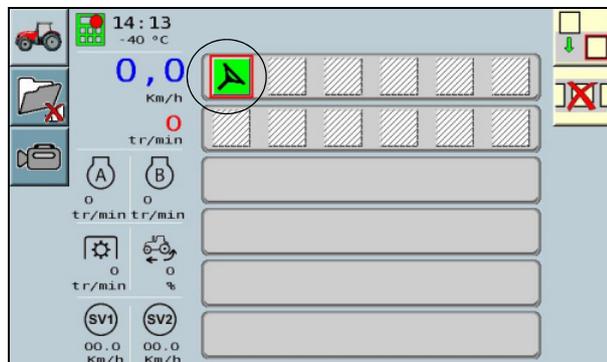
### Step 4

Enable Manual edit mode by pressing (hand with red dot).



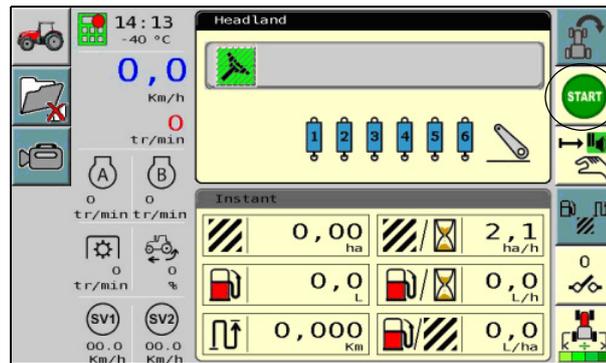
### Step 5

Scroll through the list of icons with the Encoder and find the Steering wheel. Select the icon.



### Step 6

Press Start to activate the function.  
Press Esc one time to get to the previous screens. The screen should read as follows.



## Installing the CAN Bus cable

For 5xxD and MF 7600 series machines, see [Alternative installation for 5xxD and MF 7600 series machines](#), page 21.

### Step 1

Locate the pillar at the right rear of the cab.



### Step 2

Remove the cover on the pillar and find the black 12-pin Deutsch tractor bus connector. This is the tractor PX282 connector



### Step 3

Disconnect the connector. If the vehicle is an early model use the CAN adaptor cable to adapt to the connector.



### Step 4

Connect the Autopilot to the lower PX282 tractor can bus connector.



### Step 5

Locate the power outlet at the front of the right fender, inside the cab.



### Step 6

Unscrew the panel and then locate the power connector PX150 behind the panel.

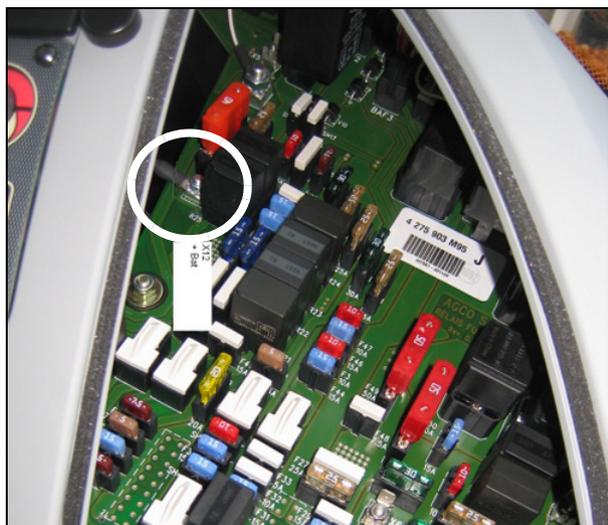


### Step 7

Disconnect the power plug and then connect the Autopilot power jumper.



If the vehicle is an early model, use the power adapter supplied and route the ring terminal ends to the power posts located in the fuse compartment, and then connect the +12V lead to the +Bat post X12 and the Ground lead to the Ground post.



### Step 8

Route the cables around the back of the cab to the NavController II harness. The P4 of the 77648 cable connects to the P4 of the NavController II harness. The P12 of the 77648 harness connects to the P12 of the NavController II harness.



### Step 9

Toggle the Autoguidance power switch ❶ once to energize the NavController II and the Trimble display and then press the power switch a second time to energize the steering valve.



## Alternative installation for 5xxD and MF 7600 series machines

### Step 1

The Autopilot interface cable will be installed to a connector behind the panel shown on the machine.

Carefully remove the screws holding the panel to the machine and then move the panel out of the way while leaving the electrical wires connected.



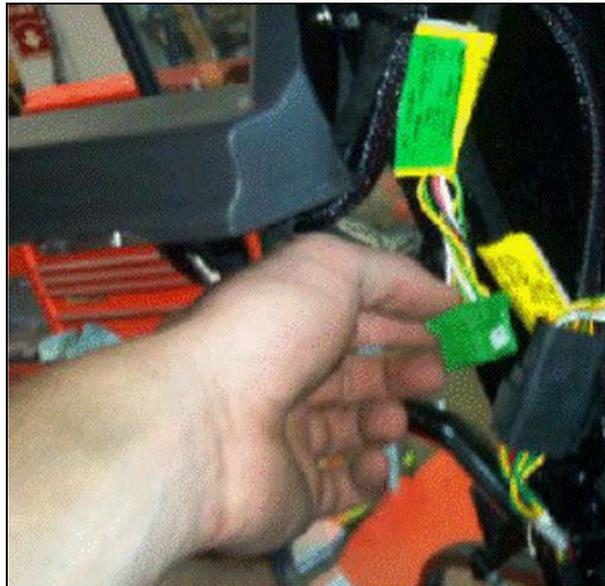
### Step 2

Locate and then separate the green connector.



### Step 3

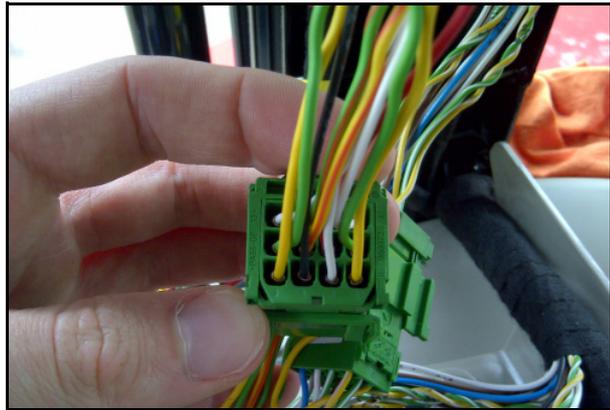
You will attach the Autopilot adapter cable and control cable P/N 77644 to the lower portion of the green connector cable. The upper cable will remain unconnected.



### Step 4

Connect the adapter cable to the cable P/N 77644. Route it to the lower green connector cable and then connect it.





### Step 5

Locate the power outlet at the front of the right fender, inside the cab.

**Note** – For removal of the fender cover, see [Preparing the location for the controller](#), page 83.



### Step 6

Unscrew the panel and then locate the power connector PX150 behind the panel.

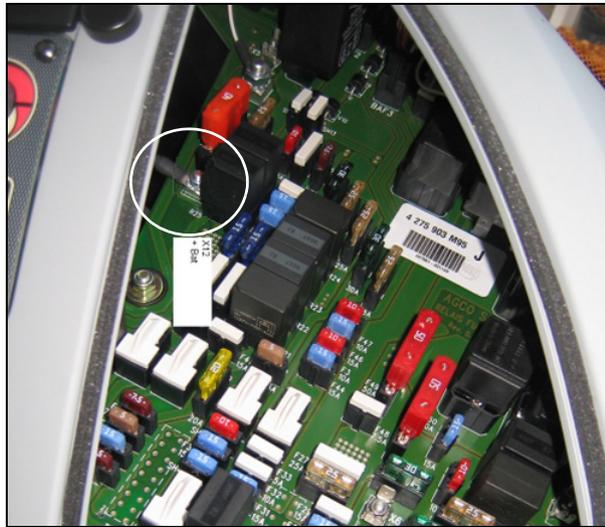


### Step 7

Disconnect the power plug and then connect the Autopilot power jumper.



If the vehicle is an early model, use the power adapter supplied and route the ring terminal ends to the power posts located in the fuse compartment, and then connect the +12V lead to the +Bat post X12 and the Ground lead to the Ground post.



### Step 8

Route the cables around the back of the cab to the NavController II harness. The P4 of the 77648 cable connects to the P4 of the NavController II harness. The P12 of the 77648 harness connects to the P12 of the NavController II harness.



**Step 9**

Toggle the Autoguidance power switch ❶ once to energize the NavController II and the Trimble display and then press the power switch a second time to energize the steering valve.





# Antenna/Receiver Installation

## In this chapter:

- Antenna and receiver installation options
- Mounting an adjustable spar to roof bolts
- AgGPS 262 receiver with AgGPS 450/900 radio module (if equipped) components
- AG-372 receiver with AgGPS 450/900 radio module (if equipped) components
- Installing the AgGPS 262/AG-372 GPS receiver with AgGPS 450/900 radio module (if equipped)
- Installing an AgGPS 262/AG-372 receiver with magnetic feet
- AgGPS 432/442/542 receiver components
- Installing the AgGPS 432/442/542 receiver

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

To install the antenna for CFX-750 or FmX display, or an EZ-Guide 500 system, 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:

- **Spar mount** – This bracket mounts directly to the roof bolts and is required for all high accuracy applications such as RTK and OmniSTAR. Trimble recommends this method for mounting an AgGPS 262 / AG-372 / AG15 / AG25 / Zephyr™ receiver. Bolt a metal spar to the roof or to a light bracket and then attach either a V plate for magnetic mounting or an AgGPS 262 / AG-372 / AG15 / AG25 / Zephyr receiver plate for permanent mounting.
- **VHB mount** – Attach a 4" x 6" plate or a V plate directly to the roof with VHB (Very High Bond) adhesive for magnetic mounting. See [page 31](#).
- **Magnetic mounting** – Magnetic mounting for quick release is available for both VHB and spar type mounting.

### Possible mounting methods

GNSS receiver	AG25 / AG15 / Zephyr receiver bolted to spar mount	VHB mounted plate	VHB V mounted plate
FmX integrated display; CFX-750 display	✓	✓	✓
EZ-Guide 500 lightbar	✓	✓	✓
AgGPS 262 / AG-372 / 252 receiver	x	x	✓
AgGPS 432 / 442 / 542 receiver	✓	✓	✓

#### Notes:

- For quick release magnetic mounting with an AgGPS 262/AG-372/Zephyr receiver, order the kit listed in [Antenna mounting kits, page 9](#) 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, Beacon, and DGPS applications, place either of the plates in a firm location using the VHB.

## Mounting an adjustable spar to roof bolts



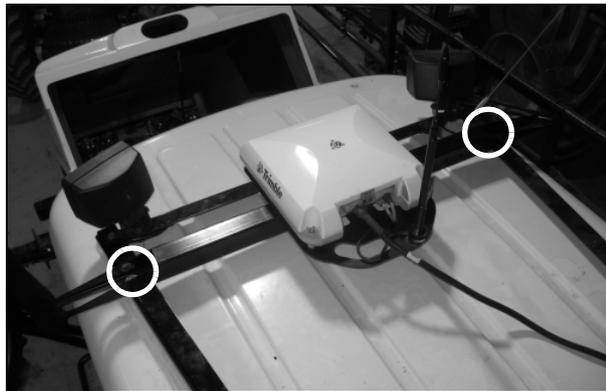
**WARNING** – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the [Safety Information](#) chapter.

### Step 1

Position the cab bolts on the roof of the vehicle.



If a light bracket already occupies the roof studs, mount the spar directly onto the light bracket.

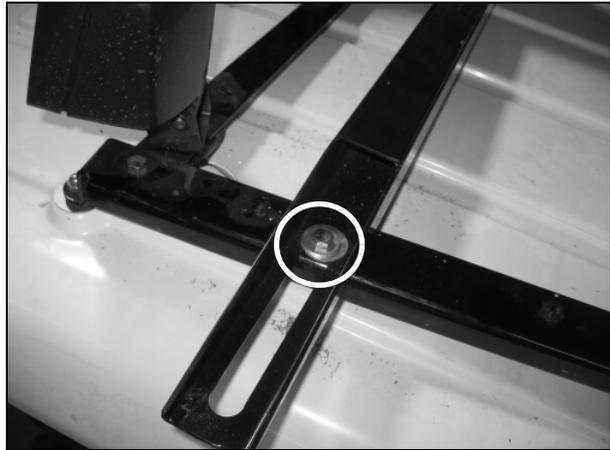


### Step 2

If required, replace the existing bolts with longer bolts.



If you use the light bracket, drill two holes to match the spar width.



**Step 3**

Use the slotted holes to center the spar and then tighten the bolts. If required, use the spacers and flat washers provided to secure the spar.

**Note** – *If the receiver is offset to the left or the right of the vehicle, Autopilot system performance may be affected. Before you tighten the cab bolts, make sure that the GNSS antenna is aligned with the center of the vehicle.*



**Step 4**

For either of the following applications:

- A single magnet antenna mount
- An AgGPS 262/AG-372 receiver with magnetic option for quick removal

Attach a V plate with four ¼" flathead screws.

The narrow end points to the front of the vehicle.



**V plate on the spar**

## 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](#) chapter.

Standard 4" x 6" plates are provided in most kits. You can use the VHB mounting method to attach either a 4" x 6" 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 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. Apply force to the roof to find a firm location.

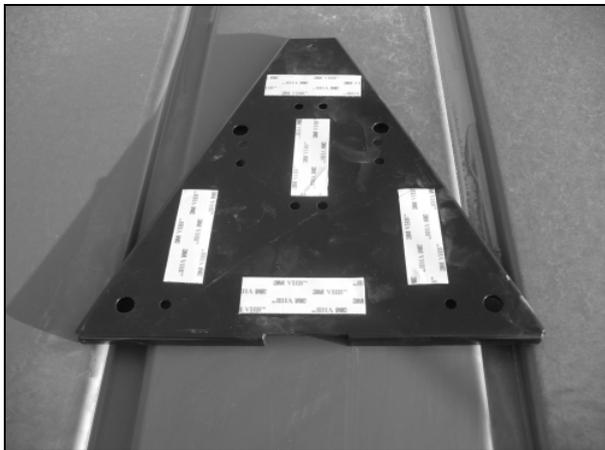


### Step 2

#### *V plate only*

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

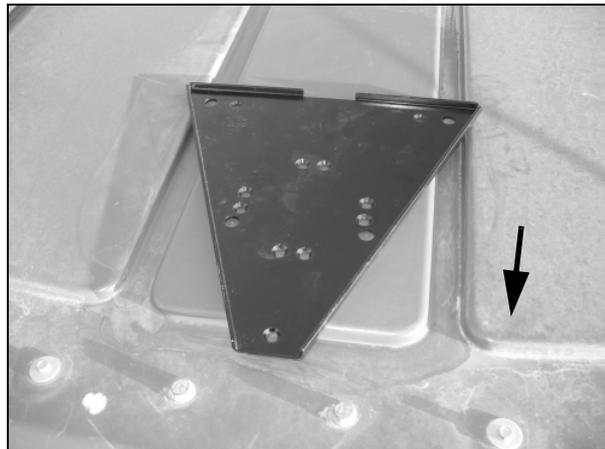
**Note** – The VHB strips are pre-applied to the 4" x 6" plate.



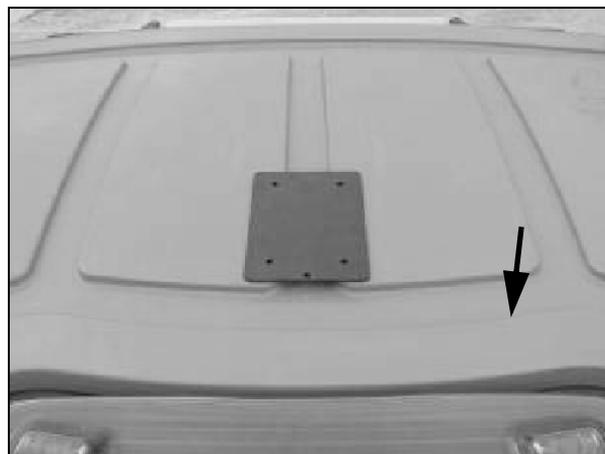
**Step 3**

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

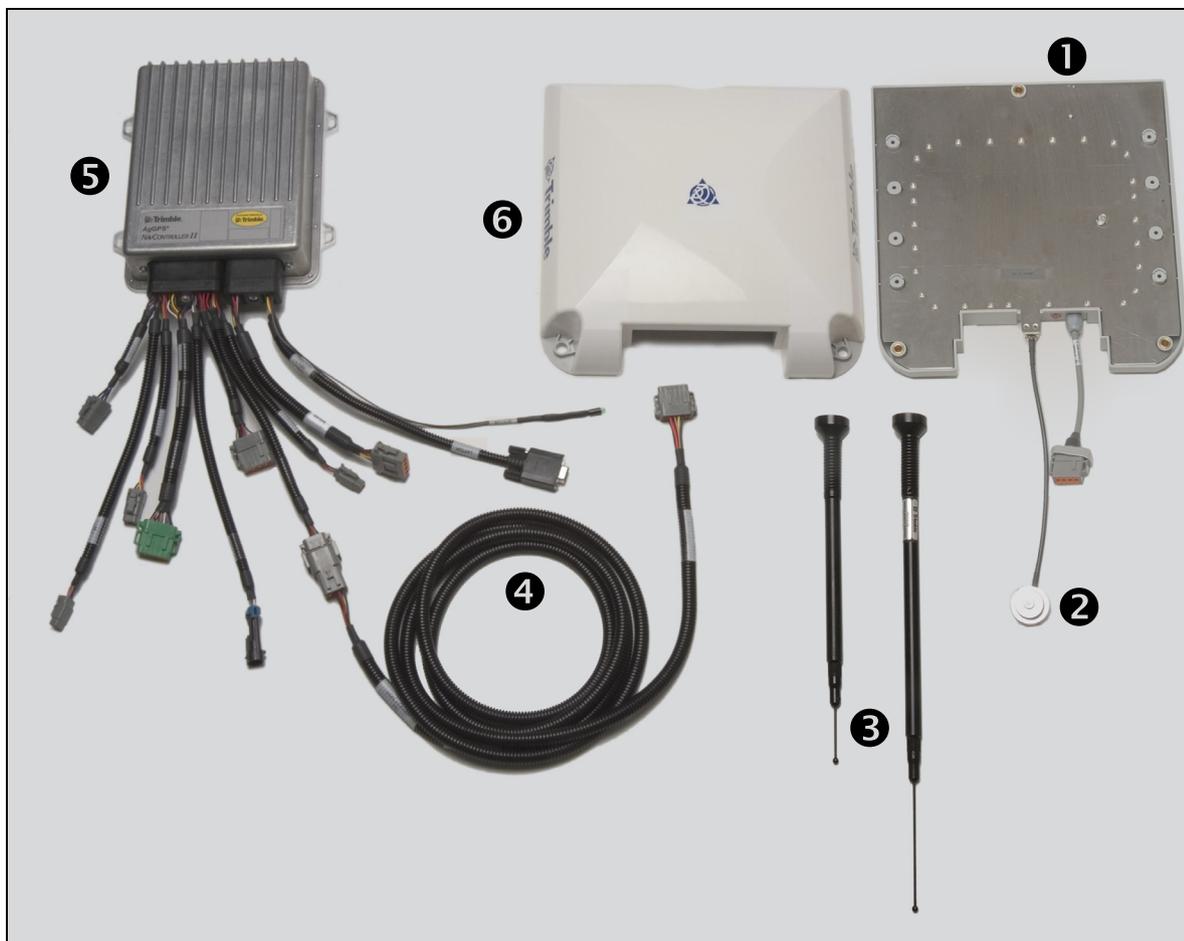


**V plate**



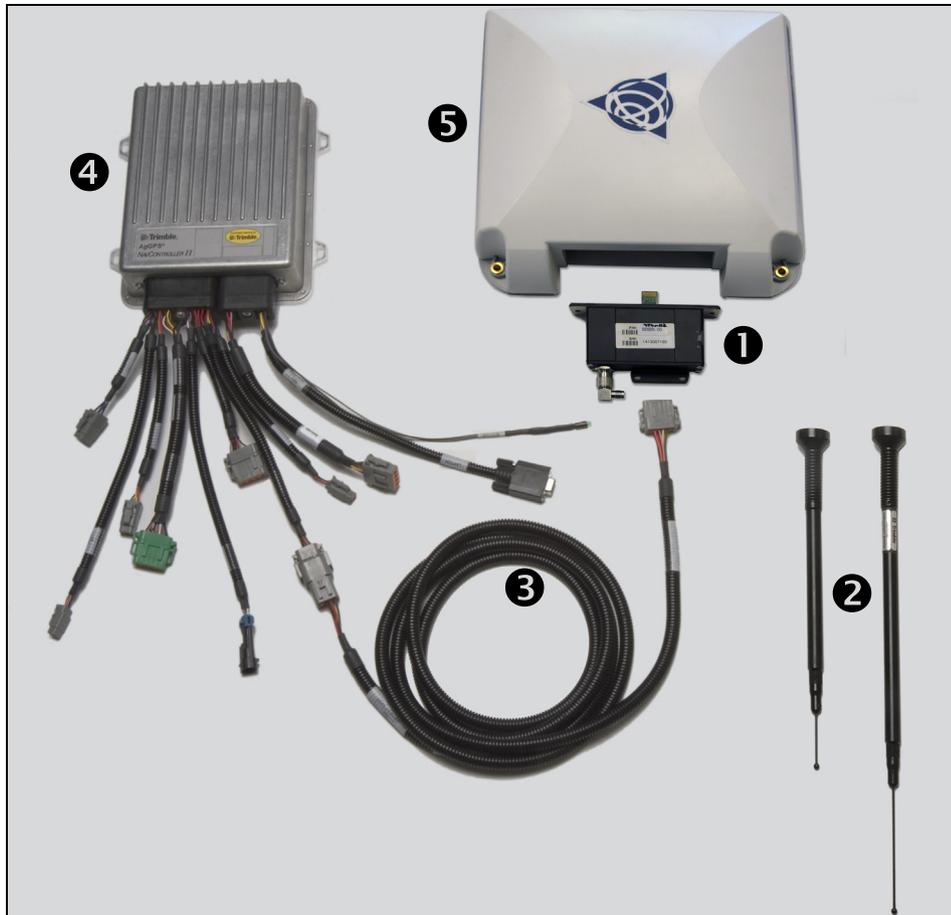
**4" x 6" plate**

## AgGPS 262 receiver with AgGPS 450/900 radio module (if equipped) components



Item	Description	Trimble part number
①	AgGPS 450 or 900 radio (if equipped)	
②	Radio antenna cable and magnetic mount	
③	AgGPS 450 or 900 radio antenna	
④	Antenna/receiver cable	54608
⑤	AgGPS Autopilot controller	
⑥	AgGPS 262 antenna/receiver	

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



Item	Description	Trimble part number
❶	AgGPS 450 or 900 radio (if equipped)	
❷	AgGPS 450 or 900 radio antenna	
❸	Antenna/receiver cable	54608
❹	Autopilot controller	
❺	AG-372 antenna/receiver	

## Installing the AgGPS 262/AG-372 GPS receiver with AgGPS 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](#) chapter.

To attach the AgGPS 262/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

##### *V plate*

Attach the V plate to the spar using the ¼" flathead screws provided in the V plate bolt kit. Ensure that the narrow end points forward.

For spar mounting instructions, see [page 29](#).



##### *Mounting plate*

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



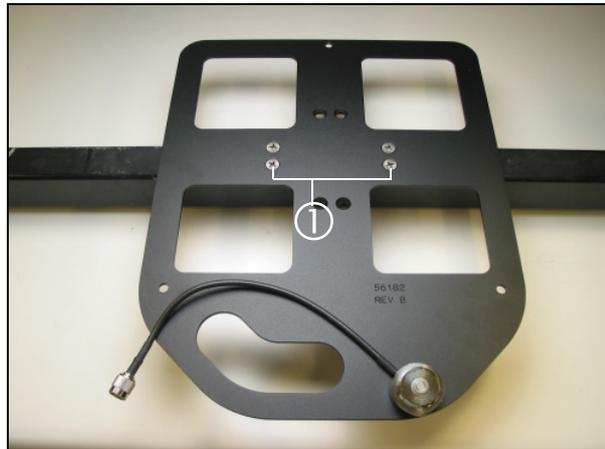
**Underside of plate**

## Permanent installation

### Step 1

Use the four provided ¼" flathead screws ❶ to attach the receiver mounting bracket to the spar.

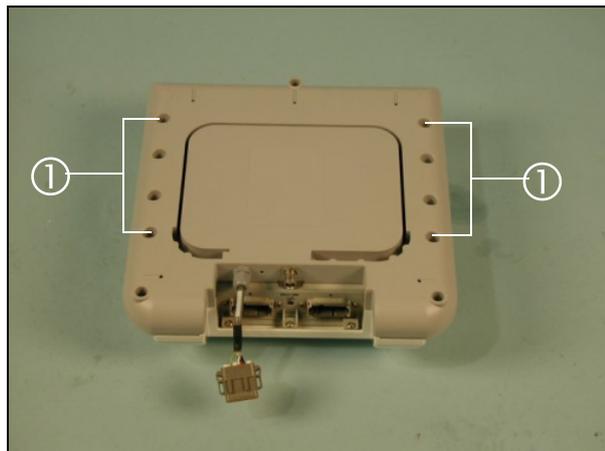
For spar mounting instructions, see [page 29](#).



### Step 2

#### *Both installation methods*

Place the radio module on the AgGPS 262 receiver. Secure it with the eight screws in the positions shown ❶.



### Step 3

Remove the blanking plate and set it aside.



**Step 4**

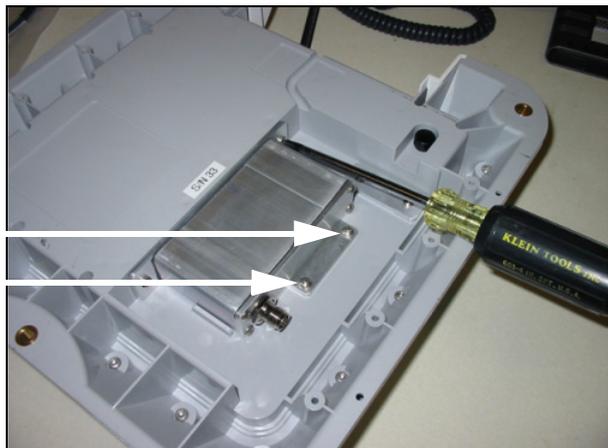
Place the integrated radio inside the AG-372 receiver. Ensure that the circuit board is aligned with the slot in the vertical wall of the receiver.

**Step 5**

Slide the integrated radio back so that it is flush with the vertical wall of the receiver.

**Step 6**

Use a #1 or #2 Phillips screwdriver and the supplied screws to install the integrated radio. First insert and tighten the two screws on the horizontal wall (arrowed), and then insert the remaining screws.



**Step 7**

Install the supplied antenna cable.

**Note** – *The housing can accommodate a cable diameter of up to ¼".*

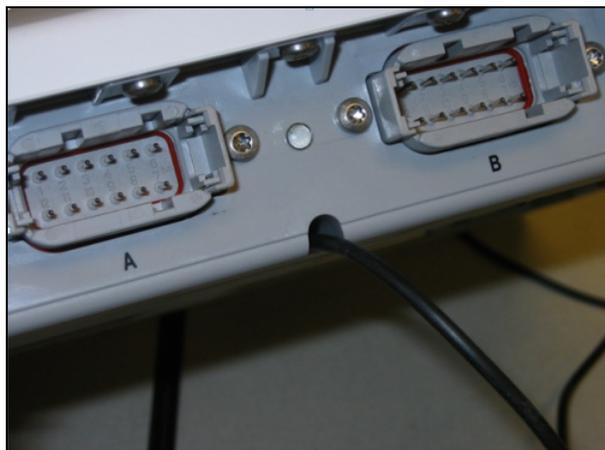


**Step 8**

Route the cable through the cable channel and then insert the cable cover.



This image shows the unit with the cable routed through the channel.

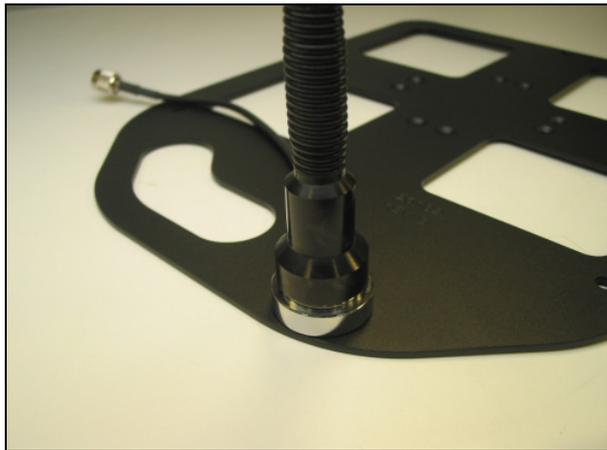


**Step 9**

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

**Step 10**

Attach the radio antenna to the antenna base.

**Step 11**

Position the AgGPS 262/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 12**

Insert the nylon bushings provided.



**Step 13**

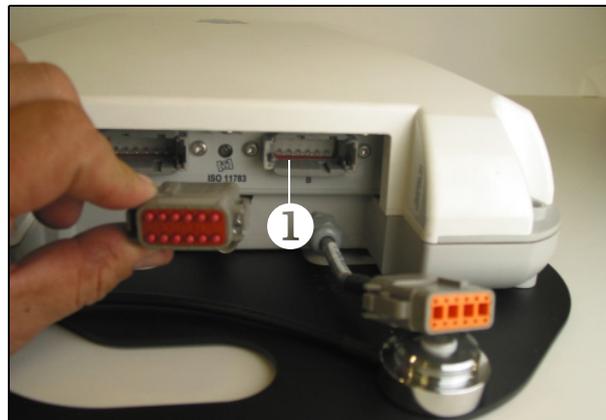
Insert the bolts through the receiver, radio, and mounting bracket. Place nuts on the bolt ends and then tighten them.



**Step 14**

*For 262 receivers*

Remove the connector plug from port B ❶.



**Step 15**

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



**Step 16**

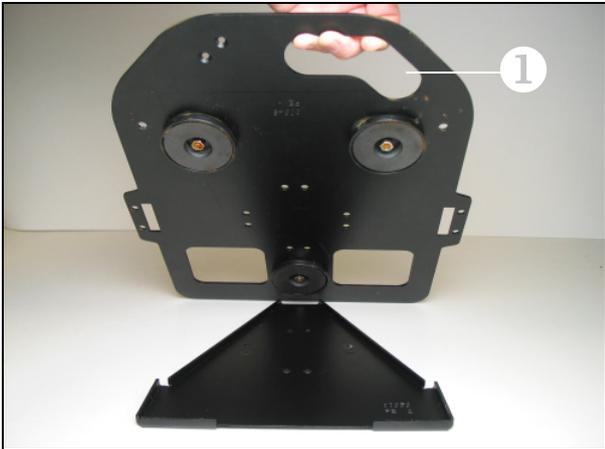
Connect the radio antenna to the antenna port.



**Step 17**

***Magnet method***

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.

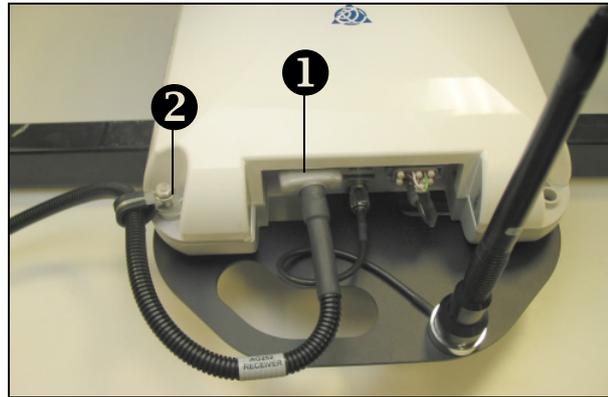


**Step 18**

***Both methods***

Connect the cable from the cab controller into port A ❶ of the AgGPS 262 receiver. Bolt the cable clamp ❷ to the left side of the receiver.

Route the cable into the cab and into the controller.



## Installing an AgGPS 262/AG-372 receiver with magnetic feet



**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.

Use this option only when all other options are unavailable. It requires a firm surface for mounting to avoid vertical vibration and is not an easily repeatable location when moving receivers. Many cabs do not offer roof bolts; you may need to drill or to construct a firm location.

### Step 1

Attach the magnets to the receiver mounting plate. Mount the AgGPS 262 GPS/AG-372 receiver using the three ¼" bolts.

Place the nuts on the receiver side.



### Step 2

Turn the mounting plate upside down. Stick the covers onto the magnets as shown.

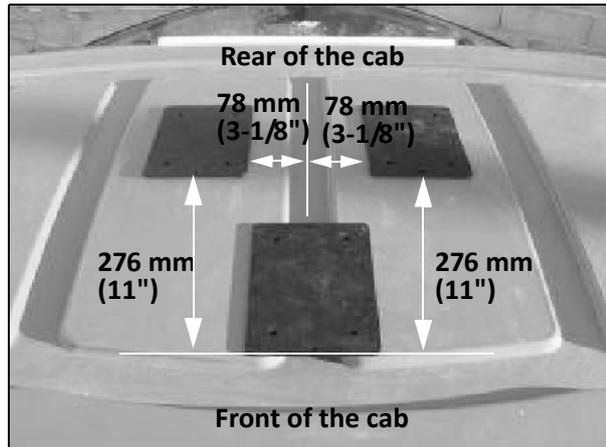


**Step 3**

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

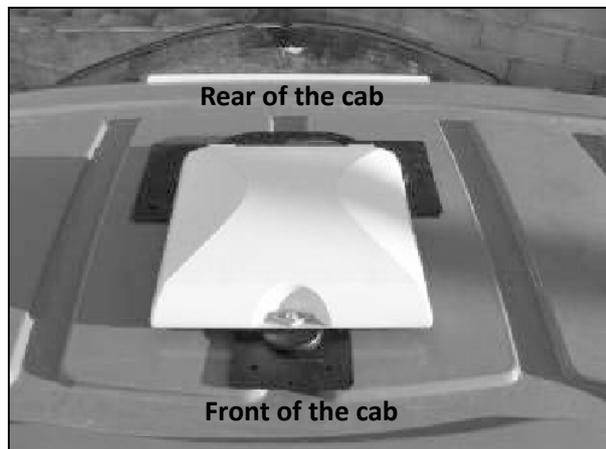
Remove the backing from the VHB strips and then apply the plates to the cab roof.

***Attach the three mounting plates so that the receiver is as firm as possible.***



**Step 4**

Stick the antenna magnetic mounts at the center of the mounting plates.

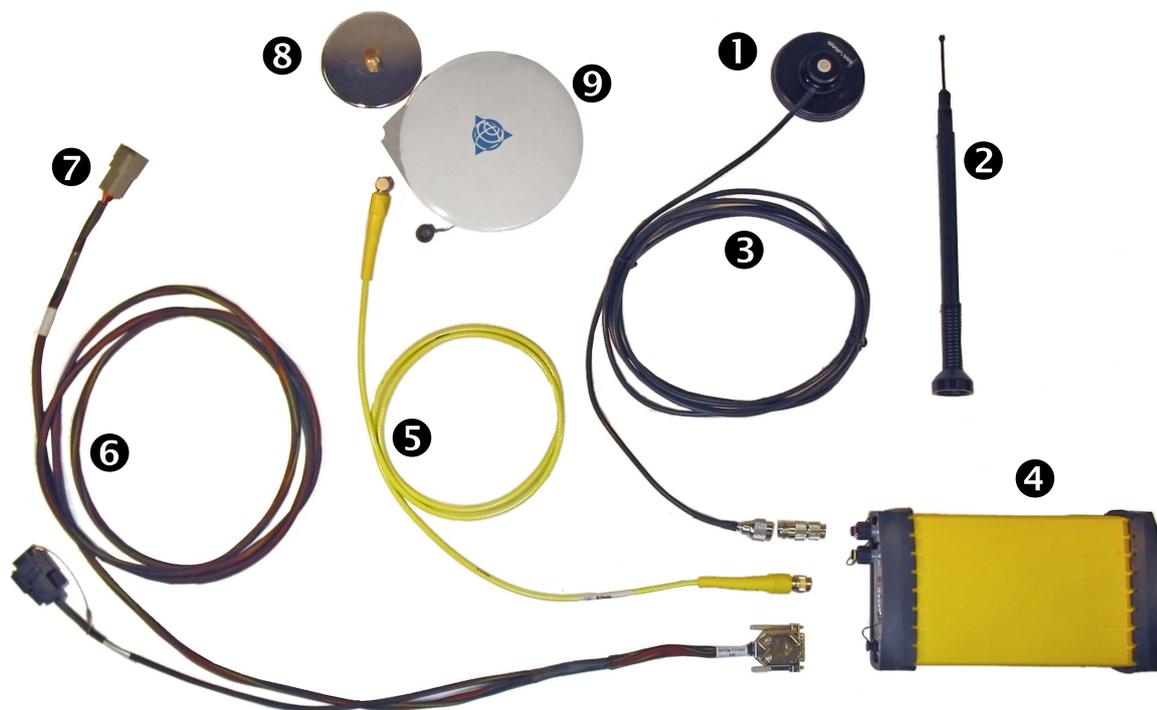


**Step 5**

Connect the antenna cable to port A of the AgGPS 262/AG-372 GPS receiver and then route the cable toward the NavController II harness.



## AgGPS 432/442/542 receiver components



Item	Description	Trimble part number
1	Radio antenna magnetic base	
2	Radio antenna	
3	Radio antenna cable	
4	AgGPS 432/442/542 GPS receiver	
5	Antenna cable	
6	Receiver cable	62037
7	To controller "P3 GPS"	
8	Antenna magnetic mount	
9	AgGPS 432/442/542 antenna	

## Installing the AgGPS 432/442/542 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.

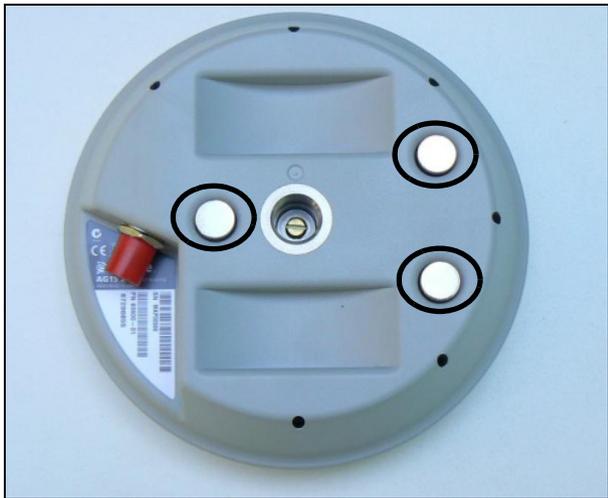
---

### Step 1

Attach the large magnet with a  $\frac{5}{8}$ " stud to the GPS antenna.



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



**Step 2*****GLONASS, RTK, OmniSTAR, 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**

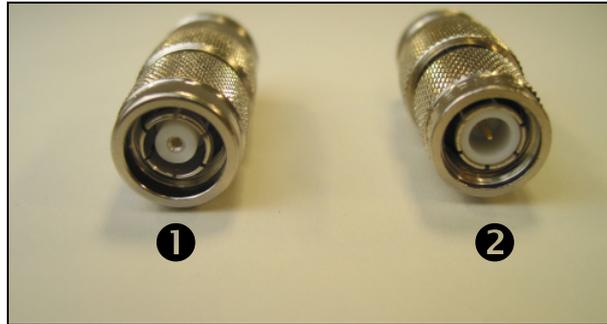
Mount the receiver in a convenient location in the cab. Route the antenna cable to the receiver and then connect it.



**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 5, 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 4" x 6" plate with the VHB provided to relocate the antenna.





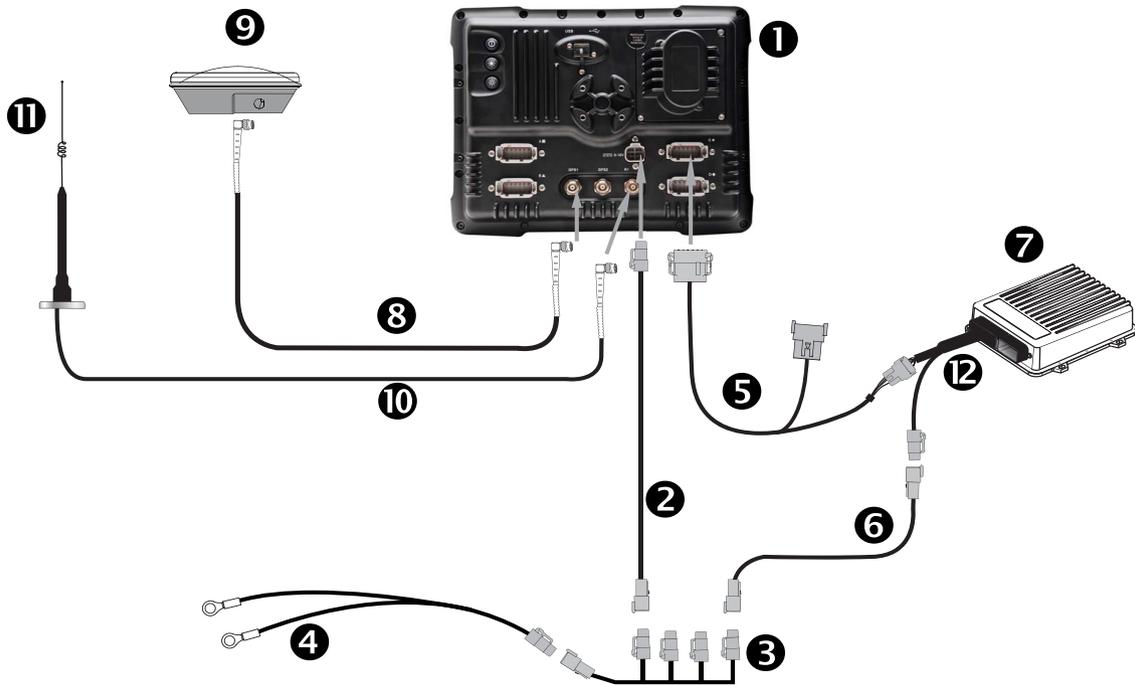
# Display Installation

## In this chapter:

- FmX integrated display components
- CFX-750 display components
- EZ-Guide 500 lightbar components: With SNB900 radio for RTK corrections (if equipped)
- Preparing the FmX integrated display
- Installing the FmX integrated display
- FmX integrated display: Installing the wiring harness
- Preparing the CFX-750 display
- Installing the CFX-750 display
- CFX-750 display: Installing the wiring harness
- FmX integrated display and CFX-750 display: Connecting accessory options
- Preparing the EZ-Guide 500 lightbar
- Connecting the EZ-Guide 500 lightbar cables
- Installing the EZ-Guide 500 lightbar
- EZ-Guide 500 lightbar, and CFX-750 and FmX displays: Installing the GNSS antenna and plate
- EZ-Guide 500 lightbar, and CFX-750 and FmX displays: Installing the RTK radio antenna

This chapter describes and how to install and connect the FmX integrated display, CFX-750 display, or the EZ-Guide 500 lightbar in the vehicle.

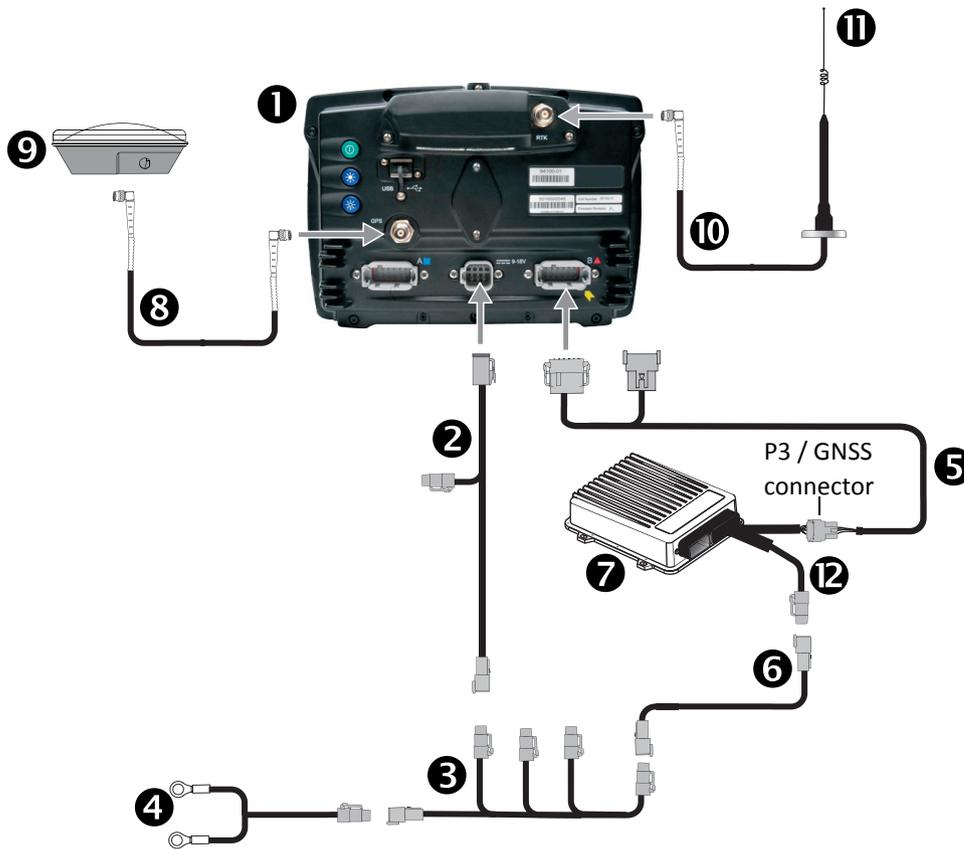
## FmX integrated display components



**CAUTION** – Connecting the Port Replicator on the FmX to NavController II cable 5 to the P4 or P12 connector of the NavController II harness 12 will result in damage to the FmX / FM-1000 integrated display, and will void the warranty.

Item	Description	Trimble part number
1	FmX integrated display	93100-02
2	FmX power cable	66694
3	FmX power cable with relay and switch (power bus)	67259
4	Basic power cable	67258
5	FmX to NavController II cable with port replicator	75741
6	2 pin DTM to 2 pin DT power adaptor	67095
7	NavController II	55563-00
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 II cable	54601

## CFX-750 display components

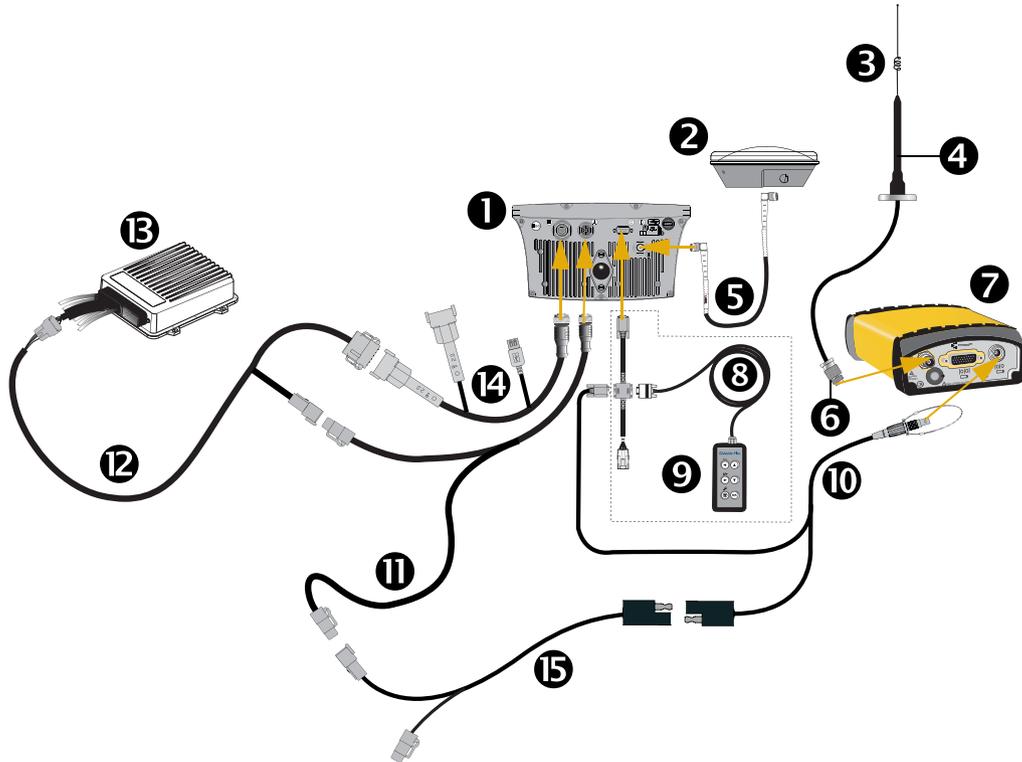


**CAUTION** – Connecting the Port Replicator on the CFX-750 display to NavController II cable ⑤ to the P4 or P12 connector of the NavController II harness ⑫ will result in damage to the CFX-750 display and will void the warranty.

Item	Description	Trimble part number
①	CFX-750 display <i>Note – RTK password required.</i>	94100-01
②	CFX-750 power cable	77282
③	CFX-750 power cable with relay and switch (power bus)	67259
④	Basic power cable	67258
⑤	CFX-750 to NavController II cable with port replicator	75741
⑥	2 pin DTM to 2 pin DT power adaptor	67095
⑦	NavController II	55563-00
⑧	8 m GNSS TNC/TNC RT angle cable	50449

Item	Description	Trimble part number
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 II cable	54601

## EZ-Guide 500 lightbar components: With SNB900 radio for RTK corrections (if equipped)



Item	Description	Trimble part number
1	EZ-Guide 500 lightbar	
2	GNSS antenna	57200-00
3	SNB900 radio antenna	22882-00
4	SNB900 radio antenna magnetic mount	62109
5	GNSS antenna cable	50449
6	N Female to REV. POL TNC Male	62114
7	SNB900 radio	X8480-X0
8	Remote keypad (optional)	66030-00
9	External interface cable	62749
10	Radio power/data cable	61158
11	EZ-Guide 500 power cable	62817
12	EZ-Guide 500-to-Autopilot cable	62754
13	NavController II	55563-00

Item	Description	Trimble part number
14	Port expansion cable	62609
15	Power tap to PDL radio	63185

## Preparing the FmX integrated display

### 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.



## Installing the FmX integrated 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](#) chapter.

---

### 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 C port of the FmX integrated display.

To connect power to the FmX integrated display, see [Chapter 2, CAN Bus Installation](#).



## FmX integrated display: Installing the wiring harness

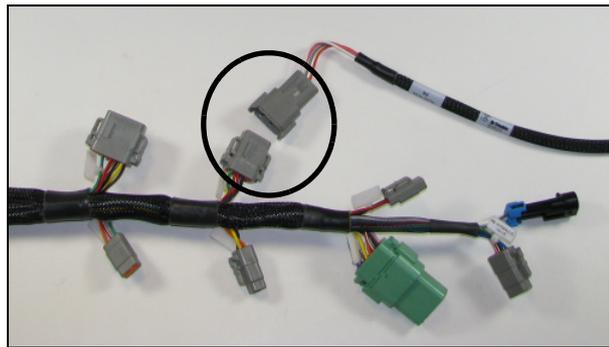
### Step 1

Locate the cable that connects the FmX integrated display to the NavController II **1**.



### 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.



## Preparing the CFX-750 display

### 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.



## Installing the CFX-750 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 chapter.

### 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 2, CAN Bus Installation](#).



## 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.



## FmX integrated display and CFX-750 display: Connecting accessory options

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

### AgCam

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

#### 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.



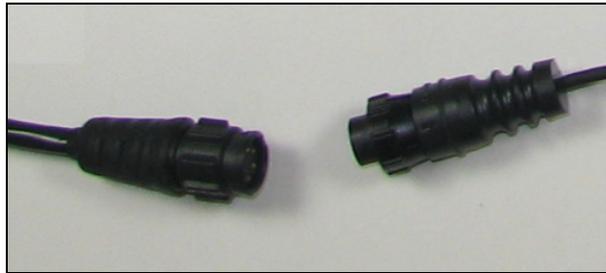
**FmX display**



**CFX-750 display**

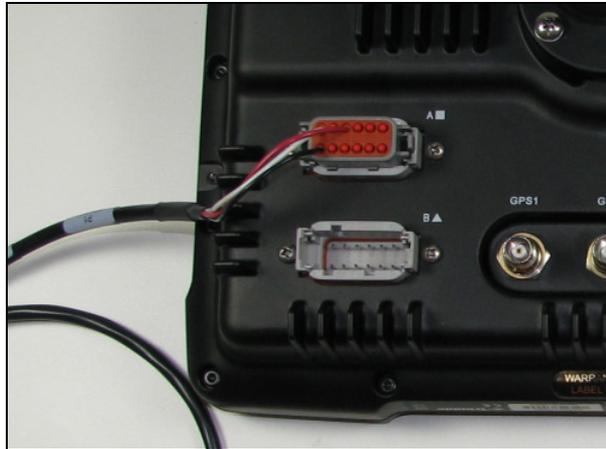
**Step 3**

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.



## Preparing the EZ-Guide 500 lightbar

**Note** – Before you attach the lightbar to the RAM mount, connect the EZ-Guide 500 cables to the back of the lightbar.

### Step 1

Locate the EZ-Guide 500 lightbar, the RAM mount and hardware, and the RAM mount clamp.



### Step 2

Attach the RAM mount diamond base to the display using the hardware provided.



## Connecting the EZ-Guide 500 lightbar cables

**Note** – Before you attach the lightbar to the RAM mount, connect the EZ-Guide 500 cables to the back of the lightbar.

### Step 1

Connect the port expansion cable (P/N 62609) to the AUX port on the back of the lightbar.



### Step 2

Connect the EZ-Guide 500 power cable (P/N 62817) to the PWR port on the back of the lightbar.



### Step 3

Connect the 2-pin connector on the port expansion cable and the 12-pin connector on the power cable to the matching connectors on the EZ-Guide 500-to-Autopilot cable (P/N 62754).

### Step 4

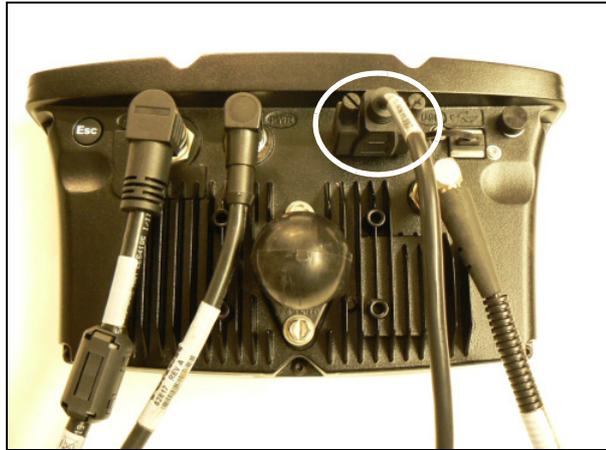
Feed the GNSS antenna cable into the cab and then connect it to the antenna port on the back of the lightbar.



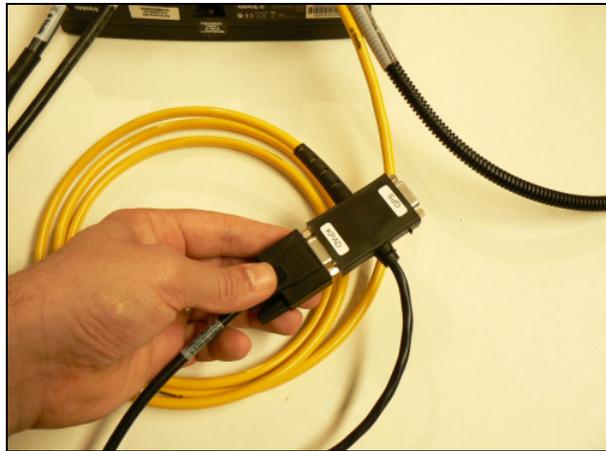
**Step 5**

**With keypad**

Connect the external interface cable (P/N 66030-00) to the serial port on the back of the lightbar.

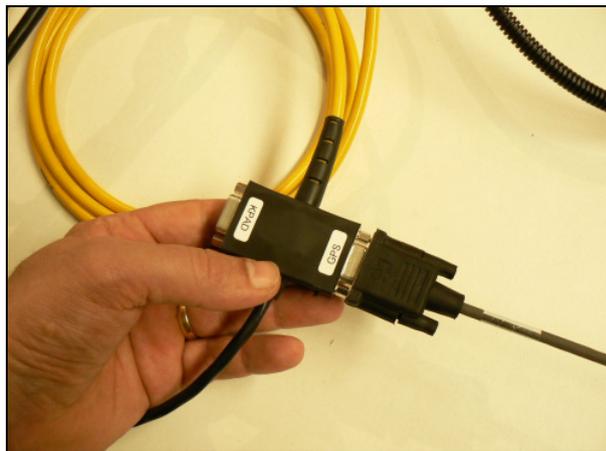


Connect the remote keypad to the KPAD serial port on the external interface cable.



Connect the appropriate cable to the GNSS serial port on the interface cable:

Radio type	Cable to connect
SNB900 radio	EZ-Guide 500-to-radio cable (P/N 61158)
PDL 450 radio	PDL radio power/data cable (P/N 51861-00)



**Without keypad**

Connect the appropriate cable to the serial port on the back of the lightbar:

Radio type	Cable to connect
SNB900 radio	EZ-Guide 500-to-radio cable (P/N 61158)
PDL 450 radio	PDL radio power/data cable (P/N 51861-00)

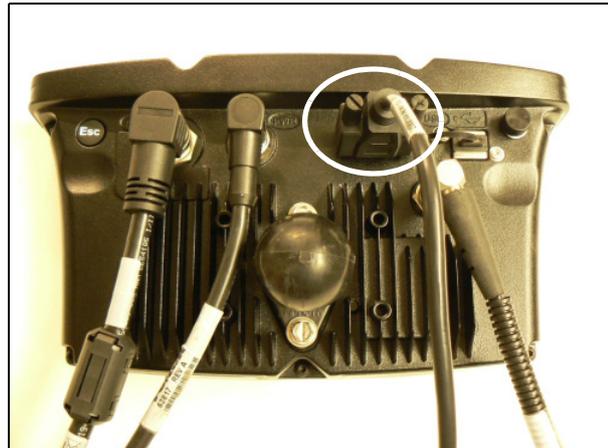
**Step 6**

Connect the other end of the radio cable to the radio.

**Step 7**

Connect the remaining connector on the PDL radio power/data cable to the matching connector on the power tap cable (P/N 63185).

Connect the connector at the other end of the power tap cable to the EZ-Guide 500 power cable.



## Installing the EZ-Guide 500 lightbar



**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

Test a location for the lightbar in the cab (there must be a bar that the RAM mount can be attached to); sit in the driver's seat and hold the lightbar in place.

**Note** – Make sure the position allows comfortable access to the display buttons and does not obstruct instruments.



### Step 2

Attach the RAM mount to the ball on the rear of the lightbar.



### Step 3

Attach the free end of the RAM mount to the bar mount, tighten the clamp on the RAM mount so that the lightbar is held securely in place and then adjust the angle of the RAM mount for ease of use.



## EZ-Guide 500 lightbar, and CFX-750 and FmX 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](#) chapter.

**Note** – The V plate antenna bracket is available on the Autopilot price list. See [Antenna mounting kits, page 9](#).

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 28](#).

Attach the V plate to the spar with the four supplied ¼"-20 flathead screws as shown. The narrow end points forward.



### 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.

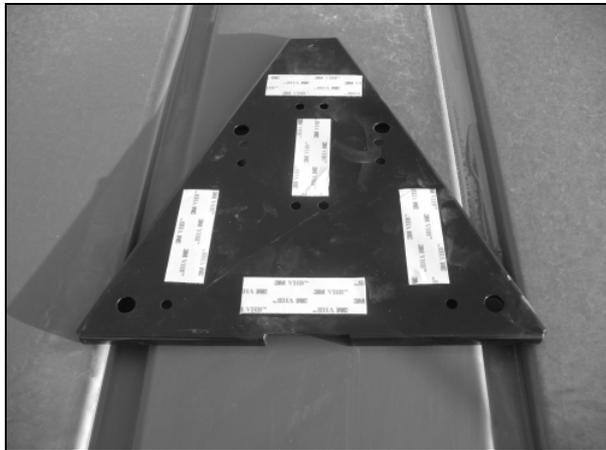
**Step 1**

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

**Step 2****V plate only**

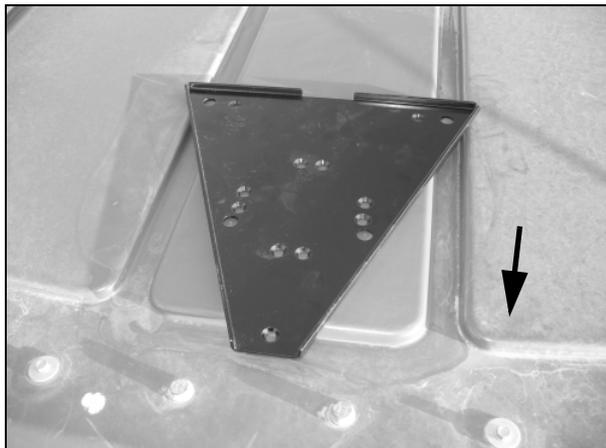
Remove the backing from one side of the VHB strips provided and then apply the strips to the plate.

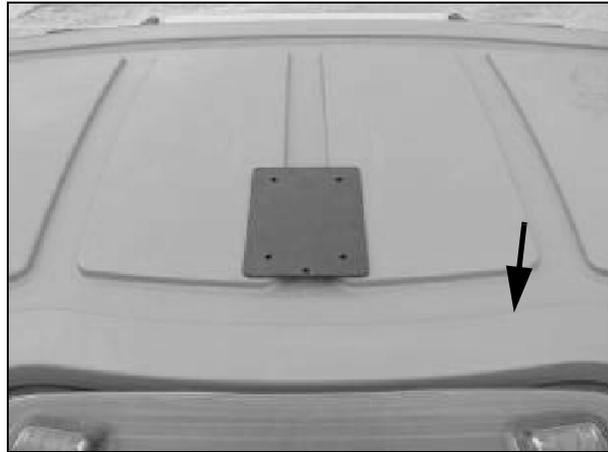
**Note** – The VHB strips are pre-applied to the 4" x 6" plate.

**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.

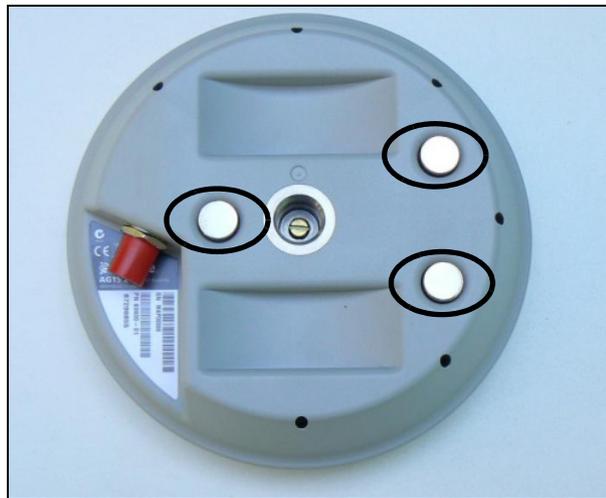
**V plate**



4" x 6" plate

**Step 4**

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



Otherwise, attach the large magnet with a  $\frac{5}{8}$ " 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.



## EZ-Guide 500 lightbar, and CFX-750 and FmX 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](#) chapter.

### 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

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

# 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](#) chapter.

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To mount the controller permanently, use a controller mounting bracket. To mount the controller so it can be transferred between vehicles, use options A or B.



**WARNING** – For early model cabs do not drill through the floor.

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### Option A: Models with the late model cab - When transferring the controller from vehicle to vehicle

#### Step 1

Mount the controller on the floor to the left of the driver's seat.

*Note* – This may require removing the air tank for better access.



#### Step 2

Place the plate (P/N 54828) on the floor. Ensure that it is square with the seat base. Mark the four outer holes or the easiest to access.

*Note* – It is very important that you only use the four holes pictured. There is a structure under the floor that will interfere with the other holes.



**Step 3**

Use a 1" hole saw with a ¼" center bit to drill a 1" hole in the two-layer floor mat, and a ¼" hole in the sheet metal floor that is underneath.



**WARNING** – Do not drill a 1" hole all the way through the sheet metal.

**Step 4**

Notice the black sheet metal floor under the mat with only a ¼" hole in it.

**Step 5**

Peel both floor mats up, exposing the entire right half of the cab floor.



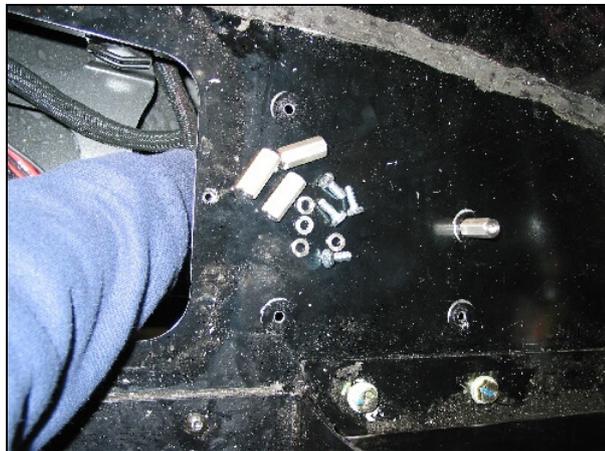
**Step 6**

Locate the access panel on the floor. Use a T-30 Torx bit to remove the six screws in the access panel.



**Step 7**

Reach through the access panel to install the standoffs and bolts (which are provided in the kit).



**Step 8**

Tighten the standoffs into place. Reinstall the access panel.



**Step 9**

Place the plate (P/N 54828) over the mat and standoffs and tighten it into place.

**Step 10**

Attach the main cable and auxiliary cable harnesses to the controller. Use an Allen wrench to secure the connectors.

**Step 11**

Attach the controller using four #10 self locking screws provided in the controller bolt kit.



## Option B: Models with the early model cab

Use this option when transferring the controller from vehicle to vehicle.

When using this option set the controller orientation to the following values:

- Roll: 58
- Pitch: 0
- Yaw: 270

### Step 1

Mount the controller behind the seat.



### Step 2

Place the controller mounting plate against the inclined rear cab wall and then position the controller to the left of the cab, using the dimensions shown as a guide.



**Step 3**

**CAUTION** – Before drilling, inspect the area outside the cab.

Use the controller as a template to mark and then drill three 5/16" holes.

**Note** – The controller can be moved up or down and left or right, but it must remain level with the cab floor.

**Step 4**

With the tractor on level ground, verify the controller plate is mounted level to the cab floor. Bolt to the cab with 1/4" cap screws and hardware provided in the bolt kit.



**Step 5**

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



**Step 6**

Attach the controller using four #10 self locking screws provided in the controller bolt kit.



**Step 7**

Route the LED indicator and DE9 serial connector to the access port.



## Alternative installation for MT 500D and MF 76XX models

You will install the NavController II under the fender plastic cover, approximately in the position shown.



### Preparing the location for the controller

#### Step 1

Remove the trim piece near the levers.



**Step 2**

Remove the fuse panel cover and then remove the panel. Move the panel under the plastic cover.



**Step 3**

Unscrew the dial panel below the PTO speed panel previously removed. Move the panel under the top plastic cover.



**Step 4**

Remove the rubber handles on the levers shown by pulling them straight up. Then remove the plastic trim panel around the levers.



**Step 5**

Remove all the screws holding the panel.

Carefully label and then disconnect the electrical connectors going to the top switch panel cover.

**Step 6**

Unscrew the panel shown to release the top panel.

**Step 7**

Carefully remove the top panel.



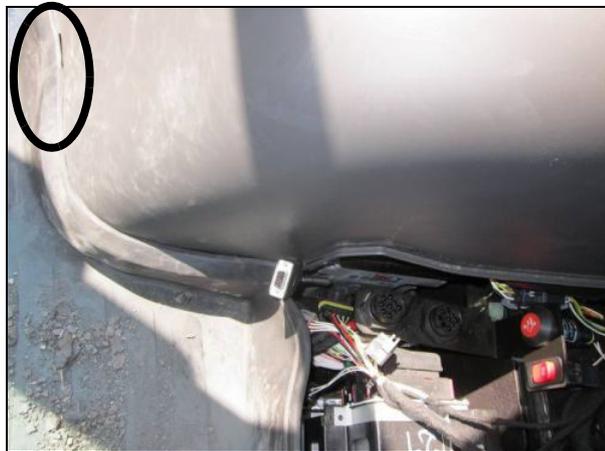
**Step 8**

Remove the access cover next to the seat.



**Step 9**

Remove the fasteners holding the fender cover, including the one on the front of the fender under the floor mat.



**Installing the controller**

**Step 1**

Position the controller on top of the right fender, inside the cab.

Align the edge of the controller with the welded seam on the fender (dashed line in photo).

Using the controller mounting plate as a template, drill four  $\frac{5}{16}$ " holes to attach the controller mounting plate to the machine.



**Step 2**

Attach the controller mounting plate to the machine using the provided ¼" hardware.

**Step 3**

Using the provided 10-32 screws, attach the controller to the controller mounting plate with the connector facing downward.

The orientation for this mounting position is:

- Roll: 35
- Pitch: 34
- Yaw: 169

**Step 4**

Connect the electrics.



Carefully reinstall the plastic cover over the machine fender.



**Step 5**

Reconnect all of the electrical connectors on the top switch panel and then reinstall the top panel on the right fender of the machine.



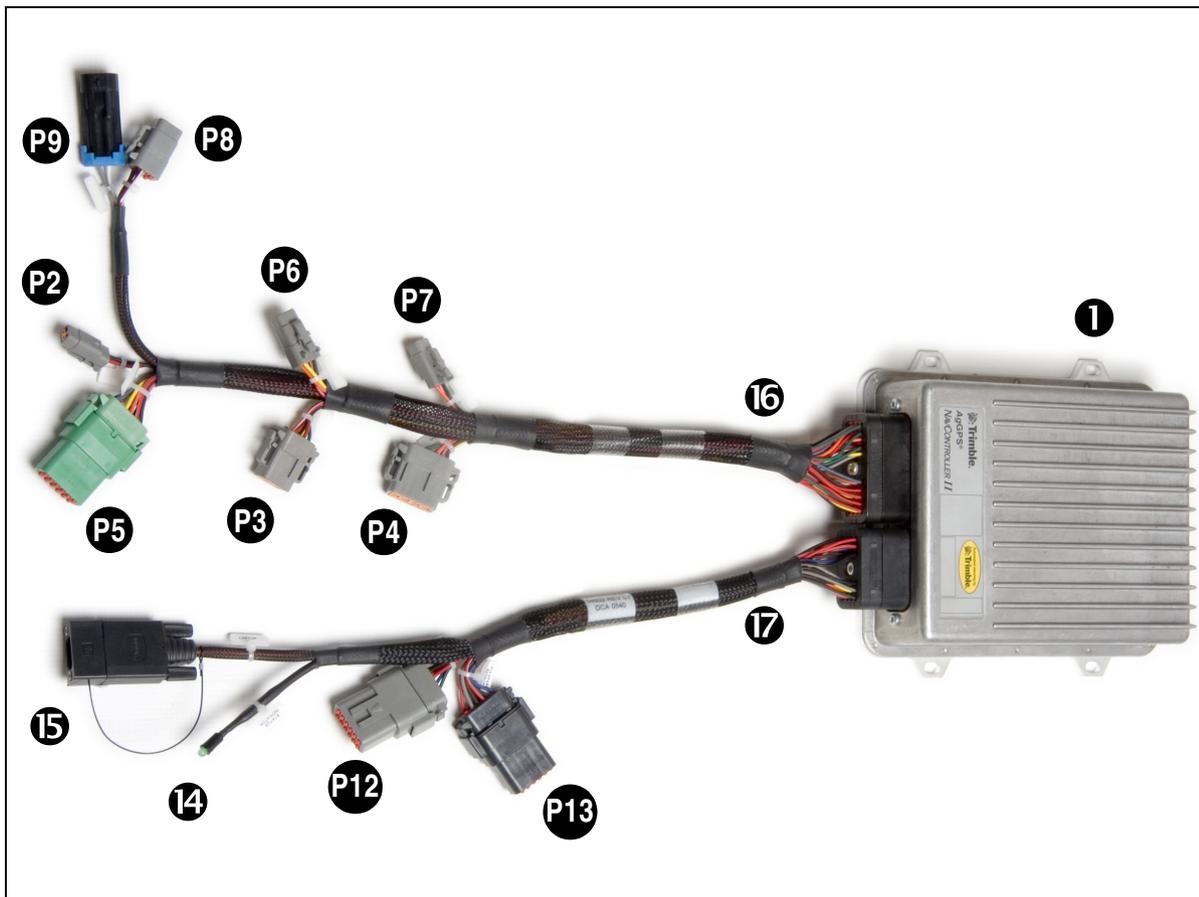
**Step 6**

Leave the Autopilot computer connector accessible behind the panel to the right of the seat.





## Controller connections



Item	Description
1	NavController II controller
P2	Power connector
P3	GPS connector
P4	Display connector
P5	Vehicle sensors connector
P6	Steering sensor connector
P7	Manual override connector
P8	Hydraulic valve connector
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector

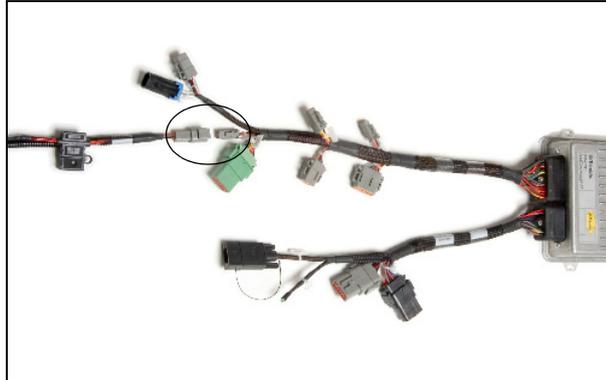
Item	Description
16	Main harness
17	Auxiliary harness

## Connecting the cables to the controller

### Step 1

Connect the power cable connection to P-2, which is labeled “Power”. P-2 is located on the main wiring harness.

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



### Step 2

Connect the Sonalert P-9 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.

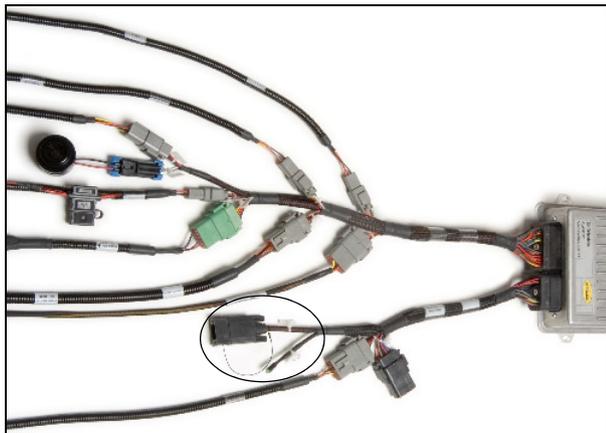


### Step 3

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 4

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.



# Final Machine Check

## In this chapter:

- Performing the final machine check

This chapter describes how to perform a final check of the vehicle.

## Performing the final machine check

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**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.

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1. Connect the battery.
2. Start the machine and then check for hydraulic leaks. Correct as needed.
3. Connect and run the Autopilot Toolbox II software for system setup and calibration. For more information, refer to the *AgGPS Autopilot Toolbox II Software User Guide*.
4. Open the *Diagnostic* page of the Autopilot Toolbox II software and ensure that all signals from the hydraulics and sensors are active.