Installation Instructions

Autopilot™ Automated Steering System

John Deere (AutoTrac Ready)

- **6230 / 6330 / 6420 / 6520 / 6530 / 6620 / 6630 / 6820 / 6830 / 6920 / 6930**
- **7130 / 7230 / 7430 / 7530 / 7720 / 7820 / 7920**
- **8120 / 8130 / 8220 / 8230 / 8320 / 8330 / 8420 / 8430 / 8520 / 8530**
- **8225R / 8245R / 8270R / 8295R / 8320R / 8345R**

Version 4.00
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Part Number 54035-39-E04

Trimble

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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.

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



Safety Information

Always follow the instructions that accompany a Warning or Caution. The information they provide is intended to minimize the risk of personal injury and/or damage to property. In particular, observe safety instructions that are presented in the following format:

WARNING – This alert warns of a potential hazard, which, if not avoided, can cause severe injury.

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

***Note** – An absence of specific alerts does not mean that there are no safety risks involved.*

Warnings

WARNING – When you are working on the vehicle's hydraulic systems, vehicle attachments that are suspended can drop. If you are working around the vehicle, you could suffer serious injury if an attachment dropped on you. To avoid this risk, lower all vehicle attachments to the ground before you begin work.

WARNING – If someone else attempts to drive the vehicle while you are working on or under it, you can suffer serious or fatal injuries. To avoid this possibility, install a lockout box on the battery terminal to prevent the battery from being reconnected, remove the key from the vehicle's ignition switch, and attach a "Do not operate" tag in the cab.

WARNING – Agricultural chemicals can pose serious health risks. If the vehicle has been used to apply agricultural chemicals, steam clean the vehicle to remove any chemical residue from the areas of the vehicle where you will be working.

WARNING – Vehicle cabs can be quite high in the air. To avoid potentially serious injury through falling from this height, always use the steps and handrails, and face the vehicle, when you enter or exit it.

Cautions

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

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

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

CAUTION – Always wear protective equipment appropriate to the job conditions and the nature of the vehicle. This includes wearing protective glasses when you use pressurized air or water, and correct protective welder's clothing when welding. Avoid wearing loose clothing or jewelry that can catch on machine parts or tools.

CAUTION – Parts of the vehicle may be under pressure. To avoid injury from pressurized parts, relieve all pressure in oil, air, and water systems before you disconnect any lines, fittings, or related items. To avoid being sprayed by pressurized liquids, hold a rag over fill caps, breathers, or hose connections when you remove them. Do not use your bare hands to check for hydraulic leaks. Use a board or cardboard instead.

CAUTION – Do not direct pressurized water at:
- electronic or electrical components or connectors
- bearings
- hydraulic seals
- fuel injection pumps
- any other sensitive parts or components



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

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CHAPTER

1

Introduction

- Technical assistance
- Your comments
- 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 other 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 GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

Note – *This manual describes Autopilot installation on the FmX® integrated display and the CFX-750™ display: Instructions for "the display" refer to either one of them. Where instructions apply to only one display, this is clearly identified.*

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**.

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. Email your comments to ReaderFeedback@trimble.com.

Manual system upgrade to Autopilot

EZ-Guide 500

Retain	Remove
EZ-Guide® 500 lightbar P/N 6610-xx 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 *Optional.* Remote keypad	Power connection cable: P/N 62818

FmX integrated display and CFX-750 display

Retain	Remove
FmX integrated display: P/N 93100-xx CFX-750 display: P/N 94000-xx Antenna for display: P/N 60600-02 (DGPS) or 77038-00 (OmniStar/RTK) Antenna to receiver cable: P/N 50449 Power cable FmX display: P/N 66694 Power cable CFX-750 display: P/N 77282 Basic cable (both displays): P/N 67258	

Required components

Kit required	Special tools
Platform kit: P/N 54035-39	5/16" drill bit Right angle drill or right angle extension Deutsch DTM crimp tool (see Troubleshooting Guide for purchasing information) 5000 psi hydraulic gauge and extension hose Allen wrench set (metric and SAE) 2" hole saw

Antenna mounting kits

Antenna options
Antenna spar mount: P/N 53676
John Deere quick release: P/N 65555
Antenna V plate mount and AgGPS 262 receiver magnetic mount: P/N 62388-01 (includes magnets for quick release of the AgGPS 262 receiver – see Chapter 4, Antenna/Receiver Installation)

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 54035-39	Steering control valve cable	Chapter 2
	Termination steering encoder connector	Chapter 2
	Manual override cable	Chapter 2
	AutoSense™ steering device and cabling	Chapter 3
	AutoSense mounting bracket and hardware	Chapter 3
	Power switch	Chapter 6
	Bolt kit controller	Chapter 8
Common parts	Controller	Chapter 8
	Controller mounting bracket	
	Cable kit: • Main wiring harness • Power bus auxiliary wiring harness • Sonalert alarm	
GPS receiver	GPS receiver	Chapter 4
	GPS antenna	
	GPS receiver power/data cable	
	RTK radio, cable, and radio antenna	
Display	EZ-Guide 500 lightbar	Chapter 3
	FmX integrated display	
	CFX-750 display	
	Display cable	
	Mounting bracket	
Roof bracket kit (P/N 53676)	Roof brackets	Chapter 2
	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.*

CHAPTER

2

AutoTrac Harness Component Connections

In this chapter:

- Identifying the steering position sensor
- Disconnecting the flow sensor (on models with a flow sensor)
- King Pin Phantom sensor components (P/N 78886)
- King Pin Phantom sensor components (P/N 67034)
- Disconnecting the King Pin sensor and connecting the Phantom sensor (on models with the King Pin sensor)
- Steering control valve cable components
- Connecting to the steering valve
- Manual override harness components
- Termination steering encoder connector components (P/N 58871)
- Connecting the steering wheel encoder

This chapter describes how to attach the AutoTrac components to the harness.

Identifying the steering position sensor

Two types of sensors may be used on late model tractors. Use the following sections to identify which of these is present:

- flow sensor
- king pin rotary sensor

Use the appropriate section to complete the installation.

Disconnecting the flow sensor (on models with a flow sensor)

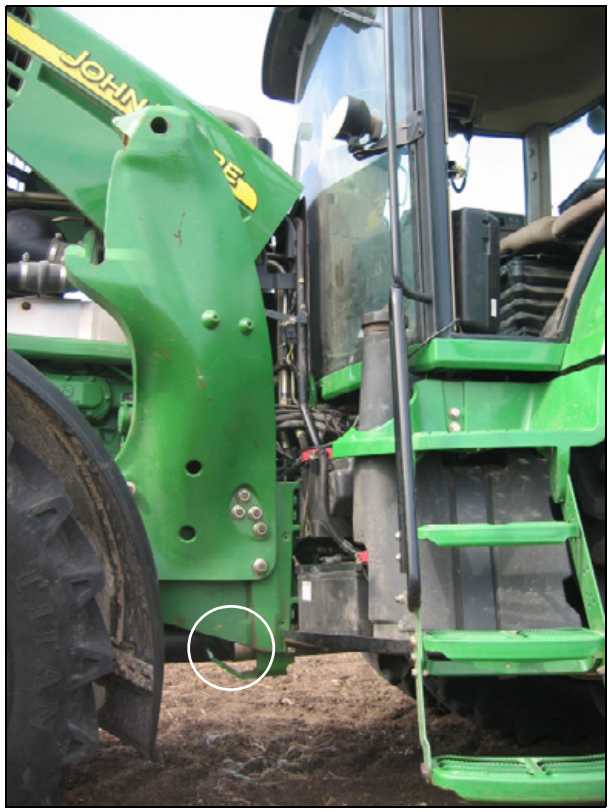
Step 1

Disable power to the vehicle by removing the negative cable from the battery.

Step 2

Large frame 7000 model

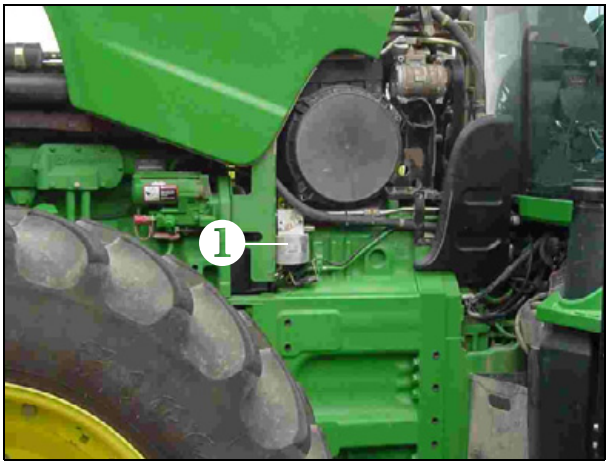
Locate the flow sensor. It is on the left side of the vehicle, just below the point where the frame meets the cab.



7000 model

8000 and 8xxxR models

To locate the flow sensor ❶ open the hood of the vehicle.



8x20 model



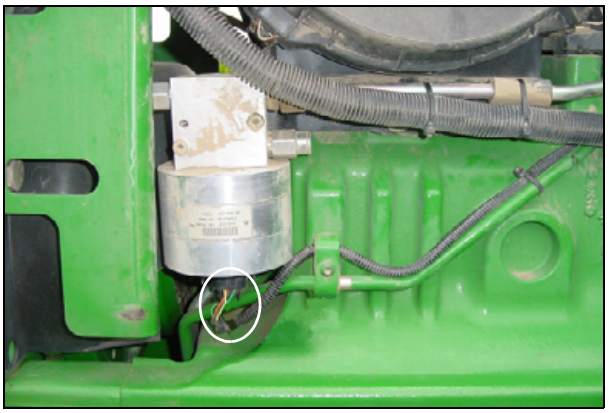
8x30, 8xxxR models

Step 3

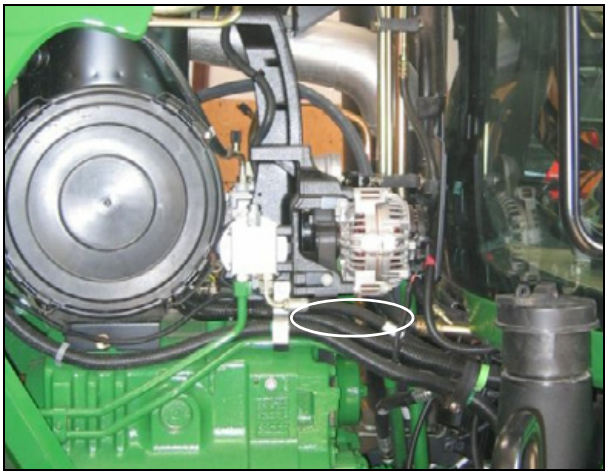
The flow sensor cable is attached to the flow sensor by a 6-pin connector. Locate the flow sensor cable and peel back the plastic conduit.



7xx0 models



8x20 models

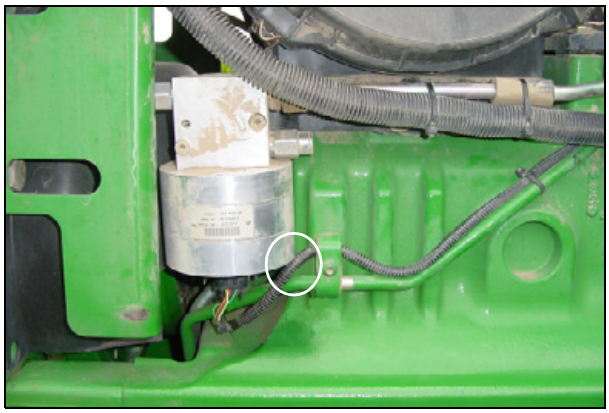


8x30, 8xxxR models

Step 4

The flow sensor cable has the following pin configuration:

Pin	Description
A	Not connected
B	Signal. Brown, gray, or yellow wire
C	Power
D	Power
E	Signal. Gray or green wire
F	Not connected



8x20 model shown

Depending on the tractor model, the two outer wires are in one of the following combinations:

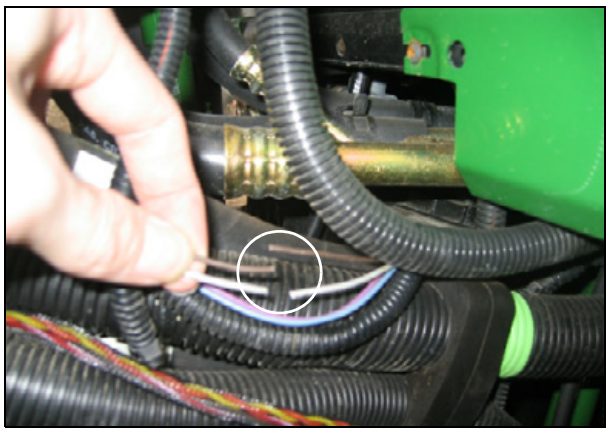
- Green and yellow
- Gray and brown
- Gray and gray

All models, excluding 8xxxR

Cut the two outer wires on the connector at a point approximately 6" away from the flow sensor.

8xxxR models

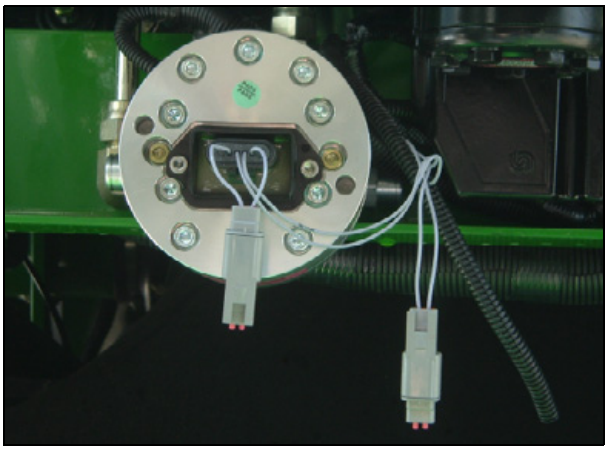
Cut the grey and white wires in connector cavities A and D.



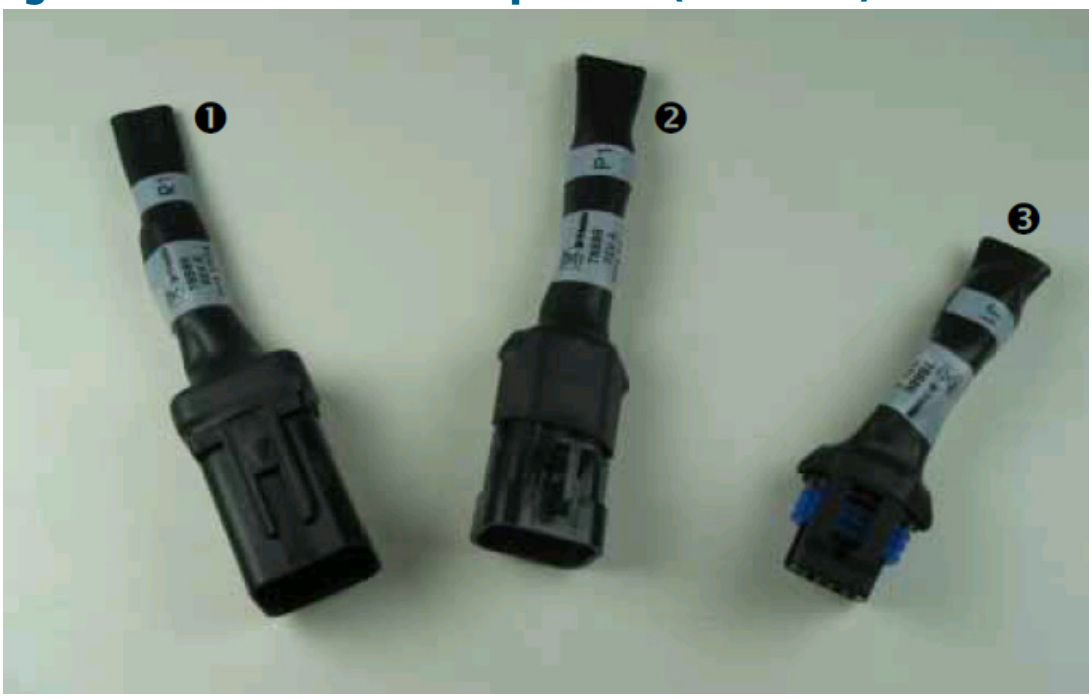
8x30 model shown

Step 5

Terminate the cut ends of the wires with the Deutsch DTM 2-pin connectors provided with the manual override harness (so you can restore the connection later, if necessary).



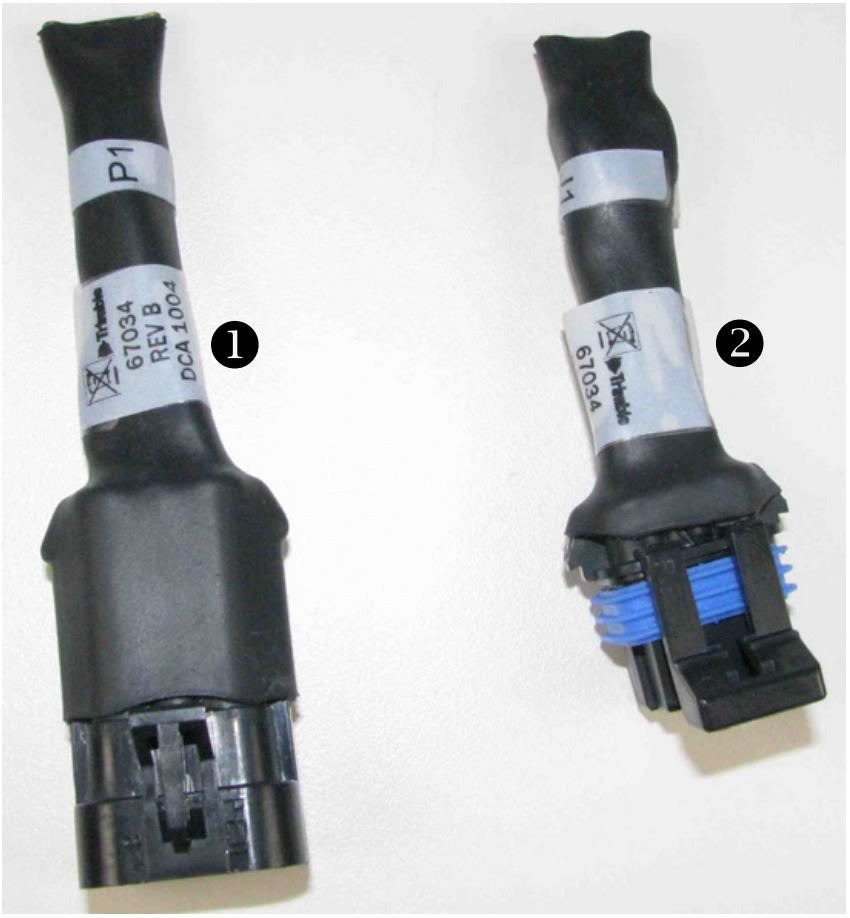
King Pin Phantom sensor components (P/N 78886)



Item	Description	Trimble P/N
❶	Phantom sensor plug	78886
❷	Phantom sensor	78886
❸	Phantom sensor receptacle	78886

King Pin Phantom sensor components (P/N 67034)

For 2010 and newer small frame 7xx0 machines and 6x30 machines use the following:



Item	Description	Trimble P/N
❶	Phantom sensor	67034
❷	Phantom sensor receptacle	67034

Disconnecting the King Pin sensor and connecting the Phantom sensor (on models with the King Pin sensor)

Some JD 6000, 7X30, 8X30, and 8xx0R ATR tractors are equipped with a kingpin steering sensor. If one is equipped, install the king pin phantom sensor.

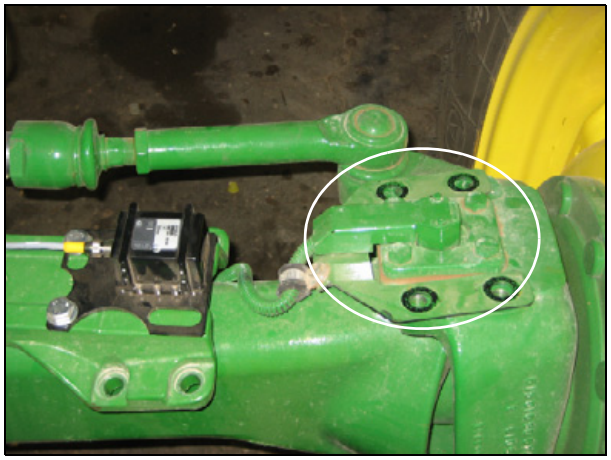
Note – *For 2010 6x30 machines and small frame 7000 models, use the king pin phantom sensor P/N 67034.*

6000 and small frame 7000 models

Step 1

Locate the steering angle sensor mounted on the kingpin on one of the front wheels.

The kingpin sensor is located on the front axle. You can identify it by the protective housing and wires.



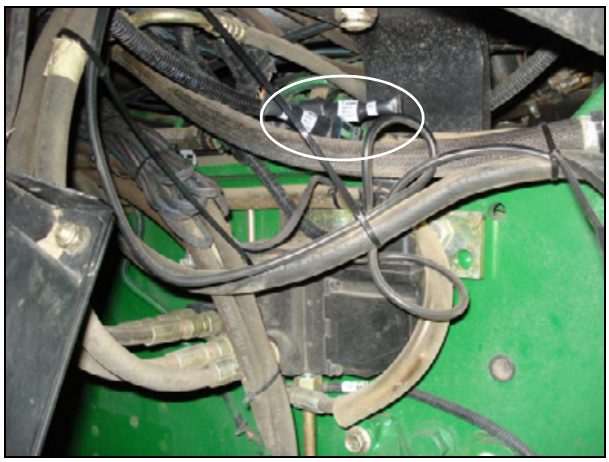
Step 2

Follow the sensor cable to the cab. Under the right front corner of the cab locate the 6-pin Delphi connector.



Step 3

Disconnect the 6-pin Delphi connector located under the right front corner of the cab.



Step 4

Plug in the phantom sensor receptacle and plug connectors provided in the kit.



Step 5

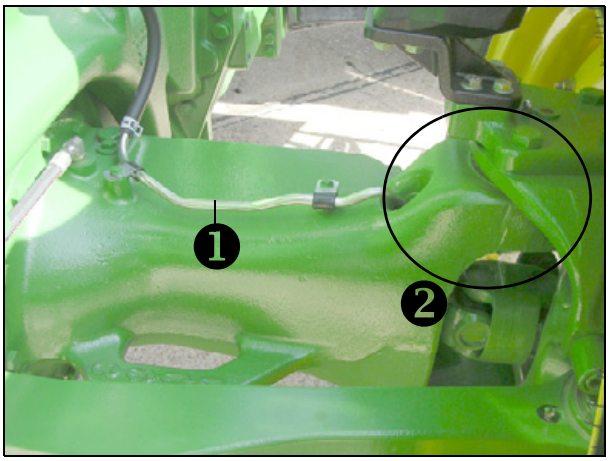
Start the tractor and engage the Autopilot system. Verify that no steering faults appear.

Large frame 7000 and 8000 models

Step 1

Locate the steering angle sensor mounted on the kingpin on one of the front wheels.

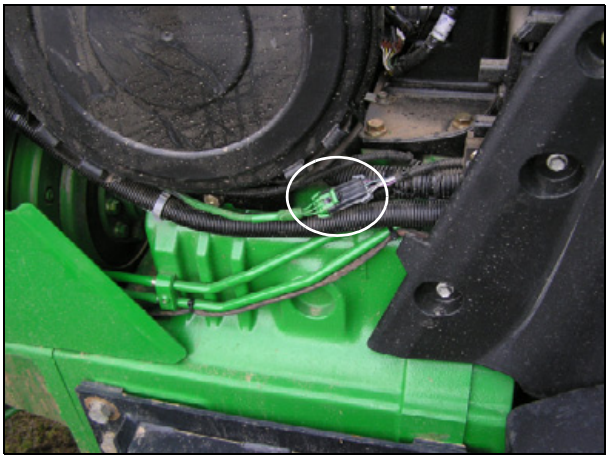
The kingpin sensor is located on the front axle. You can identify it by the wires inside the protective tube ❶ and the new axle housing ❷.



8430 model shown

Step 2

Follow the cable that is connected to the sensor. About halfway between the sensor and the cab, there is a 6-pin Delphi connector. Disconnect the connector.



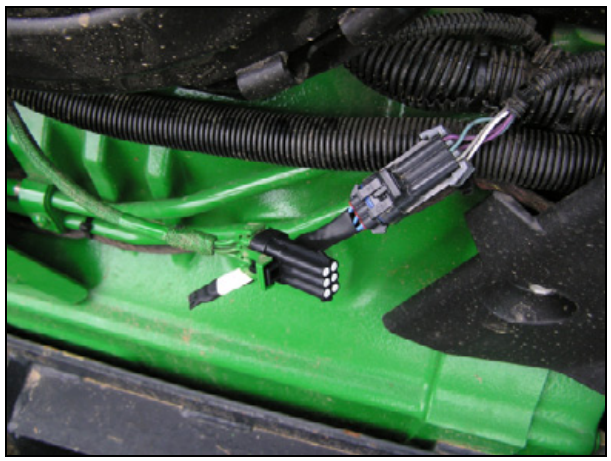
8430 model shown

Step 3

Plug in the phantom sensor receptacle and plug connectors provided in the kit.



8430 model shown



8430 model shown

Step 4

Start the tractor and engage the Autopilot system. Verify that no steering faults appear.

8xxxR models

Step 1

Locate the steering sensor and follow the cable that is connected to the sensor. Disconnect the 8-pin Tyco connector located about halfway between the sensor and the cab.



Step 2

Plug in the supplied phantom sensor receptacle and plug connectors.

Note – *Secure the cables to ensure they are not damaged.*



Step 3

Start the tractor and engage the Autopilot system. Verify that no steering faults appear.

Steering control valve cable components



Item	Description	Trimble P/N
❶	J3 steering control valve connector	
❷	P8 hydraulic valve	
❸	Steering control valve cable	57536

Connecting to the steering valve

6000 and small frame 7000 models

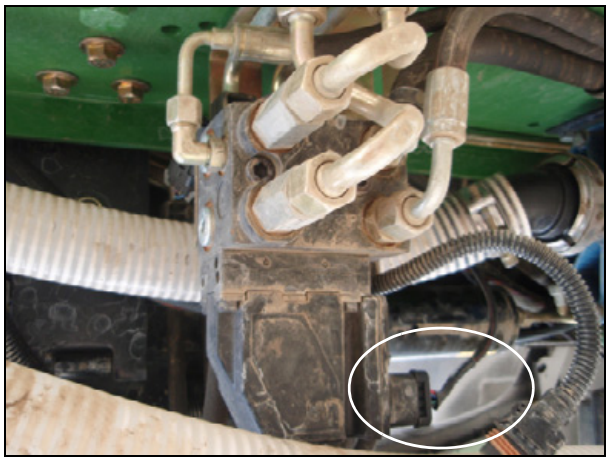
Step 1

Locate the steering valve (Sauer Danfoss valve) and the Delphi Metri-Pack 150 connection under the right front corner of the cab.



Step 2

Disconnect the Delphi Metri-Pack 150 connection.



Step 3

Connect J3 of the steering control valve cable to the steering valve.



Step 4

Route the cable under the cab toward the left, rear corner and then up through the rubber cab cable feed-through (below the lower left corner of the rear window).

Connect the cable to P8 of the main controller harness and then secure it

Large frame 7000 and 8000 models

Step 1

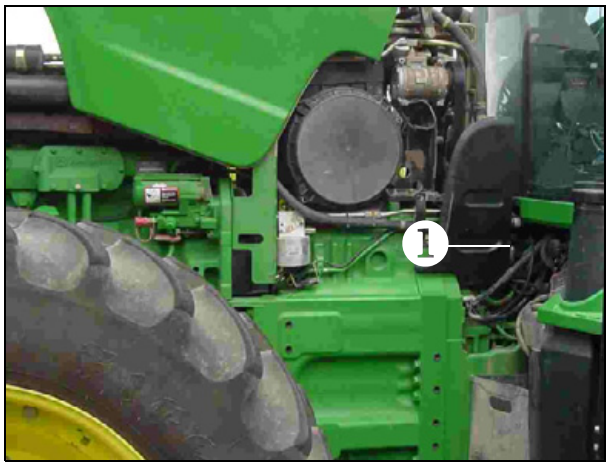
7000 model

Remove the bolts from the water reservoir and then remove the reservoir.



Step 2

Locate the steering valve (Sauer Danfoss valve) and the Delphi METRI-PACK 150 connection ❶.

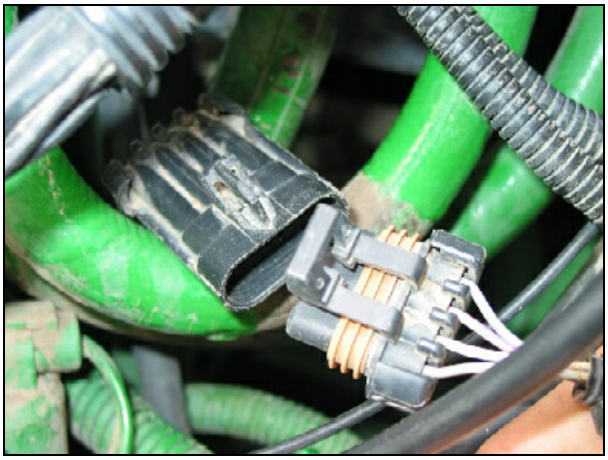


8000 model shown

Step 3

8000 model

Locate the adapter cable (approximately 6" long) connected to the Sauer Danfoss valve. On the end is a Delphi METRI-PACK 150 connection. Disconnect the Delphi METRI-PACK connection.



Step 4

7000 model

Connect J3 of the steering control valve cable to the steering valve.

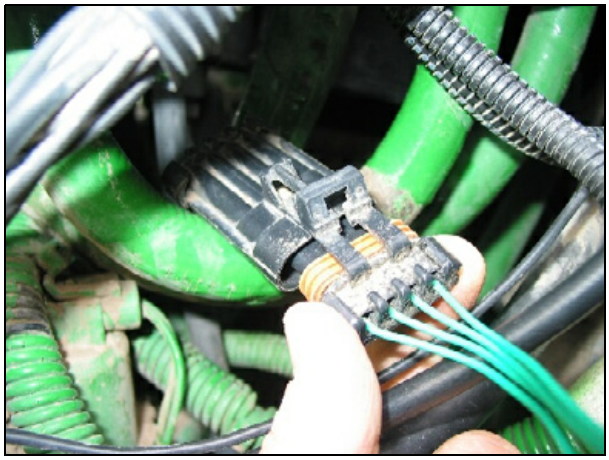


7000 model

Step 5

8000 model

Connect J3 of the steering control valve cable to the adaptor cable. Cover the free end of the disconnected connector and secure.

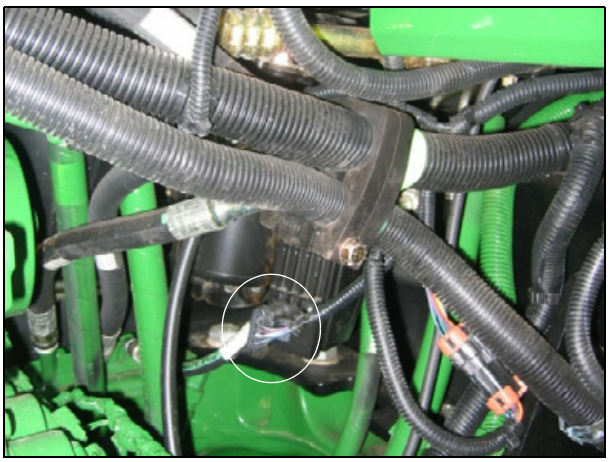


8000 model

Step 6

8000 model

Connect J3 of the steering control valve cable to the steering valve.



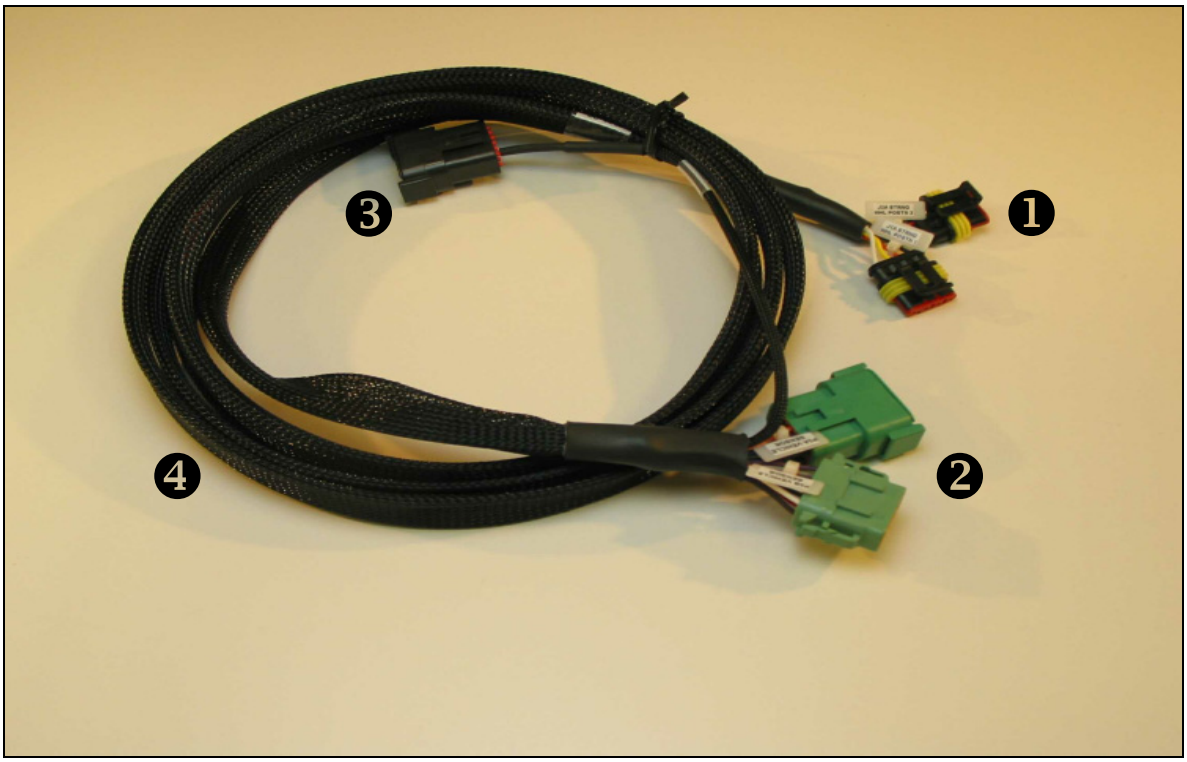
8000 model

Step 7

Route the cable under the cab toward the left, rear corner and then up through the rubber cab cable feed-through (below the lower left corner of the rear window).

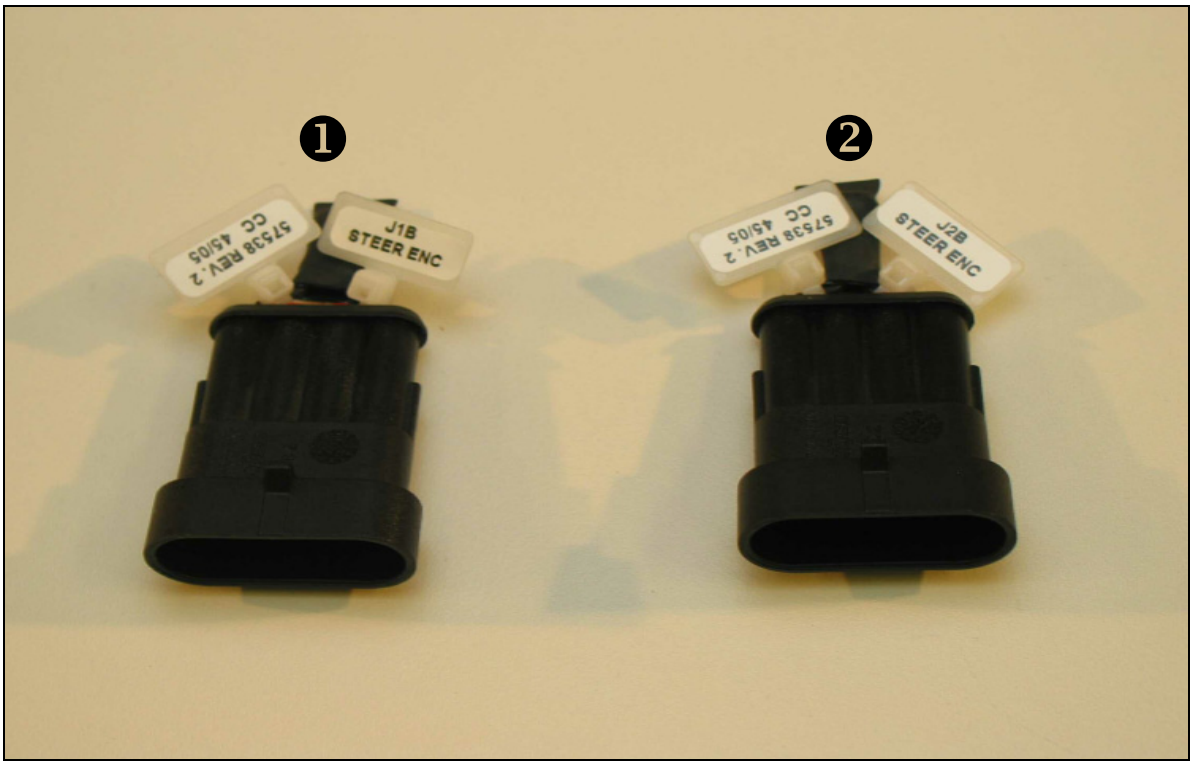
Connect the cable to P8 of the main controller harness and then secure it.

Manual override harness components



Item	Description	Trimble P/N
❶	J1A and J2A steering encoder jumper	
❷	P5A and P5B vehicle sensor	
❸	P13 spare sensor	
❹	Manual override harness (P/N)	57535

Termination steering encoder connector components (P/N 58871)



Item	Description	Trimble P/N
❶	J1B termination steering encoder connector	58871
❷	J2B termination steering encoder connector	58871

Connecting the steering wheel encoder

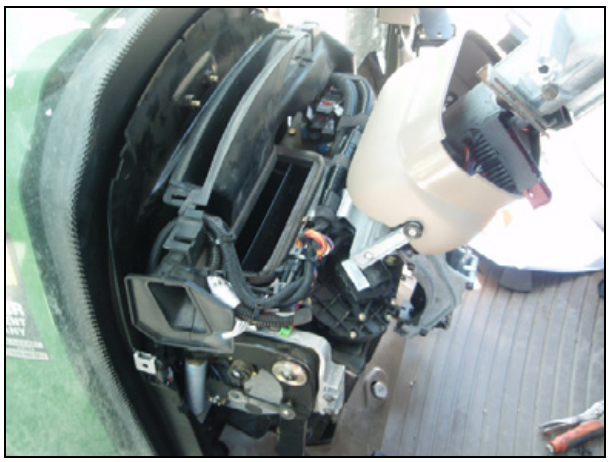
6000 and small frame 7000 models

Step 1

Remove the steering column cover.



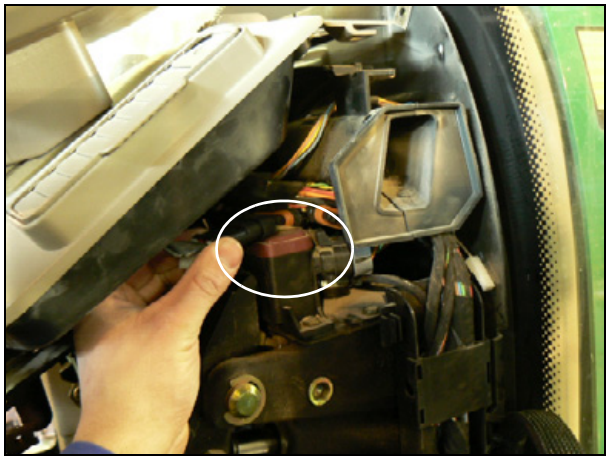
JD7420 standard cab shown



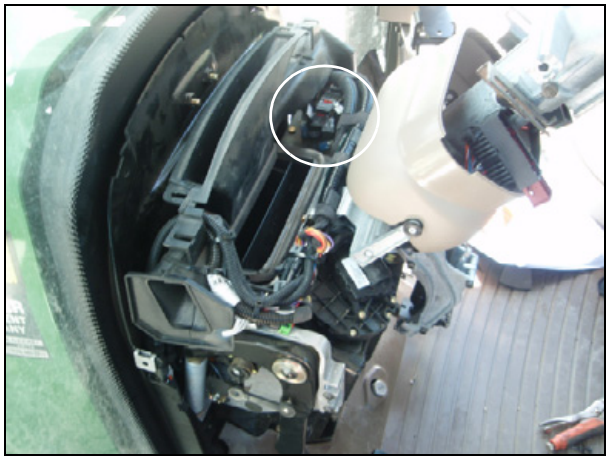
JD 6430 premium cab shown

Step 2

Locate the steering wheel encoder harness and unplug the two 4-pin connectors.



JD7420 standard cab shown



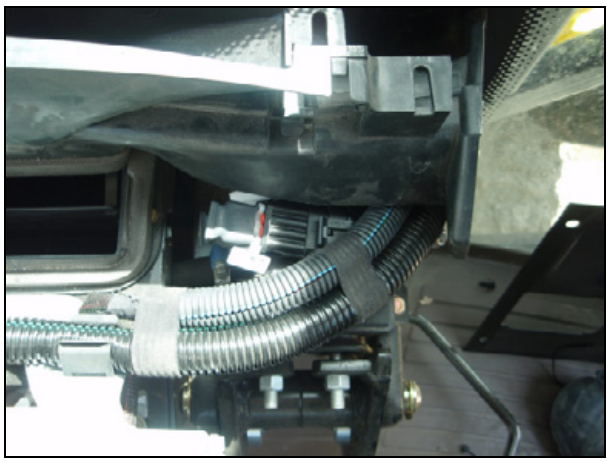
JD 6430 premium cab shown

Step 3

Connect the two termination connectors J1B and J2B into the mating connectors on the tractor harness (it does not matter which connector is connected to which mating connector).



JD 7420 standard cab shown



JD 6430 premium cab shown

Step 4

Connect J1A and J2A (from the manual override harness) into the mating connector of the tractor harness (it does not matter which sensor is connected to which connector).

Connect P13 (from the manual override harness) to connector P13 on the auxiliary controller harness.

Connect P5A (from the manual override harness) to connector P5 of the main controller harness.

For more information, see Chapter 8, Controller Installation.



JD 7420 standard shown



JD 6430 premium shown

Large frame 7000 and 8000 models

Step 1

Remove the steering column cover.



Step 2

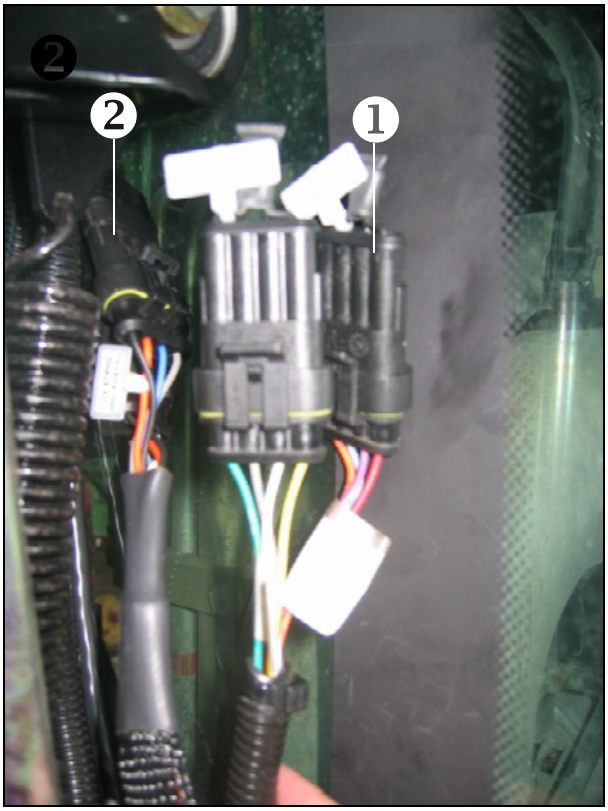
Locate the steering wheel encoder harness and unplug the two 4-pin connectors.



Step 3

Connect the two termination connectors J1B and J2B ❶ into the mating connectors on the tractor harness (it does not matter which connector is connected to which mating connector).

Connect J1A and J2A ❷ into the mating connector of the tractor harness (it does not matter which sensor is connected to which connector).



Step 4

Connect P13 (from the manual override harness) to connector P13 on the auxiliary controller harness. Connect P5A (from the manual override harness) to connector P5 of the main controller harness.

For more information, see Chapter 8, Controller Installation.

CHAPTER

3

AutoSense Device Installation

In this chapter:

- AutoSense steering device components
- Installing the AutoSense steering device
- Preparing the harness (P/N 54602 Rev C)

This chapter describes how to install the AutoSense™ steering device.

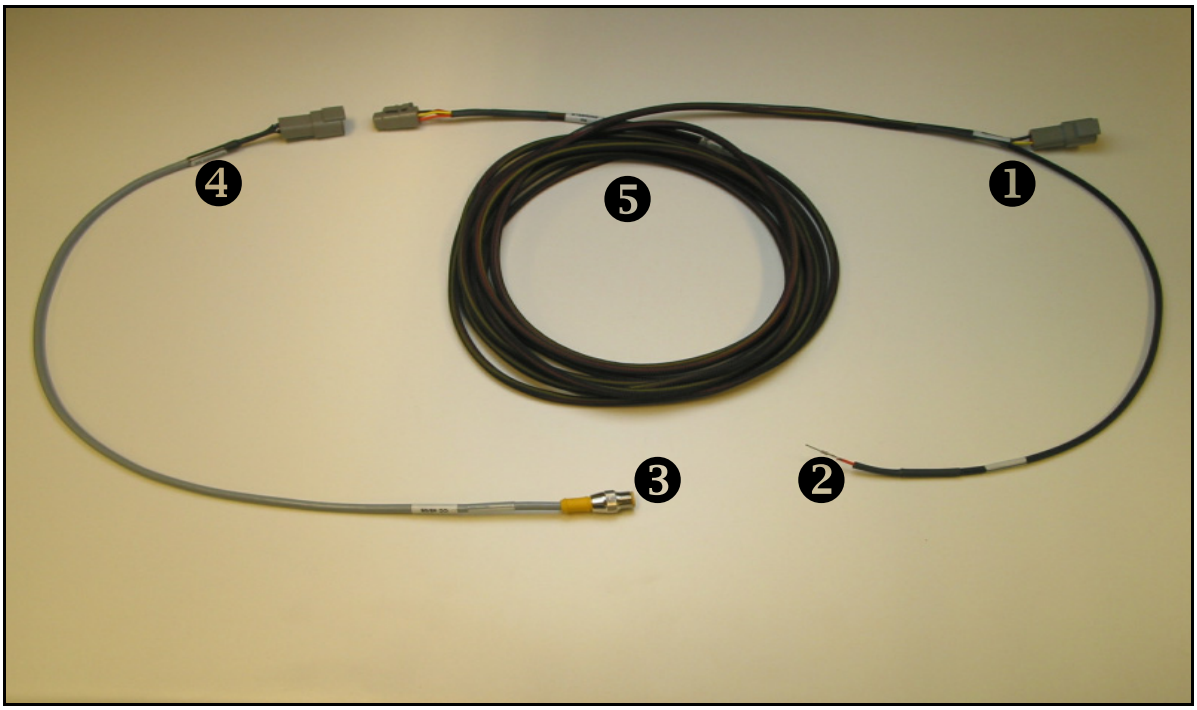
If the required mounting location is not accessible, chose a different place. To ensure proper function, the AutoSense device must be located where it is free of obstructions and can rotate with the wheels when they turn.

On articulated vehicles, mount the AutoSense device on the opposite side of the pivot point to the Autopilot controller.

Mount the device base down or base up so that it maintains a level orientation. Do not mount it on its side. An angle of up to 10° in any direction is acceptable.

To avoid stretching the cable, leave adequate length on the service loop.

AutoSense steering device components



Item	Description
❶	P-6 connector
❷	Power connector
❸	AutoSense connector
❹	Jumper cable (P/N 57560)
❺	AutoSense steering cable (P/N 57885)

Installing the AutoSense steering device

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

Step 1

Identify the location where you will install the AutoSense device.

The included brackets are designed to attach to the top of the steering kingpin or to the fender mount bracket.

If bolts are currently installed in the location, remove them.



6000 model

Step 2

If you removed bolts in Step 1, use them to install the bracket to the vehicle.

If you did not remove bolts in Step 1, use the bolts provided in the kit to install the bracket to vehicle.



7000 model



8000 model

Step 3

Mount the AutoSense device so the connector is in the most protected position. Use the four #6 socket head cap screws (provided)



6000 model



7000 model

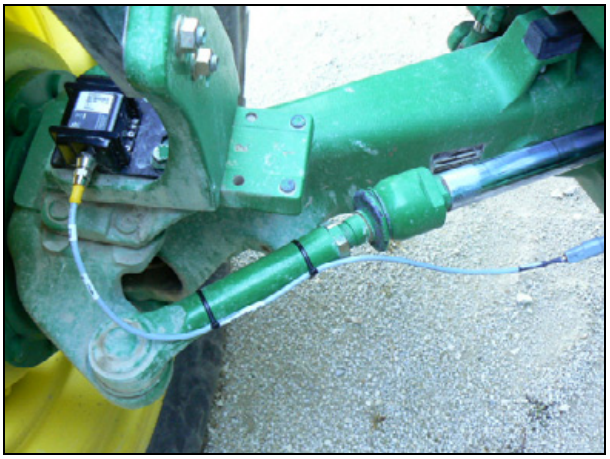


8000 model

Step 3

Route the steering cable to the steering device along the frame rail and connect it to the steering device.

Note – *Turn the steering wheel to the full left and the full right to ensure that there is enough spare harness.*



6000 model



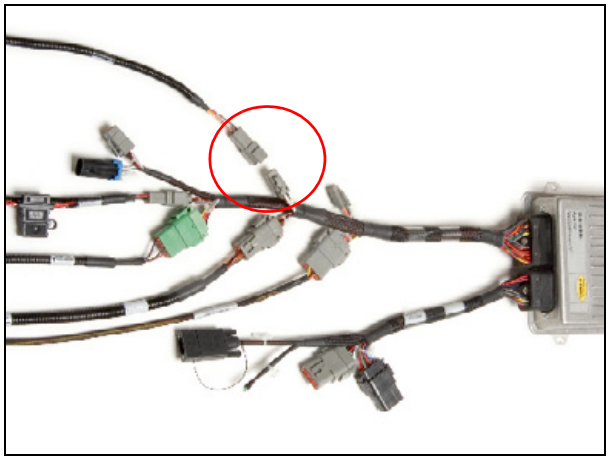
7000 model



8000 model

Step 4

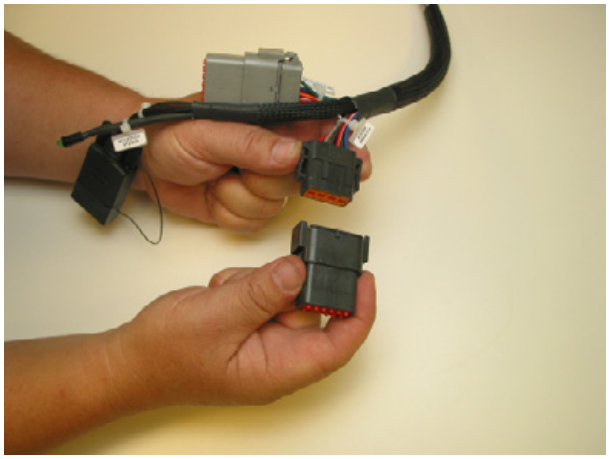
Connect the steering device cable connection to P-6 on the main wiring harness, which is labeled “Steering Sensor”.



Preparing the harness (P/N 54602 Rev C)

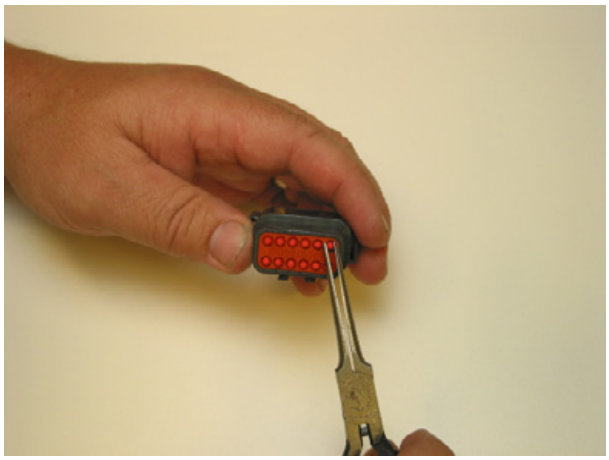
Step 1

Remove the black Deutsch DTM receptacle from the P-13 sensors leg of the auxiliary harness. See Chapter 8, Controller Installation.



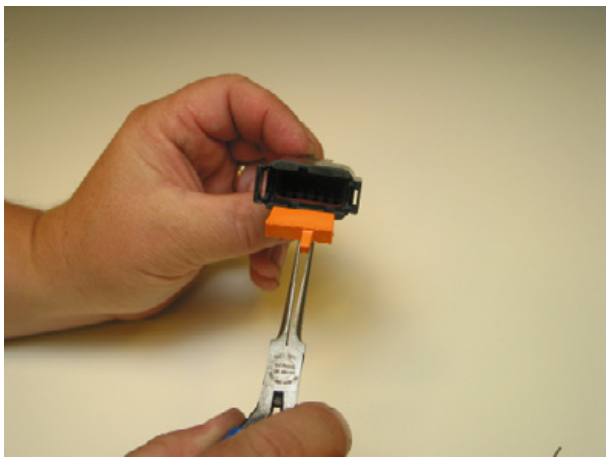
Step 2

Remove the plug from cavity number 1.



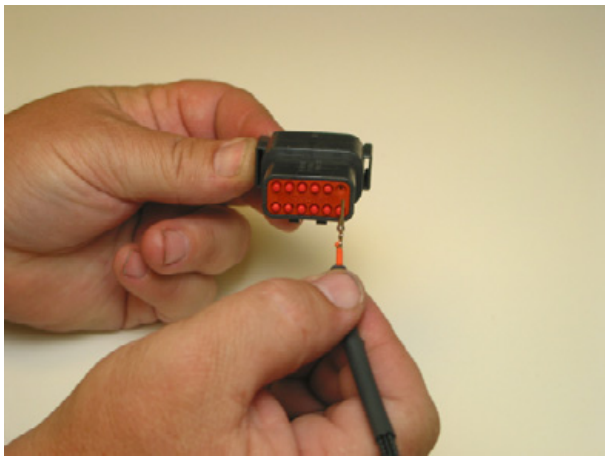
Step 3

Remove the wedge from the connector.



Step 4

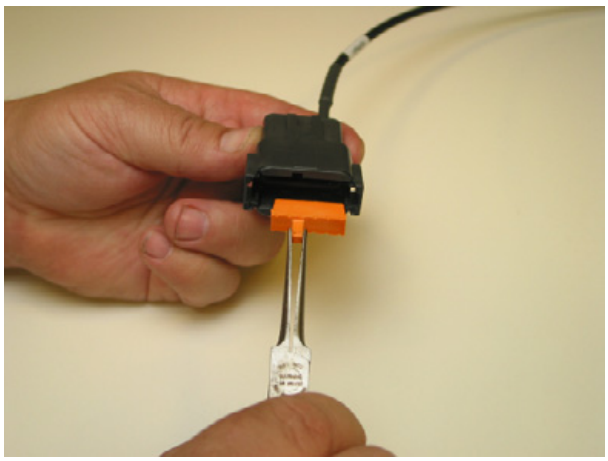
Insert the DTM pin labeled "Cavity 1" into the connector.



Step 5

Pull back on the wire to seat the pin.

Replace the wedge in the connector.



CHAPTER

4

Antenna/Receiver Installation

In this chapter:

- Antenna and receiver installation options
- Assembling and installing antenna solutions using the John Deere Starfire antenna bracket adaptor
- AgGPS 262 GPS receiver with AgGPS 450/900 radio module (if equipped) components
- Installing the AgGPS 262 GPS receiver with AgGPS 450/900 radio module (if equipped)
- Installing an AgGPS 262 receiver with magnetic feet
- AgGPS 432/442 receiver components
- Installing the AgGPS 432/442 receiver

This chapter describes how to install an *Ag*GPS 262 receiver and *Ag*GPS radio module, an *Ag*GPS 332 receiver and antenna, or an *Ag*GPS 442 receiver and antenna.

Note – *To install the antenna for an EZ-Guide 500 system, see Chapter 5, Display Installation.*

Antenna and receiver installation options

There are several options for mounting components (the antenna, radio module, or GPS 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 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 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 49.
- **Starfire quick release mount** – Attach the required receiver or receiver mount plate as described in the Starfire adaptor section. See page page 52.
- **Magnetic mounting** – Magnetic mounting for quick release is available for both VHB and spar type mounting:

Possible mounting methods

GPS receiver	V plate on spar (removable)	VHB plate on roof (removable)	Standard *Ag*GPS 262 plate bolted to spar (permanent)	Starfire mount (removable)
*Ag*GPS 262 receiver	✓	x	✓	✓
*Ag*GPS 432/442 receiver	✓	x	x	✓
FmX integrated display CFX-750 display	✓	✓	✓	✓

Notes:

– *For quick release magnetic mounting with an AgGPS 262 receiver, order the kit listed in Antenna mounting kits, page 11 and bolt the V plate to the spar. When spar mounting is not available and high accuracy is required, see Installing an AgGPS 262 receiver with magnetic feet, page 62.*

– *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

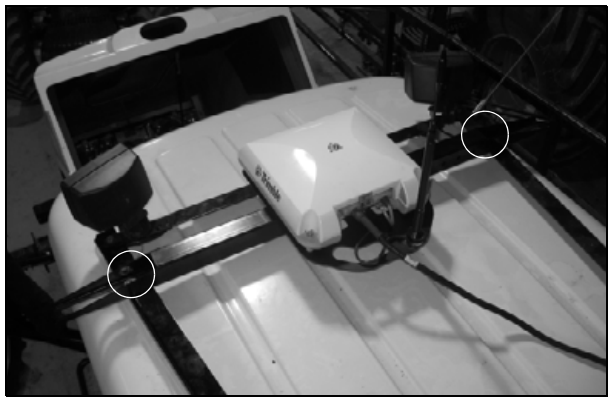
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

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.



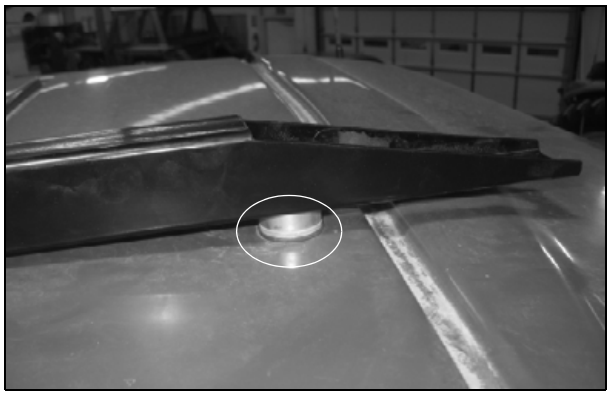
If you use the light bracket, drill two holes to match the spar width.



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 GPS antenna is aligned with the center of the vehicle.*



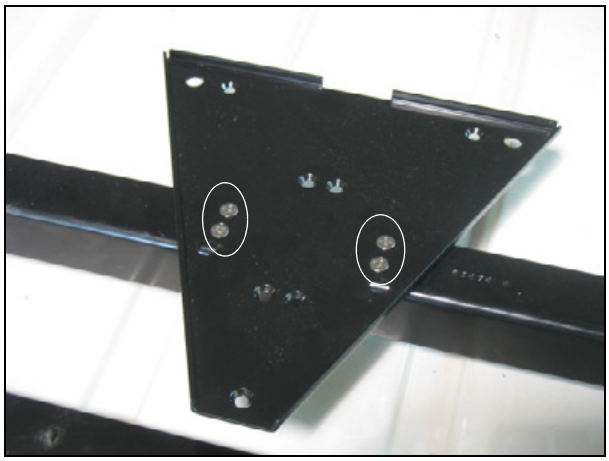
Step 4

For either of the following applications:

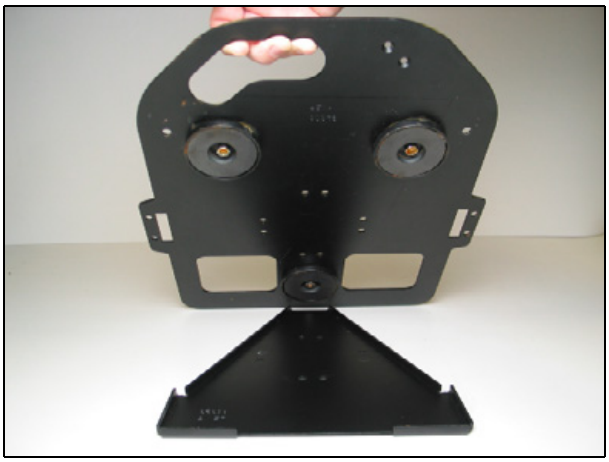
- A single magnet antenna mount
- An *Ag*GPS 262 receiver with magnetic option for quick removal

Attach a V plate with four ¼" flathead screws.

The narrow end points to the front of the vehicle.



V plate on the spar



Magnetic mount on the V plate

If you use a standard *Ag*GPS 262 plate for permanent mounting, install the radio antenna first. Use four ¼" flathead screws to attach the plate, with the handle toward the back of the vehicle.

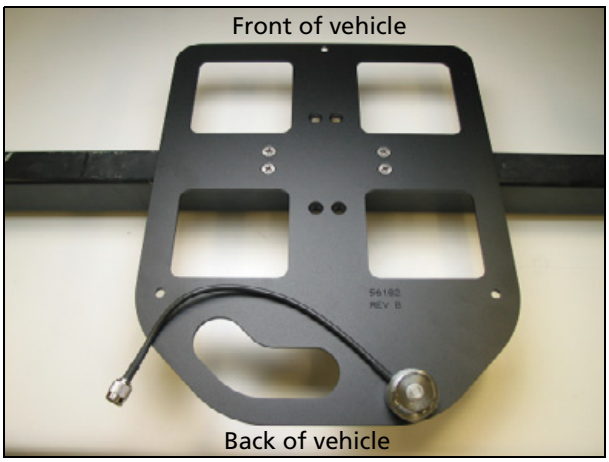


Plate on the spar

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.

- **L1/L2 dual band antenna (RTK, OmniSTAR, DGPS)** – 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.
- **L1 single band antenna (WAAS, EGNOS, OmniSTAR VBS, Beacon)** – 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.

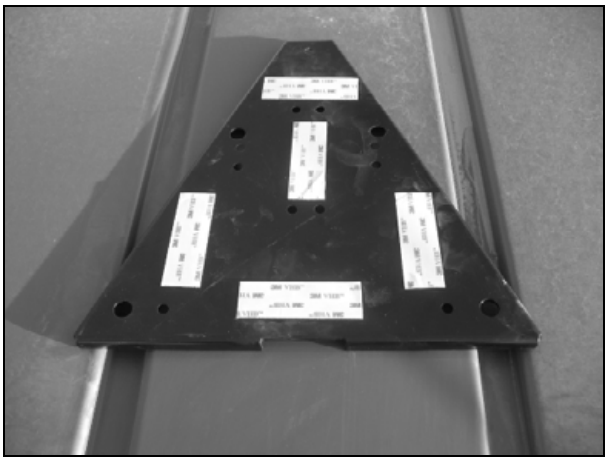


Step 2

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.*



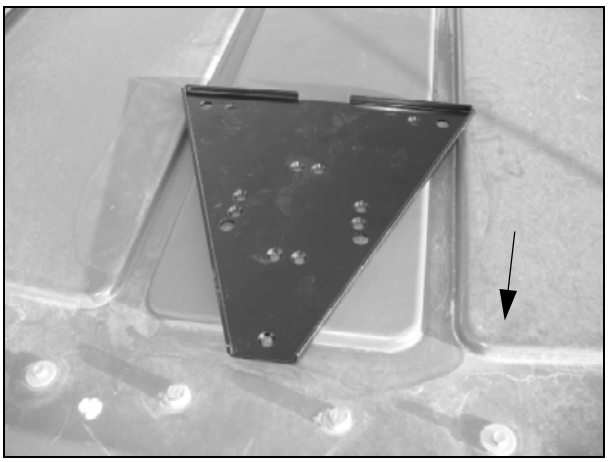
Step 3

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.

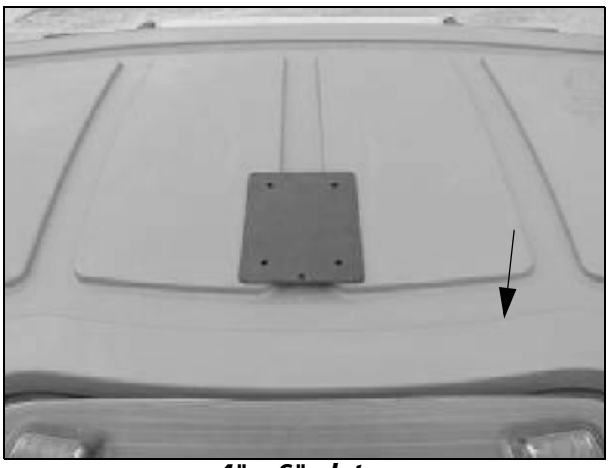
Ensure that the VHB strips make even contact with the surface.

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

Assembling and installing antenna solutions using the John Deere Starfire antenna bracket adaptor

On vehicles equipped with the John Deere optional Starfire antenna bracket, you can use the Trimble JD ATR antenna bracket to provide a fast release antenna mount.

Step 1

Layout the bracket and hardware on a clean surface.



Step 2

Using the hardware provided, install the lock-pin and the lanyard as shown.



Step 3

Install two washers onto a stud.



Step 4

Install a T-knob locking handle onto the stud and then repeat Steps 3 to 4 for the second stud.



Step 5

Standard mount

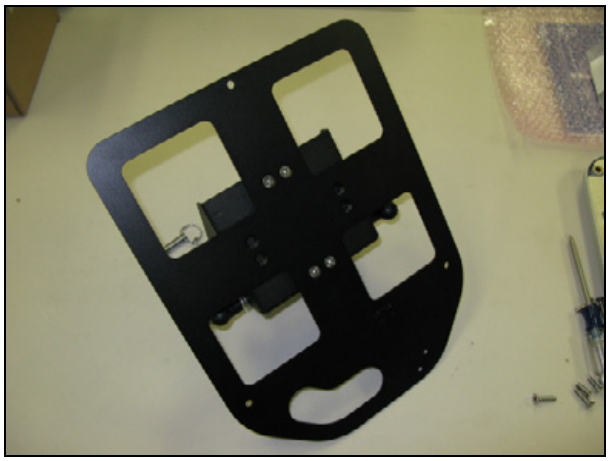
For antennas using a standard $^{5}/_{8}$" - 11 threaded mount, attach the antenna to the bracket with a $^{5}/_{8}$" - 11 bolt.



Plate mount

For antennas that use a plate mount, attach the adaptor to the plate with four ¼" - 20 flat head screws.

Note – *A standard mount (P/N 56182) is shown, others are similar.*



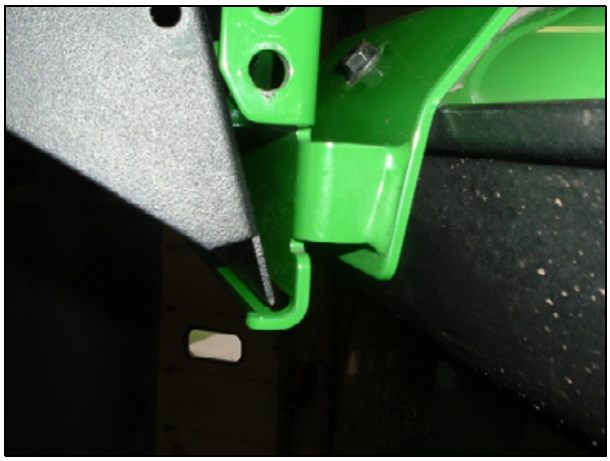
Step 6

If you are using an external radio antenna with this option, attach the radio antenna to the *Ag*GPS 262 flat mount plate as shown.



Step 7

Insert the tab situated at the bottom of the adaptor into the slot in the vehicle mounted antenna bracket.



Step 8

Tighten both knobs securely.



Step 9

Tip the adaptor back until the pin holes line up and insert the attached steel lock pin through the bracket and the adaptor.

Note – *The pin prevents the bracket from falling should you forget to tighten the locking knobs.*



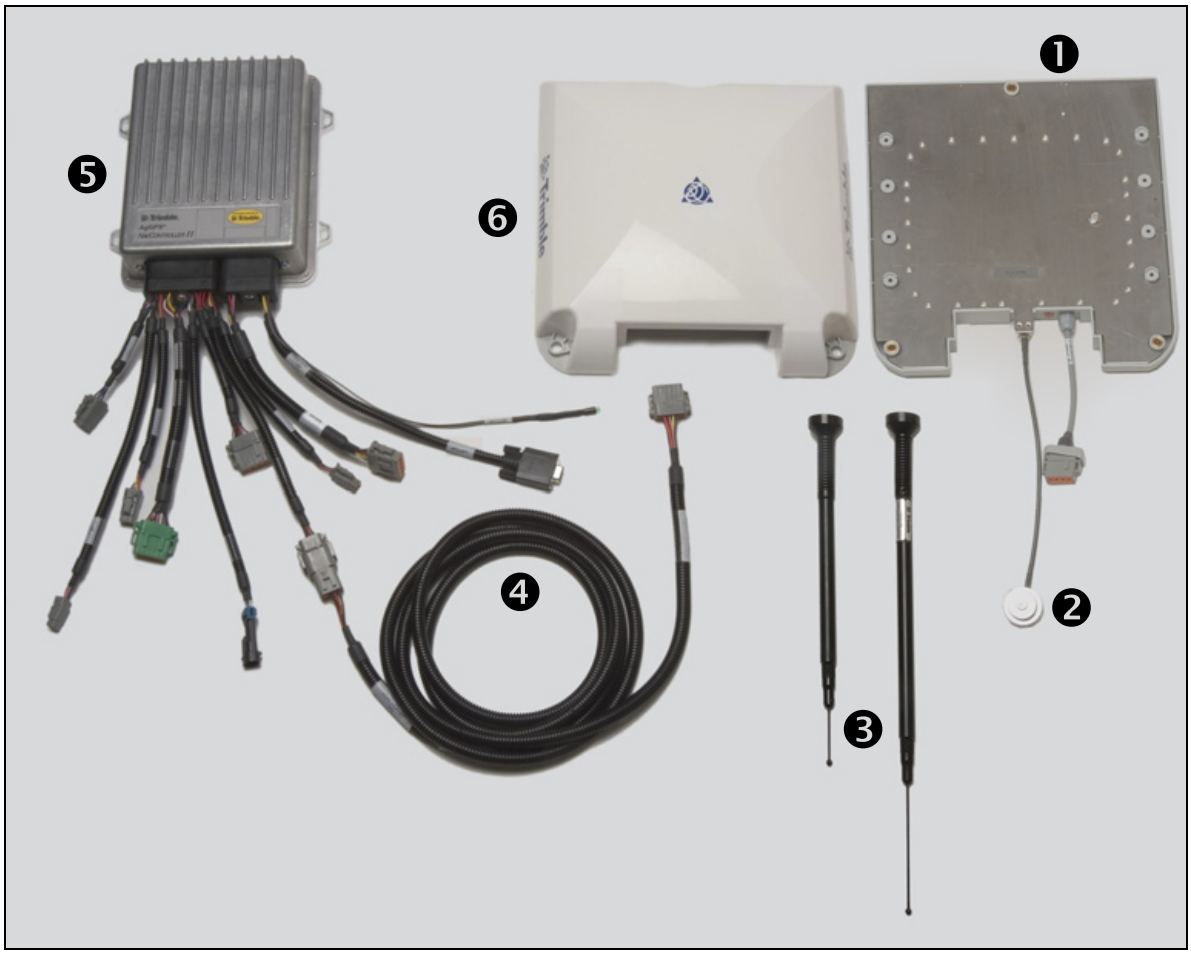
Step 10

When using the Starfire antenna bracket adaptor with an external radio antenna

Provision for mounting the radio antenna can be made using the standard adhesive backed steel plate with a standard magnetic mount as shown.



*Ag*GPS 262 GPS 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	
❻	*Ag*GPS 262 antenna/receiver	

Installing the *Ag*GPS 262 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 chapter.

To attach the *Ag*GPS 262 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.

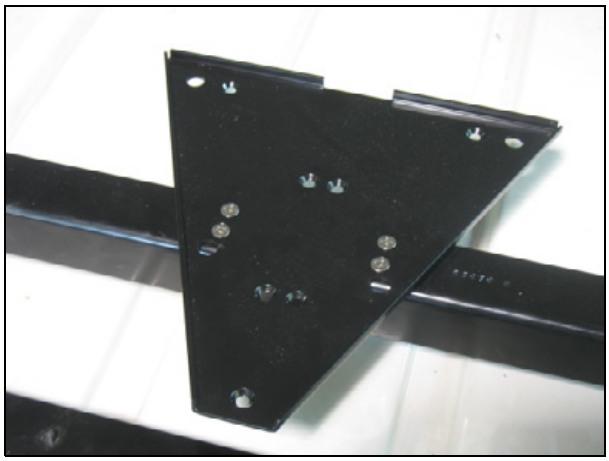
Removable installation

Step 1

V plate

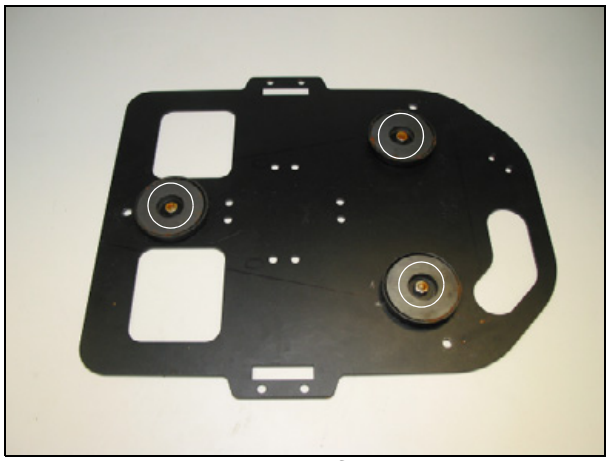
Attach the V plate to the spar using the ¼" flathead screws provided in the V plate bolt kit. Ensure that the narrow end points forward.

For spar mounting instructions, see page 46.



Mounting plate

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



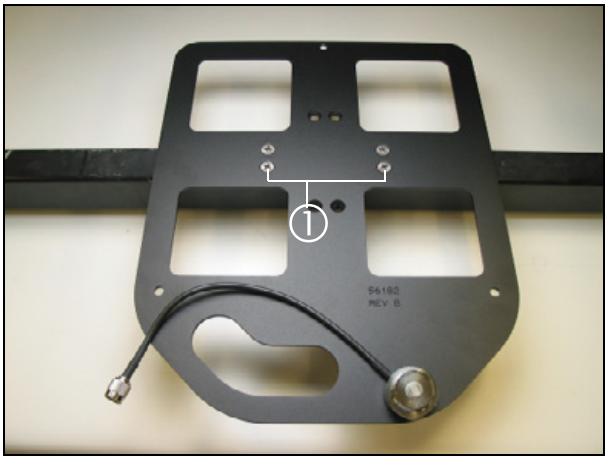
Underside of plate

Permanent installation

Step 1

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

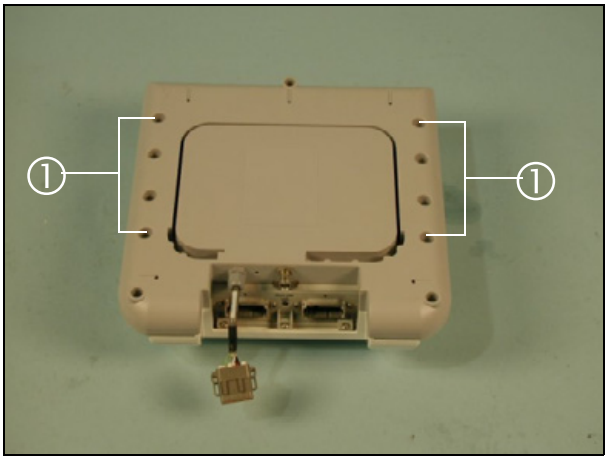
For spar mounting instructions, see page 46.



Step 2

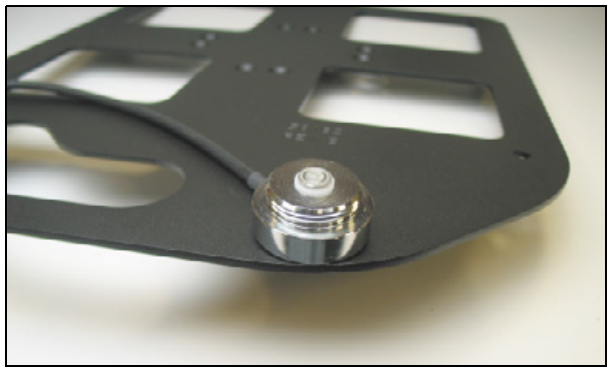
Both installation methods

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



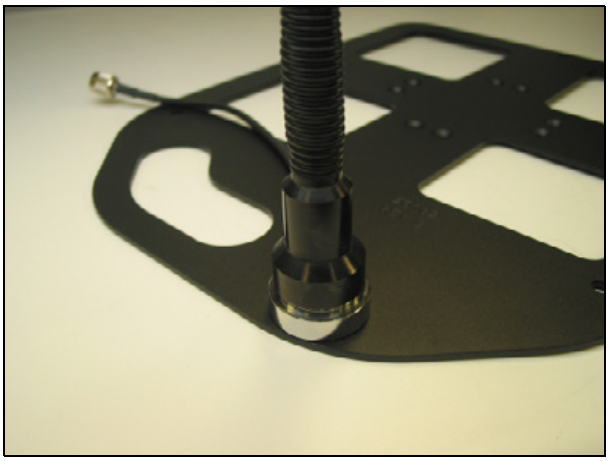
Step 3

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



Step 4

Attach the radio antenna to the antenna base.



Step 5

Position the *Ag*GPS 262 receiver and radio on the mounting plate with the connector ports facing the radio antenna. Align the three bolt holes with the receiver, radio, and mounting plate.



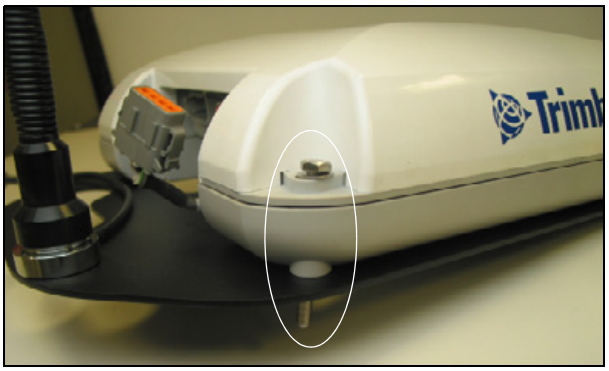
Step 6

Insert the nylon bushings provided.



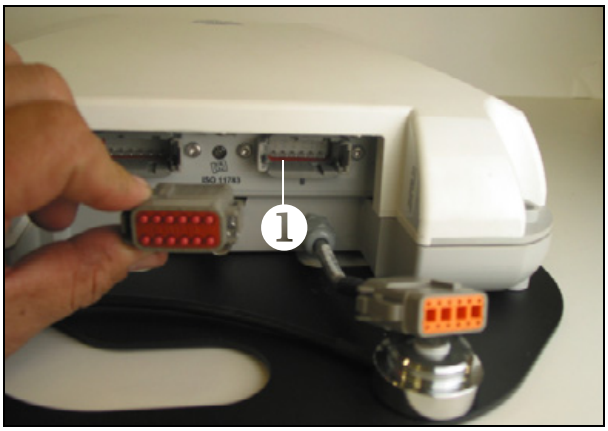
Step 7

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



Step 8

Remove the connector plug from port B ❶.



Step 9

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



Step 10

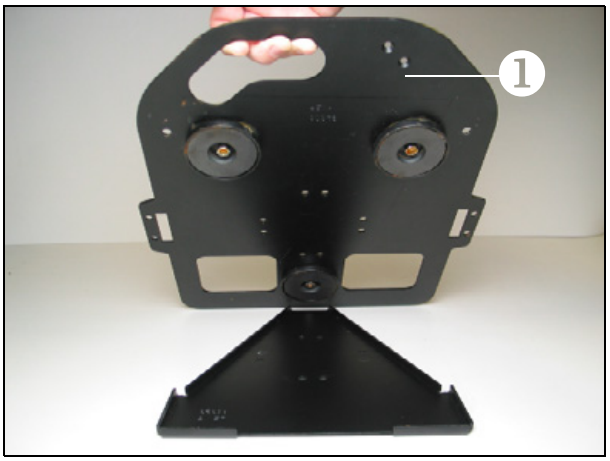
Connect the radio antenna to the antenna port.



Step 11

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.

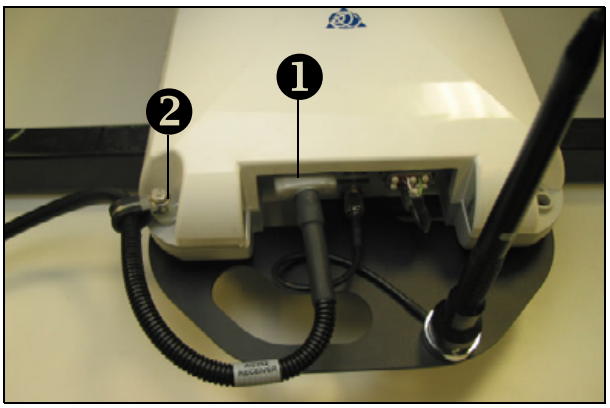


Step 12

Both methods

Connect the cable from the cab controller into port A ❶ of the *Ag*GPS 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 *Ag*GPS 262 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

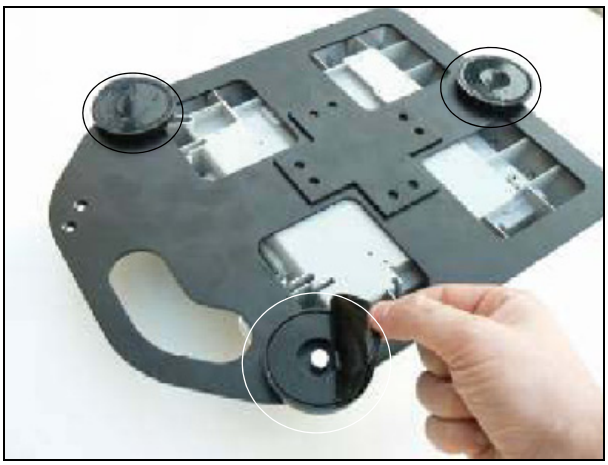
Attach the magnets to the receiver mounting plate. Mount the *Ag*GPS 262 GPS receiver using the three ¼" bolts.

Place the nuts on the receiver side.



Step 2

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

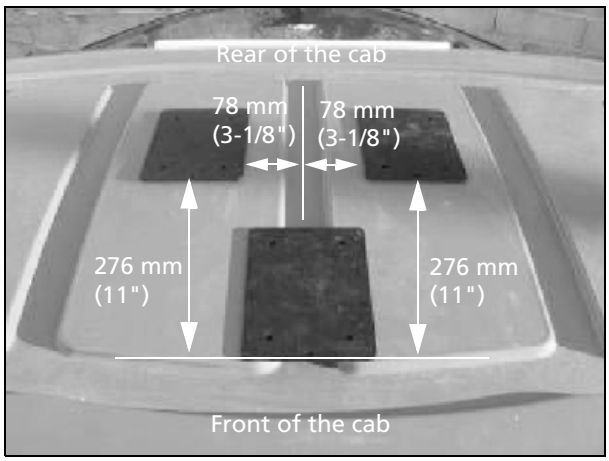


Step 3

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

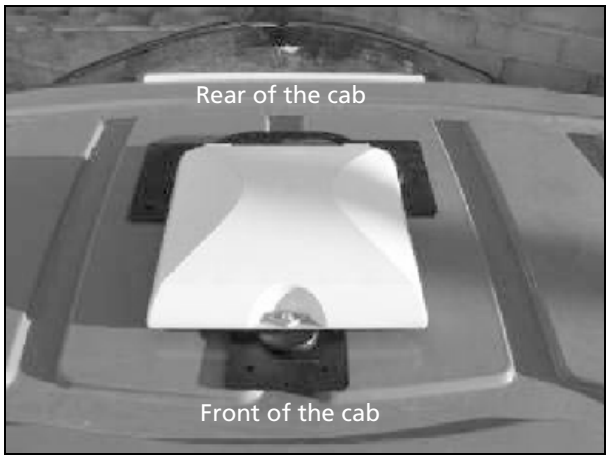
Remove the backing from the VHB strips and then apply the plates to the cab roof.

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.

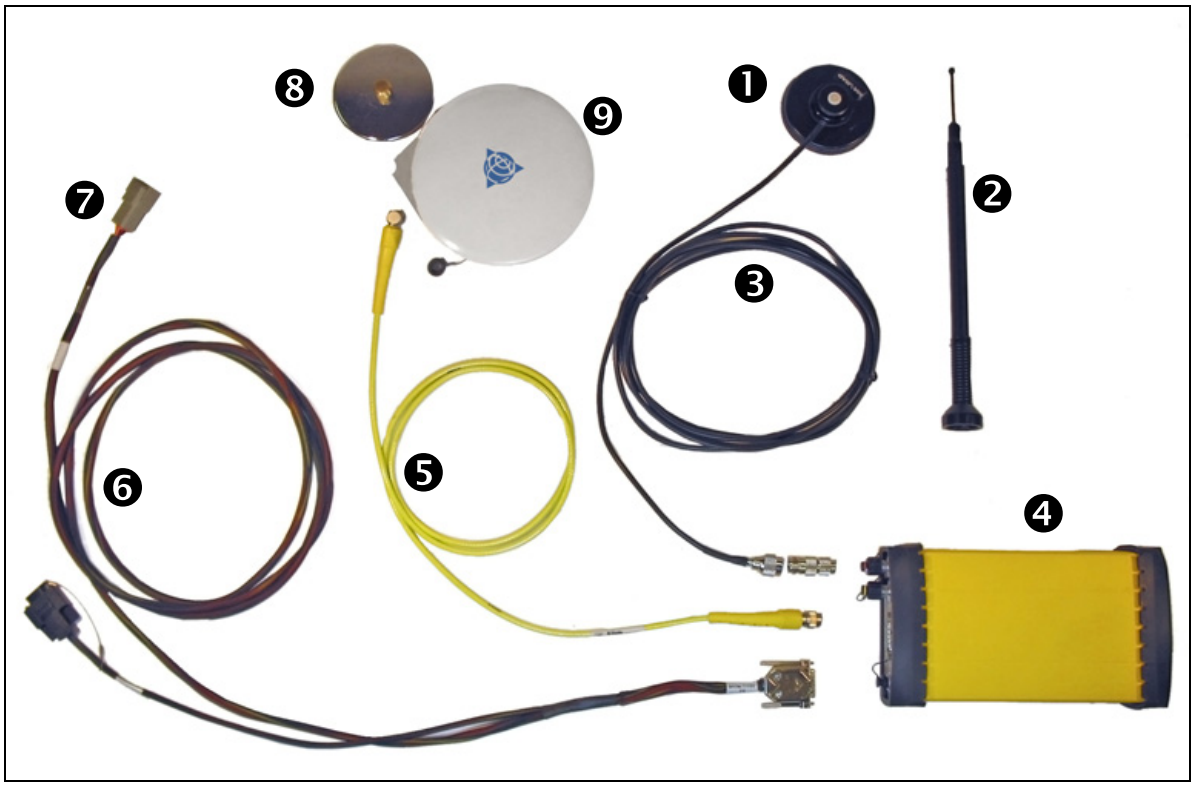


Step 5

Connect the antenna cable to port A of the *Ag*GPS 262 GPS receiver and then route the cable toward the NavController II harness.



*Ag*GPS 432/442 receiver components



Item	Description	Trimble part number
❶	Radio antenna magnetic base	
❷	Radio antenna	
❸	Radio antenna cable	
❹	*Ag*GPS 432/442 GPS receiver	
❺	Antenna cable	
❻	Receiver cable	62037
❼	To controller “P3 GPS”	
❽	Antenna magnetic mount	
❾	*Ag*GPS 432/442 antenna	

Installing the *Ag*GPS 432/442 receiver

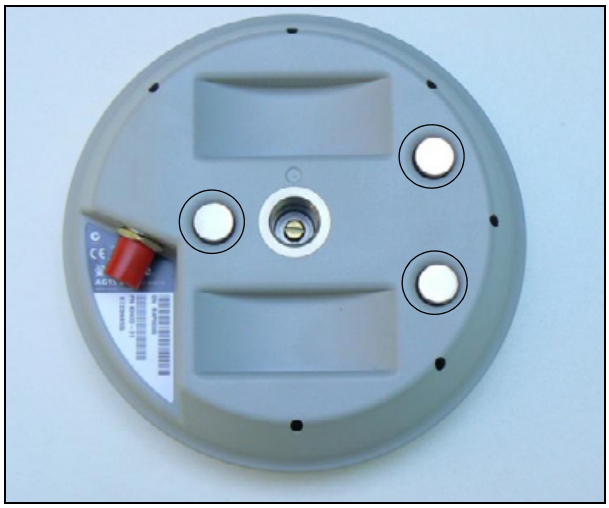
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

Attach the large magnet with a $^{5}/_{8}$" stud to the GPS antenna.



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



Step 2

L1/L2 dual band antenna (RTK, OmniSTAR, DGPS)

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:

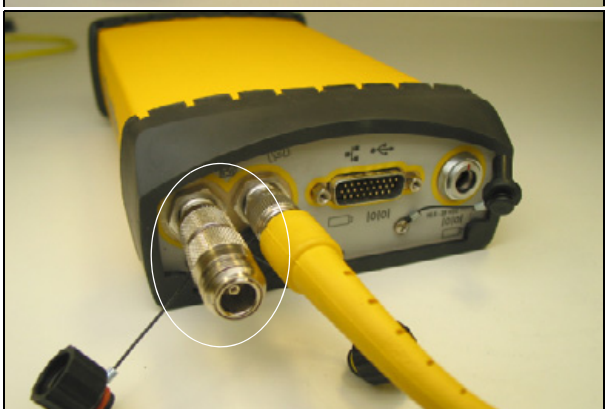
❶ Reverse polarity TNC-to-N for 900 MHz radios

❷ Normal polarity TNC-to-N for 400 MHz radios



Step 6

Attach the adaptor to the radio port.



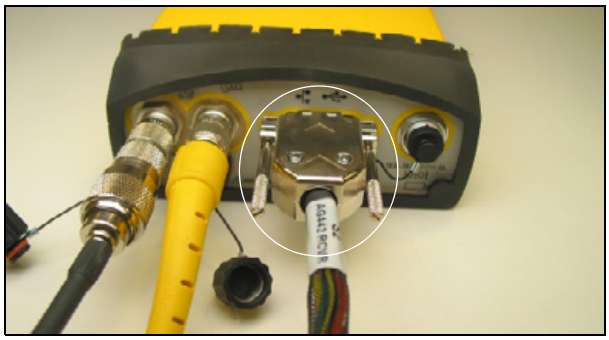
Step 7

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 later in the section Connecting the controller, page 129.



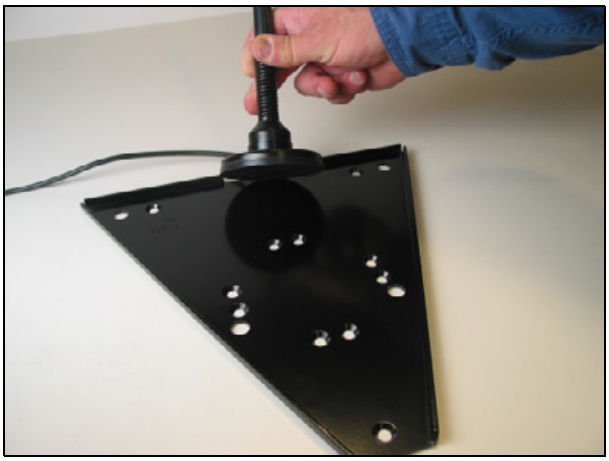
Step 9

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

5

Display Installation

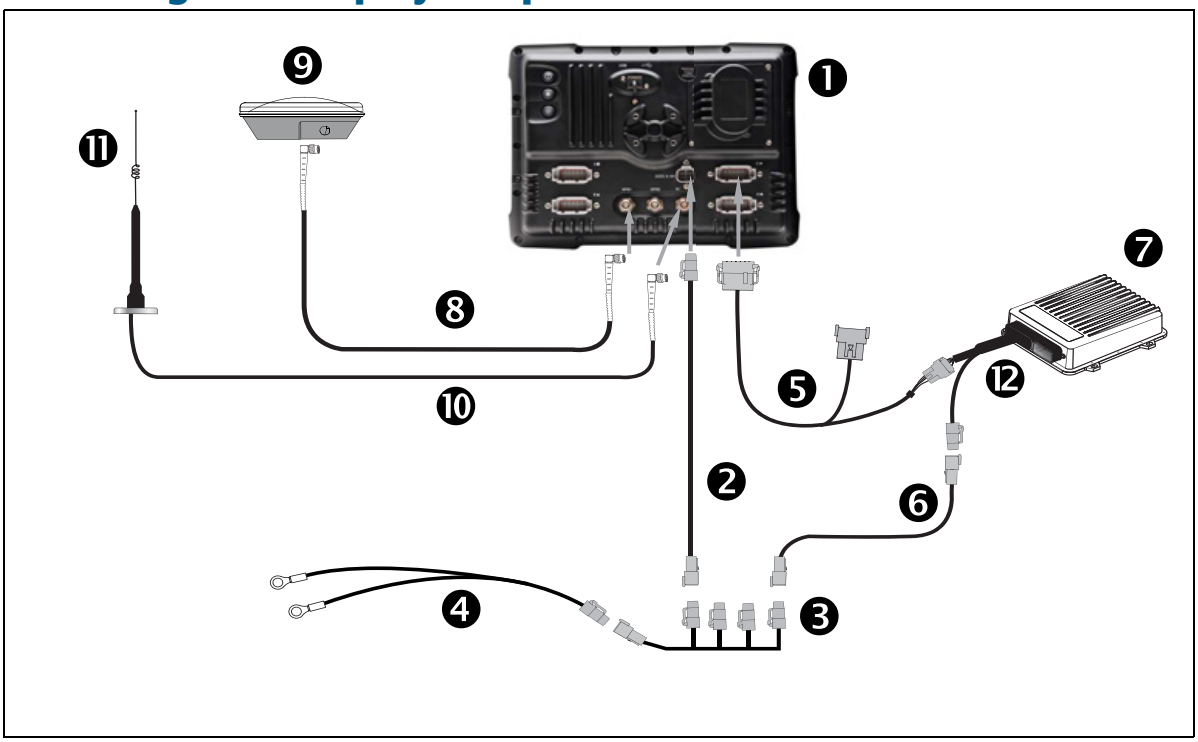
In this chapter:

- FmX integrated display components
- CFX-750 display components
- EZ-Guide 500 lightbar 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
- Preparing the EZ-Guide 500 lightbar
- Connecting the EZ-Guide 500 lightbar cables
- Installing the EZ-Guide 500 lightbar
- EZ-Guide 500 lightbar, and FmX and CFX-750 displays: Installing the GPS antenna and plate
- EZ-Guide 500 lightbar, and FmX and CFX-750 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.

Note – *Unless otherwise stated, instructions for "the display" refer to either the FmX integrated display or the CFX-750 display.*

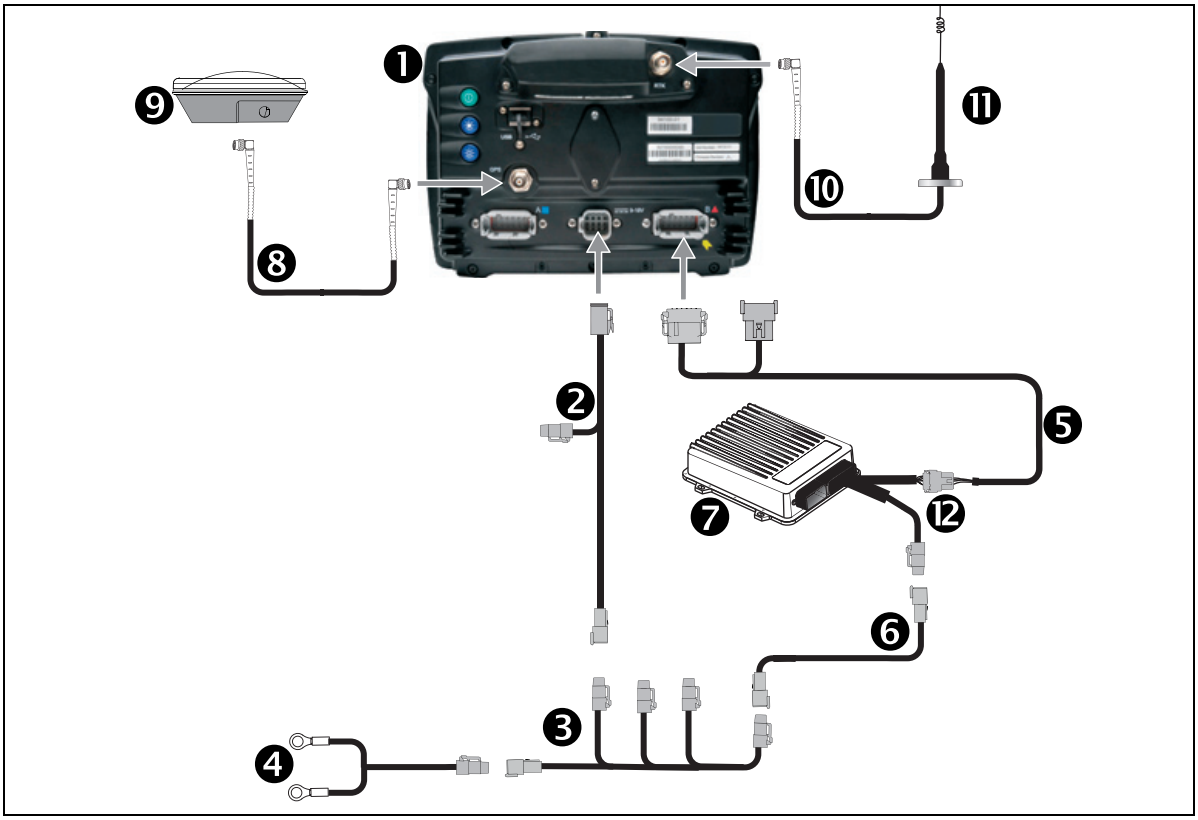
FmX integrated display components



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

Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	FmX to NavController II cable with port replicator	75741
❻	2 pin DTM to 2 pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GPS TNC/TNC RT angle cable	50449
❾	AG25 GNSS antenna	77038-00
❿	NMO to TNC 20ft antenna cable and base	62120
⓫	900 MHz radio antenna kit	2288-10
⓬	Main NavController II cable	54601

CFX-750 display components



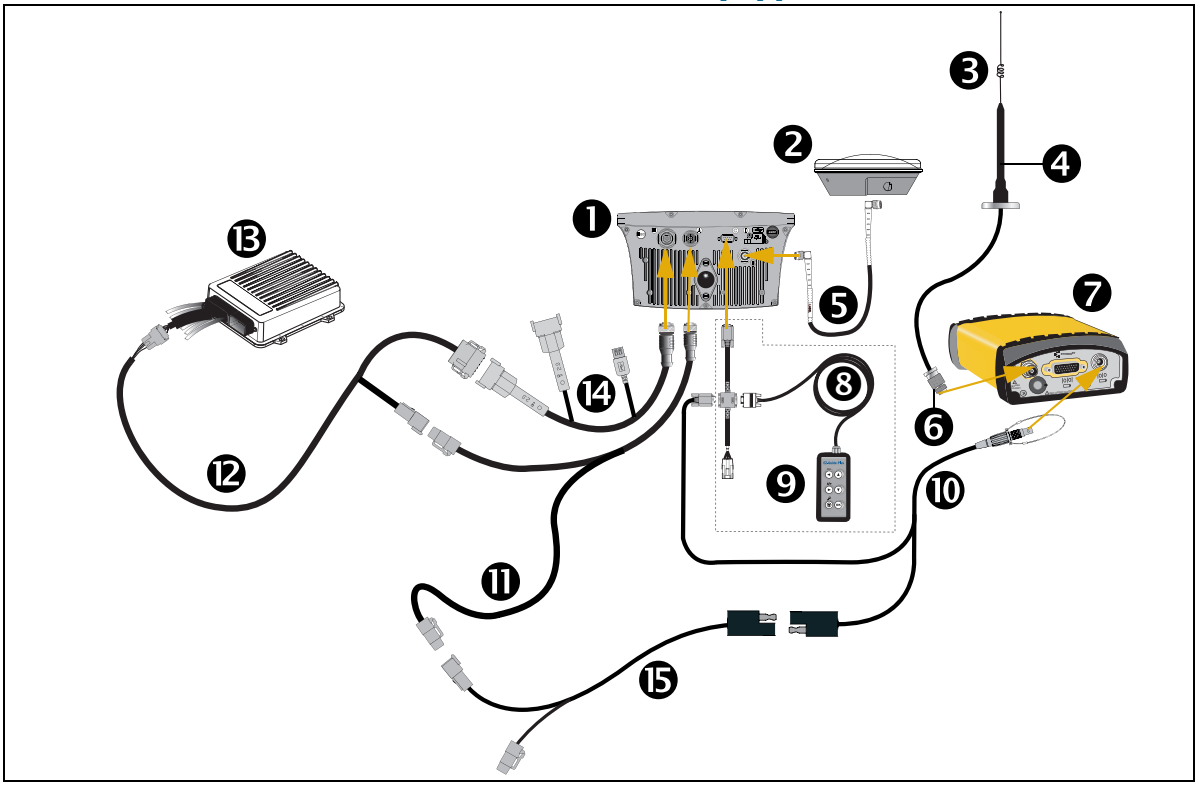
CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓬ will result in damage to the CFX-750 display and will void the warranty.

Item	Description	Trimble part number
❶	CFX-750 display ***Note –*** *RTK password required.*	94100-01
❷	CFX-750 power cable	77282
❸	CFX-750 power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	CFX-750 to NavController II cable with port replicator	75741
❻	2 pin DTM to 2 pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GPS TNC/TNC RT angle cable	50449
❾	AG25 GNSS antenna	77038-00
❿	NMO to TNC 20ft antenna cable and base	62120

Item	Description	Trimble part number
⓫	900 MHz radio antenna kit	22882-10
⓬	Main NavController II cable	54601

EZ-Guide 500 lightbar components

With SNB900 radio for RTK corrections (if equipped)



Item	Description	Trimble part number
❶	EZ-Guide 500 lightbar	
❷	GPS antenna	57200-00
❸	SNB900 radio antenna	22882-00
❹	SNB900 radio antenna magnetic mount	62109
❺	GPS antenna cable	50449
❻	N Female to REV. POL TNC Male	62114
❼	SNB900 radio	X8480-X0
❽	Remote keypad (optional)	66030-00
❾	External interface cable	62749
❿	Radio power/data cable	61158
⓫	EZ-Guide 500 power cable	62817
⓬	EZ-Guide 500-to-Autopilot cable	62754
⓭	NavController II	55563-00
⓮	Port expansion cable	62609
⓯	Power tap to PDL radio	63185

Preparing the FmX integrated display

Step 1

Locate the FmX 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.

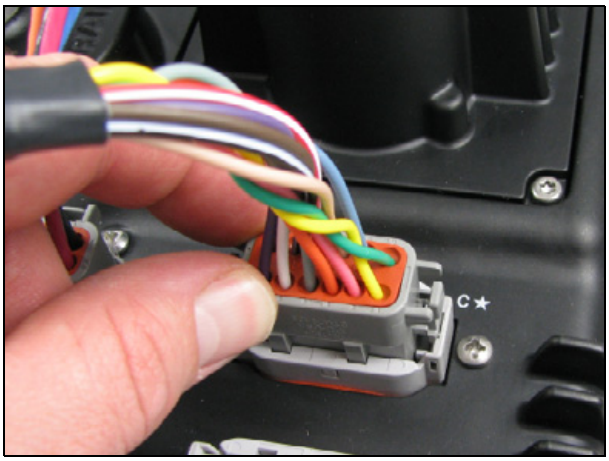
Step 1

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 display.

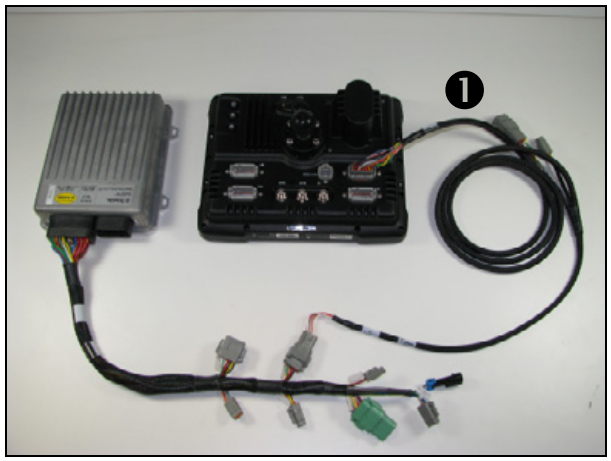
To connect power to the FmX display, see Chapter 6, Power Harness Installation.



FmX integrated display: Installing the wiring harness

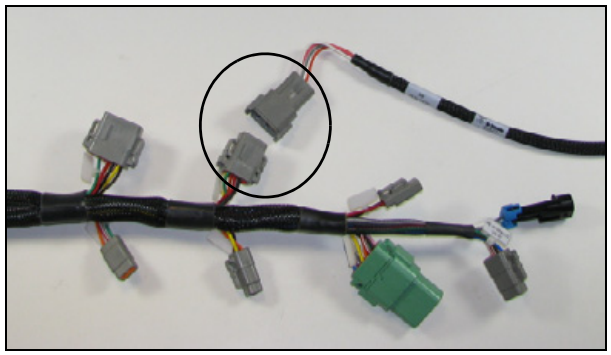
Step 1

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



Step 2

Connect the cable to the P3 connector on the NavController II main harness, and then route the cable from the NavController II to the mounting location on the FmX 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 6, 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

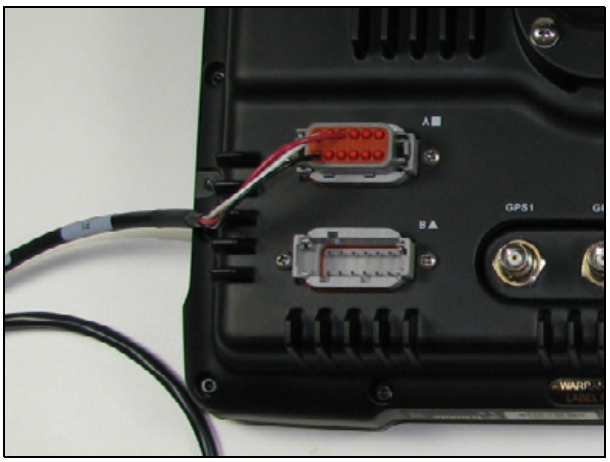
Step 3

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.



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.

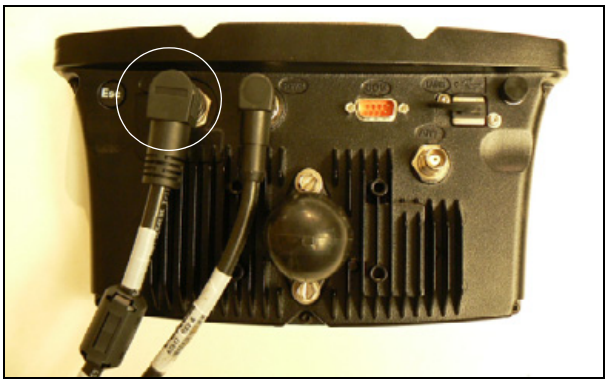


Connecting the EZ-Guide 500 lightbar cables

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

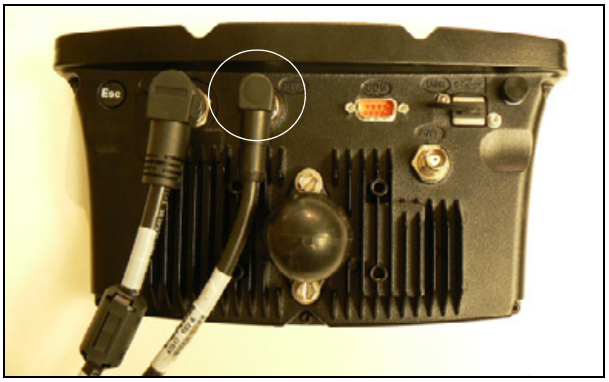
Step 1

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

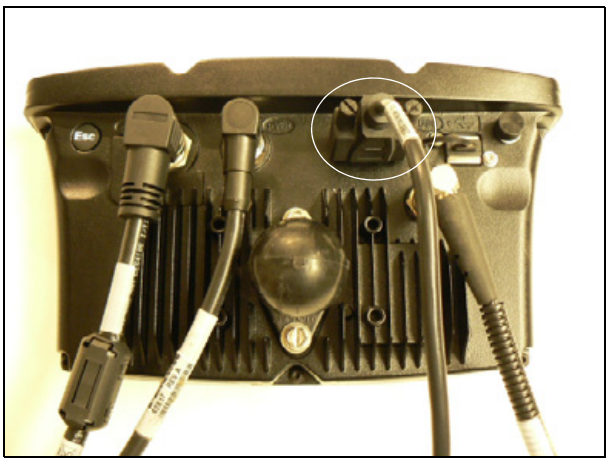
Feed the GPS antenna cable into the cab and then connect it to the antenna port on the back of the lightbar.



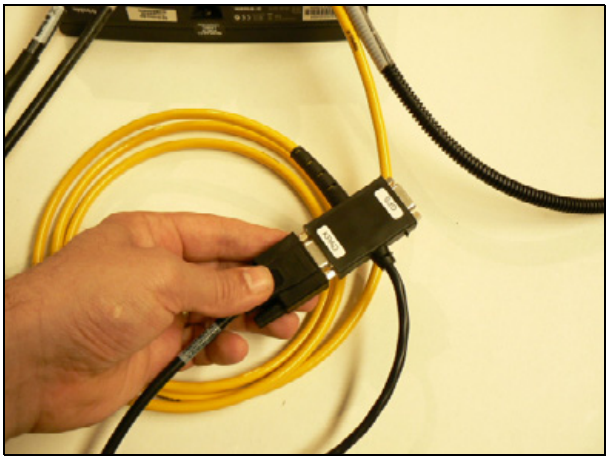
Step 5

With keypad

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

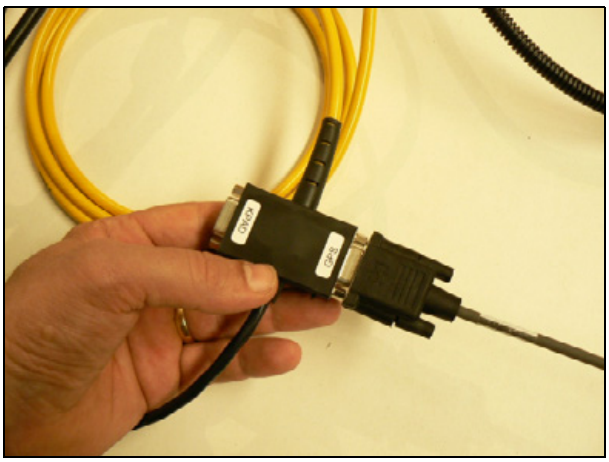


Connect the remote keypad to the KPAD serial port on the external interface cable.



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

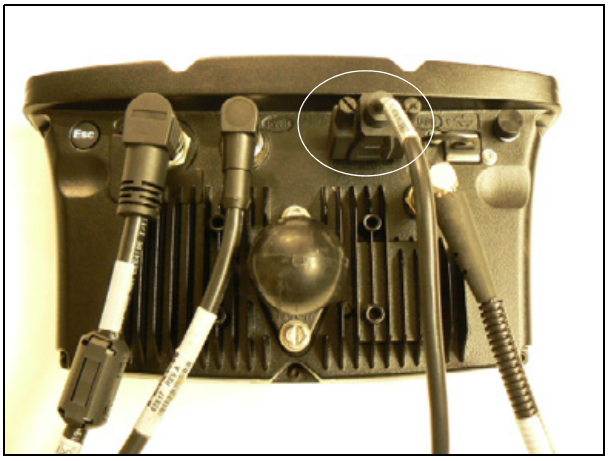
Radio type	Cable to connect
SNB900 radio	EZ-Guide 500-to-radio cable (P/N 61158)
PDL 450 radio	PDL radio power/data cable (P/N 51861-00)



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 FmX and CFX-750 displays: Installing the GPS 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 11**.*

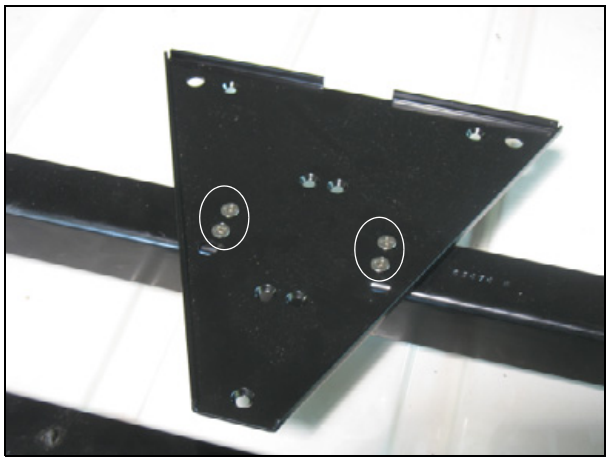
Use one of the following methods:

- 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 46.

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.

- **L1/L2 dual band antenna (RTK, OmniSTAR, DGPS)** – 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.
- **L1 single band antenna (WAAS, EGNOS, OmniSTAR VBS, Beacon)** – 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.

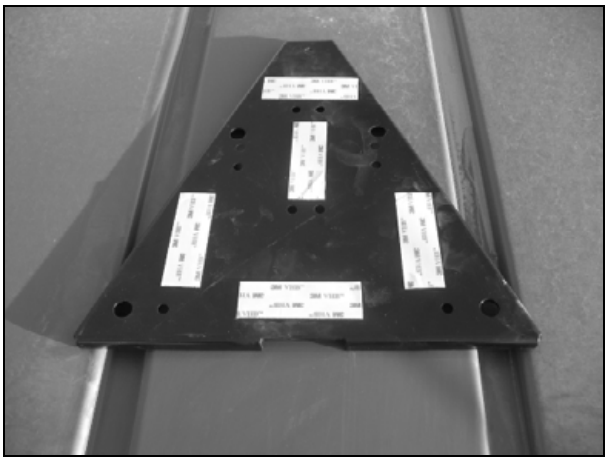


Step 2

V plate only

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

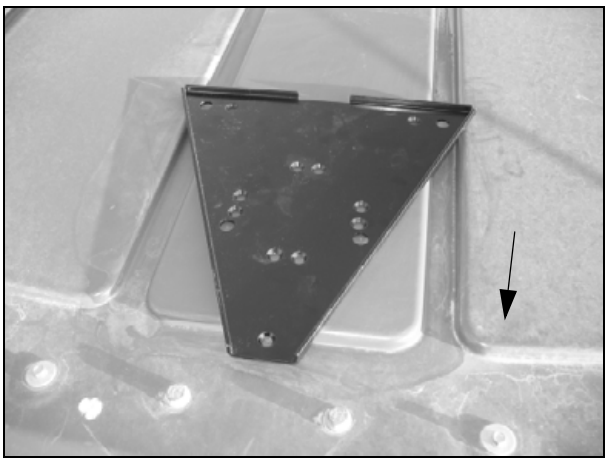
Note – *The VHB strips are pre-applied to the 4" x 6" plate.*



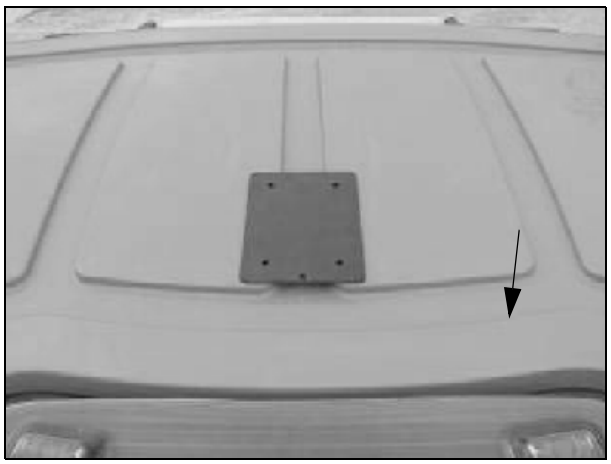
Step 3

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.*



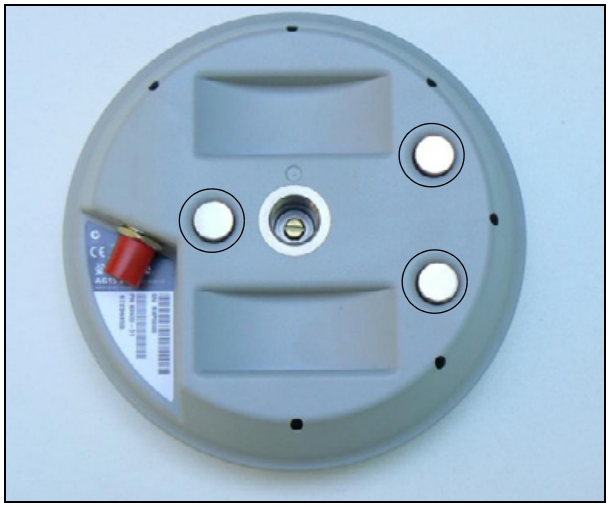
V plate



4" x 6" plate

Step 4

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



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



Step 5

L1/L2 dual band antenna (RTK, OmniSTAR, DGPS)

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



L1 single band antenna (WAAS, EGNOS, VBS, Beacon)

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 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.

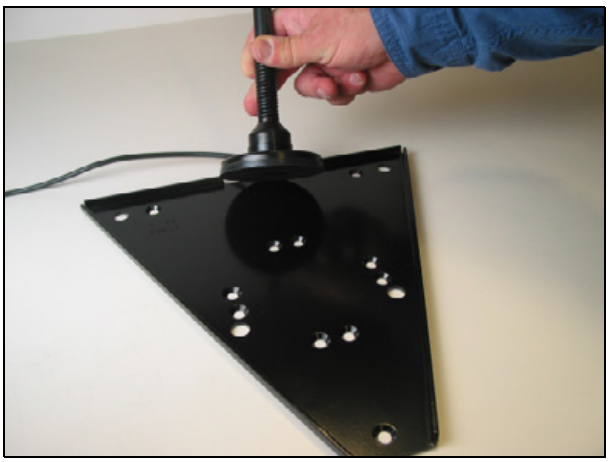
Step 1

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

6

Power Harness Installation

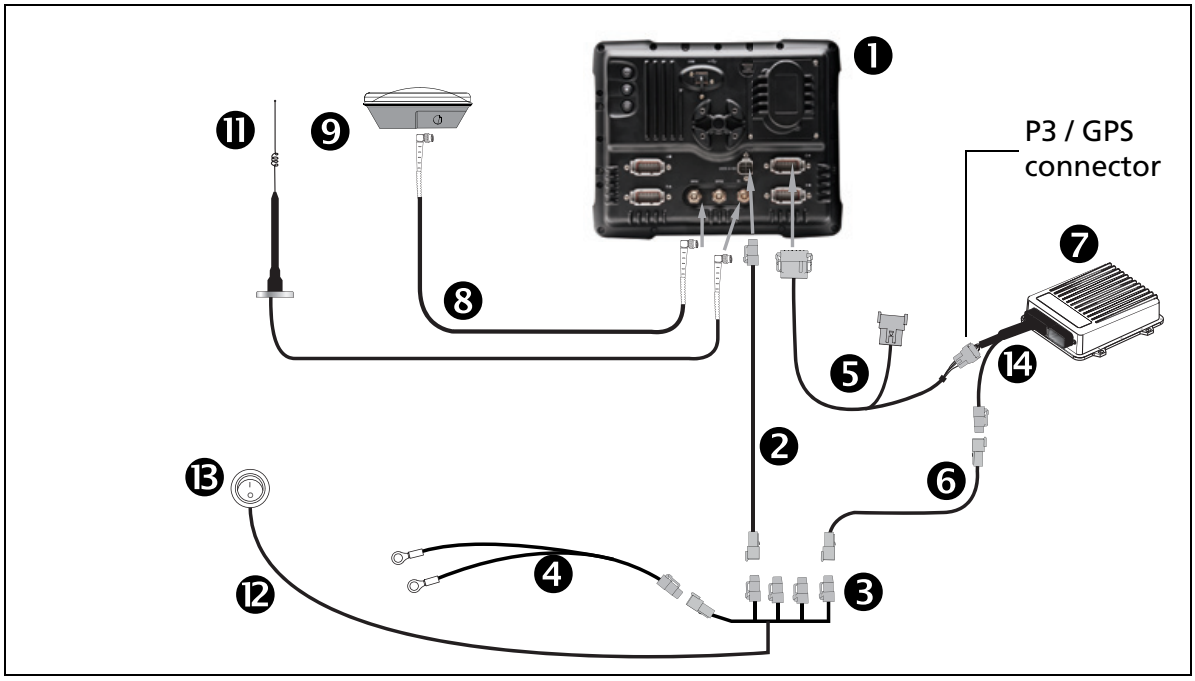
In this chapter:

- FmX integrated display components
- CFX-750 display components
- EZ-Guide 500 lightbar components
- FmX and CFX-750 displays: Installing the power harness
- FmX and CFX-750 displays: Configuring the power bus options
- Configuring the power bus options for the EZ-Guide 500 lightbar

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

Note – *Unless otherwise stated, instructions for "the display" refer to either the FmX integrated display or the CFX-750 display.*

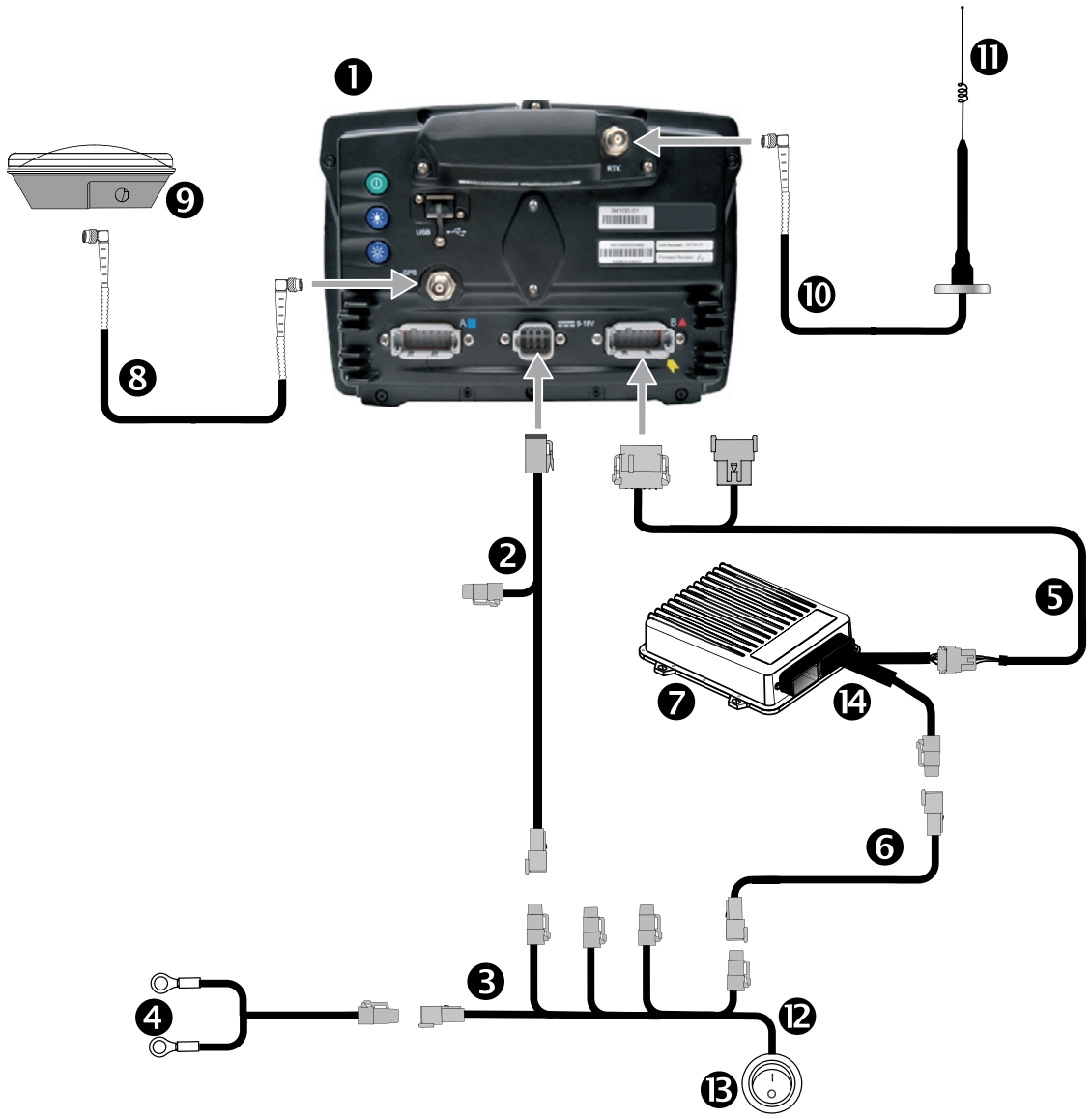
FmX integrated display components



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

Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	FmX to NavController II cable with port replicator	75741
❻	2 pin DTM to 2 pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GPS TNC/TNC RT angle cable	50449
❾	AG25 GNSS antenna	77038-00
❿	NMO to TNC 20ft antenna cable and base	62120
⓫	900 MHz radio antenna kit	22882-10
⓬	External switch cable included with kit	Part of P/N 67259
⓭	Switch	67095

CFX-750 display components

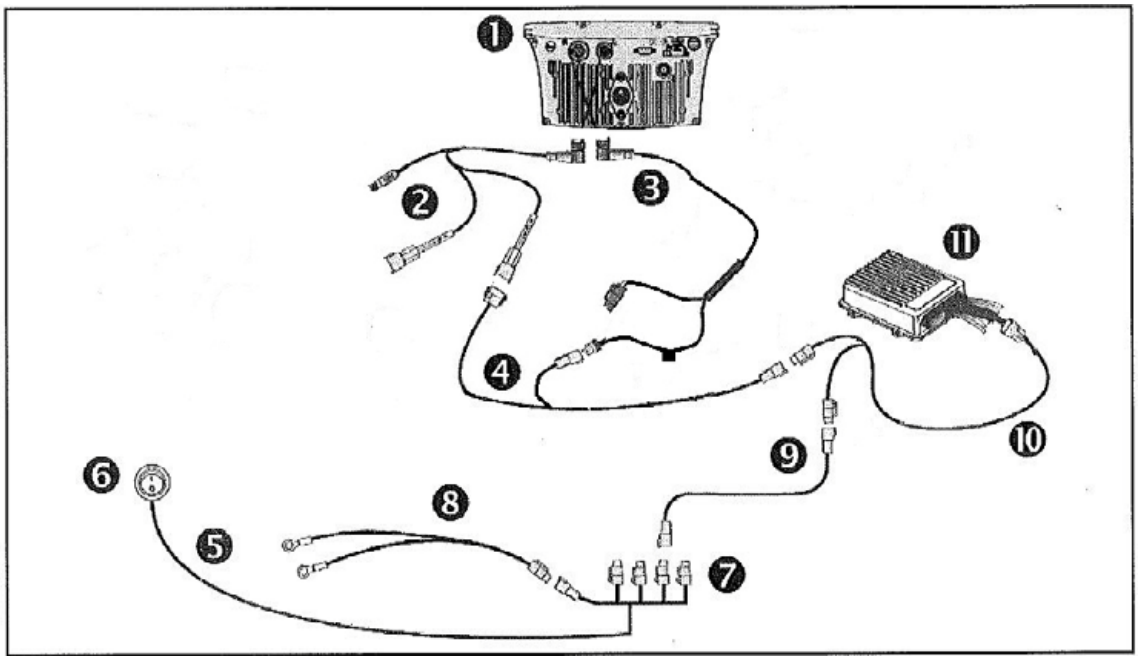


CAUTION – Connecting the Port Replicator on the CFX-750 display to NavController II cable ❺ to the P4 or P12 connector of the NavController II harness ⓮ will result in damage to the CFX-750 display and will void the warranty.

Item	Description	Trimble part number
❶	CFX-750 display ***Note –*** *RTK password required.*	94100-02
❷	CFX-750 power cable	77282
❸	CFX-750 power cable with relay and switch (power bus)	67259

Item	Description	Trimble part number
❹	Basic power cable	67258
❺	CFX-750 to NavController II cable with port replicator	75741
❻	2 pin DTM to 2 pin DT power adaptor	67095
❼	NavController II	55563-00
❽	8 m GPS TNC/TNC RT angle cable	50449
❾	AG25 GNSS antenna	77038-00
❿	NMO to TNC 20ft antenna cable and base	62120
⓫	900 MHz radio antenna kit	22882-10
⓬	External switch cable included with kit	Part of P/N 67259
⓭	External switch included with kit	Part of P/N 67259
⓮	Main NavController II cable	54601

EZ-Guide 500 lightbar components



Item	Description	Trimble part number
❶	EZ-Guide 500 lightbar	
❷	EZ-Guide 500 lightbar 19 pin port expansion cable	62069
❸	EZ-Guide 500 lightbar/CAN 90° 5 pin connector	62817
❹	EZ-Guide 500 lightbar port A to NavController II cable	62754
❺	Switch cable	Part of 67259
❻	Switch	67095
❼	FmX power cable with relay and switch	67259
❽	FmX basic power cable	67258
❾	2 pin DTM to 2 pin 2 DT power adaptor	67095
❿	NavController II main cable	54601
⓫	NavController II	55563-00

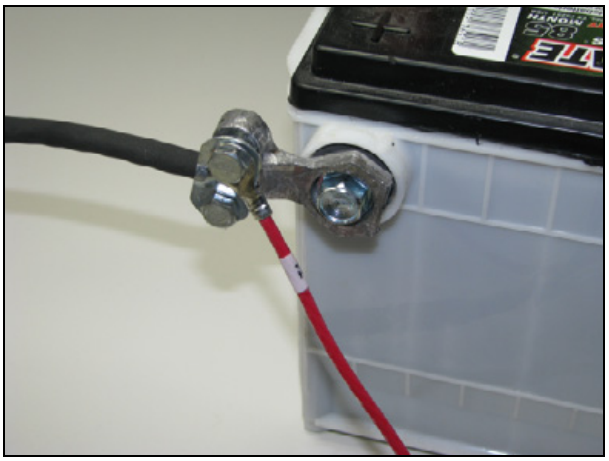
FmX and CFX-750 displays: Installing the power harness

Note – *Unless otherwise stated, instructions for "the display" refer to either the FmX integrated display or 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.

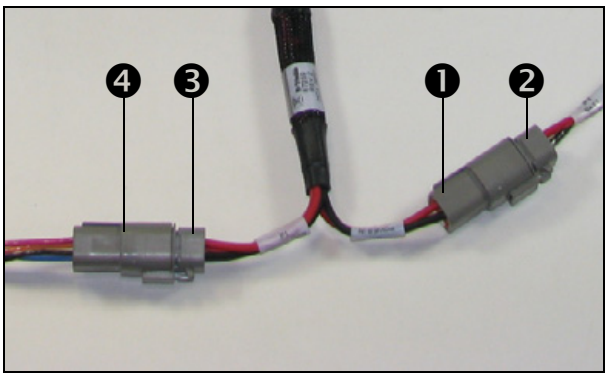
Step 1

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



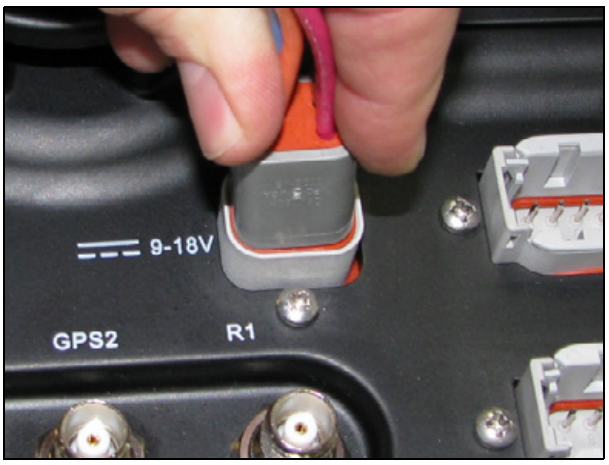
Step 2

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



Step 3

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



FmX display



CFX-750 display

FmX and CFX-750 displays: Configuring the power bus options

Note – *Unless otherwise stated, instructions for "the display" refer to either the FmX integrated display or the CFX-750 display.*

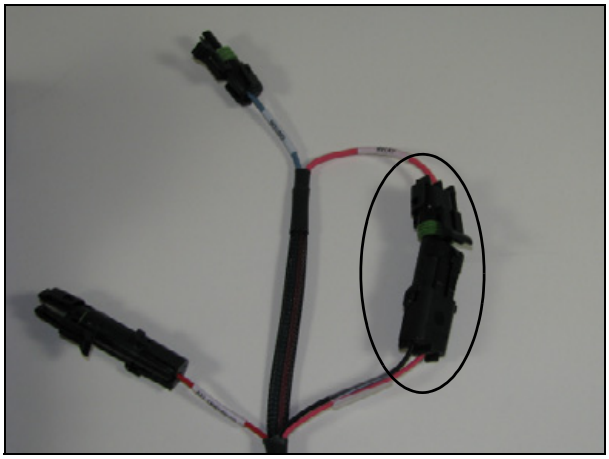
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

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

- Display power button is used to turn on the Autopilot system
- External switch is used to turn on the Autopilot system
- Ignition is used to turn on the Autopilot system

Display power button is used to turn on the Autopilot system

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

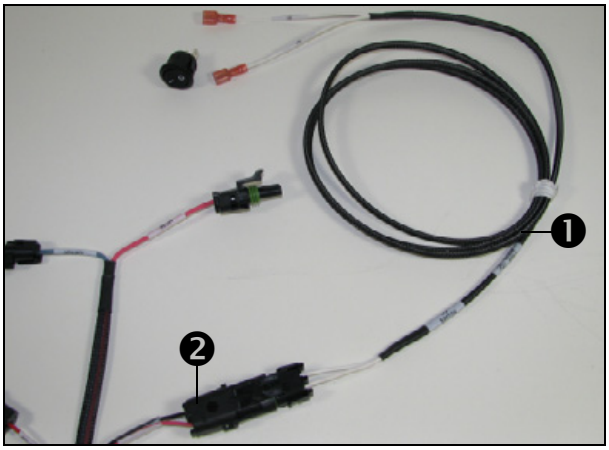


External switch is used to turn on the Autopilot system

Step 1

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

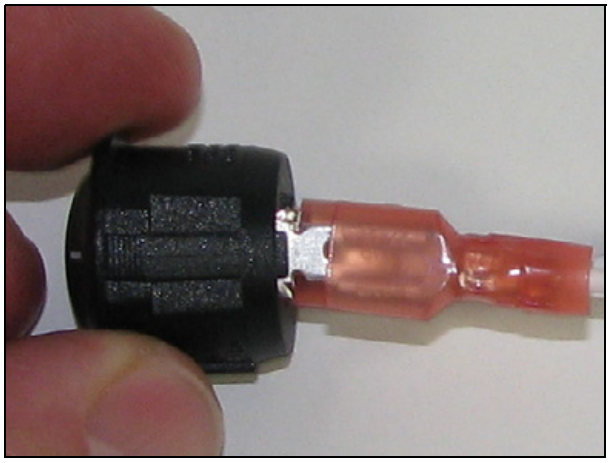
Note – *To install the switch provided, drill a ¾" hole.*



Step 2

Connect the cable labeled R7 to the switch pins.

Note – *Polarity is not important.*

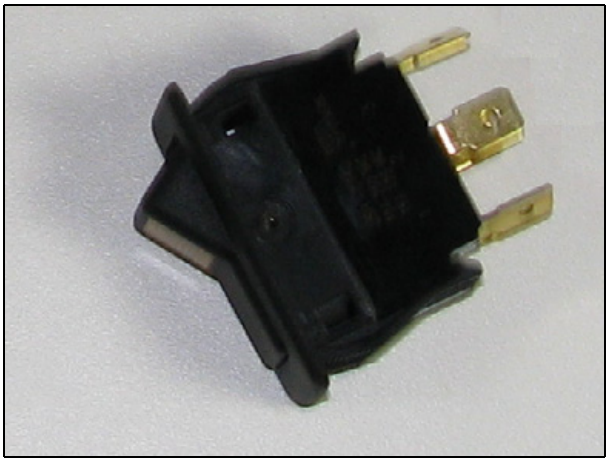


Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

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

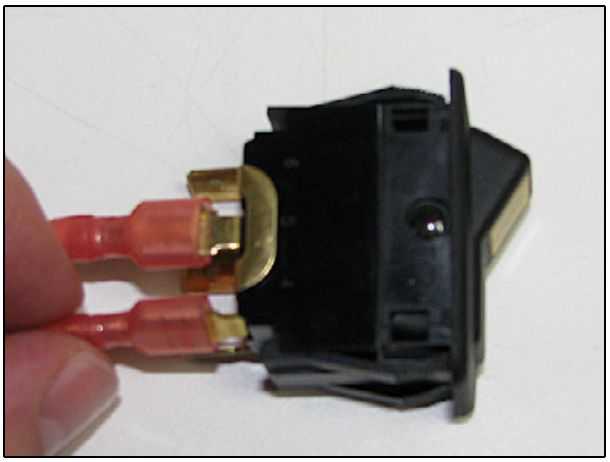


Step 2

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

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

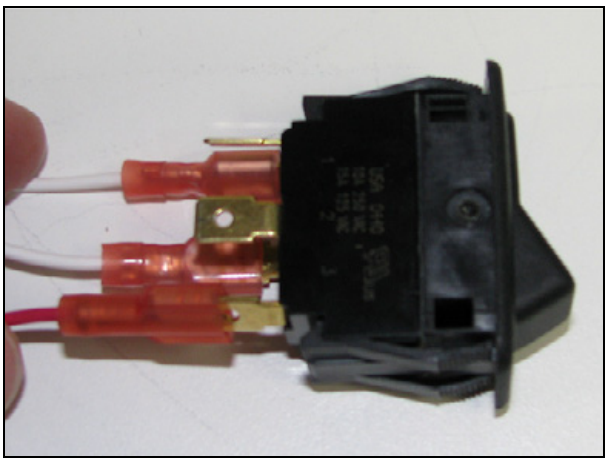
Note – *Polarity is important.*



Step 3

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

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

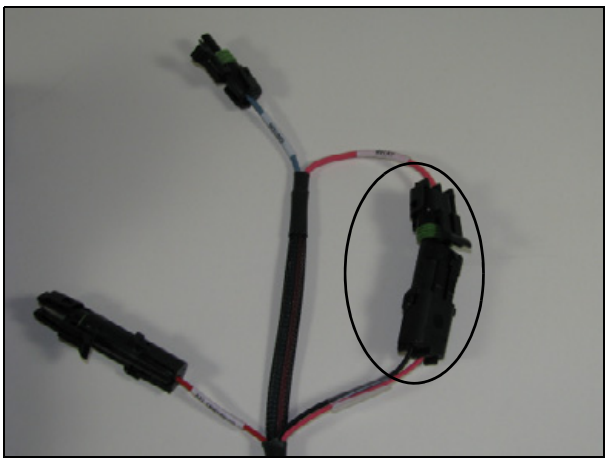


Ignition is used to turn on the Autopilot system

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

Step 1

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

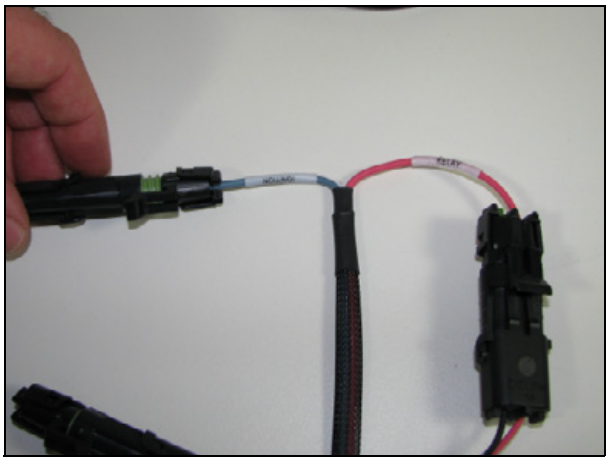


Step 2

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

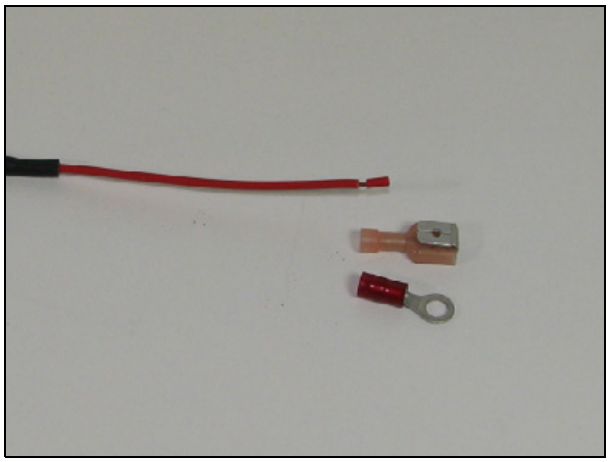
Step 3

Route the cable to the vehicles ignition.



Step 4

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



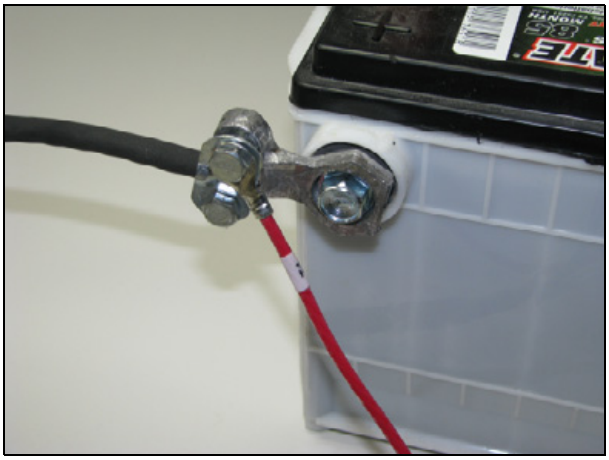
Configuring the power bus options for the EZ-Guide 500 lightbar

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.

Note – *For the EZ-Guide 500 lightbar cable installation instructions see,* *EZ-Guide 500 lightbar components, page 97.*

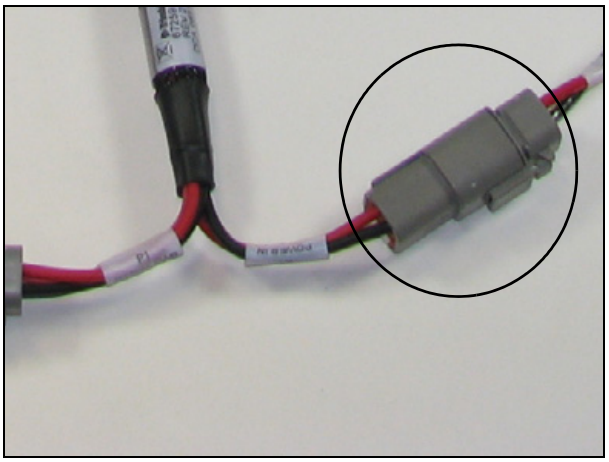
Step 1

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



Step 2

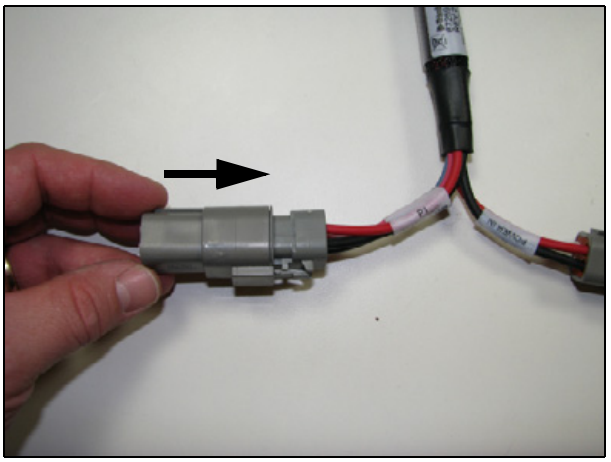
Locate and connect the 4-pin Deutsch DTP receptacle on the power bus to the 4-pin Deutsch DTP plug on the basic power cable.



Step 3

Verify that the protective receptacle is installed on the power bus.

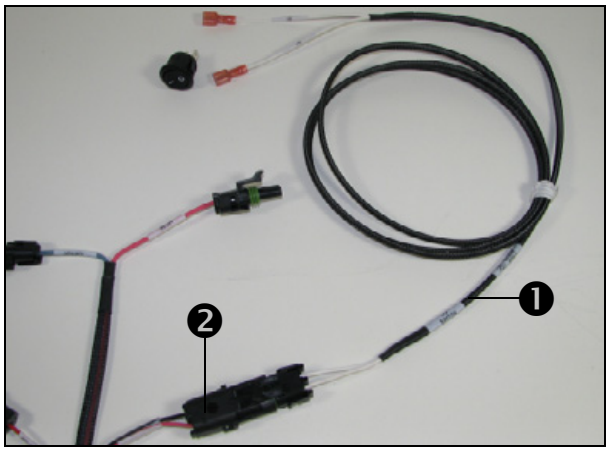
Note – *Damage to the system may result if the protective receptacle is not in place.*



Step 4

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

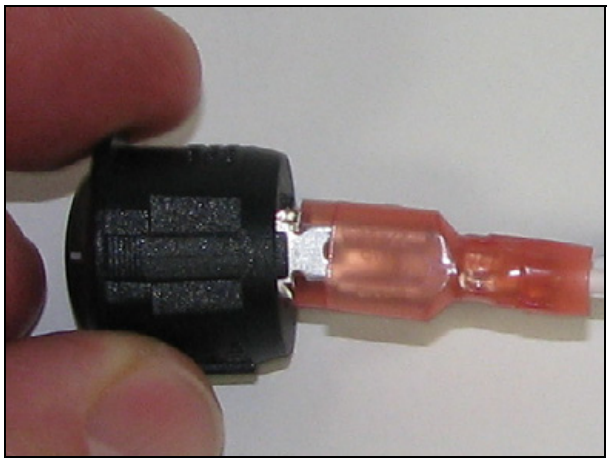
Note – *To install the switch provided, drill a ¾" hole.*



Step 5

Connect cable labeled R7 to the switch pins

Note – *Polarity is not important.*

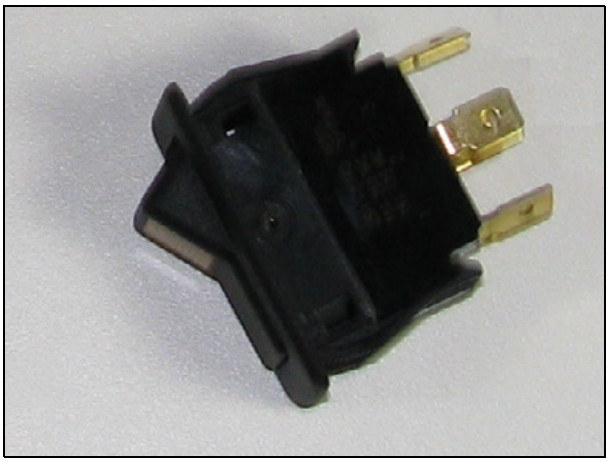


Installing the optional illuminated full or standard Euro switch

Step 1

Find an available knockout location on the vehicle console.

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

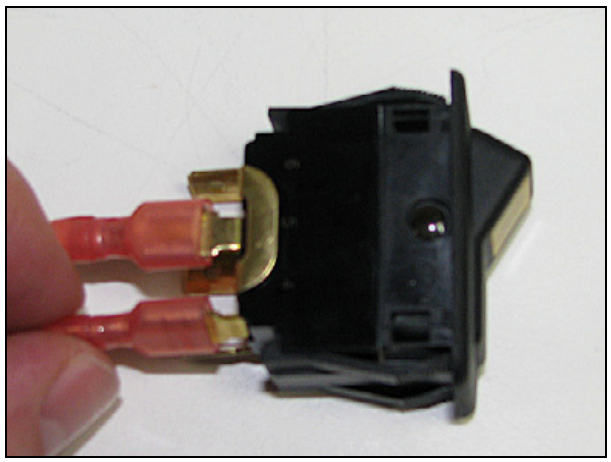


Step 2

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

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

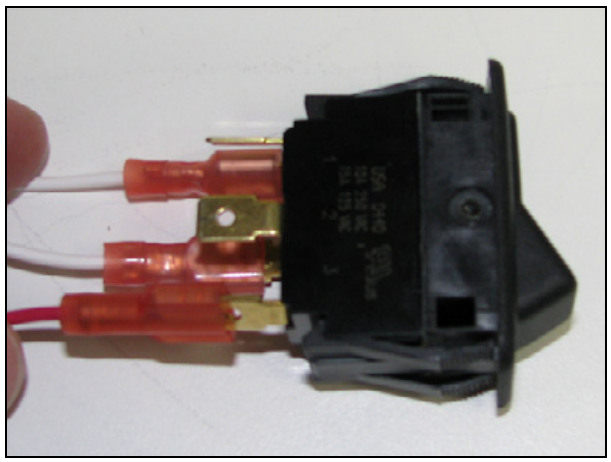
Note – *Polarity is important.*



Step 3

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

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



CHAPTER

7

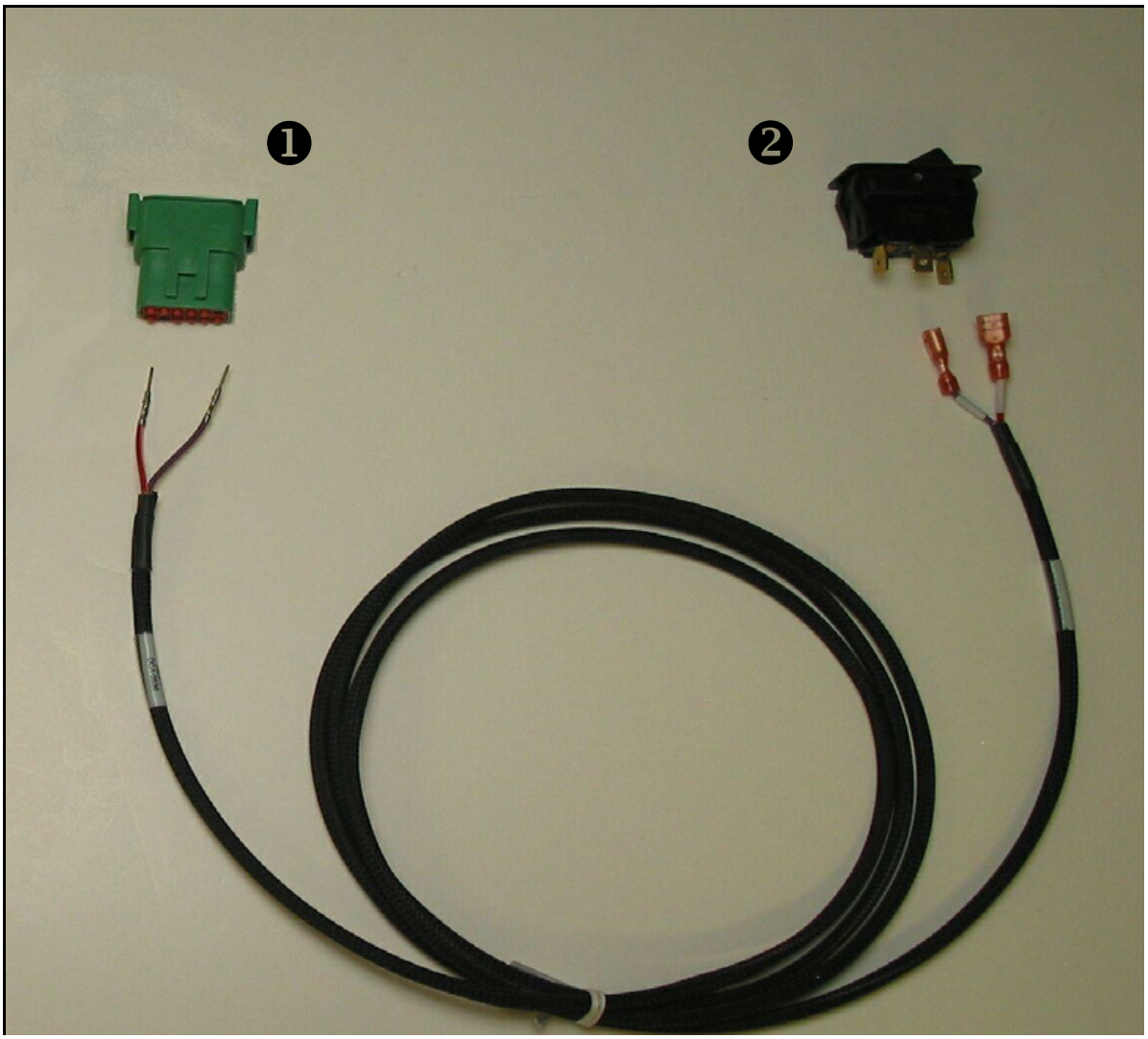
Remote Engage Switch Installation

In this chapter:

- Remote engage switch components: Rocker switch
- Remote engage switch components: Foot switch
- Preparing the remote engage cable
- Using the remote engage switch

This chapter describes how to install the remote engage switch.

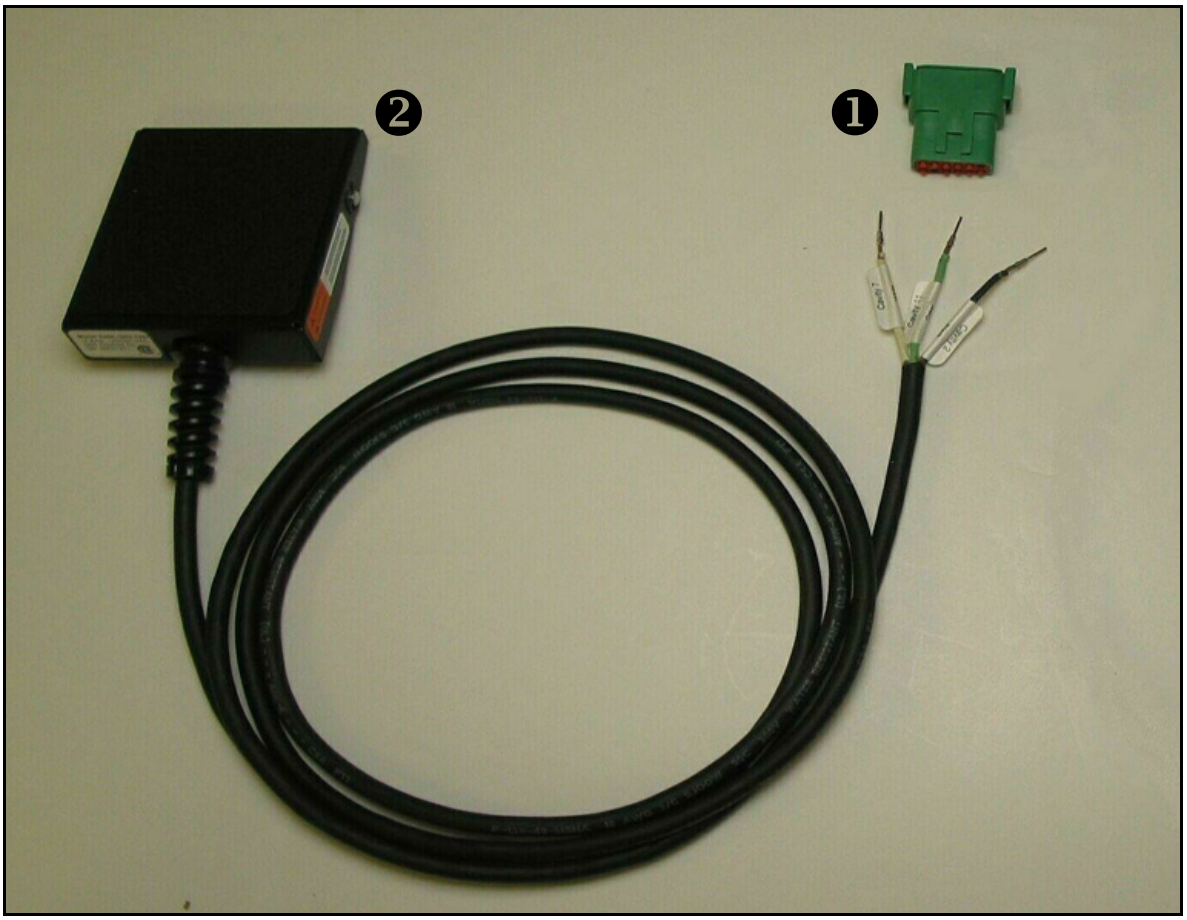
Remote engage switch components: Rocker switch



Item	Description
❶	DTM receptacle
❷	Remote engage rocker switch

Note – *Full or Standard Euro switch, depending on kit ordered.*

Remote engage switch components: Foot switch

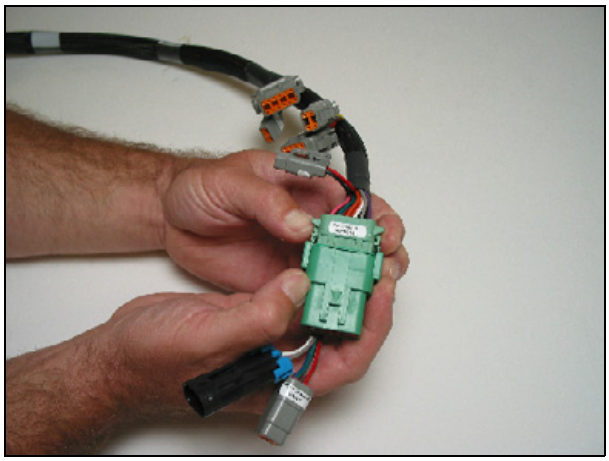


Item	Description
⓳	DTM receptacle
⓴	Remote engage foot switch

Preparing the remote engage cable

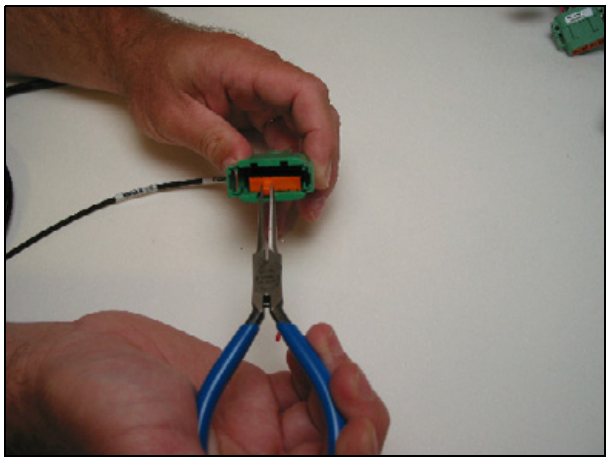
Step 1

Locate the green 12-pin Deutsch receptacle on the P-5 leg of the main Autopilot controller harness. See Connecting the controller, page 129.



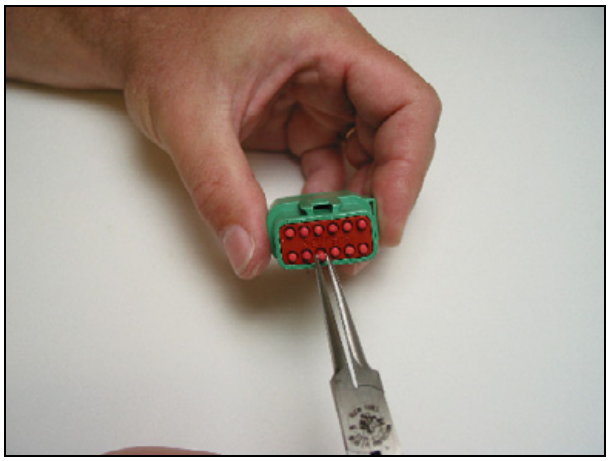
Step 2

Remove the wedge from the connector.



Rocker switch only

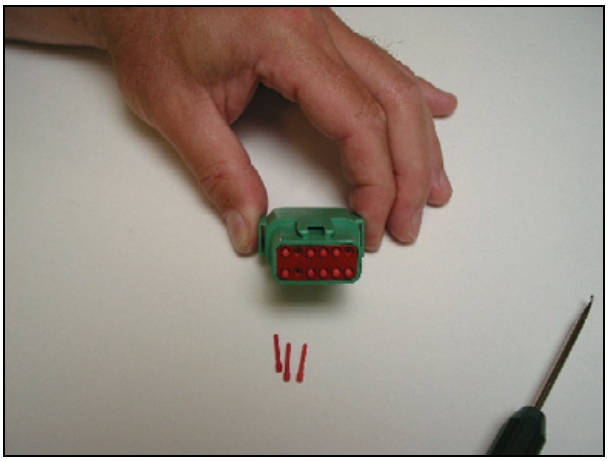
Remove the plugs from cavity 2 and 7.



Step 3

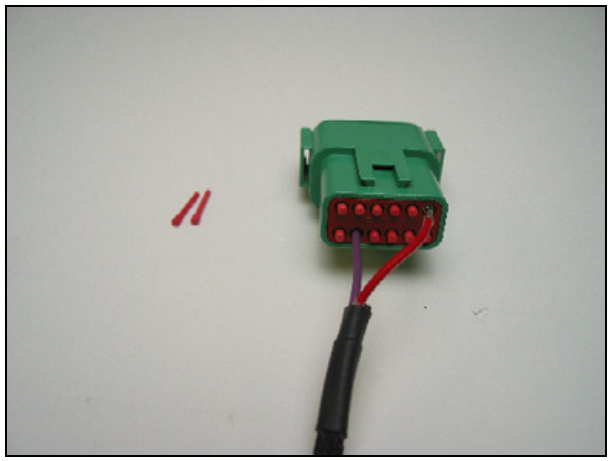
Foot switch only

Remove the plugs from cavity 2, 7, and 11.



Rocker switch only

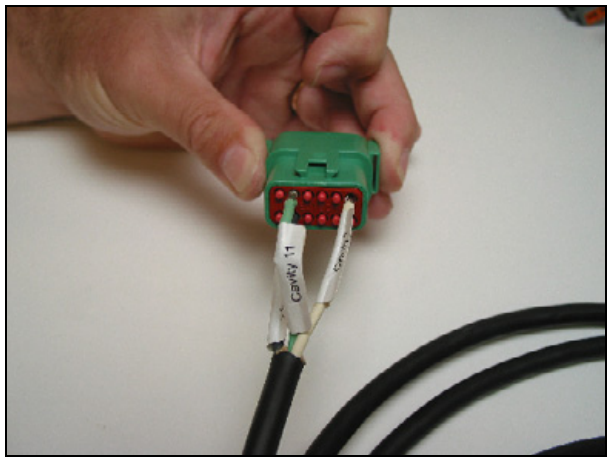
Insert the DTM pins into cavity 2 and 7 according to the labels on the wires.



Step 4

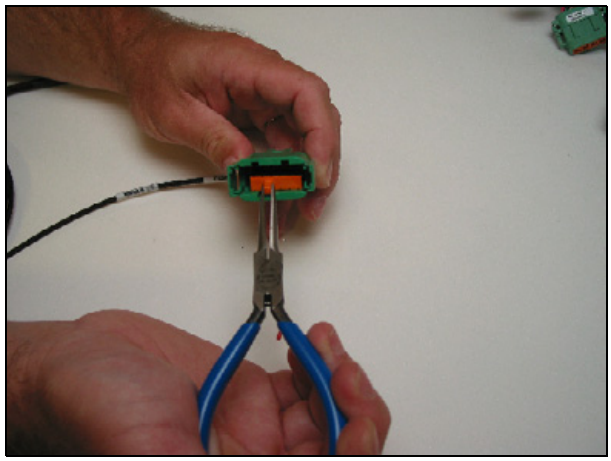
Foot switch only

Insert the DTM pins into cavity 2, 7, and 11 according to the labels on the wires.



Step 5

Pull on the wires to seat them in place. Replace the wedge in the connector.



Step 6

Connect the prepared remote engage cable receptacle to the P5 vehicle sensor connector on the NavController II harness

Step 7

Rocker switch only

Run the spade ends of the cable to a knockout location in the operator console.



Foot switch only

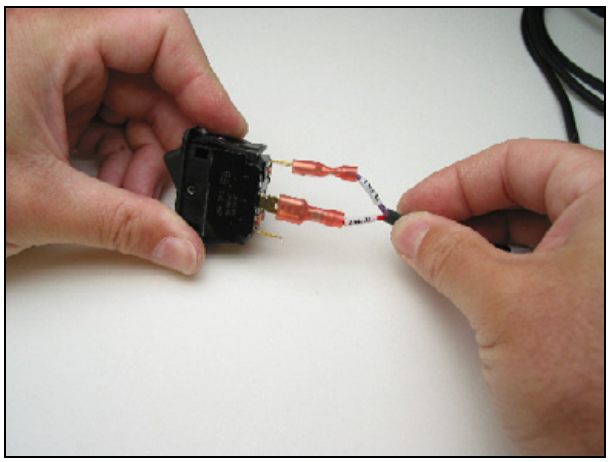
Run the cable to a clear location on the floor board. Use double-sided tape to secure the pedal. Route the cable under the floor mat.



Step 8

Rocker switch only

Connect the wires to the switch matching the print on the switch body and labels on the wires.



Step 9

Rocker switch only

Place the switch in the console.



Using the remote engage switch

1. Hold down the switch for at least 0.5 seconds.

Note – *Holding the switch for less than 0.5 seconds will not engage the system.*

2. Release the switch between 0.5 and 4.0 seconds. When you release the switch, the vehicle will engage.

CHAPTER

8

Controller Installation

In this chapter:

- Installing the controller
- 2010 and newer machines: Alternative placement
- Connecting the controller
- Connecting the cables to the controller

This chapter describes how to install the controller unit in the vehicle.

Installing the controller

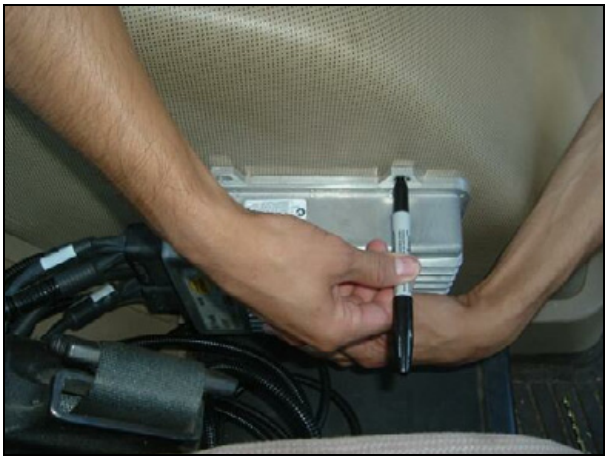
WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

6000 and small frame 7000 models

Step 1

Locate the controller connectors back and flanges left on the left fender wall. Use the controller as a template to mark the locations of the four mounting holes.

***Note** – For best performance, the controller must be parallel to the cab floor.*



Step 2

Use a right angle drill to drill four #10 clearance holes through the fender well.



Step 3

Use the provided #10 screws and nylock nuts to firmly mount the controller to the fender well.



Step 4 .

Insert the main and auxiliary harnesses into the connectors on the controller. Use an Allen wrench to tighten the allen head screws to secure the harnesses to the controller. They should be only snug; do not overtighten.



Large frame 7000 and 8000 models

Step 1

Pull back the floor mat between the operator's seat and the left hand console.



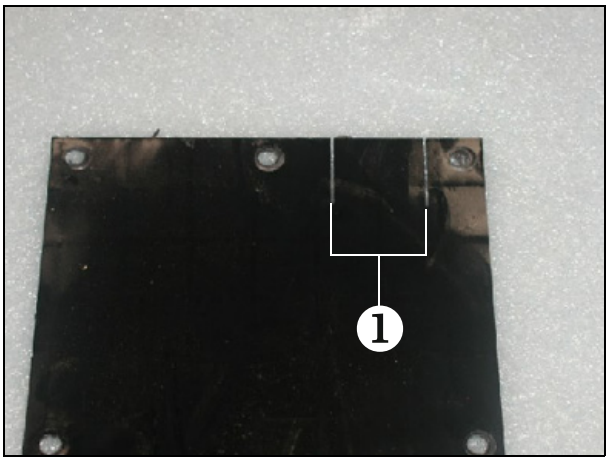
Step 2

Locate the plate bolted to the floor and remove the bolts.



Step 3

Remove the plate and cut two notches ❶ in the back corner of the plate between the bolt holes.



Step 4

Bend back the piece between the cuts. Smooth the rough edges on the plate with a file.



Step 5

Replace the plate in the floor and tighten the bolts. Route all cables into the cab through this access hole except the antenna/receiver cables. Replace the floor mat. Leave the cables out from under the mat.



Step 6

Place the controller mounting plate against the left side of the seat base slightly off the floor.

Note – *Ensure that the counter sink holes are over the metal seat base but are up as high as possible on the seat. This is to allow clearance for the floor mat.*



Step 7

Use the mounting plate as a template to drill four holes to match the fasteners.

Note – *It is necessary to drill through the track for the drawer as well. You may need to clamp the track and seat base while drilling.*



Step 8

Use the four supplied ¼-20 bolts to mount the plate. Install lockwashers and nuts on the inside of the seat base. Tighten the nuts securely.



Step 9

Insert the main and auxiliary harnesses into the connectors on the Autopilot controller. Tighten the allen head screws to secure the harnesses to the controller. The allen head screws should only be snug. Do not overtighten.



Step 10

Use the four #10-32 Phillips head screws provided to attach the controller to the mount plate. Tighten the screws securely.



Step 11

Connect the various cables to the appropriate leads on the controller main harness. The connectors are marked with identifying labels for ease of connection.



2010 and newer machines: Alternative placement

Step 1

Install the controller where shown.



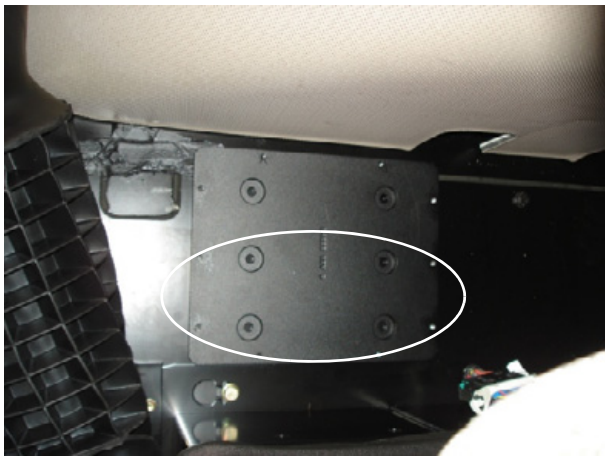
Step 2

Fold the floor mat under the brake pedal.



Step 3

Place the NavController II plate on floor next to the seat. Line up the edge of plate with the edge seat flange a ½ inch back from the front edge and mark the four holes shown



Step 4

Before you drill the holes in the floor, note the location of the fuel tank.



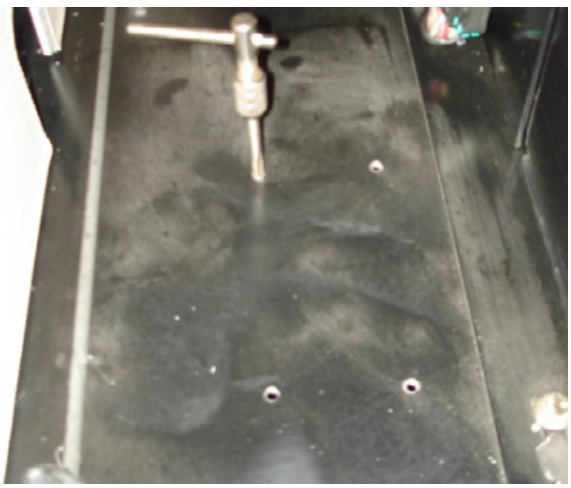
WARNING – ***Do not*** drill into the fuel tank or fuel lines.

WARNING – This piece is part of the fuel tank and is made of plastic.



Step 5

Drill and tap the hole 1/4" 20 tap



Step 6

On narrow track RT models, you must remove the floor mat from the cab to reach the floor access panel.



Step 7

Remove the panel to gain access to install the NavController II bolts,



Step 8

Screw the bolts into place.



Step 9

Attach standoff nut to the bolts.



Step 10

Cut holes in the floor mat for the standoff nuts to go through.



Step 11

Use the bolts provided to attach the controller mounting plate to the previously installed standoff nuts.



Step 12

With the cables positioned toward the back of the tractor, use the 10-32 screws provided to attach the controller.

Attach the cables to the controller.



Step 13

At the rear of the machine, remove the rear access panel.



Step 14

Remove the tray that holds the owner's manual.

Lift the tray straight up and then move it toward the seat.



Step 15

Carefully remove the weather stripping.





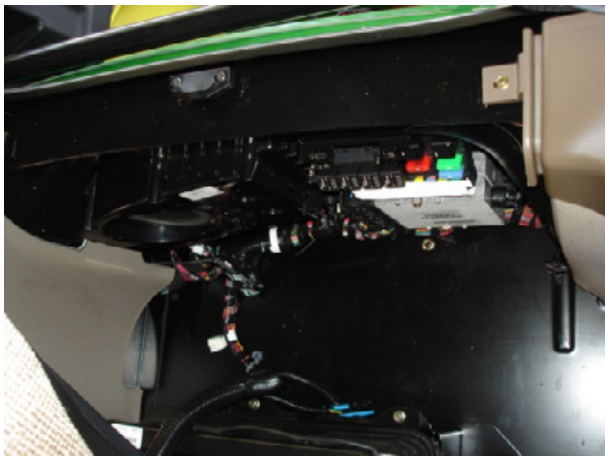
Step 16

Loosen both bolts using #30 torques bit. You do not need to remove the bolts.



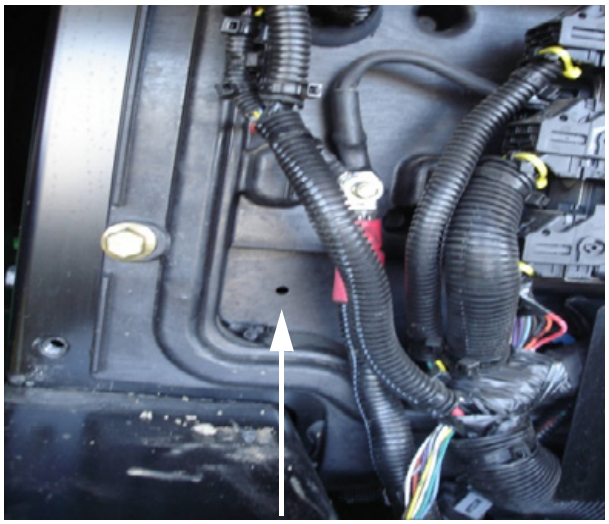
Step 17

Slowly pull the back plate toward the front of tractor. It has two friction clips holding it place.



Step 18

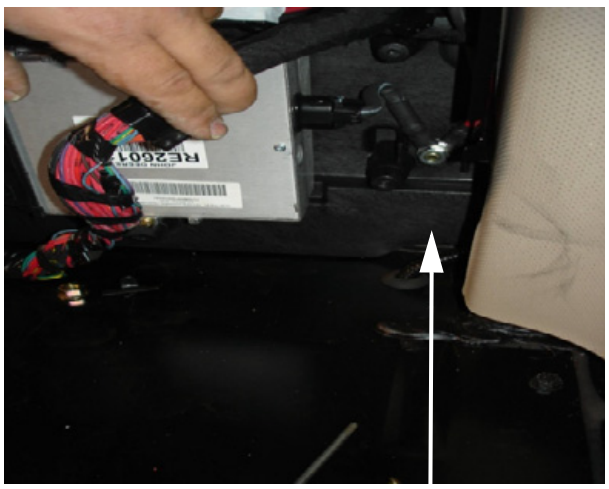
Behind the panel, mark the place to drill the access hole.



Approximate drill location

Step 19

From the inside, move the wiring harness into the corner.



Approximate drill location

Step 20

Drill the 2" access hole.

Make sure that you avoid the wiring harness.



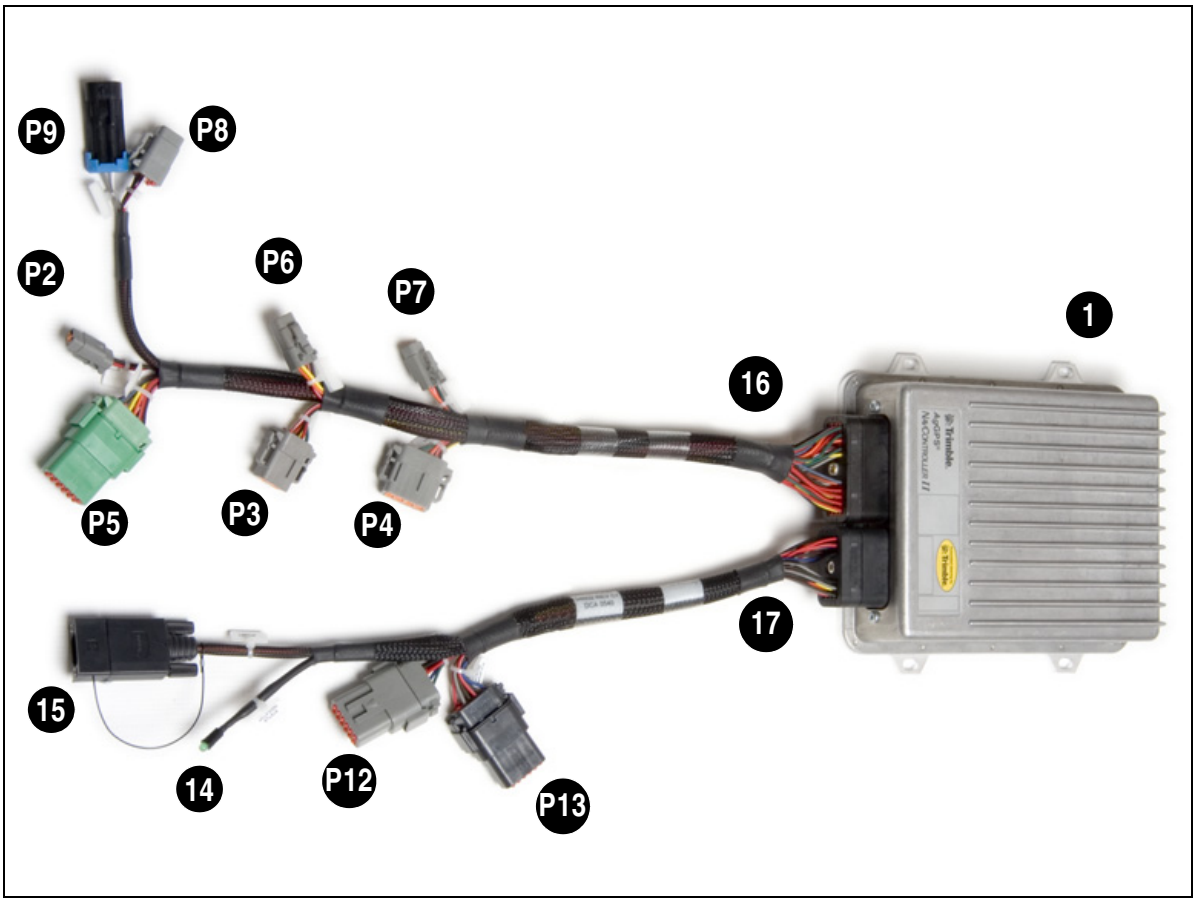
Step 21

Route power and interface connections through the access hole.

Tip – *To prevent wire damage, line the access hole with a rubber gromet.*



Connecting the controller



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

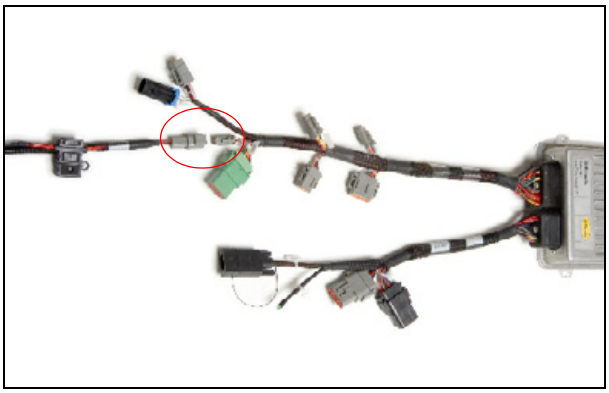
Item	Description
P9	Sonalert connector
P12	Lightbar/spare connector
P13	Spare sensors connector
14	Status indicator
15	Laptop connector
16	Main harness
17	Auxiliary harness

Connecting the cables to the controller

Step 1

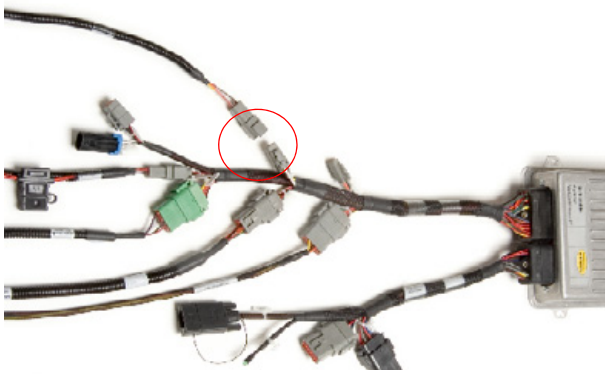
Connect the power cable connection to P-2, which is labeled “Power”. P-2 is on the main wiring harness.

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



Step 2

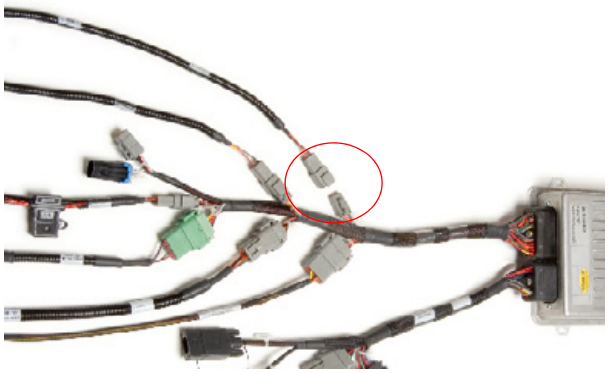
Connect the steering sensor cable connection to P-6, which is labeled “Steering Sensor”. P-6 is located on the main wiring harness.



Step 3

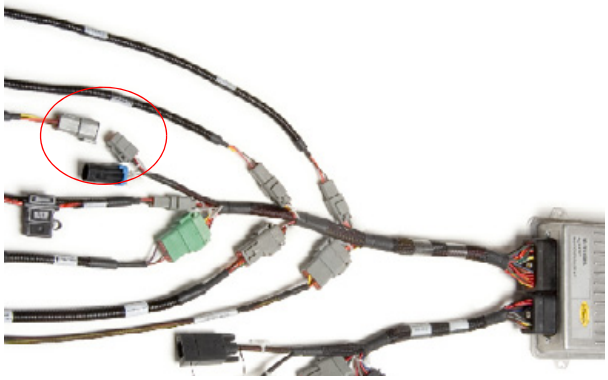
Connect the manual override cable connection to P-7, which is labeled “Manual Override”. P-7 is located on the main wiring harness.

Note – *When you install the remote engage harness, add the pins to the existing connector*



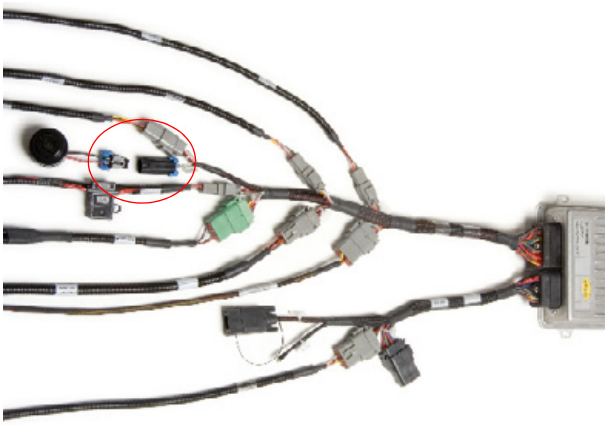
Step 4

Connect the manual override cable connection to P-5 and P-13. P-5 is on the main wiring harness and P-13 is located on the auxiliary wiring harness.



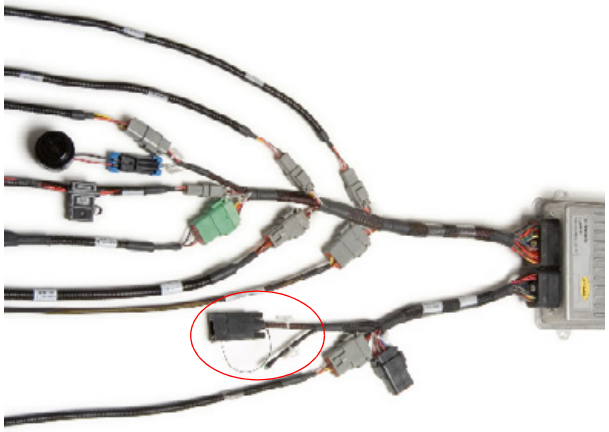
Step 5

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 6

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 7

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

9

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

   You can use FlashLoader 200 software version 3.19 to update the Autopilot controller: Download it from http://agpartners.trimble.com.
4. Do the following:

   a. Load the correct configuration file into the NavController II for the tractor model being used.

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

   c. Locate latest External Vehicle Profiles on http://www.agpartners.trimble.com.

   d. Use the correct VDB file for the tractor being used.

   You can use Autopilot Toolbox II software version 2.89 to load the configuration file into the Autopilot controller: Download it from http://agpartners.trimble.com.
5. Calibrate the Autopilot system using the Trimble display or Autopilot Toolbox II software version 2.89. Depending on your machine type, the following items must be calibrated before you can use the Autopilot system:

   – NavController II mounting orientation

   – Manual override

   – AutoSense mounting orientation

   – Valve deadzone

   – Autopilot P-gain

   – Antenna height/Antenna axle offset, and Roll offset