INSTALLATION INSTRUCTIONS

Autopilot™ Automated Steering System

Krone BiG X Forage Harvester ISO-Ready

- BiG X 500
- BiG X 700
- BiG X 8500
- BiG X 1100

Version 5.00
Revision A
January 2013
Part number 54038-71-E05

Trimble

Agriculture Business Area

Trimble Agriculture Division
10355 Westmoor Drive
Suite #100
Westminster, CO 80021
USA
(877) 447-7785 (US toll free)
+1-408-856-6491 (International)
trimble_support@trimble.com
www.trimble.com

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It applies to version 5.00 of the Autopilot automated steering system. The following limited warranties give you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

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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

For product recycling instructions and more information, please go to:
www.trimble.com/ev.shtml



Recycling in Europe: To recycle Trimble WEEE, Call +31 497 53 2430, and ask for the "WEEE Associate"
Or
Mail a request for recycling instructions to:
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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.

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CHAPTER 1

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 Global Navigation Satellite System (GNSS), such as the United States' Global Positioning System (GPS) products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GNSS, visit 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. Go to the Trimble website (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
CFX-750™ display: P/N 94000-xx Power cable CFX-750 display: P/N 77282 **FmX® integrated display: P/N 93700-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 (both displays): P/N 67258	

Required components

Kits required	Special tools
Platform kit: P/N 54038-71	Drill $^{5}/_{16}$" and $^{7}/_{16}$" drill bits Allen wrench set (metric and SAE) Open ended wrench set (metric and SAE)

Antenna mounting kits

Antenna options
Antenna V plate mount and AG-372 receiver magnetic mount: P/N 62388-01 (includes magnets for quick release of the AG-372 receiver. See Chapter 3, Antenna/Receiver Installation For AG15/AG25/Zephyr™ models use: • Magnetic GPS antenna bracket: P/N 46706 • Magnetic mount: P/N AG12920-00 • Elevated Roof Mount: P/N 62380-00 • Optional Krone Mount: P/N 89743-00

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 54038-71)	CAN Bus cable	Chapter 2
	Bolt kit controller	Chapter 5
Common parts	Controller	Chapter 5
	Controller mounting bracket	Chapter 1
	Cable kit: • Main wiring harness • Power bus auxiliary wiring harness • Sonalert alarm	Chapter 5
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) Optional Krone mount: P/N 89743-00	Roof brackets	Chapter 3
	Bolt kit, roof bracket	

Preparing the vehicle for installation

1. Park the vehicle on a hard, level surface. Block the front and rear wheels.
2. Align the steering straight ahead. On an articulated vehicle, install the articulation locks.
3. Remove all dirt and debris from the areas of the vehicle where the 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.

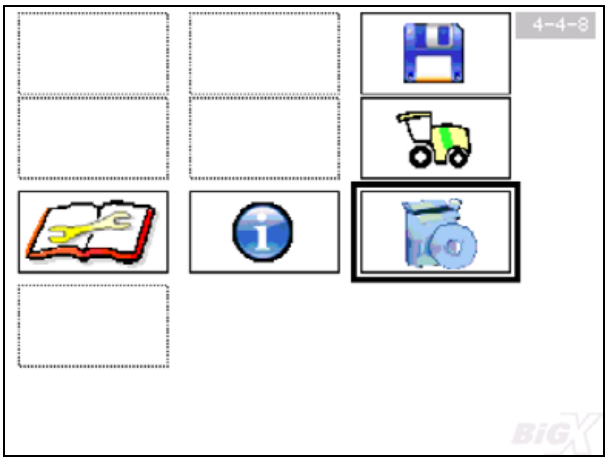
Note – *The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.*

Pre-installation checks

Verify that the machine is ISOBUS steering ready. The following is a guideline for the process to perform the check, but should only be performed by a qualified Krone dealer.

Step 1

Open the 4-4-8 in the Krone menu to view the available software activations.

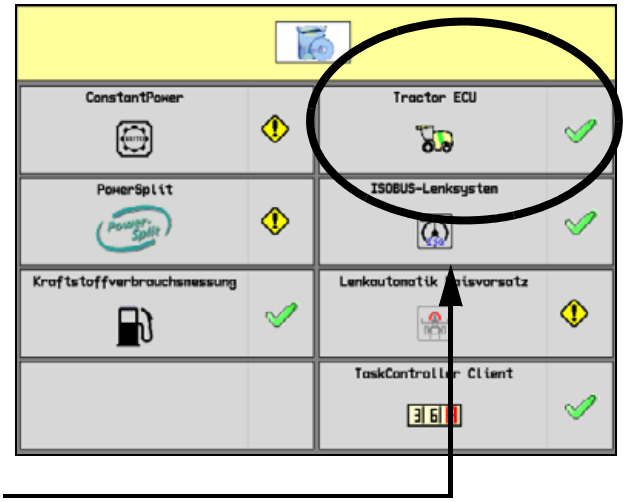


Step 2

The menu that appears shows the various software activations.

The left column of icons is related to BiG FuelSave features; the right column is related to BiG X ISOBUS ECU features.

- ✓ shows that the feature is active.
- ⚠ shows that the feature is inactive.



Step 3

To steer the machine with this ISOBUS kit, you must activate the Tractor ECU and the ISOBUS-Lenksystem software. You can use the Krone Helper service tool to do this.

Step 4

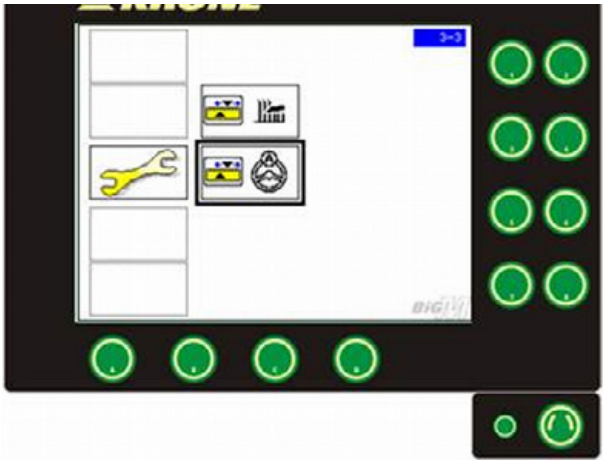
Perform the following machine steering calibrations.

Calibrating the steering

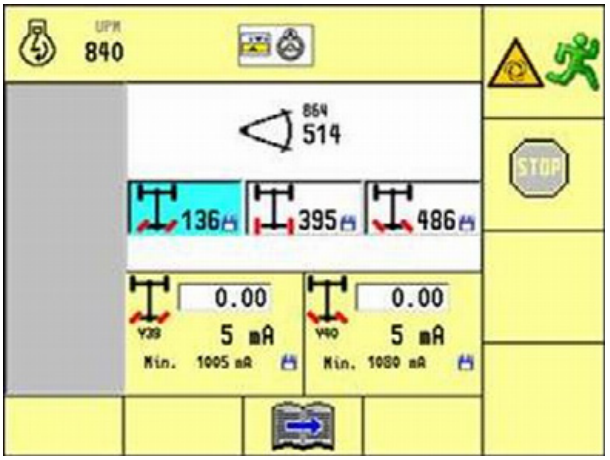
⚠ **CAUTION –** These calibrations must be performed only by a qualified Krone dealer. The following instructions serve only as a guideline: Use caution when performing them.

1. Activate the steering with the Krone Helper tool.
2. Check that the Krone Autopilot software is version 150200029_13B or later.

3. Switch on the calibration mask. You must be logged in ***Service Man***.

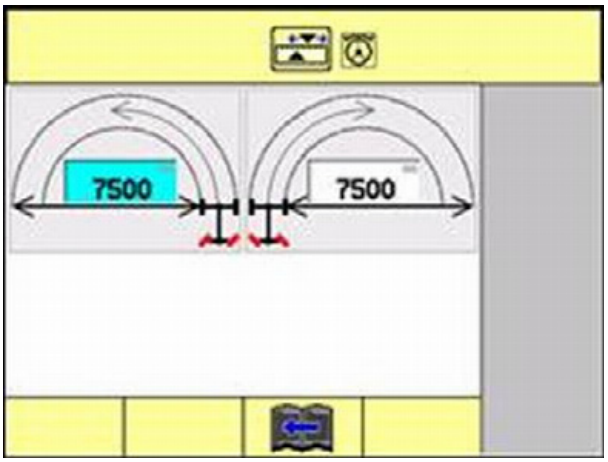


4. Calibrate the steering axle: The left, right, and middle stop.
5. Calibrate the valve current. You can do this automatically but a manual calibration will yield slightly more precise results. The currents should be approximately:
   – Left and right: 950 - 1150 mA



6. Calibrate the turning circle of the machine.

   Precisely measure the diameter of the circle from the inside wheel at the starting point to the outside wheel at the finishing point.



CHAPTER 2

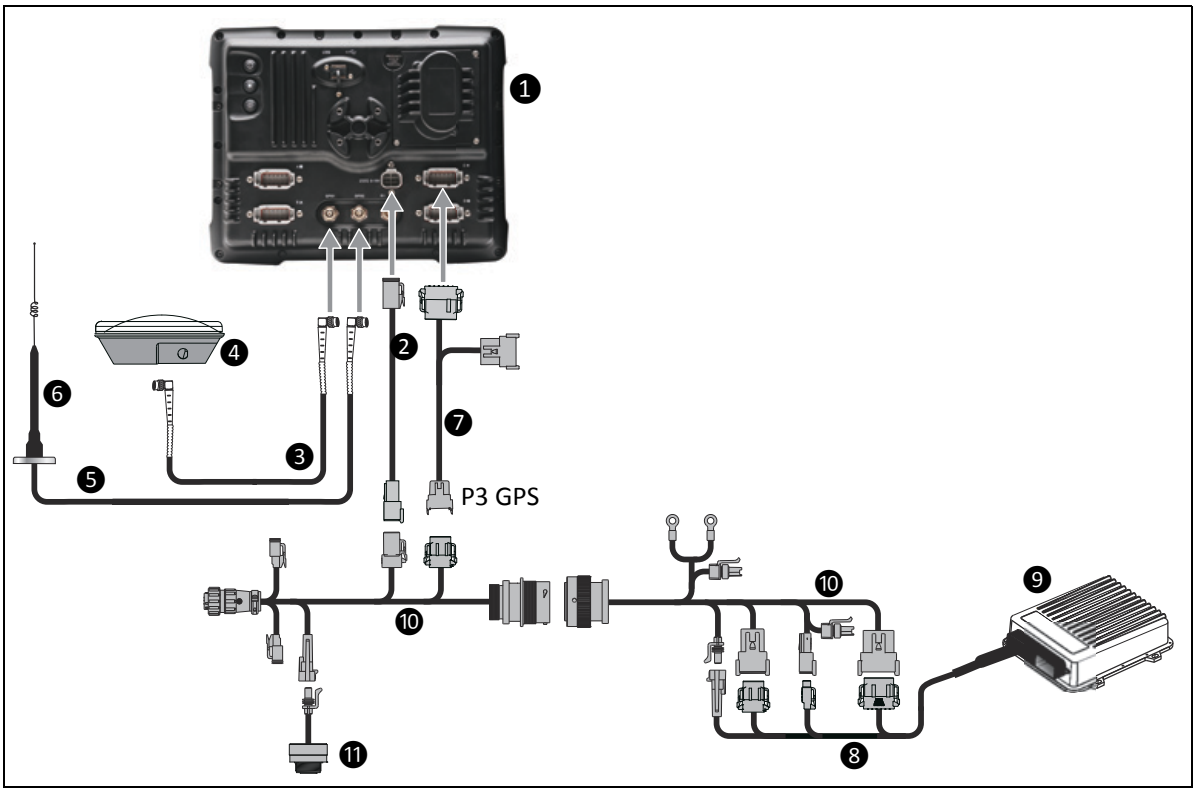
Steering Interface Cable Installation

In this chapter:

- CAN interface cable for the FmX integrated display
- CAN interface cable for the CFX-750 display
- Installing the cable

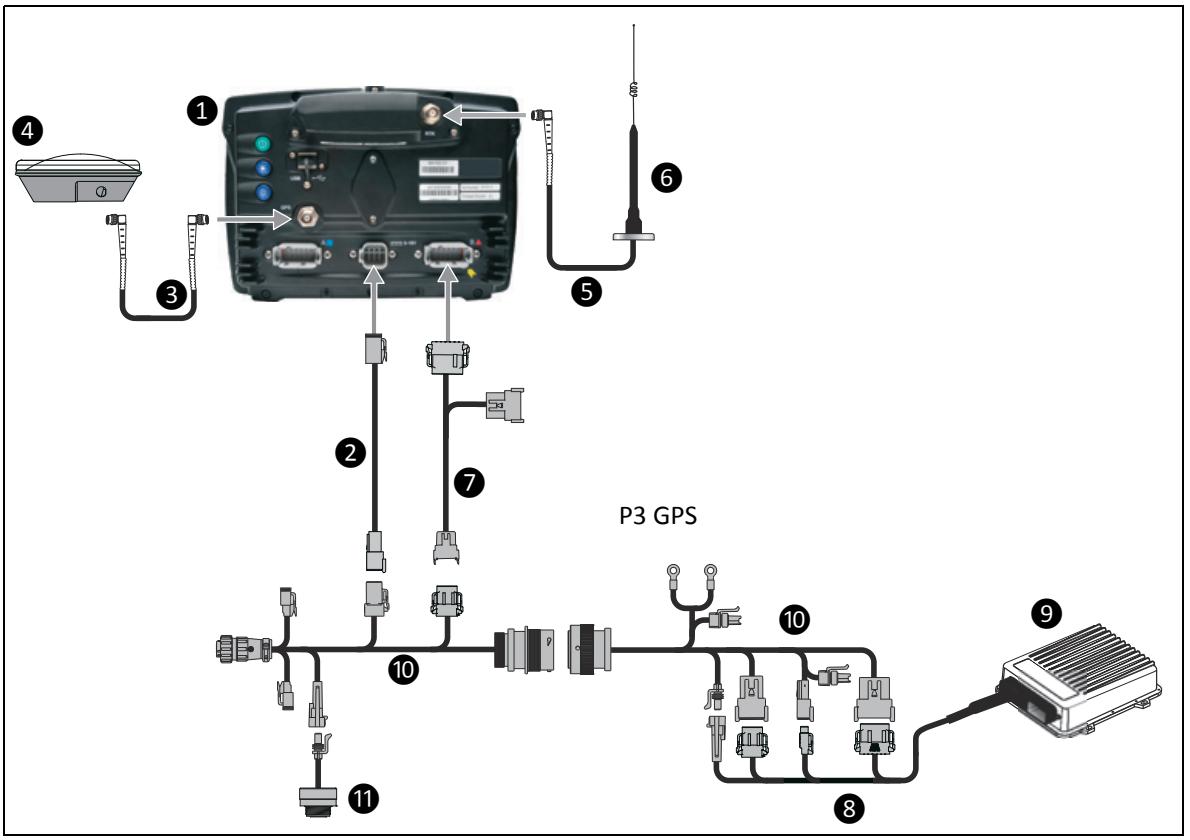
This chapter describes how to install the CAN interface cable in the vehicle.

CAN interface cable for the FmX integrated display



Item	Description	Trimble P/N
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	GPS, 5M, TNC/TNC RT angle cable	50449
❹	GNSS antenna	77038-00
❺	Antenna cable and base	72122
❻	Antenna Kit, Radio, Sitenet 900, 0db/3db/5db With Base	28822-10
❼	FmX to NavController II cable with port replicator ***Note –*** *Do not connect to P4 or P12 on NavController II*	75741
❽	NavController II main cable	54601
❾	NavController II	55563-00
❿	CAN Interface cable	89534
⓫	Sonalert	43104

CAN interface cable for the CFX-750 display



CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❼ to the P4 or P12 connector of the NavController II 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	72122
❻	Antenna Kit, Radio, Sitenet 900, 0db/3db/5db With Base	22882-10
❼	CFX-750 to NavController II cable with port replicator ***Note –*** *Do not connect to P4 or P12on NavController II*	75741
❽	Main NavController II cable	54601
❾	NavController II	55563-00
❿	CAN Interface cable	89534
⓫	Sonalert	43104

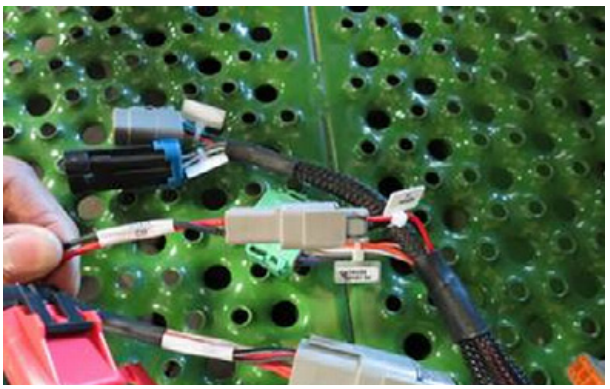
Installing the cable

Step 1

Identify the steering interface cable (P/N 89534).

Because the NavController II is mounted outside the cab, the steering interface cable is separated into the interior portion and the exterior portion.

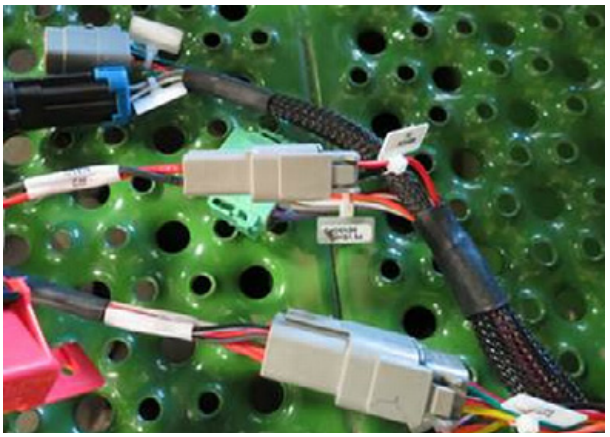
Start with the exterior portion, which has fuses on it.



Step 2

Plug four connectors from the interface cable into the NavController II harness (P/N 54601)

P/N 54601	**P/N 89534**
From:	**To:**
P2	R2
P4	R4
P3	R1
P9	R5



Step 3

To gain access to the bulkhead panel for battery power, lift the yellow access panel just behind the cab on the right side of the machine.



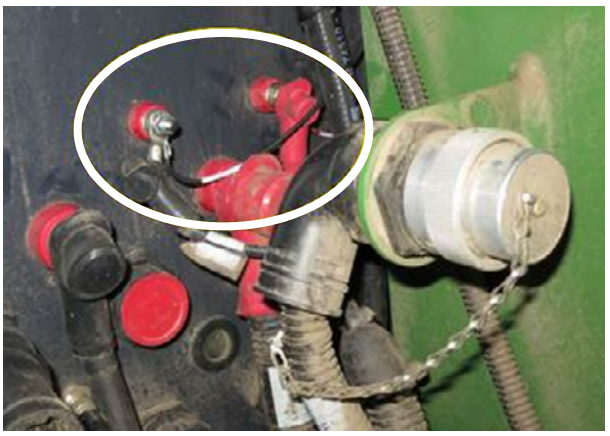
Step 4

WARNING – Turn off the main power before performing this step.
Do not turn the power back on until you have made all the connections.



Pull back the protective rubber sleeving and then use a 10 mm wrench to loosen the smaller set of power wires.

Step 5



Attach the red wire that has a ring terminal to the red power cable.

Attach the black wire that has a ring terminal to the black ground cable.

Step 6



Find a blank knockout in the bulkhead panel to pass the interface cable through to the cab.

Step 7

Install the round bulkhead connector pair (P8/R6) into the empty space on the bulkhead. Plug the connectors together and then use wire ties to secure excess cabling. Replace the access panel



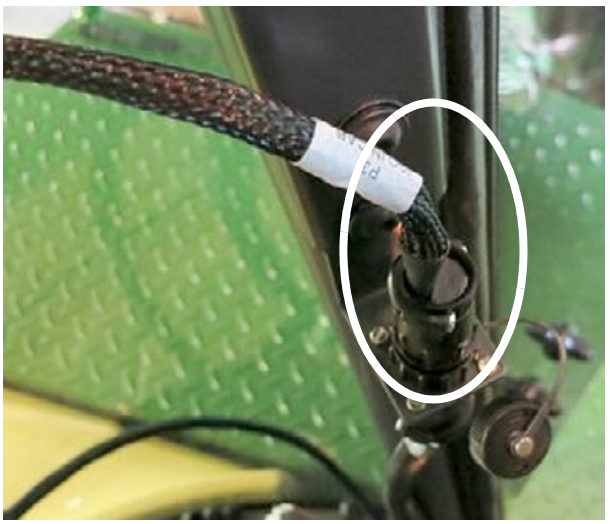
Step 8

From the inside of the cab, identify the round 9-pin ISO connector on the A-pillar in the front right of the cab.



Step 9

Plug connector P3 into the ISO connector. This is the machine steering connection, and is also the connection that turns on the NavController II.



CHAPTER 3

Antenna/Receiver Installation

In this chapter:

- Antenna and receiver installation options
- 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)
- Installing an AG-372 receiver with magnetic feet
- AgGPS 542 receiver components
- Installing the AgGPS 542 receiver

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:

- **Optional Krone bracket mount** – This component must be purchased separately. Trimble recommends that you use this method for RTK and OmniSTAR operations. Attach the AG25 or Zephyr antenna to the bracket. See Installing the optional antenna bracket, page 20.
- **VHB mount** – Attach a 4" x 6" plate, plate P/N ,62034, or a V plate directly to the roof with VHB (Very High Bond) adhesive for magnetic mounting. See page 22.
- **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	AG15/AG25/Zephyr on Krone mount
CFX-750 display; FmX integrated display	✓	✓	✓
AG-372 receiver	✘	✓	✘
*Ag*GPS 542 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, Beacon, and DGPS applications, place either of the plates in a firm location using the VHB.*

Installing the optional antenna bracket

For ease of installation of an AG25 GPS antenna, you can purchase an optional antenna bracket (P/N 89743-00), for all BiG X models.

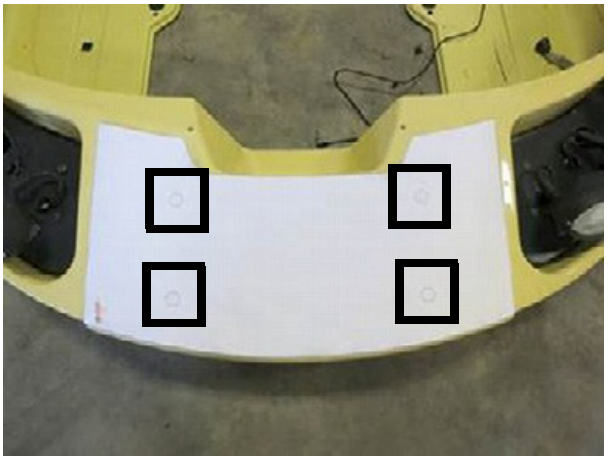
Step 1

Remove the roof cover from the machine.



Step 2

Use the provided paper template to determine the drilling locations for the four holes. Use tape to secure the template once it is correctly aligned.



Step 3

Use an 1/8" or smaller drill bit to start each of the four holes. Then remove the template and use a 1" step drill to drill the holes to a 1" internal diameter.



Step 4

Place the antenna bracket into the holes to verify a correct fit.



Step 5

Also hold the antenna bracket up to the bracket on the machine to verify a correct fit.

If you need to adjust for a better fit, gently bend the support bracket on the machine by hand.



Step 6

Run the antenna cable from the access hole in the center of the rear wall of the cab up to the roof.



Step 7

Attach the antenna to the bracket.



Attaching the antenna with a VHB adhesive 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.

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.

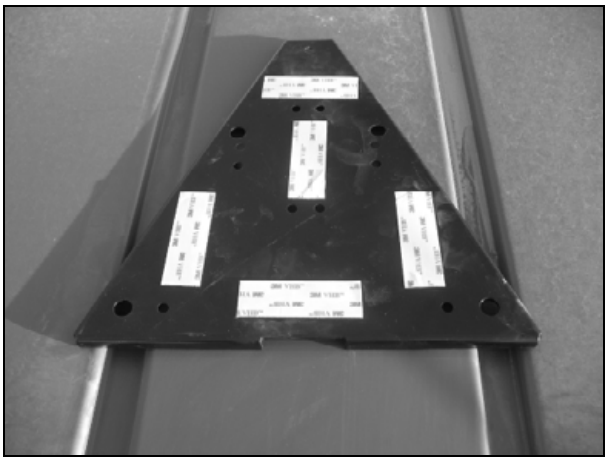


Step 2

V plate only

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

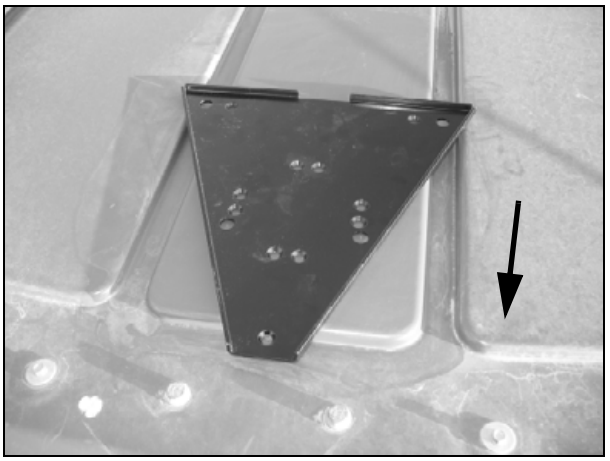
Note – *The VHB strips are pre-applied to the 4" x 6" plate.*



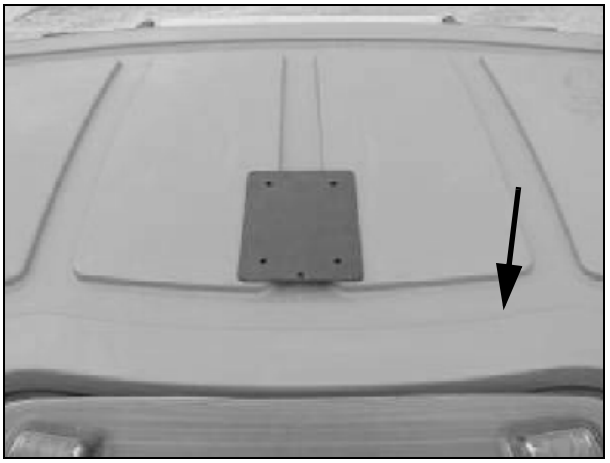
Step 3

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.*

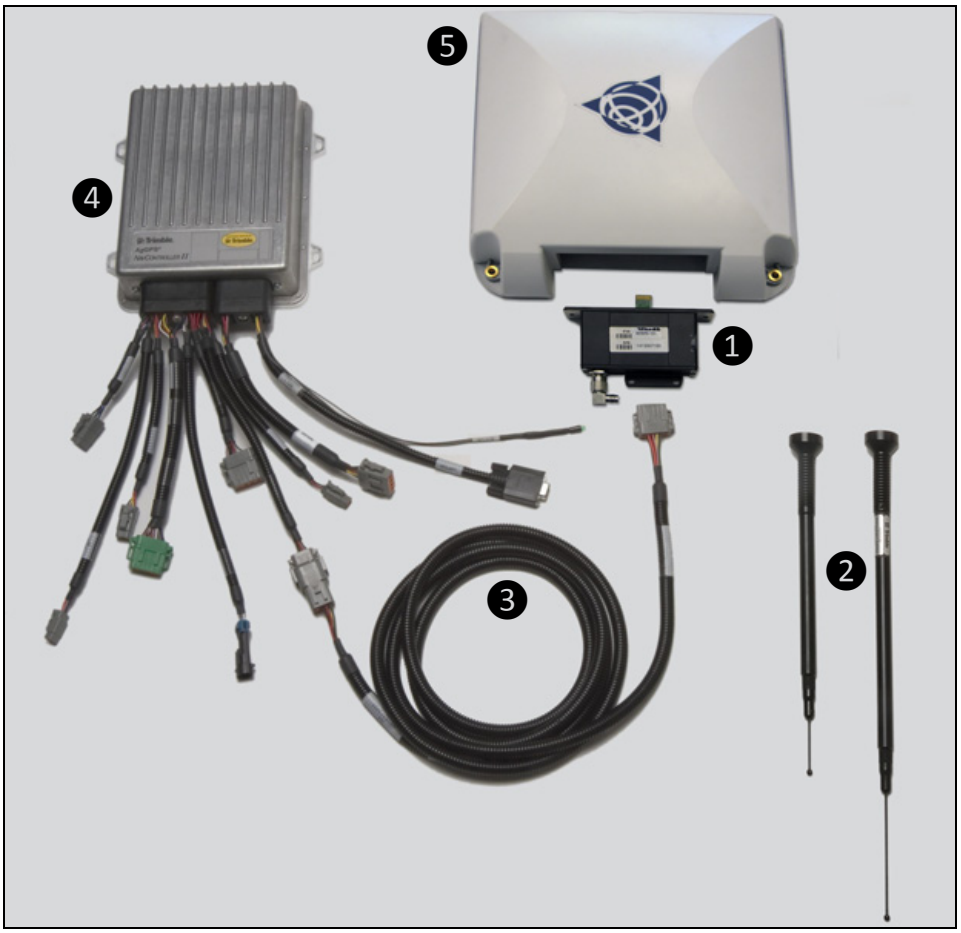


V plate



4" x 6" plate

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, use the method to attach a VHB V plate to the top of the cab.

Installing the RTK radio (if applicable)

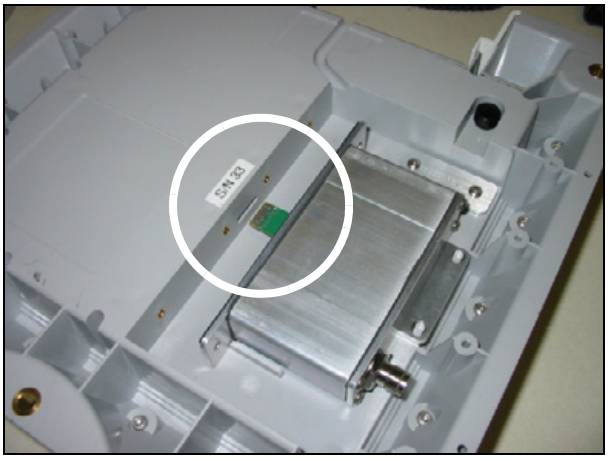
Step 1

Remove the blanking plate and set it aside.



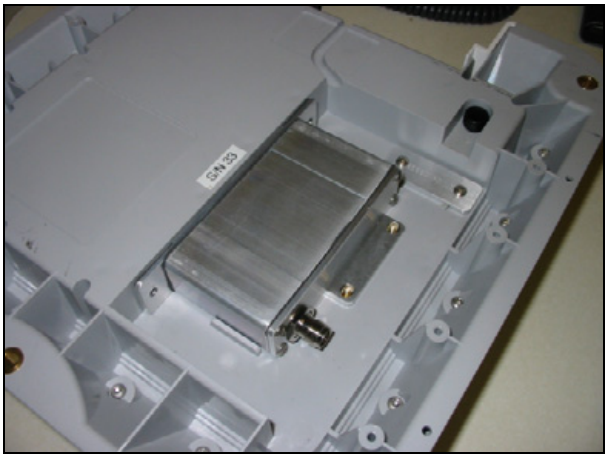
Step 2

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.



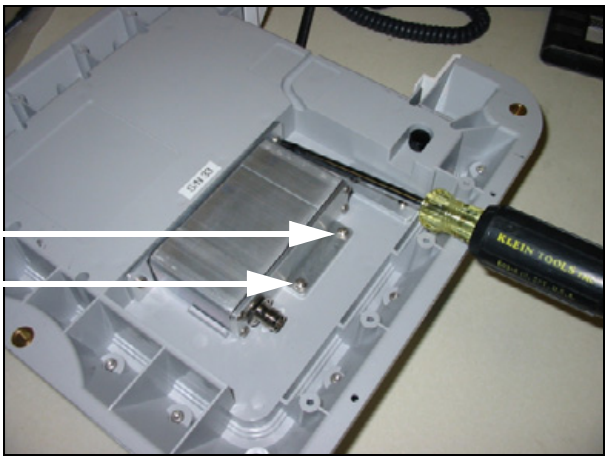
Step 3

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



Step 4

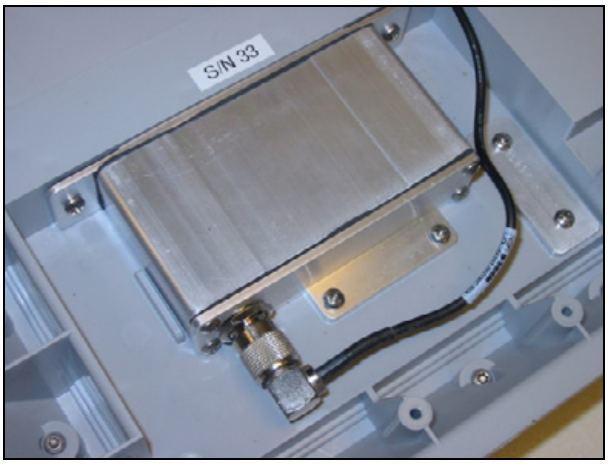
Use a #1 or #2 Phillips screwdriver and the supplied screws to install the integrated radio. First insert and tighten the two screws on the horizontal wall (arrowed), and then insert the remaining screws.



Step 5

Install the supplied antenna cable.

Notes: *The housing can accommodate a cable diameter of up to ¼".*

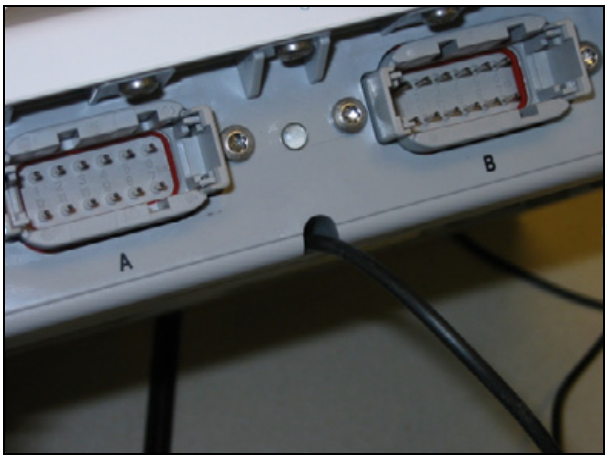


Step 6

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

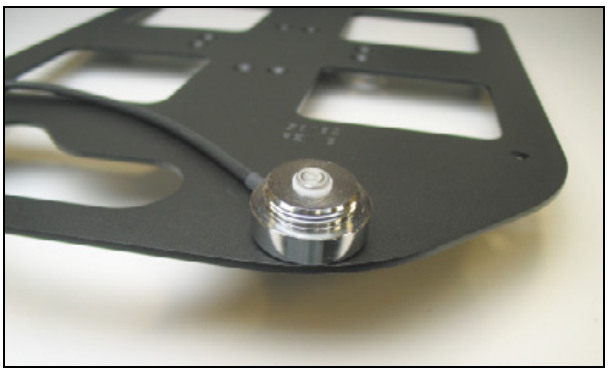


This image shows the unit with the cable routed through the channel.



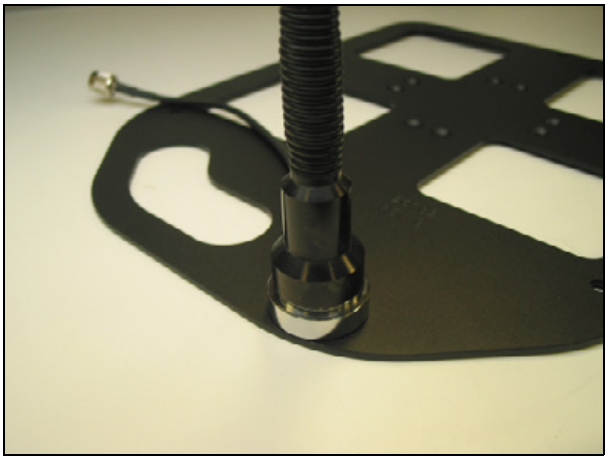
Step 7

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



Step 8

Attach the radio antenna to the antenna base.



Step 9

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.



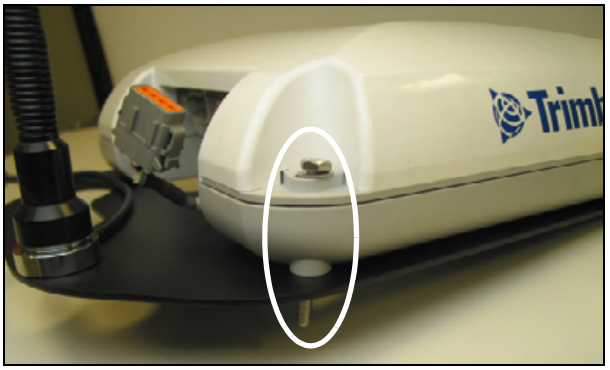
Step 10

Insert the nylon bushings provided.



Step 11

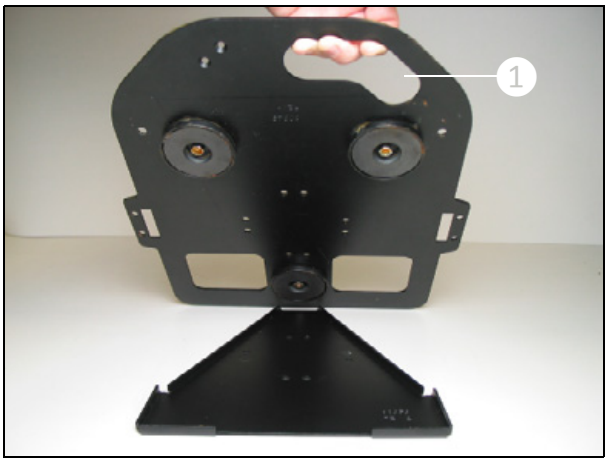
Insert the bolts through the receiver, radio, and mounting bracket. Place nuts on the bolt ends and then tighten them.



Step 12

Magnet method

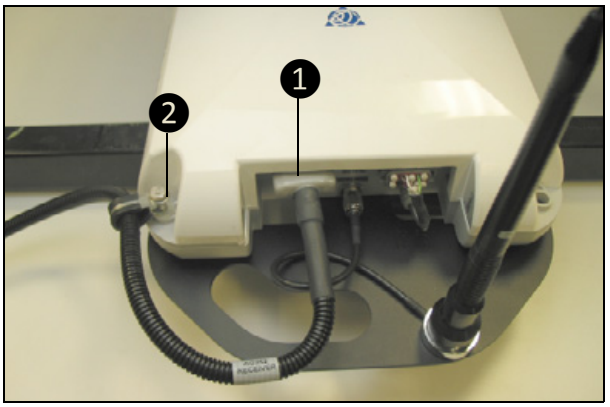
Place the receiver on the roof by aligning the magnets with the V plate. Ensure that the handle ❶ is toward the back of the vehicle.



Step 13

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.



Installing an 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.

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

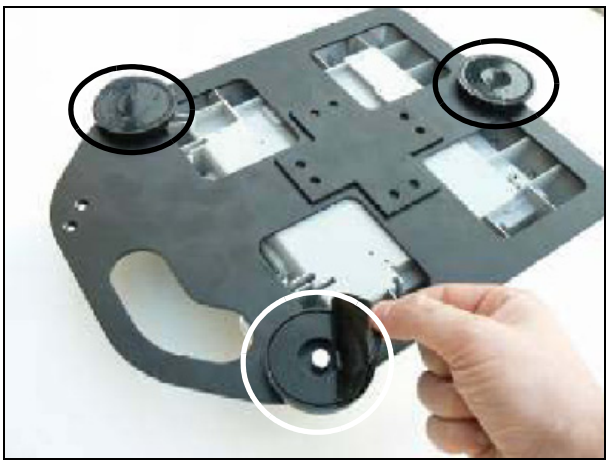
Attach the magnets to the receiver mounting plate. Use the three ¼" bolts to mount the AG-372 receiver.

Place the nuts on the receiver side.



Step 2

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

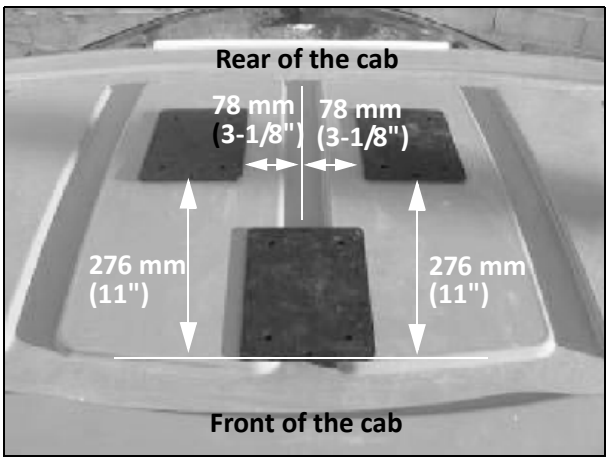


Step 3

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

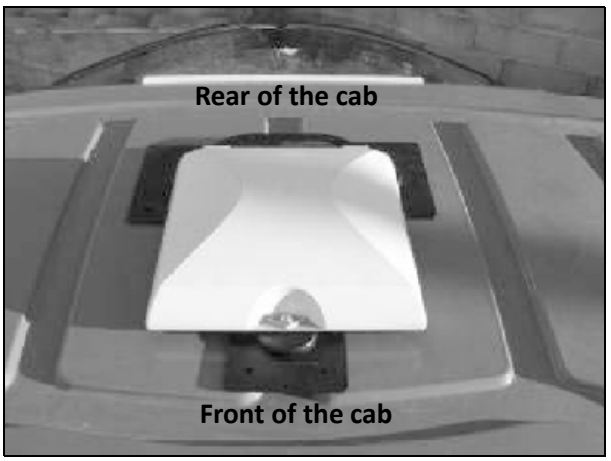
Remove the backing from the VHB strips and then apply the plates to the cab roof.

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.

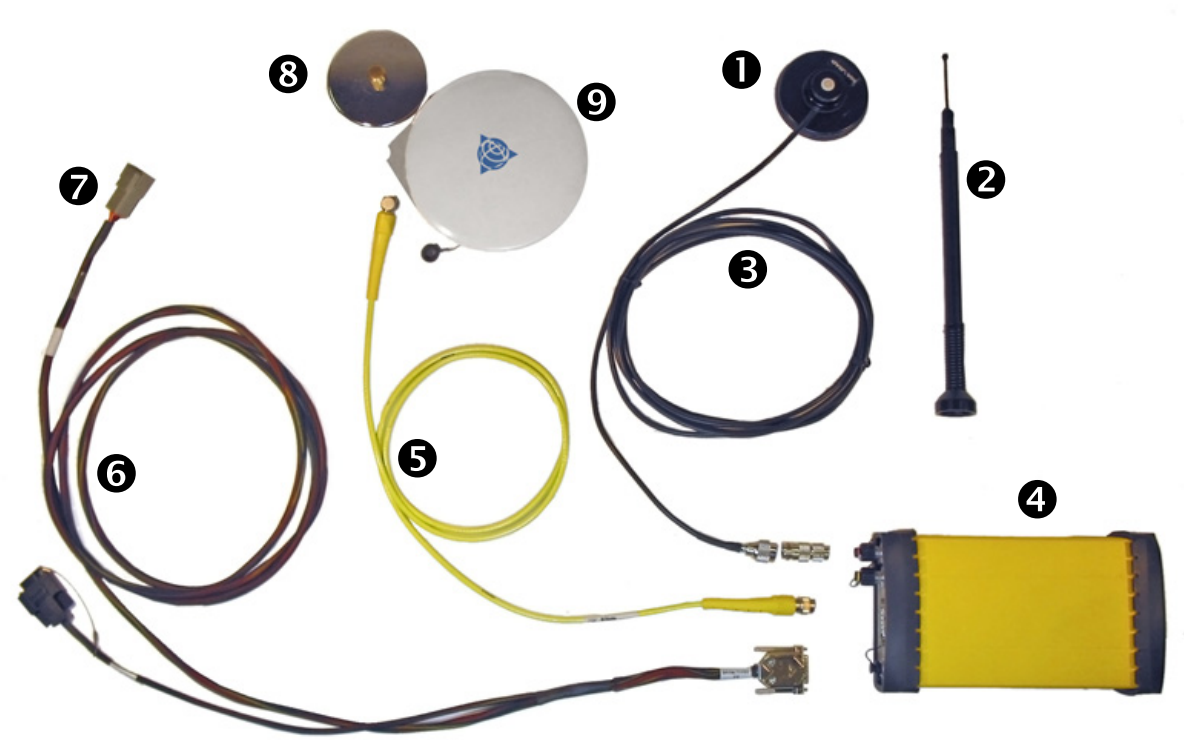


Step 5

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



*Ag*GPS 542 receiver components



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

Installing the *Ag*GPS 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.

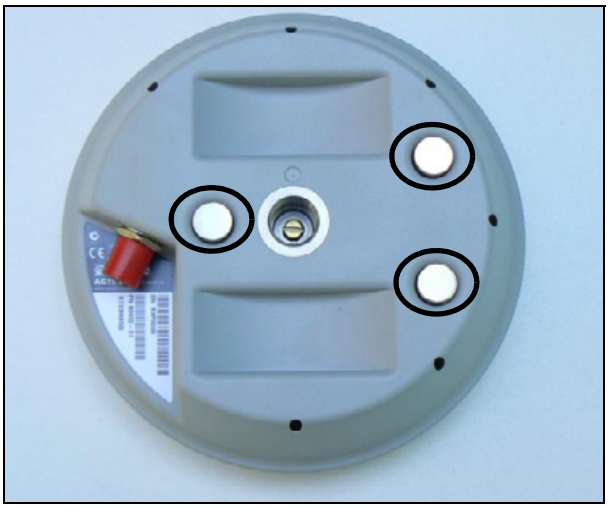
Note – *You can also install the Zephyr antenna on a Krone antenna mount, P/N 89743-00. See* *Installing the optional antenna bracket, page 20**.*

Step 1

Attach the large magnet with a $^{5}/_{8}$" 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

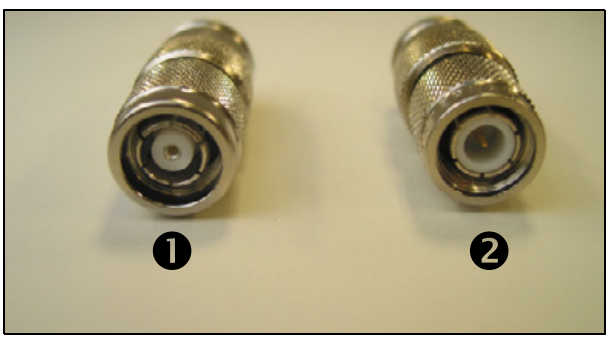
Mount the receiver in a convenient location in the cab. Route the antenna cable to the receiver and then connect it.



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.



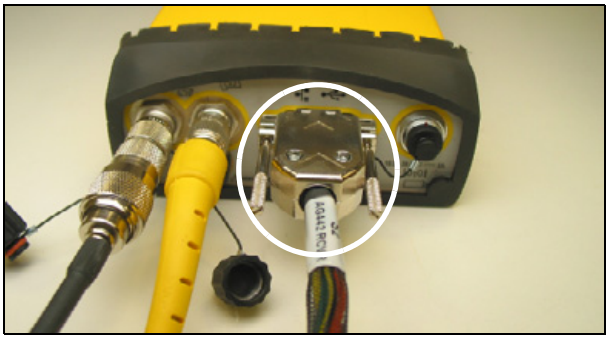
Step 7

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.



CHAPTER 4

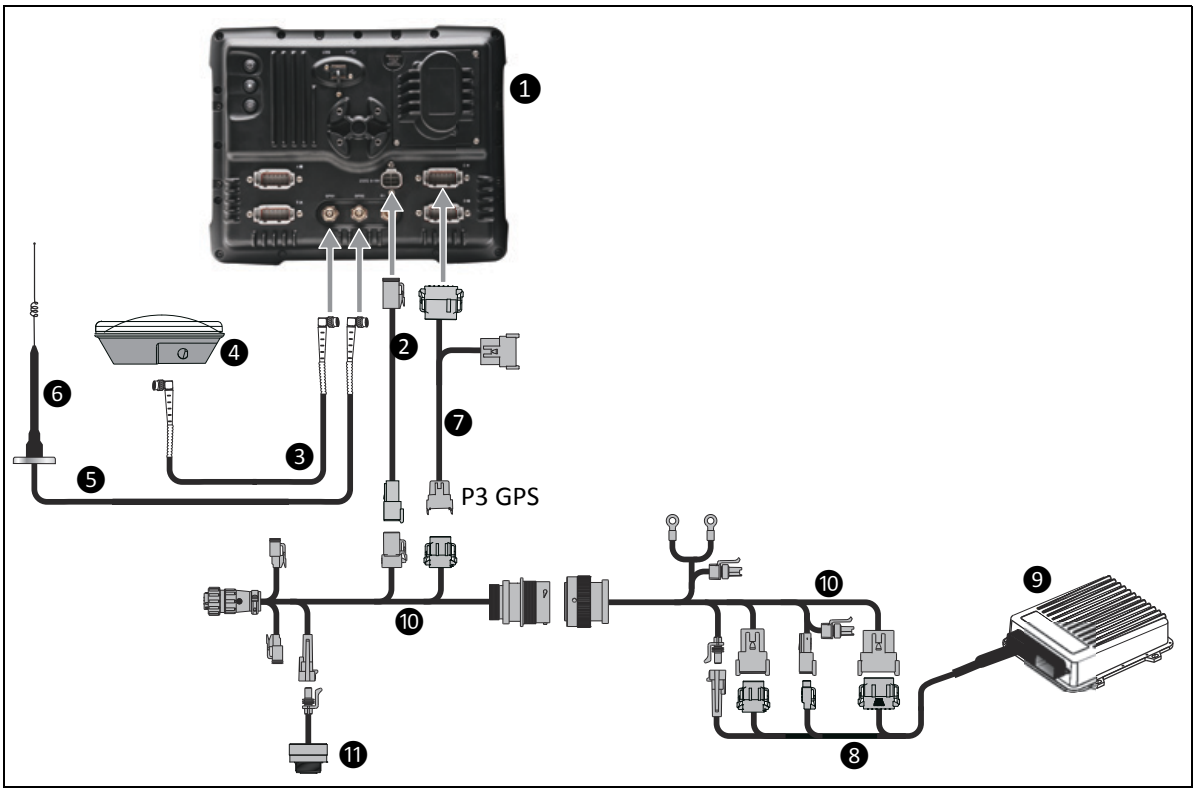
Display Installation

In this chapter:

- FmX integrated display components
- CFX-750 display components
- 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 and CFX-750 displays: Connecting accessory options
- FmX and CFX-750 displays: Installing the GNSS antenna and plate
- FmX and CFX-750 displays: Installing the RTK radio antenna

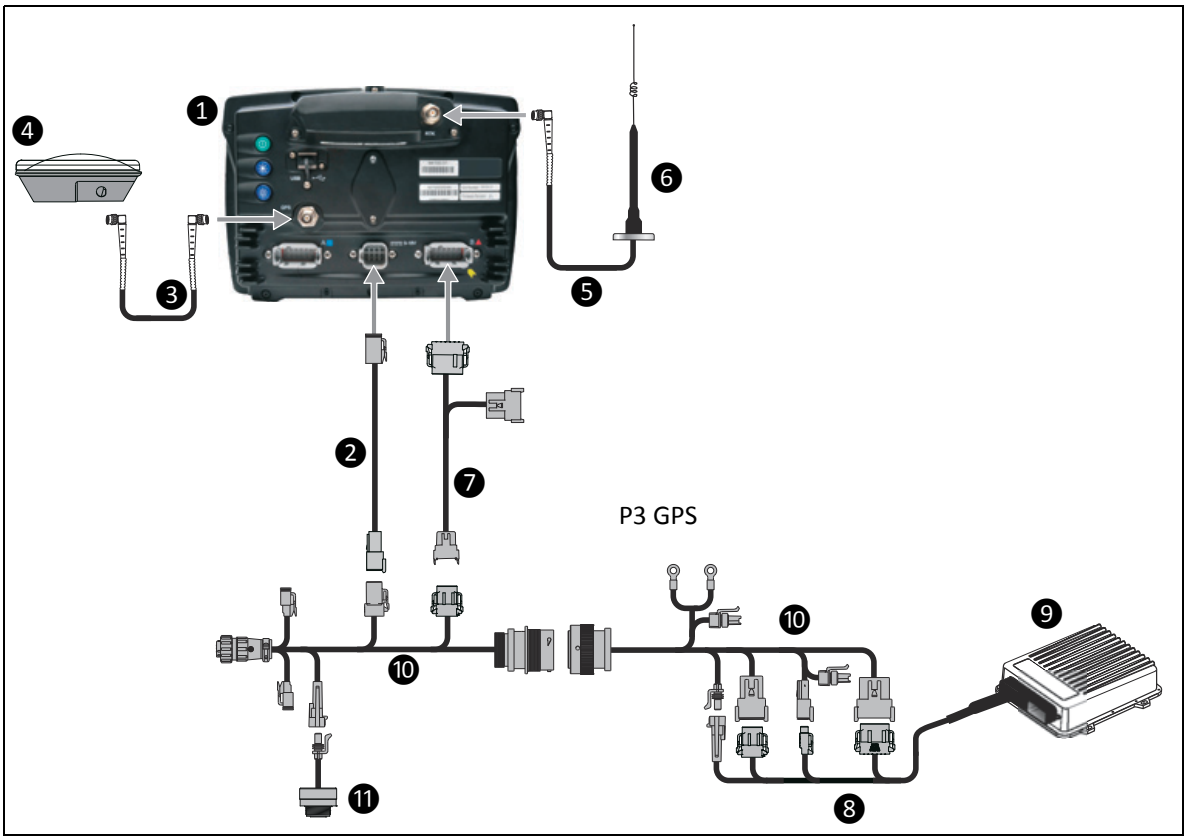
This chapter describes and how to install and connect the FmX integrated display, or the CFX-750 display in the vehicle.

FmX integrated display components



Item	Description	Trimble P/N
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	GPS, 5M, TNC/TNC RT angle cable	50449
❹	GNSS antenna	77038-00
❺	Antenna cable and base	72122
❻	Antenna Kit, Radio, Sitenet 900, 0db/3db/5db With Base	28822-10
❼	FmX to NavController II cable with port replicator ***Note –*** *Do not connect to P4 or P12 on NavController II*	75741
❽	NavController II main cable	54601
❾	NavController II	55563-00
❿	CAN Interface cable	89534
⓫	Sonalert	43104

CFX-750 display components



CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓬ 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	72122
❻	Antenna Kit, Radio, Sitenet 900, 0db/3db/5db With Base	22882-10
❼	CFX-750 to NavController II cable with port replicator ***Note –*** *Do not connect to P4 or P12on NavController II*	75741
❽	Main NavController II cable	54601
❾	NavController II	55563-00
❿	CAN Interface cable	89534
⓫	Sonalert	43104

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. Use the provided bolts to attach the bar mount to the rail

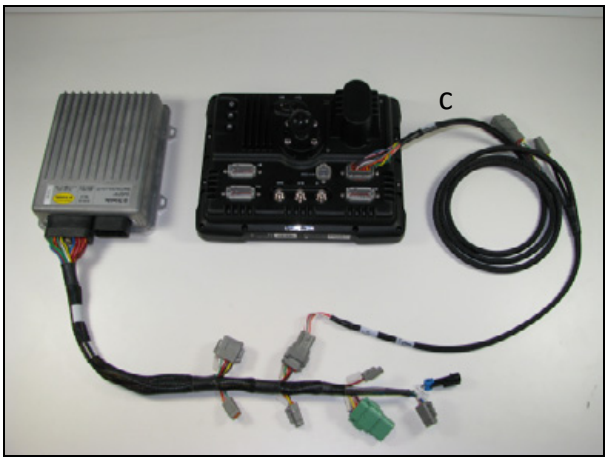
Step 2

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

FmX integrated display: Installing the wiring harness

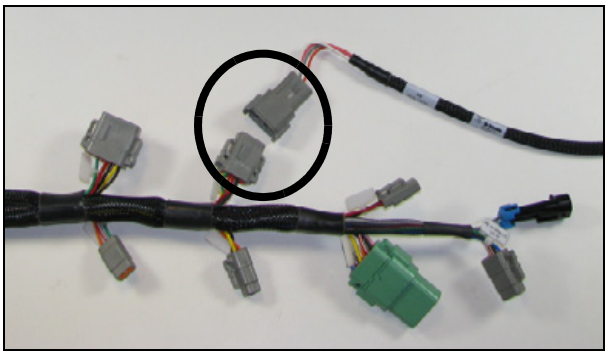
Step 1

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



Step 2

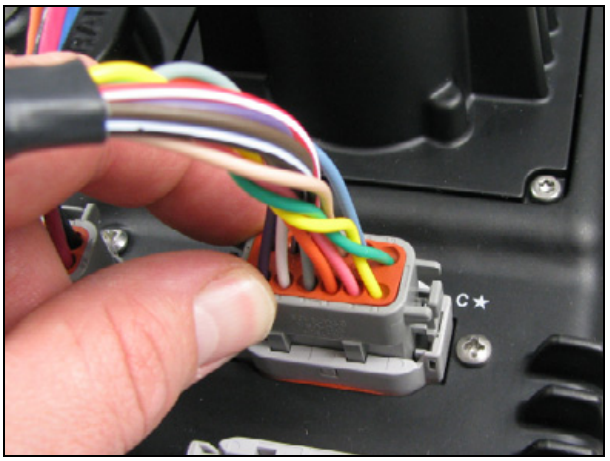
Connect the cable to the P3 connector on the NavController II main harness, and then route the cable from the NavController II to the mounting location on the FmX integrated display.



Step 3

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

Note – *To connect power to the FmX integrated display, see Power Harness Installation.*



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 *Power Harness 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 and CFX-750 displays: Connecting accessory options

AgCam

The AgCam and AgCam cable are accessory items that you can purchase separately from the display. The FmX 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 toward the display.



FmX display



CFX-750 display

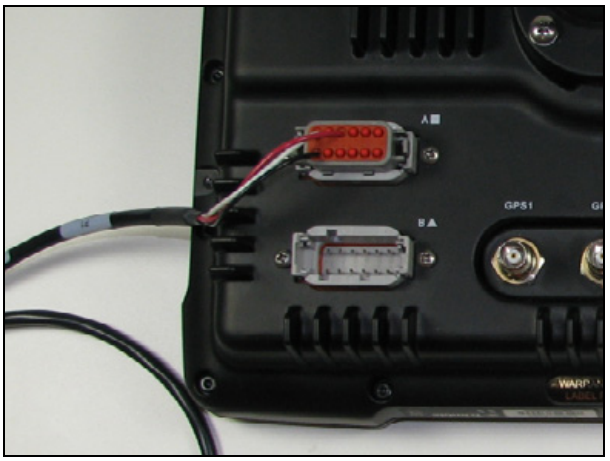
Step 3

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.



FmX and CFX-750 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 – *Because elevated grain bin extensions may block satellite signals, Trimble recommends that you use an elevated roof mount. See Antenna/Receiver Installation, page 18.*

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

Use one of the following methods:

- Optional Krone bracket mount
- VHB adhesive

Optional Krone antenna bracket

This component must be purchased separately.

Trimble recommends that you use this method for RTK and OmniSTAR operations.

Attach the AG25 or Zephyr antenna to the bracket. See Optional installation for the antenna bracket, page 49.



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. See Attaching the plate with VHB adhesive, page 51.

- **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.

Optional installation for the antenna bracket

For ease of installation of an AG25 GPS antenna, you can purchase an optional antenna bracket (P/N 89743-00), for all BiG X models.

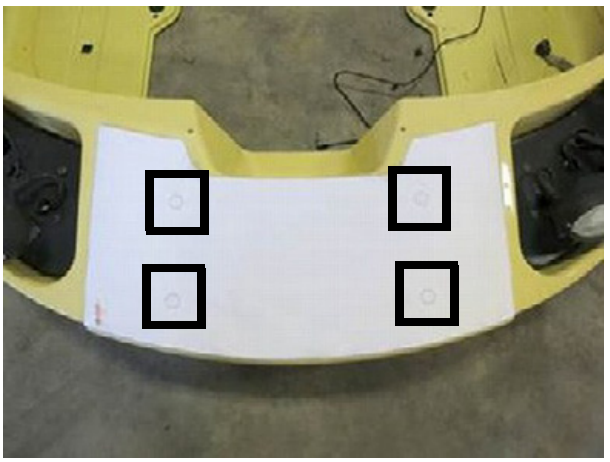
Step 1

Remove the roof cover from the machine.



Step 2

Use the provided paper template to determine the drilling locations for the four holes. Use tape to secure the template once it is correctly aligned.



Step 3

Use an 1/8" or smaller drill bit to start each of the four holes. Then remove the template and use a 1" step drill to drill the holes to a 1" internal diameter.



Step 4

Place the antenna bracket into the holes to verify a correct fit.



Step 5

Also hold the antenna bracket up to the bracket on the machine to verify a correct fit.

If you need to adjust for a better fit, gently bend the support bracket on the machine by hand.



Step 6

Run the antenna cable from the access hole in the center of the rear wall of the cab up to the roof.



Attaching the plate with VHB adhesive

Step 1

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

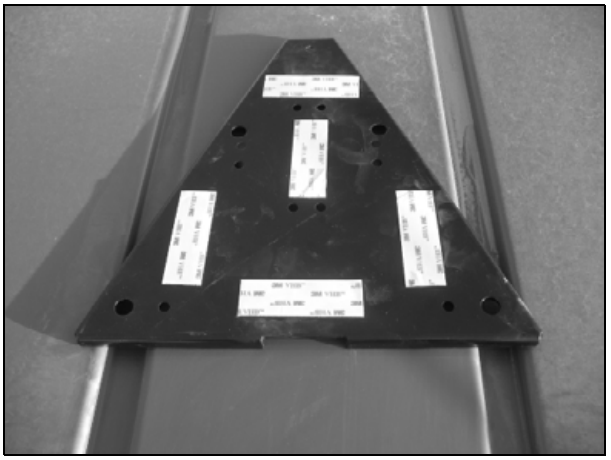


Step 2

V plate only

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

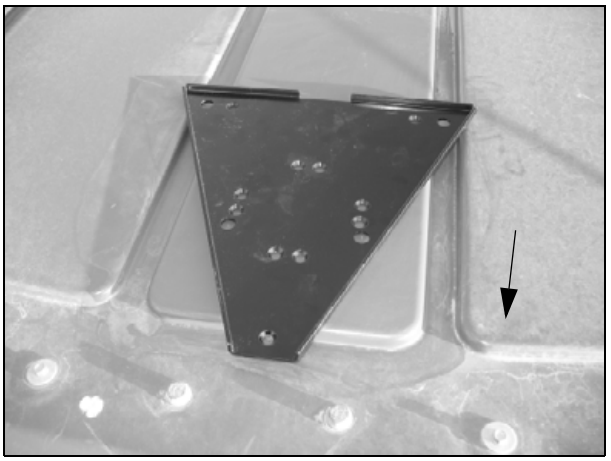
Note – *The VHB strips are pre-applied to the 4" x 6" plate.*



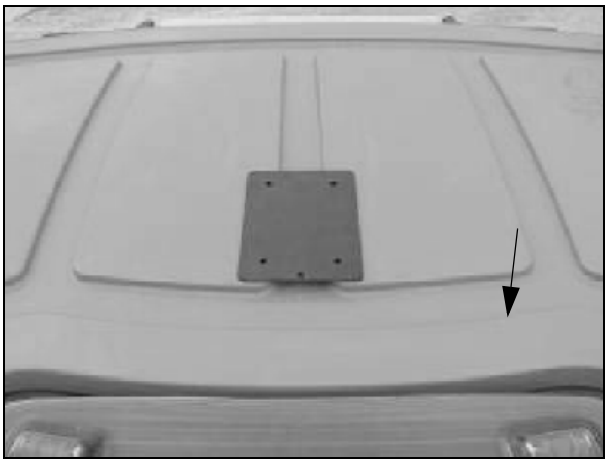
Step 3

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.*



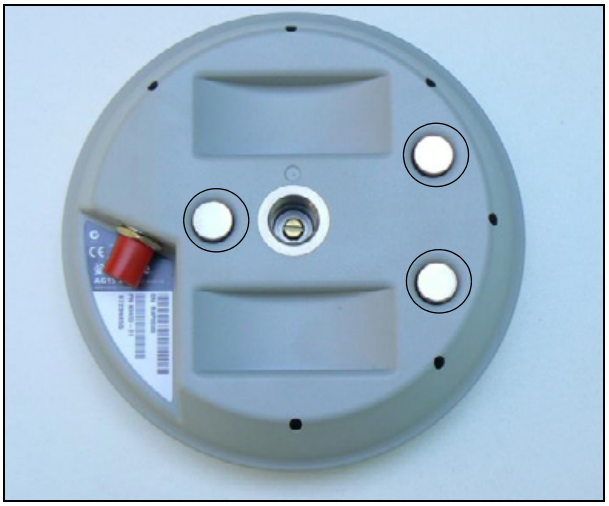
V plate



4" x 6" plate

Step 4

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



Otherwise, attach the large magnet with a $^{5}/_{8}$" stud to the GNSS antenna.



Step 5

RTK, OmniSTAR, DGPS, GLONASS 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.



FmX and CFX-750 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

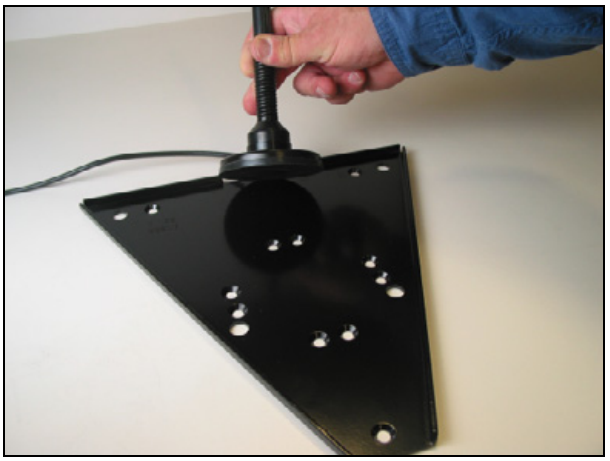


Step 2

Attach the magnetic radio antenna base to the rear f 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.



CHAPTER 5

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

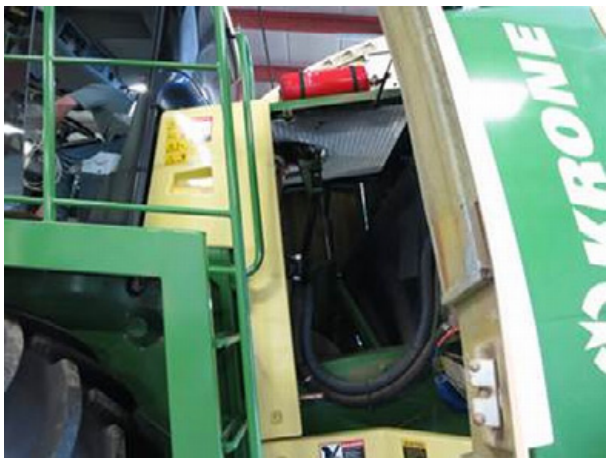
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

The controller will be installed outside the vehicle, on the left side, just behind the cab.



Step 1

Open the access panel just to the right of the ladder.



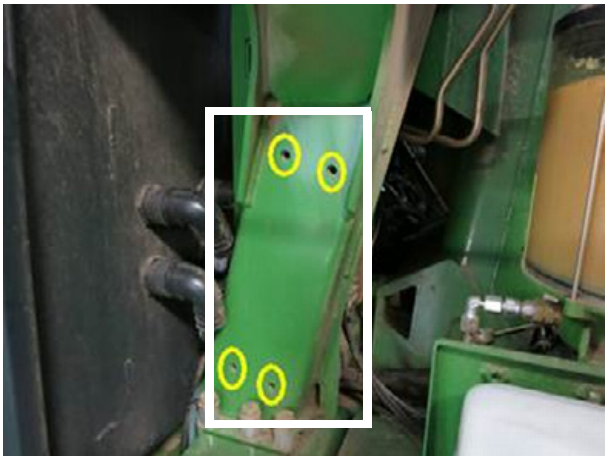
Step 2

Remove the smaller access panel behind the ladder. You should now see the portion of the frame where the controller will be mounted.



Step 3

Identify the four threaded holes in the frame to which the NavController II bracket will attach.



Step 4

Bolt the included controller bracket (P/N 89746) to the frame using the provided M10-1.5x20 mm hex head cap screws.

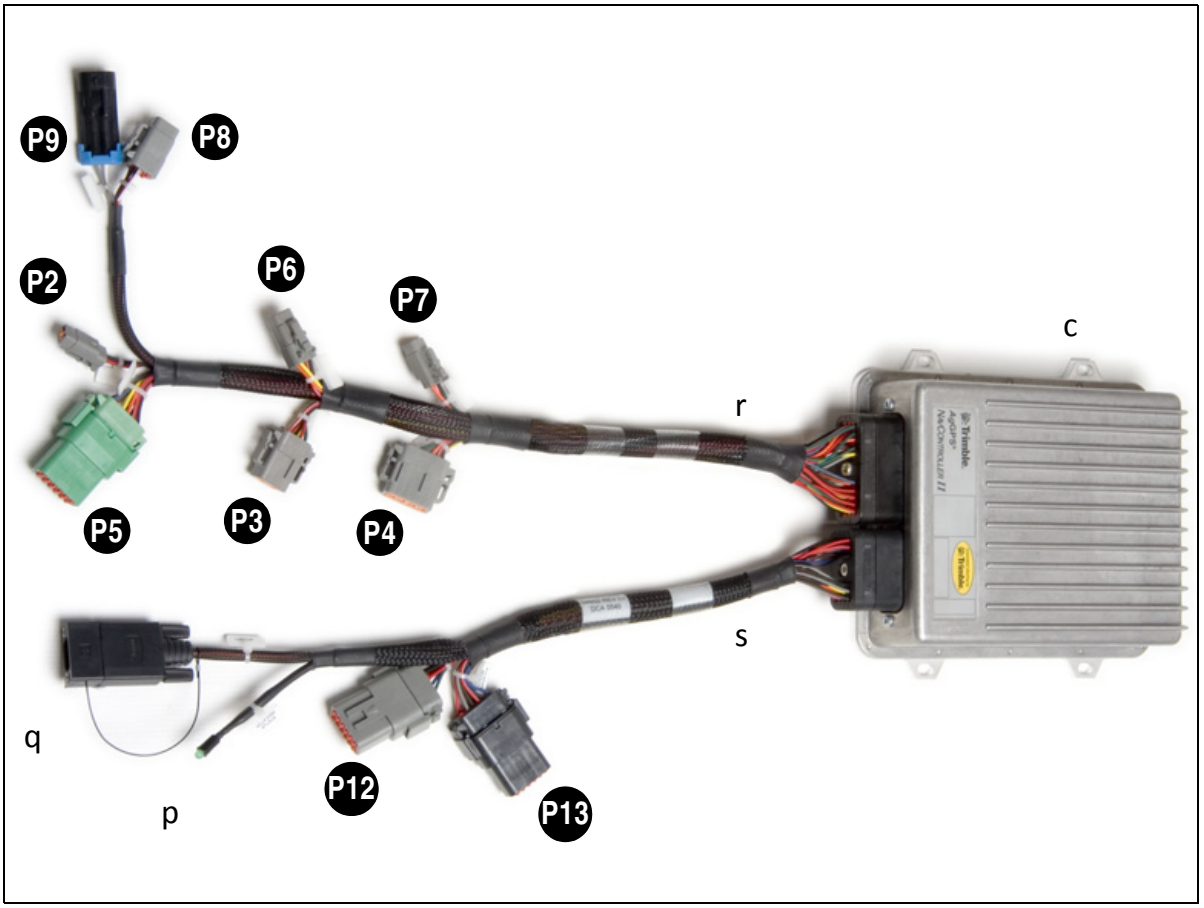


Step 5

Secure the NavController II to the bracket using four #10-32 Philips head screws in the provided bolt set (P/N 54809).



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

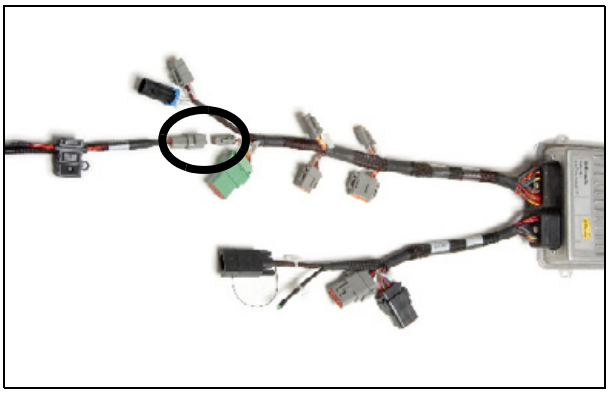
Item	Description
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector
16	Main harness
17	Auxiliary harness

Connecting the cables to the controller

Step 1

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

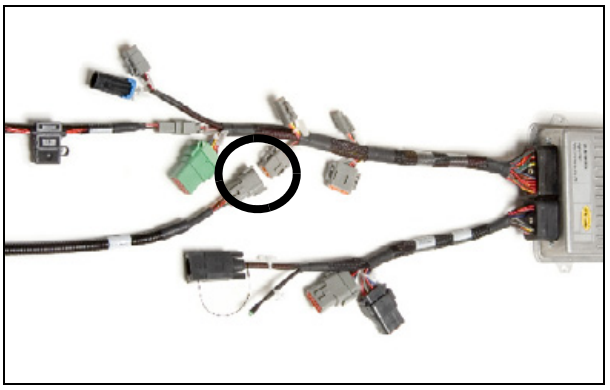
Note – *The power connection supplies power through the controller to all connected devices, including GPS and displays.*



Step 2

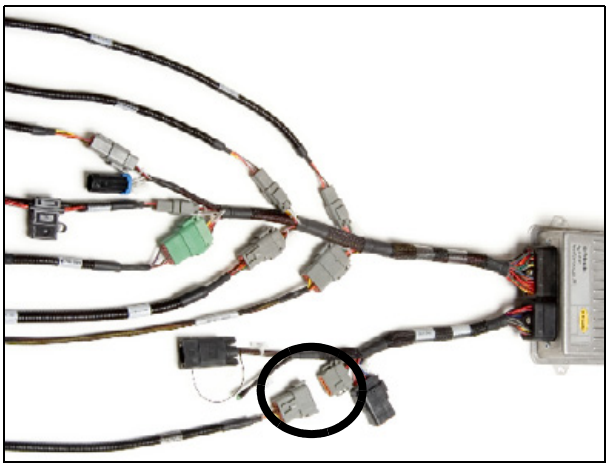
Connect the GPS cable connection to P-3, which is labeled “GPS”. P-3 is located on the main wiring harness.

For FmX and CFX-750 installations, plug the main display cable in here



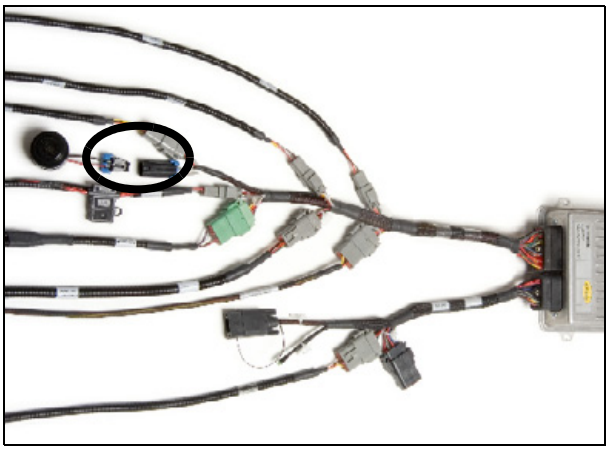
Step 3

Plug the Can interface cable connector, R12, into P12 on the NavController II auxiliary harness (P/N 54602).



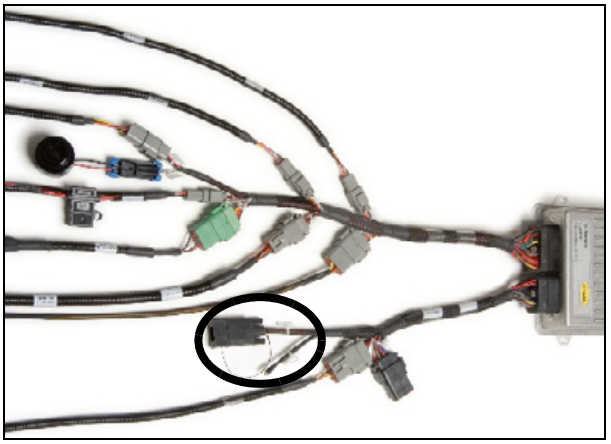
Step 4

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 5

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 6

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 6

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

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.

1. Connect the battery.
2. Download the latest external vehicle profiles, NavController II firmware, Flashloader 200 and Autopilot Toolbox from http://agpartners.trimble.com.
3. Connect and run the Autopilot Toolbox II software for system setup and calibration. For more information, refer to the *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.