*Ag*GPS® Autopilot™ Automated Steering System

Installation Instructions

Case IH

- **2377 Combine**
- **2388 Combine**

Version 3.00
Revision B
Part Number 54038-21-E03
January 2007

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

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Meerheide 45
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Safety Information

In this chapter:

- Warnings
- Cautions

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.

Cautions



CAUTION – When the vehicle has been running, parts of the vehicle, including the engine and exhaust, can become extremely hot. These hot parts 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. These can cause poisoning. Ensure that you wash you hands thoroughly after you have finished working on the system.



CAUTION – Battery posts, terminals, and related accessories contain lead and lead compounds. Lead poisoning can cause lowered intelligence and kidney problems. To avoid ingesting lead, ensure that you wash you hands thoroughly after touching the battery.



CAUTION – Vehicle cabs can be quite high in the air. Falling from this height can cause broken bones and internal injuries. To avoid falling from the vehicle, ensure that when you enter or exit the vehicle, you face the vehicle and use the steps and handrails.



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 proper protective welders clothing if you want to complete any 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 sprayer by pressurized liquids, hold a rag over fill caps, breathers, or hose connections when you remove them. Do not use your bare hands to check for hydraulic leaks. Use a board or cardboard instead.

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CHAPTER

1

Introduction

This manual describes how to install the Trimble® *Ag*GPS® 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.

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** button at the top of the screen. The Support A–Z list of products appears.
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 SL *Ag*GPS 114 manual guide system

Retain	Remove
*Ag*GPS 21A lightbar	Lightbar cable (P/N 35204)
*Ag*GPS 114 antenna/receiver	**NOTE**: *Replace with lightbar only cable from conversion kit.*
	*Ag*GPS 114 receiver cable (P/N 40947)
	NOTE: *Replace with cable (P/N 47045) from conversion kit. Extension cable available as accessory.*
	Remote keypad

*Ag*GPS 124 or *Ag*GPS 132 PSO system

Retain	Remove
*Ag*GPS 21A lightbar	Lightbar to receiver cable
Antenna for *Ag*GPS 124 or 132 receiver	**NOTE**: *Replace with lightbar only cable from conversion kit.*
*Ag*GPS 124 or 132 receiver	Remote keypad
Antenna to receiver cable	

*Ag*GPS 150 EZ-Guide Plus lightbar

Retain	Remove
*Ag*GPS 150 EZ-Guide Plus lightbar	
Antenna for *Ag*GPS 150 EZ-Guide Plus lightbar	
Antenna to receiver cable	
(Optional) Remote keypad	

Required Components

Kits required	Special tools
Platform kit: P/N 54038-21	Drill (with 5/16" and 7/16" drill bits)
Hydraulic hose kit: P/N 59767	Open end wrench set (metric and SAE)
Roof bracket kit:	Allen wrench set (metric and SAE)
P/N 55483 (grain bin mount)	
P/N 55685-00 (magnetic roof mount)	

Note – *The roof bracket kits are not provided with the platform kit. To determine which roof bracket kit you require, see Chapter 4, Antenna/Receiver Installation.*

Autopilot Hardware Organization - as Shipped

These kits are not necessarily included with the platform kit. Before you begin an installation, ensure that you have all of the parts necessary.

Platform kit (P/N 54038-21)	**Common parts**	**GPS receiver**	**Display**	**Hyd. hose kit (P/N 59767)**	**Roof bracket kit (P/N 55483 or P/N 55685-00)**
(2) Hydraulic valve (2) Hydraulic manifold (2) Transducer, flow switch (2) Manifold mounting bracket (2) Manual override cable (2) Bolt kit - hydraulics (2) Hydraulic valve cable (3) Steering device cable (3) Steering device, mounting brackets, and hardware (6) Power cable (8) Bolt kit, controller	(8) Controller (8) Cable kit • Main wiring harness • Auxiliary wiring harness • Sonalert alarm	(4) GPS receiver (4) GPS antenna (4) GPS receiver mounting bracket (4) GPS receiver power/data cable (4) RTK radio, cable and mounting bracket kit (supplied separately)	(5) Lightbar (5) *Ag*GPS 170 (5) *Ag*GPS 170 cable (5) *Ag*GPS 170 mounting bracket (5) *Ag*GPS 50 lightbar (5) *Ag*GPS 150 lightbar	(2) Hyd. hoses (2) Hyd. adaptors	(4) Roof brackets (4) Bolt kit, roof bracket

Note – *The number in brackets refers to the chapter where that component is installed.*

Autopilot Hardware Organization - as Installed

Hydraulics (2)	Steering device (3)	GPS receiver (4)	Display (5)	Power (6)	Controller (8)
• Hydraulic valve, manifold, flow switch, manifold mounting bracket • Hydraulic valve cable • Manual override cable	• Steering device assembly, mounting brackets, and hardware • Steering device cable	• GPS receiver • GPS antenna • GPS receiver mounting bracket • GPS receiver power/data cable • Roof brackets	• Lightbar • *Ag*GPS 170 • Lightbar cable • *Ag*GPS 170 cable • Lightbar mounting bracket • EZ-Guide Plus	• Power cable	• Controller • Bolt kit - controller • Main wiring harness • Aux. wiring harness • Sonalert alarm

Pre-installation Vehicle Preparation

Step 1

Park the vehicle on a level, hard surface. Block the front and rear wheels.

Step 2

Align the steering straight ahead. On an articulated vehicle, install the articulation locks.

Step 3

Remove all dirt and debris from the areas of the vehicle where the *Ag*GPS Autopilot system will be installed.

Step 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

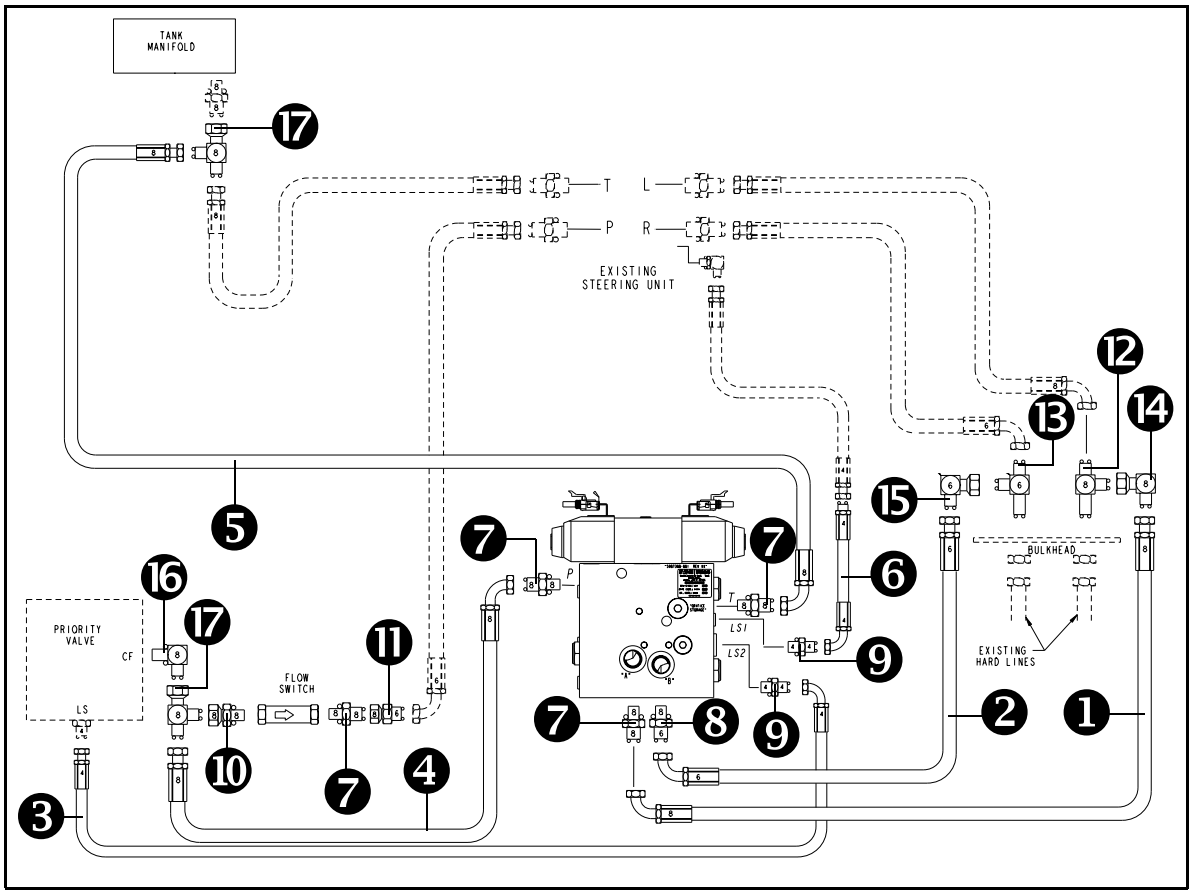
Hydraulic Control Valve Installation

In this chapter:

- Hydraulic Control Valve Components
- Preparing the Hydraulic Control Valve
- Installing the Manifold
- Installing the Pressure Line and Flow Switch
- Installing the Hydraulic Hoses
- Installing the Tank Line
- Securing the Electrical Connectors

This chapter describes how to install the hydraulic control valve and hoses.

Hydraulic Control Valve Components



Item	Description	Part number
❶	72 inch hose	TC451JSJ9-08-08-08-72
❷	72 inch hose	TC451JSJ9-06-06-06-72
❸	42 inch hose	TC451JSJ9-04-04-04-42
❹	30 inch hose	TC451JSJ9-08-08-08-30
❺	20.5 inch hose	TC451JSJ9-08-08-08-20.5
❻	11 inch hose	TC451J0J9-04-04-04-11
❼	Fitting (x4)	8 F5OLO-S
❽	Fitting	6-8 F5OLO-S
❾	Fitting (x2)	4 F5OLO-S

Item	Description	Part number
❿	Fitting	8 F65OL-S
⓫	Fitting	8-6 TRNLON-S
⓬	Fitting	8 WJJLO-S
⓭	Fitting	6-WJJLO-S
⓮	Fitting	8 C6LO-S
⓯	Fitting	6 C6LO-S
⓰	Fitting	8 C5OLO-S
⓱	Fitting (x2)	8 R6LO-S

Note – *Part numbers are Parker numbers and are for reference only.*

Preparing the Hydraulic Control Valve

Note – *Place the hydraulic control valve on a clean work surface.*

Step 1

Locate the manifold, pilot-to-shift valve, and pressure compensation cavity plug.



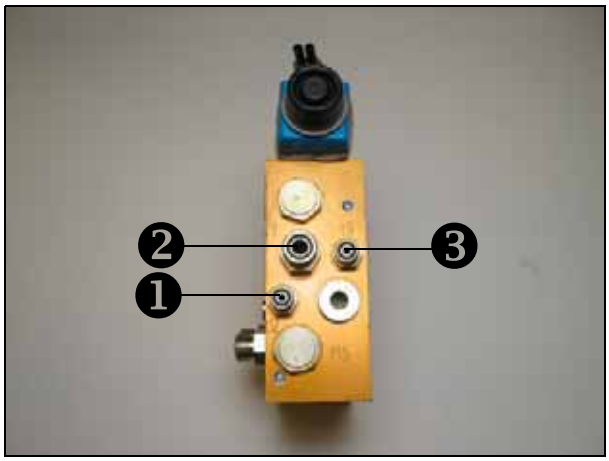
Step 2

Install the following fittings in the ports as shown:

❶ -4 ORFS straight in the LS2 port

❷ -8 ORFS straight in the T port

❸ -4 ORFS straight in the LS1 port



Step 3

Locate the pilot-to-shift cartridge (PTS) with "PTS3-10-0-40" stamped on the head.



Step 4

Remove the -10 ORB plug from the port above the “PTS” label.

Note – *To make removal easier, tap the plug several times with a ball peen hammer.*



Step 5

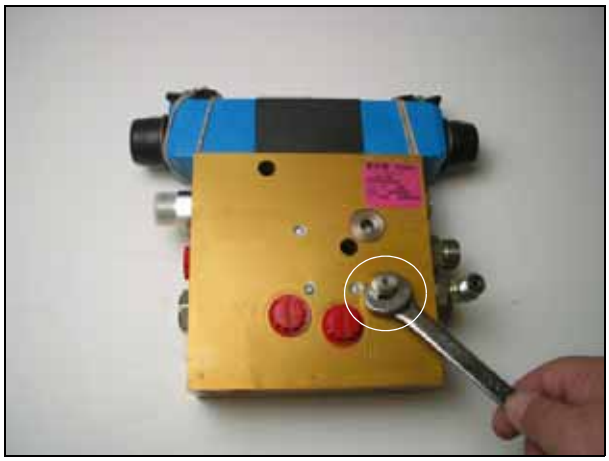
Insert the pilot-to-shift cartridge in the cavity as shown. The cartridge should match the cavity dimensions.

Note – *To seal the cavity correctly, the o-rings and backup rings must be clean and in place.*



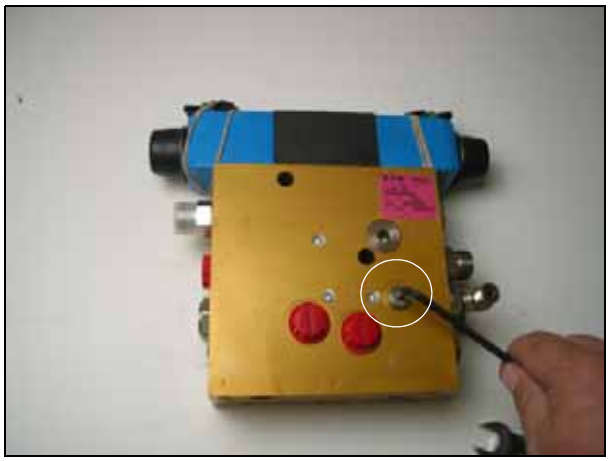
Step 6

If it is installed, remove the check valve from the LS line.



Step 7

Install a -4 ORB plug in place of the check valve.



Step 8

Install a -8 ORFS straight fitting in the A port and a -6 ORFS in the B port.



Step 9

Install a -8 ORFS straight fitting in the P port.



Note – *Identify the number of steering cylinders on the rear axle (one or two) and then complete Step 10 and Step 11 accordingly. The 40 psi pressure compensation cartridge compensates for axles with one steering cylinder rather than two.*

Step 10 Dual cylinder axles

Locate the pressure compensation cavity plug stamped "C-10-3S" or "2186484".



Single cylinder axles

Locate the pressure compensation cartridge stamped "DPS2-10-F-F-0-40".



Step 11 Dual cylinder axles

Install the P-Comp cavity plug into the P-COMP port.

Note – *To seal the cavity correctly, the o-rings and backup rings must be clean and in place.*



Single cylinder axles

Install the P-Comp cartridge into the P-Comp port.

Note – *To seal the cavity correctly, the O-rings and backup rings must be clean and in place.*



Step 12

Connect the kit supplied 90 end of the 11" hose to the LS1 port. Position the hose as shown.



Installing the Manifold

Step 1

Locate the mounting location on the panel below the access door.



Step 2

Make a vertical mark 3" from the left break.

Note – *The photo is taken facing towards the front of the vehicle.*



Step 3

Clamp the AgGPS Autopilot manifold valve to the front panel below the access door. Position the manifold 3” from the left of the panel.



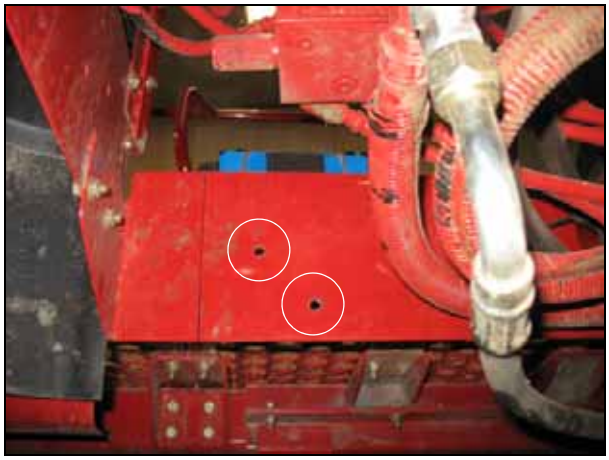
Step 4

Position the manifold even with the top lip of the panel.



Step 5

Mark the two through-hole locations and drill two 7/16" holes.



Step 6

Install the valve as shown using the 3½" long 3/8" bolts and hardware provided.



Installing the Pressure Line and Flow Switch

Step 1

Install the following fittings:

Downstream end:

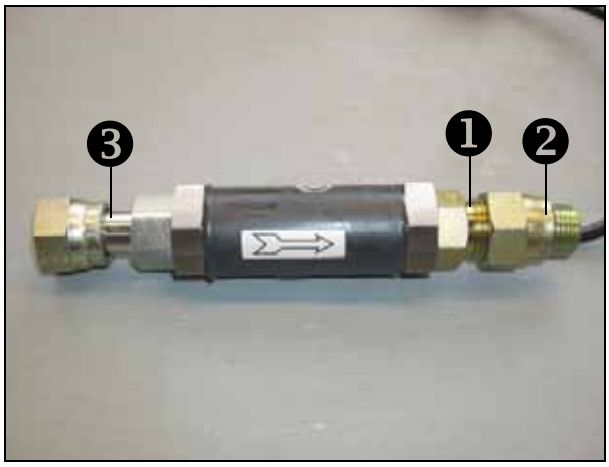
❶ -8 ORFS male by -8 ORB male

❷ -8 to -6 ORFS reducer

Upstream end:

❸ -8 ORFS female by -8 ORB male

Note – *Do not use a -8 ORB male by -6 ORFS female in place of fittings* ❶ *and* ❷*. The flow switch plunger can become stuck on the -8-6 fitting.*



Step 2

To avoid excess loss of hydraulic fluid, attach a shop vacuum to the hydraulic fill tube on the reservoir. This creates a vacuum and slows the drain of oil in the following steps.



Step 3

Locate the priority valve.



Step 4

Remove the existing -6 control flow (CF) hose and fitting on the port labeled “CF”. Verify this line runs to the hand pump.



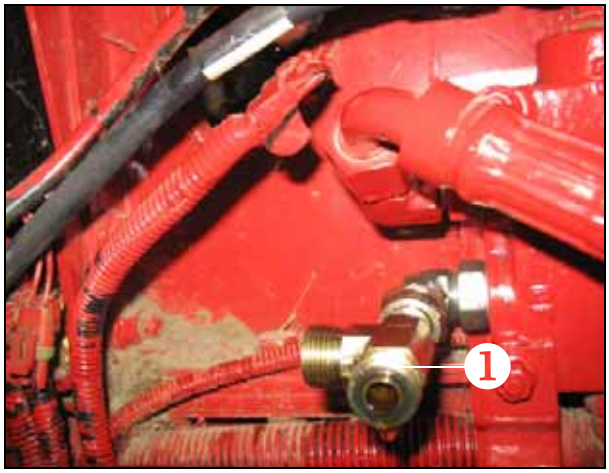
Step 5

Install a -8 ORFS male by -8 ORB 90 adaptor in place of the original straight adaptor. Point the adaptor away from the panel.



Step 6

Install a -8 run tee ❶. Point the tee to the front of the vehicle.



Step 7

Install the flow switch to the existing CF hose removed in Step 4. The arrow on the flow switch points to the hose.



Step 8

Connect the flow switch and hose to the tee fitting in Step 6.

Note – *The flow switch arrow points to the hand pump.*



Step 9

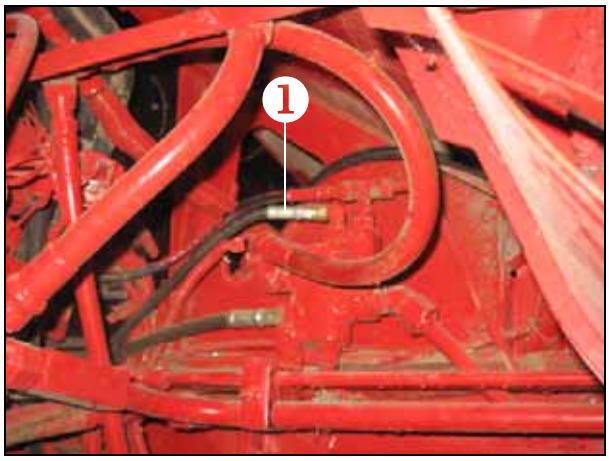
Connect the 90 end of the 30" kit provided pressure hose to the manifold and then to the tee ❶ on the "CF" port.



Installing the Hydraulic Hoses

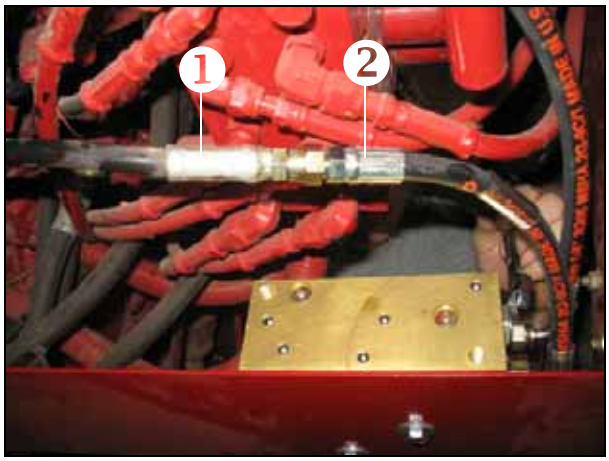
Step 1

Locate the load sense “LS” line ❶ on the priority valve.



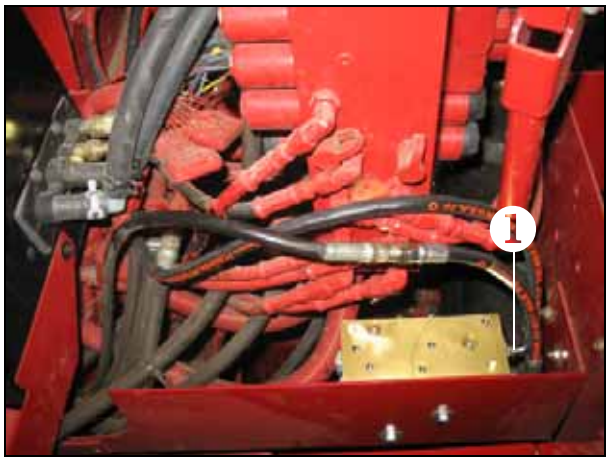
Step 2

Remove the LS line and reroute it to the *Ag*GPS Autopilot manifold. Connect the existing LS line ❶ to the male end of the LS1 hose ❷.



Step 3

Connect the 90 end of the kit provided 42" LS2 hose ❶ to the manifold “LS2” port and route the hose to the priority valve.



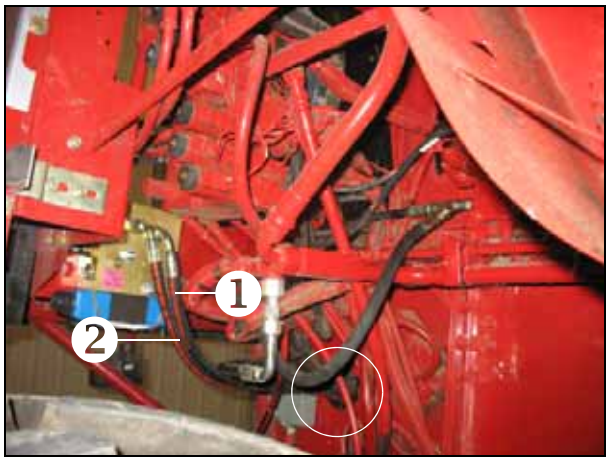
Step 4

Connect the straight end of the 42" LS2 hose to the priority valve.



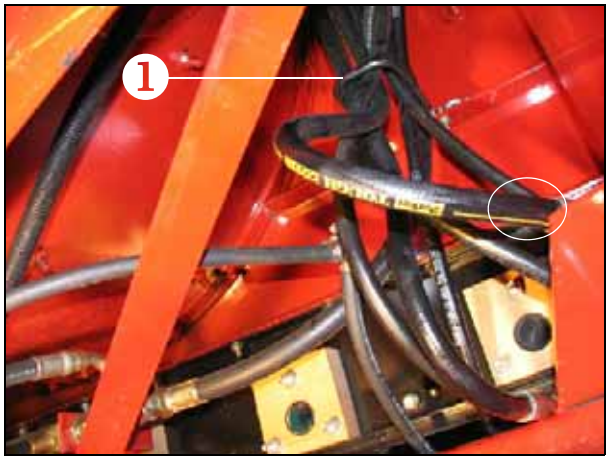
Step 5

Attach the 90 degree end of the 72 inch -8 hose ❶ (supplied in the kit) to the A port on the control valve. Attach the 90 degree end of the 72 inch -6 hose ❷ (supplied in the kit) to the B port on the control valve. Route the other ends of these hoses along with the existing hoses into the interior of the combine.



Step 6

From under the feeder housing, route the hoses through the hose loop ❶ down and back toward the cleaning fan.



Step 7

Remove the existing left and right cylinder steering hoses at the bulkheads in front of the cleaning fan.



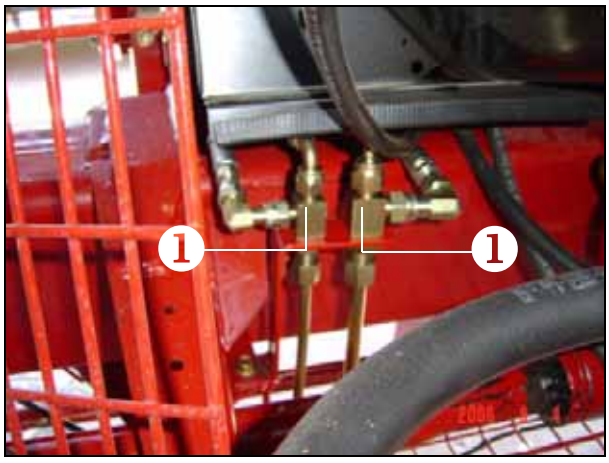
Step 8

Remove the existing bulkheads.



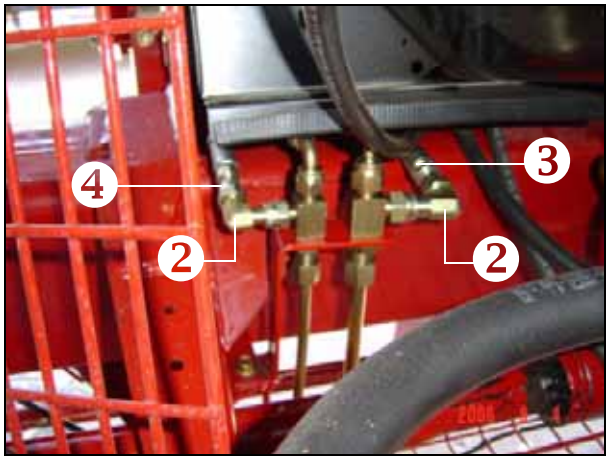
Step 9

Install the kit provided bulkhead tees ❶ in place of the existing bulkheads.



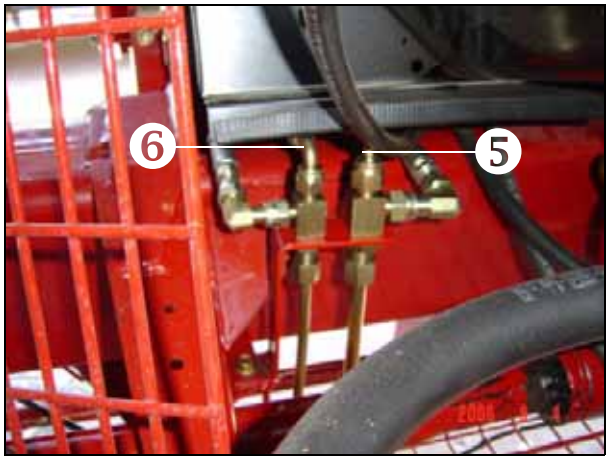
Step 10

Install 90 swivels ❷ to the bulkheads and connect the A ❸ and B ❹ hoses previously routed from the manifold.



Step 11

Reconnect the existing left ❺ and right ❻ steering lines to the bulkheads.



Installing the Tank Line

Step 1

Install a run tee ❶ at the tank manifold located behind the *Ag*GPS Autopilot manifold.

Note – *Use the vacuum on the oil reservoir. See Step 2 in* *Installing the Pressure Line and Flow Switch, page 16* *to avoid draining the reservoir.*



Step 2

Connect the 90 end of the kit supplied 20.5" tank line to the T port on the manifold ❶. Connect the opposite end to the run tee ❷.



Securing the Electrical Connectors

Step 1

Locate the control valve harness (P/N 54617).



Step 2

Plug the two connectors from the control valve harness into the control valve. Route the other end of the harness under the cab toward the right hand service door. Secure the harness with tie straps along the path.



Step 3

Locate the flow switch harness (P/N 54626).



Step 4

Plug the connector from the flow switch harness into the flow switch. Route the opposite end of the harness under the cab toward the right hand service door. Secure the harness with tie straps along the path.



Step 5

Check and tighten all hydraulic fittings.

CHAPTER

3

AutoSense Steering Device Installation

In this chapter:

- AutoSense Steering Device Components
- Install the AutoSense Steering Device
- Harness Preparation (P/N 54602 Rev C)

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

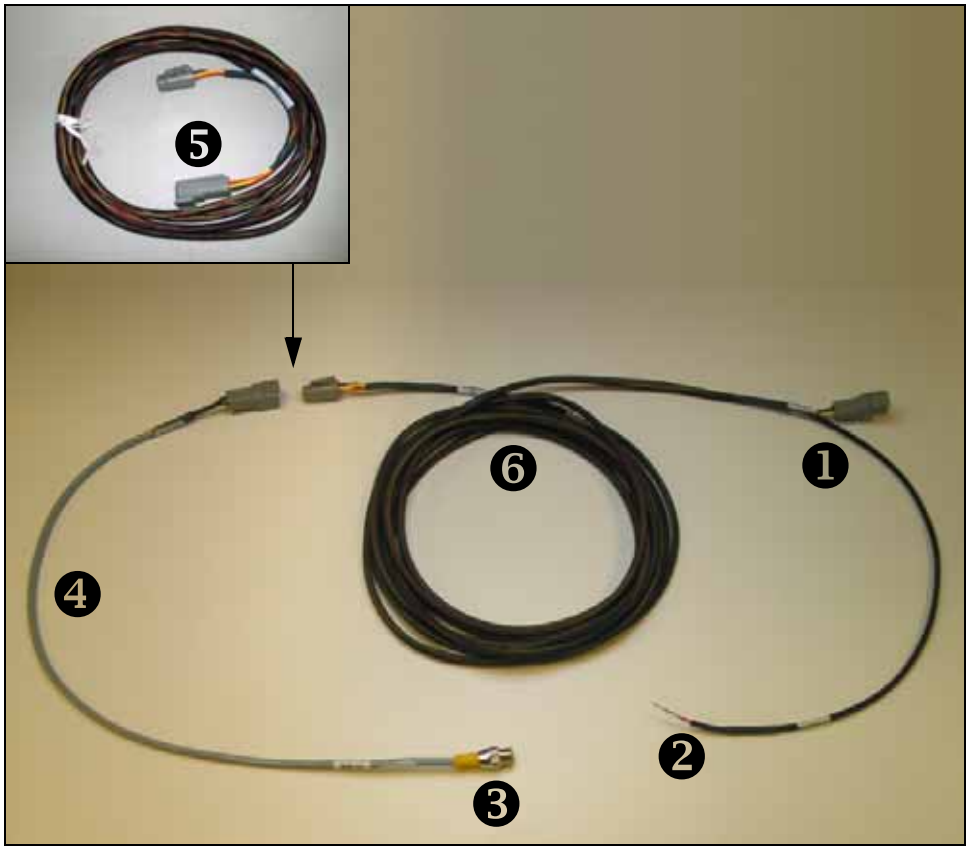
If the described mounting location is not accessible, chose an alternate location. To ensure proper function, the AutoSense device must be located in a position that is free of obstructions and allows it to rotate with the wheels when they turn.

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 the device maintains a level orientation. Do not mount the device on its side. An angle of up to 10 degrees in any direction is acceptable.

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

AutoSense Steering Device Components



Item	Description
1	P-6 connector
2	Power connector
3	AutoSense connector
4	Jumper cable (P/N 57560)
5	AutoSense extension cable (P/N 55656)
6	AutoSense steering cable (P/N 57885)

Install the AutoSense Steering Device

Step 1

Locate the mounting location on the right rear tie rod.



2WD AXLES



4WD AXLES

Step 2

Remove the cotter pin and castle nut from the tie rod end.



2WD AXLES



4WD AXLES

Step 3

Install the adaptor nut and reinstall the cotter pin.



2WD AXLES



4WD AXLES

Step 4

Use the included 3/8 bolt and thread locker to mount the plate to the adaptor nut. Tighten securely.



2WD AXLES



4WD AXLES

Step 5

Mount the AutoSense device using the included #6-32 screws.

Note – *Point the AutoSense device in the direction that provides the best cable routing.*



2WD AXLES



4WD AXLES

Step 6

Route the steering cable to the steering device behind the rear of the axle to avoid damage from stalks. Connect the jumper cable to the steering device. Leave adequate length on the service loop to avoid stretching the cable.



2WD AXLES



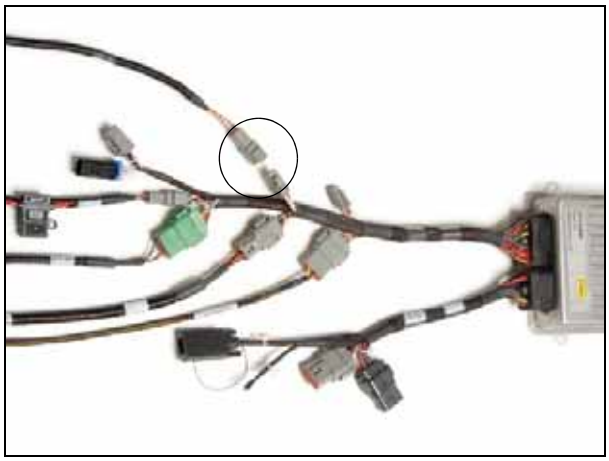
4WD AXLES

Step 7

Connect the steering cable extension to the short jumper cable. Connect the main steering cable to the extension and route to the controller.

Step 8

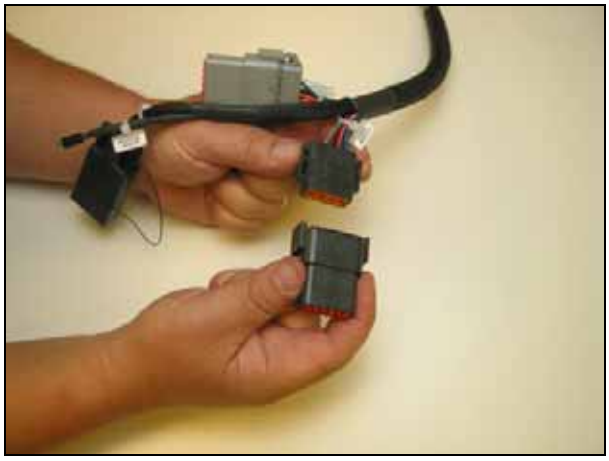
Connect the steering device cable connection to P-6 on the main wiring harness. P-6 is labeled “Steering Sensor”.



Harness Preparation (P/N 54602 Rev C)

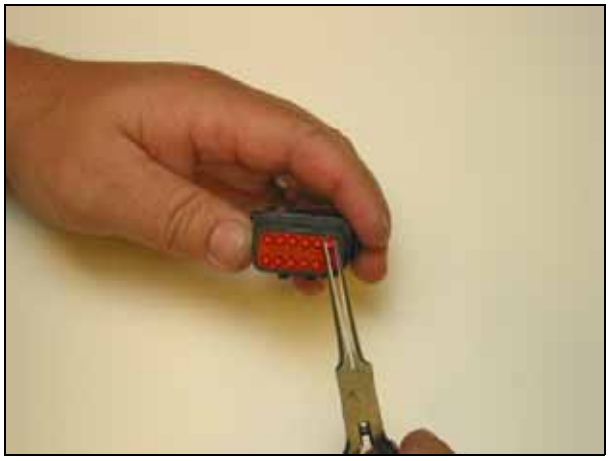
Step 1

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



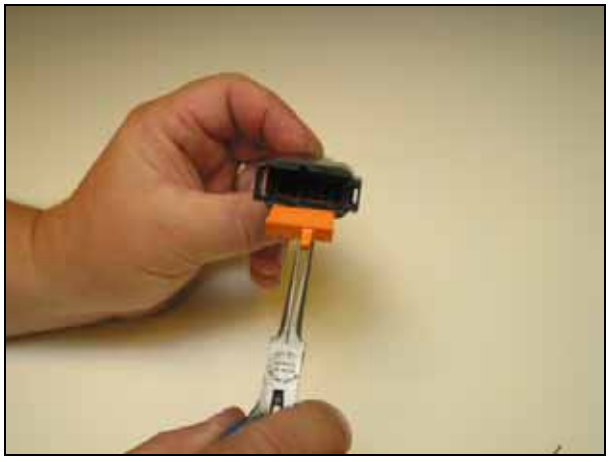
Step 2

Remove the plug from cavity number 1.



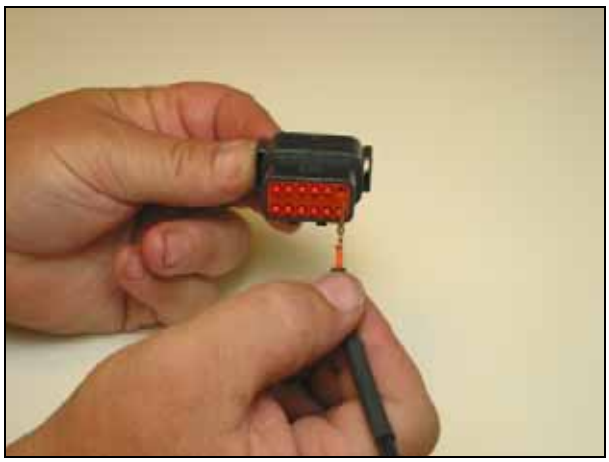
Step 3

Remove the wedge from the connector.



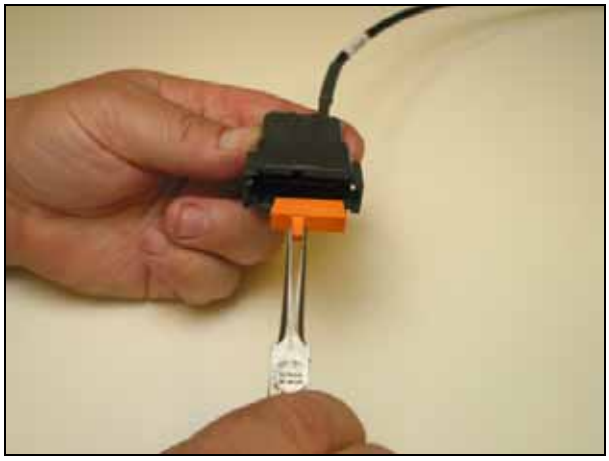
Step 4

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

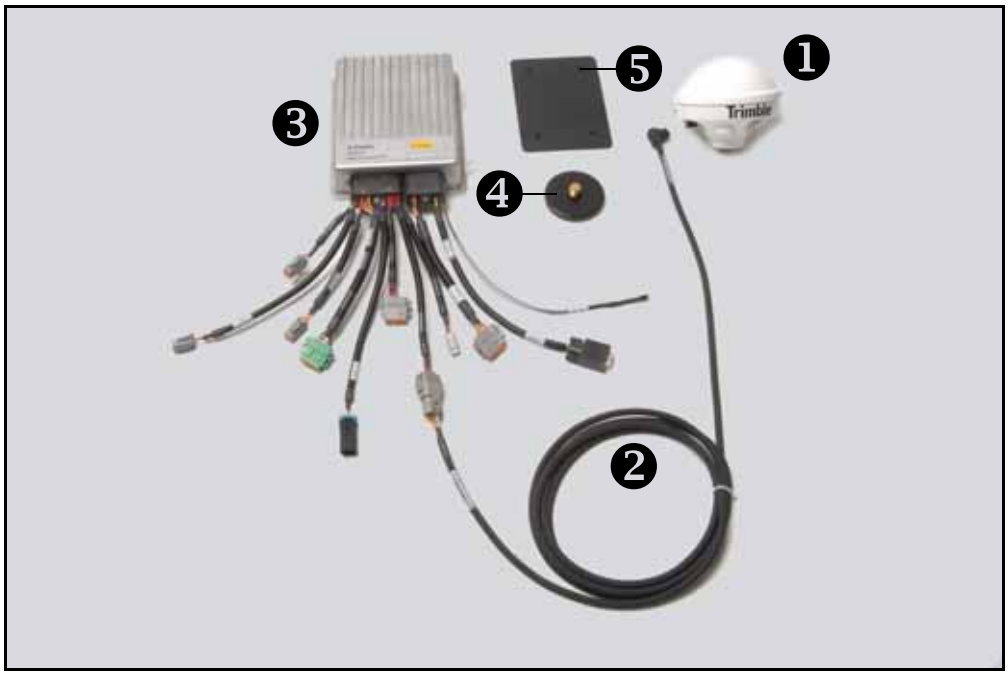
Antenna/Receiver Installation

In this chapter:

- AgGPS 114 Components
- AgGPS 132 Components
- AgGPS 114/132 Installation Process
- AgGPS 252 GPS Receiver with SiteNet Radio (If Equipped) Components
- AgGPS 252 GPS Receiver with SiteNet Radio (If Equipped) Installation Process
- AgGPS 252 GPS Receiver with AgGPS 900 Radio Module (if Equipped) Cab Roof Components
- AgGPS 252 GPS Receiver with AgGPS 900 Radio Module (if Equipped) Cab Roof Installation Process
- AgGPS 252 GPS Receiver with AgGPS 900 Radio Module (if Equipped) Grain Tank Extension Components
- AgGPS 252 GPS Receiver with AgGPS 900 Radio Module (If Equipped) Grain Tank Extension Installation Process

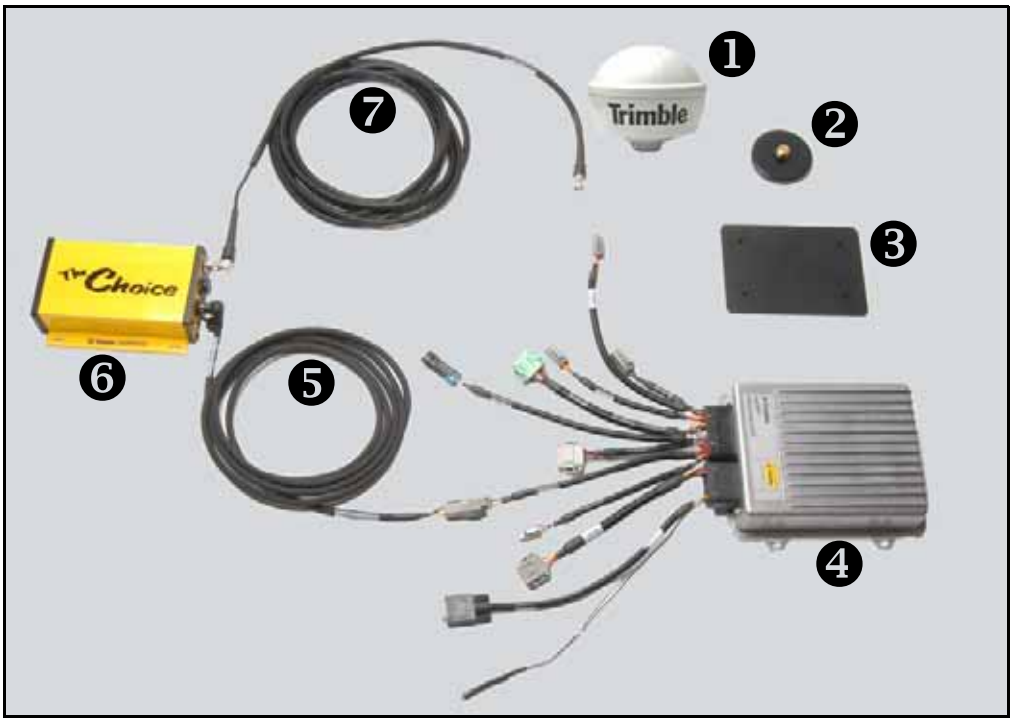
This chapter describes how to install an *Ag*GPS 114 antenna/receiver, an *Ag*GPS 132 receiver and antenna, an *Ag*GPS 252 receiver and SiteNet™ radio, or an *Ag*GPS 252 receiver and *Ag*GPS 900 radio module.

*Ag*GPS 114 Components



Item	Description
1	*Ag*GPS 114 antenna/receiver
2	Antenna/receiver cable
3	Controller
4	Magnetic mount
5	Mount plate

*Ag*GPS 132 Components



Item	Description
1	*Ag*GPS 132 antenna
2	Magnetic mount
3	Mount plate
4	Controller
5	Receiver cable
6	*Ag*GPS 132 receiver
7	Antenna cable

*Ag*GPS 114/132 Installation Process

Step 1

Measure from side to side on the cab roof to locate the center point of the roof. Clean the area around the center of the cab.



Step 2

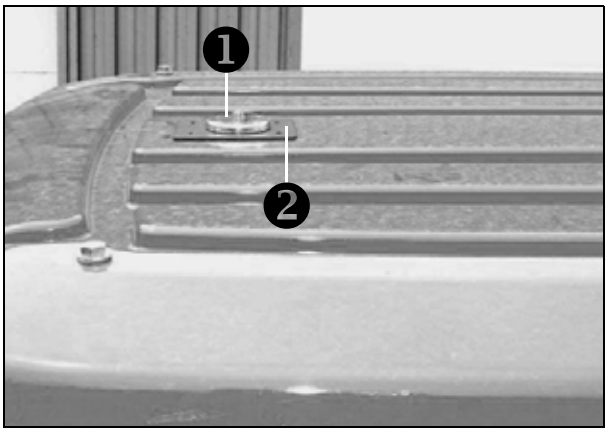
Remove the backing from the adhesive strips on the mounting plate.

Note – *You can place the antenna so it is anywhere between the front and rear of the cab. It must be centered left to right.*



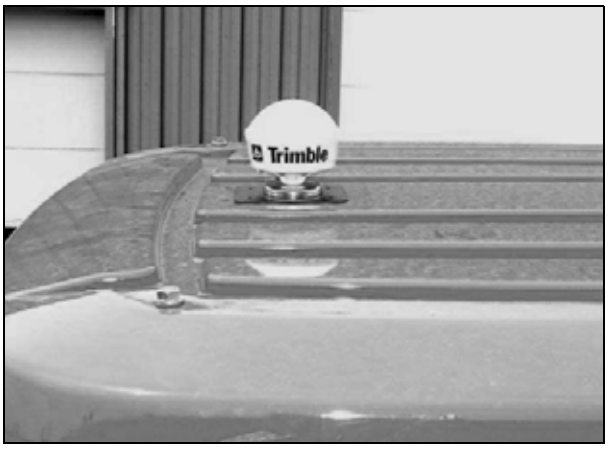
Step 3

Attach the magnetic mount ❶ to the mounting plate. Use the four holes ❷ in the plate as a guide to attach the magnetic mount in the center of the plate.



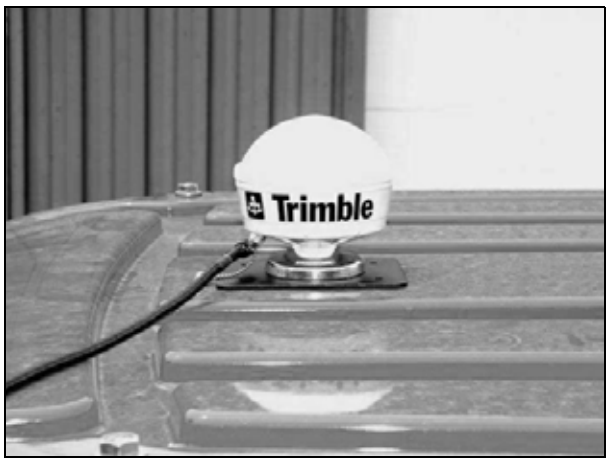
Step 4

Install the antenna on the magnetic mount.



Step 5 *Ag*GPS 114 Only

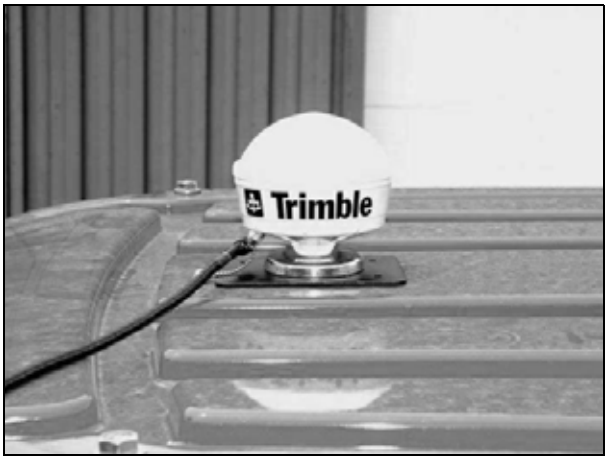
Attach the antenna/receiver cable and then route the cable toward the C post at the right rear of the cab. Secure the cable to the grab rail with cable ties. Route the cable into the cab through the hole in the rear window or through the cab floor. Route the cable toward the rear of the operator's seat base.



Step 6 *Ag*GPS 132 Only

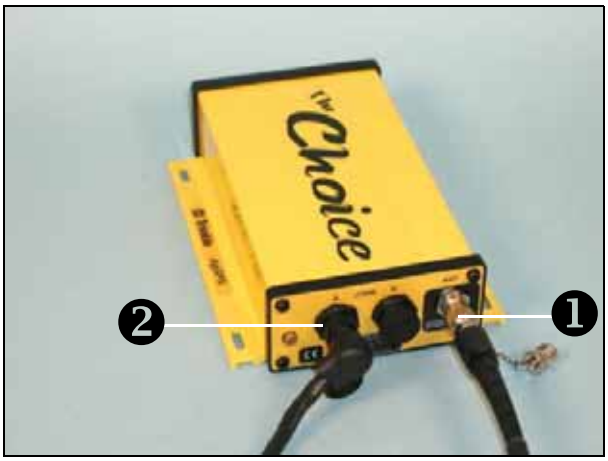
Attach the antenna/receiver cable and then route the cable toward the C post at the right rear of the cab. Secure the cable along the way. Route the cable into the cab, through the hole in rear window or through the cab floor. Route the cable toward the rear of the operator's seat base. Cable connections will be established later in the *Installation Instructions*.

The *Ag*GPS 132 receiver can be mounted in a convenient location anywhere in the cab.

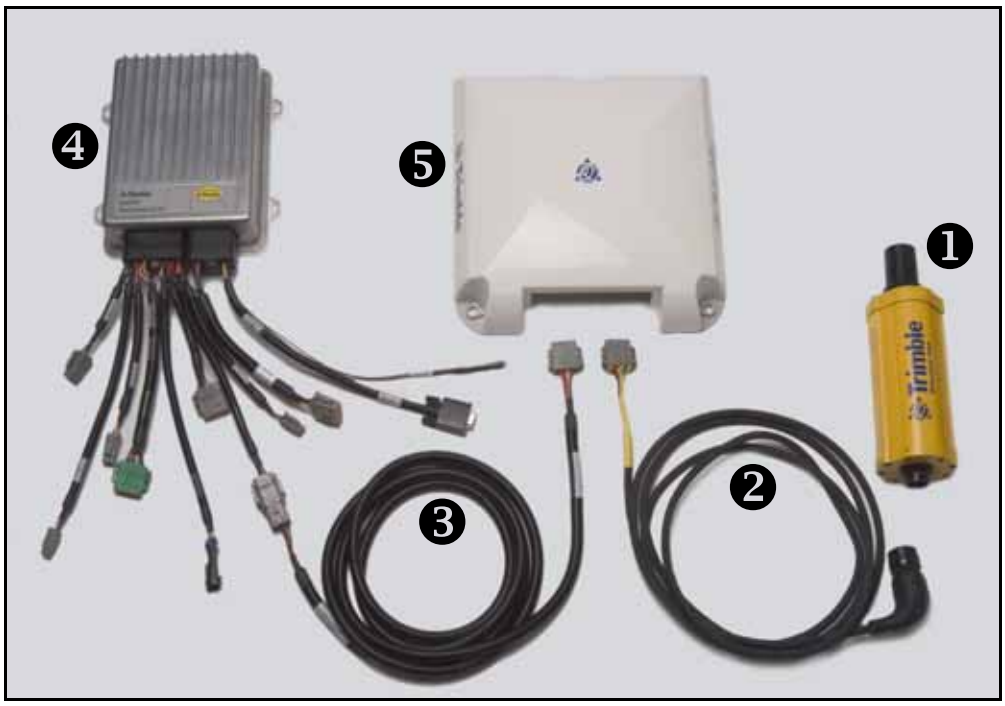


Route the antenna cable ❶ to the receiver and then connect it. Connect the controller cable to cavity "A" ❷ of the receiver. Route the cable toward the rear of the operator's seat base.

Cable connections will be established later in the *Installation Instructions*.



*Ag*GPS 252 GPS Receiver with SiteNet Radio (If Equipped) Components



Item	Description
1	SiteNet radio (if equipped)
2	SiteNet radio cable (if equipped)
3	Antenna/receiver cable
4	Controller
5	*Ag*GPS 252 antenna/receiver

*Ag*GPS 252 GPS Receiver with SiteNet Radio (If Equipped) Installation Process

Step 1

Place the mounting bar on a clean, level surface. Rotate the mounting bar so the four side holes ❶ are on your left.



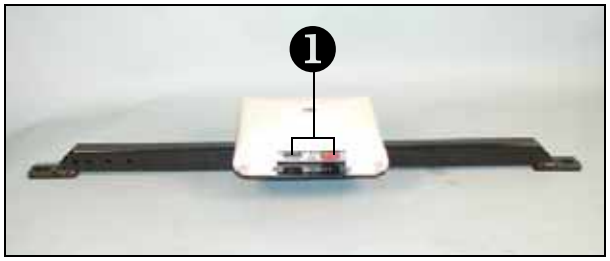
Step 2

Use the four screws ❶ to attach the receiver mounting bracket to the top of the bar. The curved edge of the mounting bracket faces you.



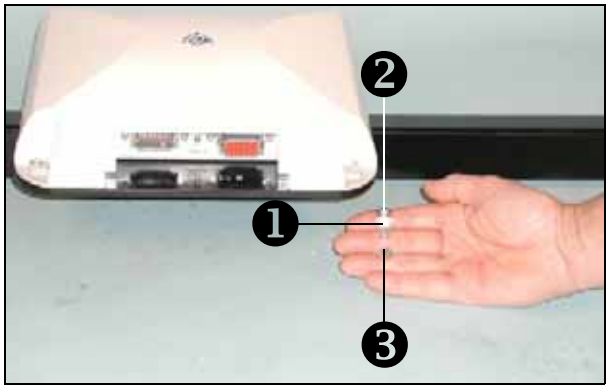
Step 3

Position the *Ag*GPS 252 receiver on the bracket with the connector cavities ❶ facing you.



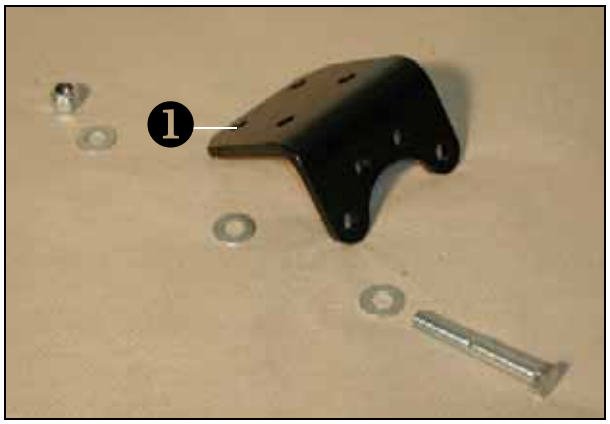
Step 4

Install the nylon bushings ❶, ¼ x 7/8 hex bolts ❷, and ¼ lock nuts ❸ through the receiver and mounting bracket.

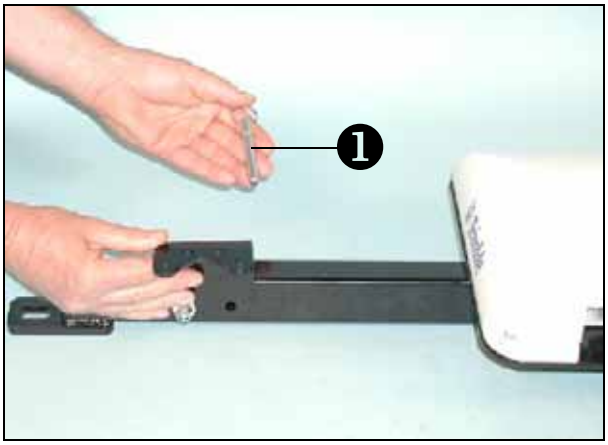


Step 5 If Equipped With SiteNet Radio

Install the SiteNet radio mount bracket. Place a flat washer onto the 3/8 x 2½ hex bolt. Install the bolt through the back of the mounting bar in the third hole from your left. Install another washer. Place the radio mounting bracket on the bolt through the hole shown. Install another washer and then the lock nut.

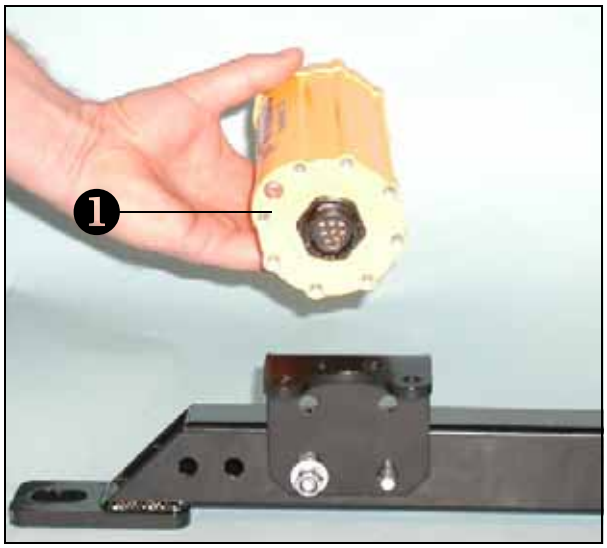


Install the ring grip retaining pin ❶ through the back side of the bracket next to the bolt.

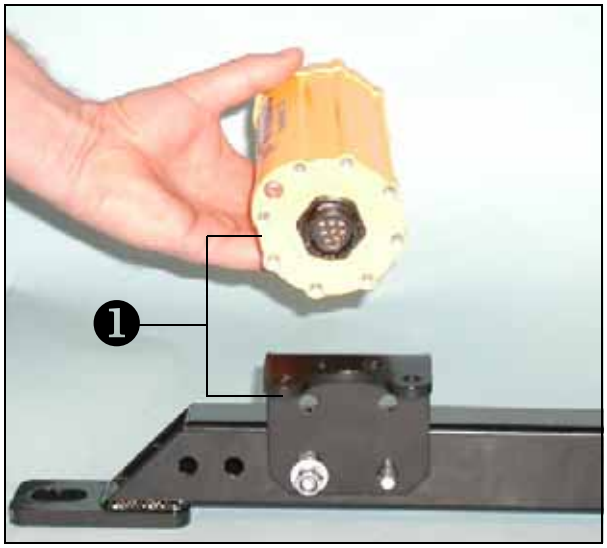


Install the radio on the mount bracket with the connector cavity underneath.

Note – *Mount the radio so the LED* ❶ *on the bottom of the radio is visible.*



Position the radio so the LED is as close to the mounting bracket as possible, without covering the LED. Align the hole on the radio with the hole on the bracket, as shown ❶.



Install two 5/16 x 5/8 socket head bolts and washers into the mount bracket and radio.

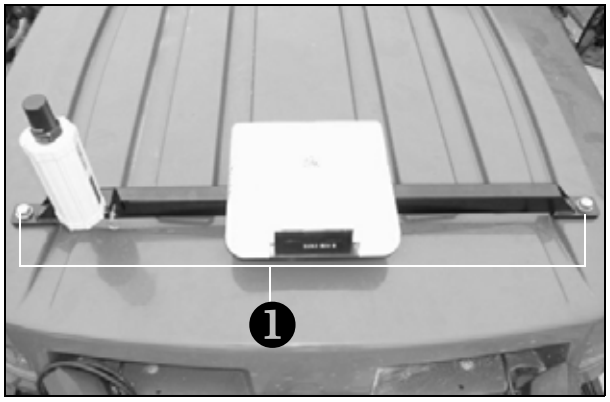
Note – *You do not need all of the bolts provided for the radio.*



Step 6

Remove two bolts and washers ❶ at the rear of the cab roof. Place the mount bracket assembly over the existing holes. Re-use the existing cab bolts and install bolts onto the bracket. The connector cavities face the rear of the cab.

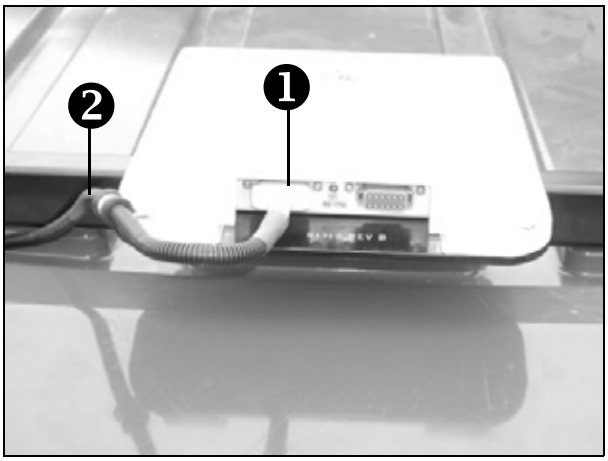
Note – *If the receiver is offset to the left or the right of the vehicle, AgGPS Autopilot system performance can be affected. Ensure that the GPS receiver and bracket are both aligned with the center of the vehicle, before you tighten the cab bolts.*



Step 7

Connect the cable from the cab controller into cavity A of the *Ag*GPS 252 receiver ❶. Use the existing bolt to secure the cable clamp to the right side of the receiver ❷.

Route the cable along the roof bracket, toward the right side of the cab. Place the cable along the C post of the cab, through the rubber grommet at the base of the rear window. Place ties along the cable to secure it.

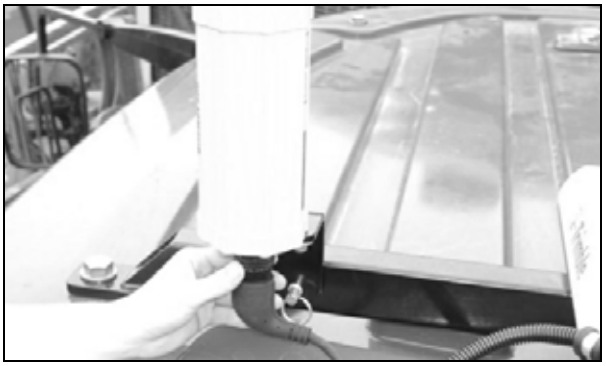


Step 8

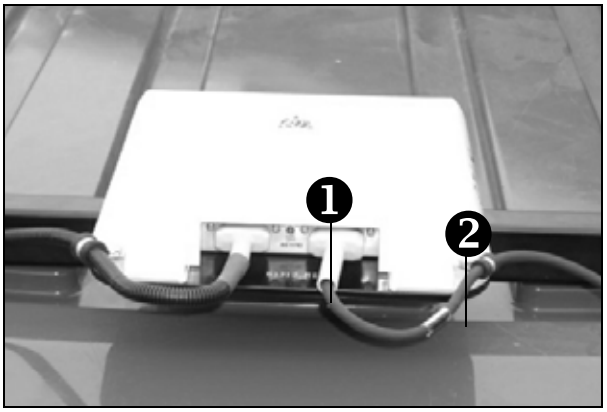
Route the cable toward the left rear corner of the cab. Cable connections will be established later in the *Installation Instructions*.

Step 9 If Equipped With SiteNet Radio

Connect the cable to the SiteNet radio. Rotate the connector until it seats and then turn the lock ring into place.



Place the opposite connector end of the radio cable into cavity B ❶ of the *Ag*GPS 252 receiver. Remove the plug from cavity B and then install the connector. Use the existing bolt to secure the cable clamp ❷ to the receiver.



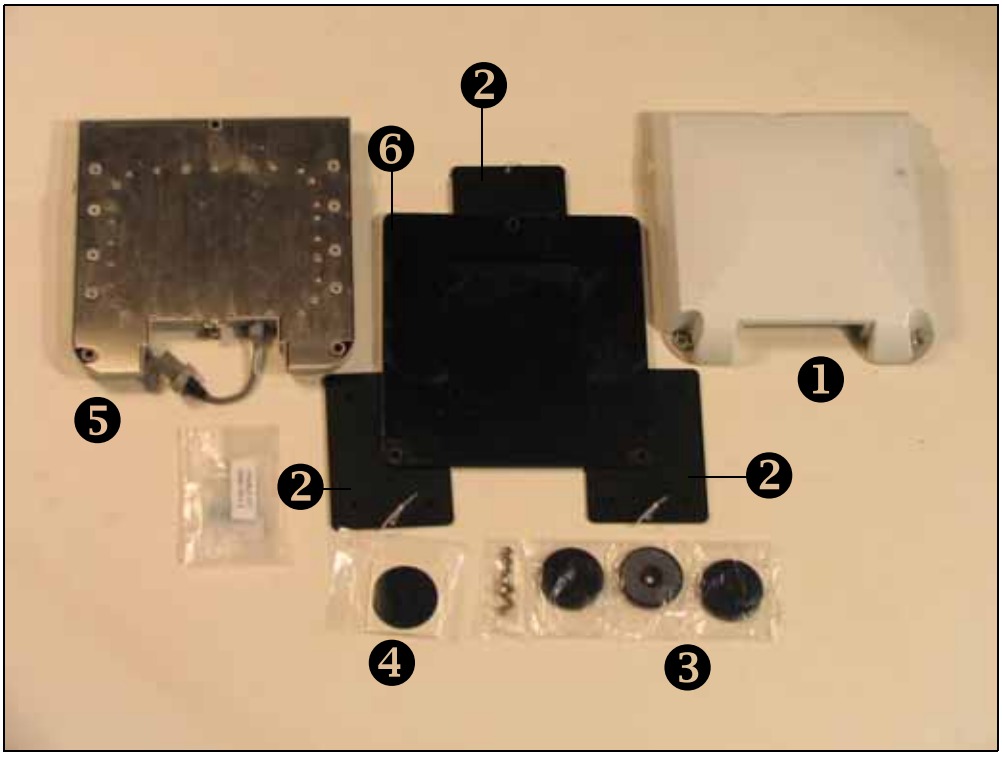
Coil the excess cable, tie the cable together, and then secure it to the cab or the roof bracket.



You can reposition the radio mount bracket for clearance while the vehicle travels. Remove the pin from the mount bracket and then push the radio down toward the left side of the cab. Reinstall the pin through the mount bracket.



*Ag*GPS 252 GPS Receiver with *Ag*GPS 900 Radio Module (if Equipped) Cab Roof Components



Item	Description
1	*Ag*GPS 252 GPS receiver
2	Magnetic mount plates
3	Magnetic mounts
4	Magnetic mount pads
5	*Ag*GPS radio (if equipped)
6	Antenna mounting plate

*Ag*GPS 252 GPS Receiver with *Ag*GPS 900 Radio Module (if Equipped) Cab Roof Installation Process

Step 1

Position the three magnetic mounting plates at the front center of the cab roof with the antenna mounting plate.



Step 2

Ensure that you have full magnetic contact on the magnetic mounting plates.



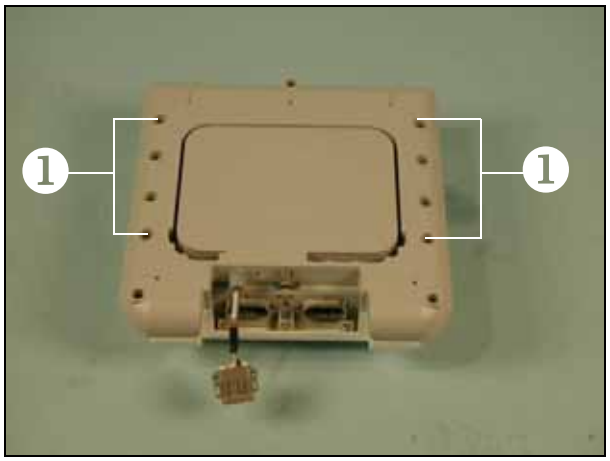
Step 3

Ensure that you have as much tape as possible contacting the cab roof between the roof ribs. Clean the cab roof area where you will adhere the magnetic mounting plates. Remove the protective covering from the tape strips and then secure the magnetic mounting plates to the cab roof.



Step 4

Place the *Ag*GPS 900 radio module (if equipped) on the *Ag*GPS 252 receiver. Install four screws in the holes ❶ as shown.



Step 5

Install the nylon bushings into the receiver.



Step 6

Position the *Ag*GPS 252 receiver and radio (if equipped) on top of the mounting plate. Align the three bolt holes. Install the magnetic mounts below the mounting plate and then secure with a bolt, washer, and nut at each location.



Step 7

Install the magnetic mount pads to the bottom of each magnetic mount.



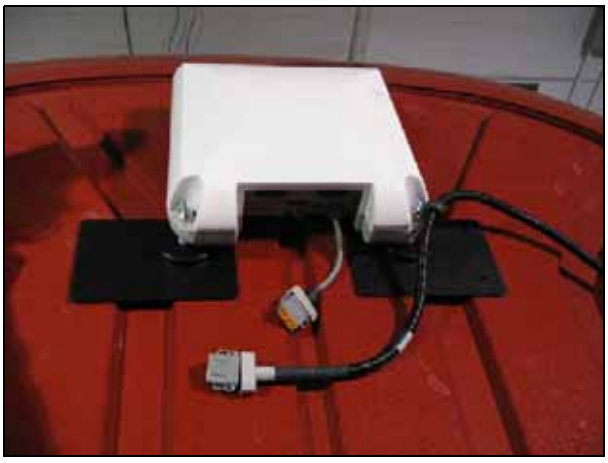
Step 8

Attach the antenna cable clamp on the antenna harness to the mount on the right side of the receiver connectors.



Step 9

Place the receiver assembly onto the magnetic mounting plates on the cab roof.



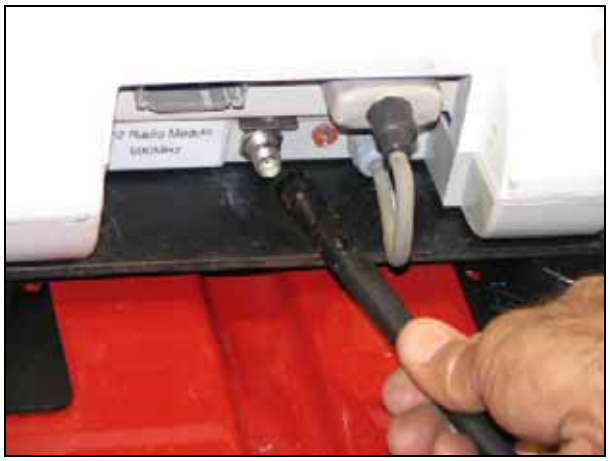
Step 10

Remove the connector plug from the B port on the receiver and then plug the connector from the radio (if equipped) into the receiver.



Step 11

Screw the antenna mast onto the radio (if equipped).

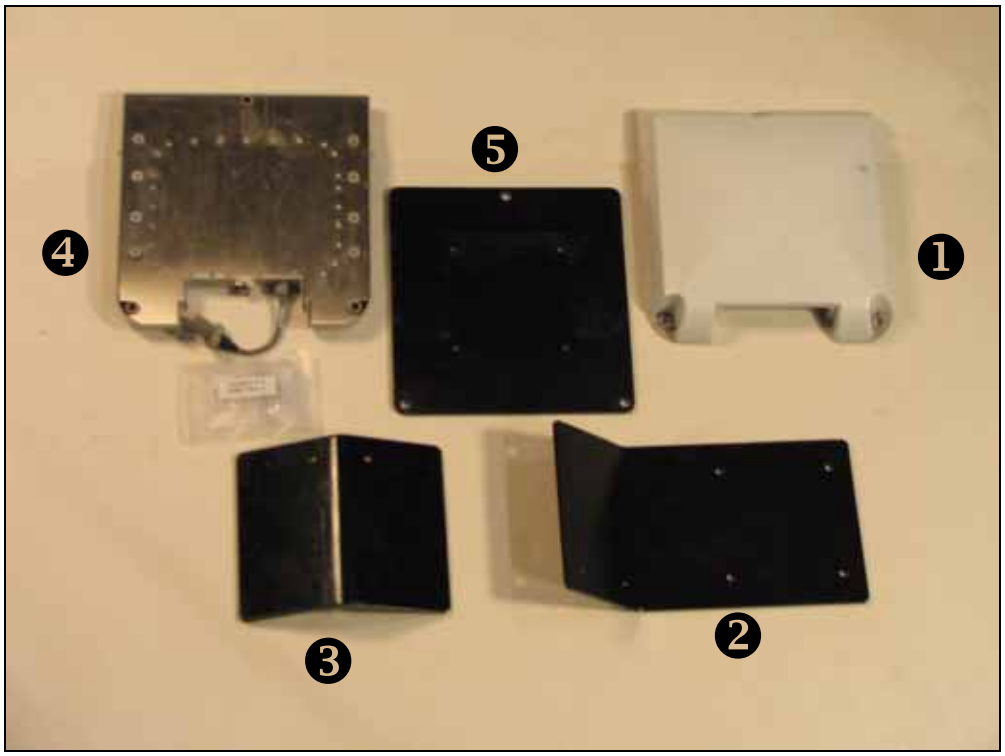


Step 12

Plug the antenna harness into the A port on the receiver. Route the harness over to the right mirror, down the right hand grab rail, and back toward the right hand service door. Secure the cable along the way with tie straps.



*Ag*GPS 252 GPS Receiver with *Ag*GPS 900 Radio Module (if Equipped) Grain Tank Extension Components



Item	Description
❶	*Ag*GPS 252 GPS receiver
❷	Grain tank angle bracket
❸	Grain tank angle bracket
❹	*Ag*GPS 900 radio module (If Equipped)
❺	Antenna mounting plate

*Ag*GPS 252 GPS Receiver with *Ag*GPS 900 Radio Module (If Equipped) Grain Tank Extension Installation Process

Step 1

Position the angle bracket on the front center of the grain tank extension. Mark the mounting hole locations in the grain tank extension and then drill four ¼ inch holes.



Step 2

Use four ¼ inch bolts, washers, and nuts to mount the angle bracket to the grain tank extension.



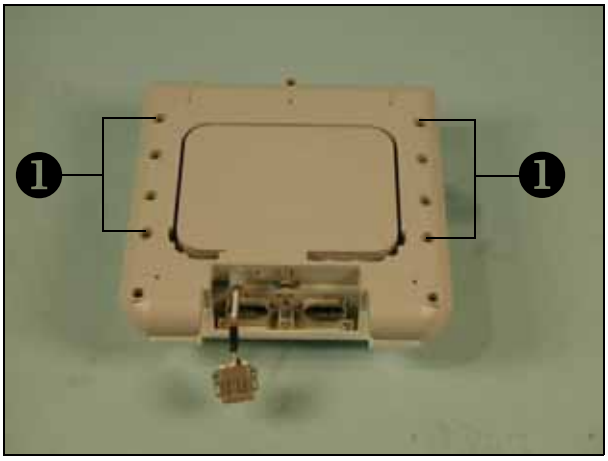
Step 3

Use four ¼-20 x ½ inch flat head screws to attach the receiver mounting bracket to the angle bracket. The single receiver mounting hole on the mounting bracket faces forward.



Step 4

Place the *Ag*GPS 900 radio module (if equipped) on the *Ag*GPS 252 receiver. Install four screws in the holes ❶ as shown.



Step 5

Install the nylon bushings into the receiver.



Step 6

Position the *Ag*GPS 252 receiver and radio (if equipped) on top of the mounting plate. Align the three bolt holes and then secure the receiver with a bolt, washer, and nut at each location. Attach the antenna cable clamp that is on the antenna harness to the mount on the right side of the receiver connectors. Remove the connector plug from port B on the receiver and then plug the connector from the radio (if equipped) into the receiver. Screw the antenna mast onto the radio (if equipped). Plug the antenna harness into port A on the receiver. Route the harness down the grain tank and toward the right hand service door. Secure the cable along the way with tie straps.



CHAPTER

5

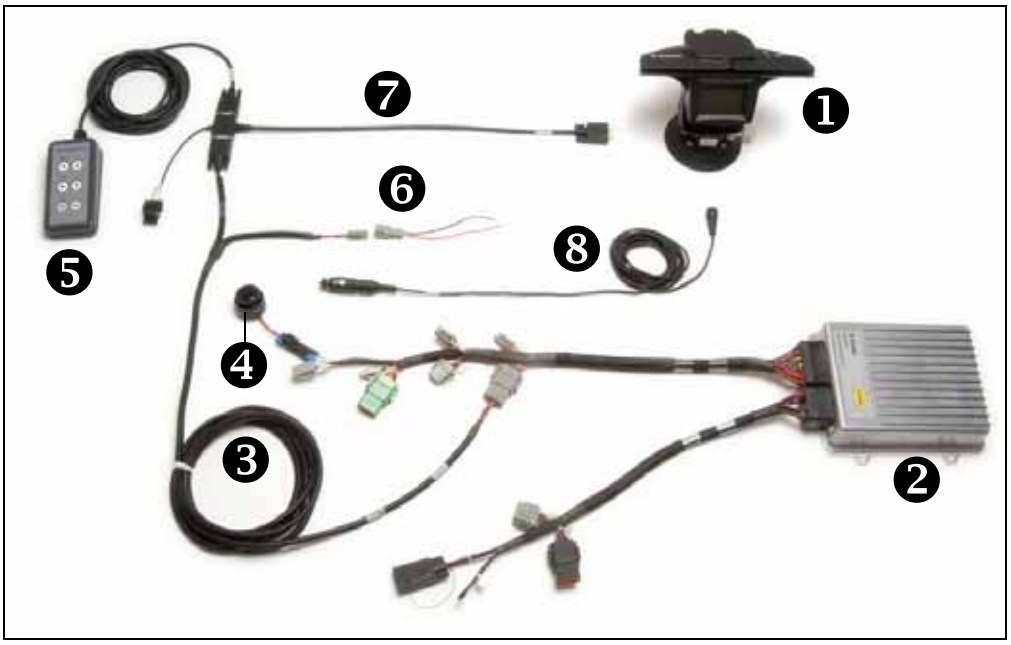
Display Installation

In this chapter:

- EZ-Guide Plus Lightbar Components
- EZ-Guide Plus Lightbar Display Installation
- Mounting the Lightbar
- AgGPS 170 Field Computer System Components
- AgGPS 170 Field Computer System Installation Process

This chapter describes how to install and connect the EZ-Guide Plus lightbar and the *Ag*GPS 170 Field Computer in the vehicle.

EZ-Guide Plus Lightbar Components



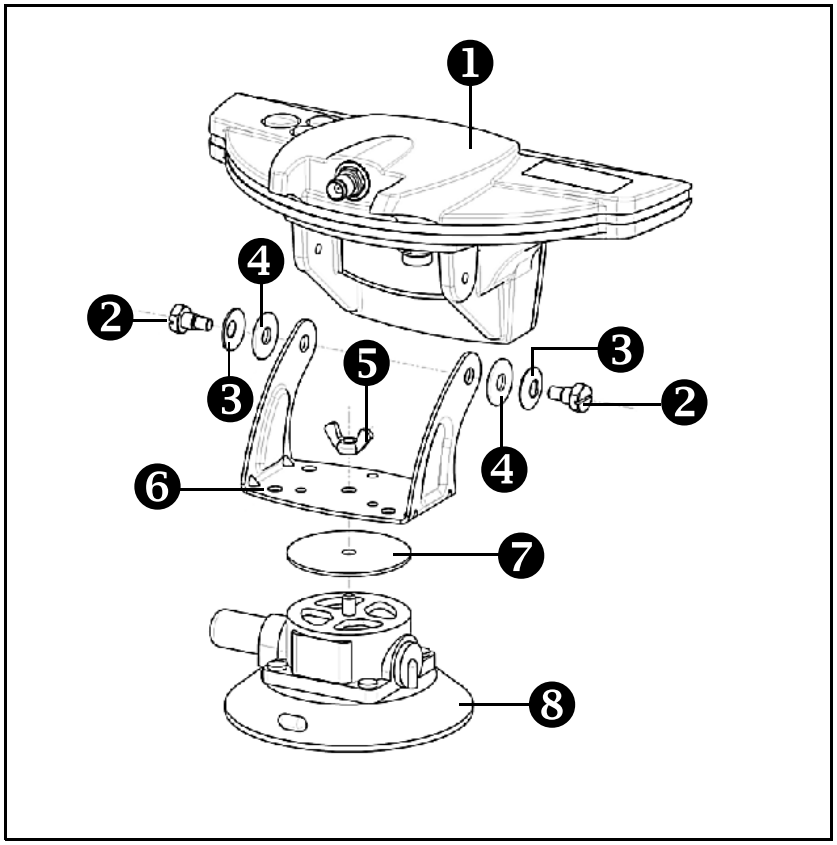
Item	Description
1	EZ-Guide Plus lightbar
2	Controller
3	Display cable
4	Sonalert alarm (if connected)

Item	Description
5	Optional remote keypad
6	Alternative power supply
7	External interface cable
8	Power harness

EZ-Guide Plus Lightbar Display Installation

Step 1

Assemble the lightbar as shown below.



Item	Description
❶	EZ-Guide Plus lightbar
❷	Bracket screw
❸	Bracket lock-washer
❹	Bracket flat-washer

Item	Description
❺	Bracket wing-nut
❻	Mount bracket
❼	Bracket pad
❽	Suction cup mount

Step 2

Tighten the screws ❷ to a torque of 170 cNm (15 in/lbs). Re-apply thread-lock after every ten insertions. Screws require liquid thread-locking compound for optimum performance.

Note – *Check orientation of bracket before inserting screws.*

Mounting the Lightbar

There are two methods of mounting the EZ-Guide Plus lightbar:

- On a vertical, or near vertical surface, using a suction cup vacuum mount, for example to mount the lightbar on a window.
- On a horizontal, or near horizontal surface, using a mount bracket, for example to mount the lightbar directly on the dashboard with screws.

Vacuum mount installation

Note – *The vacuum mount is a temporary mounting device. Before you use it, read the manufacturer's instructions provided with the mounting kit.*

Step 1

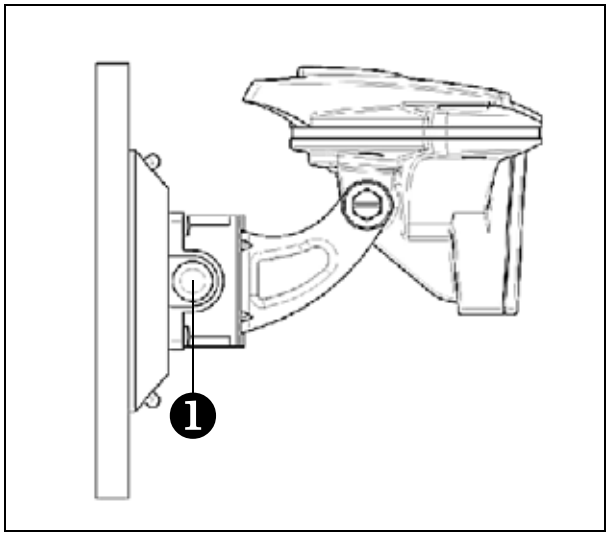
Secure the vacuum mount to the mounting bracket using the hardware provided.

Step 2

Dampen the rubber seal on the suction cup.

Step 3

Secure the lightbar in the desired location by pressing the suction cup against a flat surface and pumping the gray button ❶ until the red line is no longer visible.



Mount bracket installation

Step 1

Use a pen or awl with the bracket drilling template below to mark where the four holes are to be drilled on the mount plate.

Step 2

Drill the holes in the bracket at the marked points.

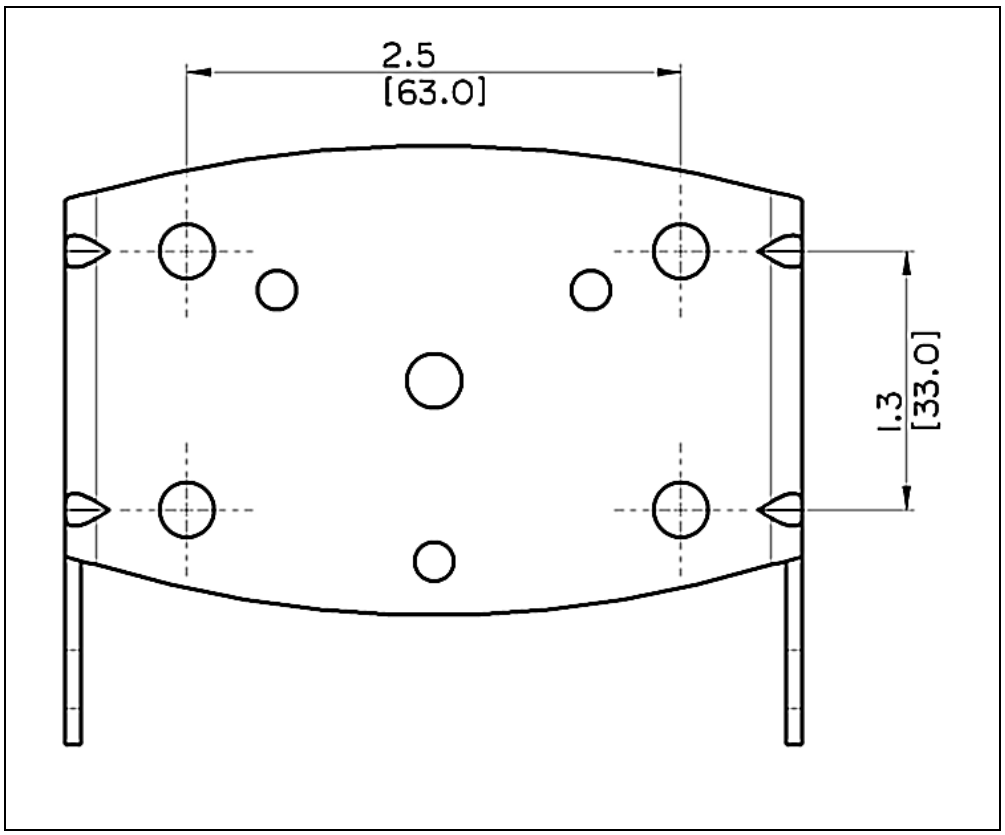


Figure 5.1 Bracket drilling template

Step 3

Screw the mount bracket to the horizontal surface.

Step 4

Attach the EZ-Guide Plus lightbar to the mount bracket.

Step 5

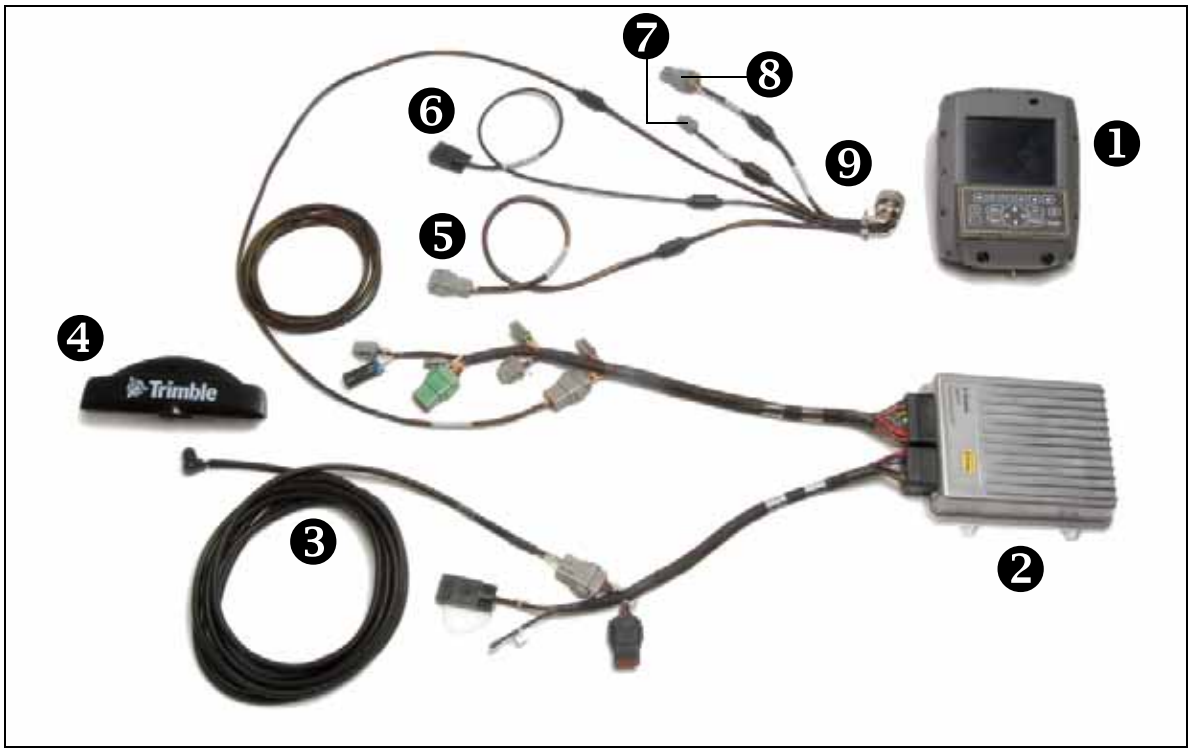
Connect the cable to the EZ-Guide Plus lightbar.

Step 6

Attach the EZ-Guide Plus display cable to the main harness connection labeled “Display”.

Note – *If the cable is connected to the auxiliary harness connection labeled “Spare”, the display will act as a lightbar only.*

*Ag*GPS 170 Field Computer System Components



Item	Description
1	*Ag*GPS 170 Field Computer
2	Controller
3	Lightbar cable (optional)
4	Lightbar (optional)
5	Switch + *Ag*GPS 170 alarm (not used)

Item	Description
6	Com 1 serial I/O (not used)
7	CAN (not used)
8	*Ag*GPS 170 lightbar (not used)
9	Display harness

*Ag*GPS 170 Field Computer System Installation Process

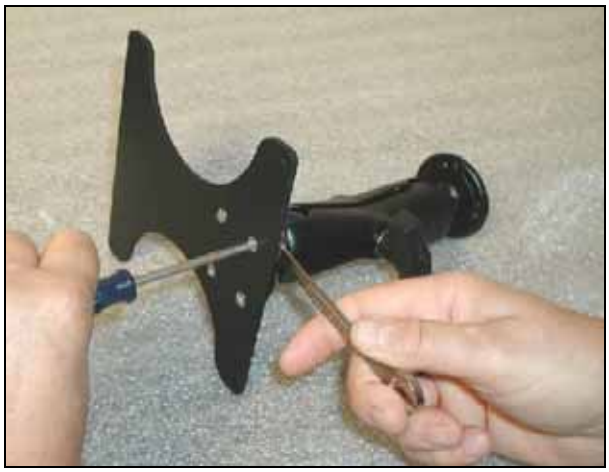
Step 1

The *Ag*GPS 170 Field Computer will be mounted in the cab with a bar mount ram mount. Decide where in the cab it will be mounted.



Step 2

Assemble the display mounting bracket onto the ram mount with the hardware provided.



Step 3

Place a spacer over each threaded hole on back of display.



Step 4

Install the display mount assembly over the spacers. Secure the mount with hardware provided.

The mount is being secured so that, with display facing you, the mount is on the left side. Install the display mount bracket according to where you will be mounting the display in cab.



Step 5

Install the bar clamp mount to the ram mount with hardware provided. The display can now be mounted in cab.



Step 6

Connect the *Ag*GPS 170 display harness to the display. Route the cable to the controller and connect to the connection labeled "Display" on the main harness connection.

Note – *Do not connect the AgGPS 170 connection to the auxiliary harness connection labeled "Spare".*

Step 7

Connect the lightbar display cable to the *Ag*GPS 21A lightbar. Route the cable to the controller and connect to the connection labeled "Spare".

CHAPTER

6

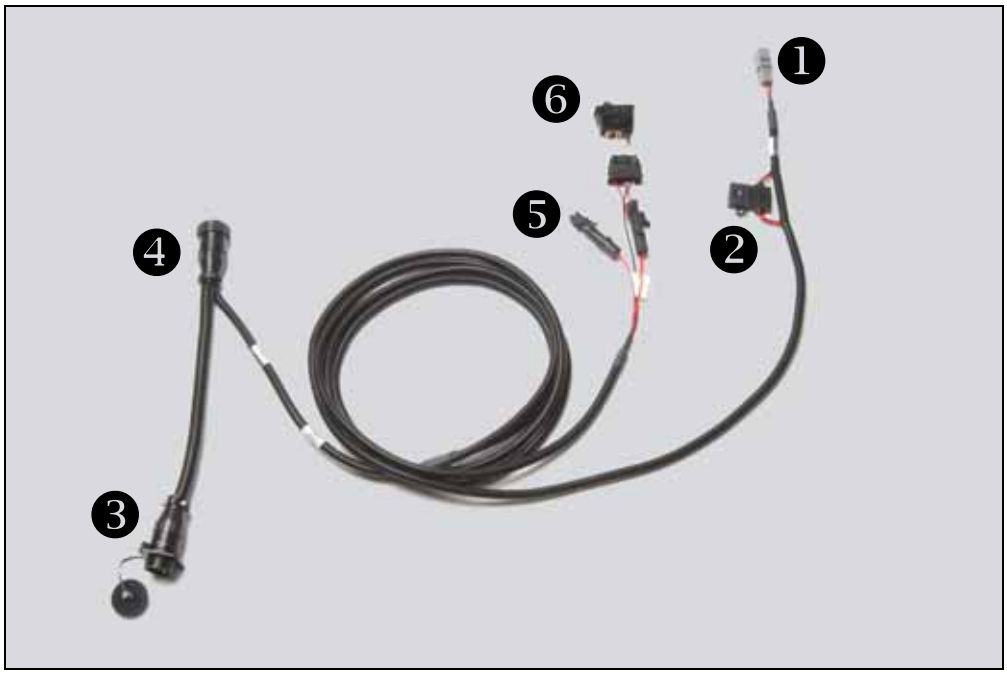
Power Harness Installation

In this chapter:

- Power Harness Components
- Power Harness Installation Process

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

Power Harness Components



Item	Description
❶	Controller power connection
❷	Fuse holder - Littlefuse 257010, 10 amp
❸	Extra accessory outlet
❹	Accessory jumper cable (P/N 54630)
❺	Switch receptacle
❻	Switch

Note – *Route all harnesses, wires, and cables along routes that are free of obstructions and pinch points. Use wire ties where necessary. For ease of installation, the connectors on all harnesses are identified by component. The following instructions will only give you the general direction to route the components. You will be responsible for determining the best method to conceal all routings.*

Note – *Make note of where you remove any wire harness and hose tie straps during disassembly so you can properly install them during assembly.*

Power Harness Installation Process

Step 1

Open the right hand service door. Remove the protective covering to the access hole that leads into the cab.



Step 2

From inside the cab, remove the cover to the electronics compartment.



Step 3

To remove the bottom cover of the right hand control console, remove the four screws at the bottom of the cover.



Step 4

Locate an unused switch position on the right hand control console. Remove the blankout cover from the location selected.



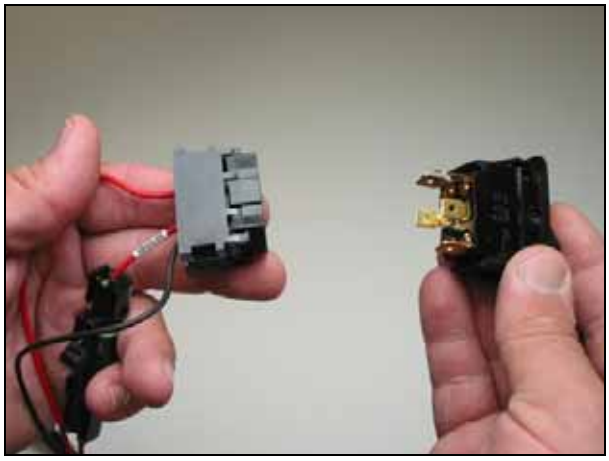
Step 5

From under the right hand control console, route the power switch receptacle from the power harness up and through the hole at the switch location.



Step 6

Mate the black (ground) wire in the receptacle with pin 3 of the switch. The pins are marked on the sides of the switch.



Step 7

Install the switch in the console.



Step 8

Plug the vehicle accessory plug from the power harness into the accessory plug located at the right rear of the operators seat.



Step 9

Route the controller connector end of the power harness into the electronics compartment. Route the connector through the sidewall of the cab into the right hand service area.



CHAPTER

7

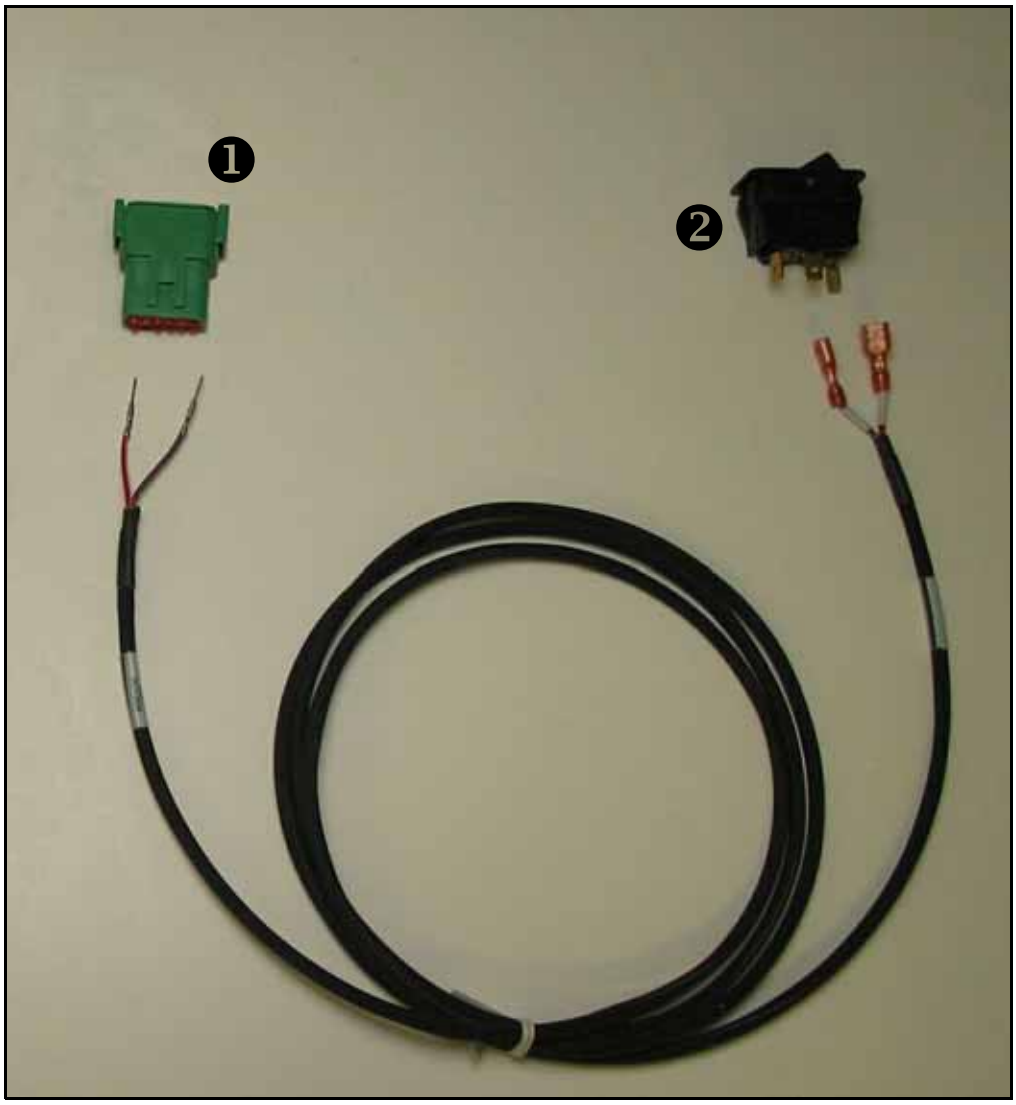
Remote Engage Switch Installation

In this chapter:

- Remote Engage Switch Components: Rocker Switch
- Remote Engage Switch Components: Foot Switch
- Prepare the Remote Engage Cable
- Using the Remote Engage Switch

This chapter describes how to install the remote engage switch.

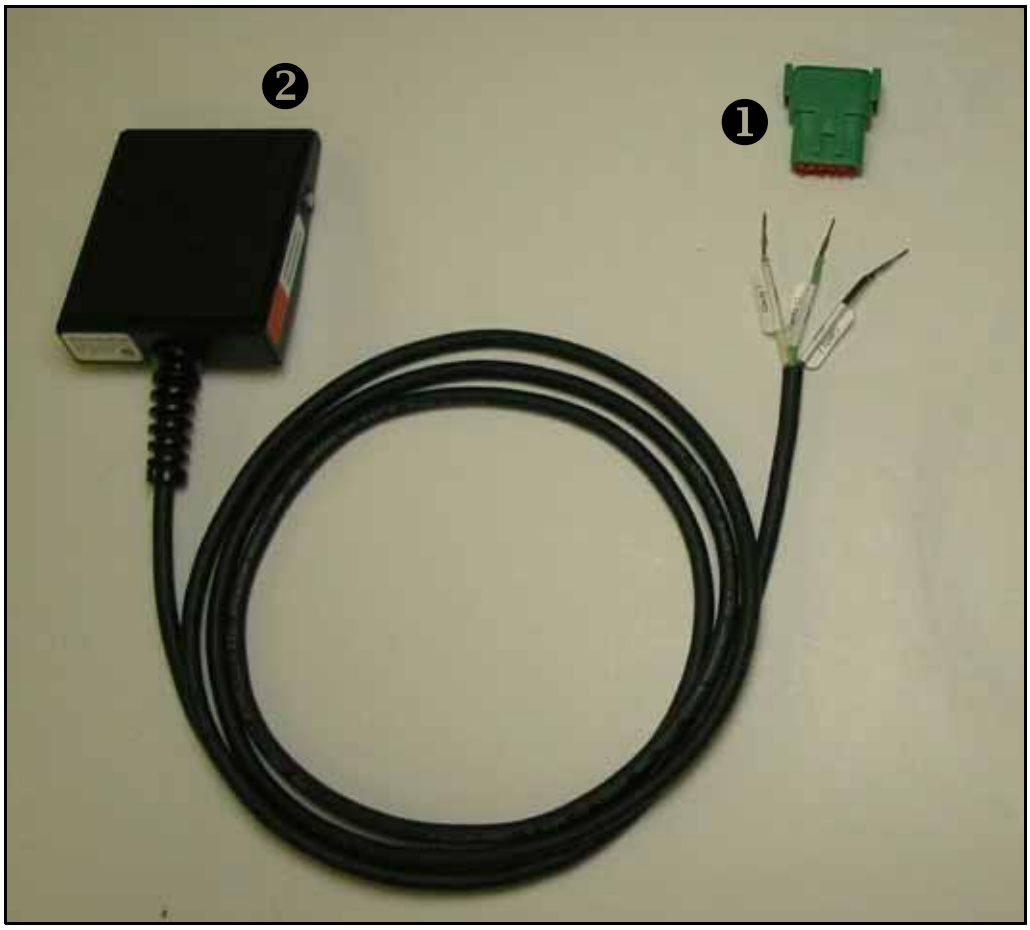
Remote Engage Switch Components: Rocker Switch



Item	Description
1	DTM receptacle
2	Remote engage rocker switch

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

Remote Engage Switch Components: Foot Switch

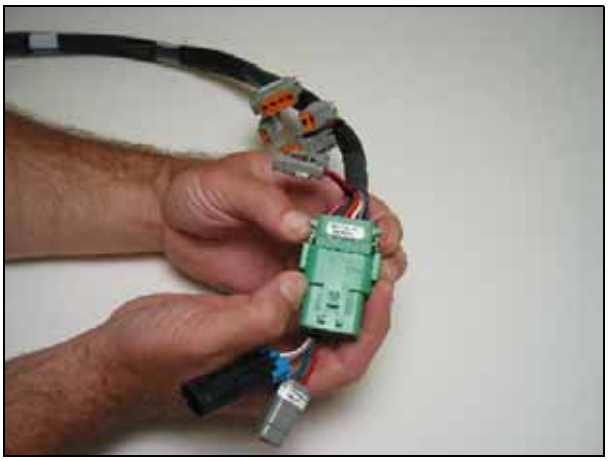


Item	Description
❶	DTM receptacle
❷	Remote engage foot switch

Prepare the Remote Engage Cable

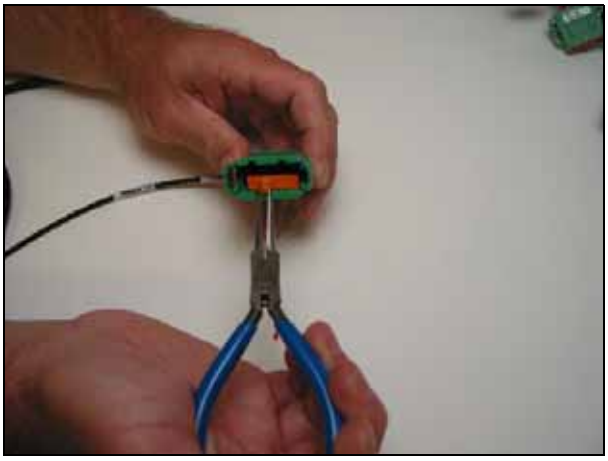
Step 1

Locate the green 12-pin Deutsch receptacle on the P-5 leg of the main controller harness. See Chapter 8, Controller Connections.



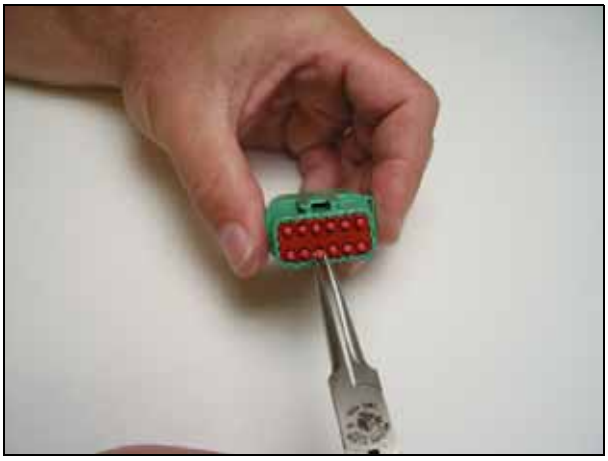
Step 2

Remove the wedge from the connector.



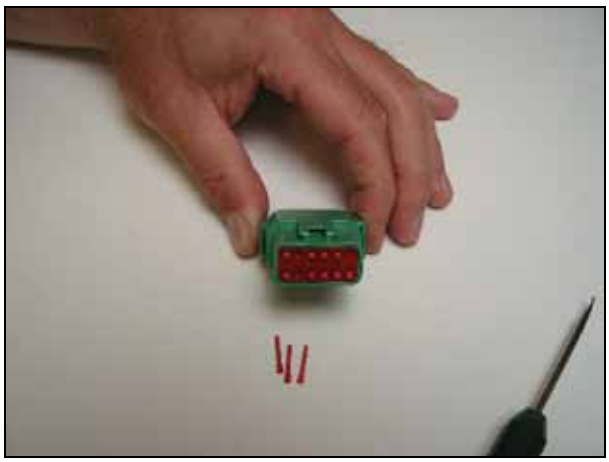
Step 3 Rocker switch only

Remove the plugs from cavity 2 and 7.



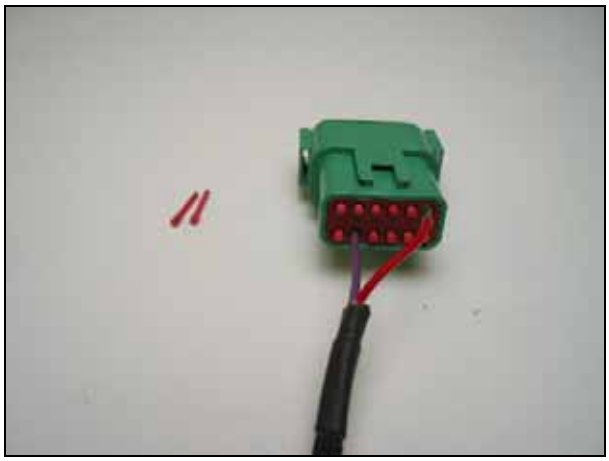
Foot Switch Only

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



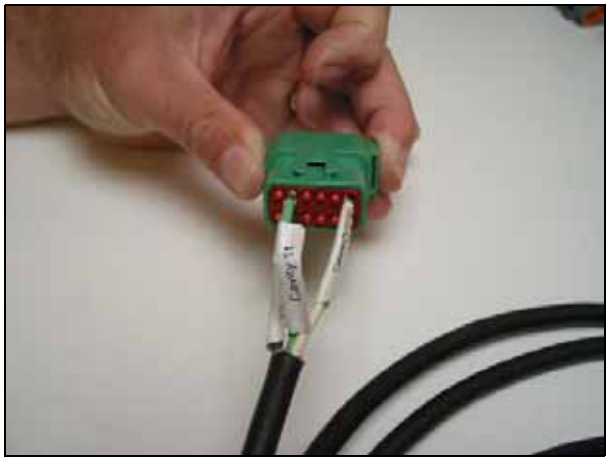
Step 4 Rocker Switch Only

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



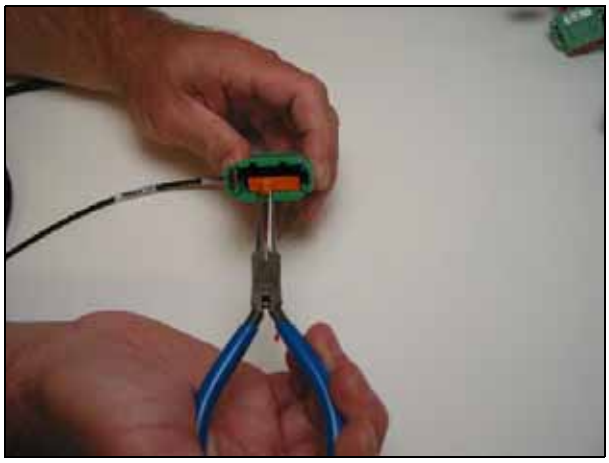
Foot Switch Only

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 Rocker Switch Only

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



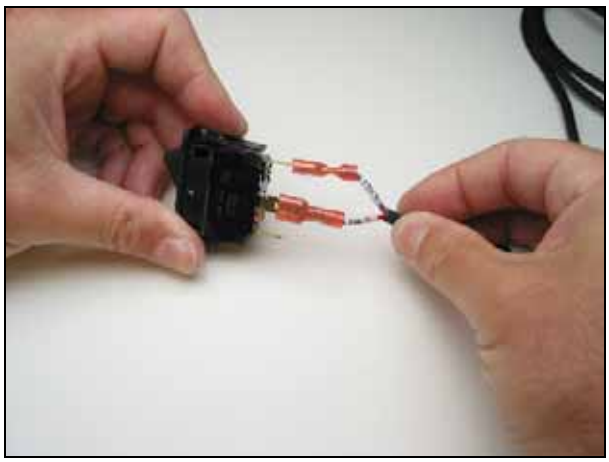
Foot Switch Only

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 7 Rocker Switch Only

Connect the wires to the switch that matches the print on the switch body and labels on the wires.



Step 8 Rocker Switch Only

Place the switch in the console.



Using the Remote Engage Switch

Step 1

Hold the switch down for at least 0.5 seconds.

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

Step 2

Release the switch between 0.5 and 4.0 seconds. The vehicle will engage when the switch is released.

CHAPTER

8

Controller Installation

In this chapter:

- Controller Installation
- Controller Connections

This chapter describes the installation of the controller unit in the vehicle.

Controller Installation

Step 1

Remove the outside air filter cover located in the right hand service door to the right of the operator's cab.



Step 2

Place the controller above the existing control module and to the right of the air filter to ensure adequate room for mounting.



Step 3

From inside the grain tank using the controller as your template, measure over 400 and 597 mm (15 ¾ and 23 ½ inches) from the right side of the grain tank to the center line of the left and right mounting holes on the controller.



Step 4

Measure down 203 mm (8 inches) from the grain tank lip to the center line of the top mounting holes on the controller. Make sure the tape measure is inserted up to the top of the grain tank lip. Mark all four mounting holes on the controller at these locations.

Note – *Holes are drilled from inside the grain tank for easier access.*



Step 5

Drill 5/16" holes at these locations.



Step 6

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



Step 7

Secure ¼" bolts and washers, threads facing forward, with nuts to provide mounting studs for the controller.

Note – *If transfer of the controller is not necessary, fasten the controller directly to the panel.*

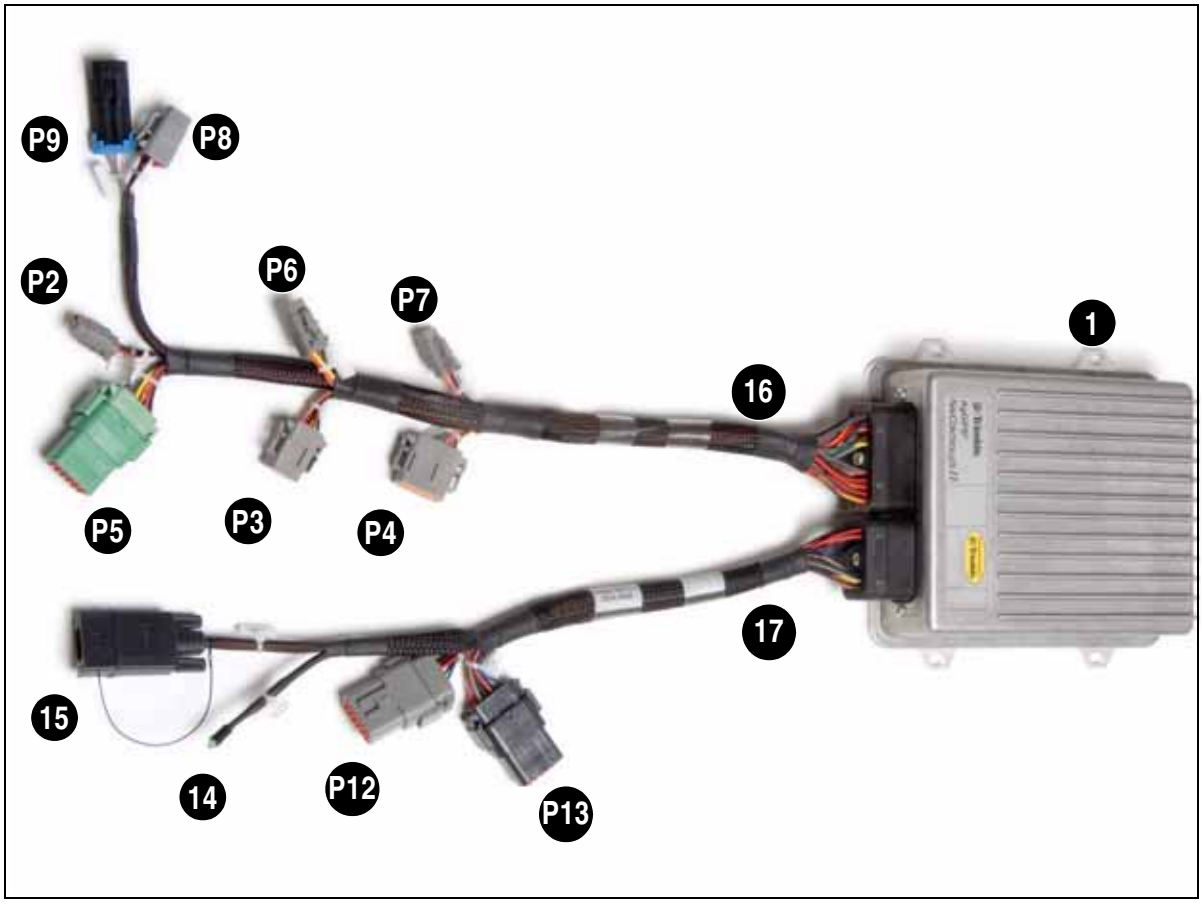


Step 8

Install the controller on the studs with ¼" nylock nuts.



Controller Connections



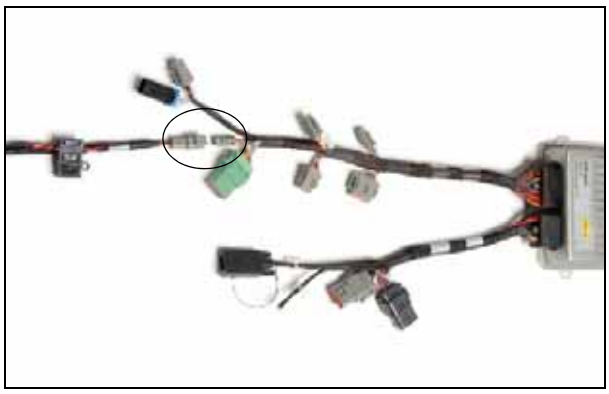
Item	Description
1	NavController II controller
P2	Power connector
P3	GPS connector
P4	Display connector
P5	Vehicle sensors connector
P6	Steering sensor connector
P7	Manual override connector
P8	Hydraulic valve connector

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

Step 1

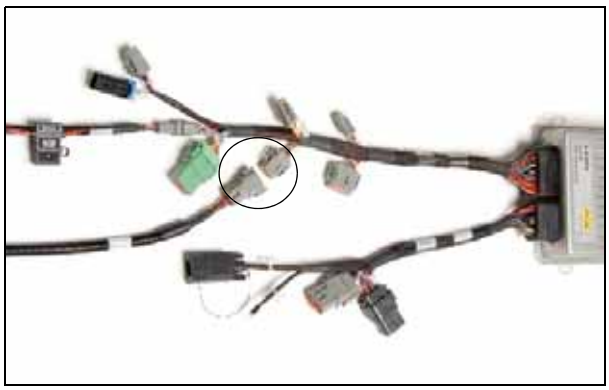
Connect the power cable connection to P-2, which is labeled “Power”. P-2 is located on the main wiring harness.

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



Step 2

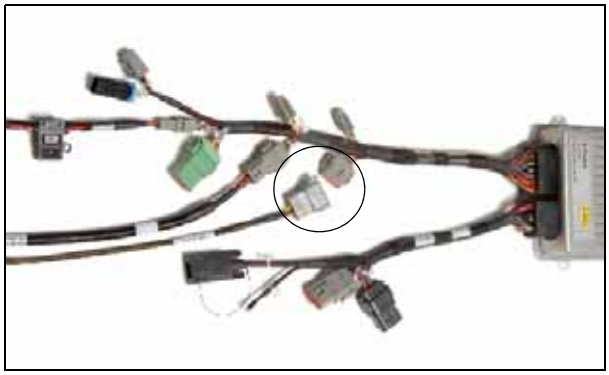
Connect the GPS cable connection to P-3, which is labeled “GPS”. P-3 is located on the main wiring harness.



Step 3

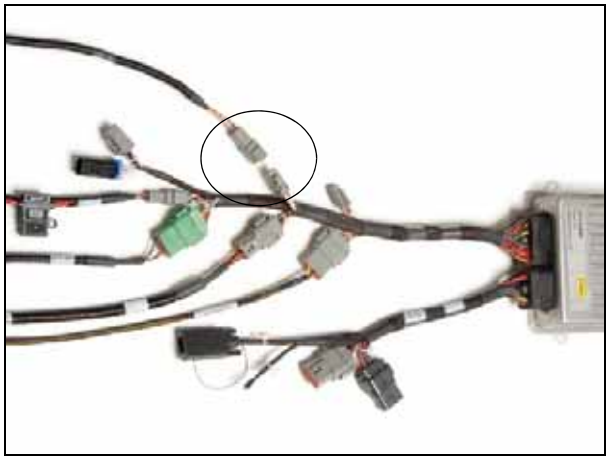
Connect the primary display cable connection to P-4, which is labeled “Display”. P-4 is located on the main wiring harness.

Note – *Do not connect the cable to the connector labeled “Spare” on the auxiliary harness.*



Step 4

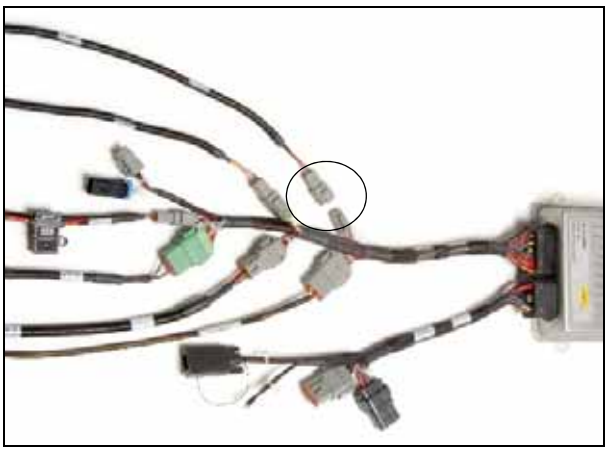
Connect the steering sensor cable connection to P-6, which is labeled “Steering Sensor”. P-6 is located on the main wiring harness.



Step 5

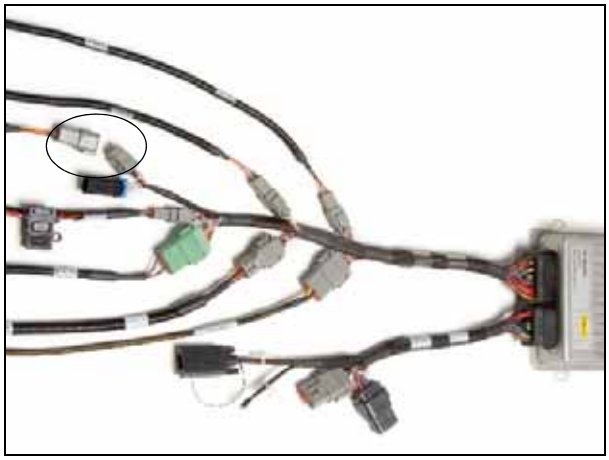
Connect the manual override cable connection to P-7, which is labeled "Manual Override". P-7 is located on the main wiring harness.

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



Step 6

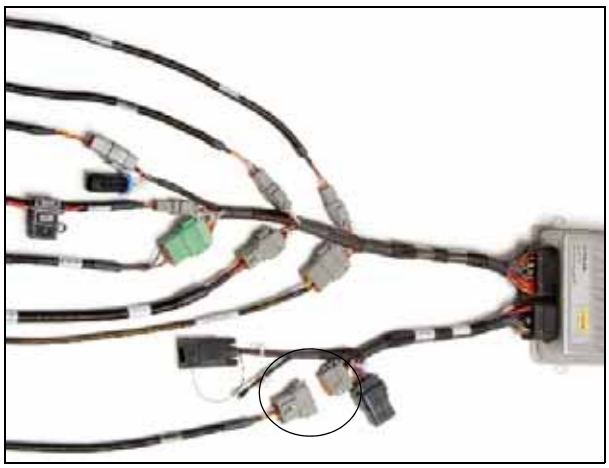
Connect the hydraulic steering valve cable connection to P-8, which is labeled "Hydraulic Valve". P-8 is located on the main wiring harness.



Step 7

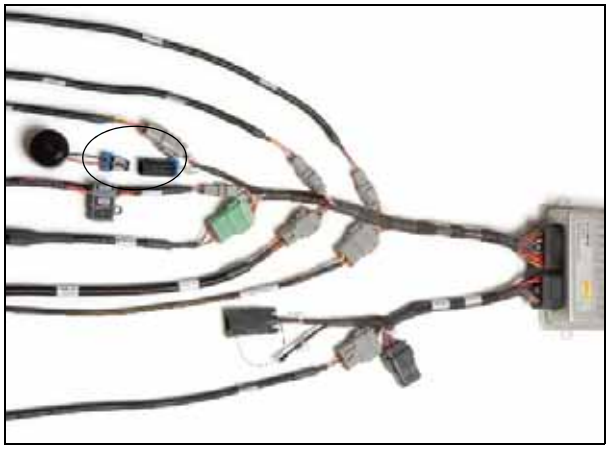
When using a lightbar as a secondary display to an *Ag*GPS 170 field computer, connect the lightbar cable connection to P-12, which is labeled "Lightbar/Spare". P-12 is located on the auxiliary wiring harness.

Note – *If an AgGPS 50 or AgGPS 150 lightbar is connected to P-12, it will act as a lightbar only.*



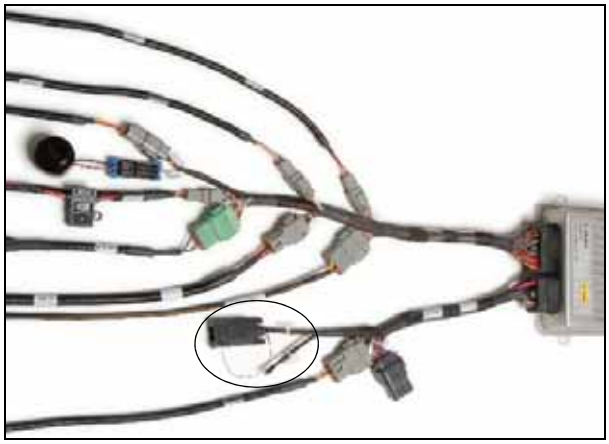
Step 8

Connect the Sonalert P-9 to the two 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 9

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 10

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:

- Final Machine Check

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

Final Machine Check

Step 1

Connect the battery.

Step 2

Start the machine and check for hydraulic leaks. Correct as needed.

Step 3

Connect and run the *Ag*GPS Autopilot Toolbox II software for system setup and calibration. For more information, refer to the *AgGPS Autopilot Toolbox II Software User Guide*.

Step 4

Open the Diagnostic page of the *Ag*GPS Autopilot Toolbox II software and ensure that all signals from the hydraulics and sensors are active.